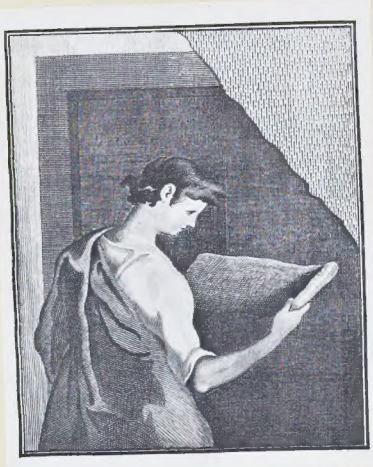


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THE BUILDER

AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR, SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

LATE VICE-PRESIDENT OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS;

Honorary Member of various Societies; Author of "History in Ruins," "Town Swamps and Social Bridges," "Another Blow for Life," &c.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."——SIR HENRY WOTTON.

"Our English word To BUILD is the Anglo-Saxon Býlðan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."——DIVERSIONS OF PURLEY.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is GOODNESS."

VOLUME FOR 1873.

LONDON:

PUBLISHING OFFICE, No. 1, YORK STREET, COVENT GARDEN, W.C.

Wyman & Sons, Printers,
Great Queen St. London, W.C.

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The Builder

A Partial Retrospect.

GLANCING backwards, we find the questions involved in the proposed decoration of St. Paul's Cathedral have given rise to the chief architectural discussion of the year,—a discussion, not yet closed, — which has drawn forth expressions of a nature very different from the balanced opinions of calm and competent criticism. Of the Law Courts the public hear nothing: whether or not the absolutely necessary alteration in the Strand front has been made in the design has yet to be learnt. We shall be glad to find that time has enabled the architect to give calm consideration to the design, and effect the required revision.

The question of the increasing use of iron in building, in this country, referred to in our "Prologue" last year, has received valuable elucidation in our pages during the course of 1872; and in our last number we described some very interesting experiments by Professor Calvert, establishing the view as to the nature of the rust of iron which we have on former occasions suggested to be correct.

The great question of the durability of the coal supply existing in Great Britain, and the character of the report issued by a Royal Commission late in the year 1871, formed subjects to the real master-facts of which we endeavoured at the commencement of the year, as well as on previous occasions, to call attention. The view which we took, strongly condemnatory as it was of the ridiculously optimist character of the report of the Duke of Argyle and his fellow commissioners, received a confirmation more pointed and definite than the stern logic of facts often accords to the forecasts of a public writer. The rapid and serious rise in the price of coal, and, a little later, the actual importation of foreign coal into English ports, are among the chief industrial features of the year which has elapsed; and are events which absolutely verified the predictions on which we had felt that we had a sound basis for venturing.

The subject of our great fortifications at Portsmouth came into prominence early in the year; the details that we were enabled to give of their construction have more than an ephemeral interest. Later in the year, the question of our floating batteries came into conspicuous notice. The duel between penetration and resistance was, and is, still continued; but with increasing odds in the favour of the former.

The month of January had not elapsed before the engineering world was amused by a revival of one of the projects,—not for an aërial, but,—for a submarine railway. A French gentleman claimed our attention to his plan for multiplying the perils of our Channel navigation, on the entirely new ground of having been severely bitten by conger eels. The fact, to which we were the first to call attention, of the permanently water-logged character of the chalk below a certain level, received full illustration, in our pages and elsewhere, from the experience of engineers engaged in mining and drainage works in the chalk formation.

The construction of the Royal Albert Hall was described by its architect, Major-general Scott, C.B., at a meeting of the Institute, during the same month. On the same day, at a meeting of the Social Science Association, the general public excitement arising from the narrow escape of the Prince of Wales from falling a victim to typhoid fever was referred to, as affording room for hope that an efficient sanitary measure might be passed. At the time, the temper of the country was altogether favourable for such a proceeding. Unanimous conviction was expressed that to remit this important question to the discretion of the local guardians of the expenditure of the rates, would be simply to burke it. The report of the Sanitary Commissioners was discussed, and the importance of determining water-shed areas, scientifically laid down, and of obtaining, at a proper rate of remuneration, competent inspection, both medical and engineering, was pointed out as forming a necessary part of any sound and practical legislation on the subject. Later in the year we had occasion to refer repeatedly to this important matter; first giving the programme of the Government; then tracing the progress of denudation of most of its useful provisions which attended the passage of the Bill through the House of Commons; then showing what use, by a minister who was in earnest on the subject, might be made of the stunted and crippled measure which finally became law; then calling attention to that persistent waste of time, denial of counsel to those who sought it, and determination to leave the medical local inspectors at the mercy of the Board of Guardians, which have constituted the policy of the local Government Board; and finally having to chronicle the angry and despairing echo with which the old supporters of sanitary reform throughout the whole country have responded to, and confirmed, our remarks. While referring to this subject, we may mention those analyses of sewage, on a broad principle, which have appeared exclusively in our columns, and which cannot be neglected with impunity in any future attempts to deal with this complicated question.

A question of so much importance as to attain a national character,—namely, the regulation of mines,—was dealt with by the Government in a more serious and practical spirit than characterised their experiments on the vital subject of the public health. The usual death-tax on coals has proved, up to the very close of 1872, the necessity for stringent measures to protect the coal-miners from the result of their own and their fellow workmen's criminal recklessness. While some of the provisions of the new law hardly rise to the necessity of the case, much hope is entertained by the different classes most closely interested as to the beneficent results that may be expected from the working of the measure during the ensuing year. In the most fatal explosion that occurred in 1872 it was found, as usual, that the use of matches, in breach of the laws of the mine, was the cause.

South Kensington added to the attractions of the Museum, with the opening of the year, that of the display of the collection of bronzes, faïence, arms, stuffed quadrupeds and birds, jewelry, objects of Japanese art, and drawings, made by H.R.H. the Duke of Edinburgh in his cruise round the world in the *Galatea*. The interest excited was very great,—the rush of sight-seers on one occasion overturning one of the models of a fountain that stood in the line of entrance. The exhibition was a great success.

Archæology and antique art formed the subject of a series of articles in our columns, commencing in the month of February. The rude stone monuments of all countries, described in an illustrated work by Mr. Fergusson, raised no small amount of discussion in antiquarian circles; but the attempt to bring down to late historic times the dates of some of the most famous relics of the megalithic age did not carry with it any amount of conviction. The restoration, in the Louvre, of the beautiful statue called the Venus of Milo led to a very interesting discovery of the method in which the figure had been erroneously repaired by the curators of that museum in the first instance.

The restoration of the Chapter-house of Westminster claimed the congratulation of all lovers of architectural beauty, and has proved a permanent addition to those of our noble historic monuments which have lately been redeemed from neglect and decay. We observe that the restoration of the screen and tracery of the south cloister, which had sunk into almost entire dilapidation, is now quietly proceeding. The chapter-house and cloisters are now permanently accessible from the prior's entrance into the Abbey,

and the commencement of a local museum has been made in the former building.

The site of one of the most famous temples of an older worship than that which hallowed the foundation of the Confessor was happily determined by the judicious perseverance of Mr. J. T. Wood. Some cavil was raised against the first reports of Mr. Wood, who revenged himself by sending to the British Museum that noble portion of one of the great columns of the temple of which we gave an engraving. Later in the year a collection of antique objects of great interest from Cyprus, was brought to the country. A part was purchased for the British Museum; but the great bulk was secured for America. The very curious collection of antique *terra cotta objects* from Moab, illustrative of astronomical, animal, and phallic worship, made by Mr. Shapira, was treated with hostile suspicion by the experts of the British Museum, and declared to consist of forgeries, until the Prussian chaplain at Jerusalem verified the discoveries *in situ*. Much of this ancient *terra cotta* has been burned to make cement. The inability of our scholars to read the inscriptions (if inscriptions they are) in Phœnician letters on some of this pottery is no excuse for neglect of such a discovery. At the close of the year, Mr. Parker, in lectures at Oxford, called attention to the discoveries made in Rome, which have the signal interest of proving that the history of Regal Rome is not the myth to which Niebuhr and his followers have only sought to reduce it. The history of architecture will owe much to these excavations. While our notice is preparing for the press, we hear of the discovery by the workmen employed by the Italian Government of the base of the equestrian statue of Domitian, which decides the long-vexed question of the true site of the Forum.

The visit of the Queen to the City, on the 27th February, to return thanks in the metropolitan cathedral for the recovery of the Prince of Wales, was a stirring event, the memory of which is, however, more grateful to the patriotic than to the professional feelings of those connected with architecture. While the warm feelings of personal loyalty burst forth with an unexpected unanimity from the people, the fact that we have no public building fit for the accommodation of the numbers who flock to a great religious ceremonial, without the aid of the carpenter for the time, cannot be thought creditable to the metropolis. Nearly a quarter of a million of passengers were, on that day, conveyed by the Metropolitan Railway and its effluents.

The uneasy relations between different classes of the people, which recent legislation has done so much to aggravate, if not to originate, assumed, in the month of April, proportions in the agricultural districts which commanded serious attention, until the subject was overborne by the more tangible movement affecting our supply of coal. Our attention was thus necessarily again directed to the wonderful revolution which is being carried on under our eyes by the application of steam to agriculture; and to the enormous waste attendant on our want of any systematic method of utilising our ample annual supply of rain-water, and of irrigating as well as draining the country on a comprehensive plan. That it would be practicable to expend a sum of more than 300,000*l.* per diem (a hundred millions per annum), on labour applied to the soil, with a return of 300 per cent., is one of those deductions from plain statistics which cannot be too distinctly urged on the public attention. There is enough and to spare for both farmer and labourer something that might at once augment the national wealth, and go far to extinguish the hardest forms of poverty.

The outburst of a typhoid epidemic at Barbage, in Leicestershire, which was traced with absolute distinctness to poison from neglected sewage, failed to stimulate the Administration to impart that vitality to the Bill then before Parliament which was expected by those who were more familiar with the activity of disease than with that of sanitary reformers in ministerial chairs.

The collection at Kensington which bore the title of the International Exhibition of 1872 was opened by a brilliant evening party, held at the nominal invitation of H.R.H. the Duke of Edinburgh, as *locum tenens* for the Prince of Wales, on the 27th of April. The event had been preceded by a controversy that at one time assumed a great degree of acrimony between the promoters of the Exhibition and the tradesmen of London, who objected to the competition of an untaxed bazaar, held on national ground, against their highly taxed and rated shops. The result was evident in the falling off of the display, as compared with those of former years; the chief attendances of the year having been that of the country visitors to Town after the close of the proper London season. Our opinion as to the unadvisability of the attempt to make an exceptional into a permanent exhibition, was confirmed by the events of the year.

The discovery of the remains of the original shrine of the proto-martyr of England, St. Alban, walled up behind certain arches of the abbey, with the gradual restoration of this ecclesiastical relic, formed one of the most interesting architectural events of the year. We gave cuts of some of the details of that charming fourteenth-century work. Amid the richly-foliated canopy-work the founder of the church,—probably Offa himself,—is represented seated, with the model of the building in his hand. At the west end the martyrdom of Alban is figured; and at the east end is a group that may exercise the ingenuity of the observer to detect its meaning. Angels with thurifers, and crowned benefactors and benefactresses, hallow the intervals of the tracery.

Architecture was illustrated by a collection, probably of the highest average merit that has yet been seen in the present quarters of the Royal Academy in the past year. The interest of the general collection we found to fall below that of the two previous years.

The discussion between the claims of Classical and Mediæval taste, as applied to the decoration of St. Paul's Cathedral, led to the nomination of Mr. Burges, to act jointly with Mr. Penrose, by a vote of nine members of the committee against eight, one being absent. No result from the appointment has as yet reached the public. All must be anxious that the right steps should be determined on.

The legislation of 1871 as to education, has led to the exhibition of designs for schools at Stepney, Limehouse, Whitechapel, Bromley, Battersea-road, Tower Hamlets, Hatcham, and other places, as to which the courtesy usually shown to the scientific press was omitted by the School Board. We have endeavoured, and are endeavouring, to supply the information which the Board appeared to desire should be withheld.

The opening of the Branch Museum in Bethnal-green is one of the features of 1872, which was attended with the most gratifying results. The non-architectural character of the building itself, with the exception of the front, and its imperfect illumination, were forgotten in the delight experienced by the visitors in examining the magnificent collection of paintings displayed to their view by the patriotic munificence of Sir Richard Wallace. The large and steady attendance at this new museum, which has continued throughout the year, has been most encouraging. The order of the attendances, and the evident gratification experienced, have formed instructive comments on those sensational articles in certain papers which excited so much indignation among the intellectuals of a part of the metropolis who were described, as to habits and manners, as if they had been so many newly-discovered savages. Notwithstanding the opening of this new centre of attraction, the attendance at the Crystal Palace showed an increase for the year, and a dividend was declared on the original shares. The fourth palace of pleasure, that in Alexandra Park, has still remained closed. A fresh addition was made to the number of features that have formed the special distinction of this property, by the appointment of a committee, for the object of purchasing, with imaginary funds, a substantial estate. Meantime the proprietors have all but completed the railway to the Palace, a necessary preliminary to the promised opening in the coming spring, when the gracious presence of the Royal Lady whose name illustrates the park is hoped for by the directors.

By the middle of the summer the prices of coal, iron, and labour had attained so unprecedented an inflation as seriously to disturb many arrangements and relations of business. We had, from professional and economic reasons, pointed out, early in the year, that the price of coal must be expected to augment. Great uneasiness became manifest in the relations of the employed and the employers in various occupations, mostly among the builders; and on the Continent, as well as at home. While in some instances there were positive hardships to remove, the underlying cause of dispute in most cases was the endeavour, on the part of the workmen, to substitute an artificial minimum of pay and maximum of work, determined by trade organisation, for the natural effect of supply and demand. In doing this they counted, first on the inability of their employers to resist their demands, and then on the pressure that would follow from the inconvenience of the public. The daily press hesitated to speak out on this subject until, in the month of November, it became probable that London would be exposed to serious danger, and perhaps to organised pillage, in consequence of the unprovoked strike of the gas-stokers. On this occasion, for the first time, the public seemed to become alive to the fact that, whatever might be the actual merits of any trade dispute, or the immediate outcome of any strike, the cost must ultimately come out of their own pockets; and not only so, but that it might prove to be cost impossible to estimate in money alone. The Bench, at length, came to the support of law and order, by inflicting imprisonment with hard labour on the defaulting workmen, who forgot that there were two sides, as well as two parties, to every bargain. On the whole, this latest instance of a strike read a salutary lesson to us all.

The important subject of railway amalgamation, to investigate which a committee of the two Houses of Parliament was appointed early in the session, was peddled with in the course of the summer by a report, characterised by the usual want of grasp and exhaustive knowledge that naturally occurs when the work of a single eminent man is committed to the exertions of a board, committee, or similar irresponsible body. We followed our analysis of the report by an investigation of the probable effect of the industrial movement on the value of railway property, and by an account of what has actually been done in the important matter of small-gauge railways, of the future development of which we entertain high expectations.

The dead season of 1872 was unusually bare of topics of great interest. The happy escape of our noble cathedral at Canterbury, from more than partial damage by fire, gave a fresh lesson as to the importance of maintaining not only a constant vigilance, but a ready supply of water, in all public buildings. Several of the ancestral glories of England have suffered more or less from the destructive element in the course of the year. Yet each new fire seems to add a lesson which is unheeded from the very fact of frequent repetition. The fury attained within the year, by the ravages of fire in the United States is unparalleled.

Some fresh efforts are being made by the Palestine Exploration Fund. This society has changed its plan of operation, and confined its present efforts to the survey of the Holy Land. Lieut. Conder, who was appointed to the command of the expedition in July, sent home a thousand miles of map in November. It is much to be desired that the delicate hill sketching of so mountainous a country as Palestine should be properly engraved by the Fund, and not issued under the disfiguring smudge of any of the cheaper processes of reproduction. Although no funds have been placed at the disposal of Lieut. Conder for archæological researches, his investigations in this direction have not been without results. His discoveries comprise (1) part of the original scarped defence of the city of Jebus, to the south of the present wall of Sion; (2) the crypt of one of the "conclaves" in the Court of the Temple, described in the Talmud, and by Maimonides; (3) a very ancient tomb, outside the wall of Agrippa, containing bones so old as to have become partially fossilised; (4) a tomb near Silcam, with inscribed characters, arranged in vertical lines; (5) a Roman altar, 4 ft. 4 in. high, standing *in situ*, near the ruins of a large colonnaded building; a sarcophagus and the capital of a Corinthian column lying near. This is near Umm-el-Fahm, in the north of Palestine; (6) a Roman aqueduct, near Acre, not laid down in any map. Money should be provided to enable this officer to pursue discoveries which are so promising; although arrived at only as incidental to the main duty of the mapping of the country. 1872 has witnessed much advance in our knowledge of ancient Ephesus, Rome, and Jerusalem. An American expedition sailed, at the close of the year, to carry on the survey of Syria to the east of the Jordan.

The opening of the New Library and Museum of the Corporation of London, on the 5th of November, was an event honourable to that ancient body, and to the energetic chairman of the committee, Dr. Sedgewick Saunders, as well as to Mr. Jones, the City architect. The display on that occasion of some *four per cent.* of the

unrivalled collection of topographical drawings of Mr. John E. Gardner suggested the importance of securing, in some appropriate manner, the unity and the accessibility of an architectural and topographical record that is unique.

We were happy in being able to offer to our readers some account of the Polytechnic Exhibition at Moscow. At Kioto, in Japan, an exhibition, not international, but national, filled three of the great temples which exist in the environs of this ancient capital of the Mikado. The success of the exhibition was so great that another is promised for next year. Preparations for the forthcoming Great Exhibition in Vienna are in a forward state, and give good promise.

Of works of ecclesiastical and domestic architecture in this country we have taken occasion to describe and illustrate, among others, the following :—The enlargement and restoration of the Church of St. John the Baptist, Bathwick, Bath,—architect, Mr. Blomfield ; Peabody-square, Blackfriars-road,—architect, Mr. H. A. Darbishire ; the new Roman Catholic church of Our Lady and St. Philip, Arundel,—architects, Messrs. Hansom ; the restoration of the Chapter-house, Westminster,—architect, Sir G. Scott, R.A. ; the new offices of the Hull Dock Company,—architect, Mr. C. G. Wray ; the new City and County Asylum, Hereford,—architect, Mr. Robert Griffiths ; the new Estate Office buildings, Huddersfield,—architect, Mr. W. H. Crossland ; the Union Bank of London, Charing-cross branch,—architect, Mr. F. W. Porter; Caen Wood Towers, Highgate,—architects, Messrs. Salomons & Jones ; Emanuel Church, Clifton, Bristol,—Mr. John Norton, architect ; the Horton Infirmary, Banbury, a work of private munificence,—architect, Mr. C. H. Driver; the chapel of St. Paul's College, Stony Stratford,—architects, Messrs. Goldie & Child ; the restoration of the Early English Cathedral of St. Canice, Kilkenny, the see of the Bishop of Ossory,—architect, Mr. T. N. Deane. The erection of school-houses in various parts of the country forms the chief feature of architectural activity at the close of 1872.

MEMORIALS OF LIVERPOOL.

IF Charles II. had decided to land at Liverpool on his restoration, the chances are that not one out of ten of the sailors on board of his Majesty's vessel, would have known where he was going ; so small, and comparatively unimportant was this great port in the Merry Monarch's time. It was so small, and comparatively unimportant in the days of Queen Elizabeth, that when the Duke of Norfolk hoped to rescue Mary, Queen of Scots, from her uncousinly keeping, he arranged that the ship tha iwas intended to carry the beautiful captive away, should lie "redy about Lyrpole." Master Ralph Sekerston, who represented the town in Parliament then, petitioned Queen Elizabeth not to allow her subjects to be utterly cast away, as he conceived they were, owing to the decay of the town, but to relieve them "like a mother." "Liverpool is your own town," he wrote in the supplication which he put into the Queen's hand in the Parliament House. "Your Majesty hath a castle and two chantries clear; the fee-farms of the town, the ferry-boat, two windmills, the custom of the duchy, the new custom of the tonnage and poundage, which was never paid in Liverpool before your time ; and the commodity thereof is your Majesty's. For your own sake, suffer us not utterly to be cast away in your grace's time, but relieve us like a mother." But, though in this lowly condition in Elizabethan days, Liverpool had given some promise of its ultimate prosperity at an earlier period in its history. In 1533, Leland noted "Irisch Marchauntes cum much thither, as to a good Haven;" and in the fourteenth century there were 168 burgages in the town, whereas, according to the census of 1565, the number of inhabited houses was 138.

The story of the rise and progress of Liverpool from this small and fluctuating beginning, is now told to the world by a good authority, Mr. J. A. Picton, in two substantial volumes.* He has looked well about him, and made his own observations for information concerning the busy port of to-day, and he has examined ancient sources of particulars relating to the town in times past, including the corporation records, which are complete from the year 1551. One of the volumes tells the history and the other speaks of the topography. Both are pleasantly written and likely to interest more than local readers ; for those who have not seen the peopled streets, and recognised their dash of American character, or looked upon the wide Mersey quick with English and American shipping, have yet heard of Liverpool men whose names have left an after-glow that sheds an interest over the scene of their labours. "The man of letters," wrote Washington Irving, in one of his amiable and appreciative sketches,—"the man of letters who speaks of Liverpool, speaks of it as the residence of Roscoe. The intelligent traveller who visits it inquires where Roscoe is to be seen. He is the literary landmark of the place, indicating its existence to the distant scholar. He is, like Pompey's column of Alexandria, towering alone in classic dignity." The more modern man of letters will also call to mind Harriet and James Martineau and Felicia Hemans. In the art-world Liverpool must always be associated with the memory of Gibson, the sculptor, and Lonsdale Elmes, the architect ; for though it was not the birthplace of either, it was the starting-place of the first, and contains the masterpiece of the last. Mr. Picton adds to our list of associations of this kind. Among other facts not generally known, to use Mr. Timbs's phrase, he points out that Lord Francis Bacon represented Liverpool in Parliament at the commencement of his great and useful career. Later, in 1670, Sir William Temple was a candidate for the seat. The successive mayors and members of Parliament furnish more figures that are followed with pleasure through their respective lives.

Ralph Sekerton was both mayor and member. We refer to him again to outline a proceeding in which he took part that was of considerable influence on the fortunes of Liverpool. On Sunday, Nov. 9, 1561, Robert Corbett, then mayor, called the whole town together, to take counsel concerning the advisability of making a new haven, and turning the water out of the old pool into it ; and before the meeting separated he put down a "pistole of gold" towards the expenses of the undertaking ; then Mr. Sekerston made a contribution, and all the rest of the congregation followed his example, when there was the sum of 13s. 9d. current collected. The corporation record continues,—"On the Monday morning then next, Mr. Mayor, and of every house in the Water-street, one labourer went to the old pool, and there began and enterprised digging, ditching, and busily labouring upon the foundation of the new haven ; and so the Tuesday, of every house in the Castle-street was a labourer sent to the same work. Wednesday next then after came forth of every house in the Dale-street to the said new haven, a labourer gratis. Thursday then next after the Juggler-street ; with the More-street, Mylne-street, Chapell-street, every house sending a labourer, and this order continued until St. Nicholas-day then next after, gratis." Thus with 13s. 9d. did these stout hearts commence their great task. Mr. Sekerton, who was mayor in 1550, and again in 1560, before he was chosen as the Parliamentary representative, was accustomed to say in all troublous times,—"Save me and mine, and the good town of Liverpool and theirs, and then let the nobles kill whom they please ;" and up to this mark he continued to act all the days of his life. He and his and "the good town of Liverpool and theirs" were indeed identical at most times, and never less than in 1574, when war with Spain was expected, for, with five others, he undertook the expense of fortifying the town for defence. We feel sorry, when all mention of him ceases in the records, that Mr. Picton is not able to add that we may see his monument and recumbent effigy, with ruffs, doublet, trunk hose, and rapier, in the old parish church. His contemporary, Robert Corbett, who put down the "pistole in gold" (then worth 5s. 10d.) towards the expenses of the new haven, was one of the five who joined him in the defence of the town ; and the richest merchant and shipowner of his time.

The family of Mores, or Moores, who built a manor-house, in the thirteenth century, known as Bank Hall, and occupied leading positions for 500 years, were also benefactors to the town. Richard Blome in his "Magna Britannia," published in 1673, speaks of their influence upon its prosperity. He says it was at their charge and industry that it was beautified with many goodly buildings, all of hewn stone, and that they owned divers streets that bore their name, which had so enlarged the town that the church was no longer large enough to hold the inhabitants. Thus we speak within bounds when we assume that Lyrpoole, with its one church and divers streets, would be unknown to most of the sailors who brought King Charles to "his own." But a more prominent figure than either of the Moores appeared upon the scene in the reign of Queen Anne. This was Thomas Johnson, afterwards Sir Thomas Johnson, who, like Sekerton, was both mayor and member. In his day the population of the town was about 10,000, and there was the great excitement consequent upon the Revolution and Hanoverian succession. Johnson was a stout supporter of Queen Anne, in opposition to the claims of the Pretender, as he was subsequently of her Hanoverian successor ; and was knighted by her on the occasion of presenting a loyal address from his constituents, in 1708, when an invasion was threatened by her brother. Mr. Picton sums up that he filled a prominent place in the town's affairs for more than thirty years, and served as member in seven Parliaments. Under his auspices Liverpool was created a distinct parish from Walton, of which it had hitherto been a district, two new churches were built in it, the first dock was made, and many distant adventures were undertaken in the way of trade by his contemporary merchants, that resulted in new sources of wealth for the town. Johnson engaged largely in the tobacco trade with Virginia, then a novelty, since a great success. But no monument exists to his memory, no street is called after his name, save an opening leading from Dale-street to Whitechapel, which was formerly lined with buildings by him, and hence called Sir Thomas's-buildings, as stating a matter of ownership, and but for an occasional literary tribute to his memory, he would be as utterly forgotten as his distant grave on the banks of the Rappahannock River in Virginia.

The Liverpool men, like many others, appear to have resented any proposal of improvement that did not emanate from themselves. With so much of their wealth embarked in shipping it is, however, surprising that they did not make an exception to this rule in favour of the proposition to build lighthouses on the western coast. But when, in the year 1670, a Mr. Reading applied for a patent to empower him to erect lighthouses and levy a toll for their maintenance they opposed him, headed by Thomas Johnson, and succeeded in preventing him from executing his scheme. They wrote to their representative, Sir Gilbert Ireland, and insisted that he should state their case to the committee for grievances when it met to consider Reading's patent : "In regard those lighthouses will be no benefit to our mariners, but a hurt, and expose them to more danger, if trust to them, and also to be a very great and unnecessary burden and charge to them." But what one generation dreaded another courted ; and in 1762 the merchants promoted an Act which procured them the present lighthouses on the Cheshire coast.

But there were improvements to come that Sir Thomas Johnson might, perhaps, also have opposed, notwithstanding his real and hearty embrace of all things he considered likely to benefit the town,—paving, gas, and steam locomotion. The first quarter of the nineteenth century had, however, nearly passed away before Liverpool was properly paved. Many streets had no footways whatever, and the roads were paved with boulders as late as 1818. But when Canning was addressing his constituents, Sir Francis Burdett dining with the Reformers, and Thomas Campbell delivering a course of lectures at the Royal Institution, the authorities bestirred themselves, and paving, lighting, and postal communication were perfected. In the following year, 1819, the first steamer that ever crossed the Atlantic arrived in Liverpool.

Within the last half-century Liverpool has seen more changes than in any other period. Neither Robert Corbett nor Ralph Sekerton, in their most sanguine moments, could have hoped that their 13s. 9d. would turn out to be so splendidly invested. The number of vessels belonging to their port was twelve ; and when they were all manned, they could count but seventy-five souls on board them all. The income of the corporation was under 21*l.* When Sir Thomas Johnson first looked upon the Mersey, he could only count twenty-four vessels that belonged to the port. In 1784, although there were between 3,000 and 4,000 vessels in the river, the number belonging to the port was only 446. In those days Erskine, in one of his impassioned speeches, likened it to another Venice, overflowing with riches. To what would he compare it now that upwards of 20,000 vessels enter the port annually, and the docks extend in

* Memorials of Liverpool, Historical and Topographical, including a History of the Dock Estate. By J. A. Picton, F.S.A. London : Longmans, Green, & Co. 1873.

a continuous line of sea-wall for six miles, with a water area of 255½ acres, giving a quay margin 18¼ miles in extent on the Liverpool side, and of 165 acres on the Birkenhead side? "The improvements and changes in the Liverpool streets and buildings have been so great, and the extension of the suburbs so enormous," says Mr. Picton, "that the very aspect of the town and neighbourhood, and those legends and traditions which grow up in every locality, and impart a flavour and raciness to its associations, are in danger of being forgotten." If any one who had left Liverpool as a boy returned to it a man, in 1870, he would have found forests of masts where he left a quiet shore, and labyrinths of densely-crowded streets where he left fields from which he may have watched the sun set far away in the sea.

It is said Liverpool has always been loyal, and Liverpool has always loved a lord. The mayors have reaped honours from this consistency, as we have seen; but though the town has, doubtless, benefited from it, too, it has involved a price. "Trustie and well-beloved, wee greet you well," wrote Charles I. to John Walker, "maior of Liverpoole," encouraging his loyalty; but in this instance the Liverpool people transferred their allegiance to Cromwell, and suffered for it under Prince Rupert. They came right again, however, after the Restoration, and greeted Charles II. as "Dread soveraigne," best of princes and of men. The corporation has always been ready with soldiers and sailors for the national service, in all emergencies. In 1745 there was a battalion raised. In 1778 a regiment was raised and equipped in the town, and called after the battalion, "the Liverpool Blues." There were 1,100 men in it, who were ordered out for active service, and reduced to eighty-four individuals before they returned and laid down their colours in the Exchange. In 1779 the corporation gave a bounty of ten guineas to every able seaman, and five guineas to every ordinary seaman, who entered the King's service. In 1795 the authorities were assessed to furnish 1,711 men for the navy, which they did, at a cost of 41,206*l.*, immediately, the mayor heading a procession, with drums beating and colours flying, to stimulate the enlistment.

It would have been well if Mr. Picton had furnished his work with a map. Unless resident in a place, it is difficult to keep more than the lines of leading streets in remembrance; hence, without a map, we have to hurry after the author in his perambulations without knowing exactly which way we are going. When we come to a public building we get hold of a clue, of course, but only to lose it as we pass on again.

We have described Sir William Brown's great gift to the town, so that we need not refer to it further. We shall, perhaps, be doing as much justice to Mr. Picton's labours if we show our readers specimens of his information with which they may not be so well acquainted.

Speaking of Gibson, for instance, Mr. Picton, who has travelled considerably, relates that he called upon him at Rome, and was received by him in bed, as he was indisposed, and conversed with him for an hour and a half. "Conversation, indeed, it could hardly be called, for Gibson was almost as great a monologuist as Coleridge. His talk was delightful, poured out from the full stores of a richly-endowed imagination, and rendered racy by his slightly Welsh accent and occasional expressions, such as 'Yes, sure,' which he had brought from the Principality. He talked about Greek art in all its phases; discoursed on tinted statues, on which he was enthusiastic; entered into reminiscences of old Liverpool friends; told anecdotes of the Queen and Royal family, and of his intercourse with them, to which he was always proud to allude. It was an interview to be remembered and treasured up." Of his fellow-student, William Spence, we are also told several particulars which bear upon the important query as to whether art is a better pay-mistress when treated in a manufacturing sense than when followed as a profession. Of these two lads who had worked together from the same models, Gibson became an artist, and Spence remained a manufacturer. Gibson's fame and skill brought him fortune. Spence's untiring industry enabled him to bring up a large family, and send a son to Rome; but on his decease his establishment was broken up, the premises used for other purposes, and every sign of his occupation obliterated. The younger Spence was received kindly by Gibson, but he died of pulmonary consumption at too early an age to have accomplished much work. His widow presented casts of his chief pieces to his native town, and thus ended the deferred hopes and aspirations that swelled the heart of one of Messrs. Francey's most able assistants.

"It is a remarkable fact," observes Mr. Picton, with much satisfaction, 'that of the four great Parliamentary orators of recent times—Lord Derby and Messrs. Disraeli, Gladstone, and Bright, three belong to South Lancashire, and two of these to Liverpool, or its close vicinity." And then he stops before a house that is only a few doors beyond Leece-street, in Hardman-street, numbered 62. It is a large house which, when first built, had a wing on either side of it, whereof one has since been turned into a separate dwelling; but he bids us look at it, for it is the birthplace of the Right Hon. William Ewart Gladstone. House after house he points out as the residences of the rich old West-India merchants, who dealt in sugar, molasses, rum, and slaves. These were chiefly sedate, portly, double-fronted mansions, that had ranges of business offices at their back doors. Every merchant down to the latter end of the last century had his counting-house under his own roof, attended "Change" solemnly every day, and executed his business slowly, methodically, and profitably, without a thought of the horrors of the slave trade that increased his wealth so magically; and if social intercourse, carried on with great conviviality, be evidence, loved his neighbours as himself.

As our author approaches modern times in his historical survey, his notes become much more frequent and diffuse. Whereas a page suffices to describe a century in the earlier portion of the annals, it takes a hundred pages to relate the events of a much shorter period as time progresses. But he has read, and seen, and knows how to tell what he has read, and say what he has seen, in a very smooth and cheerful manner. He has the clever knack, too, of making other people enrich his book with their says and saws. The squibs, songs, poems relating to local subjects, extracts from speeches, old letters, handbills, which he has preserved in his work, are often better than pictures, though too long to quote here. We have no doubt but that the "Liverpoldons" will say, if only for their sake, what Harvey Pierce said of another work, "Live ever sweete booke." Little has been omitted that should have been mentioned. There is the large Welsh element in the population duly noticed. There is the fatal accident to Mr. Huskisson on the day that the Liverpool and Manchester railway was opened duly recorded. There are the performances of all the musical celebrities who have ever visited the town also chronicled; all the elections described; the starting of the first stage-coach in 1760 noted; the adoption of mail-coaches to carry the mails detailed; visitations of sickness mentioned; the Queen's progress dwelt upon; receptions given to public men, such as Sir Charles Napier, Livingstone, Lord Brougham, Rajah Brooke, the Siamese Ambassadors, and many more, recorded; and in fine every incident mentioned of a public character in which the town has taken part, down to the presentation of a silver cradle to the mayor's wife in 1858, or the getting up of a fancy ball in aid of the new hospital that was opened by Prince Arthur later still.

The history of the Dock estate will have more interest to some minds than these various social particulars. It was in this port, it will be remembered, that the system of floating docks originated. Mr. Picton traces the experiments that led to their perfection, which now, he considers, "leaves the boasted canals of Venice far behind, and which in structure, capacity, and convenience, exceeds any others in existence." The natural material upon which successive engineers have had to deal was, in the first place, but a small creek, fed by a small stream. This humble haven was exposed to the currents of an estuary whose tides flooded up to a height of 30 ft. at the full. Probably, a breakwater existed before Robert Crosse and Ralph Sekerton began their enterprising ditching and digging; and it is supposed that their work must have been of a similar character, though all traces of it have disappeared and its site is not known. Both must have done good service, for an old authority states that Liverpool was considered the best harbour and port between Mylforthe and Scotland. But, in 1635, a bridge was ordered to be made where the sluices were at the Pool on the south side of the town, with a "key and harbour" for the succour of shipping within the town. About that time the largest vessel was forty tons burthen, and had a crew of twelve men and a boy. Hitherto shallow water was sufficient for the size of the vessels, but as the trade of the place improved the enterprising merchants turned their attention to deepening the water in the Pool. At the end of the seventeenth century, when Johnson, Norris, Cleveland, and Clayton were the leading personages in the corporation, many counsels were held as to the best mode of improving the port. They first thought of a canal that could be cut from the pool inwards along the line of Paradise-street. But they ultimately decided to empower their Parliamentary representatives to treat with some qualified person to come to the town and advise. Johnson and Norris were then the members. They selected Mr. Thomas Steers as their engineer, who recommended the abandonment of the canal and the conversion of the pool into a wet dock. This was to be done, he showed, by impounding the water in the pool with floodgates. For this suggestion, Mr. Picton urges, there should be more praise given to Steers than he has received. "The idea of dealing with a tidal estuary so as to neutralise its ebbs and flows, and to afford a placid and sheltered haven at a uniform floating level, was altogether new." And he contends that Steers, in contriving the first floating dock, did as much for the commercial marine of England as Stephenson did for the railway system. However, we do not hear that Steers reaped any particular distinction by his application of the principle. He settled in Liverpool, we know, probably to carry it out under his own eye, where his descendants remain to this day. In 1709 the scheme was sufficiently advanced to request authority to commence the works which, after some opposition from the cheesemongers of London, whose dealings with Cheshire interested them in the question, and made them fear they would have to pay dues to meet the charges, was 'granted; and the mayor, bailiffs, and common council were constituted trustees. It was estimated that the cost would be 6,000*l.* But after six years' labour, and an expenditure of 41,000*l.*, the 'works were still incomplete. Fresh powers to borrow an additional sum were given, the land round the dock was leased for building purposes, and at length the work was accomplished. In the year 1721, a vessel was carried over the pier from the river into the dock in an unusually high tide, the record of which curious circumstance is the only clue to the date of the completion of it. After a time, the entrance was considered too narrow, and the outer basin two small; and it was resolved that Mr. Steers should make an addition to it, build a pier, and construct a dry or tidal basin, containing a water space of 4 acres 376 yards, to form an outer harbour to the old dock, with three graving-docks on the west side of it. This last work stood till 1813, when it was re-constructed, and named the Canning Dock, in honour of that statesman, who was then one of the members for the borough. A few more years brought such a large extension of traffic, and the vessels were of so much larger dimensions than heretofore, that another and larger dock was required. This was constructed on land given by the corporation, and named, in 1771, George's Dock, in honour of the king. A lighthouse was now no longer thought a "hurt" to mariners, and one was built at Bidston, commanding the town, and an extensive view of ocean. Those were the days when every merchant had his own signal, and up by the lighthouse were numbers of flagstaffs, upon which the look-out man hoisted his notification that he had recognised any particular ship in the offing; and standing about in the old churchyard and in the Merchants' Coffeehouse adjoining, were anxious inquirers, whose looks were always directed to this source of early intelligence of arrivals. But the semaphore superseded this arrangement, and now the electric telegraph has made it utterly obsolete, and the flagstaffs have been allowed to rot and fall.

When Erskine looked upon Liverpool, and pronounced his rapturous praise of it, two additional docks had been constructed, named respectively the King's and the Queen's; and the Duke of Bridgewater, in the execution of his canal scheme, had also constructed a dock with an outer channel. "I was astonished and astounded," the great orator declared, "when I was told by my guide, 'All you see spread out beneath you—that immense place which stands like another Venice upon the waters—which is intersected by those numerous docks—which glitters with those cheerful habitations of well-protected men, which is the busy seat of trade, and the gay scene of elegant amuse-

ments growing out of its prosperity, — where there is the most cheerful face of industry, where there are riches overflowing, and everything which can delight a man who wishes to see the prosperity of a great community and a great empire; all this has been executed by the industry and well-disciplined management of a small number of men since you were a boy,' I must have been a stock or a stone, not to have been affected by such a picture." Since then, however, such an enormous extension of docks, traffic, trade, and town has taken place that, if we outlined on a map the scene that filled him with astonishment, we should probably smile. Enormous warehouses speedily arose on all sides, chiefly built by private enterprise. On the east side of the King's Dock a large building was raised as a bonded depôt and store for tobacco, in 1795. About fifteen years after, a much larger warehouse was raised on the west side, that cost 140,000*l*. In 1799 powers were obtained to build two more docks; but owing to the circumstances of the times, the intention stood over. Mr. John Rennie was consulted, who recommended that a dock of seven acres should be constructed north of George's Dock, capable to contain seventy sail of vessels. He mentioned that extra accommodation could be obtained at the south end of the town, in less time, and at half the cost; but this suggestion was not acted upon. After a long delay the old dock was filled in, and the new north dock completed and named the Prince's Dock. Enlargements were constantly being effected northwards and southwards, and small docks united; but larger undertakings brought into the field a new man, Jesse Hartley, one who would have been called in old times "a whole man," able to form great projects, and work them out into the bargain. He wrought out his ideas in granite with a simple grandeur that has not been hitherto surpassed. He built the Brunswick Dock, for the timber trade, with two large graving-docks opening out of it; the Clarence Dock, the Waterloo Dock, the Victoria Dock, and the Trafalgar Dock, in rapid succession, but so solidly that not a stone has required to be reset. He changed the system upon which his predecessors acted, and placed the narrow ends of his works to the river margin, thus securing greater quay-space upon a smaller frontage, and he introduced covered sheds, for the protection of the goods that were to be loaded or discharged. The Albert Dock was a later work, executed with the same strength and solidity, and with the same disregard for beauty. Mr. Picton characterises the pile of warehouses built in connexion with it, on a larger scale than the Pyramid of Cheops, as a hideous pile of naked brickwork, and rightly expresses his regret that some effort was not made to ally the beautiful with the useful on this occasion. Still the trustees bought more land north and south, for additional docks, basins, and works. The opposite side of the river threatened to come into competition with them, and they bought up lands on that side also. They made no use of these last, however, and were finally beguiled into selling them again, when they were immediately turned into the threatened docks, and a great contest began between the two shores of the Mersey, which raged for twelve years, and fearfully impoverished the dock estate. In twenty-six years, we are told, the amount of capital expended on the Birkenhead Dock property was nearly six millions sterling. Mr. Rendel was the leading engineer employed, whose portrait is thus sketched:—

"Mr. J. C. Rendel, the engineer of the Birkenhead Docks, was a wonderfully clever and specious man, with a fine presence and an attractive manner, the very man to impress a committee, to turn the corner of a difficulty, and make the best of his cause. In this respect there could not be a greater contrast than that between the dock engineers of Liverpool and Birkenhead; but there is this important difference also, that whilst Jesse Hartley's work is calculated to stand till the 'crack of doom,' nearly the whole of the work of his more showy competitor has had to be taken down and replaced by the son of his rival."

The Birkenhead works did not pay; and in 1848 the Commissioners made an offer to the Liverpool Dock Committee to make over the whole undertaking to them. But it was declined. In 1855, however, the Liverpool corporation reconsidered this matter, and purchased the property for 1,143,000*l*. Meanwhile, Mr. Jesse Hartley was bringing out his finest works. Five new docks, authorised by an Act in 1844, were opened in August, 1848, and named, respectively, Salisbury, Collingwood, Stanley, Nelson, and Bramley Moore. The Wellington Dock and Half-tide Basin was opened in the following year. But even this was not sufficient. The cry was always for more space. And another enormous dock, with a fine range of warehouses, was constructed. This was called the Wapping Dock. The year 1851 saw the Sandon Dock added to the list; and in 1852 the Huskisson Dock, 500 yards in length, with its water space of nearly fifteen acres, was opened, which area was increased afterwards by a cut extending eastward, which afforded nearly eight additional acres of water space. In 1854, a fort and barracks were built at the north-west corner of this dock. About this time the management of the dock property was transferred from the corporation to a new body, consisting of twenty members, who were to be elected by the dock ratepayers, with the exception of three, who were to be nominated by the Government. This body now represents a capital of fifteen millions, and a revenue of nearly a million per annum. The first task it undertook was the completion of the works at Birkenhead, which, with the hydraulic machinery executed by Sir William Armstrong, are reckoned among the wonders of the kingdom.

Before the list of docks is complete, we must mention the Canada Dock and the Herculaneum Dock. The first is a very extensive work, containing a water area of upwards of seventeen acres, with a wide landing-quay on the east side, communicating with great timber-yards that stretch out till they join the railway. It has also been furnished with a half-tide basin, with three sets of gates on the west side, and two cuts or docks on the east side. The Herculaneum Dock is smaller. It consists of a floating-dock and two graving docks. There are eighteen graving docks in Liverpool and three in Birkenhead. Nor have the Liverpool merchants yet come to the end of their tether. If the lesson of their pluck, energy, and enterprise, was all that could be learnt from Mr. Picton's book, the price would be a very profitable investment. But there is even more. We may see, and we may take heart from seeing it, that though a deed, like a seed, may not bear fruit immediately, it may yet, in some after time, lead to great results: "a pistole of gold" and other small sums, amounting in all to 13*s*. 9*d*., if well laid out, may eventually realise a million per annum, and give employment and the means of happy existence to many generations.

ORIENTAL WORK AND THE LIVERPOOL ART CLUB.

THE members of the club recently formed in Liverpool under the above title (on the model, it is to be supposed, of the similar institution in Hanover-square), have inaugurated its existence by an exhibition of objects of Oriental art, lent for the occasion, and filling two rooms in their premises in Sandon-terrace, Liverpool. Considering the nature of the majority of the objects on view, perhaps it might more correctly be termed an exhibition of "Oriental pottery,"—we beg pardon, "faïence" of course we meant to say. The most important portion of this is the collection of Japanese *cloisonné* enamel jars, some of unusual size, beauty, and rarity, lent by Mr. J. L. Bowes, a local *dilettante* who appears to have devoted himself to collecting articles of this class. The peculiar characteristics of design, and beauty of colour and workmanship, belonging to this branch of Japanese art-manufacture have probably never been so well and so fully illustrated in any collection in this country. The ornamental art of Japan is represented in three other branches; the *Satsuma* ware, characterised by decorations of figures, birds, and flowers, freely and unsymmetrically delineated on a (generally) faint buff ground, and occasionally with the ornaments treated in relief; the *Kaga* ware, not differing very much from the last-named sometimes, in general character of design, but painted chiefly in red and gold, and with a higher glaze; and the lacquer work, exhibited on small vases, caskets, &c., and which in its way is as finished and delicate in workmanship, and almost as unique, as the *cloisonné* work. There is besides a collection of Persian porcelain work, of Chinese ditto, and sundry objects of various kinds, including specimens of Japanese cabinets, of carving and metal work, and of Chinese and Japanese embroidery. The catalogue, which is edited by Mr. G. A. Audsley, gives a very full description of the objects exhibited, as well as sketches of the history, so far as it is known (which in some cases is not very far), and the process of manufacture of the various classes of work.

The collection is, as we have inferred, a good and in some points an exceptional one, so far as it illustrates a certain class of ornamental art; and has already been praised in other quarters quite as much as is necessary. Considered in relation to the special occasion which gave rise to the exhibition, the nature of it suggests certain considerations. The fact that a club professedly instituted for the promotion of a taste for art, in a large town, should inaugurate itself by an exhibition of this particular class of works, is an unfortunate illustration of the tendency of what is called "artistic taste" in the present day to degenerate into a disproportionate love of mere workmanship and prettiness, or workmanship without prettiness. We used to think of "art" as something appealing especially to our higher intellectual perceptions and sympathies, something of which the mental effect was the end, the finish of execution only the means. It may be accident; but we fear it is rather a significant fact that such a club as we are referring to should commence its efforts in the cause of art by an exhibition of works which are entirely devoid of intellectual interest, of which some are admired purely from fashion, some for delicacy of workmanship only, and of which a considerable proportion are what can only be classed as barbaric art,—interesting as illustrating the characteristic taste of this or that nation, but, *per se*, simply ugly. The celebrated *cloisonné* enamel vases are really marvels of patient and elaborated workmanship; but it is certainly a question whether the result is worth the labour expended; and although, as studies of harmony in colour, these productions are most suggestive, it is impossible, after seeing a good many of them, not to be struck with the general sameness of effect and treatment, even in the diaper-work, not to speak of the wearisome repetition of dragons, and serpents, and storks, which form the staple of the animal ornamentation. The forms, too, of most of these vases are not good,—often clumsy and unrefined, a characteristic always marking art of a semibarbaric character, in which form is neglected or treated as quite secondary to colour and surface elaboration. Then, if we look at the vaunted Satsuma ware, what do we find? Beautiful workmanship, in so far as surface, tone of colour (in some cases), and elaboration are concerned; but, except as curiosities, why are we to admire the grotesque, misshapen figures, the fearful conventional landscapes with which these jars are adorned? Why is it that, in the name of "art," people are to be invited to study hideous forms of grotesque monsters and dragons, or attempts at statuettes of the human figure which are only fit to amuse children? Why are we to go into ecstasies over little ivory carvings of figures, stunted and misshapen, because they are executed with that kind of dexterous handling of the tools which might be achieved by a clever schoolboy? Why must we admire a plate covered with the effigy of a kind of glorified barn-door cock, which we are told is called the *Ho-ho?* To call such things "art," is merely to pander to a passing fashion. They are interesting and characteristic, no doubt, just as the *naïve* efforts of children in drawing what they see are interesting and characteristic. If we look at the lacquer-work of Japan, again, we find an absolute want of perception as to what the material is suited for artistically, and what it is not suited for. Some of the works in this class are exquisite; for instance, the gold lacquered vase (No. 431 in the catalogue), with its raised flowers of imbedded mother-of-pearl and coral; and the quaint, fanciful little leaf-shaped box, with the figure of a monkey on it (No. 437). But we find in the catalogue eloquent praises bestowed upon lacquered writing-cases, decorated with trees and rivers; the interior of the lid of one "is beautifully ornamented with chrysanthemums, bamboo fences, a flowing river, and a mass of clouds, from which a silver moon appears to be emerging," &c. That is to say, it is a clumsy attempt to represent landscape in a material and in a situation totally unfitted for such treatment. This is bad art; and its being done in Japan makes it no better. When we see a pianoforte with the top and sides painted over with landscape, or a hearthrug worked into a picture, we say it is bad taste,—"vulgar," in fact; and such things are vulgar, whether done in Paris, London, or Yokohama. It is just on this very point, as to the relation of material to design, that the English public want educating and improving, instead of being confirmed in their bad taste by examples from other climates. The oddest thing is that

whilst we, or our "art-clubs," are thus holding up everything Japanese for admiration, those worthy and ambitious people are equally bent upon copying and admiring us in our costumes and customs; thus illustrating in an amusing manner the influence of fashion in both hemispheres. Among the most really artistic objects exhibited by the Art Club are the Persian porcelain dishes; in which there is a remarkably bold, free, and at the same time sufficiently conventionalised treatment of foliage ornament, well worth the attention of students of architectural ornament of this description, and marked by a great deal of variety of design.

We shall be glad to hear of the Liverpool Art Club doing something to encourage interest in those forms of art which appeal more directly to the intellects of educated persons rather than to the tastes of the mere connoisseur in artistic *bric-à-brac*. One drawing by a great artist, ancient or modern, is worth a roomful of Japanese pots, and requires a much higher degree of mental education for its appreciation.

THE FAILURE OF THE SAUGOR BARRACKS, INDIA.

EVEN if the Indian Public Works Department be rightly organised and properly managed, it certainly is not lucky. Is the system so bad, that even able men cannot succeed under it; or is the system good, and the men in command unfit for their position? Something wrong there surely must be, or such failures of work as we often hear of could scarcely occur. The most recent scandal of which information has reached us is as to the failure of the Saugor Barracks, which have been in course of construction during four years, at the cost of 166,000*l.*, and are now abandoned. We have received a number of communications on it, but, fearing to commit injustice, have withheld comment until now. An official report on the subject, however, puts the matter beyond question. The failure is therein termed the "most signal instance of the waste of public money which has taken place of late years in the construction of barracks." The executive engineer, Captain Faber, and several of the superintending engineers, have been reprimanded and reduced. The following resolution is suggestive:—

"The officers who have been blamed by the Committee were furnished with copies of the report, and invited to submit any explanation with respect to their conduct which they might desire to offer. Those explanations have now been received. It is obvious that sufficient care was not taken to secure proper executive supervision of the construction of the barracks, and that Lieutenant-Colonel Allen's antecedents were not such as to justify his appointment to the post of Superintendent of Works at Jubbulpore. If a competent officer had filled that position, it is probable that the defects in the construction of the barracks would have been remedied before they had become irretrievable. It is important that the attention of those who are responsible for appointments and promotions should be called to the necessity of looking solely to the public interests, and not to the rank, position, or pecuniary emoluments of the officers from whom they have to make their selection."

The writer of a pamphlet entitled "Narcissus," published at Allahabad,* condemns the transfer of Military Works to a Central Department, and shows the enormous cost of the change. The writer says:—

"There are now three bodies of men in the Punjab drawing high salaries and doing the same kind of work—the Engineers of the State Railways, Military Works, and Provincial Public Works. Over the majority of these the Local Government has no control, and, being under different masters, the system of control must vary, with discontent, jealousy, and inefficiency, as the inevitable result. Superintending Engineers and Executive Engineers revolve in ceaseless succession in the same orbit, each looking askance at the work of the other which should be his own, and specially paid to neglect the work which he has been trained to perform, and which he has ample time to supervise. At a Station like Jhelum, the Superintending Engineer for Military Works may arrive at 9 a.m. at the dâk bungalow to inspect the lines of the Native Troops, which have not cost altogether as much as his salary. At 9.30 approaching wheels announce the arrival of the Superintending Engineer of Provincial Public Works to decide upon the repairs of the District Court-house; while at 10 o'clock appears the Superintending Engineer of State Railways to inspect the bridge over the Jhelum. The Military Works officer may not, though his own duties will probably occupy him only two hours, inspect the Church or the Court-house; nor may he, on his journey from Rawul Pindee to Jhelum, give any instructions regarding the road over which he has passed."

He speaks of useless expenditure, to an immense extent, at Peshawur, and points to the disasters of Jubbulpore, Allahabad, and Nusseerabad, though these, if we mistake not, occurred under a different order of things. Whether he be correct or not in his views, some wise steps seem to be imperatively required to prevent the possibility of a repetition of such enormous waste of public money as has occurred in India during the last ten years,—to go no further back.

* At the Pioneer Press, 1872.

THE HEALTHFULNESS OF CHISELBOROUGH.

THE rector of Chiselborough has had his say in answer to a statement in our pages respecting the houses and sanitary condition of his parish. In his letter to this journal he asked leave to modify the severity of some of our remarks; but the reverend rector, in his letter to the *Times*, assumed a more demonstrative attitude, and furnished some scholastic statistics from officers of inspection to show the high state of cultivation that exists under his pastoral care. We did not allude, in our notice of Chiselborough, to the school question at all, but confined our remarks to the housing of the labourers and the sanitary state of the village. The rector exclaims, like Byron, that he and his parishioners have awaked and found themselves famous, in consequence of our certainly not ill-timed notice. Famous, forsooth! the village of Chiselborough has long been famous throughout the length and breadth of Somersetshire. That many of its inhabitants have been, and are, an afflicted race of human beings admits of no doubt, whether goître or not exists among them. The rector says that there are only four cases of goître existing, to his knowledge; but he strangely omits to mention aught of that other malady which is generally found accompanying the former. Let us say once more, without any equivocation, that we found several cases of goître and Cretinism in the four or five villages we visited in the neighbourhood of Chiselborough, and, as far as we could ascertain, these unhappy beings were formerly natives of Chiselborough, or the children of parents belonging originally to that village. Goître, as most people know, is a swelling of the throat, beginning first in a tumour, that is soft and elastic, but eventually hardening; and it very often attains a great size. Cretinism in its worst form is perfect idiocy, arising from an imperfect development of the brain, and it is accompanied with bodily deformity. The individual affected by goître alone may be handsome and intelligent; but the Cretin is stunted in stature, and the conical profile of his cranium belies the possession of intelligence. The rector of Chiselborough should not feel offended at the truth being known; and it may be some consolation to him to learn that his "ill-fated village" does not stand alone in England in cases of goître. It may possibly divide the honour—or, rather, the crime,—with some villages among the hills of Derbyshire, where the malady is known as the "Derbyshire Neck."

We hold these frightful maladies to be partly endemic, and to have a local origin; and our object in alluding to them, and bringing them into notice, is for the purpose of leading to their eradication wherever they may still exist, whether in Somerset or Derbyshire. When the labourer is properly housed, his body in a healthy condition, from a supply of wholesome if not nourishing food, when he can afford warm clothing, and can resort to frequent bathing, and when the water he drinks, and the air he breathes, is no longer poisoned or impure, then goître and Cretinism will disappear from the land. Frequent intermarriages with kindred has increased the evil in those districts where goître and Cretinism have existed. We would remind the rector of Chiselborough that our recent observations were not the first we have had to make as to the condition of his and adjacent villages.

Two years ago we had occasion to point out the state of the villages, when, we believe, cases of fever and small-pox were numerous in the neighbourhood.

In 1851, Dr. Guggenbühl, in a letter to Lord Ashley, drew attention to these "unhappy beings," and described them as "three German feet high, corpulent, and bloated, with misshapen heads, turgid lips, and noses flattened like the negro's." At that time there were many cases of both goître and Cretinism in the district, instead of the mythical "four cases," which have not increased, according to the rector's knowledge, for the last fifty years. Now let us put a query to the rector,—or a rector,—of Chiselborough. Is it a fact that a rector not long since refused to live in the old rectory-house because it was situated in an unhealthy part of the village, and that he in consequence removed a distance from the "ill-fated" village, until such times when a new rectory could be erected, with the latest improvements? His parishioners, however, had only Hobson's choice; they neither could build new dwellings for themselves, nor would their landlords assist them. They had to stay and add to the "general healthiness of the population" by their presence,—what other better provided-for folk felt indisposed to do.

As far as the school, clothing-club, and friendly society questions are concerned, we are glad indeed to hear that there is an improvement setting in, but our sanitary picture remains intact. In conclusion we remark, with all good feeling, that the rector's congregation will awake and find themselves more famous than ever, the day after they are able to disprove what we have written as to the sanitary condition of Chiselborough.

DEATH OF PROFESSOR J. W. McQUORN RANKINE.

WE much regret to have to announce the death of Professor Rankine, LL.D., F.R.S., Professor of Civil Engineering and Mechanics in the University of Glasgow, in the 53rd year of his age, at his residence, 8, Albion-crescent, Dowanhill, Glasgow, on the night of December 24th. For some time past Professor Rankine's state of health was anything but satisfactory to his medical advisers; but no imminent danger was anticipated. On Sunday, however, he was stricken with apoplexy, and never rallied. It is difficult to over-estimate the magnitude of the loss which the scientific world has sustained. Professor Rankine was known and valued for his mathematical powers. His contributions to thermodynamics suffice alone to place him in the first rank as a man of science. Professor Rankine was not a profuse writer, but he possessed unusual powers of expression. His works are essentially safe.

THE VALUATION OF HOUSE PROPERTY IN LONDON.*

THE value of land varies with time; at one time becoming stagnant, or apparently retrograding in value. Only a few years ago, prior to the memorable day in November, 1866, when the great discount house of Overend, Gurney & Co. stopped payment, what then appeared a maximum value had been reached, but immediately after that, City land could hardly be disposed of at any price. There can be no doubt that those speculators who had invested in City land or buildings were losers temporarily; but I felt then, and my constant advice was, that the value of land had not diminished, but only depressed for a time on the sudden cessation of demand for it. Subsequent events have, in my opinion, justified the impression I then formed, for at the present moment City property is realizing the full value it had attained prior to the crisis of 1866.

Assuming, however, that the valuer is in possession of all the requisite facts as regards recent dealings with any particular plot of ground, it still requires considerable judgment to foretell what may be the realizable selling or actual value, and I believe it must always be, to a certain extent, speculative and dependent upon the skill with which the architect adapts his building to the precise requirements of the locality.

Of this adaptation of the building to the wants of a locality, the numerous City offices offer a good illustration. When I first began to build on the new London Bridge approaches, previous to 1840, City offices as now constructed were not thought of; the houses were built as shops and dwellings, or as warehouses, and it was the same in Moorgate-street. Since that time, however, a distinct type of construction has been evolved, which is now, perhaps, nearly perfect. In this development I hope and believe I have had some share; our colleagues, Messrs. Corbett & Newsom, Mr. Richard Bell, Mr. Whichcord, Mr. E. N. Clifton, Mr. Francis, Mr. Edward Ellis, Mr. Gruning, and others, have all produced practical buildings of this class, as have also Messrs. Innes in the Colonial Market, with the assistance of Mr. Crockett, and Mr. R. B. Marsh. In these buildings the greatest attention is paid to the size of the rooms, so that the greatest number

* From a paper by Mr. I'Anson, read at the Royal Institute of British Architects, Dec. 2nd, 1872.

may be obtained in the smallest space, and that they may be abundantly lighted: convenience of access, the position of doors, stairs, fireplaces, and water and gas supply are all carefully studied.

There is, however, another method of determining the value of land, and that is by ascertaining the letting value of the building put upon it when erected, and after deducting a certain amount for interest on the outlay to repay the builder, and allowing for all outgoings in the shape of rent, taxes, insurance, maintenance and repairs, management, loss of rent from portions of the building unlet (called "empties") the residue capitalized will represent the value of the land.

This method of calculation also requires a knowledge of many local circumstances, the rates and taxes, for example, varying in different districts, as does especially the chance of "empties." In the lowest class of property (that which is let weekly), it is hardly safe to reckon upon a less deduction than one-half of the gross rent to arrive at the net rent. This is rather an extreme case, but the rate of deduction for outgoings does actually vary between one-half and one-fifth.

To illustrate this mode of calculation let us say that—

A building realises by various lettings a gross rent of ...		£1,500	0 0
Say the building cost £10,000 Assuming the builder's profit to be 7 per cent., that gives	£700 0 0		
And deducting for rates, taxes, insurances, &c., one-fifth	300 0 0		
The total deduction would be		1,000	0 0
Leaving as the annual letting value of the ground.....		£500	0 0

I only offer this (which I will call example A) as an illustration: when the buildings are very speculative and slightly built, so as not to be durable, 7 per cent. interest will not pay the builder, because to a large extent speculative buildings are erected with borrowed money, and as money is seldom obtainable for less than 5 per cent., the builder has not only to provide a sufficient margin for a profit for himself, but to set aside a yearly sum as a sinking fund to accumulate to repay the borrowed capital. Again, as before remarked, the outgoings depend very much upon the rate of taxation in the locality, some parishes being more heavily taxed than others, and on other circumstances.

This method of calculation has been to a great extent adopted in endeavouring to prove the value of land taken compulsorily for public improvements; and if the rentals, which might hereafter be obtained in new neighbourhoods, could be foretold with actual certainty, as it is comparatively easy to ascertain what deduction should be made for Parliamentary and local imposts; then, after making due allowance for empties and management, and a proper interest to the builder for his investing capital, the net result would be shown in the most legitimate manner, and that would be the value of the ground.

The future rent must, however, still be to a great extent matter of opinion; as are also to some extent the question of what is a fair profit for the builder, how long that profit will be deferred, and even what would be the actual cost of the building. If all these things were matters of mathematical certainty, here would be a certain process of solution; but even when this rational principle is agreed upon, the views of buyer and seller are influenced by their conflicting interests, and the result is that these questions are frequently decided by reference to an arbitrator, or the judgment of the Sheriffs' Court, where evidence of the most opposite character bewilders the jury, who have to establish the value by their verdict.

The wonder, indeed, is that juries can at all balance the various kinds of evidence adduced before them, and enforced by the speeches of eminent counsel, and that they so frequently arrive at results which are very nearly just. There can be no doubt, however, that the verdicts of juries are speculative and uncertain: erring, I think, usually in favour of the claimant. Trial by jury is, however, speedy in its action, most cases being decided in the course of a single sitting.

Reference to arbitration before a skilled referee is slower, but mistake in exaggeration is eliminated; and although excessive damages are seldom obtained, I believe that claimants are as justly compensated in this manner as it is possible for them to be.

It is pretty generally agreed that in valuing freehold house property; that is to say, a house, together with the land upon which it stands, that after finding its actual net value, that is, the value or rental at which it would let without premium for a term of twenty-one years to a tenant paying a net rent, without deduction for land-tax, insurance or any other charges or imposts (property-tax excepted), that such annual value should be capitalised upon the 5 per cent. table, which is equal to twenty years' purchase, thus a house or other building producing a net rental to the owner of 100*l.* per annum, is worth twenty years' purchase, or 2,000*l.*

This is a generally admitted preliminary or starting point, but only a starting point; for if the building is old, and likely to require rebuilding, then the value of the land must be found apart from the house, and each valued separately.

Thus, assuming the land and building together to be, as before, of the annual value of 100*l.*, and the annual value of the land or ground-rent is one-fourth of the whole rent, or 25*l.*, and that the building is so far decayed as to necessitate its rebuilding in twenty-one years, it is evident that the calculation must be different.

You have, first, the annual value for twenty-one years, at 100*l.* a year, and this is worth, upon the 5 per cent. table, 12·82 years' purchase, or	£1,282	0	0
To this you must add the value of the ground-rent of 25*l.*, at the expiration of twenty-one years. Now, valuing this upon the 4 per cent. table (and this is the table usually adopted), the value of the land will be 25*l.* × twenty five years' purchase, or 625*l.*; but the realisation of this sum is deferred twenty-one years, and it must be discounted by that number of years, and discounting also upon the 4 per cent. principle, you multiply by ·438...625*l.* × 438*l.* =	273	15	0
Which gives a total of	£1,555	15	0

This example for further reference I will call example B.

There is another way of stating the question which I will call example C, and probably the more correct way, which produces a slightly different, but more favourable result for the vendor in case of sale.

Taking the value of the land, first in fee or in perpetuity, we shall have 25*l.* × twenty-five years' purchase, or as we have before found.....	£625	0	0
Then we have the assumed annual value for twenty-one years of 100*l.* per annum; but as the ground-rent has already during that period been accounted for, we must deduct 25*l.* from 100*l.*, which leaves 75*l.* Now this for twenty-one years, at the 5 per cent. table, is worth, as before found, 12·82 years' purchase, or	961	8	0
	£1,586	8	0

As before observed, this gives a little more than the first method of calculation, and it evidently arises from capitalising the ground, in the last calculation for the first twenty-one years at the 5 per cent. instead of the 4 per cent. table.

The value of the old materials upon the ground in either calculation may be disregarded. Whatever their value at the end of twenty-one years, that must also be discounted, and it is considered a balance or set-off against any loss of rent that may accrue at the end of twenty-one years.

Now these calculations give rise to more questions than one. Upon the first mode, example A, the principal question which presents itself is, what deduction must be made to arrive at a net rental, the rate of deduction, as I have already explained, varying considerably. On the second and third valuations, B and C, two questions at least arise, which must materially affect the result arrived at. Now the first question is, as to the number of years' purchase at which the ground-rent should be capitalised. I have said that the rule is twenty-five years' purchase, or the 4 per cent. table. I have, however, constantly claimed and contended for more, because ground-rents are, I consider, the best secured and safest description of security, and constantly increase in value; that is, of course, assuming that the land is let for a term of years, expiring at no very remote period, such as a lease for from sixty to ninety-nine years, in which case there is always a certain value attaching to the reversion at the end of the term.

It was only the other day that certain City ground-rents were sold by public auction at a price a little over twenty-five years' purchase; but for these same ground-rents offers were made a few months previously at twenty-seven and five-eighths years' purchase. I had a professional interest in the matter, and advised on the offer made. I know that it was worth while for the parties who made the offer to give that price, which is, I contend, a proof of the value. The reason why the transaction was not carried through,—and the ground-rents were afterwards sold by auction,—was, that it was one of the conditions of purchase that the title of the vendors should be approved by the Court of Chancery. I may incidentally mention that this condition often occasions a serious difficulty in the transfer of property, as the Court of Chancery, in investing trust money, requires such absolute certainty as to title, that it practically excludes many good but not absolutely unimpeachable titles; and I believe it is very much on this account that large sums of trust money remain in the hands of the Accountant-General which might be much more profitably invested than in Consols.

The first question, then, is, upon what table should the ground-rent be capitalised? My own experience is, twenty-five years' purchase is the minimum, and probably twenty-eight years' purchase is the maximum; but even this must not be considered a fixed rule, for there are certain exceptions.

In a recent agreement for letting land [certainly not in the best part of the City], in which I was concerned, it was a condition of the agreement that if the rent were redeemed within four years from the date of the agreement, it might be redeemed at twenty-six years' purchase, but within a limited period after that, at twenty-seven years' purchase, and the whole ground-rent has actually been redeemed, partly at twenty-six years' purchase, and partly at twenty-seven years' purchase.

In one instance I offered as much as twenty-eight years' purchase for a ground-rent in New Southwark-street, which offer was declined, and it actually sold by public tender for thirty and five-sixths years' purchase. This I consider, however, an exceptional case. The average of one of these public sales in Southwark-street ground-rents was twenty-seven years' purchase, and the maximum was thirty-one and six-sevenths years' purchase, and I have very recently offered, as before mentioned, for one of the corporations for which I am professionally concerned, twenty-seven and five-eighths years' purchase for a City ground-rent.

The value of City ground-rents has for some years declined; but still I consider a really good ground-rent to be worth twenty-seven and a-half years' purchase.

There are, however, considerations affecting this value; for example, the proportion of the ground-rent to the gross or rack rent. Now, as it very frequently occurs that the ground-rent in the City is as much as one-half of the rack-rent, it is very clear that in such a case the reversion is of comparatively small value compared to what it would be were the ground-rent one-sixth or one-seventh, as it is in less valuable localities.

It sometimes happens, as already referred to, that ground-rents are sold, the title to which, although good holding title, is not absolutely perfect, and that also depreciates the value.

Moreover, recent legislation has materially extended the powers of trustees, enabling them to invest in the bonds of some of the great railway companies, Government debentures and similar securities, and ground-rents, are consequently less sought for. Government stocks and landed estates do not yield a return of more than 3 per cent., which represents twenty-eight years' purchase, while railway debentures and guaranteed stock yield 4 per cent. interest, equal to twenty-five years' purchase; so that ground-rents, which in the early part of my professional experience used to exceed thirty years' purchase in value, at the present time, from one or some of the causes I have mentioned, do not realise, as a rule, more than from twenty-five to twenty-seven or twenty-eight years' purchase.

Of course there are exceptional cases. Some-

times it happens that a lessee of a large estate will manage so as to have very small ground-rents upon some of his houses, and such ground-rents I have known to realise as much as forty years' purchase. I recollect one large estate in the north-west of London where the ground-rents were very frequently sold to the tenant at thirty years' purchase, plus one year's rack rent, equal probably to thirty-six or thirty-seven years' purchase.

It not unfrequently occurs that a price may be obtained for property far beyond its intrinsic or marketable value to anybody but the purchaser. For instance, where a piece of land is surrounded by the property of an adjoining owner, and the acquisition of the piece of land would enable the adjoining owner to free himself from restrictions as to light and air, or some other easement acquired over his property which prevented him utilising it to the fullest extent. The ability to obtain a frontage upon a street, river, or canal, or the substitution of a frontage of a superior nature for that hitherto enjoyed, or similar advantages, all confer additional value. In these cases, it seems to me, that it is perfectly fair that the owner should reap the advantage due to the exceptional position of his property; but no safe rule can be laid down for the guidance of the valuer. I have a case present in my mind where a payment of from 2,000*l.* to 3,000*l.* (being nearly 25 per cent. beyond the admitted market price on both sides) was cheerfully paid for the acquisition of an exceptional site of this character, and the transaction was made with the sanction of a Government department.

Assuming, however, that we have arrived at a fair conclusion as to the table on which the purchasing of a ground-rent should be valued, there is yet another question arising out of the third method of computation of the value of land let upon lease for a term (which I have called example C), and that is upon what table should you discount the deferred value, *i.e.*, the value at the expiration of the term; and this is, as you will see, a problem not easy of solution. We will, for the sake of argument, assume that the deferred value is an absolutely fixed quantity (say 1,000*l.*), payable at the end of fifty years, and that you are to receive such a sum of money at once as will realise, by careful investment, of the interest every year, or every half-year, a capital sum of 1,000*l.*, at the end of the fifty years.

You will see by the table that very much depends upon the rate of interest you assume can be obtained for your money. If you assume you can obtain 3 per cent., and consequently discount upon the 3 per cent. table, you should have in present money. £228

Upon the 3½	per cent. table	.....	179
,, 4	,,	.....	140
,, 4½	,,	.....	110
,, 5	,,	.....	87

It is assumed that if you do not part with the property, you or your successor will, without any trouble or expenditure, receive at the end of fifty years 1,000*l.*; but in order to obtain that result you must go punctually every half-year to the Bank of England, or elsewhere, to receive the interest upon your capital as it becomes due; and when you have invested that interest you must attend to receive the interest upon that interest, and so on for fifty years. Each one of these operations involves a certain amount of time, which must have some value, and the difficulty of finding an immediate and secure investment for the interest as it accrues is almost insuperable. It is to be borne in mind the table assumes that the interest is re-invested as it accrues with automatic regularity, and no allowance is made for loss by want of punctuality in receiving or investing the interest, or from investment in a bad security.

Assuming that 5 per cent. is a fair rate of interest upon which the compensation should be assessed for a reversion to 1,000*l.* at the end of fifty years, you would have, as we see by the tables, 1,000*l.* × ·0872, or 87*l.* in present money. You must now endeavour to place this money (the 87*l.*) at interest, and it is just possible that, by your solicitor's assistance, and in consideration of a fee for investigating the nature of the security, instructing a surveyor to report upon the value, perusing the abstract of title, conferring with counsel, drawing mortgage-deed, &c., &c., you may find an investment for your 87*l.* at the rate of 5 per cent. per annum. You will have paid the solicitor's and surveyor's charges, and at the end of the year you will get for the money invested 5 per cent. interest, or 4*l.* 7*s.* Now what can you do with this sum of 4*l.* 7*s.* You cannot get another mortgage for 4*l.* 7*s.* If the sum were larger you might possibly do so, but you must incur further legal expenses and loss of interest by delay in obtaining another investment. Now this would be a constantly recurring difficulty, and contrasts strongly with the former position we have assumed yourself to be in, when you would only have to wait patiently, do nothing, and at the end of fifty years you would receive your 1,000*l.*

Now, suppose, instead of your reversionary interest being a fixed sum of money, it were a piece of land, who can say, with the constantly decreasing value of gold, and consequent increase of the value of land, what will be the value of the piece of land at the end of fifty years? So that you not only have the risk, expense, and trouble of re-investment, but you also lose the chance, indeed I may say the certainty, of town land increasing in value.

I think, therefore, you will feel you make but a poor bargain in parting with your reversionary interest at a price to pay you 5 per cent., and you will, I am sure, discover that it is excessively difficult to find a means of accumulating the interest on the present money, in order to secure the full value of the reversion; indeed, at the present time, the only means available is to invest in Foreign Government Bonds, upon which you will have to pay a commission of at least ½ per cent. upon every purchase. And this is not all, because in the course of fifty years (if we are to be guided by past experience) there can be no doubt that the value of securities, and Government securities of all kinds especially, will constantly increase in value; so that even assuming you are paid in the ratio of the present price of Consols, and Consols were your only means of investment, the probability is that you would suffer in the course of fifty years even by this arrangement. Now these considerations you will find have a very practical influence upon the value of real property, and I will give you a case in point, which occurred within my own knowledge. A certain nobleman was possessed of some very fine house property, magnificent houses, palaces they might be called anywhere but in England,—with unusually low ground-rents, let on lease for a long term; they formed part of a large estate, and were severed from it. A certain railway required the houses, and of course obtained them under its Act of Parliament, and of course the owner had to be compensated. Upon the part of the railway company it was contended that if such a sum were paid as would purchase similar ground-rents, secured by similar property, that would be a fair measure of compensation. The difficulty in this particular case, however, was that, having reference to the class of house, the ground-rent was exceptionally small, and that it was extremely difficult to find property of an exactly similar class. This rendered it almost impossible to carry out this suggestion, which was admitted by the owner's agents to be fair and reasonable.

Now, what the owner's surveyor contended for was, first, that however long the term upon which it might be let, house property never deteriorated in value in London, no matter however dilapidated it might become or however the fashion of the locality might alter, but would be just as valuable a century hence as at present, in consequence of the decrease in the value of money and other causes. I do not remember that this proposition was disputed by the railway company's agents. It was also contended that the owners would prefer keeping an integral estate to being obliged to watch yearly the increment of the present money to be paid for compensation for the reversionary value, and that such an arrangement was less favourable to him than the retention of the property as part of his estate. It was also pointed out that the rate of interest at which the deferred value was discounted was an important element in the calculation, inasmuch as the greater part of the compound interest accrues in the latter part of the term. If the calculation were made as we anticipated, the railway company would make it on the 4 per cent. table, or on the 2½ per cent. table, at what latter rate the claimant's surveyors valued the owner's interest, it would make a difference as between 13·2 and 5·6, entirely arising out of the question as to what should be the sum of money to be paid which, accumulated at compound interest, would be sufficient to recoup the owner at the end of a number of years, when he would become entitled to the reversion. The matter was referred to the arbitration of a barrister. I did not hear the arguments on behalf of the railway company, but the result was, that the sum awarded was considerably below the amount claimed, being in the proportion of 7·8 to 13·2. Notwithstanding this, I think that the claimant's view was perfectly legitimate, and the ground of claim entirely reasonable.

There often exists what is called a dormant value in property. Assuming a lessee has possession of land in the environs of London, for instance, at Clapham, upon a lease granted eighty or ninety years ago, when Clapham was a suburban village, the rent paid would be, perhaps, at the rate of 10*l.* per acre, but the land would now be worth, say, from 60*l.* or 70*l.* per acre, or even more if it could be used for building purposes; but the lessee cannot so dispose of it, his interest being too short to permit him to do so. The lessor cannot deal with the land as he is not in possession, therefore the value of the land is dormant or undeveloped as long as the original lease lasts; and, although it may be said the purchaser might compensate the lessor for his expected interest by payment of such a sum of money, as being accumulated at compound interest during the residue of the term, would equal the future value of the estate. Practically, this accumulation never does take place; and a purchaser having bought both interests, enters into immediate possession of the land, and reaps a large advantage by the transaction.

As an illustration, let us suppose a case in which a lessee holds an estate of fifty acres at 10*l.* per acre, for a residue of ten years. This, as a well-secured rent, would, to the owner in fee, be worth, on the 4 per cent. table, 8·1 years' purchase, or 81*l.*, and a reversion to a rental of 70*l.* per acre (the estimated value at the end of ten years), being an unrealised ground-rent, is worth say twenty years' purchase, and deferred ten years, valued upon the 4 per cent. table, would work out thus:—

70 × 20 × ·6756	=	£945	16 0
10 × 8·1	=	81	0 0
Total value.....		£1,026	16 0

Which is all the purchaser would pay. Now, assuming it were in hand, taking the same annual value as before, viz., 70*l.*, worth as unrealised ground-rent twenty years' purchase, this would give as the value, 1,400*l.*, so that the purchaser who could utilise the ground at once would appear to realise 373*l.* by this transaction, because he extinguishes the dormant value. It is true he would have to compensate the lessor for his leasehold interest of ten years; but as ten years is not a building term, the utmost profit rent the lessor could claim would be probably double the rent paid of 10*l.* a year, or say 20*l.*, being a profit rent for ten years; but this would be capitalised at the best at the 5 per cent. table, or 10*l.* per annum for ten years, on this table worth 7·2 years' purchase, or 72*l.*, which, deducted from the profit of 373*l.*, still leaves over 300*l.* profit.

It is customary to value land which is unlet, but has a fair prospect of an early letting at twenty years' purchase, as an unrealized ground-rent, but I have always held that whenever an agreement for letting is signed, it is a proof that the value is real and no longer speculative, and that, although the ground-rent may not be secured by the erection of any building upon the land, it is worth more than twenty years' purchase. When once a building is erected the land attains its full value, because the ground-rent is thenceforth secured.

Time does not allow me now to do more than refer to one point I noticed at the commencement of this paper, namely, the rate of profit to be allowed to the builder:—Evidently this will vary according to the skill with which the building is designed and erected, and its perfect suitability for the locality it is placed in. Obviously an ill-suited building will realise a less rent or less profit than one that is well suited to the locality, assuming both to be built on land of the same actual value. Any return beyond the current rate of interest for money (which is practically 5 per cent.) is a profit to the builder. Sometimes the profit is added to the ground-rent, and what is called an improved ground-rent is created, which is saleable at a greater number of years' purchase than a rack-rent.

It would no doubt have added to the reality of this paper if I could have given the names of some of the parties concerned in the cases to which I have referred, but I have refrained from doing so, fearing lest I might in some way prejudice their interest in their property.



THE PROPOSED NATURAL HISTORY MUSEUM, S



NSINGTON.——Mr. Alfred Waterhouse, Architect.

THE NEW NATURAL HISTORY MUSEUMS AT SOUTH KENSINGTON.

WE publish in our present number a perspective view of the new Museums for Natural History, as the design was completed by the architect, Mr. Waterhouse, before the receipt of the tenders, in October last.

We regret to say that, owing to the lowest tender being higher than was anticipated, in consequence of the then exceptionally high prices in certain portions of the building trade, the design has had to be shorn of some of its more salient features; as, for instance, the central towers and the architectural treatment of the internal courts.

The execution of the work has been intrusted to Messrs. George Baker & Son, who will immediately commence operations, and who have undertaken to complete the building within three years and a half. We may therefore hope shortly to see the site of the International Exhibition of 1862, which has so long remained an eyesore to the neighbourhood, assume a different aspect.

It will be in the remembrance of our readers, that some eight or ten years ago a competition was invited for designs for this building, in connexion with museums for other purposes. The selected design was by Capt. Fowke, R.E., who unfortunately died without seeing the commencement of his work.

In January, 1866, the then First Commissioner of Works, Mr. Cowper, placed the work in the hands of Mr. Waterhouse, with a view to his carrying out so much of Capt. Fowke's design as would meet the requirements of the trustees of the British Museum. As so often happens, however, with designs which are the result of competition, it was found that much of the ingenuity which had been displayed in this design had been thrown away, in consequence of the arrangements being incompatible with the absolute requirements of the authorities, and that to meet those requirements it was impossible to retain any large portion of it.

Without narrating in detail the history of the present design, which has suffered but little interruption, though many vicissitudes, since the year 1866, it may suffice to say that it has been elaborated with every endeavour to meet the views of those who are likely to know most about, and who are most interested in, its successful arrangement; and although, from the monetary exigencies of the case, the building has had to be modified in some of its details, no interference has been made with the arrangement finally determined upon, nor with the amount of floor-space required.

What is now to be erected is only a portion of a larger building, which will sometime occupy the site of the Exhibition of 1862. It consists of the southern façade, 675 ft. in length (set back 100 ft. from Cromwell-road, and about 250 ft. from Exhibition-road and Queen's Gate), and of certain portions of the interior behind it.

It was the architect's intention to erect the building entirely of terra-cotta, both within and without. Its power of resisting the atmosphere of London, and its fitness for a building in which there is necessarily great repetition of parts, are proved by its successful use in the Government and other buildings adjoining. But this intention has had to be in some measure modified; and the internal courts will be faced with brick, leaving all the external elevations and the interior of all the galleries, as originally designed, in terra-cotta.

The entire site will be at once inclosed on the three sides fronting the surrounding streets, with a dwarf fence-wall, surmounted by iron railing and Portland stone piers; and the spaces not required for building purposes laid out in ornamental grounds, with turf and trees at intervals.

We purpose in our next producing the ground-plan of the building, and describing the interior arrangement of the building.

The Chelsea Embankment.—The claim of Messrs. Rosher, lime and cement merchants, of Cheyne-walk, for compensation, was heard and decided by Mr. Under-sheriff Burchell and a special jury. The amount claimed from the Metropolitan Board of Works was 16,741*l.*; but after viewing the premises, the jury gave, by arrangement between the parties, a verdict for 8,000*l.*, of which 4,500*l.* was for the leasehold interest in the property, and 3,500*l.* compensation, together with an additional 1*l.* to carry costs for the claimants.

THE PARISH CHURCH, THERFIELD.

ON Saturday, the 14th ult., the plumber had occasion to go on to the roof of the chancel of this church for the purpose of repairing the lead. It was found necessary to raise some of it, when it was discovered that one of the principal beams was completely rotted about 2 ft. from the wall, and that the roof had sunk 3 in. with the weight of the workmen upon it. Finding the roof in this dangerous condition, the rector, the Rev. J. G. Hale, gave directions that the work should be stopped, and telegraphed to Mr. G. E. Pritchett, architect, Bishop Stortford, to come as soon as he could. The chancel was shut up, and at the commencement of the next service a heavy piece of plaster fell with a crash into one of the pews. Mr. Pritchett visited the church, and found two other beams in an equally dangerous condition. In his opinion the whole roof was in the same state, and the whole of it might have fallen at any time. During the examination by the architect the roof sank other 2 in. The late wet season seems to have put the finishing-stroke to the church. There is scarcely a sound wall, window, or angle in the church. The whole of the tower must come down and be rebuilt. The wall of the south aisle is 14 in. out of the perpendicular. The architect has not yet made his formal report, although there seems little doubt that the church is beyond repair, and will have to be entirely rebuilt. On removing the panelling at the east end, an ancient piscina and sedilia were found.

LINCOLN SCHOOL OF ART.

THE annual exhibition of works by the masters and students was open for ten days, during last month, and was well attended. The meeting for receiving the reports and the distribution of prizes, was held on December 18th, under the presidency of the mayor of Lincoln, and the prizes were distributed by Dr. Blakesley, the newly-appointed Dean of Lincoln. We gather from the reports of the committee and the head master, that the school was opened ten years ago under the present master (Mr. E. R. Taylor). At the end of the first year the present rooms were built, being considered ample for any probable requirements of a School of Art in Lincoln. For two years past the attendance, especially in the evening classes, has been such as to cause great inconvenience to the students and masters for want of room, the accommodation being intended for half the number now attending. The students number 259, exclusive of those in institutions taught from the School of Art. The school is self-supporting. The Government awards for the present year are about three times the number of last year.

PROPOSED REBUILDING OF ST. GILES'S CHURCH, NEWCASTLE.

A VESTRY meeting has been held for the purpose of deciding upon applying for a faculty for carrying out the contemplated rebuilding of the parish church, and altering the churchyard. The vestry was full, and every resolution submitted to the meeting, contrary to anticipation, was carried with entire unanimity. The rector (the Rev. H. Veale) presided. Seven resolutions were proposed, seconded, and carried unanimously to the following effect:—That Sir Gilbert Scott's plans be approved and carried out by voluntary subscription; that the rector and churchwardens be authorised to apply to the Chancellor's Court of the Bishop for a faculty to carry out the plan for rebuilding the church; to enclose a sufficient space of the churchyard for the rebuilding; to reseat the church when completed in conformity with the plans; to take down a portion of the south wall of the church wall; dispose of a portion of the land for widening Church-street, on terms to be agreed upon with the Local Board of Health; to disinter any remains found in any area required for the foundations of the new building, or which should interfere with the due carrying out of the plan, and to reinter such remains in consecrated ground; to level the surface of the churchyard and re-arrange the tombstones in a proper and suitable manner, to make any necessary new path, divert existing paths, and erect suitable boundary walls. The rector and churchwardens were empowered to purchase out of any voluntary funds in hand any land abutting on the churchyard which might be considered necessary for the carrying out of the work.

A NEW SYNAGOGUE IN LIVERPOOL.

THE foundation stone of a new Synagogue has been laid in Prince's-road, Liverpool. The edifice will cost between 10,000*l.* and 12,000*l.* The style is Saracenic, freely treated, with the introduction of both Classic and Gothic forms. The principal materials to be used in the exterior are red sandstone, red and grey bricks, and red granite. The façade to Prince's-road will present an imposing appearance; its dimensions are to be 97 ft. wide by 83 ft. high. This large frontage will be divided into five features, the three main ones being flanked by octagonal and square turrets terminating in domed tabernacles. The centre feature is the gable terminating the nave of the building westward, and is to be carried up to the height of 70 ft., including the terminal canopy, in which are to be carved the initial words of the Decalogue. The principal entrance to the synagogue is to be in this gable. Over the portal is to be a large wheel-window, richly moulded and carved, and recessed under a cusped arch. Two octagonal turrets are to flank this gable, finishing above the roof in arcaded and domed tabernacles of stone. On either side of the centre feature are to be two wings, gabled north and south, and finished at their angles with four square turrets with domed canopies of stone above the roofs. From the gables of these wings are to be projected semi-circular staircases. The wings and staircases are to be richly ornamented in their windows, strings, and parapets. The sides of the building are to be treated in keeping with the façade, but in a simpler style.

The interior, when decorated in the manner suggested by the architects, will, it is thought, be by far the finest feature of the structure. The synagogue is to be divided into a centre or nave and lateral aisles of six bays in length. On the ground-floor the seats are to be arranged to face north and south, leaving a centre space unoccupied by sittings throughout the whole length of the interior. At the eastern end of the nave, and under a lofty cusped arch, supported upon groups of red and green marble columns, is to be placed the ark, constructed of various materials and richly decorated. A flight of marble steps will lead up to the marble floor, upon which the ark is to be placed. Behind the ark will be erected a lofty screen, and over it is to be the choristers' gallery. The columns of the nave are to be 23 ft. high, and are to be surmounted by lofty pointed arches carrying a clearstory of thirty-six arched windows. The ceiling is to be semi-circular, richly moulded and panelled, and ultimately decorated in gold and colours. The windows throughout are to be glazed with ornamental glass. At the eastern end of the building are to be placed retiring-rooms for the choristers and congregation, minister's room, &c. The whole building is to be warmed with hot water and lighted with gas. The internal dimensions of the edifice are to be 120 ft. long by 60 ft. wide, and it is to be seated for about 700 persons. The height of the interior is to be about 50 ft. The whole is to be carried out under the superintendence and from the plans of Messrs. W. & G. Audsley, architects. Liverpool; the builders being Messrs. Jones, Brothers.

BATHS AT WHITEHAVEN.

SIR,—On the 26th of October, 1872, an advertisement appeared in the *Builder*, asking for plans and designs, and stating terms, &c. We applied, and got plan of ground and particulars, and commenced making plans and elevation. There was no time stated for plans to be sent in, but on November 16th we received a note from Mr. Jackson, saying that the time was extended to November 30th. With our ordinary work somewhat pressing us, and these plans being almost completed, we pushed them on, finished, and sent them to Mr. Jackson on November 22nd, in order to make room for other things.

On November 25th Mr. Jackson writes and acknowledges receipt of our designs; but most singularly he adds, "I regret to say that at a meeting to-day the harbour engineer requires the land on which I proposed to build the baths," &c. We reply on November 26th, saying that it seemed to us very peculiar, &c. We have *done the work*. We will refer the matter to the editor of the *Builder*, &c. Mr. Jackson replies on November 27th, asking what we think we are entitled to, &c. The Harbour Commission approved of his scheme. On November 30th, Mr. Jackson writes and says, "with respect to

your alleged claim," &c. On December 4th, Mr. Jackson writes, in reply to a letter from us, "If you will kindly send your claim for *work done*, &c., I will submit the whole for my solicitor's opinion."

On December 5th, 1872, we write and say that "You do not do as you ought when you withhold from us the names of architects who have sent in plans. You have our terms. Your cheque for 75*l.* (2½ per cent. on 3,000*l.*) will oblige, or instruct your solicitor to communicate with ours," &c. On December 11th we wrote a similar letter. Mr. Jackson replies, and says the delay is caused by his solicitor not having a copy of the advertisement, and we send him a correct copy in reply. On December 24th, Mr. Jackson writes,—"His solicitor says he is not liable, *but says he had better offer us something for our trouble*; and he offers us 10*l.*, without prejudice."

To sum up, we say, "If architects are to be swindled into making and sending plans, and then, from no matter what cause, are coolly told that the employer is not going to carry out the work, and that he is not going to pay a right charge 'for work done,' and that he is not liable, then the time and talents of architects can be trifled with at any one's pleasure." In this matter we ask and seek assistance. How shall we proceed?

If we had received any notice *before sending our plans*, then, perhaps, it might have altered the case; but our task was finished and completed, and "work done," before any such thing occurred. We have troubled you with these remarks, thinking it might be a "public" good if the "laws on competition" were more generally understood, and what remuneration architects ought to have in such cases as ours.

For Dyson & Dyson,
RICHARD DYSON.

PADDINGTON BATHS AND WASH-HOUSES.

SIR,—I am indebted to you for the information that my plans arrived a day after the time appointed. In such a case, one would have thought the proper course would have been not to have received them.

As, however, I am excluded, I may, perhaps, be permitted to make a contribution to the history of this most extraordinary competition.

I have devoted a great deal of attention, not altogether without success, to the subject of baths and wash-houses; but even with a special and practical knowledge of the necessities and requirements of such an establishment, I should have found it utterly impossible to judge of the plans in the off-hand manner which the Commissioners saw fit to adopt.

If the object were to choose a man rather than a plan, the exclusion on points of the merest punctilio of the architects of two of the most important metropolitan parochial baths is perfectly intelligible.

The only consolation I can give to your correspondent and his fellow "parishioners" is, that the brains of the rejected competitors will even now be pressed into their service. I have it on the best authority that the more unfortunate features of the successful plan will be corrected in the *amended* design which (in utter violation of the conditions of competition) Mr. Isaacs is permitted to draw out, and which will not improbably embody the best ideas of the confiding competitors.

Of course the Commissioners should not have pretended to decide on the merits of the plans without the advice of an architect of experience in this department.

HORACE GUNDRY.

THE LATE MR. WILLIAM SLATER.

SIR,—Ever and anon it becomes your sad duty to announce the death of some one or other with whom, by name or reputation, if not by personal intercourse, your readers are all more or less acquainted. In your issue for the 21st ult., you notice briefly the death of the above-named gentleman, whose lamented decease occurred somewhat suddenly on the afternoon of the preceding Tuesday.

I have looked over all the volumes of your excellent and widely-circulated journal, dating back for some twenty successive years, and although I find many notices of the death, with brief biographies appended to the same, of numerous great men, I notice that they are all written as by a brotherly hand,—by one of the profession, a fellow-professional. Perhaps, therefore, having no claim to a precedent, as a practical working man, I may not be altogether in order by venturing to address a few lines to you, but I do so, knowing perfectly that I am but the mouthpiece of every man I know in the building trade,—and these are not a few, in Town and country,—with whom Mr. Slater has been connected, or has had to do with, be it in ever so remote a degree.

His kind and genial manner, and real concern for the interest of all amongst whom he came, ever won for him a something more than respect from those whose duty and privilege it was to carry out, or work upon jobs under him. He was ever ready to give more than due praise, and a world of encouragement where work was well done; and as willing to make excuses and allowances for those to whom blame fell when misfortune occurred. The successful workman gloried in him, the unfortunate were grateful, and received a fresh stimulus to do better another time. I can think of him under varied circumstances, within the last ten years, and always knew him and found him to be just the same.

You will, I doubt not, at an early period, speak more particularly of the undertakings of the gentleman whose demise we so deeply deplore. The excellence of those works, many of them second to none of the productions of this architectural age, is a standing exemplification that to be a man of genius, it is not necessary to throw overboard all kindly considerations for the feelings of those beneath one in position; that the possession of talent and of attainments of a high order are not counterbalanced, but rarified and made infinitely more noble and honourable when blended with thoughtful and fatherly sympathy, and an interest in the welfare of inferiors.

When talent alone dies, the world regrets the loss, although no fine sympathies are aroused; but when those in whom are embodied such qualities as were possessed by the late Mr. Slater die, we of the banker and of the bench, the mortar-board and of the trestles, feel we have lost a friend of whom we shall not, very soon, see his like.

Those of us who knew the long, I had almost said affectionate, friendship which had existed between the deceased and his surviving partner, Mr. R. Herbert Carpenter, sympathise heartily and most sincerely with the latter gentleman in his bereavement.

CHISEL.

IMPORTANT POINT IN TRADE UNIONISM.

AT the sittings of the Newcastle County Court, the case of "Young *v.* Allan" was finally disposed of, and involved a question of great importance to trade unions.

The plaintiff, David Young, was a subscribing member of the Amalgamated Society of Engineers, and the defendant is the well-known chief secretary in London, of the same important Trade Society.

The action, although only brought to recover the sum of 8*l.* 9*s.* for superannuation, at so many weeks' allowance of seven shillings, yet involves thousands of pounds.

The plaintiff had been a subscribing member of the Engineers' Society, which has branches all over Great Britain, America, and the Colonies, for twenty-one years, and had regularly paid his one shilling per week, and according to the 24th rule of the Society, "Any member fifty years of age, who has been eighteen years successively in the Society, and who through old age or infirmity, is unable to obtain the ordinary rate of wages, shall be entitled to a superannuation allowance (if he applies for it) of seven shillings per week." But he could not make an application for the pension until he was fifty years of age, which he did to the Newcastle branch, which branch granted the application, considering that Mr. Young was entitled to it; but the chief branch in London had refused to sanction it.

It appeared that while working at Sunderland, nine years since, an iron block fell upon the plaintiff's head, so that he could not afterwards work as he formerly did, and was subject to fits and giddiness.

Mr. Harle, in answer to the above case, said the Society was one of the greatest organizations of labour in the world, and consisted of 41,000 members, and the members would not do an act of cruelty or wrong towards a brother if they thought he was justly entitled to any claim. There was a proper machinery to settle all disputes of this nature, but it was not through the County Courts. The two persons now before the Court, were partners in a very large concern, and according to law no one partner could sue another on accounts of this nature. Instead of coming to a county court, the plaintiff should have taken the ordinary course of appealing to his own local branch, and he was then at liberty to appeal to the central branch in London. This was under Rule 24, and there was no reason why Mr. Young should not have appealed to the central committee. In this case, moreover, the Newcastle surgeon to the society refused to give a certificate as to Young's inability to follow his trade, as he could not see inside the man's head.

Mr. Allan, the defendant, said Mr. Young had still the opportunity of appealing to the central committee: they had no desire to act harshly towards him. A great organisation like theirs was bound to be careful in investigating all claims. They were now paying 10,000*l.* a year to disabled members.

The learned judge (Bradshaw) said the courts of law in this country had always reserved to themselves the right, in the event of an arbitration not being deemed satisfactory to a man's sense of justice, to take cognizance of a dispute if brought before them; but before entering an action of this kind, the plaintiff was bound to observe the rules of the society, and if they failed to do justice, then a county court was a proper tribunal to appeal to, or any court of law or in equity. The plaintiff, however, must first learn what the central committee in London said to his claim, and if they rejected it, it was competent for him to appeal to a court of law, and he thought Young's present proceedings ought not to prejudice him in the eyes of the society. He must nonsuit the plaintiff, on the ground of his not first complying with the rules of his society; but, under the circumstances, without costs. Nonsuit accordingly.

ACCIDENTS.

Pontefract.—A large stone wall, some 12 ft. or 14 ft. high, at a curve in the road leading from Tanshelf to Coplar's Hill, Pontefract, has fallen, burying completely the much-frequented causeway with earth and large pieces of stone. The continued wet reaching the foundation accounts for the occurrence.

Jarrow.—As three men were at work erecting a house in Grey-street, Jarrow, the chimney, gable-end, and part of the side-walls gave way, precipitating the workmen, who were on the top, to the bottom, and underneath the ruins. One of them was so much hurt that great fears are entertained whether he will survive. It is alleged that the continuous wet weather keeping the work from setting was the cause of the accident.

Leeds.—The coroner for the borough of Leeds has held an inquiry relative to the death of John Kelley, aged 40, a bricklayer's labourer. Additions were being made to the building of the Little Sisters of the Poor Institution, in Belle-Vue-road, and the deceased was employed upon the works. Whilst he and a bricklayer, named Wilson, were working on a scaffolding, one of the upright supports broke, and they fell to the ground, a distance of 10 yards. Kelley was killed on the spot, and Wilson was conveyed home in a precarious state. The jury gravely censured a bricklayer named Watson, who had worked upon the erections, and whose duty it was to have seen that the scaffolding was properly fixed. The verdict returned was one of "Accidentally killed."

Salford.—At a tea-meeting in the Christian Mission-room, 153, Ordsal-lane, Salford, about 200 persons had partaken of tea, when efforts were made to clear the room preparatory to a religious meeting. The room had been about half cleared of those who had sat down to tea, when the floor gave way, and about 100 people—mostly women and children—fell a distance of 12 ft. into a coal-yard. Sixteen or eighteen persons were injured, and those who had been the most seriously hurt were conveyed in cabs to the Salford Dispensary. The others, after their rescue, were enabled to proceed to their homes. A subsequent examination showed that one of the two wooden beams which supported the flooring was in a decayed state, and had broken near the middle. The room, which measures 15 yards by 12 yards, was formerly licensed as a dancing-hall, and is calculated to hold about 300 people.

America.—The Philadelphia correspondent of the *Times* telegraphs that on Christmas night the floor of a church at Williamsport, Pennsylvania, gave way, precipitating 500 persons into the cellars. Fourteen were killed, and forty injured.

NEW THEATRE, ABERDEEN.

THE new theatre which has been in course of erection since May last was opened on the 19th ult., in presence of one of the largest and most influential audiences that have for some time assembled in Aberdeen, several of the county families coming in specially for the occasion.

The architect was Mr. C. J. Phipps, of London.

The theatre occupies a site facing 75 ft. wide towards Guild-street, and extending 100 ft. in depth to Trinity-street. The frontage has a series of seven pointed arches on the ground-story, supported by polished red granite shafts. Four of these arches give access to the several parts of the auditory, while the three centre ones are occupied by a shop.

Above are two tiers of seven windows, the arches of which are alternately of white granite and red sandstone, the whole being surmounted by a cornice overhanging about 3 ft., supported on a series of massive granite corbels, between which are panels with perforations giving light to the gallery.

The main part of the frontage is of white and blue granite, with string courses and capitals of Newton freestone.

The interior of the theatre is arranged to seat 1,650 persons in the pit, balcony, back circle or boxes behind balcony, amphitheatre, and gallery, but nearly 200 more can stand in open corridors and promenades behind the pit and boxes. The arrangement of the audience is like the Vaudeville, in London, while the design and size are like the Gaiety, with the addition of an arch over the proscenium. With the exception of the frontage wall, the whole of the other walls and partitions, as well as the gallery staircase and the arching of the cellars under the pit have been executed in cement concrete, by Messrs. Drake, of London; the sun-burner and stage gas-work were done by Strode, of London; the decorations and act-drop, by Mr. George Gordon, of London; and, with these exceptions all the work was accomplished by local tradesmen in Aberdeen:—Bisset, mason; Daniel, carpenter; Garvil, ironfounder; Lamb, plumber; Davidson, slater; Morrison, plasterer; Stephens, painter and glazier; and Thompson, gasfitter; Mr. Browne, from London, being the architect's clerk of works. The costs have been about 8,000*l.*

Surveyor for the County of Montgomery. The correspondent who stated last week that Mr. Swettenham had been appointed to this office, writes to say that he was misinformed, the gentleman named having then only been selected by the committee, with two others, for after election.

PROFESSIONAL PRACTICE OF ARCHITECTS.

WE give in a condensed form the substance of two lectures on this subject delivered by Mr. T. Roger Smith as a part of a course to the students at the Architectural Association. The introductory lecture was noticed at p. 923 of our last volume. We shall return to those that follow.

(1). *In dealing with "Men."*

I. *Clients.*—It is generally better that the client on his own monition should come to the architect, and instruct him (say in the architect's office). Get,—if, and as soon as, possible,—information as to character, tastes, connexions, money, &c. If a man has strongly-formed views, well thought and worked out, do not attempt to disturb them; if general ideas only are supplied, work them out in your own way, and support your opinions,—giving way however if necessary, except perhaps on very vital points. Let your instructions be made definite: you should receive either a rough model, or a plan to scale, or a list of accommodation, or directions to submit your ideas. Waste, if need be, some sketches and interviews; endeavour to see very soon how far the consideration of cost is dominant, and then give what you find is really wanted, or get the requirements modified accordingly. Take down instructions in writing, and when anything is fairly fixed write a letter of record, and see if being thus tested the client cousiders his directions rightly interpreted. Be clear about the disagreeables of building:—settle early the times of completion, arrange as to the amount of discomfort to be looked for during the works; point out all risks of litigation on the part of adjoining owners (rights of light, &c.). Give full information as to the steps to be taken,—quantities, tenders, extras, and the like:—building matters are often a profound mystery to a very intelligent man. Especially prepare him from time to time if there are many extras. For a good client, with means and some taste,—a man of business with proper confidence in his architect,—spare no pains. For a man who thinks he understands a good deal about building, and buys goods himself, and orders many extras and alterations, keep things as straight as he will let you, and warn the builder of the necessity of getting definite orders in writing. With any one who likes to suppose he is going to do a building and never does it, arrange beforehand that you shall be well paid for all drawings. With committees, get resolutions passed; they will express something really (and finally) settled; take orders from one person only, the secretary or the chairman; of course make no enemies; from the first find who has weight in council and act with him, see him privately if possible and bring him to your view if you can before a meeting. Indulge a fidgety member in much consideration of some comparatively unimportant subject: you may thus get important matters quietly approved. When tenders are obtained, and are higher than the original estimate, be prepared to state good and sufficient reasons for the difference. In the course of execution maintain your position as director of the works; get all orders passed through you; warn the client against paying any money without authorisation. If an interest is taken by the proprietor in the progress of the building it will lighten the architect's responsibility, though it may add to his work. Make a client understand clearly his personal responsibility for matters of doubtful expediency; prepare him also for his disappointments, *e.g.*, for the apparent smallness of the rooms when partly carcassed, for their darkness before being plastered, for the temporary discolorations outside and in. Leave your client in good humour, not charging him too many extras; if however you know that he will want something off your account, put it on first. [In all stages of your work remember that if there is a lady who must be consulted and who wants her own way, she must be allowed to have it.]

II. *Builders.*—A tender from one builder, without competition, is usually a very satisfactory arrangement, promoting a friendly feeling and pride in the work. If he furnishes a detailed estimate, do not recognise his quantities beyond the negotiations, but accept a lump-sum tender. If it is left entirely to you, and seems desirable, do not hesitate to name a man for the work in whom you have confidence. As a precaution, however, it may be useful to furnish the client with your own independent estimate before you apply to the builder. Entirely open competitions are really very limited in practice. The men who would be selected for limited competition send in,—often with the addition of an undesirable tradesman, who probably gets the work. Men known to be anxious for fresh work, and of about the same standing in trade, should be asked to give in tenders. In a committee, where each member nominates one or two builders, every one should understand that he is responsible for the character of his nominees. It will usually be better not to let builders know with whom they are competing. Perhaps the worst kind of builder is the man who has not been accustomed to work under an architect. He will make friends with the client, and try to shirk your control. A bad type is the man not used to good work or able to do it. You can only try what can be done through the personal pride of the foreman and workmen. A builder with little foresight will cause much annoyance. When you see his failing, you must try to do the thinking for him. Builders short of money must be well watched; but they are not hopeless, and may be made to alter their work, and push it on, in order to get their certificates. For many works, the best class of tradesmen are men who have raised themselves from the workshop, and become little masters. They will manage their men well, take a real pride in their work, carry it on steadily and quickly, be content with a moderate profit, and settle accounts at the end without contest. Such men must not, however, be too heavily taxed. Builders in a large way (the great London firms, for instance) will give most satisfaction in suitable works. It will be found, however, that the skill and good service of their clerks will often lead to unexpected claims for extras, and the clerks will usually be supported by their employers. Try to hold a good position with the builder,—being conciliatory, but strict. Note the first mistake at once, and firmly. Be very careful as to your first certificate, and stand to the opinion you have formed, making thus good precedents to act on the mind of a new man. . . . . If the *builder's foreman* is not a fit man, get him changed. He will usually be proud, and somewhat vain, therefore you had better mention to him anything you find unsatisfactory, even when you take the contractor to task by letter. A bad *clerk of works* is worse than none. He should have good knowledge of building, and be sober,—and incorruptible. He should be eyes to the architect, and ears to him, and mouth to a certain extent. It should be thoroughly understood that he cannot order extras. He should check work continually, but not set it out. If he draws too much, he will neglect the works, and not notice defects in materials or errors in execution. The architect should always support him if possible, advising him as to the future if he has not acted quite wisely. He must not be quarrelsome, nor too tenacious of his authority. Usually the architect should pay him each week, and once a month send the receipts to the client, and ask for a cheque. From *workmen* the architect should get opinions and explanations, and, in return, take some pains to give personal guidance to those in charge of special works. As to other tradesmen executing their specialities (baths, heating apparatus, decorators, &c.), never apply to any but the best men.

III. *Architects* (*and other Professional Men*). In negotiations of all kinds, always see the principal, and arrange with him only. Understand the matter in hand most thoroughly in all its bearings when you have to meet older men; get a friend to coach you if you do not feel confidence. Let your client know about the quantity-surveyor, and your reasons for selecting him; take care to select the best man you know, as you will be deemed morally responsible for him, and you will also run no risk of his attempting to take the work out of your hands.

(2.) *In dealing with "Drawings."*

I. *Design.*—First, specially study good precedents,—old examples and the best modern works; get to know thoroughly what has been done before of the same sort. The first sketches will probably only show the nature of the problems and bring clearly in view what ought to be done. Work out if possible the main features of a design in complete security from interruption. Having the subject well in the mind and at the fingers' ends, keep at it. Of course begin with the plan: use sectional paper, or for a difficult site cut out the rooms and fit them about; draw with ease, using good paper, pencil, and india-rubber. A small scale, $\frac{1}{16}$ in. to a foot, or even $\frac{1}{32}$ in. or $\frac{1}{32}$ in. for large buildings. Get every part into form: work out portions to one-eighth scale. See that all can be executed,—and properly. Generally submit one design only,—the best produced after considerable work and thought. If you thus trust your own judgment, you may hope that it will also have weight with others.

II. *Explanation, or Exhibition* (the drawings required to show a design).—Clients want assistance, frequently very much assistance, before they can understand a building on paper. Architects themselves mostly are assisted by perspectives. All drawings for this purpose should be tastefully got up; the plans without too many colours; without visible erasures (not suggesting want of due consideration or of decision of judgment). Generally the drawings should be the same way of the paper; kept flat (on millboards or strainers); the writing very neat and legible. Perspectives showing general effect, and interesting or difficult portions, will frequently enable a man to whom a plan by itself is quite unintelligible to follow all—from the idea to the details of a design. An isometrical drawing of the plan (the walls 3 ft. or 4 ft. high), and in important buildings, a model, and, either rough or detailed, may be useful or even indispensable. Some people take in readily the idea of an elevation; explained as an upright map,—a diagram, and so on. Indeed, always explain personally if you can; prepare on occasion a concise written description, and read it, and leave it with a client (in the case of a competition, take great pains with a report, as it cannot be supplemented or shortened in personal explanation). Spare no trouble to compel those for whom your are working to see, as fully as possible, what their building will be when you have erected it. If every other way fails, select some building of a similar kind, and explain the similarities and differences on the spot.

III. *Final* (contract and working drawings to be used in the actual construction of a building).—The drawings prepared for explanation of a design can rarely be used for this purpose. A set of contract drawings should comprise complete general drawings, and sufficient details to explain the method of construction. All should be in ink, carefully kept, and not afterwards worked upon or touched in any way. The ground-plan should be well figured for setting-out, with all the dimensions on principal lines given from the starting-points. The principal heights on sections, and a scale placed vertically beside the elevations, will be useful. Dimensions may, however, be too numerous on drawings. The minor working details should be all grappled with, and well expressed: the flues, for instance, followed, and where complicated shown by special diagrams. All down-pipes and drains, water-supply pipes, speaking tubes, &c., should find their places;—in arranging for such the structure may have to receive modifications,—made with little difficulty while the drawings only are in progress. Profiles, stoppings, carving, &c., all well drawn, will help you to realise your building. The general drawings should, however, be made as few and as compact as possible; in view of the labour and expense of the numerous copies often wanted. Alterations made before the final acceptance of the contract should be in red: labour is thus saved, and the parts modified can be seen on future reference if necessary. Have the usual drawings, even in such a case as repeating the existing upper story to a house. For the builder or the architect may die during the execution: in case of dispute, the drawings may be called for: and points may show themselves in making the drawing which you would otherwise overlook till you saw them by chance in the work. *Scales* had better be such as a workman's 2-foot rule, divided into inches and eighths, will apply to. Avoid for this reason $\frac{1}{8}$ in., $\frac{1}{12}$ in., $\frac{1}{16}$ in., $\frac{1}{10}$ in., $\frac{3}{16}$ in., to a foot; and the like. Use $\frac{1}{32}$ in. or $\frac{1}{8}$ in. for general drawings; $\frac{1}{4}$ in. for difficult plan, or portion of plan, and show such with extreme accuracy; also for important architectural treatment (a complete set of $\frac{1}{4}$ in. scale drawings will generally be extravagant and cumbersome). A $\frac{1}{2}$ in. scale should be used for details, especially for parts that are to be repeated; 1 in. for individual features, such as doors or windows, that must be carefully shown in detail; $1\frac{1}{2}$ in. (one-eighth full size) is very handy for use, and gives a little more size when needed. Avoid half full-size as deceptive (sure to make your work clumsy and coarse), but give full size every profile that you are anxious about. *Colours* used on drawings should be something like the actual colours of the materials, *e.g.* brick,—on sections, lake,—on elevations, the real colour, or the joints ruled in:

stone,—on sections, sepia,—on elevations, raw sienna, &c.: sectional timber,—burnt sienna, and surfaces light sienna or yellow ochre: iron,—indigo; sectional plaster,—dark neutral tint. Windows may be tinted darkish indigo or neutral tint, when looking at them; light blue, when looking through them. Keep together on drawings things relating to the same part of a building, *e.g.* full-size details of jamb, base, cap, arch, &c., of a doorway, and put them in position with reference to each other. Never back-line working drawings. Mix perspective sketches with geometrical details, to show anything that must be seen on two sides at once, before it is comprehensible. A careful drawing, to a small scale, for sculpture, as a guide to your intentions, will generally be sufficient. The builder, when the accounts are settled, should return every drawing, &c., and keep no copy. An architect will find it useful, and well worth the trouble and expense, to bind drawings of executed works in books,—a custom followed by Mr. P. C. Hardwick and by his father and grandfather before him. Drawings (including part of office-rent, assistants' time, paper, and other expenses) should cost not more than one-third of the commission, in order that a work may be fairly remunerative. A calculation, giving three acres as the superficies of drawings for a very large modern London building, shows that economy (wise spending and sparing of superfluities) may often be of essential importance.

CITY AND WEST END RAILWAY.

It is already known concerning some of the railway and other private bills, for which it was proposed to petition Parliament in the approaching session, that they will not be heard of again for at least another year. The surveys have been made, notices have been published in the *Gazette* and other papers, plans, and sections lodged in the Private Bill offices of Parliament, and in other places, the bills have been drafted, printed, and duly deposited, but the projects have been abortive or premature, and have been already abandoned. It is probable that there will be a larger proportion of early deaths among the private bills of the coming session, than has been presented for many years past. Hitherto the deposit money of five per cent. of the estimated cost of a scheme, which the promoters are required to deposit in the Court of Chancery, in accordance with the Standing Orders of Parliament, as a guarantee of capability and good faith, has at the worst only been locked up for a time. By a new Standing Order, which comes into operation in 1873 for the first time, the deposit will be forfeited, and transferred to the Consolidated Fund, in the event of the promoters failing to obtain their bill. The time for making the deposit extends to the 15th of January, and immediately after that date the Examiners proceed to the discharge of their duties, and after examination endorse the rolls of documents submitted to their scrutiny;—"Standing Orders complied with," or "not" complied with, as the case may be. The receipt of the receiver in Chancery for the deposit is, of course, an important item among the papers.

The projectors of the City and West End Railway, from anything that appears to the contrary, intend to proceed with their bill, although it has been whispered that it is a manœuvre, or fighting bill, rather than a scheme intended to be carried out. However this may be it is incontestably the most important project of the session relating to London.

Parliamentary draft bills are literary curiosities, and the City and West End Railway Bill is a curiosity even among its class. It has been said, perhaps cynically, that punctuation is dispensed with in these documents that counsel may have on each side the wider scope. However this may be, it is certainly a strange thing to come upon a string of nearly 700 words following each other without the interposition of any point whatever, from the first to the last. Lindley Murray lays down eighteen rules for the use of the comma. Few writers, if any, are likely to embarass themselves with such a bewildering directory, but there are some uses of the comma to which even the draftsman of a bill should be equal, and upon which he should feel bound to condescend, as, for instance, when a group of names are brought together. The 47th section of the City and West End Bill gives the names of the first directors thus: "Sir Edward William Watkin Joseph Shuttleworth Andrew Cassels John Rowson Lingard George Morphett Benjamin Whitworth and James Shepherd." The reader may make sure that there are at least two directors' names in the list, thanks to the conjunction, but the last name is the only one concerning which he can be absolutely certain.

A good many weeks since it was stated confidentially that the deposit-money for the City and West End Bill was already subscribed. If this be so, it is conclusive evidence of the *bona fides* of the promoters, who will be called upon to risk the loss of a sum exceeding a hundred thousand pounds.

The proposed line is to be for the most part underground, from South Kensington station of the Metropolitan District Railway, along the Brompton-road, Knightsbridge, part of the Green Park and Piccadilly to the lower Regent Circus, and thence through Soho, Bloomsbury, and Lincoln's Inn Fields, to join the Metropolitan Railway at the Farringdon-road station, thus forming a continuous circuit to the north of the Metropolitan District line, which must suffer severely in its traffic if the proposed line is made. The Bill proposes that powers should be given for agreements between companies having terminal stations in London, including the London and North Western, the Midland, the Great Northern, the London, Brighton, and South Coast, the London and South Western, the London, Chatham, and Dover, the South Eastern, the Great Eastern, the East London, and the London Central.

The proposed railway will be in two sections, and will be in all 3 miles, 5 furlongs, 8 chains, and 75 links in length. The proposed capital is 2,200,000*l.* in shares, with the usual borrowing powers. The works, it is proposed, shall include making certain new streets, and widening others. One new street, it is proposed, is to commence on the northern side of Tichborne-street, about 94 yards west of the junction of Tichborne-street with Great Windmill-street, and to terminate on the west side of Rupert-street, near its junction with Coventry-street. It also proposes to widen Richmond-street and King-street, from Rupert-street to Moor-street, and also to widen Dudley-street from Moor-street to Broad-street, St. Giles's. A new street is proposed in St. Giles's, commencing near the junction of High Holborn and Drury-lane, and terminating near the north-western angle of Great Queen-street. It is also proposed to widen Newman's-row and Great Turnstile, from Lincoln's Inn Fields to High Holborn. The new streets are to be not less than 50 ft. wide.

The company take powers, subject to notices, to underpin or otherwise strengthen houses near the railway, and to make subways, and openings over the railway in the streets or roads for ventilation. The time for the compulsory purchase of lands is limited to four years; and for the completion of the line to six years. The deposit-money is not to be repaid until the line is opened, or half the capital has been paid up and expended. If the line is not completed, the deposit-money is to be applied in compensating land-owners or others whose property has been interfered with, or made less valuable by the commencement, construction, or abandonment of the railway, or any portion of it. The remainder of the deposit will be forfeited, and carried to the Consolidated Fund.

Workmen's trains, calling at all the stations, will be run at fares not exceeding one penny per passenger for each journey; such trains to run not later than seven in the morning, or earlier than six in the evening. If the trains have for six months continuously carried less than 100 passengers in each train, they may be discontinued, on proof of that fact to the satisfaction of the Board of Trade. The ordinary fares will be:—first class, under two miles, 4d., over two miles, 8d.; second class, 3d. and 6d.; and third class, 2d. and 4d.

Whether the promoters will be able to withstand the opposition they will doubtlessly provoke from the owners of property in the neighbourhood of Piccadilly and elsewhere along the route, and whether, assuming that they get their bill, they will be able to raise the capital to make the line, are problematical; but it must be confessed that neither the traffic returns of the Metropolitan companies that have made lines and opened them, nor the no-progress of the companies that have got their bills—the London Central, and the Mid London — are very encouraging for projects of a similar character.

THE ECONOMIC LIFE ASSURANCE COMPANY'S NEW BUILDINGS.

A FINE block of buildings is in course of erection in New Bridge-street, Blackfriars, for the Economic Life Assurance Company. It stands on the site of the old one, and is immediately opposite to the Ludgate-hill station of the London, Chatham, and Dover Railway Company. The New Bridge-street elevation presents a mixed style of Gothic architecture, and is massive and bold in appearance, the materials used being red brick, with a large admixture of Portland stone, red Mansfield stone, terra-cotta, and ornamental work in granite and marble. The building has a large basement, and the height from the street-level to the base of the cornice is 50 ft., above which there is a frieze, and panels with cantilevers, and above those again the elevation is surmounted by a main upper cornice in Mansfield stone; the entire height of the structure to the roof being 54 ft. 6 in., and its width 35 ft. The main entrance to the building, in the centre of the ground-floor, consists of a large and handsome porch, projecting several feet beyond the main elevation. On each side of this there are circulars columns of polished granite, with capitals of terra-cotta, the roof being in Portland stone, whilst immediately above it a broad and elaborately-worked band in terra-cotta stretches across the elevation. On each side of the main entrance there are two large circular-headed windows, uniform, in the massiveness of their design and detail, with the general character of the elevation. A broad border of terra-cotta work runs round the arch over the windows, with a monogram in the centre, whilst inside this is a gauged arch in red brick, relieved at short intervals by the insertion of green tiles. The windows have traceried heads in Portland stone, and are supported by red brick jambs, with green and red serpentine columns on each side, and polished granite columns in the centre of the windows, and red Mansfield sills, with an enriched string at the base. The first floor contains three large circular headed windows, resembling in their dimensions and elaboration of detail, those just described. These windows, which are 13 ft. in height to the crown of the arch, and 10 ft. in width, are united by three continuous arches or semicircular headings in terra-cotta, with enriched hood-mouldings and panels of Cupids running round the arches. Between the windows there are rich double columns in terra polished, and rope columnar mouldings in red brick. At the base of the windows there are panels in red Mansfield stone, and the columns are also supported by the same material. All the windows will have polished mahogany frames and sashes. Above the first-floor windows a broad string of terra-cotta runs across the elevation uniform with that above the ground-floor. The second-story windows are uniform in design and execution with those in the rest of the elevation, but their dimensions are not so large.

We have already stated that the portion of the elevation above the second-story windows is a prominent feature in the building. The sunk panels above the lower cornice and frieze, with projecting cantilevers, are in terra-cotta, whilst the main cornice surmounting the elevation, in red Mansfield stone, is very elaborate both in design and execution. There is a third story or attic, but this is concealed from view by a cornice and parapet rising considerably above the roof.

The interior of the building will include a number of apartments. The basement will contain the clerks' dining-room, muniment-room, together with stationery and other offices and conveniences. The chief apartment on the ground-floor, entered through the porchway, will be the general office, 33 ft. by 26 ft., together with the secretary's office, the actuary's office, and the actuarial office. On the south side of the ground-floor is the main staircase leading to the apartments above. The first floor contains the board-room, oblong and horse-shoe in form, 36 ft. long by 20 ft. wide. This portion of the interior will be handsomely decorated. The borders of the floor, to the extent of three feet all round, will be composed of ornamental coloured wood in diamond form, and the ceiling will be in compartments. A corridor seven feet in width, paved with ornamental tiles, divides the board-room from the physicians' room, the waiting-room, and the luncheon-room, which are on the opposite side of the floor. The second story contains a convenient residence, consist-

ing of commodious sitting-rooms facing New Bridge-street, together with butler's pantry, kitchen, and other domestic offices, as well as a lift; whilst the third story, in the roof, contains several bed-rooms and store-rooms.

The estimated cost of the building is about 8,000*l.* The architect is Mr. E. Christian, and Mr. W. Brass, of Old-street, is the contractor; Mr. C. Greaves being the clerk of works, and Mr. A. Jones the foreman in charge.

CONCRETE MODEL DWELLINGS AT HASTINGS.

THOUGH there has long been a deficiency of habitations for working men in the old cinque port of Hastings, it is only within the past twelve months that any experimental effort has been made to supply the want. The Hastings Cottage Improvement Society, which has done a good deal in the special field for which it was originated, has (after overcoming numerous difficulties), stepped out of its ordinary track, to enter upon a double experiment. The society has nearly completed a large building, the walls of which are entirely of concrete, and which is the first structure of the kind in the borough. The plan (designed by Mr. G. Friend, Maidstone), comprises three separate blocks of dwellings, which are connected together by means of two open staircases, and by galleries along one front of each "house." The arrangement of the apartments is managed so as to form nine dwellings, with four rooms each; five have three rooms; fifteen consist of two rooms only; and an odd place gives a one-room tenement. In every separate dwelling one room is supplied with a range, with oven and boiler, and water is drawn from a tap, over a Staffordshire glazed ware sink. The rooms, of course, connect with each other, and are on the same floor. In the tenements consisting of four apartments, one is for use as a living-room, 12 ft. by 10 ft.; a scullery, 6 ft. by 10 ft.; and two bedrooms, 9 ft. by 9 ft. 6 in. each. An ordinary grate is placed in the bedrooms, except in some six or eight cases, where a self-acting ventilator takes the place of the chimney. Two ash-shoots on each of the three floors lead to common receptacles; and there are conveniences on each landing,—eighteen for the thirty families who will be located in the model dwellings. The tenements are virtually self-contained, and avoid the necessity of going up or down stairs for any domestic need.

The buildings are erected on a square piece of land at the foot of the East Hill, in the midst of the labouring population. As they are directly open to the sea, at an elevation of about 150 ft. above the shore, a plentiful supply of fresh air will be unfailing. The middle block faces to the south; whilst the other blocks are at either end, looking east and west. There are large open yards on each side of the central block. The concrete was in proportion of 8 of shingle from the beach, to 1 of cement. The floors and roofs are constructed in the ordinary manner, except that the floor-boards are tongued. A coat of stucco gives the exterior a smooth surface, and the inside of the tenements is rendered in plaster. The staircases and galleries are formed of slate slabs, supported on iron pillars, and girders. A fence of corrugated galvanised sheet iron protects the passages.

The buildings were constructed by Mr. R. Avard, of Maidstone, who has just obtained the contract for the erection of the first Board school in this borough, at a cost of 1,300*l.*

THE NEW THEATRE ROYAL, MELBOURNE.

THE new Theatre Royal, and hotel premises connected therewith, are built upon the site of the old Theatre Royal, Bourke-street East. The frontage to Bourke-street is used as café and hotel premises. The entire building has a depth of 313 ft. from Bourke-street to Little Bourke-street, and a frontage of 66 ft. The theatre portion of the building embraces a depth of 200 ft. by 66 ft. wide; the auditorium having a depth of 80 ft., leaving 120 ft. for stage, dressing-rooms, and offices. The whole of the external walls and the greater portion of the walls and partitions are of brick. The approaches, corridors, staircases, landings, with all saloons, crush and waiting-rooms throughout the building, have brick walls with stone floors upon iron girders. All openings are formed by means of iron girders or arches, wood being utterly dispensed with in the superstructure. The frontage to Bourke-street is built of brick, with bluestone mullions between the windows, and bluestone landings, moulded to the balconettes, the whole being finished in cement. The windows to the first floor are circular-headed, and finished with pressed cement columns, enriched architraves, caps and bases, and ornamental keystones. Above the windows is a row of mezzanine lights. These also are finished with small columns, circular corners and chamfered arrises. The windows to the second floor are segmental-headed and finished similar to the windows below. The top of the building is finished with a cornice and open balustrade, terminating in a pediment (which is very ugly, by the way) with the Royal arms inserted. There are three entrances from Bourke-street, the centre one being the main grand entrance, leading through a large vestibule, from which is obtained access to stalls, pit, and upper circle, with modes of egress, in case of fire, from all parts of the house. On the east side is an entrance doorway, with a flight of stone steps 10 ft. wide, leads to the café, billiard-room, and saloon. On the west side is the dress-circle entrance, which opens into a large hall. From this hall a stone staircase leads to a corridor over the vestibule. At the north end of this corridor are folding-doors, which open into a spacious crush-room.

The auditorium consists of pit, stalls, and three tiers, which are constructed upon cast-iron columns. It is lighted with a suspended sunlight from the ceiling, which is formed into an extensive dome in panels, richly decorated above the sunlight, and is ornamentally perforated for ventilation. At each side of the proscenium is an escape staircase, from all parts of the house, and side flies. At the rear of the stage are the dressing-rooms, painting, property, manager's, and other rooms connected with the stage. Lavatories are provided on the ground, dress-circle, and upper-circle levels. At each end of the theatre are large circular ventilators, which cause a current of fresh air to pass freely through and over the ceiling of the building. By way of extra precaution in case of fire, Yan Yean water supply-pipes, with hose attached, will be laid on to all parts of the house.

Mr. Geo. Browne, architect, who is a native of Melbourne, made the designs, which were approved of by the Boards of Health and other officials, previous to the signing of the contracts.

The contractor for the theatre proper is Mr. John Wood; but for the hotel, café, and front premises, Mr. Chas. Browne.

The estimated cost for the erection, completion, finishing, and furnishing of the whole premises is 22,000*l.* sterling.

THE HOUSE OF THE CIVIL ENGINEERS.

THE rooms of the Institution of Civil Engineers have been painted and decorated under the direction of Mr. T. H. Wyatt, by Messrs. J. G. Crace & Son, of Wigmore-street, with their usual taste and skill. The theatre or meeting-room is the only part in which coloured decoration has been attempted, and the architectural treatment of the room has rendered decision as to the best mode not an easy problem. Bearing in mind the contingency of having at some future period to provide galleries at the ends of the room, the architect introduced two distinct orders. In the lower one the busts of distinguished members are introduced, carried by brackets on trusses, and in the upper division portraits are hung. The difference between these two portions of the room is strongly marked. The upper panels have been covered with a delicate green flock paper. The lower panels are hung with maroon-coloured cloth, as a ground for the busts. The pilasters, cornices, and other architectural features of the room are treated in stone colour. The upper cornice and the ceiling are so coloured as to mark and separate the panels and the enrichments, pink and blue predominating. The introduction of cloth in the lower compartments of the walls has contributed to subdue the resonance, which was found to exist from the previous hard surface; but from an art point of view the effect is questionable, the brackets and busts having the effect of being attached to loose cloth curtains.

Additional room for books has been provided in the library, a fine apartment, which now contains about 11,000 volumes.

The members of the Institution have reason to be satisfied with their handsome and commodious quarters.

REBUILDING THE SURREY SESSIONS-HOUSE.

THE Surrey Sessions-house, in Newington-causeway, has for some time been found to be too small, and altogether unsuited for its purpose, and recently the county magistrates appointed a committee to take into consideration the question of rebuilding it. At the meeting of the magistrates on Tuesday last, the committee presented a report, recommending that the Sessions-house should be rebuilt, and that tenders should at once be obtained for carrying out the reconstruction of the building, The report gave rise to some discussion, and the adoption of the committee's suggestion to rebuild the premises having been moved, Mr. Locke King objected to the proposal, on the ground the whole question of local taxation was about to be considered by Parliament; and he further contended that the present courts were sufficient for all required purposes. He moved as an amendment, that the question of rebuilding the courts be adjourned for twelve months. In answer to these objections, it was shown that the existing building was in a dilapidated condition, and in every respect inconvenient for the transaction of the business of the sessions. The proposal to rebuild the premises was carried with only a few dissentients, and the committee were instructed to obtain tenders for the erection of the new structure. We understand that the plans of the intended new building provide for large new courts and offices.

THE FALL OF A WAREHOUSE IN BRISTOL.

THE warehouse opposite the Railway Terminus in Bristol, built by Messrs. Brock & Bruce, at which a disaster recently occurred, has a frontage of about 70 ft., with a depth from front to back of about 120 ft. It is three stories in height, and covered with a flat roof, intended for the purpose of seasoning timber. The roof was formed of concrete, covered with asphalte, altogether 9 in. or 10 in. thick, and this being supported on square uprights of timber, the centre part fell through, carrying everything before it. The portion remaining around the walls seems to be in a bad state, and will have to come down. The great weight of the roof seems to have been the main cause of the accident, though one of our correspondents ascribes it partly to the contraction of the asphalte.

THE NEW INFIRMARY IN ST. GEORGE'S-IN-THE-EAST AND THE CHARITY COMMISSIONERS.

A DIFFICULTY.

THE guardians of St. George's-in-the-East have just been placed in a difficult and unpleasant position as regards the new infirmary which they are now building, in consequence of the course which is being adopted by the Charity Commissioners. It appears that the new infirmary buildings darkened some of the windows of that portion of the workhouse which they hold on lease from the trustees of Raine's Charities, at a rental of 130*l.* per annum. This fact led the trustees to complain that the guardians, in erecting the new building, had damaged the reversionary interest in the workhouse, and they threatened the guardians with an action for obscuring the lights unless they agreed to purchase the workhouse premises entirely. The guardians ultimately agreed to pay as much in Consols as would produce the amount of the rental, and within the last few weeks they have given instructions to their solicitor to proceed with the purchase, but the Charity Commissioners, whose sanction is, appears, required to complete the bargain, are interposing to prevent the arrangement from being carried out. The Commissioners simply allege that the bargain is a bad one, and state that in the interests of the charity they decline to give their sanction to the arrangement. The trustees of Raine's Charities are thus ignored by the Charity Commissioners, whilst the St. George's-in-the-East guardians have before them the prospect of legal proceedings unless they by some means complete the purchase, or, on the other hand, make such alterations in the new infirmary buildings as will remedy the alleged injury to the future value of the workhouse premises.

ASHTON COURT, NEAR BRISTOL.

CONSIDERABLE alterations, improvements, and additions have taken place at Ashton Court, the princely seat of Sir Greville Smyth. The western wing has been rearranged, but the principal part of the works have been concentrated in the central portion of the buildings. This part has been raised considerably and in a great measure rebuilt, and is surmounted by two octagonal towers, which rise to the height of 72 ft. A clock has also been fixed upon the inner front facing the courtyard, at an altitude of 56 ft. Between the two towers, on the front elevation and upon the crow-step, is carved the crest of the owner, a large eagle with a griffin's head. There is a covered passage running the length of the south side of the courtyard, which opens out into the court by an arcading of five bays. The capitals and corbels of these are carved, birds and animals being largely used amongst the ornament. The style of work, like the rest of the building, is Tudor, and Bath stone, of the Box-ground variety, has been used throughout. Mr. B. Ferrey is the architect. The contractors for the whole of the works are Messrs. Herbert & Frederick Burridge, of Exmouth. The carving was executed by Mr. Harry Hems, of Exeter. Mr. Thomas Cloutman was the clerk of works.

THEATRICAL MANAGEMENT.

SIR,—It is difficult to find a medium through which to express disapproval of the proceedings of theatrical managers, such is [the connexion between them and the majority of the professional critics. On this general question I should like permission to address a few words to the public; but my present desire is to complain of a dodge practised by the persons managing under the manager at Drury-lane Theatre. The practice is, to allow some hundreds of persons to pay at the pit doors *after the pit is full*, and they are then drafted off to other parts of the house at increased prices, or offered tickets for another night. On Boxing-night, when the uproar became too great to be resisted, the money was returned to those who were disposed to sacrifice their evening in fighting their way to a pay-place in the hall. The whole arrangement for admitting the public on these occasions, when a crowd is sure to be assembled, is discreditable to all concerned. At the pay-place for what is called the Balcony, no *queue* is formed, and the fighting and struggling to get tickets, when there is any crowd, often with the loss of watch or purse, would scarcely be believed by those who have not seen the struggle. At the north pit-entrance, nothing would be easier than to form a *queue* under part of the colonnade, next the wall of the theatre, and so prevent the unseemly and dangerous crushing that always takes place at holiday-time; and yet, year after year, this is allowed to go on without the slightest attempt to devise a remedy. This, however, is but stupidity: what I am really complaining of just now was sheer imposition.

A PLAYGOER.

FIREPROOF FLOORS.

SIR,—As a practical plasterer, of thirty years' experience, I can thoroughly endorse the opinion of your correspondent "Y.," and I will give you my reason why,—the very nature of its manufacture. The gypsum, being submitted to the action of the heat in baking or boiling, after being ground to dust, and after being gauged, becomes hard, but at the same time very porous or spongy, and when dry absorbs a large amount of water; and, upon the application of heat, steam is generated, and the inevitable result is explosion and calcination.

WILLIAM PULHAM.

STANDON, HERTS.

NEW schools have been opened here. Two-thirds of the outlay being raised by subscription and a grant, the remainder by a voluntary rate. They comprise a new school for girls, 42 ft. by 18 ft.; with lobby, 12 ft. by 10 ft., built of red brick, with moulded string-courses, and pointed black. The boys' and infants' schools, with master's and mistress's residence, were remodelled; the building of which is half-timbered and overhanging at back, supposed locally to have been erected by the Knights Templar, and is 105 ft. in length. This was covered with lath and plaster; in removing this, the timbers were found to be good old oak, and have been cleaned and oiled and filled in with red brick, black pointed. The boys' school is 34 ft. by 17 ft.; with lobby, 17 ft. by 13 ft.; the infants' room, 27 ft. by 17 ft. The works have been carried out by Messrs. Whitaker & Sons, of Standon. Mr. G. E. Pritchett was the architect. Mr. Warner, of Stortford, supplied the school desks.

A memorial window has just been put in the chancel of the parish church by the Rev. D. D. Sadlier, whose family grave is at the south side of the chancel,—the subject being the stoning of St. Stephen, executed by Ward & Hughes, of London.*

MEDIÆVAL MONUMENTAL MEMORIALS.

IT is a wise thing, I think, when many of the institutions of this country are in a transition state, to foster a national sentiment, by building imposing symbols of our veneration for the heroic characters that formed so much of that historic worth that shed, as it were, a halo on the present. There cannot be too many of these monuments: they rebuke the ignoble spirit of Mammon worship; they help to make higher manhood and womanhood. "Little Scotland," says an American writer, "has conquered the respect of the world by insisting on the claims of its great dead to be for ever remembered." Visitors to Edinburgh have for a long time wondered at the absence of a national memorial to Knox. The discordant factions of the kirk, awaking to a higher sense of duty, are now seeing the Jesuitical tendency of their sectarian party delusions, and are uniting to honour the memory of John Knox, as the champion of sound principles, after the same manner as the Protestants of Germany have done in erecting a memorial to the noble Luther and his compeers at Worms. The proposed erection of a bronze statue to John Bunyan, at Bradford, showing the great dreamer of two hundred years ago in the style and costume of that day, and a representation of some of the characters in his world-renowned allegory, has at last convinced many a canny Scot, who doubted the propriety of a statuesque Scottish memorial to the great image-breaker of three centuries ago, that such an erection, in the style and taste of Mediæval art, would not be out of place near the grave of Knox, at the west entrance to St. Giles's Church.

> "Within the ancient city's very heart,
> Teeming with old historic memories rife."

No huge architectural pile can vie in taste with a gem of art here as a memorial. In fact, the site proposed by Dr. David Laing (one of the few remaining literary friends of Scott) is at the very "Heart of Mid Lothian." Where there is an open space sufficiently large upon which the bronze statue of Knox may stand, raised upon a granite pedestal of moderate height, surmounted by a Mediæval metal canopy, and having other statues of famous Scotchmen of that period at the base, the whole forming a gem of art, for which prize designs are wanted.

JAMES KERR.

ST. PETER'S CHURCH, DRAYTON, BERKS.

THE chancel of this church having become very dilapidated, and having been "restored" some few years ago, and deprived of nearly all its interest, it was decided last year to rebuild it; and this has now been done, together with a new chancel aisle on the north side.

The old triplet east window has been restored to its original position, and the new side windows have been made to correspond. The walls have been constructed of local wall-stone, the new roof is of pitch pine, the outer stone dressings are of Ham Hill stone, and the roof is covered with the old plain tiles.

The chancel aisle is of Perpendicular character, to correspond with the north aisle of the church It is lighted by three-light windows, filled with glazing of two tints in patterns. The roof is flat, of oak and chesnut, has an ornamental cornice and tie beams, after the manner of the old roofs, and is covered with lead; the tile pavements are from the manufactory of Mr. Godwin, of Lugwardine; the stone carving has been executed by Mr. Earp; and the ornamental iron-work by Mr. Lucy, of Oxford. The architect was Mr. Edwin Dolby, of Abingdon; and the cost, 1,100*l.*

There are some alabaster figures in this church, which were discovered a few years ago while digging for a vault, and they would well repay a visit of inspection, the church being within an easy walk of either Steventon or Abingdon stations. The figures appear to be early fifteenth century work, and represent the betrayal, the scourging, the crucifixion, and the entombment of our Lord, also the Adoration and Annunciation. They have traces of the original colouring, which appears to have been chiefly red, green, and gold.

Much more remains to be done to this church, and if funds should permit, it is proposed to repair the Lady Chapel, and to restore the figures with a new framework, to what is supposed to have been their original position, viz., the reredos of the Lady Chapel.

New schools are in contemplation for this village from the designs of the same architect, and a scheme for building a vicarage-house is also on foot.

* An interior view of this church, as restored by Messrs. Godwin, will be found in an earlier volume of the *Builder*.

THE HODGSON MEMORIAL IN BEAUMONT CHURCH.

ARCHÆOLOGICAL DISCOVERIES.

THE personal friends of the late Mr. Thomas Hodgson, of the Carlisle and Cumberland Bank, resolved to erect a monument to his memory in the church at Beaumont, his native place. The original intention of the subscribers was to place a new window, filled with coloured glass, in some part of the old church, the features of which are very plain and simple, and with the consent of the vicar it was decided to place it at the east end. In breaking out the wall with this object in view, under the direction of Mr. D. Birkett, of Carlisle, some old masonry was discovered, which proved to be the original east window of a still older church, belonging to the end of the twelfth or beginning of the thirteenth century. This newly-discovered window is a triplet. In the interior the three lights are superimposed by an arcade extending nearly the whole width of the church, and formed of three massive pointed arches, resting on pillars with plain capitals and bases. The capitals have square abaci. The restoration of this masonry, which is very solid,—the whole thickness of the wall being over three feet,—cost 41*l.* The south and west walls of the church appear to be of the same date as the east window. The north wall is more recent. The window has been filled with coloured glass by Messrs. Scott and Son, of Carlisle, who have taken the Ascension for their subject. The central light contains a figure of our Saviour with the banner, and each side light a choir of angels. At the bottom is a simple inscription.

STAINED FLAGSTONES.

SIR, Will some one inform me how to restore the colour of flagstones that have become green from old age or neglect? G. W.

FIRE BRICKS.

SIR,—I observe that just at this time, in the *Builder* and other papers, great attention is being called to building materials, and especially to such as will withstand intense heat, as during the recent great conflagrations in London and in America.

These demonstrated that neither schistose nor carboniferous rock, nor granite, is proof against a very high degree of temperature. The various sandstones are, no doubt, a better fire-resisting material, but are confined to certain localities, and expensive in transport and working.

These objections do not apply to bricks, and it is therefore a matter of increasing importance to ascertain which is the best brick for meeting the full requirements which are now needed in building material.

During the last thirty years a new industry has been growing up in the *far West*, initiated first at *Lee Moor*, in Devonshire, and in the development of which I have taken a part, although not now connected with the manufacture, I allude to the moulding of bricks from the refuse produced in the China-clay washing of Devon and Cornwall.

This industry has greatly increased during the last few years in Cornwall, nearly a dozen new works having been recently commenced, and are all doing well. I found in all those which I visited some of my old *employés*, hence the Lee Moor use prevails; and all these works are striving to make *fire*-bricks, and doubtless they will succeed in making a fair but *not a first*-class fire-brick; with some little modification, however, they might make *quite* a first-class *building* brick. The West of England Clay Company have done something in this direction, and at a very moderate price are supplying a good brick; which is, however, susceptible of improvement.

In case of fire these bricks would withstand a greater heat than any of the building materials above mentioned. In short, while it is quite conceivable that fire in a great conflagration might reduce these substances, it is incon-

ceivable that any heat could be so attained that would at all affect these bricks.

The feldspar of the granite, from the decomposition of which the chief constituent of these bricks is derived, has lost in the decomposing process the alkalies which make it in its perfect form an absolute flux, and being now fairly pure alumina, it, with the other chief and, practically, only other constituent of this brick, is, for all building purposes, perfectly infusible.

It has been objected in your paper that these bricks are very *absorbent*, and render a house built of them damp. At present this is, doubtless, just, for all the works are aiming at making only a good fire brick. An error is committed in selecting the one which is proved to be the *best fire* brick. It may be accepted generally that a *good fire* brick will make a *bad building* brick, so far as damp is concerned, and *vice versâ*. J. P.

SCHOOL BOARDS.

Bradford.—The Works and General Purposes Committee recommended the acceptance of the tender of Mr. B. Dixon for plastering work in the erection of Bowling Back-lane School, the amount being 123*l*. They also recommended that Mr. Squire Holdsworth's tender for the erection of schools in Park-lane, according to the altered plans, amounting to 9,866*l*., be accepted. It was agreed to. A resolution was passed authorising the Works and General Purposes Committee to engage, subject to the Board's approval, a clerk of works to superintend the erection of schools.

Driffield.—The seal of the Board was affixed to the contract for the erection of the new schools and signed by the chairman and by Messrs. Hewson Brothers, the contractors, and the time for completion was fixed for the 21st October. Messrs. Hayton's tender for supplying the heating apparatus to the schools by warm water for 195*l*., was accepted. The architect in a letter stated that he had arranged for a clerk of the works at 3*l*. a week. The chairman thought it would not do to pay 3*l*. a week until they got some bricks and mortar together. Mr. Bradshaw thought they could get the same services in the town for less, and Mr. Whitaker considered it rather an exorbitant charge. The architect asked for a cheque on account of his commission of 2½ per cent. on the contract. The contractors stated that they would at once proceed with the buildings.

CHURCH-BUILDING NEWS.

Llanelly.—The foundation-stone of a new English Church has been laid in Goring-road, Llanelly. The contractor is Mr. Thomas Williams, of Llandaff. The new edifice is named All Saints' Church, and is estimated to cost from 8,000*l*. to 9,000*l*. The site was presented by Mr. Rees Goring Thomas, of Llannon.

March. — Active progress is being made towards restoring and altering St. Wendreda's Church. The removal of the north gallery shows off to advantage the stone pillars which support the building on that side; and the window at the west end, formerly hidden by the gallery staircase, is now fully exposed to view. Some of the pews have been taken down, and open benches substituted in their stead. A new pavement of Minton tiles is to supersede the present flooring of flagstone, the south gallery removed, and the chancel taken down and rebuilt, so as to correspond, in an architectural point of view, with the rest of the building. Various other changes, embracing a new ringing-floor for the belfry, a new door for the principal entrance, a new pulpit, reredos, and Lord's table are also in contemplation. All monuments and memorial stones which may be interfered with in carrying out the proposed alterations will be re-fixed under the direction of the Rev. J. W. Green, Rector of March. The plans and specifications are to be prepared by Mr. William Smith, architect, London. Altogether, the estimated cost of the work is 4,400*l*., which is to be raised by voluntary subscription.

Glossop.—The foundation-stone of a new church for the district of Hadfield, in the borough of Glossop, has been laid. The new edifice, which is dedicated to St. Andrew, is estimated to cost 2,500*l*., of which 1,500*l*. have been contributed or promised. It will be built of stone, ornamented with a spire 60 ft. high, and is calculated to accommodate 500 persons. The architect is Mr. Medland Taylor, of Manchester.

Oxford.—A new tower and spire, 160 ft. high, are to be added to St. Aldate's Church. Mr. Christopher, of London, is the architect, and Mr. Symm, of Oxford, the builder, and the work has already been commenced.——The spire of All Saints' Church, in this city, being in an unsafe condition, preparations are being made for taking a portion of it down.

Penge, Surrey.—The new church of Holy Trinity, being a district church for the hamlet of Penge, has been consecrated by Bishop Claughton, acting for the Bishop of Winchester. Accommodation for 1,000 persons is provided in the nave and aisles. The chancel is groined in brick with moulded stone ribs. The facings, both internally and externally, are of red brick; the dressings being of Bath stone. The work, including the first stage of the tower, has been carried out by Messrs. Dove Brothers, at a cost of 7,000*l*., under the superintendence of Messrs. Newman & Billing, of Southwark, architects.

Ockley.—The new church of St. John the Evangelist, Ockley Green, has been consecrated by the Bishop of Winchester. The architect was Mr. G. R. Clarke, of Bedford-row. The edifice has been erected to meet the needs of the southern portion of Ockley, and consists of a nave, 53 ft. long, and 24 ft. wide, with a north porch and chancel, 24 ft. 6 in. long, and 18 ft. wide, with a vestry on the north, and an organ-chamber in the south side, forming a cross in plan. The accommodation is nominally for 204, but 220 can easily be seated. The walls are of brickwork, worked fair inside and out, 12 ft. to the springing of the roof of the nave, and 15 ft. in the chancel. The windows, crosses, &c., are of Bath stone. The general character is Early English. The ridge of the roof runs throughout in an unbroken line, the division of the nave and chancel being marked by an open bell-turret, roofed with oak shingle. There is no chancel arch in the ordinary sense of the term, but brick piers and stone corbels receive an ornamental roof principal, which supplies the place of one. The east window is a three-light lancet, enclosed with label and crosses. The west window is a four-light plate tracery one, and the nave windows are two-light, square-headed, with corbels. The roof is all open, with eight framed principals. The font is octagonal, a clustered shaft, with capitals of water-lily, carved by Mr. Purday, of London. The seats and stalls are open benches, with plain ends. The flooring is of Godwin's Lugwardine tiles. The work has been executed by Mr. John Ansell, of Ockley, builder, at a cost of about 900*l*. All fittings and expenses included, the total cost of the undertaking will be nearly 1,200*l*. This, with the exception of four donations, amounting to 340*l*., is defrayed by the rector. A window, by Messrs. Lavers, Barraud, & Westlake, on the north side of the nave, has been presented to the church by parishioners and friends. The east window, shortly to be inserted, will be the result of a memorial fund. The lectern is of oak, carved, and is the design and in great part the execution of Mr. James Ansell and Mr. Kett, who jointly presented it to the church.

Bradford.—The new church erected in Hall-lane, Ripleyville, Bradford, has been consecrated by the Bishop of Ripon. Twelve years ago an association of churchmen in Bradford determined to erect ten new churches in neighbourhoods within the borough where they were required. This church, which is dedicated to St. Bartholomew, is the ninth that has been built, and is intended also as a memorial of the late Mr. Charles Hardy, who was president of the association and the originator of the scheme. The site of the edifice was contributed by Mr. H. W. Ripley. The building itself was designed and executed from plans prepared by Messrs. T. H. & F. Healey, of Bradford, and forms a feature in the locality in which it is situated. It is in the Gothic style of architecture, and stands upon an eminence. The structure is composite, the exterior walls being of stone, lined in the interior with pressed brick. The edifice consists of nave, side aisles, chancel, and two chapels. The nave is 86 ft. long by 24 ft. wide, and 50 ft. from floor to ceiling. The chancel, which is garnished with apsidal terminations, is 41 ft. 6 in. long and 23 ft. wide. The Hardy Chapel is on the north side. There are two vestries on the south side of the chancel. The clearstory is 15 ft. high. The principal entrance is by a porch at the south-west corner. The porch is built of stone, with a flight of steps to lead to the somewhat high level of the nave floor. The nave is divided into five bays, with circular stone columns and moulded capitals varying in design. The arches, as well as the remaining inside work, are of hand-pressed brick, with bands of coloured brick and stone. The west end has four-leaved lancet windows, surmounted by rose windows in the gables. Between the lancets is an elaborate niche for a statue of the patron saint. The end of the chancel contains three large lancet-windows, and on the other side is an arcade pierced with windows. The turret, which is partly completed, occupies the south-west corner of the chancel, and in the absence of this feature the building is somewhat incomplete; but that part will doubtless soon be added. There are open benches of red deal, slightly stained and varnished. The passages of the nave are paved with ordinary brick and red and black tiles; but the chancel pavement is more elaborate. The stalls are of oak, and the upper part of the pulpit and the font are of Caen stone, designed by Mr. Mawer, of Leeds. The lower portion of the chancel-wall and part of the nave are intended to receive mosaic tiles or frescoes instead of their present lining. There is a brass eagle lectern. The chancel is lighted by polished brass standards, and the nave by standards of wrought-iron. There are sittings in the church for 750 people, and the total cost will be about 7,500*l*. Of this sum 1,800*l*. have still to be raised.

SCHOOL-BUILDING NEWS.

Stafford.—The Wesleyan new Sunday School has been formally opened. The building is 54 ft. long by 40½ ft. in breadth, with a small yard and out-offices on the side nearest the gas company's reserve gasometer. It is a somewhat plain brick building, from designs by Mr. T. Roberts, of Trentham. The Committee's aim to make the erection useful and convenient rather than ornamental has been carried out. On the ground floor are two rooms, 17 ft. 6 in. by 13 ft. 6 in., for senior or adult classes; a large infant class-room, with gallery, 40 ft. 6 in. by 20 ft.; and two other class-rooms and library, each room being 12 ft. high. The large room, extending over the whole of the rooms beneath, is entered by two flights of stone steps,—one for the boys and the other for the girls. The roof is light and lofty, the principals and purlins being strengthened with tie-rods, painted blue. The room is well lighted by 19 windows, the principal portion of them having one of Stock Bros. & Leyton's patent glass louvres, and additional ventilation is provided from the roof. At night six gas pendants, each having nine jets, afford ample light for the whole room, which is the most spacious in the town. The cost of the building, including the land and internal fittings, has been fully 1,300*l*.

Leighton.—The committees of the Boys' and Infants' British Schools resolved to supply the educational deficiency of Leighton by building a new girls' school of the requisite dimensions, to comply with the requirements of the Education Department. A deputation from those committees, having, in the first place, waited upon the committees of the Pulford and St. Andrew's Schools, have now attended conferences of members representing the Wesleyan, Baptist, and Primitive Methodist bodies, for the purpose of ascertaining the general public feeling upon the question. The school will be of an undenominational character, and subscriptions have already been promised.

VARIORUM.

THE first number of the *Workman's Magazine*, edited by Mr. H. Solby, has been published. We shall have to see more of it before we can say that it is likely to supply a want. At any rate, it has good intention to recommend it.——"The Gentleman's Annual," being the Christmas Supplement to the *Gentleman's Magazine*, and containing a review of the year—its politics, literature, art, sports, and so on,—is above the average, and makes a little book that will not be destroyed.——*The Temple Church, London.* Mr. Thomas Goodman announces the publication by photo-lithography of a plan of this church, as the first of an intended series of accurate illustrations of the round churches handed down to us from the Order of Knights Templars.

New Gallery of Fine Art at Brighton.—The opening of an exhibition of pictures, lent for the occasion by Mr. W. Webster, of Brighton, is about to take place. The exhibition contains some choice works, and, says the local *Herald*, may be said to represent the present advance of the English school of art better than any collection that has ever appeared in Brighton.

Miscellanea.

Down by the Thames.—Mr. Dillon Croker, continuing his interesting sketches in the *South London Press*, writes:—At the corner of Cremorne-lane (formerly known as Hob-lane) stands the World's End, a noted house of entertainment in the reign of Charles II., and mentioned by Congreve in his comedy of "Love for Love." We read that in 1825 the sign was represented by a fractured globe in a dark background with fire and smoke bursting through the rents. The third turning on the right leading to the river is Milman-street, known until lately as Milman-row, so called after Sir William Milman, who died in 1713 (his monument is in the old church), and who had possession of the estate for some years. It has quite lately with much reason been changed from row to street, which it really is. Beaufort-street, a street facing Battersea Bridge, was some years ago similarly renamed. At the north end of Milman-street (18, King's-place), adjoining the entrance to the Moravian Chapel and burial-ground, might have been lately seen the clock placed by Mr. Howard, a clockmaker, in front of his house; whence the name of "Clock House," as generally applied to it. This house, formerly the Moravian Chapel, which stands on the site of the old stables of Beaufort House, is now occupied as a school-room; the burial-ground attached, some two acres in extent, contains many curious tombstones, including that of an Esquimaux Indian. Here, amongst others, James Gillray lies buried, the father of the celebrated caricaturist, and for forty years sexton at this cemetery. Facing the Thames between Milman-street and Battersea Bridge is Lindsey-row, the principal portion of which belonged to Hyde, Earl of Clarendon. Here, pleasantly situated in front of the river, stood Lindsey House, erected by the Earl of Lindsey in the reign of Charles II., and subsequently inhabited by some members of the Moravian Society. It is now divided into five houses, in which several celebrities have resided; amongst others may be mentioned Brunel, the originator of the Thames Tunnel; Bramah, the distinguished engineer; and John Martin, [not] R.A.; nor should Jennings's interesting museum be overlooked. In a house facing the river, in the direction of Cremorne, J. M. W. Turner, R.A., died in 1851.

A Norwegian House.—A Devonshire gentleman has imported a wooden Norwegian house. The *Times*, in an interesting description of it, says:—The walls are made of pine wood, about 6 in. thick, the interstices of the logs being filled with oakum, and the whole surface being plastered with a mixture of cowhair and lime. Outside the main wall there is a shell of wood, which is protected with paint against the action of the weather; and again inside there is another shell, which serves as a panelling to the rooms. By staining and varnishing this, a good effect is produced. The cornices are carved, by the use of the riband saw, in devices of excellent taste. Neither paper for the walls nor plaster for the ceiling is used throughout the house. The logs are placed vertically, which prevents the unevenness so often to be observed in the woodwork of English houses. To avoid the resonance, dry sand to the depth of 4 in. is placed between ceilings and floors. In addition, the floors of both stories are laid with deals, 2 in. thick, and millboard is placed under each, with the effect of thoroughly deadening all sound. The house, which presents externally the appearance of a handsome villa residence,—brighter, indeed, in colour than we commonly see in this country,—is an oblong of about 74 ft. by 56 ft. The total cost will be something under 2,000*l*. The estimates previously obtained for a stone house containing about the same amount of accommodation, had reached 4,000*l*.: extras not included.

The War Damage to Strasburg Cathedral.—The official report of M. Klotz, architect to the Cathedral of Strasburg, states that the cost of reparations rendered necessary by the Prussian bombardment will be 598,000 francs. A quarter of a million of francs is required for the stone-work; new roofs, 187,000 francs; repairs to the painted windows, 143,128 francs. During the twenty-four days' bombardment, the cathedral was struck in more than 300 places, and the *débris* amounts to more than 300 cartloads.

The Monument at Hughenden to Mr. Isaac Disraeli.—One of the most graceful compliments ever paid by a wife to her husband, says the *Birmingham Post*, was the erection of a monument to Mr. Disraeli's father, by the late Viscountess Beaconsfield. The idea was entirely her own, and the monument was to be a surprise to Mr. Disraeli. The deceased lady took an intimate friend of the family into her confidence. An architect was consulted, and after due consideration his design was approved. Tenders were privately obtained, and a suitable site upon the estate was discovered on a hill, within view of Hughenden. As soon as the statesman and his wife had left their country seat for the opening of Parliament, workmen began to prepare the foundations. If Mr. Disraeli had returned to Hughenden for the Easter recess, the secret would have been discovered. Lady Beaconsfield was equal to the occasion, and filled the house with house-painters. All through the spring and summer the work went steadily on, until, in August, an obelisk of 120 ft. or 130 ft. high had reared its lofty, varied, and graceful outline against the horizon. When the prorogation enabled husband and wife to return to their country retreat, the surprise of Mr. Disraeli may be conceived. The obelisk, surrounded by a palisading of stone pillars and iron rails, cost the deceased, lady upwards of 600*l*.

Report on the Health of Marylebone.—The November report, by Dr. Whitmore, medical officer of health, and chemical examiner of gas for the parish of St. Marylebone, has been issued in a printed form, by order of the vestry. It shows a slight increase upon the death-rate of the previous month, but still indicates a very favourable state of the health of the parish. The excessive rainfall that had taken place during the month, and the constantly-recurring storms of wind, as well as of rain, have had the effect of thoroughly cleansing and flushing the sewers, and forcing currents of fresh air into many foul, ill-ventilated courts and alleys, and thus, as it were, driving fever and infection from their favourite lurking-places; nevertheless, it is apparent that, owing to the excessive humidity of the atmosphere, and the universal dampness that has clung to everything around, an unusual amount of sickness and mortality from diseases of the lungs and breathing organs has latterly prevailed. A greatly-needed improvement in one of the poorest and most densely-populated districts of the parish has been suggested by an eminent member of the vestry, and will shortly be brought under the consideration of the Board. It is proposed to make a direct thoroughfare from Upper Lisson-street through Little James-street into Salisbury-street.

Cheap Gas.—Since the discovery of petroleum, the improvements in all sorts of machines, and the discoveries in chemistry, we have often wondered why some man had not solved the problem of applying cheap gas to country-houses, or to buildings situated at a distance from the cities. This, it seems, has now been accomplished. A patent has just been obtained in France, and in the United States for a new apparatus for making gas at home, even in the ordinary apartments of cities, and so far as we can see it is a complete success. The gas is inexplosible, its price is very low, and the whole machinery employed occupies but small space. In fact, the apparatus occupies a space of only one mètre in length and 50 centimètres in breadth and height, and can be placed in an ordinary cupboard. The advantages are—1st. The absence of all danger of explosion, no fire being employed in the fabrication; 2nd. Economy; 3rd. The instantaneous production of a brilliant light. The new system is said to offer a great economy upon all other modes of lighting, but this remains to be investigated. Nevertheless, if the cost be a trifle more, the gain in convenience will amply compensate for it.—*The American Register.*

A Terrible Railway Accident in America. A terrible railway accident has occurred in America, as intimated by the Atlantic cable. The train broke through a bridge near the town of Corry, in Pennsylvania, having, we presume, been thrown off the line by some accident; and the bridge doubtless was of frail construction, cheaply and quickly put together. The cars were flung into the stream 30 ft. below, and in the fall took fire. Some nineteen or twenty persons were burned to death, besides about forty who were more or less severely injured.

Scientific and Mechanical Society, Manchester.—The opening meeting of this society has been held at the Trevelyan Hotel, Corporation-street. Sir W. Fairbairn, bart., the president, delivered an address. In course of his remarks he said, he did not think it could be doubted that from the want of sound and first-class education amongst the better class of mechanics and artisans we were getting behind. We ought to take the lead, as we had done for a great number of years. He believed that if a better system of education was established, so that practical mathematics and a knowledge of chemistry were taught, there would be raised for the public service a much superior class of men than we possess at the present time. Mr. H. W. Harman proposed, "That the officers and council of this society be requested to institute inquiries into physical science, so far as it relates to practical mechanism;" and Professor Reynolds proposed, "That similar investigations and analyses be introduced in chemical science, but more particularly in those departments which relate to gases, supply of water, and electric telegraphy." The resolutions were seconded by Mr. J. C. Edwards and Mr. C. J. Allport, and were passed.

Typhoid Fever at Birmingham.—The alarming prevalence of typhoid fever in the district of Balsall Heath and Moseley, suburbs of Birmingham, has led to the holding of a public meeting of the inhabitants of Moseley. It was stated, on eminent medical authority, that there were nearly fifty cases of fever in the four hundred houses which are comprised in the district of Moseley, and that there were at least thirty cases in Balsall Heath, the district adjoining. Fresh cases were occurring every day. The sanitary precautions were characterised by a leading local surgeon to be as defective as they could be. There was no drainage worthy of the name, and the cesspools and water-closets caused incalculable mischief. A member of the local sanitary authority was present, and defended the course of action taken by that body. A resolution was adopted by a large majority, appointing a committee of residents to deal with the matter, and directing that a memorial be forwarded to the Secretary of State, praying for a special commission to inquire into the bad drainage of Moseley. A guarantee fund was subscribed, and a movement fairly set on foot to deal with the evil.

Reredos, Littleborough Church, near Manchester.—A reredos has lately been erected in this church by two friends, Mr. Edward Alfred Clegg, and Mr. William Law, of Littleborough, as a memorial to the late Vicar, the Rev. Thomas Carter, M.A. The central feature comprises five panels, the middle one wider and more lofty than those at the sides, as well as being cusped. The brass altar-cross to the present church being of good design has been retained, and stands on the super-altar; the panel behind it has been made of white alabaster, banded with green Connemara marble, the spandrels being of mottled alabaster. The emblems of the four Evangelists, enclosed in quatrefoil panels, are carved in white alabaster. The shafts carrying the arcade are of Devonshire red marble, and there are likewise ten inlaid pateras of the same material in different tints. The material mainly employed is Caen stone. The total cost has been about 150*l*. The work has been executed by Mr. J. L. Jaquet, of Westminster; Mr. Edmund B. Ferrey being the architect.

A Pestilential Spot.—When a fifth part of the entire population of a place are stricken down with typhoid fever, there must be something abominably filthy about the water-supply and drainage of the locality. On the 4th of November last, 250 out of the 1,200 inhabitants of Burton-Latimer, in Northamptonshire, had been attacked by the pest. The Local Government Board directed Dr. Thorne to investigate the circumstances connected with the outbreak. He found a really disgusting state of things abounding in the village. A large number of wells—for the water-supply of the place comes from shallow wells,—which were absolutely unfit for use. The sewerage and drainage of the place are extremely defective; filth and foulness collect in the defective channels which are, by a stretch of the imagination, called drains. There are in Burton-Latimer a host of piggeries, and much overcrowding to make matters worse. It is to be hoped that proper attention will be given to the recommendations made to the sanitary authority.

The Builder.

VOL. XXXI.—No. 1562.



Belfries and Bells.

IF we were asked to name the most characteristic external feature of a Christian Church, we should feel disposed to accord that title to the belfry. The cruciform plan, indeed, may be regarded as generally, though not exclusively, Christian. But it is very far from being a universal feature. Indeed, in the most ancient historic form of the church, the Basilica, this arrangement of plan is absent. When a modern Christian architect, whose genius is as lofty and as subtle as that of our own immortal Wren, strove to consecrate the antique Pagan forms to the service of the modern Christian rite, he could, indeed, produce a magic effect by the intersection of his vaulted aisles. Yet the idea of a cruciform structure, not accidentally, but purposely, planned in that form, does not force itself on the mind of the visitor to St. Paul's Cathedral. In St. Peter's, and, indeed, wherever the form of the equilateral, or Greek, cross is adopted, the association becomes still more shadowy. In fact, wherever the great Oriental element of the dome is developed at the intersection, the cruciform plan fails to lay hold of the attention. You may see that there are lateral recesses, or star-pointed distances, to the great, lofty central hall; but that is a very different matter from the regular association of nave, choir, and transepts.

Again, the orientation of our churches, which is spoken of as a Christian custom, has by no means exclusively, or even distinctively, that character. Orientation is twofold, both in its azimuth and in its signification. There is the alignment directed on the East, the true cardinal point, and there is that which cuts the sunrise-point on a given day; often that on which the Romish calendar commemorates the saint, after whom, in superstitious times, the church was subordinately named—under his invocation, to use the technical phrase. Not unfrequently these two lines are represented in the same church, in nave and chancel, to the great confusion of architectural elegance. But orientation is common to the temples of the East, and to many of those of Greece. Exact alignment in azimuth is an astronomical characteristic of the Great Pyramid, in the sides of which a minute deviation from the true meridian of 1′ 35″ seems to measure the displacement of the poles of the earth that has occurred during the long period of 5,400 years on which that colossal tomb has looked down. Orientation, again, as defining a kebleh, or prayer-point, and thus pointing to Jerusalem or Mecca, is common to the synagogue and to the mosque. Little praying compasses are to be met with in the bazaars of the East, which indicate not the north, but the east, and tell the devout pilgrim in which direction to turn his face at the appointed hours of morning and evening prayer. And we find the sunrise-line of the summer solstice structurally indicated in our own magnificent Stonehenge.

But the belfry is a structure which is, on the one hand, almost exclusively connected with buildings of the Christian rite, and of which (since our meeting-houses have become things of the past, and nonconformist sects have ceased to hide their modest chapels in holes and corners, the obscurity of which was only too welcome in the days of by-gone persecution), there is scarcely a place of worship so poor that it does not show at least the homologue or the symbol. The nearest approach to the belfry may be found in the minaret. But the sound principle of "purpose defining form" comes in here to prevent confusion. The belfry, whether it be tower, turret, or steeple, is an architectural feature originally conceived for the suspension and the housing of bells; a lofty aërial structure, giving shelter from storm, and from direct sun rays, and pierced with free apertures, from which the melodious voices of the chimes ring out loud and clear, and the full deep tone of the *bourdon* may measure forth the hours, by night as well as by day. The minaret, on the other hand, is essentially a lofty turret, crowned with a projecting or open balcony, whence the shrill voice of the muezzin may be heard calling on the faithful to pray; a relic, in the stern refusal of mechanical means to perform, or to call to the performance of, a religious duty, of some of the loftiest doctrines of an ancient creed. The difference between accommodation needed for the bell, and that proper for the crier, is so great, that no confusion can arise between the forms proper for either of the two.

In the Temple at Jerusalem, before the time of Ahaz, existed a feature which appears to have borne a relation to those outposts of the watchers against time of which we are speaking. It was called the Covert of the Sabbath; and is held to have been the station whence the appointed Levites might watch the setting of the sun on the eve of the Sabbath, and send forth those three peculiar trumpet-notes, the blast, the long note, and the blast, by the sixfold repetition of which the commencement of the sacred day was announced to the city. A natural tower or lofty wall, scarped in the solid native rock, at the north of the great Temple platform, above which it still rises sheer for more than 30 ft., was probably left in this unusual form for the base of the Covert of the Sabbath.

The dome is not a belfry; nor is it readily to be combined with one. The purposes of the two architectural features are too distinct to admit of satisfactory fusion. The dome, formed in antique structures by overlapping stones meeting finally in the centre, has gradually risen in modern use from the flat, and then slightly vaulted, roofing common in those countries where snow never falls, where shade from the sun is a more needful luxury than exposure to his rays, and where all the water that comes from heaven is stored as a precious gift. Supported, in ordinary cases, on joists, or rather on rough logs of timber, in more substantial buildings the roofs are actually formed of flat arches; built of tufa, in districts where this light volcanic stone is available. As a structural expedient, natural to this condition, the centre of the arca is first slightly cambered; anon it rises as a sort of shell; then expands into a bubble. The architectural effect thus producible was seized upon by some far-sighted genius, who raised the exquisite form of the dome on a pillared drum, and thus added a special beauty, at once to the external elevation, and to the solemn repose of the interior, of the building thus adorned.

There is, indeed, another theory of the genesis of the dome; that is, from the roofing of a tower. The ordinary gable roof, when applied to cover a circular building, becomes a cone. From the cone to the cupola the transition is not very far-fetched. But, familiar as we are with cupola forms of towers in the countries bordering on the Mediterranean, we still hold that it is from the flat roof that the dome has actually originated; that it attained its beauty under Saracenic rule; and that the cupola forms of Italy are reflected from an Arabic tower; and are not the direct descendants of the cone-roofed turret, which in some districts, as in the romantic valley through which one road from Castellamare to Salerno leads, may be found side by side with them.

Another form of sheltered turret may be named, but it is one which has had no discernible influence on occidental architecture. We refer to the pagoda. The hollowed, pointed forms of the roofs and verandahs of this Oriental type of towers evidently simulate the droop of the textile fabric, umbrella or tent, which preceded the roof of solid materials. This tent-like form is an outline equally distinct from the level roof, from the gable, and from the cupola, or its development, the dome. But though the pagoda does not appear to have been the lineal ancestor of the belfry, it was at least its chronological predecessor. The angles of these buildings are often adorned with bells. Bells were used by the Chinese as much as 4,000 years ago; and the mention of them as dividing time for public information, is 600 years anterior to that of the golden ornaments to the vestments of the high priest, in the Pentateuch. These precious bells were probably like those used for horse-collars in Italy, and for children's corals in England: hollow globes with a slit, and a loose clapper enclosed. The sound of these, if made of gold, must have been extraordinarily sweet. The gong, whether older or later than the bell, is an instrument of much musical power. We must not omit to mention the fine tones producible from steel bars.

Leaving aside the cupola form as a foriegn product, hardly naturalised among us (the glorious instance of St. Paul's serving as an exception to prove the rule), the Christian character of England may, as a general division, be ranked under the head of those furnished with towers, and those adorned with spires. Of course, there is a wide border-land, where tower and spire march, or where wedlock of all kinds,—happy equable union, or disproportionate and ridiculous bondage,—is illustrated in structural form. Watford Church, Herts, and some others in the same county, may serve as examples of the latter. On a large tower, which a certain massive solidity might render respectable by itself, is perched a sort of diminutive extinguisher, the design of which is one of those mysteries which it is equally hard and useless to solve.

The origin of the tower, there can be little doubt, is military. We are not prepared to state that the distribution of the tower churches in England marks districts formerly exposed to the ravages of the Danes, or specially liable, from other causes, to constant danger. The topographical likeness of our old churches is so marked,—certain features are so local, so characteristic of a particular district,—that the detection of their origin cannot be beyond the reach of intelligent investigation. But a solid, substantial fortalice, in which, first, the clergy, and then the immediate parishioners, might find refuge, and from the summit of which they might both watch against attacks and give signals of distress, is, both in England and the Low Countries, the historic reality of many a church tower.

The spire is scarcely debateable as to its origin. Its growth from the high stone roofs of towers of the tenth and eleventh centuries, as seen for example in Normandy, to its culmination in Vienna and Freiburg, is plainly shown. The idea of its being a finger-post, pointing heavenward, is perhaps something more than mere fancy.

It must be confessed that in the act of hanging and of ringing bells, we have hitherto gained but little from the advance of mechanical knowledge. It seems to be taken for granted that to produce a pure full tone from a bell, whatever be its weight, it must be swung. That is to say that the cup-formed mass of metal, hung at a lofty height from the ground, must be rocked until it swings through a semicircle, with its mouth quite vertical, while the impetus with which the freely-moving clapper, suspended from the bottom of the cup itself, strikes the inside of the bell, produces the desired tone. And if we compare the tone of a bell thus rung, with that of another, or even of itself when fixed in place, and struck with a hammer on the outside of its rim, the dull, heavy, odious sound thus produced seems to testify in favour of the assertion.

But that while first the application of springs, then the use of rails, and thirdly the invention of steam-power, have raised our rate of travelling from 2½ miles to 25 miles an hour, it is rather too bad that the mechanics of so cheering a description of public music as that which we may derive from the belfry should have been almost entirely neglected. The hanging of bells so as to ring them, in the old upending style, has proved so destructive to our belfries as very seriously to discourage this once favourite source of melody. In St. Alban's, for instance, before the late repairs of the abbey, the fine peal of bells had not been rung for years,—if we remember rightly, not for centuries,—for fear of bringing down the tower. And this, it is very likely that they would have done. But the danger consisted, not in the pure, full tones that might have been educed from the bells, but in the clumsy, reciprocating action of the ringing, by which the whole weight of each bell was made to act as a hammer on the beams on which it was suspended, and thus on the masonry of the tower. Whenever great speed or great weight is concerned, reciprocating action has a very destructive effect. One main reason why we have as yet realised so little of the mechanical force that calculation tells us is due to the combustion of a given quantity of coal in our steam-engines is, that we have not yet succeeded in obviating the reciprocating action of the piston. Mechanics have long instinctively perceived this fact,—although the construction of a rotary steam-engine has hitherto been as unattainable as the philosopher's stone.

There can be no doubt that the mechanical skill of the present day is such as to enable us not only to give such a blow to a bell by an unconnected clapper as shall produce the same sound as that obtained by the process of ringing, but to do something more. It would be possible to institute such a series of experiments as to the relative weight of bell and clapper, and the velocity at which the latter should strike, as should enable us not only to rival, but very far to excel, the effects that can now be produced by the most skilful ringers. When we remember that a bell, according to the part of it which is struck, will emit a third, a fifth, and an octave to its consonant, or true note, it seems not impossible that by the use of more than one hammer to each bell an effect something resembling the double-stopping of a violin may be produced, adding wonderful richness to the aërial harmony. Improvement in bell machinery is not altogether a thing of the future, for Messrs. Gillet & Bland, of Croydon, have applied to a set of Belgian bells at Boston, Lincolnshire, and elsewhere, a carillon machinery that is spoken of as highly satisfactory.

Old-fashioned carillons, rung by the rude and simple machinery of a barrel, pins on which pull wires that move the hammers that strike the bells, exist in the two churches which we have named, those of St. Alban and of Watford. There is a certain music in the sound. But those who are familiar with this part of the country are well aware of a peculiar stiffness in these chimes, which leads to the expectation that each note struck is the last that will be audible. How far this depends on actual tone, as produced by a fixed hammer, and how far on the defective character of the machinery employed, we cannot now decide. At all events, we freely admit the usual inferiority of mechanical chimes to those which are rung by the best ringers. But we should compare the results of very old and imperfect machinery, not with the best, but with the rudest, manual work. No reason exists for doubting that mechanism may attain a perfection of performance in the way of extracting music from bells far in excess of our present experience.

With the return to a mechanical mode of producing musical notes of the flight of time, the true character of the spire, as affording the best form of belfry, will become more evident. The architectural question as to perforating this graceful finish of our churches will then be a question no longer. When the destructive effect of our present barbarous mode of producing sound from our bells is done away with, they may advantageously hang tier upon tier, utilising for their abode a space which is now preserved solely for its picturesque effect. Nay, more, the music of the chimes would have imparted to it a new and peculiar beauty from the arrangement of the bells at levels proportioned to their sizes. We all know the effect of the *vox angelica* or *vox celestis* stop of such an organ as that at the Albert Hall or the Alexandra Palace; and are aware that part of the surprising beauty of their tones depends on the lofty elevation from which the pipes utter their voices. Thus, when the shrillest treble of the bells comes down upon us with a sharper and more earthward inflexion than the vibrations of the deeper-toned members of the choir, an effect may be produced from an element now altogether neglected. If any lingering in time should be perceptible from the increased distance to be travelled by the sound, this can be allowed for, in setting the carillon. Thus, our steeples will be at once more graceful, as pierced [illegible], and choral, as well as symbolic, features of the Christian Church.*

A musician who touches on no topic that he does not adorn; whose industrious honesty in searching out all the truth of any subject that he takes in hand, and then in stating his results, whatever they may be, is perhaps unique,—the Rev. H. R Haweis, in his charming work called "Music and Morals,"—has given us a chapter on "Bells and Belfries," which we should be glad if we had the space to reproduce. He tells of the famous old belfry at Tournay, which dates from the twelfth century, and is built on a Roman base. It now contains forty bells. Four brothers relieve one another in constant watch on its summit; and when a fire breaks forth within the watcher's range of vision, the great bell is at once tolled in alarm. On stormy nights this aërial and illuminated watch-tower looks like an ocean light-house. On the highest accessible part of the spire of Notre Dame at Antwerp, which rises 403 ft. from the base of the tower, as well as on that of the Cathedral of Strasburg, 468 ft. above the level of the sea, (though less in structural height than its sister of Antwerp), he has stood to listen to the bells. *Non sunt loquelæ, neque sermones; audiuntur voces eorum*, is the beautifully appropriate motto on a bell in the tower at Antwerp, cast in 1658. From the marble *Duomo* of Milan, "o'er all the Italian plain;" from St. Peter's over that *campagna* which some of us may yet see blossom with the rose; from the towers of Ghent, Brussels, and Louvain, over the canal-cut low countries; these sacred songs without words are heard in daily and nightly music. Why, Mr. Haweis may well ask, is there no proper peal at Salisbury? A day or two since, in one of those quaintly-built and quaintly-named courts that lie between St. Paul's and the Thames, the full joyous peal of the bells, from some hidden City church, burst on the ear with unexpected melody. The peal still rang on, when we had reached the cathedral yard, but was then altogether drowned by the roar of the traffic.

We must add one word as to the bird that generally presides over the belfry. Perched on the loftiest spire, or furnished with a roost on a corner, or even on each of the four corner turrets, of a church tower, is usually to be seen the image of the cock. Displaced by the invention of the clock from his time-honoured station of the measurer of the night watches, to the bird of morning has been committed, as if in compensation, the duty of indicating the direction of the wind. It is often said that the weather-cock is the attribute of St. Peter. It would hardly, however, be selected to do honour to that apostle. Neither is it limited to, nor always present in, churches called after his name. It is rather, we think, a relic of the extreme veneration in which Chanticleer was held in antiquity—as witnessed alike by Grecian fables, and by the Agada of the Talmud—for his divinely-implanted knowledge of time, and his energetic and faithful pertinacity in communicating that knowledge to the world. An appropriate reflection for our readers at a period when—

> "The bird of morning singeth all night long,
> So holy and so blessed is the hour."

* At the Church of Our Lady in Chalons-sur-Marne, a belfry hangs in the upper part of the two door-spires, with openings all round it.

THE ROYAL ACADEMY AND ITS OLD MASTERS.

In undertaking to supply the loss occasioned by the withdrawal of the best-esteemed favour of the British Institution (when it resolved to sleep the sleep of the just—or *unjust*, so far as the loud cry of modern masters would lead to belief), the Royal Academy organised,—for the magnificence of its scale made it quite a new thing,—such an exhibition of the basis of their own position as "the works of the old masters, associated with works of deceased masters of the British school," could by great means afford, it was a task. There were no such collections ever seen in London before, as the three years' run of them at Burlington House has made for a course. The Royal Academy has run a winning race, and with the usual result,—most thanks from those who have gained most by it.

The catalogue, as before, very advisedly gives the notice of pictures being placed under their furnished designation. If England were as rich in old picture-treasure as the additional help of Rome, Florence, Bologna, Munich, and the Hague together, could make it, the product of the mine would not be a growing one. If kind words were nearly as scarce, even, as the real calls for the use of them appears to be, the Royal Academy would be very much entitled to gratitude from all who can value rightly a great service, for the magnificent displays by which it has done so much towards imparting to the multitude knowledge that hitherto was the privilege of the few to attain, of what is best worth teaching and worth most learning from old masters. Pen and pencil will record the time-beats of civilisation's pulse to show its health or weakness up to the last hour of its existence, and the grandest, strongest buildings, as if they were its bones, will crumble then. Life, indeed, is as nearly dependent on Art as on Nature, and the fine arts have a much wider and higher mission than that of administering to epicurean gratification, or of confining their beneficent influences to the refining of already refined minds.

The fourth of these annual Exhibitions of works by the old masters—some native, to rank with the best of them,—should be seen by every one. They may be likened to the old feasts of legend, whereat the skull presided; for there may not be many more to follow for those who enjoy them now. The tinge of sorrow the proverb makes the necessary associate of all pleasure, will not fail those who must think this source of delightful instruction not inexhaustible. Millions of eyes have opened and closed on this turning world since old masters such as Ghirlandajo, who taught Michelangelo Buonarotti, Luca Signorelli,—who did even more than that for the Tuscan demigod, for he help'd to direct him in his full strength and knowledge;—or Sandro Botticelli, who did for himself such wonders as frightened the monks, by the effects produced on the unjust critics of the view he gave of heaven,—were young. Generation on generation has lived, laboured, and gone to rest; hosts of bright, honest-eyed children; right and wrong headed, but strong-headed men, and white-haired councillors have waited and worked and watched, all actuated by the one belief that progress was as inevitable as age. And so it is: a needle is made from the same metal as a 35-ton gun, and being the more useful instrument of the two, is the more valuable. So long as metal remains, it will be cast or wrought, or over-wrought; and progress will progress much as progress ever did. For the world turns round, and in its course passes the same stages over and over again. If every particle of dried brain were a germinative seed, to what a pitch of progress should we have arrived now; if such progress were ever really to be, as growth upon growth might make to be possible, and which the very thought of is enough to make evidently impossible, there would be finer pictures to be seen than ever were seen. In what the Royal Academy by judgment and rare opportunity is enabled to verify for genuine production, they leave a little room for speculation; or, to be more correct, a smaller gallery—No. IV. Science helps spiritualism here, if it will have nothing to do with it elsewhere, and the touch of dead hands that lifts facts, embodies ghosts, and brings visions of floating ideas to comprehen-

sible form of them, is perceptible here, and with light, too,—for the sceptic: the sceptic who would question such a medium as old art in its intensity of purpose, and devotedness to what that purpose was. Signorelli died 350 years ago, and yet he will speak here, and account in some degree for the religious fervour a painter's preaching may awaken (162); even more years are to be counted since Domenico, Corradi, or Ghirlandajo was ministering in the same way (163).

Sandro Botticelli is an instance of the absorbing claim genius asserts. Brought up with care, taught, and learning easily, yet, was he so discontented, so eccentric in his habits, that his father, a worthy Florentine citizen, "turned him over in despair to a gossip of his, called Botticello, who was a goldsmith." So says Vasari; proceeding to tell of the constant intercourse that a close connexion between the goldsmiths and painters of the period engendered, and how Sandro found his calling; becoming enamoured of painting, and resolved to devote himself entirely to that vocation; of how diligent he was; how successful in obtaining credit and reputation, to the consequence of being appointed to execute various commissions, some of them particularised and described, until we come to the very picture (191) of which the Duke of Hamilton is the fortunate possessor. It was painted for the church of San Pietro Maggiore, Florence, on the commission of Matteo Palmieri, who, if he gave the whole scheme of the work, could not have given that appreciation of what is lovely and graceful; nor the scientific skill that marks the performance to be more actuated by innate direction, than any bias of command or payment could readily have ordered. The admirable perspective arrangement of the numerous figures; their varied attitudes, involving foreshortening and a freedom of movement truly astonishing in archaic representation, are among the charms of the work. In "The Assumption of Our Lady" (191), the zones of heaven are shown inhabited by Patriarchs, Prophets, Apostles, Evangelists, Martyrs, Confessors, Doctors, Virgins, and Hierarchies; according to the design furnished by Matteo, "who was a very learned and able man." He and his wife are depicted kneeling each side a tomb, in which lilies are blooming. "But although this picture is exceedingly beautiful, and ought to have put envy to shame, yet there were found certain malevolent and censorious persons who, not being able to affix any other blame to the work, declared that Matteo and Sandro had erred gravely in that matter, and had fallen into grievous heresy;" and so the altar it adorned was interdicted, and the picture covered from view. It has passed into better keeping now, and is a very valuable possession.

Raffaelle, "The Urbane" (176); and Francia (167), who is supposed to have fretted the remnant of his life away in his recognition of Raffaelle's supremacy; and Jan Van Eyck (171), who did and died before these began to do; and Masaccio, with others, who coloured the past; Jan de Mabuse (172); Albert Durer (173); and Lucas Van Leyden (179) and Lucas Cranach (170), who brings the Reformation into mind, and many troubles that have followed it, with all its benefits; Quintin Matsys, the clever blacksmith, whose strong passion led to another kind of execution than newspapers too often record, all rap in answer to the spell of their names. But we will leave the spirits for a plainer guidance, and the science that shall anatomise them, to John Hunter, F.R.S. (158), who is too splendidly restored to healthy appearance not to make it an easy matter for him to substantiate the possible revivication of ghosts. Tintoretto, the Carracci, Murillo, with many other names to make the catalogue full of promise for the walls to bear out; Rubens, who looked better in any one of the three preceding exhibitions than he does now; the "Daniel in the Lions' Den" (131) tending to the corroboration of admiration for Sir Edwin Landseer, as much as it can do for its author; and "Diana returning from the Chase" (207) is no better a specimen, when compared with many a well-known specimen of his florid magnificence. Titian's masterpiece in portraiture, the grandly composed and painted "Cornaro Family" (146), has long ago been adjudged all the praise so noble a work would secure. Holbein's "Two Ambassadors" (114), supposed to be Sir Thomas Wyatt and his secretary, sent by Henry VIII. to Paris on some particular business, that made its successful result worth notifying, is a marvel worth a pilgrimage to behold. The possible combination of breadth and force with the achievement of the minutest finish, so thoroughly perfect in every detail, is manifested in every inch of it: it puts to shame any notion that too close an attention has been bestowed on minor matters, for in spite of the utmost elaboration of dead things, so generally complete that the interest of everything has to be weighed with the interest of everything else, the two men by their absolute vitality take just that prominent position flesh and blood would in reality assume, and all the importance that naturally belongs to them.* Rembrandt, Velasquez, Vandyck, and Sir Joshua Reynolds, Romney and Gainsborough, bear out to the full meaning of it this real prominence of humanity, all the more recognisable and real-looking in the simpler, quieter show of it. There is more life in Gainsborough's exquisite portrait of a young lady assuming the humble position for the natural gracefulness that a rustic, a cottager, would be sure to become possessed with under the painter's best treatment (53) than any such dancing joy "Madame Baccelli," by jumps to display her appreciation of it, could give a positive notion of. Who can care for such flagrant frippery (56), admirably given though it be in varnish with strong perfume in it, to cover that which all the paint in the world could never make pretty, nor the finest painting save from coarseness and obtrusive vulgarity,—qualities that have been emphasized very strongly, one must think, since Gainsborough's time? If Sir Joshua Reynolds was not quite inimitable, there are some of his works of incomparable excellence, even when side by side with others of his own. Apart from the taste that fashion fashioned, his superiority will remain extant to the last, or so long as the perishable threads and grounds of his pencil's discourse can be made to hold out the argument. Reynolds, "grand and graceful," is not much more forcibly represented in the present collection than Gainsborough is fairly; he is more really to be identified with the series of portraits of the "Keppel" family, or the charming "Mrs. Stanley" (112), than by some specimens of extra-faulty drawing and meretricious graces. In his strength and in his weakness he was distinct enough to divide himself from his follower,—Romney, whose portraits of "Anne, wife of George, third Earl of Albemarle, and her son William Charles" (108); of "Mrs. Drummond Smith" (15), with a quaint idea of a becoming head-dress that rivals some not of the ugliest to be seen nowadays; or of "Henrietta Countess of Warwick and her Children" (26); and "Mrs. Carmichael-Smyth" (49),—lovely enough to have left the *y* to the assertive *I*, and to make ordinary name extraordinary distinction,—would yet tend to account for that division of opinion that created a "Romney faction" in opposition to those who upheld the supremacy of Reynolds, if allowance be made for the pleasurable excitement derivable from contradiction; "party feeling" being one of the strongest to act on sense, especially when there is not too much of it for other feelings' play! There must always be factions, however. Leisure for such intellectual improvement as examination of these collected pictures must surely afford, is a delightful grant; and though for the better help to instruction it might be wished they had been arranged with more regard to period, school, and class, those who love variety will satisfy their affection plenteously with those whose satisfaction exists in finding food for their dissatisfaction. The difficulties attendant on the formation of such exhibitions as a four winters' course at Burlington House has made memorable, would have been insuperable to most other influences less powerful than the gained respect and confidence the Royal Academy enjoys.

* We gave particulars of this and the Erasmus pictures (also here) some few years ago in describing the curious structure Longford Castle, near Salisbury, where they usually hang.

ON ARBITRATIONS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting, on the 6th inst., the paper read was "On Arbitrations," by Mr. Banister Fletcher, associate. We print some portions of it:—

The first thing an arbitrator should do is to consider what is called the *submission*, as it is the foundation of all his proceedings. It would appear that it is not necessary that this submission to arbitration should be in writing, or even verbal; it would appear to be absolutely necessary, however, that the parties intend "to be concluded by the decision of the persons called in, in order to clothe him with the authority of an arbitrator."

Where it is possible, it is certainly desirable, to have the submission in writing, and in one document, signed by both parties; as, if it can be shown the parties intended to refer different matters, the award will be invalid. I have in my mind a case where one party appointed arbitrator to determine a dispute respecting the construction of a lease and the damages sustained, the other, in wording his appointment, alluded only to the construction of the lease, and omitted any allusion to the damages; in consequence, the entire award was void.

That there is much technicality to be observed. For instance, where there is an arbitrator appointed on each side, no such appointment is complete until it has been notified to the other side. I would call attention to the importance of this, because if (as is very usual) the appointment is to be made by a certain day, it will be *too late*, and therefore the appointment void, though the arbitrator be nominated on the day, if the information of the nomination be not given until the day after. Again, the law holds where an umpire is to be appointed before proceeding; that, until the umpire is appointed arbitrators cannot act. Further, it is wise, directly you are appointed, and know who is appointed on the other side, to arrange an early meeting, and to give notice to each party of the day, time, and place. Again, it is well to recollect, that if a party to a reference is bankrupt, the reference is at an end, in most cases, if the other side choose to revoke. Again, a lady marrying during the reference revokes the submission.* Again, death, in most cases, revokes the appointment. Either party may revoke the authority of the arbitrator, but only with the consent of the court. An arbitrator formerly used his own discretion as to allowing evidence to be given before him. Now he has none. He is bound to receive evidence if either party wishes it.

Let me next state what is understood by *a reference on the usual terms*, as they are the terms we nearly always have to abide by. They are,—That the arbitrator shall decide for the plaintiff or defendant. If plaintiff, then assess the amount of the damages (which, however, cannot exceed the amount claimed). The cost of the cause follows his decision. He may award the costs of the reference in any way he pleases. He has unlimited time for making his award.† The death of either party does not abate his authority. He has power to amend the record. All evidence must be taken on oath. The parties must produce all documents relating to the matters in question. The parties are bound to obey his award; not to bring any action or other legal proceedings respecting the matters referred, either against the arbitrator or each other. They consent, further, that if either of them wilfully prevents the arbitrator making the award, he will pay such costs to the other as the court shall think fit. That if either party dispute the validity of the award, the court may refer the matters or any of them back to the arbitrator to reconsider. Lastly, they consent that the order itself may be made a rule of court.‡

Surely with such ample powers the arbitrator would seem to be hedged in on every side so that no opportunity could occur which could stultify his labour. Yet such is not the case. Instances are not uncommon of awards being set aside. It is this accusation of the legal profession, that scarcely any awards, save those made by their own profession, ever stood. I would call attention to one pitfall. It would appear that it is necessary (unless there is a special clause inserted in the submission, that it shall be sufficient for the arbitrator to find in the cause generally for the defendant or plaintiff, unless either party shall request him to decide some particular issues) for the arbitrator to decide on *each* issue in the cause, to render his award binding. The other matters that may set aside our awards are,—If it can be proved it has been obtained by fraud. If it can be shown

* But she and her husband are liable to an action unless they continue the reference.—B. F.

† In practice, however, it is usual to fix a time, giving the power to the arbitrator to enlarge the time if he considers it necessary.

‡ By which the parties are bound by all the provisions of the Common Law Procedure Act, 1854. This Act gives either party power to compel the other to name arbitrator &c

it has been drawn up by mistake. Where a third party who, although he had agreed to join in a submission to arbitration, refused to proceed with the reference. Proof of undue pressure.

Curious it seems that, powerful as the courts are to upset or set aside awards, they have scarcely any power, in fact they are powerless, to amend an agreement of reference, even though it is only desired that it should be made to accord with the original intentions of the parties. I am not alluding here to clerical errors, or to an immaterial variance in an order of reference, as such matters, and such alone, they can vary. I trust I shall not weary you if I quote a case to show how cautiously all must walk who would come near the law. Fancy the extent to which the legal judicial mind can go. The case I quote is, "Rawtree *v.* King," 5 Moore, 167. There, by a mistake of the court's own officer (the associate), who drew up the order, referring all matters in difference between the parties, and not all matters in difference in the cause, they, the court, said they could not alter the order, but that the order of reference must be treated as a mere nullity. I mention this, as I have said, to show the caution necessary in our proceedings, so that we may secure what we fervently desire, justice to those whom we find deserve it at our hands.

Certain interests disqualify an arbitrator, but it is held that they must comprise something unknown to one of the parties; for instance, an architect, though employed by his client to superintend a builder in building a house for him, may be an arbitrator between his client and the builder, even although his remuneration be a commission on the amount of the building charges. One other matter I think desirable to mention, as those who act for the first time have not their feelings under control, and are so likely to be led into expressions of feeling which, though natural, are most injudicious; for this reason, that the courts require the arbitrator to be absolutely impartial, and hold that if the arbitrator uses any expression towards either party which indicates a strong bias or prejudice in his mind, or show that he is actuated by any hostile feeling (and how soon might such feeling be genuinely expressed simply with contempt when the case was seen through, and how cleverly the keen solicitor on the wrong side would irritate to produce the strongest expressions that he might use them for the purpose of upsetting the award), the award may be set aside; and it must be remembered that this setting aside of the award may be accomplished even where there was nothing to impeach the conduct of another arbitrator, who has joined in the award.

Of course we must not have an arrangement with any of the parties to the reference, such as the purchase of their unascertained claims; and it seems it is wise either to deliver a detailed bill of charges before receiving payment, as if this be not done it may render our award open to be set aside, or not to receive any payment until award is made and published. Just a few hints before I close as to the conduct of the inquiry.

The arbitrator having sworn the witness, will be, if fresh to the matter, bothered as to what is evidence, what can be admitted, and what cannot, what questions are proper, and what are inadmissible. I will give a few leading ideas to guide. The claimant or plaintiff opens his case, and it is his duty to prove it as strictly and in the same manner before us as arbitrators as he would have to do were he conducting his case in a court of law, unless "*by arrangement*," when many matters are taken as proved, or with very slight proof and irregular evidence admitted. Still, where the parties are what is called *hostile*, and *will admit nothing*, the law courts must be our guide, and the popular idea that strict evidence is not required must be disregarded. It must be borne in mind that the improper rejection of evidence tendered by either party will set aside an award. Further, that with what the law calls a lay arbitrator improper admission of evidence will have the same effect.*

One of the most important rules is that the best evidence must be given, and until that is exhausted you cannot give what is termed secondary evidence.

This rule excludes hearsay evidence, that is the witness stating what he has heard that A did or said, and nothing as said by a third party in evidence against those who are party to the arbitration, unless it was said in their presence or done with their knowledge. Again, a copy of a letter or other document cannot be read until it has been proved that the original has been lost or destroyed; but if proper steps are taken to procure the production of the original, a copy may sometimes be used. Further, a reply to a letter is not evidence until the letter in reply to which it was written has been proved. Handwriting may be proved by comparison; that is, comparing the handwriting of one document admitted to be written by A, with that of another not so admitted. Plans should be proved by the person making them, and should be made, I may remark, from actual surveys. Deeds thirty years old need no proof of their execution, if they apparently come from a proper custodian of them; and those of less antiquity may now be proved by calling any witness who is acquainted with the signatures. This formerly was not so: further, it must be remembered this does not apply to wills or warrants of attorneys. A deed is not evidence unless it is properly stamped, so that it is necessary for us to have some slight knowledge of the Stamp Laws. Entries in books kept by a person cannot be used by him to prove his case; but his adversary may use them against him; the reason for this being obvious. There is nothing to prevent a man making any entry he might think convenient to assist him, as for instance, payment of money not actually made, but it is not probable he would make entries which he thought would operate against him. Again, the entries being made without the knowledge of the other party; there are similar reasons for not allowing them to be used, as there are for rejecting "hearsay" evidence.

Another difficulty most frequently arising is to decide upon the form of the question to be put to a witness, it being a rule that the party calling a witness must not ask him what is termed a "leading" question (that is a question which indicates the answer that is required), nor (unless the witness is "hostile") can the party calling him examine him, except as to such matters as are direct evidence upon the issues raised, nor ask him questions tending to contradict the evidence he has given. On the other hand, the adverse party can cross-examine a witness for almost any length of time (as we have seen in the famous Tichborne case), and can also examine him and call other evidence to prove that his evidence is untrue.

I have far from exhausted this important branch of my subject, but time and consideration for your patience and kind attention compel me to pass on. One other point only I would mention, as it is so liable to be done, which is, that if you are trying to fix on an umpire, you must not select him by *lot* or *tossing up*. It does seem such an easy way of getting rid of a difficulty, and I have had it proposed; and certainly my opponent has been astonished when I have told him that such a method is illegal. As to our fees as arbitrators, it should be borne in mind they must not be large, or we may be liable to an action to recover what may be considered excessive charges. This is the law, although we are unable to legally recover our fees as arbitrator, unless we have, what we rarely have, an express promise to pay, and then only from the person so promising. One more hint. Directly our award is made, we should send notice thereof to each party, stating where the award can be obtained on payment of the fees, mentioning the amount. Our award must of course be made within the time to which we are limited.

* But if the arbitrator be of the legal profession, this will not have such effect. Is this law?—B. F.

PROFESSIONAL PRACTICE OF ARCHITECTS.*

(3.) *Works.*

I. *Specifications.*—The best possible will describe every portion of the building, systematically giving the fullest particulars (scantlings of carpentry, sizes of doors, girth of mouldings, sizes of stonework, &c. An exceedingly general specification giving no minutiæ, if it accompanies a good, careful, set of drawings, is not bad: it must describe the quality of all materials precisely, allowing the drawings to explain the work in which they are to be used. A mixture of these two kinds, vague in parts and detailed in parts (perhaps even within the limits of the same trade), is a very imperfect document. Every specification of any size should have the trades in the usual order, good marginal descriptions of the contents, and an index. Have a good example or two before you while writing as an aid to memory: various good specimens may be found if necessary in Bartholomew's Specifications, or Professor Donaldson's. Avoid the too frequent custom of asking for the best of every material. The best timber is rarely necessary for ordinary framings: frequently absolutely the best materials are not wanted for joinery: in ironwork, "best" as a description is open to an opposite interpretation, as there are a "best, best," and a "best, best, best," recognised in the trade. Contractors say that they are able to give lower tenders for the works of some architects known to them, because of the definiteness of their instructions and their nice adaptation of materials, &c., to the purposes to be served. If a well-thought-out draft is supplied to the quantity surveyor, and he is allowed to make minor additions subject to your approval, it will often avert little extras; and bring the quantities and other documents into complete accordance. If you take out the quantities yourself you will perhaps defer writing some parts of the specification till the quantities are completed, and your ideas on many details thus settled.

II. *General Conditions.*—The headings for clauses of contract settled between the Royal Institute of British Architects and the London Builders' Society supply these in a skeleton form. The conditions of contract recently issued by the London School Board have a few specialities (differing from the "headings"), but are good, and may be considered a fair precedent.

III. *Cutting down.*—May be requisite when the tenders have been received. This should not be done too ruthlessly; simply to reach down to a certain sum. No architect should radically maim a building, taking out many good decorative features or special characteristics. Of course, the efficiency for the purpose should not be trenched upon; nor anything required for stability or durability cut out; nor the money provision for contingencies, except as a last resort. If the drawings represent, as they should, what the client really wants, only take out things that can be put in again without much difficulty, or that can be added hereafter.

IV. *Getting to work.*—In London, get notices given to adjoining owners as soon as possible (as to works on party-walls, &c.), so that no delay can happen when you want to begin. See the district surveyor personally, if possible, before beginning, and get him, if he will, to look over the drawings. See that the builder gives the requisite notices to him and to the Local Board. See the surveyor to the Local Board, if you can; and thus be sure you are right as to the level of your basement floor and as to the arrangement of the drainage. In fixing, finally, the exact site, do not be influenced too much by the existence of any private roads (if you see they can be diverted), or of any ordinary trees; but put the building where seems best to yourself,—and to the landscape gardener if one is employed with reference to the work. Combine shelter, good access, fall of drainage, good water supply, aspect, and (if to be lived in) good prospect; or get as many and as much of the most important of these as you can. Leave some permanent marks when you have fixed the angle of the building. The trial-holes,—dug before the contract-drawings were made in order to ascertain as to the foundation, may not have found the weak places; insist, therefore, always on inspecting the open trenches before building is begun. If at all doubtful, do not fail to get all the counsel that wide experience, and also local knowledge, can give. Foundations are not always improved by going deeper; *e.g.*, Wren would have wasted a large part of his funds before he had reached the floor level, if he had not had the courage to build on pot-earth, which had carried the old church, as detailed in the "Parentalia" (at the north-east of the choir the pot-earth was absent, and the foundation consequently carried down full 40 ft.). The trenches should not be open long, or be allowed to fill with water; and any earth softened into a slush should always be removed before building. In the course of execution, insist on condemned materials being taken from the site, or they will perhaps be hidden in the building; see, before you leave the work, that any defect in the scaffolding, any carelessness that may lead to formidable accident, is well remedied; see masonry in danger of injury cased. Supply the clerk of

* From lectures by Mr. Roger Smith. See p. 15, *ante*.

works or the foreman with printed forms of returns; and get a statement sent you weekly giving the state of the building, the works in progress in each trade, the number of workmen employed, and the state of the weather for each day. A building of great importance should, perhaps have a resident architect, who should make most of the drawings, and look keenly after the works. Men in large practice would do well to introduce such a system,—putting younger men into a temporary partnership, and giving to them much of the responsibility and a good share of the honour and the pay attached to the work. See that the vouchers for day-work are supplied as by contract, and checked and agreed upon at the time. In case of repairs to existing buildings, let the insurance company know before anything is commenced (the builder should be made to insure, so that all risks may clearly fall on him). See specimens of important parts or of things to be repeated, put in place ("offered up" as trials): if you are like other people, you will find the time you spend on a building in progress about the pleasantest you pass.

V. *Misfortunes (Dangers to be escaped as far as possible).*—(1.) Damp.—Spend some time, in a locality new to you, in ascertaining how materials have behaved. (2.) Decay.—Go to the quarry if you can, and select the bed, after careful inspection, and talk with the quarrymen: your selection will be made with full knowledge, and you will recognise the characteristics of the best stone as the work comes to the job. Be a little forbearing, if need be, in the matter of evenness of colour in bricks, so long as you get other desirable qualities. (3.) Settlements.—Never neglect an instance of unequal weighting pointed out to you, especially on a doubtful foundation; take precautions at once to broaden the area of support. Attack any crack when it is noticed, and cure it radically,—unless you can explain it satisfactorily to yourself; never let it alone, knowing that it may get much worse, but hoping that it may not. (4.) Delay.—Never let this be owing to the architect. Give out details before they are wanted; select anything required at once on being asked about it; see how much remains to be done, and urge on the contractor, if necessary, by the use of your power of withholding certificates. Frequently the really effectual power of the architect is in his control of the payments. (5.) Many extras.—You will rarely avoid them altogether. Improvements will suggest themselves as works go on; or the employer will have fresh requirements; or circumstances may change radically. Generally, however, avoid serious variations; keep your alterations within the limit of the contract (making a set-off equal to every addition). If possible, have the price for a real extra settled before it is ordered.

VI. *In case of serious Disaster.*—Go to the best friend you have, that can take useful counsel with you; and look the worst possible result in the face from the first.

THE ARTIFICIAL LIGHTING OF BUILDINGS, AND GAS.

IT is a somewhat singular thing that, considering the importance of the subject and the manifest interest of it, so very little, almost nothing indeed, has been said on the artificial lighting of buildings and rooms in an *artistic* sense. If a room be well lighted artificially,—for we propose to speak at present solely of artificial lighting either by gas, oil, or candles, as doing the work of sunlight or daylight,—a good deal of bad and indifferent architecture and furniture is made up for or pardoned, but if badly or vulgarly lighted, which is nowadays almost always the case, the very best of architecture and decoration, and painting and furniture, is artistically lost and even destroyed by its bad lighting up. The subject is just now of more than usual interest from the fact of the "gas strike," and from the singular spectacle of a good part of London, both streets and shops, presenting for a night or two the repetition of what they must have exhibited in the days of our great-grandmothers, before gas was thought of, and long before it was deemed essential to good lighting to abolish *shadows*. The subject is a curious one and somewhat new, and a few words about it may prove useful to some who may not have thought much about it. Putting aside, in the first place, the lime-light and the electric light as exceptional phenomena, we may well say that never before did there exist so intense and sparkling a light as that of gaslight. A street or a room completely lighted by gas jets would have exhibited to our forefathers a scene which would have almost transported them to fairy land; and a theatre lighted up with gas, leaving out the aluminium-wire light, would hardly have been credited. And if our immediate ancestors could but have been bewildered, what would imaginative Shakspeare have thought of such a scene with his own little Globe, or Blackfriars, still in his mind's eye! But yet, if in Shakspeare's day buildings, as theatres, were under-lighted, is it not all but certain that they often are nowadays as much *over*-lighted?

In the first place, it is to be noted that *all* cities, even at this advanced hour of the world's history, are not lighted artificially at all at night; indeed, as we find ourselves in the older places of the world, and in the regions of the almost forgotten, we find, as in not a few of the older Oriental cities, that the moon and stars do all the work of street lighting; and one of the strangest things which the modern traveller has to open his eyes to in them, is the palpable darkness of those towns and cities at night whose very names are to him as enchanted sounds. He finds that if he needs light at night in the absence of a bright moon, he must carry it with him in a lantern, or by a flaring torch. But wholly unlighted towns are soon to be of the past, and where of the present, will doubtless in no short time be among the things that were, and to be *read of*, but not seen. So we may dismiss them, and a good deal with them that our modern light puts out. Imaginatively, it is possible to have too much, even of light. Passing, then, by a few things which need not detain us in the darkness and total absence of artificial light, we come to the dim oil-lamp way of lighting a street, not wholly gone out of sight; for in places at some distance from gasworks it is yet in use, and takes us into the last century fairly. It was and is darkness visible, for the odd-looking lamps, and little oil-flames in them, did but little more than indicate their own whereabouts, and light up a few feet of space round them; yet they did good service in their own day, and fought a fierce battle against gas. It had and has some advantages against gas, for the flame and the light given out from an oil Argand burner are far softer to the eye, and nearer to the colour and effect of sunlight, than is a gas flame, even when the gas is good and pure. It is not pure white light like the electric light that is needed for domestic purposes, but a *softened* light, with yellow rays in it, like those coming from the sun, that is the desideratum. It is well to know, as it at first sight may be a little doubtful, that there are some few London shops in fashionable quarters lighted wholly by oil-flames, and the effect is singularly pure and soft, and does not distress the eye as continued gas-flame does, and as gas is at present burnt. Some of the rooms in the Carlton Club, it may be mentioned, are lighted in this way, and may be compared usefully with the gas-lighted rooms in the same place. No one can fail to perceive the difference, and the more softened effect of the oil-flames.

It is impossible, even in these few thoughts on the subject of artificial lighting, to do less than notice the truly modern, characteristic mode of illuminating the interiors of theatres. It is really impossible to over-estimate the impetus, artistically, that might be given to not a few things,—as *costume*, and even painting,—by a thorough reform in theatrical modes of doing work. We might see in the theatre, as Goethe has observed, what ought, artistically, to be found in real and actual life. There is nothing more humanising or more instructive than a thoroughly good play, well acted, and well put on the stage. We see a little,—and but little, unfortunately,—of this at times; and one of the improvements that might be, as we think, easy of adoption would be in the mode of lighting the interior of a play-house;—both the house itself and the stage as well. As things, for the most part, are at present, the chances are a hundred to one that we have, instead of the scene before us, a gas-burner, or, indeed, it may be, as sometimes it is, any number we can count of them. The interior of the audience part of the house in some of our theatres is so over-lighted as to positively hurt the eye. It is painful to remain for any time in its glare. It seems a perfect deluge of light, and to look on the scene and actors before us is to look out of light into darkness,—by contrast, that is; for the stage and scenery, in reality, are as light as the house itself,—sometimes lighter, as to *kill* the gas in the house the electric light or magnesium-wire light is called in to do that work which even gas cannot accomplish. Surely, the secret, artistically, must be in a subdued light *in the house*, with as few visible barriers as possible, and with the light invisible as to source on the stage, and that light so far under regulation as to imitate, which it well might, the appearance of daylight and sunlight, and thus to help the illusion, and add to the magic of the scene. Next to well-painted scenery, we know of nothing which would so well repay a little thought. Expense it would positively save, for it would save gas. What Shakspeare, with his few dull oil-lamps, or candles, and little stage, and wonderful *minimum* of theatrical "properties," would have thought of one of our great theatres filled with gas-lights all round and about, and everywhere, who can possibly imagine! He himself certainly could not, full of dreams as he was. We forbear to do more than hint at one or two obvious improvements, but can but ask those in authority to think over it, for a world of good might be done by a few well-considered alterations, by putting the bright lights where they ought to be, and putting them out where they ought not to be.

We have instanced more particularly theatres because the effect in them is the more marked, and must strike every one who for a moment gives the subject a thought, but the same remarks apply, more or less, to nearly all public interiors;—gas-lighted cathedrals, churches, chapels, with gas all round, above and below. Why, the very genius of the sombre Romanesque church, to cite but one instance, must be put out, and its very ghost laid, by the staring glare of gas and by the handiwork of the modern gasfitter. Who will try to initiate a better way of things?

But letting this pass, there is one other popular gaslighted place of "amusement," which, perhaps, more than all, needs improvement in its lighting: we allude to the concert-room, such as Exeter Hall, St. James's Hall, and others, wherein the finer sort of music is performed. The subject is not a little curious and scientific. It is a well-known fact, that when one sense is either gone or weakened, other senses are rendered more acute: thus the blind man is commonly found to be more open to the power of sound and music than he who can see; and it is quite certain that the effects of sound and music are more powerful in darkness than in the full glare of day. Humboldt notices this, and Goethe considered it an ascertained fact. Any one can test it by attentive notice of the effect of classical or delicate music, in a dimly-lighted room, as contrasted with the same music in the full glare of daylight or gaslight. The mind is less distracted; the sense of hearing is allowed without interruption to do its work; the eye is at rest, and comparatively unoccupied, and the mind is thus ready to concentrate itself upon the special work, while the ear takes in without distraction or hindrance its own proper harmonies. It is wonderful how much of this may be and is lost, especially in the interpretation of the finer music of sonatas and Beethoven quartets, by this painful glare of over-lighting. We go to hear and not to see, especially as to the works of Beethoven, who, perhaps, alone of all the great masters of musical sound, breathed out his magnificent thoughts in pure sound, deaf and unconscious to all external influences. Pure musical thinking. Nothing surely should be allowed to jar on the sense of hearing, or to distract it. There is one other effect of powerful gaslight among many others that might be cited, that not a few readers must have noticed—we allude to the colour-killing effect which a full supply of gas has upon pictures. We do not here speak of its chemical effect as positively destroying colours; but to the strange power it has in taking the *colour* more or less out of a picture, no matter whether the painting be magnificent in power of colour or not. No painter, whatever his powers, can hope to stand against it. When pictures are lighted with gas it should be done with great discretion.

The Ancient Church of Bradford-on-Avon.—An appeal is being made for funds to complete required works at this building. As the conductor of this journal was amongst the first to make clear the fact that this church is a pre-Norman structure, we naturally feel interested in seeing its preservation, as a whole, made certain.

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"I KNOW A HAWK FROM A HANDSAW."

MR. J. A. PICTON has made a suggestion to *Notes and Queries*, touching this much-disputed quotation, which is probably more likely to find favour with our readers than with the general public. The commentators seem to be agreed either that "handsaw" is a misprint for "hernshaw" or that the passage was a familiar proverb already corrupted before it was adopted by Shakspeare. The passage first appears in the 4to. of 1604, and the term "hand saw" is in Roman lower-case in two words, which the writer justly considers evidence against any misprint. Again, if it had been a common vulgarised expression, it would have been found elsewhere.

Shakspeare's illustrations are brought from every ordinary occupation in life, and the building trades have their fair representation. The second part of "King Henry VI.," and the "Midsummer Night's Dream," supply evidence that Shakspeare was familiar with the builder and his tools of every kind. "A handsaw as a builder's tool would naturally fall into a proverbial comparison with another builder's tool, and such we find in the *hawk*, used by the operative plasterer. This is a thin board, about 18in. or 2ft. square, held in the left hand of the workman, much in the same way as a painter's pallet, but by a handle or stele on the under side. This holds the plaster of lime and hair which is floated on the wall or ceiling by a trowel in the right hand. The supply of material is brought from time to time by an assistant, called a *hawk-boy*. A proverbial expression, drawn from a comparison of implements used in the building trade, would be very natural. It is equivalent to saying, 'I am no fool, I understand my own business. I know how to discriminate between my own affairs and those of other people.'" There is yet, however, an alternative; for in the Midland counties, especially Oxfordshire, a *billhook* is called a hawk, and this would certainly better compare with "handsaw" than would the bird hawk.

THE ANCIENT DEFENCES OF SOUTHAMPTON.

SIR,—The inhabitants of Southampton should feel grateful for the learned and generally accurate account of their town walls with which your correspondent, "G. T. C.," has favoured them. He has, however, unavoidably fallen into a few errors, which he will no doubt be pleased to have corrected, and he may also be glad of a little additional local information.

1. The Bar-gate was formerly the prison, and the curious cross arches between the centre arch and the side arches probably formed part of the prison arrangements. Bridle-gate appears to have had a similar cross arch.

2. There is no tradition on record of any water-gate to the castle, and the shore at the foot of the walls was flat and shallow, and, except at the highest tides, inaccessible to boats, so that any such gate would have been all but useless. Nor can the water have been deeper when the walls were built; in fact, it was probably shallower, for before the present road was made, the beach had been washed away so as partially to expose the foundations of the wall, and yet the water was very shallow.

3. The projection between the castle wall and Bridle-gate is so weak and slight, and so much out of the line of wall, that it seems to be of more modern construction,—perhaps built when a piece of the town wall fell down.

4. The wall is double, and there are three arches and traces of a fourth south of Blue Anchor-lane postern.

5. The only mutilated part of the passage through West-gate is the centre door-case.

6. The wall south of West-gate does not sink, but continues in a fairly perfect state for eighty yards. At the south end are arches similar to those near Blue Anchor-lane postern. The wall beyond this fell about 1760. There are no traces of a half-round tower in this length of wall.

7. The south or water gate was pulled down about 1803, not 1830—40.

8. The lower part of the old gaol or spur-work appears to be Edwardian; the upper part is a Perpendicular addition.

9. The York-buildings gate is altogether modern. The town-wall was pulled down about 1750, in order to make room for York-buildings. A law-suit ensued, and the present gate was built as a compromise in order to give access from a house on one side to a garden on the other.

C. M.

We have submitted the foregoing to the author of the article, and append his reply:—

Sir,—I feel much obliged to your courteous and well-informed correspondent, "C. M.," for his testimony to the general merits of my paper, and especially for his correction of its errors. I am an absolute stranger to the town, and employed but one afternoon, alone, but with an Ordnance map, in conducting my examination.

The water-gate of the Castle I did not observe, and took upon what seemed to be good positive testimony. To me the broad, flat pilaster seemed never to have been pierced. Nevertheless every castle connected with a town had an independent entrance, and every castle upon water had a water-gate, and at Southampton the two must have been one and the same. Sometimes, as at Ledes, Tonbridge, and the lower postern of Caerphilly, it was so arranged that a boat could be floated in. Sometimes, as at the upper postern of Caerphilly and at Porchester, the boat had to be dragged up.

The light and projecting wall ranging from the south-western angle of the Castle to Bridle-gate, crosses the *embouchure* of the castle ditch upon the sea, and is no doubt in part modern. Possibly it was made salient to enable musqueteers to flank the wall-gate and the curtains. It may be that the water-gate of the Castle was at the mouth of the ditch, into which boats could be floated for a short distance. In that case there would be needed a line of stockade or fence of timber across the shoal-water, as an outwork to protect the approach to the wall from the sea.

I surrender York Gate. I felt that a postern was out of place so near to a main gate, and yet not a part of it.

G. T. C.

NEW LIBRARY BUILDINGS NEAR THE LONDON UNIVERSITY.

A BLOCK of buildings, now almost completed, is in course of erection in Grafton-street East, Gower-street, within a short distance of the London University, and which is intended for a library and an educational establishment in connexion with a bequest made more than a century ago, by a Presbyterian minister named Williams, who bequeathed a large sum of money in trust for theological and academical purposes, together with his library of books and manuscripts, which are of great value. For a number of years past the building for the purposes of the testator's bequest was in Redcross-street, in the City, but the site having been absorbed by the Great Eastern Railway Company, who have had to pay compensation for the same, the trustees purchased a quantity of freehold land in Grafton-street East, and it is on this land that the new building has been erected, and will be ready for opening in the course of a few weeks.

The structure, which has been erected from designs by Mr. Chatfeild Clarke, is in the late Gothic style of architecture, and built of white Suffolk brick, with Bath stone dressings, red Mansfield stone and Forest of Dean stone being freely used in the exterior decorations. The Grafton-street frontage, 80 ft. long and 70 ft. high, consists of a basement, ground-floor, and a lofty story above. The main entrance to the building in the centre of the ground-floor is a prominent feature in the elevation. On each side of the entrance there are three windows, with an equal number of buttresses between them, carried up the whole height of the elevation. The upper story is 30 ft. in height, and contains seven windows, 18 ft. in height to the crown of the arch. The centre window is immediately over the main entrance. The keys and springers to the headings of the upper story windows are in red Mansfield stone, whilst those to the ground-floor windows are in Forest of Dean stone, and all the windows are recessed. The cornice at top of the building is supported by red Mansfield corbels with gauged arches; and the centre of the elevation, above the principal window in the upper story, is surmounted by a gable, enclosing an ornamental circular window, which rises several feet above the rest of the frontage.

A residence for the librarian has been secured immediately adjoining the building, and it is ultimately intended to purchase this property, and erect a new librarian's house on the site.

The basement of the building will contain the kitchen and other domestic offices, together with the heating apparatus, which is being supplied by Mr. Phipson. This part of the interior will also contain strong rooms, which have been mainly constructed for the safe deposit of some valuable and unusually rare manuscripts forming a portion of the library. The ground-floor will in part be devoted to the educational purposes of the building, whilst other apartments in this portion will be used as committee-rooms, offices, and for other business purposes. The upper story, which may be regarded as the principal portion of the building, and which, as we have already stated, is 30 ft. in height, and extends the entire length of the frontage, will be altogether devoted to the library. This apartment will have a handsome panelled ceiling, with large ribs springing from corbels, and will be fitted with polished wainscot bookcases on each side of the walls in bays. It will be lighted with gas by sun-burners, which are arranged so as to assist in the general ventilation of the building. Narrow flues are introduced between the smoke-flues for the ventilation of the lower stories, and provision has also been made for the admission of pure air under the cills of the windows. That portion of the work in connexion with the lighting of the building and the ventilation is being carried out by Messrs. Richardson, Slade, & Co., of Brownlow-street, Holborn. The cost of the building is estimated at between 8,000*l.* and 9,000*l.*, and Messrs. Perry & Co., of Stratford, are the contractors; Mr. March being clerk of works.

REGENT'S PARK THEATRE.

A NEW theatre is being proceeded with, situate in Park-street, Gloucester-gate, Regent's Park. The principal entrances are in Park-street, Gloucester-gate. Two properties have been purchased for it, making a frontage of 30 ft. and 80 ft. deep.

The façade will be three stories in height, in the Italian style, with columns and foliated caps, which will mark the entrances. The plan includes two entrances, one for boxes, stalls, and first circle, the other for pit; above these are two conservatories or saloons, with glass roof for plants, 50 ft. by 15 ft.,—one for ladies, the other for gentlemen.

The theatre proper is 101 ft. by 69 ft. in width, and is arranged into three tiers. The first tier is reached by a staircase, with sunlights and chandeliers, with a broad double flight of stone stairs outside the theatre at the end of the entrances.

The conservatories are upon a level with the first landing. There are three tiers of boxes on either side of the proscenium, and eight at the back of the first tier, which are raised from the level of the balcony, 2 ft. 6 in., making in all twenty boxes. On this tier there are balcony, stall, and dress circle. The pit will accommodate 1,000; there are four rows of stalls. The two front rows of the gallery tier will be partitioned off for the amphitheatre.

The gas and water patent, as lately, and for the first time, applied at Astley's Theatre, is adopted.

The decorations will be in carton pierre; the ceiling will be arranged with sixteen star-lights in a circle, and cut-glass baskets or chandeliers, with ventilation above.

The gallery entrance is from Grove-street, and upon this site are erected dressing-rooms, and so forth.

The contractor is Mr. Edward Vaughan, Birbeck-road, Kingsland. The decorators are Messrs. Pashley, Newton, Young, & Co., Red Lion-square. The upholsterers are Messrs. Audas & Leggott, of Hull. The gasfitter is Mr. L. D. Berry, Regent-street, Westminster; and the architect is Mr. J. T. Robinson.

LOCAL GOVERNMENT AT BETHNAL GREEN.

SIR,—I beg most respectfully to submit the following for the favour of your consideration,—my apology for doing so being that it is a sanitary question of considerable importance, not merely to the inhabitants here in particular, but to the public generally. Dr. Sarvis, our medical officer of health, states that there are 100 fish-smoking houses in this parish. The largest of these—which is, indeed, the largest in the East-end of London,—is at the rear of Peel-grove, in the midst of four blocks of houses, in the heart of a densely-populated neighbourhood, and its

boundary-wall is not 37 ft. from some of our dwelling-houses. In it are cured, according to the report of our medical officer of health, every night, including Sundays, between 40,000 and 50,000 herrings. Fourteen fires, made from great logs, chiefly the roots of oak and hornbeam, are burning therein at one time, the dense fumes of which roll out in volumes, filling our houses with noxious gases, even when our windows and doors are shut. The louvre-boards from which the effluvium escapes are at the same elevation as our bedroom windows, and there is no chimney-shaft to the factory to carry the effluvium away from our abodes!

Dr. Sarvis warned the vestry "that the smoke would cause irritation of the lungs." Four other physicians, the copy of whose certificates I enclose with this, have certified the smoke-house a nuisance, and greatly injurious to health. Numbers of able chemists in this neighbourhood have affirmed the same thing. The vestrymen having been applied to repeatedly by the suffering inhabitants, have not only persistently refused to abate or remove the pest, but have always avowed themselves the defenders and patrons of it. The reason is that self-interest is far too strong for the poor parishioners to obtain justice, for most of our vestry are related to each other by marriage. They consequently all hang of a string, like one family, forming a gigantic clique, able to crush any movement for the public good that is against their own private interests. In a word, they do just as they like, without any real supervision or control over them. We have also petitioned the Local Government Board, but they declare themselves powerless to do anything except to endorse the decision of the vestry: therefore our health is being wantonly destroyed without remedy, because this is too poor a neighbourhood for us to be able to bear the legal expenses necessary to suppress the nuisance,—which was brought to us, for we did not come to it, and our removing from it would, in many cases, involve the breaking up of our homes and the ruin of our business, with the chance of some other nuisance equally pernicious being brought to us in whatever other place we might remove to.

If this be vestry and Local Government Board management, of what use is either of them to us? So far as our health is concerned, we could not be worse off under Turkish despotism.

R. M. GURNELL.

SANITARY MATTERS.

Conferences.—Lord Leigh, Sir C. H. Adderley, and Mr. Henley, inspector of the Local Government Board, were present at a conference of the sanitary authorities of Warwick on Tuesday in last week. There was a general agreement that medical officers should not have private practice, and it was decided to appoint an officer for each of the two divisions of the county.

A meeting of delegates from fourteen sanitary authorities of the county of Oxford, was held at the Clarendon Hotel, Oxford, on December 14th, to consider the best means of carrying out the provisions of the Public Health Act. A series of resolutions was adopted, the first of which was,—

"That a duly-qualified person shall be appointed to act as Central Officer of Health, over a joint area, consisting of several districts, for the term of three years: Banbury Rural, Banbury Urban, Woodstock Rural, Chipping Norton Rural, Chipping Norton Urban, Henley Rural, Henley Urban, Bicester Rural, Bicester Market End Urban, Thame Rural, Thame Urban, Witney Rural, Witney Urban, and Wheatley Urban."

The chairman said the following sanitary authorities were in favour of it:—Banbury Rural, Woodstock Rural, Chipping Norton Rural, Chipping Norton Urban, Henley Rural, Henley Urban, Bicester Rural, Witney Rural, and Wheatley Urban.

York.—The York Rural Sanitary Board met in the board-room of the York guardians in reference to the appointment of a medical officer and his salary; and of an inspector of nuisances, which had appeared in the *Builder*. The appointment of a medical officer was resolved upon, the salary to be 200*l.*; that of an inspector was postponed.

Typhoid Fever caused by Germ-poisoned Milk.—A virulent outbreak of typhoid fever in several streets near the Leeds townhall, a few weeks ago, attracted the attention of the authorities. The epidemic, very fatal in its character, pursued a somewhat eccentric course. It attacked families in some parts of fashionable squares, and left others untouched. It raged in certain middle-class houses in the same street, and passed over others. Though it was found that the drainage in some parts of the affected districts was slightly defective, this did not satisfactorily account for the attack. The authorities next turned their attention to the food supply of the infected houses, and they then discovered that one milk-dealer living in the centre of the town supplied the whole of the infected houses, and it transpired that he received his daily quantity from a farm near Harewood. Thither the health officer of the town at once proceeded, and found that some six persons were there suffering from the fever. The milk-cans were generally kept in the kitchen, which closely adjoined the room where the fever patients were lying, and one woman attended both to the sick inmates and to the dairy. The theory is that the germs of disease in the air settled down in the milk-cans before they were daily sent out with their stock. The sanitary committee of the Leeds town council at once stopped the sale of milk from this infected quarter. To show the severity of the epidemic it may be stated that some eighty people have been thus attacked, and that twelve died.

Typhoid Fever at Birmingham.—The alarming prevalence of typhoid fever in the district of Balsall Heath and Moseley, suburbs of Birmingham, has led to the holding of a public meeting of the inhabitants of Moseley. It was stated, on eminent medical authority, that there were nearly fifty cases of fever in the four hundred houses which are comprised in the district of Moseley, and that there were at least thirty cases in Balsall Heath, the district adjoining. Fresh cases were occurring every day. The sanitary precautions were characterised by a leading local surgeon to be as defective as they could be. There was no drainage worthy of the name, and the cesspools and waterclosets caused incalculable mischief. A member of the local sanitary authority was present, and defended the course of action taken by that body. A resolution was adopted by a large majority, appointing a committee of residents to deal with the matter, and directing that a memorial be forwarded to the Secretary of State, praying for a special commission to inquire into the bad drainage of Moseley. A guarantee fund was subscribed, and a movement fairly set on foot to deal with the evil.

SCHOOL BOARDS.

Carlisle.—After an adjournment from the hall to the committee-room, the Board proceeded to consider the various plans which had been sent in for the new schools proposed to be built. After a very brief conversation, preference was given to two sets of plans—those of Mr. D. Birkett, of Carlisle, and those of Messrs. Scoles & Cory, London. Canon Curry said he had inquired and found that the latter plans could be carried out for 1,800*l.* After considerable discussion, and examination of the plans, Mr. Wrigley moved that Mr. Birkett be the architect, the Board having previously decided not to pledge themselves to any of the plans as they were presented. Another conversation ensued, and at length it was decided, on the motion of Mr. Crowder, seconded by Canon Curry, to postpone the consideration of the plans till next meeting.

Barnstaple.—Mr. Neill moved:—"That the tender of Squire Holdsworth for the erection of a school on the Barker-end site, amounting to 9,866*l.*, be accepted." He observed that they had two sets of tenders in respect to these schools. In the first instance Messrs. Wilson's was the lowest, and Mr. Holdsworth's next; but after the plans had been revised, Mr. Holdsworth's was the lowest. They had dispensed with the tower and several other matters which were considered expensive had been taken away. Carried without opposition.

NEW NATURAL HISTORY MUSEUM, SOUTH KENSINGTON.

As promised with the view in our last number, we publish this week a plan of the ground or principal floor of the new Natural History Museum about to be commenced at South Kensington.

The level of this floor is several feet above that of the surrounding streets, and as the latter are several feet above the general level of the museum site, a basement story entirely above ground has been arranged, containing towards the front several useful suites of curator's rooms and workshops, and towards the back, store-rooms, kitchens, &c.

The principal floor is approached by a curved incline for carriages, entered by two gateways in Cromwell-road, and by a broad central flight of steps for visitors on foot.

Passing through the great archway of the entrance, 40 ft. wide, we reach a hall, 170 ft. long by 97 ft. wide, consisting of what may be called a nave, 57 ft. wide, and recesses on either side, devoted to exhibition wall-cases.

The main staircase from the principal to the first floor, consisting of flights of steps 20 ft. wide, is placed at the northern end of the hall. The staircase leading from the first floor to the galleries above, spans the southern end of the hall, on an elliptical arch.

The hall will not only give ready access to the various portions of the Museum, but will itself afford, in the recesses on either side, large accommodation for exhibition purposes. It is intended that this part of the building shall be devoted to an index or typical museum, containing specimens of a more popular character, and, together with the Museum of British Natural History at its northern extremity, be lighted by gas and thrown open to the public during the evenings. For this purpose the doorways leading from the hall, or Index Museum, to the eastern and western portions of the building, will be fitted with fireproof doors.

To the right and left of the Index Museum, facing the south, on the principal floor, are two side-lighted galleries, each 278 ft. in length by 50 ft. in width, terminating in the pavilions at either end of the main front. The cases in these galleries will be placed between the windows, and extend from the side-walls to the coupled columns (cast iron, cased in terra-cotta) supporting the floor above, the space between the two rows of columns being devoted to passage-way.

There will be three stories of these side-lighted galleries, those on the principal and first floors being precisely similar in arrangement, and those on the second floor being partly lighted by the dormer-windows and partly by roof-lights.

Behind the two south galleries on the principal floor the plan shows, on the west side, three large galleries, 39 ft. in width by 160 ft. in length, for immediate erection, lighted by continuous roof lights at the junction of the roofs with the walls. Between these top-lighted galleries are galleries reserved for the study and preservation of duplicate specimens. The cases for the exhibited specimens will be placed between the piers, and separate the public galleries from those devoted to students. They will form a continuous line towards the former, and where they are required of extra depth for the larger specimens, they will project on the students' side.

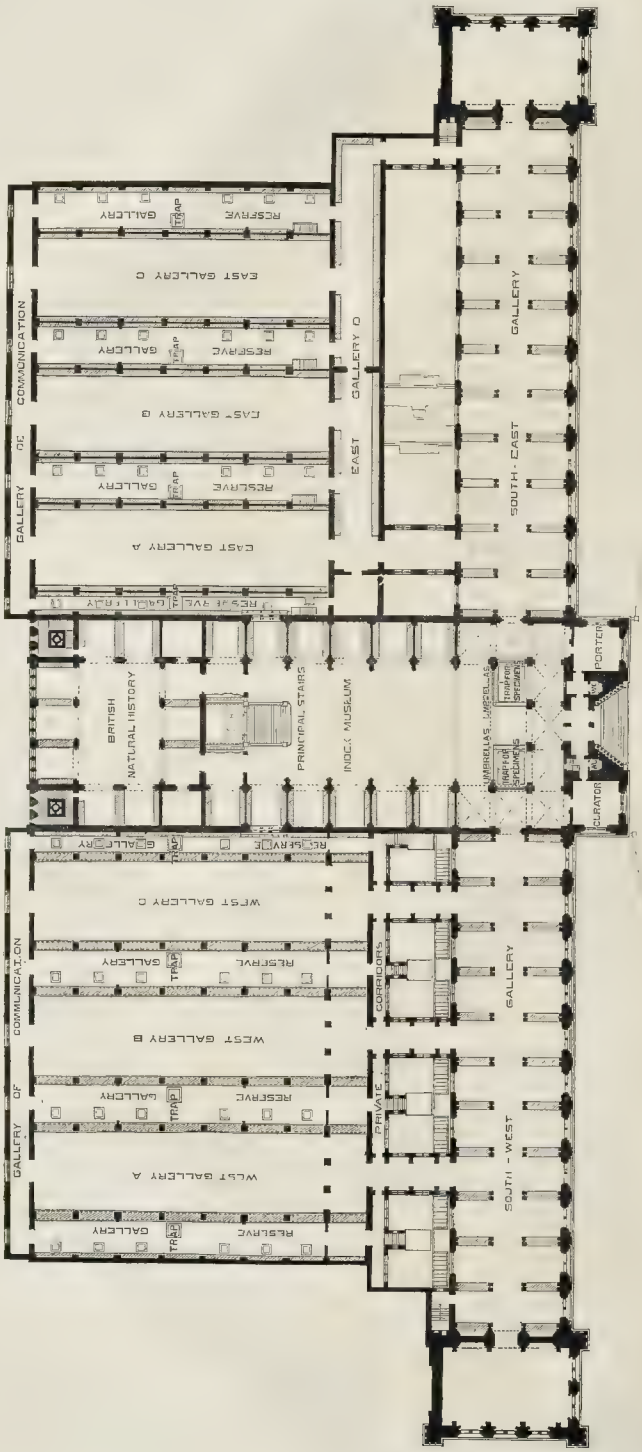
The reserve galleries communicate by trap-doors, with the storerooms below. The workshops and studies in the basement may also be reached by a staircase across a private corridor, from the reserve galleries.

A slightly different arrangement of top-lighted galleries on the eastern side has been adopted in order to meet the views of those who are likely to have the custody of the collection there.

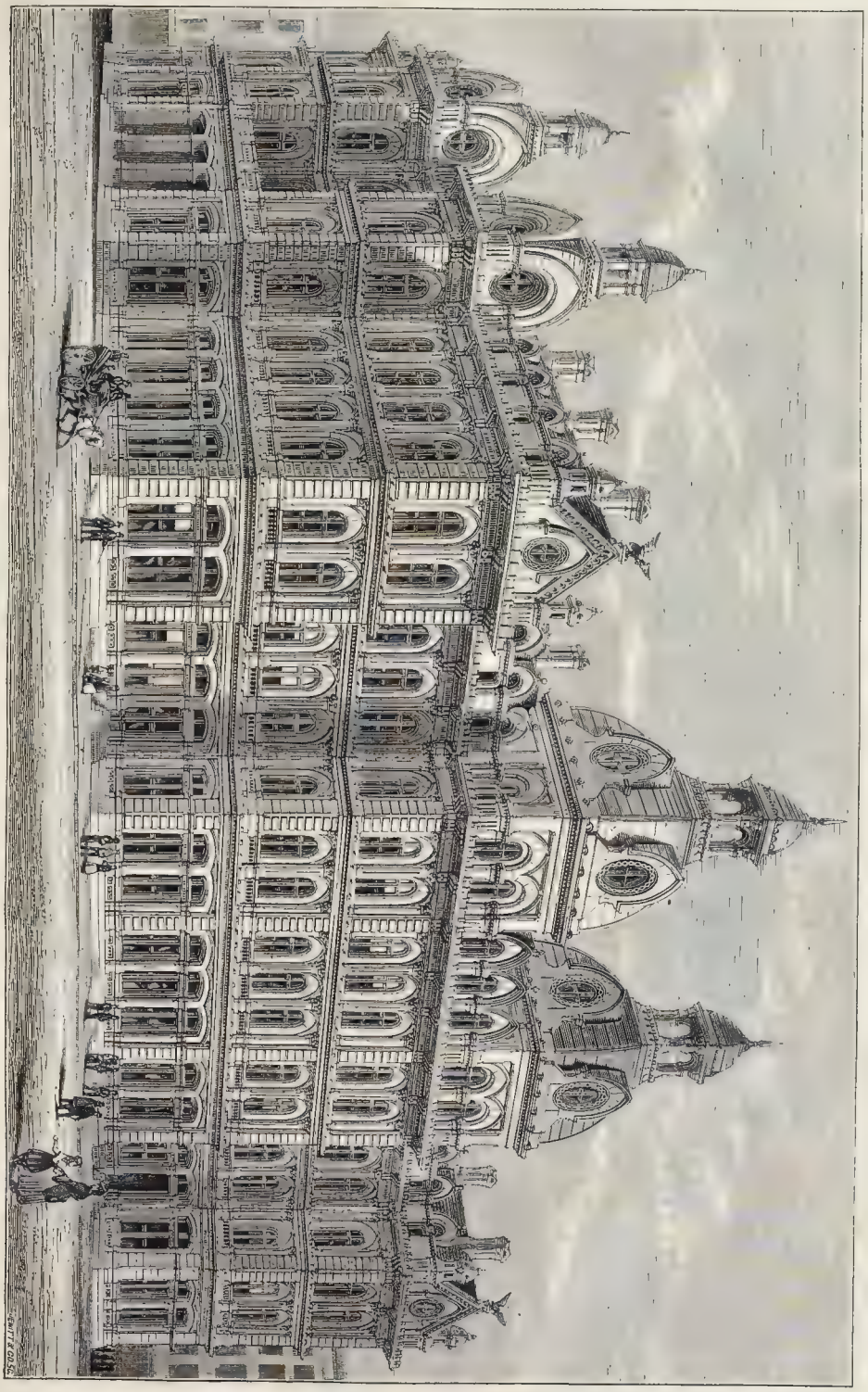
Generally speaking, it is intended that the zoological collections shall be placed on the western side of the building, and the geological and mineralogical collections on the eastern.

As the Museum progresses we may have other opportunities of publishing further descriptions of its construction and arrangement. Mr. Waterhouse, from whose designs, as our readers know, the building is about to be erected, has given much thought and consideration, in conjunction with the officials, to ensure the efficiency of the general arrangements.

Monumental Sculpture.—The execution of the memorial cross intended to be placed over the tomb of the late Sir H. F. Lambert, bart., in the Malvern Cemetery, has been entrusted to Mr. W. Forsyth, sculptor. The monument has been designed by Mr. Preedy, architect, London. The cross itself will stand 15 ft. high, upon two massive granite steps. The base, cross, and shaft will be of white Sicilian marble, with inlays of serpentine in the centre of the cross, and the sacred monogram.



THE PROPOSED NATURAL HISTORY MUSEUM, SOUTH KENSINGTON.—*Plan of Ground Floor.*



THE NEW GOVERNMENT BUILDINGS, CHICAGO, U.S.—DESIGNED BY MR. A. B. MULLET, ARCHITECT.

THE NEW GOVERNMENT BUILDING, CHICAGO, U.S.

THE rapidity with which Chicago has been reconstructed has astonished all beholders. About 1,500 buildings, public and private, have been erected since the fire, many of them of great size and cost. Amongst those now going on is the structure of which we give a view. It will occupy the square bounded on the north and south by Adams and Jackson Streets, and on the east and west by Dearborn and Clark Streets, known as the Bigelow Block. The plan of the building measures 342 ft. 6 in. by 210 ft. 6 in., and is placed in the centre of the square. To avoid monotony, the plan is boldly treated with projections, and in the elevations there are important central features on each façade carried above the main cornice as towers, each surmounted with a domical roof and belfry-shaped termination in stone. The style adopted is a sort of Romanesque, treated very freely, not to say disguised. The corners are heavily rusticated, and the wall surface is relieved by piers, with carved capitals. The first story is treated with the segmental arch. A bold transom, carried throughout continuously, adds to the solidity of this story, and prevents any appearance of attenuation, which the piers otherwise would have. The post-office requirements for light are such as to make it a difficult problem to solve, in giving up all wall space for glass, not to destroy the architectural effect by an unpleasant feeling of the slightness of support for the superstructure.

On each of the shorter sides is a capacious porch; on the long sides are entrances to the various departments. The second story (or "first floor") has an ornamented pedestal course, through which will be admitted air for ventilation. The windows have semicircular heads, with pointed Italian arch mouldings above. The various stories are well defined by broad belt courses, simply decorated. The main cornice carries a balustrade at its outer edge, and its great projections are sustained by brackets. The part above the main cornice is treated in an original manner, whereby a good story is obtained. The details are well studied.

The first story and basement are for the post-office business entirely. The second story will be used by the sub-treasury and the customs; and the third story will be devoted to the Law Courts.

The general plan of the building comprises an interior court, 83 ft. by 198 ft., open to the ceiling of the first story, which will be a glass skylight, lighting the working part of the post-office. In the upper stories a continuous corridor makes the circuit of this court, and all the rooms are lighted from the outside walls of the building. The vaults will be carried through each story in solid masonry from the foundation. At each end of the building will be two passenger lifts, besides a fine airy staircase. The ventilation of every part is well cared for.

This structure will be erected under the supervision of Mr. James C. Rankin, architect (who resigns the position of Assistant Supervising Architect of the Treasury Department for that purpose), from the designs of Mr. A. B. Mullet, supervising architect of the U.S. Treasury, at Washington.

AN OLD BRICK HOUSE IN ENFIELD, MIDDLESEX.

THE Great Eastern Railway Company, having built a new station at their terminus at Enfield, are about to pull down an extremely interesting house, of the Queen Anne period, which has hitherto served the purposes of a station. The front of the house has good specimens of carved and moulded brickwork. The central portion of the front is, perhaps, one of the finest pieces of English brickwork in existence. It consists of an elaborate entablature, with a segmental pediment, and four pilasters, which divide the front into three spaces, the central space, which contains a large window, being twice as wide as the lateral ones, each of which contains a niche, semicircular on plan, with a semi-circular head, filled in with a well-carved cherub's head. Above the niche is a panel containing swags of fruit and flowers, well carved out of brickwork. The entablature is very elaborately moulded and carved, the cornice having delicately-moulded dentils. Each pilaster has a carved composite capital. The bricks of which this portion of the front is formed are small and the joints almost imperceptible. All the carving is out of the solid brickwork, and none of this work appears to have been cast. The front contains, in addition, four windows, with carved brick architraves and label-heads: the other features are the usual ones found in houses of this period. The plan of the house is ⊓ shaped. All the rooms are panelled.

A view of the front and a carefully-measured drawing of a specimen of the carved, moulded, and rubbed brickwork, by Messrs. Penstone & Batterbury, were published in the fifth volume of the Architectural Association's sketch-book.

It is a great pity that so good a specimen of a house of the period should be destroyed. It is said to have been inhabited by one of the Earls of Essex. Enfield has many old and curious houses; but this one is its most perfect and best example. A correspondent suggests that the authorities at the South Kensington Museum might preserve the central portion, and asks the London and Middlesex Archæological Society to see what they can do towards saving it: otherwise the house is doomed to be destroyed in a few days by Messrs. Patman, builders, of Enfield.

NEW CATTLE-MARKET AND PUBLIC WORKS FOR DUNDEE.

A NEW cattle-market and abattoirs, on a large and comprehensive scale, are proposed to be constructed at Dundee. It appears that Mr. Markison, the town surveyor of Dundee, has recently visited London, Deptford, Liverpool, Manchester, and Paris, and personally examined the markets and abattoirs recently erected in these several places. The result of these visits and inspections is that he has just submitted plans to the corporation for the erection of a new market of this character in Dundee. The extent and magnitude of the proposed market may be conceived when it is stated that, exclusive of the boundary streets, the site of the proposed market embraces nearly nine acres, and the total estimated cost of the works, including market, hotel, stables, offices, and market erections of various sorts, lairs, and lines of railway, is nearly 50,000*l*. In addition to this new market, extensive new waterworks are also about to be constructed, at an outlay of more than 30,000*l*.; and beyond these undertakings, both of which are proposed to be carried out by the local municipal authorities, a scheme has been put forward for the construction of a high-level railway around the town, with a view of reducing the heavy cartage from the railways and docks, and facilitating the traffic of the mills, manufactories, and engineering establishments. It is further stated that the project has the warm support of both the Caledonian and North British Railway Companies, who are prepared to subscribe towards the undertaking.

WORKS AT SALFORD.

Stowell Memorial Church Schools. — These schools were formally opened on the 2nd inst. They form the concluding part of the scheme, designed as a memorial of the late Canon Stowell. They are situated near Regent-road, and are bounded on all sides by streets. The site contains 2,420 square yards, of which about two-thirds are devoted to playgrounds. There are two school-rooms, one being 60 ft. by 30 ft., and the other 59 ft. by 20 ft. In connexion with the latter, is a class-room, 18 ft. by 20 ft. The roofs are of high pitch, and open to the collar-beams. A care-taker's house is also provided. The building is of a plain but substantial character, faced with white headers, and having stone and stock brick dressings. They have been erected in accordance with the requirements of the Education Department. Accommodation is provided for about 400 children, who will be taught in mixed classes. The total cost, exclusive of the site (which has been given), is about 2,290*l*. The builder is Mr. Geo. Napier, Hulme; and the architect is Mr. John Lowe, of Manchester.

Stowell Memorial Church.—A reredos, from the designs of Mr. John Lowe, has recently been erected in this church. It is of varied stone, enriched with marble, and extends the whole width of the chancel. The lower portion is of Darley Dale stone, and the upper of Caen. This upper portion consists of five gableted panels, the three central being so combined as to form a centre-piece. The panel-shafts are of red granite, relieving the white Caen, and supporting pointed arches, having also carved caps. In the centre of each panel is a raised field, with carved emblems (*e.g.*, wheat, vine, passion-flowers, &c.), and bearing appropriate inscriptions. The tympanum of each gable is a diapered surface, of Styperson stone, in the centre of which is a circular panel of Caen stone, enriched with various coloured marbles. Crocketed pinnacles separate the gables (which are also crocketed), and all terminate in carved finials. The whole is the gift of a lady, in memory of two friends of the late Canon Stowell. The builders were Messrs. Ellis & Hinchliffe, of Manchester.

PUBLIC WORKS IN WASHINGTON.

A FLOWING account of the great changes in the streets of Washington made under the Board of Public Works is given in the *New York Times*. The great width of the roads was found a difficulty:—

"The plan of Washington, as laid out by its founders, contemplated a city with millions of inhabitants. There is more area in the streets and alleys of the city than there is devoted to the uses of public and private buildings. In Paris the ratio of street area to the area of the city is 25·8 per cent.; in Vienna, 35·8; in Boston, 26·7; in Philadelphia, 29·8; in New York, 35·3; in Washington, 54·5. The report says:—

'How to improve these very wide thoroughfares, interspersed with numerous reservations and public squares, without bankrupting the people, was the practical question which had first to be solved. The most feasible plan suggested was so to narrow the carriage-ways as to render the use of improved pavements practicable. This would place the surplus width inside the footwalks, where it could be parked and otherwise beautified at slight expense to the public, and in many instances at the expense of the property bordering upon it, the owners of which, for the privilege of the use of the ground, would gladly beautify and adorn it. By this plan, that which was a barren and unsightly waste has been made a beautiful feature in the contour of the streets and avenues. The cost has thus been very largely reduced, while the capacity of the streets as a means of intercourse has not been in the least abridged.'"

It is stated that the Board of Public Works have succeeded in getting work done for 50 per cent. less than the same work is done for in the cities of New York and Brooklyn. The identical pavements which have cost New York 5 dollars per square yard are being laid here for 3 dollars and 3 dollars 50 cents. This result has been achieved by a determination on the part of the Board, at the outset, that it would be better to establish a scale of prices at which work should be done, and to award contracts at these uniform prices to responsible persons. The plan is said to have worked exceedingly well.

"BRICKWORK AND MASONRY IN IRELAND."

SIR,—From the speech of Mr. Owen, the president of the Architects' Institute of Dublin, quoted by you, any person would be inclined to think that the Irish granite was an utter failure. Such statement, made by the president, is certainly not very patriotic, to say the least of it, and shows how little Irishmen are acquainted with the produce of their own beautiful country. I shall attempt to do that "justice to Ireland" which it would appear is not obtainable by "home rule," if such can be applied to the statement made in Dublin.

No country can produce a better granite, not only useful but ornamental, than Ireland; the beautiful Aberdeen granite cannot even compare with the splendid granite produced at the model temperance town of Bessbrook. Here is a granite unsurpassed for quality and beauty; only see the monuments erected by Farmer & Brindley, of the Westminster Bridge-road. Again, see the works of Burke & Co., of Regent-street; also of M. W. Johnson, Sanders, & Co., and Maile, the monumental masons, of the Euston-road, and compare with the statement made in Dublin. I positively assert that a more useful, more durable, and at the same time ornamental granite than that of Bessbrook has not yet been found. I have had the pleasure of visiting this temperance town, and can most truly state it to be a model town. It really appears as one large happy family, and the secret of it all appears to be that the whole management is under the control of the Bessbrook Spinning Company, a company composed of gentlemen whose main object appears to be the welfare of the population. The granite quarries were opened by them, and are worked with the object of providing employment for the male population of the town, and, so far as quality of granite is concerned, they have it unsurpassed. At very great cost they

have erected machinery to facilitate the working (but whether or not such will be found advantageous to a granite quarry remains to be seen); they have applied water-power for polishing the granite, and have produced some of the finest possible specimens of polished granite monuments, and likewise building materials, to the satisfaction of the most eminent London architects. Therefore, am I not justified in requesting you to allow such facts to be made public through your most useful paper, after the sweeping condemnation of Irish granite which has appeared? and more especially when I state that I do not write as a novice in such matters, having had an experience of over thirty-five years in granite. AN ENGLISHMAN.

*** We have received several other communications on the same subject, including a copy of a letter addressed to the president of the Institute of Architects of Ireland. The writer of the latter says, in the course of it,—"The Bessbrook granite combines beauty and durability in so high a degree that the astute Scotchmen themselves already recognise the fact, and apply to us for blocks to be wrought, polished, and sent forth into the market as Aberdeen granite. In some cases we supplied these blocks, but have now ceased to do so, knowing no reason why Scotland should win fresh laurels at the expense of Irish reputation." Mr. Owen has since written to say that his thoughts were fixed solely on Dublin, and that he did not wish his words to extend to a wider district.

THE FOREIGN COAL AND IRON TRADES.

THE French iron trade continues quiet, but there is a general impression that it will shortly bedome more active. Orders have declined in importance. MM. Blondeaux & Co. have obtained a contract for 3,000 tons of rail for the Northern of Spain Railway, at 12*l.* per ton, delivered at Antwerp. The exports of iron from France in the first ten months of last year are returned at 216,000 tons, as compared with 187,000 tons in the corresponding period of 1869. The Belgian iron trade has exhibited rather more firmness. In the Belgian coal trade, notwithstanding some temporary traffic difficulties, prices remain firm, orders being abundant. The exports of coal from Belgium in September have been just officially returned at 440,877 tons, or 23,217 tons more than during September, 1871, and 296,881 tons more than during September, 1870. It appears that 401,450 tons were exported from Belgium to France. Coal maintains its price firmly in France.

An important discovery, according to the correspondent of the *Swiss Times* at Milan, has been made within the past month by Signor Ferrero, an amateur chemist, who for many years has made a special study of combustibles. He has succeeded in the invention of a substitute for coal, the quality of which renders it most serviceable for machine and locomotive consumption and the extraction of gas, the refuse being economised into a sort of coke for kitchen use. The process is exceedingly simple, and makes use of a raw material extremely abundant in Italy, whose combustible, gaseous qualities were unknown or unapplied until this invention. The cost of this new fuel will not exceed two lire per hundredweight.

A MODEL HOTEL ABROAD.

As your paper has been for years, and is still, the medium of numerous sanitary discussions, I thought perhaps the following might be a little interesting, as showing how these matters are conducted on some parts of the Continent.

I speak of a large and well-situated building, overlooking one of the finest valleys in Europe, the resort of numerous English and American travellers, and holding a primary position in the guide-books referring to the town in which it exists.

The building in question entirely surrounds a court-yard, and is annexed to some other buildings of the same height and width; the court (some 50 ft. square) is entirely and completely covered over with glass, without one particle of ventilation or opening of any description, and is, in fact, to all purposes hermetically sealed. The kitchen and four stories above being next to the adjoining building, have no other frontage except into this covered court, the door and windows opening into the same! Corridors surround the yard, leading to the different rooms, also having no other opening save this: untrapped drains are below; and yet there is not one breath of ventilation.

A large staircase ascends to the different rooms in one corner of the court, and has no other opening of any description, save into the corridors. Dark and gloomy is this staircase, and the stenches from below are horrible and offensive: the disgusting gases from the drains rise up here, and hang in the corridors above, having no outlet whatever to dissipate them. To open the windows is only to let other stenches in, which have accumulated from the cesspools below, and which hang in one vast body under the roof, and yet there is not one breath to carry this away.

In times of much rain, the horrible gases are driven up the drain into the corridors above, and are diffused throughout the house. Nor is this all, for the smells from the kitchen having no outlet whatever except into the court, rise up under the roof, mix with the smell from the drains, and assist to make the whole doubly more sickening.

I simply send this to the sanitary world as a curiosity, and without one letter of exaggeration.

The covering over of the court, without ventilation, I have also noticed in Vienna and some parts of Italy, in new and public buildings.

Travelling as an architectural student, the more I see of these matters the more sure do I feel that they are too often overlooked by us. Architectural lectures do we attend, relating to the different styles, perspective, projection of shadows, or even carpentry and mechanical drawing; but little do we hear or know of sanitary matters.

Any meetings connected with architectural students relating to these matters I should most gladly avail myself of on my return to England, and would readily give notes of any incidents concerning the same coming under my notice between now and then,—not as suggestions for future improvement, but as examples of what to avoid. ALBERT N. BROMLEY.

Venice.

EXPLORATIONS AT THE SUPPOSED SITE OF TROY.

DR. HENRY SCHLIEMANN has sent to the *New York Herald* a paper in which he gives the results of his labours and researches on the site of Troy, where he has been at work for several years. At only one mètre below the surface, he says, I came upon a relic of Greek art, a fine sculptured marble of the time of Lysimachus, representing Phœbus Apollo in female attire with the disc of the sun on his head, and supported on four horses of beautiful workmanship. I also found there a long Greek inscription, which I shall publish, and which refers to the Emperor Antoninus Pius, who is therein called Titus Ælius Hadrianus Antoninus. At this part of the mount the accumulation of rubbish is very great. I came upon a wall built of huge stones, joined with clay. Whether this wall served as the substructure of some Trojan temple, or whether it was the wall of circumvallation which Homer ("Iliad," vii.) attributes to Neptune and Apollo, I am unable to say. Below and above this wall I find masses of that splendid black pottery which resembles so much the Etruscan terra-cottas. My thoughts are now absorbed in another important object. In digging the great trench simultaneously from north and south across the mount, I came, July 19, upon a colossal structure of solid masonry, 12 mètres or 40 ft. in thickness, and of a perpendicular height of 6 mètres (20 ft.), built on the primitive rock. Its structure is similar to that of the wall found beneath the site of the temple, except that the stones are smaller. I find by measure that the part I have laid bare is but 37 or 38 mètres from the western descent from the Acropolis to the plain, and it is, therefore, not unlikely that the structure was a tower in the wall, and it may have been the great tower of Ilium ("Iliad," vi., 386), to which Andromache went up to scan the plain in search of Hector. . . . On the primitive soil I found a Trojan lamp. I also found on the virgin soil a small domestic burial-place, formed by three stones, and containing two urns with human ashes. In the Trojan ruins proper I found weights of granite, hammers and axes of diorite, and small, beautifully-polished implements in the form of wedges of a splendid transparent green stone, besides small black terra-cotta discs, &c. Until last week the only Trojan symbol I had found in all my explorations was the sun. But last week I found a large number of symbols which enable me to say with certainty that the Trojans were Arians. The cross, and that cognate symbol which may be described as a cross with a crotchet at the end of each limb at right angles with the limb, are the symbols of those two pieces of wood which our Arian forefathers used, together with the "pramatha" (from which the Greek Prometheus), for kindling the holy fire (agni). The crotcheted cross symbol was found on utensils discovered on the banks of the Oder, and is a symbol of great importance in religious history.

SIR ARTHUR HELPS ON ART.

THE distribution of prizes to the successful students at the Portsmouth School of Science and Art took place in the Green-row Rooms, Portsmouth, on Monday evening in last week, in the presence of a crowded audience. Ex-mayor Ald. S. Baker presided, supported by Sir Arthur Helps, Mr. Stone, M.P., and members of the committee. After a preliminary statement by the Vicar of Portsmouth, chairman of committee, showing that the students had been very successful,—

Sir Arthur Helps addressed the meeting. He referred to the great enjoyment following school studies. It was a celebrated saying of Charles V. that "He who knows two languages is twice a man," and similarly he would say he who knew any other art besides his bread-getting one was twice a man. Speaking of the intellectual advantages the students gained, the first that struck him was the increased power of observation. He had once made the rather venturesome observation—to which he adhered,—that no one had really grasped and mastered a thing unless he had had to depict and describe it. Then there was the advantage of accuracy,—a sort of plebeian virtue. No! it was not common enough in the world. Would that it were common enough to be called plebeian! He believed that all the intentional lying in the world—of which there was a good quantity, perhaps,—did not do one quarter of the mischief that inaccuracy did. If a superior being were to come to him and ask him whether he would rid the world of inaccuracy or lying, he would say, "Let us get rid of inaccuracy,"—the misrepresentations, misunderstandings, misquotations, and all those things which led to the most tremendous quarrels between man and man, and nation and nation. There was not any method by which they could conquer this inaccuracy better than by the studies they were pursuing. Another intellectual advantage resulting from these studies was, that they gained power of expression. He believed that very low down in the world very great thoughts existed, but lacked expression. The students were also gaining power of representation in depicting nature. Replying to the arguments of those who asked how it was that the decadence of a State had generally begun when art was at its best, he maintained that the assertion implied was a total delusion. There was an enormous distinction between luxury and art. Nations had fallen, it might be, through luxury, but not through art.

ACCIDENTS.

Fall of a Floor in Sheffield.—The floor of a shop in Pondhill has fallen in. Between the shop and the next house there is a passage from the street, by which the back of the houses is approached. For some days before workmen had been engaged digging up the passage for the purpose of laying a drain-pipe, and a depth of about 5 ft. was reached. At this depth, the foundations of the houses on either side were exposed, and it is believed that this was the cause of the accident, for the foundation of the shop suddenly bulged out. This caused a portion of the outer wall to come down, and with it fell the roof of the cellar and the floor of the shop above. A girl was injured, and a labourer received a rather severe scalp wound. At the time of the accident, the required depth had been reached, and a portion of the drain-pipes were laid.

Fall of a Floor in Cornwall.—During a tea-meeting, which was held at Charlestown, Cornwall, on New Year's night, half of the floor of the large volunteer drill-hall, in which the company were assembled, gave way suddenly. Sixty persons fell into the cellar below, a distance of

16 ft. Fortunately the cellar was used for storing china clay. The audience who had escaped the accident were unable to descend the staircase, as it was that end of the building that had fallen, and they were in momentary expectation that the remainder of the floor would give way. The vicar was the first to make his way out of the cellar, when he immediately, with the assistance of others, secured planks, and placed them across the aperture in the floor. The persons in the cellar were then pulled out. The injuries sustained were broken bones and severe contusions. The remainder of the audience had to get down by ladders and planks.

Fatal Accident at the Alexandra Palace.—Mr. Richards has held an inquiry at the Nag's Head, Tottenham, respecting the death of George Hines, aged forty-two years. It appeared from the evidence that the deceased was foreman of a number of men engaged in the building of a theatre at the Alexandra Palace. On Saturday before last he was hoisted a distance of 95 ft. to fix some poles in the roof of the theatre, when in commencing his descent he missed his footing, and fell to the ground. He expired in about seven minutes. The jury returned a verdict of accidental death.

THE THAMES EMBANKMENT.

LAST week a deputation from the vestry of the Precinct of the Savoy waited upon the Metropolitan Board of Works in order to present a memorial upon the subject of an approach from the Strand through the Precinct to the Victoria Embankment. The memorial set forth that the only means of communication between Villiers and Surry streets, a distance of 710 yards, was by means of the steps at Waterloo Bridge, only practicable for pedestrians. The want of a thoroughfare for carriages was producing serious injury to commerce, property, and public convenience, and the present limited use of the Embankment between Westminster and Blackfriars was in a great measure to be attributed to the few approaches to the Strand from the Embankment. The deputation proposed the construction of a road 60 ft. wide through the Savoy, appropriating a very small portion of the Thames Embankment Gardens, and using some vacant property of this Board. Mr. White having expressed the views of the deputation, Mr. Newton asked Mr. White if he had not been to the Board before opposing any road through the Savoy, and whether in consequence of the opposition the Board had not abandoned the viaduct. Mr. White said that was so, but the road was different altogether to the plan now proposed, which would cost 100,000*l.* instead of 300,000*l.*, and lead down to the Embankment by an incline of one in twenty. On the motion of Mr. Phillips the matter was referred to the Works Committee.

DEPRIVATION OF PROSPECT.

Robinson v. Grace.—In this case, before Vice-Chancellor Wickens (Dec. 18), plaintiff, in the spring of 1852, contracted to purchase from the defendant land near Derwentwater, from which there was a fine view north and east. Plaintiff then built a house, the defendant having known, at the date of the contract, that this was his object in buying the land, and in 1854 the land *and house* were conveyed to the plaintiff. The defendant shortly afterwards obstructed the view from the plaintiff's windows looking north and east, with the intention of preventing his acquiring any rights under the Prescription Act. Plaintiff filed his bill to restrain such obstruction.

Vice-Chancellor Wickens, without hearing a reply, granted the relief prayed.

WORKING MEN'S COLLEGE.

THE inaugural address at the commencement of the winter session of this college, in Great Ormond-street, has been delivered by the Dean of Westminster. There was a large attendance of students and visitors.

Mr. Thomas Hughes, M.P., in the absence of the Vice-Principal (the Rev. J. S. Brewer), took the chair, and referred to the great loss which the college had sustained by the death of its founder, the Rev. F. D. Maurice.

Dean Stanley, who was warmly greeted, said there was a very widely-spread complaint or murmur, he could hard call it a belief, that the age for individual influence had passed away, and that the world was henceforth to be guided by general movement—by the action of masses, forces, or parties of men. Against that complaint the connexion of this college with its first founder was a perpetual protest. At the close of his address, the Dean said he thought he had said enough to show that they need not give way to the popular belief that the age for individuals and institutions had passed.

In the course of the evening a report was read by the secretary, which contained the following passages:—

"6,144 members have joined the college to this date and at least double that number have passed through the adult school. In the college 573 members attended classes during the past year. There was an increase in the average number of men attending the higher sections in all divisions, with a decrease in the number of men attending the elementary sections, especially so in English and French. . . . . There is still a sum of about 220*l.* due for repairs on account of the new building, &c., and at the close of the year there was a balance against the college of 9*l.* . . . . . The experience of the college makes it reasonable to expect that, when it is freed from its temporary incumbrances, it will easily support itself without any extraneous aid."

CLEANING FLAGSTONES.

IN reply to "G. W," it will be necessary to take up the flags and relay them, after cleaning, on dry ballast, free from mould, and a superstratum of chalk or old clean dry mortar.

To clean the stones, lime-white them both sides with hot new-made lime-wash, and brush it off when dry; and repeat the process if necessary. This process is also applicable to any old building material that cannot otherwise be cleaned; for old brickwork or stonework of any kind; and also for dirty old wood floors. These latter only want one thin coat, and should be scrubbed as soon as the lime is dry. In this case the lime does good in every way. Where necessary it removes contagion, kills vermin, purifies the atmosphere, and cleans and preserves the wood.

WALTER S. ARGILL.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

ON Saturday last, the members of this Society again visited the extension works of the Great Eastern Railway, between Broad-street and the low-level station at Shoreditch.

The members assembled at Broad-street Station, North London Railway, at two o'clock, and were conducted over the new works by the representative of Messrs. Lucas, Brothers, the contractors.

The works in this section of the railway consist of the new station and approaches, and a short length of line between retaining walls.

A notable feature is the subway for the mains of the Chartered Gas Company, running under the whole width of the station parallel with what was Sun-street. The roof of the subway under the platforms is formed of brick arching; but under the line of rails iron girders will be used.

The Shoreditch Low-level Station claimed the attention of the members. The roof of iron and glass is light and elegant, and the ventilation seems satisfactory. The iron bridge carrying Commercial-street over the station was particularly noticed. The works, which are in a forward state, are being carried out under the direction of the company's engineer, Mr. Edward Wilson.

THEATRICAL.

Haymarket Theatre.—Mr. W. S. Gilbert's new play, "The Wicked World," is the most complete work that he has yet produced,—a most ingenious fable admirably set forth, and it is helped by the best acting, on the part of Miss Robertson, which that excellent actress has yet been led to exhibit. That it includes as many elements of popularity as "Pygmalion and Galatea" is not quite certain, but that it will long hold the public, and give pleasure to thousands, we have not the remotest doubt. In parts of the play, notably at the close of the second act, Miss Robertson displayed an amount of physical power with which her warmest admirers had scarcely credited her, and literally carried the house by storm. A more enthusiastic recognition, justly earned, has not been awarded to actor or actress for many a long day. Mr. Buckstone has a part full of fun, and Miss Roselle, Miss M. Litton, and Mr. Kendal efficiently carry out the author's views. The latter by portraying the fairy brother *Ethais* with feminine refinement, could produce a stronger contrast with his coarse and brutal counterpart from earth.

Mr. J. O'Connor has painted an elegant scene, "a fairy landscape on the back of a cloud"; but it does not convey exactly the actual situation: it should have represented in the background the earth as seen from fairy-land. Objections apart, all parties concerned in the production of "The Wicked World" are to be congratulated on a genuine success tending to the upward progress of the drama.

RAILWAY MATTERS.

Tenterden.—A correspondent of a contemporary says,—"I propose to start a line from Paddock Wood which would touch as near as possible, Brenchley, Horsemonden, Goudhurst, and Cranbrook. Then it should run so as to be useful to Benenden, and pass down the valley on the west side of Tenterden, which would be useful to Rolvenden. Then it should run to the west of Wittersham, which would be useful to Beckley, Peasmarsh, and Iden, and so onwards to Rye.—W. H. E., architect and surveyor, London." The tramway scheme has been abandoned.

Inauguration of a Railway in Japan.—A line of railway has been opened from Jeddo to Yokolama. The Mikado determined to inaugurate the opening himself, and this was one of the great attractions of the ceremony,—to see "the descendant of the gods," who had hitherto permitted himself to be seen but very rarely by his own people, delivering a speech and receiving addresses in the midst of a general *fête*. This, therefore, may be considered as another step taken in the path of progress. The importance of the event was recognised by all, and the attendance at the ceremony was immense. The Mikado is a very noble-looking young man, about twenty years of age, and rather tall, and with an olive tint of complexion, very regular features. He was dressed in a white tunic, and a mantle of yellow silk. His head-dress appeared to consist of a sort of chignon, formed of the back hair and brought to the top of the head, and surmounted with a small silk cap. The ceremony terminated with a splendid display of fireworks.

CHURCH-BUILDING NEWS.

Homerton.—The new church of St. Luke has been connected by the Bishop of London. It accommodates 750 persons. It is faced externally with Kentish rag-stone, with Bath-stone dressings, and has cost, as far as at present completed, about 5,000*l.* Mr. Carruthers, of Reigate, was the contractor, and Messrs. Newman & Billing were the architects.

Maryport.—The new Mission Church, which has been built on the north side of the harbour at Maryport, has been opened for divine service by the bishop of the diocese. The site for the building was given by Mr. J. P. Senhouse, the lord of the manor, and the edifice itself has been erected by public subscription. It has been built from the design and under the superintendence of Messrs. Charles Eaglesfield & Son, of Maryport, architects, and consists of a nave and one side aisle, with a circular apse or chancel. The style of the building is Early English. The nave is divided from the aisle by three arches. The roof is an open timber one. The structure will have, when properly finished, a tower and spire above the entrance, 100 ft. in height. The pews, which are open, and made of pitch pine varnished, will accommodate 340. The building generally will be lighted by gas from ornamental brass standards, but the chancel will be lighted by a corona, the gift of a lady. The walls are of red freestone from the Netherhall quarry; and the church is to be warmed by one of Gurney's patent stoves. The contractor for the mason's work was Mr. Marshall, of Maryport; for the joiner's work, Mr. Henry Dent, of Cockermouth; for the slating, Mr. Mandle, of Maryport; for the plastering, Mr. Johnson, of Carlisle; and for the plumbing and glazing, Mr. Anthony Piele, of Workington. The cost of the church, including the tower and spire, will be about 1,600*l.*, and a considerable portion of this amount has been raised. It is intended to furnish the tower with an illuminated clock with four dials.

Dorchester.—The Abbey church has now undergone a thorough restoration, the work extending over twenty-five years, and costing nearly 10,000*l.* The proportions of the church are now well displayed, and the Jesse window and the east window, with its stained glass, are plainly visible from nearly all parts of the edifice. The last and crowning portion of the work of restoration is the complete renovation of the roof of the south aisle of the chancel, which has just been accomplished from the designs of Sir Gilbert Scott. There yet, however, remains something to be done to this aisle, as some traces of a groined ceiling have been discovered, and it is the wish of the vicar to have this thoroughly restored. A marble reredos, coloured glass for the windows, more and improved seating, a new

St. George's, Hanover-square. The Committee of Works have recommended the vestry to adopt the following estimates for the year ending Lady-day, 1874: Maintenance of roads, 12,217*l.* 6s. 8d.; paved footways, 322*l.* 10s.; paved carriage-ways, 1,608*l.* 5s.; gravel footways, 75*l.*; casual repairs, 1,750*l.*; lighting, 9,929*l.* 14s. 6d.; watering, 3,966*l.* 17s. 3d.; cleansing, 9,242*l.* 3s. 8d.; total, 39,141*l.* 17s. 1d. This does not include 2,271*l.* 7s. 10d. for sewer works, besides an additional outlay of 1,700*l.* Should the vestry adopt these estimates, they will involve an additional rate of 1½d. There are recommendations to lay down asphalte on the footways in various parts of the parish, at a cost of 194*l.* 10s., and to lay down wood-paving as supplied by the Improved Wood Paving Company in Piccadilly, between Berkeley-street and Albemarle-street, at a cost of 1,150*l.*

The Redcliffe Sanitary and Ventilating Trap. — This is the title given to a cheap, earthenware trap invented and patented by Mr McNeil Greig, and at present chiefly used on the Redcliffe Estate, South Kensington. It holds more water than most traps, and so gives greater chance of security, and has a second inlet, also trapped, to receive water from sinks or areas, which serves to flush out any sediment deposited in the bottom of the trap. The hole provided in the crown for a ventilating pipe would be more useful if it were in the front part of the trap, nearer the outlet, instead of being behind the bridge. Mr. Greig has made some smaller traps of the same form: all very cheap and good.

Ozone.—The *Journal of the Franklin Institute* says that Dr. Loew has procured a patent for a method of manufacturing ozone, which depends upon an observation first made by him some time ago, and which then created considerable discussion as to its correctness, in various scientific papers. The observation is, namely, that if cold air be blown through a flame, it is converted partly into ozone. The apparatus designed by the inventor to utilise his process consists of a number of Bunsen burners, placed in a row, and as many horizontal tubes, arranged at a certain distance above the burners, through which cold air is blown against the flames. Opposite to these tubes are placed a number of funnels, to collect the accumulating ozone.

Slate Quarries on the Lochiel Estates. — A correspondent of the *Weekly Scotsman* states that the slate quarrying, began some months ago on Mr. Cameron, of Lochiel, M.P.'s, estate, at Onich, continues to be of a most promising character. Seams of slate varying from 5 ft. to 15 ft. have been bored through horizontally, and from the nature of the surface tunnelling there is every indication that the depth of seam lies much under the sea line. The quality of the slate found is stated to be equal to Welsh in durability, and the working of these quarries will, it is expected, greatly augment the trade and revenue of the Caledonian Canal.

A Crystal Palace for New York.—The people of New York, encouraged by the example of the Crystal Palace in London, have determined to commence a similar undertaking in their own city. The "Industrial Exhibition Company" has been started, and a grand dinner was given at the St. James's Hall, in order to discuss the position and prospects of the company. The directors intend issuing 1,875,000 dollars stock, at 80 cents on the dollar, and to purchase a plot of ground outside the city, at a cost of about 952,000 dollars, for the erection of a permanent industrial exhibition. The matter is said to be in very good hands.

The Vienna Universal Exhibition of 1873.—Notices have been issued to British exhibitors that a special law for the protection of industrial designs and inventions at this Exhibition has been sanctioned by the emperor and published; and that the frontier custom-houses will direct goods to the chief custom-house in the Exhibition, and the chief custom-house back to the frontier custom-houses, under certain regulations announced; goods remaining in Austria or Hungary being liable to import duty within three months after the close of the Exhibition if not then entered for exportation.

Builders' Foremen.—Complaints reach us against the fitness of the foremen employed by certain large builders, but we cannot give currency to charges on *ex parte* evidence. The builders themselves ought to be the best judges.

New Buildings. -On Christmas-day a new Welsh Calvinistic Methodist Chapel was opened at Craig, near Bangor, the architect being Mr. R. G. Thomas, Menai Bridge, and the contractor Mr. Evan Williams, Bangor; the total cost was about 1,800*l.* Mr. Thomas has also in course of erection a large mansion at Treborth, for Mr. R. Davies, M.P. for Anglesea; and at Trevecca College, South Wales, a handsome memorial chapel to the late Howel Harris, one of the founders of Welsh Calvinistic Methodism.

Mr. John Jay, Contractor.—We regret to have to announce the death of this gentleman, at his residence in Hornsey. He has been long known as an eminent contractor, having executed many undertakings of great extent, not only in the metropolis, but in various parts of the United Kingdom. He was the first contractor for the Metropolitan Underground Railway. His remains have been interred in the family vault at Abney-park Cemetery.

A New Clock for Market Drayton.—The parishioners of this town having decided upon the erection of a clock in the parish church, a subscription enabled the committee to place the work in the hands of Mr. Smith, of Derby. It is now complete. It strikes the hours upon a bell of 18 cwt., and the quarters on bells in proportion. The time is shown upon four large dials (one illuminated).

Paris.—Workmen will shortly be occupied in clearing away the ruins of the Tuileries. They are also employed in making some interesting repairs in the Palais des Thermes, at Paris, the relic of the old Roman edifice inhabited by the Emperor Julian. There is also some question of repairing the façade of the Hôtel-Cluny, which is falling to ruin. M. Viollet-le-Duc will have the direction of the works.

Proposed Art Gallery for Liverpool.—This project is again talked of in the town: we shall be glad to see it persevered with. It appears that pictures to the amount of about 13,000*l.* have been sold during the past two years in the public exhibitions in Liverpool, in addition to what have been sold from the exhibitions of Messrs. Agnew, Grindley, and others.

Caution to Brass Founders and Others.—An account comes from America of the destruction of the jaw-bone of a workman, poisoned by the fumes of zinc. The man was a brass-founder, and in pouring the alloy of copper and zinc, the fumes were thrown off. The action of the zinc fumes upon the bones of the human system appears to be analogous to that of phosphorus.

The Leeds Borough Engineer and Surveyorship.—A recommendation was made to the council at their meeting on Thursday, to appoint one of the three following gentlemen borough engineer and surveyor:—Mr. A. W. Morant, Norwich; Mr. J. Lemon, Southampton; or Mr. P. Paul, Tottenham.

The Ironworkers of South Staffordshire and East Worcestershire have accepted the terms offered by the masters, and will continue to work at present prices for three months. At the expiration of that time a new basis of agreement will be sought by the men.

Institution of Surveyors.—The next meeting will be held on January 13th, when the discussion on the paper by Mr. Arundel Rogers, "Mines and Minerals," will be resumed; and, should time permit, a paper will be read by Mr. E. J. Castle, entitled "The Origin of Parochial Relief."

The Queen of Diamonds.—The discovery of a diamond of enormous weight is reported from the Cape. It is said to be of 288 carats, in colour a light yellow, shape good, though slightly flawed on the surface. In weight this surpasses all known stones.

Mr. Rickman.—The newspapers announce the death, on the 3rd inst., at Rhyl, of Mr. Edwin Swan Rickman, architect, late of Birmingham, aged eighty-two years.

Co-operative Conference in Leicester.—A quarterly conference of delegates from the Midland Counties Co-operative Societies was held in Leicester Town-hall, on Saturday.

TENDERS

For building a cottage, with workshop in rear, at Weymouth-terrace, Haggerston, London, for Mrs. H. Baker. Messrs. Ebbetts & Colb, architects

Ferne (accepted) £325 0 0

For new building, Bear gardens, Southwark. Messrs. John Young & Son, architects:—

Coleman	£2,469 0 0
Kilby	2,379 0 0
Pritchard	2,377 0 0
Hart	2,347 0 0
Elkington	2,300 0 0
Merritt & Ashby	2,197 0 0
Newman & Mann	2,183 0 0
Robbins & Co.	2,180 0 0

For alterations, St. James's-place, Aldgate. Messrs. John Young & Son, architects

Philps & Besiker	£1,090 0 0
Axford & Co.	1,047 0 0
Perry	1,012 0 0
King & Son	1,010 0 0
Newman & Mann	995 0 0
Merritt & Ashby	933 0 0

For new coffee and billiard room, &c., to Bulkeley Arms Hotel, Beaumaris, for Sir R. W. Bulkeley, bart. Mr. R. G. Thomas, architect:—

Pritchard (accepted)	£836 0 0

For schools, Pr ness-road, Croydon, for the Croydon School Board. Mr. Henry Dawson, architect. Quantities by Mr. C. N. McIntyre North.

Henshaw & Co.	£8,371 0 0
Rider & Sons	7,990 0 0
Colls & Sons	7,944 0 0
Woodward	7,324 0 0
Peskett & Taylor	7,323 0 0
Higgs	7,150 0 0
Holledge	6,995 0 0
Hyde	6,975 0 0
Smith*	6,136 0 0

* Withdrawn on account of error in tender.

For alterations to Christ Church, Leicester. Mr. J. Goddard, architect:—

Herrod	£824 10 0
Knight & Hodgkinson	765 0 0
Osborne, Brothers	728 0 0
Ratcliffe	710 0 0
Nicholson	619 0 0
Thrall, Vann, & Co. (accepted)	617 0 0

For alterations and additions to Abney Chapel, Stoke Newington

Brindle & Co. (accepted)	£235 0 0

For a new window to be erected at the west end of the parish church, as a memorial to Dr. Harvey, the discoverer of the circulation of the blood. Mr. S. Slingsby Stallwood, architect:—

Adcock & Rees	£204 10 0
Bowley	159 0 0

For new town-hall, St. Helen's. Mr. Summers, architect:—

	Municipal Department	Police Department
Latham	£28,524 0 0	£11,476 0 0
Middlehurst	27,825 0 0	11,130 0 0
Harris	27,600 0 0	11,360 0 0
Harrison	27,745 0 0	11,209 0 0
Jones & Sons	27,427 0 0	11,032 0 0
Hague & Co.	27,198 0 0	10,647 0 0
Urmson*	25,294 0 0	10,159 0 0

* Accepted.

For chapel at Canning Town. Mr. Finch Hill, architect. Quantities by Mr. Goode:—

Gibson, Brothers	£2,055 0 0
Ennor	2,016 0 0
Patrick & Sons	1,968 0 0
Morter	1,938 0 0
Kilby	1,930 0 0
Dove, Brothers	1,925 0 0

For completing Nos. 12, Warrington-crescent, Maida-hill, N.W., for Mr. Henry Vallance. Messrs. Fowler & Hill, architects. Quantities supplied

Mallett	£2,756 0 0
Nixon & Sons	2,310 0 0
[illegible]	2,137 0 0
Reed	2,128 0 0
Johnson & Co.	1,988 0 0
Ecclestone	1,945 0 0
Rutland	1,850 0 0

TO CORRESPONDENTS.

E. E. (If a party garden-wall it should be jointly rebuilt. The [illegible] J. S. [illegible] Messrs. M. [illegible] Mr. [illegible] Messrs. M. [illegible] [illegible] Mr. R. W. R. K.—H. F.—G. T. C.—G. M.—J. I.—W. & J. B.—D. & D.—Th. B.—Joiner of Fifty Years. J. L.—E. D.—W. R. C.—C. H. P. B. & Co.—Messrs. P. H. E. F.—C. F. M.

We are compelled to decline printing our books and [illegible] addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the [illegible] and address of the writer, not necessarily for publication.

N.B. The responsibility of signed articles and papers read at public meetings, rests of course with the authors.

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The Builder.

VOL. XXXI.—No. 1563.

Architecture in Landscape.

ONE of the most thoughtful and profound philosophers of our day, Mr. Herbert Spencer, has in his miscellaneous essays travelled a little out of his usual paths of speculation, to give us his thoughts on the picturesque in architecture. The short essay on the subject was suggested, he tells his readers, by hearing at a water-colour exhibition the remark, "How unpicturesque!" applied to a certain drawing, which had previously struck himself in the same light. On considering the drawing in question, and having assumed the "unpicturesqueness" as proved by this *consensus* of opinions, he came to the conclusion that this defect arose from the fact that a building in the "Classic" style, with regular unbroken horizontal lines, was combined in the composition with a broken and irregular landscape. The lines of the building did not harmonise in style and character with those of the landscape, and the result was as aforesaid; upon which premises the writer bases some further considerations on the general conditions of the picturesque in architecture, not altogether to the purpose.

It is always interesting to meet with original opinions on any branch of art from men who have thought deeply on other subjects, and who frame their opinions entirely independently of fashion. But the instance we have alluded to is one out of many illustrations of the fact that, even to minds of exceptional power and breadth of information, some special training is requisite to enable them to appreciate fully the subtle and delicate distinctions involved in questions of this nature. If Mr. Spencer was right in his deduction, the Acropolis ought certainly to be a most unpicturesque subject; and Gaspar Poussin and other artists, who were fond of introducing architecture into their landscapes, must have grievously erred in their critical judgment, as well as the numbers who have admired their compositions. Art criticism may often be in want of more philosophy; but it is equally true that philosophy will not make art-critics.

In fact, the general sense of painters and students of the picturesque has decided, in the main, in favour of almost the opposite principle in combining landscape and architecture, to that to which we have alluded. Tacitly, at least, it has been felt that the simple, regular lines of Classic or Italian architecture gain in effect in combination with that kind of broken and irregular, but not too wild, landscape, which we generally call picturesque, and the effect of which (in painting) is, in turn, enhanced by the presence of the architecture. We regard architecture in a picture as something distinct from the landscape, appealing to a different class of associations, and resting upon entirely different qualities for its effect. As compared with nature, it is the distinctive character of architecture to be regular and symmetrical: that is the kind of charm peculiar to it, and which, therefore, when architecture is used as an accessory to pictorial effect, we like to see emphasised and brought out,—in regard, at least, to the main lines of the structure introduced. The painter may indeed represent the buildings he introduces as abraded and discoloured by time, for it is only thus that he can avoid the aspect of newness and recent introduction on the scene, which would, in most cases, clash with the feeling of his picture, destroying its repose by suggesting the immediate presence of the mason and his staff, and depriving the scene of the charm of association belonging to that which has remained long unchanged, and survived many vicissitudes of time and season. So far the painter may endeavour to harmonise his architectural adjuncts with the feeling of this landscape; but further than this both painter and architect will be wise not to attempt to bring the lines of their architecture so far into similarity with those of the landscape as to make the former appear in any degree to compete with the latter. Architecture should stand as a contrast to, not as a reduplication of, the character of the landscape. Where we have the variety and irregularity of outline and detail in nature, in broken ground and woodland scenery, there we look for the symmetrical repose of architecture as a foil to the landscape. We do not want budding crockets and finials, wild and piled-up outlines, and masses of building, where there are the more varied growths and the larger outlines of nature to throw such attempts on the part of architecture into the shade. A very distinguished church architect certainly attempted, in a church built in the lake district, to make the architecture harmonise with the mountains, by providing a tower and spire of exceptional and disproportionate size and massiveness. But the attempt is not a success: its purpose is evident, and the futility of the result equally so. What we can realise, in such scenery, is the contrast between the varying and undulating outlines of nature and the sober, artificial repose of building. And on the converse principle it is that Gothic architecture, in its richer and more ornate developments, is pre-eminently the architecture of towns, both historically and æsthetically. Where we have no hills and trees to compete with our buildings, we can afford in them to give the rein to fancy, and we find a pleasure and relief from the otherwise dreary monotony of formal streets, in playing with the outlines and details of the architecture, and seeking from it some of that variety of line and of light and shade which in the country is supplied by nature. Almost all landscape painters have felt this instinctively. A Gothic church, with its spire and pinnacle and crockets, would add nothing, in most cases, to a landscape, and would be felt, if worked out at all in detail, rather as an intruder in the composition. The painter seeks mainly for broad, heavy masses of light and shadow in his buildings, and is rather troubled than otherwise with elaborate detail. When, however, the landscape gets beyond the limits of the picturesque into those of the wild and grand, there is another change required in the treatment of architecture, which is to be combined with it. We cannot place the amenities of Classic architecture as a feature in scenery of this description; they would be lost and overpowered; the contrast between the scene and the building amounting in this case, not merely to opposition of character, but to absolute discrepancy of sentiment and association. The Greek temple, contrasting as it does in line with the irregularity of an ordinarily picturesque landscape, is in harmony with it in sentiment; neither overpowers the other. But the Greek temple would be lost and insignificant amid the gloomy grandeur of Glencoe or similar scenes. In such scenes we require still further to denude architecture of her attempt to vie in interest with nature. We must reduce the architecture to its broadest, simplest, most unpretending and yet most durable form, in order to prevent its appearing either an impertinence or a feebleness amid those great forces of nature. Thus it is that the castle form of building is the most suitable for such regions; the suitability being partly, no doubt, the association which connects buildings of the fortress aspect with crags and inaccessible places, but partly, also, that scenes of the kind we are referring to irresistibly suggest the power of natural forces, and we are scarcely satisfied unless with structures which seem capable of resisting the action of those forces. The principle will hold good, indeed, wherever nature assumes a wild, cheerless, and uncultured aspect, as on a bleak, barren moor, as well as in rocky and mountainous landscapes. By such a treatment we are, it is true, blending architecture with nature to a certain extent, and this because nature is here too strong for us. We can neither compete with her in character, nor offer an equally balanced contrast, and we are obliged to let our architecture fuse itself, as far as possible, with the landscape, which must otherwise overpower it completely. This fusing of architecture with nature is carried a step further, and as far as it can go, by the painter who reduces his architecture to ruin, from which the immediate human interest has departed, and which becomes, in point of picturesque effect and treatment, entirely one with the landscape, to which it serves only to impart the additional interest of association with past times and with the former history of man. This kind of sentiment in architectural ruins in combination with the landscape has never been more beautifully illustrated than by Richard Wilson, who, perhaps, was only searching for the mere pictorial element, in the introduction of his picturesque blocks of ruined buildings and fragments of arcades; but he was giving us more than, possibly, he knew of himself; and the architectural remains in his Italian scenes have a kind of combination of old and modern interest which reminds us of Goethe's beautiful little poem, where the wearied foot-traveller in Italy is guided to the peasant's dwelling to rest, and finds, instead of the lowly hut he expects, shapely time-worn columns and architraves, the remains of a ruined temple.

Among more recent painters who have happily treated buildings in combination with scenery may be mentioned Stanfield, who evidently attached great importance to buildings in his inland and lake scenes, and has a way of using them, very similarly in many of his works, which indicates a settled and premeditated treatment of them as features in a scene. He depends largely upon sunlit buildings for the principal lights in his middle distance, and an Italian tower or campanile so placed, and partly reflected in water, is a very common incident with him. Another painter, not so much talked about now as he deserved to be, Bridell, was occasionally very happy in his introduction of buildings, generally of a classic type, into landscapes exactly suited to this type of architecture. Of Roberts and Prout we do not here speak, because they were rather painters of buildings than landscape painters, and what little landscape did appear in their pictures was quite subordinate to the architecture. But among painters who have treated buildings in landscape with great success must be mentioned Duntze, the painter of winter scenes in Belgium. His pictures are very much alike certainly, and he paints but one effect; but his groups of high-roofed quaint houses are endlessly varied, and always picturesque and interesting; and their quaint jagged outlines supply to the painters leafless and flat winter scenes, just the relief and play of line which they want, and which in pictures of another

*

class would be furnished by the foliage of the trees and the undulations of the land. Of the value of architectural objects to the painter in giving interest to distance and middle distance, and aiding the linear and aërial perspective of a picture, examples are endless, and too obvious to need special reference.

It might be wished, however, that the architects would oftener show the same sense of the value and effect of their structures on real landscape which the painters evince in regard to their artificial landscapes. Often, in the designing of a building in the country, we are inclined to suspect that its effect on the landscape in which it is situated, and the most picturesque and effective way of placing it in regard to the landscape, is the last thing thought of, if it is thought of at all. Yet this is certainly one of the most important points in connexion with architecture considered from an artistic point of view, if we reflect that this combination of the building with the landscape is the only light in which it will be viewed at all—the only way in which any pleasure will be derived from it—by a large proportion of the persons who may see it. The strictly architectural beauties of the mansion, and the comfort of its arrangements, are confined to the experience of the owner and his particular circle of friends. But the position of a building in regard to the scenery in which it is situated, its being placed higher or lower on a slope, or a dozen other circumstances of site, may make all the difference as to whether, to the majority of those who see it, it is a new beauty in the landscape, or an intruder spoiling the best point of the scene. We have in our recollection houses so felicitously placed, whether by choice or happy chance, in the landscape, as to be, under almost all aspects of morning and evening, a constant source of pleasure. It is surely worth while for an architect to make an endeavour towards attaining such an object as this, where it is possible. When an opportunity is afforded of placing a house on the end or spur of a moderate ridge, without its being too much exposed, this is one of the surest opportunities for realising picturesque effect. In such a position, too, a building, especially with anything in the shape of a tower rising from it, serves to give scale to the landscape, and may even be made to add to this without suffering itself from an architectural point of view. Conversely, a building ill considered in proportion and outline may succeed in dwarfing and impairing the scale of the landscape a result which engineers are frequently exceedingly happy in realising by means of their own peculiar class of structures. While a building thus placed on an eminence requires a characteristic treatment of skyline by means of moderately elevated towers or cupolas (of which one of the finest and most picturesque examples is perhaps the palace at Cintra, which evoked so much admiration from Byron), a building on the slope of a hill will generally require a different treatment, in predominating horizontal lines; the building in this case appearing to nestle into the landscape rather than to stand out from it. The exact position for a building on such a slope, when seen in profile, will often be a very nice point to determine; a very little difference of place, higher or lower, making all the difference in point of effect. In such a position, as we hinted just now, tall projections in the shape of towers will mostly be out of place, as clashing too nearly with the slope of the ground behind them, especially when this is at all steep; and for buildings on eminences a degree of solidity and squatness of proportion is generally required even in their most elevated features, to give the requisite expression of stability and power to withstand all the attacks of the elements incident to such a situation. It is only in the plain, on level country, that we can successfully introduce features of great height; it is here that such features are practically most securely placed, and here, also, that they have their greatest effect, where there is nothing else to compete with them. This has long been recognised by architects, as is evident from the fact that the great spire districts of England are almost entirely flat countries,—a fact which completely bears out the position laid down above, that architecture, as a rule, must contrast with, and not compete with the character of the landscape. Few things of the kind can be finer and more successful in effect than some of our tallest Mediæval spires, rising straight from the flat expanse of country, or seen in the distance, a white spike lighted by sunshine, against the dark purple of the distant landscape,—the latter, as we all know, a favourite incident with landscape-painters. Much of the suitability of form in regard to site will depend also on the known climate of the country or neighbourhood; for an outline or composition which would be pleasing in a region of sunshine and calm may give a feeling of insecurity and instability if placed in a stormy and inclement neighbourhood. One recent rather successful adaptation of architectural treatment to natural site, which may be mentioned in illustration, is a large house (the residence of the head of a well-known publishing firm), which now forms the most prominent object in a walk out of Edinburgh to Arthur's seat. Situated low, this house would in a serene climate be judged as far too *prononcé* in character for the site; but taking into account the prevalent climate and weather of the neighbourhood, coupled with local associations of style, and the proximity of the overhanging brow of Salisbury Crag, the stern castellated character of this building, with the large, heavy square block which rises above the rest as the main feature, is a very satisfactory instance of the combination of architecture with landscape. The name of the architect has escaped us.

The consideration of colour in architecture, in regard to its effect upon the landscape, is a very important one; that is to say, it is a great and crying evil when colours and tones, crude and out of keeping with the tone of the landscape, are introduced into it; though the means of avoiding any glaring inconsistency of this kind are very simple. Build, as far as possible, with the materials of the district, if you would have your building harmonise with the tone of the landscape, since it is these materials that give, or rather, in fact, constitute, that tone. This is the secret of part of the charm of many a simple old country church—many a rural cottage; they are of the same material which forms the basis of the landscape around them, and fall naturally into keeping with it. It is odious to the eye, often, to find in the midst of a quiet rural landscape a staring, particoloured portent of patent brick or "streaky-bacon" masonry, frightening away all repose and harmony from the picture. Foreign materials may be used with happy effect in small quantities, to relieve and brighten up the structure; but let the main part of its material be, if possible, of a local growth, and imbued with local colour.

Where a house is necessarily at all out of keeping with the landscape, in this or in other respects from the necessity of using materials foreign to the site, the inconsistency may be got over by connecting the house gradually with the landscape, through the medium of terraces and gardens, in which the materials and treatment should be made gradually to coincide more and more with the character of the landscape, till the point is reached where the artificial blends with the natural. Very beautiful results may be produced in this way, with care (and cost).

There will be many other points to be found, in almost every case of buildings to be erected in the country, in regard to which it will be possible to render a structure a desirable feature in the landscape; but nearly every case will present its own problem, to be dealt with according to perception of the architect. We will only add that, in selecting the precise site for a house, in addition to the usual questions of foundation, drainage, &c., to be determined by a close inspection of the ground, it may sometimes not be labour thrown away to take a more distant view of the site from one or two neighbouring points, and endeavour to realise how far the building may be best placed, so as to be a real added interest to the landscape in which it is to form a permanent feature.

MEN AND MASTERS IN SOUTH WALES.

It is worse than idle to ignore or to dissemble the extreme gravity of the crisis in South Wales. It is far more than the prosperity of even that busy centre of production that is at stake. Our great staple industries of iron, of coal, and of all the thousand crafts that depend on the regular production of these prime elements of skilled labour, are all, directly or indirectly, involved. The mining industry of the country alone is a source of national income to the amount of 200,000*l.* a day, for each of the six working days in every week in the year. Our latest returns, those of 1871, have been issued within the past few days. From 210 mines, during that year, were raised 17 million tons of iron ore, of the value of 7,700,000*l.* From 2,760 collieries, 117 millions of tons of coal were raised, of the value of upwards of 35 millions sterling. The total value of the minerals won in the United Kingdom in 1871 was 47½ millions sterling, being 2 millions more than in the preceding year. Such is the direct industry, and such was the rapidity at which it was expanding, the rate of increase being such as, if steadily maintained, to double the production in five years. The opposite side of the picture is too gloomy to be regarded without feelings of apprehension, as well as of distrust.

Our collieries found employment, in the year 1869, for 345,446 male persons, of whom 282,473 were miners; the yield of that year being 108 million tons of coal. It is not easy to compare the complex industry of iron with the simple statistics of coal. We have stated the estimated value of the iron ore won in 1871. In that year the pig iron produced was valued at 16,667,947*l.*, being an increase of above 1,700,000*l.* in value over the preceding year. When we compare the price of pig iron with that of bar, of rails, and of sheet, and when we further consider the great development recently given to the manufacture of steel, we shall be able to form some idea of the labour devoted to the manufacture of iron, in the condition in which it becomes an article of commerce; and perchance the raw material for the ironsmith and ironworker for all descriptions of trades.

Bar iron was quoted on the 6th of January last at from 11*l.* 10s. to 12*l.* per ton; Staffordshire sheet iron being as high as 15*l.* 10s. Scotch pig was at 6*l.* 6s. These prices have been attained by a gradual rise from 6*l.* 5s. per ton for bar iron in 1861 1862. In 1856, the price was 9*l.* 1s.; in 1851, 5*l.* 11s.; in 1845, 3*l.* 5s. Thus for the last quarter of a century there has been a recurrent rise and fall in the price of iron, the maximum quotations being very nearly three times the minimum. It is evident that a trade subject to such enormous fluctuations must demand both unusual powers of business, and very large capital, for its maintenance. And the question is further complicated by the fact, that other parts of the world are only too well prepared to come into competition with the United Kingdom, for the production and manufacture of iron, not only as to quantity and price, but, still more seriously, as to quality.

Thus the grim, hard, fact, of the sudden cessation of the bread-winning work of some 60,000 industrious men in South Wales,—a fact, enough, in itself, to intensify the rigour of a winter that has lost its usual character,—is but an item in that long catalogue of mischief which opens with the word "strike."

It has been urged as a matter of hope, in the contest now joined, that mutual consideration and good temper have, to an unprecedented extent, been maintained during the preliminary discussions. We confess that we derive but small comfort on the present occasion from this fact. When persons quarrel in haste, they may often make friends on mutual reflection. But when the real points of difference appear, to the uninformed looker on, to be so slight that they may readily be compromised; when mutual accommodation is proposed, and when, coolly and composedly, it is refused by both parties; experience shows that the break is very difficult to close.

It is important that this great question should be viewed in its true light. The self-control hitherto exercised by both parties has, at all events, the advantage of rendering this more easy. The men who are put in the fore-front of the battle are not those who have provoked the contest. The former will be, there is no doubt, the first to suffer. They are the forlorn hope of the union; and a forlorn hope exposed to suffering and starvation, for a cause to which they by no means wholly belong. For the extreme cruelty of this case lies in the fact, that so few of the ironworkers are union men, so that they will not enjoy the usual solace of strike money; but that, while holding out for a union purpose, they do so at their own cost. It must not be forgotten that this is not the case of an ordinary dispute between masters and men. The relations between the great Welsh ironmasters and the thousands whom their wealth and enterprise enable to support themselves, have been of somewhat a patriarchal character. It is impossible either to know the district, or to read with care the accounts of the conferences that have taken place, without being aware of this fact. Had Wales been left to itself, those who know best believe matters could scarcely have come to their present condition.

We are not about to raise any question of

sentimental nature on this ground. The appearance of the officers and delegates of the union in Wales; the reference of decisions affecting the wives and children of the kindly Welshmen to Darlington,—all these matters are incidents of a state of war. Battle once joined between the two parties, humanity has but little to do with the matter.

The ground, then, is thus cleared. The masters are to submit, or the industry of South Wales is to be destroyed. It is on labour that, after all, the blow is to fall. With the knowledge we possess of what Russia can do in producing iron, we are convinced that it is not, at all events, a very selfish spirit that keeps so many millions invested in the Welsh iron-fields. While all goes on well; while forges glow, and fans hum, and wheels revolve; above all, while there subsists the strong tie of mutual reliance and good feeling between the head and the hands, it will not be the prospect of larger returns for his capital that will tempt the great ironmaster to displace the seat of his labours. But if, in spite of all that he can do, and in spite of the better feelings of his men themselves, a schism like that is to be forced on by a semi-political agency, we very much doubt whether any long-headed men will long continue to devote their resources to the production of a metal which is both dearer and inferior to that which only awaits the application of a little enterprise in the north of Europe.

Arbitration may mean one of two things. It may mean the reference of a dispute to the decision of a tribunal, or of a judge, appointed *od hoc*, with the assent of the disputants. In that case it is a special tribunal, with definite, legal powers. The erection of such tribunal is not forbidden,—we cannot say is discouraged,—by our laws and our judges. In cases where a great amount of detailed investigation is requisite, and where public convenience does not allow of the necessary time being devoted to the question, by our courts of law, arbitration is at times resorted to at judicial instance. In foreign countries where the code prevails, arbitration is rendered legally imperative, in many cases, such, for example, as partnership accounts. The arbitration is clothed, for the time, with judicial functions, and the award is enforced by all the authority of the law.

An arbitration of this kind is, in fact, a legal measure, and as such it may be a most beneficial procedure. But it is of its essence that it shall be conclusive. The parties arbitrated between must be under the power of the Court. No backing out must be possible. It is a lawsuit, civil, not criminal, amicably decided, but decided with all the authority that dignifies even a judge pronouncing on a criminal question.

Any other arbitration than this is simply an offer of good offices. Its possible advantage arises from the chance that a third party may suggest some possible compromise. Between angry disputants, blinded by their own passion, such an intervention may be of great service. Personal dignity is saved; matters that may have been overlooked are brought to light; in fact, a hasty quarrel may be soundly made up.

In the present case we fear there is but little room for an arbitration of good offices. With suggestions of all kinds, of more or less value, the press has teemed. Men who have seen the national danger of the contest, and have seen little more, have been eager with their advice. But the position has been misunderstood. For the ironworkers the fact that the price of iron has fallen might be reason enough why their own wages should fall. But for the men who have hitherto forced on the strike, this is only a trifling incident. They wish to seize the opportunity of deciding on the proportion to be henceforth maintained between profit and wage. They want not only to know what the ironmaster can afford to pay, but further to decide at what rate of profit his own capital and energy shall be remunerated.

This is a point which we are disposed to think it is impossible to carry. With one or two great employers, indeed, it might be easy to cut away any ground from the agitation. "There are our books," a merchant prince might say; "there are our private ledgers. So and so is the capital I have invested. Over the twenty-five years past, while iron has varied from the price of an ounce of gold for a ton of pig to that of more than three times that rate, I have kept my works open, come fair, come foul. So many thousands are housed, fed, and made comfortable by my great business. I can live without it. My profits, one year with another, are so much per cent. And I cannot, and will not, encounter so vast an anxiety and so imminent a risk for less. I will give such wages, and no more. Please yourselves."

Ironmasters whom we might name might, and possibly very readily would, take this tone. But justice is impartial. It is not one or two *millionaires* who alone can consider what they choose to do. We have seen that the forges of the country are very numerous. Small masters have to be protected as well as great ones. The rate of profit that will pay liberally with a large make may be such as to starve the small maker. No steps, therefore, in the direction of making the rate of wages a direct and exact function of the market price of iron can be justly taken without the concurrent establishment of a vend, or syndicate, among the ironmasters. Now our trade has grown up on the competitive principle. If an order for 50,000 tons of rails, for instance, has come from Russia, it has been matter of the keenest competition. Each great "works" preserves with the utmost care the secret of its cost price; for the sound reason that on the one hand its profit, and on the other hand its power to compete for orders, depend on this reserve. If the whole iron trade were formed into one great body, in which the interests of larger and smaller proprietors, and the respective advantages of different works, were elaborately and accurately balanced; if, instead of firm competing with firm, each took its fair turn and proper proportion in the supply of the market of the world, a partnership between master and men would be not only practicable, but, in our opinion, most beneficial to all parties. But while competition exists in the iron market, a demand for such an arbitration as alone could have any reality seems to us useless.

We speak as to friends and constant readers on both sides. We venture to think the majority will see, on reflection, that our view is correct. We have ever been advocates of the principle of co-operation. We believe that it forms the great hope of the industry of the future. To introduce it into every occupation in which great bodies of men are concerned is, we hold, desirable. Nor do we doubt that all difficulties as to the application of the system are to be removed by a sincere desire to dispel them. Where there is a will there is a way.

But, then, this application of the co-operative principle must be, in every case, in accordance with the special requisites of each distinct business and occupation. In a joint-stock bank, for instance, none but very foolish proprietors ask at public meetings for a list of securities. Confidence is the soul of many kinds of business. If no confidence exists between the partners, none will be awarded to them by the public. Now, something of the co-operative principle is implied in the rise and fall of wages with the rise and fall of prices. That this may be further developed we think highly probable. But it can only be so developed by mutual confidence between employer and employed. Supposing an ironmaster to promise to increase his workmen's wages five per cent., if they enabled him to do so by their extra industry. It would be well worth the while of all parties to do so. But if the offer involved the cession to any workman of the right to inspect all the books of a large firm, or to set any small lawyer to perform this task for him, no concession of the kind would be for a moment practicable. It is thus of the very nature of business that the ironmasters should be treated with a certain degree of confidence by their workmen. If they say that with a rise or fall in the price of iron they agree to a certain proportionate rise and fall in the price of wages, they go as far as, under the existing circumstances of trade competition, they can be called upon to do. If they would go a step further, as, for instance, to say that, with the maintenance of a certain definite proportion between the consumption of ore and of fuel and the production of iron, they would give a bonus at the end of the year, or a *pro-rata* increase of wages, they would, we conceive, both become richer and pay more to their workpeople. But if the latter distrust their truth and honour,—if they insist on determining, not only for what wages they will themselves work, but at what exact rate of profit every forge in the kingdom shall be kept in blast, year by year (for it comes to that),—if that is insisted on,—we see no result possible but the forced emigration of capital, and the transference of the great seat of the iron-manufacture to Russia.

We call on those who are responsible for the maintenance of the present strike to ponder on what we have said. We are no advocates. We have not exchanged a single word with any ironmaster since the quarrel began. Neither are we of that school in political economy which attributes a magical power to capital. We hold the best capital to be the shrewd, honest, persevering, instructed head, and the strong arm. We know that the former is of more importance,—as more rarely to be found,—than the latter. But we do know something, not only of the enormously productive power of well-directed labour, but also of the course and customs of business. We may wish things to be other than they are, but we can only regard them as they actually are. We might say, here is a great question to be fought out. We have our own opinion of the result. We are far from the actual scene of strife; we can only look on, and learn.

But when we know it is not only the daily bread of thousands, the misery of helpless women, the suffering and death of children, during the miserable prolongation of the struggle, that are involved; when we see that a great industry, checked by this struggle between the belly and the members, only requires a little more discouragement to take its flight from our shores; when we see that, we cannot be silent. Let our readers recall what we told them just a year ago, about coal. When but a hint had been given by the market quotations, we showed them, from a serious investigation of the condition of the collieries, that a rise was inevitable, and probably at hand. All remember what occurred. On precisely the same dispassionate consideration, and with judgment wholly unbiassed, we assert the certainty of a long and deadly struggle, if the demand for arbitration on the whole question be persevered in. The masters may do much to remove erroneous impressions as to their profits, and should unquestionably do it. The masters, moreover, should meet concession with concession. Let peace be made before it is too late. It will be many a year before the Russian forges are blown out by a demand for arbitration.

VIENNA AND ITS EXHIBITION BUILDING.

THE extraordinary building erected in the Prater at Vienna for the approaching international Exhibition, proceeds apace towards completion. We have already given our readers particulars of the undertaking, with a view of the central portion of the structure, and a plan of the whole.* As regards the construction of the building, the commission adopted a plan designed as early as 1845 by the architects of the Vienna Opera, Siccardsburg and Von der Müll. This plan, entirely differing from all those of former Exhibitions, was followed. It offers not only a better light for the objects exhibited, and allows of extension of the covered area according to the wants of exhibitors, but makes the employment of many hundreds of workmen at the same time in the different galleries without hindering one another possible, and permits of the goods of the various States being deposited in their respective spaces without interfering with their neighbours, which circumstance must effect considerable saving of time, an important point in this case, as time is so short. Seven thousand workmen went to work at once, an army which to keep in order requires no ordinary amount of tact and energy. Wages, of course, rose in Vienna to an enormous extent. A simple labourer earned 3 florins (6s.) a day; bricklayers made from 52 to 56 florins (over 5*l.*) per week; and large numbers of workmen were brought from all parts of the empire—Tyrolese, Albanians, Czechs, &c.

To the architect Hasenauer was confided the execution of the plans marked out twenty years ago, the original designers having departed this life. The originality of this plan consists in the application of the so-called "herring-bone" system, which resembles somewhat the architecture of the Escurial. From a gigantic longitudinal gallery, 905 mètres long, and 25 mètres broad, branch out at right angles, and at regular intervals, sixteen cross-galleries, 205 mètres long and 15 mètres broad. In this wise twenty-four courts, closed on three sides, and having the same length as the cross galleries, and a breadth of 35 mètres—for this is the distance between the cross galleries,—are formed on both sides of the great gallery. On this plan, the architect, Hasenauer, founded his division of the principal building, dividing it into

* Vol. xxx., pp. 744-7.

a large quadratic central construction, and a smaller building at each end, which latter inclose each an octagonal court. The centre, again, of the central building will form a grand rotunda, constructed entirely of iron, whose erection by the firm of Harkort may be considered a triumph of modern engineering. This rotunda is the idea, as we have before said, of Mr. Scott Russell, who takes a great interest in this part of the Exhibition works. The span of this dome, roofed by a new method, amounts to more than double that of the greatest domes of the world, viz., 108 mètres. The width of the dome of St. Paul's is only 35 mètres; that of St. Peter's is only 49 mètres wide; that of the London Exhibition building of 1862 was only 50 mètres. These figures alone give us an idea of the imposing dimensions of the gigantic cupola, which has been erected without any outside scaffolding, and the shell of which was hoisted and fixed by Harkort's engineer, M. Steiger.

The director-general of the Exhibition, Ritter von Schwarz, has another purpose in view with this rotunda. He intends it for a memento of the days of the Exhibition which, being both a thing of beauty and of usefulness, deserves to outlive those days. And it is here that the whole plan of the Exhibition borders on another grand undertaking, which may be mentioned—the great work of the regulation of the Danube.

The Viennese have now for some time been almost ignorant of the fact that their city really lies on the Danube. The Danube Canal, which separates the inner city from the Leopoldstadt, was, so to say, only a poor substitute for the mighty stream, which in a bed gradually being choked up with sand, rolls its waters nearly a mile (German) from Vienna towards the east, and the poetical "beautiful blue Danube," was to the real Viennese nothing but a popular myth, which to behold was the fortune of but few. The Government, together with the authorities of the province of Lower Austria, and the administration of Vienna, resolved to divert the Danube from its present course into a new bed, now nearly completed, to bring it half a mile nearer to Vienna, and to open up to the capital, by this close connexion with a great navigable river, all the advantages which can be derived for commerce from so favourable a position. It is intended to construct great docks, erect factories, warehouses, and counting-houses along the banks of this new Danube, and so lay the foundation of an emporium which shall attract all the traffic of the river. The new Danube-Stadt is to spring up close to the Prater, consequently near to the Exhibition building, and the great rotunda is looked upon already as the future corn market and warehouse of the new city.

Yet more. Behind the longitudinal axis of the Exhibition building, close to the newly-constructed Danube dyke, rises the treble gallery for the machinery, of about the same dimensions as the Exhibition building proper, in the construction of which its ulterior destination as warehouses for the new city has not been lost sight of. During the Exhibition, the machinery will be in full activity, and the great space allotted to it will be of immense advantage to the exhibitors of machinery from all countries.

Opposite the southern cross front of the principal building is an annexe in four rows, the Hall of Arts. In the middle will be a double row of rooms, with ample skylight, for the reception of more important works of art, while at both sides, in smaller galleries, will be exhibited the smaller art-treasures. New modes of lighting, which have already been tried on a small scale, will be here employed. Tastefully laid-out gardens will fill the space between the Hall of Arts and the Palace of Industry, which will serve at the same time as places for exhibiting objects of the plastic art. A covered gallery leads from the Hall of Arts to the left, at both ends of which are *pavillons*, to contain a new feature, "Expositions des Amateurs." It is the intention to induce private collectors to exhibit their treasures here. Near the Hall of Arts large palm-houses and gigantic aquaria will find their place.

Admittance into this world of wonders will be gained, besides by the thirty-two entrances at the frontal sides of the cross galleries of the Exhibition building, by four principal portals, to be decorated in the most splendid style which art can devise. One of these portals leads from the principal road of the Prater to the Exhibition. On passing this wide gate, a park, profusely decorated with *bosquets* and *bassins*, lies between the beholder and the building, while on both sides of the way stand *pavillons* of different shapes opposite to one another. Close to the entrance to the left is the building for the commission; to the right the post-office; farther on to the left the *pavillon* of the jury; to the right that of the Imperial family. Close to these buildings, farther to the right, follow others, erected by the Sultan, the Khedive, the Prince of Roumania, &c., at their own expense, with Oriental splendour, which will leave those of the last Paris Exhibition far behind. Even Japan, besides China and Siam, has lately asked for space of 4,000 square mètres for her special exhibition.

A series of buildings has thus been undertaken, for the construction of which over 28 millions of bricks were necessary. To facilitate and accelerate this mighty work, eleven lines of rails were laid down from the two principal termini of Vienna to the area of the Exhibition, else it would not have been possible to do so much in so short a time.

THE COMBINATION OF COLOURS.

AT a recent meeting of the St. Helen's Literary Society, Mr. S. Chandley read a paper on "Art in Form and Colour." After treating of form, Mr. Chandley said,—Sir Isaac Newton established the theory that there were seven simple or homogeneous colours. This was afterwards reduced by Sir David Brewster to three, and he showed that the analysis of white solar light consisted entirely of the three primary colours—red, blue, and yellow,—and that the other four were simply compounds of these three. We may now refer to the similarity between music and colour. The note C may represent a single colour, simple and pleasing in itself, say red; by sounding G, its fifth, simultaneously we get improved harmony, so by placing yellow with the red; sound E, and we get the ear thoroughly satisfied, and it is not until we place blue in the harmonic triad of colour that the eye is perfectly satisfied. Each of these colours is capable of a key-note for an arrangement to which all other colours must refer subordinately. In our several examples of colours, we have difficulty by artificial light in illustrating the exact colours, as the gaslight being yellow it imparts a yellowness to some colours and takes it out of others.

Now the strongest and most beautiful contrast to any one given colour is produced by the admixture of the other two; for instance, the harmonious contrast to red is produced by mixing yellow and blue, producing green. The harmonious contrast to blue is produced by mixing red and yellow, which give orange; the strongest harmonious contrast to yellow is purple, produced by mixing blue and red; these combinations are what are called secondaries (as distinguished from primaries), now there is no guess-work: it is as infallible as a rule of three sum. Here is a natural proof: place a red wafer on a sheet of white paper, gaze at it for some time, and there will appear its complementary colour, green, to surround it. The same complementary colour, purple, will surround a yellow wafer, and orange a blue one, and *vice versâ*.

Colours have a shade, and a hue. By shade we understand the depth of a colour as in the gradations from black to white. By hue is meant any compound colour undiluted. For instance, we say an orange colour of a red hue or a yellow hue; or purple from the bluest to the reddest hue. Nothing is more common than in the assorting of wools to mistake these two qualities, and often we see a pale lemon colour shaded down to a deep orange, or a yellow-green down to a dark blue green, which, when worked into a subject, makes the general effect so entirely discordant. We will now consider other attributes of the three primaries, red, blue, and yellow. Red, then, is the most positive of all colours. It holds the middle station between yellow, which is most allied to light, and blue, which is most allied to shade, is decidedly a warm colour, and imparts that quality into every compound colour into which it enters. The effect is most apparent when compounded with yellow.

Red, from its powerful nature, requires more careful management than most colours, but is highly useful and agreeable when reduced into tones of chocolate and claret, and perhaps (next to green and blue) is the most agreeable colour to look upon. Not so when it becomes what is usually called "mauve" (which is crimson diluted with white), and in some of its shades is a most irritating colour, and highly destructive to all other surroundings, as its contrasting colour is yellow, so it yellows or fades all colours near which it is placed, and it is rarely acceptable as a colour in dress, without being considerably mellowed by being placed in juxtaposition with plenty of white or black. Blue is the next primary, and is the nearest to shade as yellow is to light. It is the only absolute cool colour, and communicates this quality to all hues into which it comes in combination. It is a pleasing colour, and may be used in almost any arrangement, and has a larger portion in nature than any of the two other primaries. There is a popular notion that blue and green are discordant when viewed simultaneously. If we look on a blue sky shining over a green meadow, we shall see under what circumstances they agree (as nature never errs). It is that green is yellowed by the sunlight, which, along with the browns of nature, is sufficiently warm to be thoroughly harmonious. Yellow, the next primary, is the lightest of all colours, white excepted, which we consider the combination of all colours reflected. Black—absorbed, its proportional power to red, or blue, is as three to thirteen. It is the most positive and least agreeable colour to the eye, that is pure and undiluted. Now, if nature never errs, why, it may be asked, does she give us the largest flower we have, yellow, the yellow sunflower? Now, on analysing this, we shall see that the great bulk of the centre of this flower is not yellow, but its contrasting or neutralising colour, melodised to it; so the otherwise vulgar staring flower becomes perfect. The eye dwells with greater pleasure on yellow, the more it is diluted or weakened in intensity, and we can tolerate a lemon tint or light buff; but even then, unless toned down, you often hear it denounced as sickly and bilious. And we may here remark that no combination of colour can be complete without the three primaries entering into their component parts, either in their pure form, or compounded with secondaries; all should be so arranged as to form a general bloom, the most powerful colours necessarily being in the smallest proportion.

We have dwelt on the pleasure experienced by the contemplation of beauty, of arrangement of colours, but we must not conclude this is a natural pleasure. It is a natural pleasure to see colour, but not in its most refined combinations. A child manifests its natural taste by preferring those toys most gaudily painted, and with the greatest amount of vermilion. A collier dresses himself in a green plush waistcoat with a couple of dozen of brass buttons down the front and a scarlet comfortable, and thinks himself perfection. We occasionally see also natural taste showing itself in the shape of a pink bonnet, orange shawl, and a green dress. But we do not set these up as examples at all to be imitated, as in nature (which we may always take as our type) we never see large masses of bright colour without a larger quantity of neutral or tertiary colours to tone, subdue, or counterbalance them.

It has been suggested that I might further illustrate this subject by reference to house decoration and furnishing which would introduce us to textile fabrics also. Now if you are going to furnish and decorate, say your dining-room, it may be done either by the harmony of analogy or by the harmony of contrast. Your first consideration in either case should be the aspect. If south or west it requires to be on a cool key. If north or east, it should be on a warm key. You then may consider your pictures (if sufficient to require consideration). Now sage green is perhaps for a background the most suitable (or claret, if there is plenty of light and a cold aspect); say the former. Green for the walls, you would then ask what is the complementary colour of green. The answer is red; so you get the three colours by fixing red for your curtains, and blue and yellow in combination, forming green, on the walls; you have only to regulate it further by ascertaining whether the green is a blue green or yellow green. If a blue green, the complementary will be made up by adopting an orange red,—in other words, scarlet or cherry; if a yellow green, purple must enter into the composition of your red, which then becomes more crimsony. If the chairs are covered with morocco, the same rule holds good. If you did not feel that you had your red blue enough, a border containing blue might be added. If short of scarlet or yellow, a gold-colour border would supply that deficiency. The law of contrast in colour is equally invariable in dress, and, as far as this is concerned, we only need look at some of the costumes worn by some of the higher

classes in England at the present time, to be struck with the advanced taste and refinement that pervade it. Plenty of sombre colour, but little raw or pure.

PEGWELL BAY RECLAMATION.

THE streak of silver sea that furnishes a sense of security to some subjects of the United Kingdom is well known to be mutable, although beautiful. In some places the tides, in successive series of years, are encroaching upon the land; in other localities,—in some instances by natural action, and in others by man's device,—the domain of ocean is invaded, and dry land occupies large areas covered in former times by the waters of the sea. Great changes have taken place in the shore-line of almost the whole of Wales, and of the coast northwards, from the estuaries of the Dee and the Mersey. In some places traces of cultivation exist, according to Dr. Hume, down to the very margin of the tide. It is demonstrable that the Wirall shore-line formerly projected much further to seaward, as is shown by ancient maps, and the testimony of historic records. In that district the encroachments of the sea have carried away part of a racecourse, and of a public road, with the whole of a burial-place. In Cardigan Bay evidences of the existence of an extensive submarine forest have been distinctly traced, with trunks of trees and standing stumps as hard and black as ebony, the marks of the axe as sharp and distinct as if they had been just felled. Bardsey Island, in Cardigan Bay, and on the Carnarvon coast, is now, or was not many years since, rated as part of Pembrokeshire, and paid taxes as such.

The encroachments of the sea are, however, compensated by recessions. On the west coast of Anglesea the sea is receding, and extensive tracks of blown sands are being deposited towards the south-west end of Menai Straits. In another locality Tremadoc nestles in a valley formerly covered by the sea. On the southern coast of Wales extensive alluvial deposits have been lodged in many places that are protected by blown sands, and the same phenomena are presented on the south coast of England; as witness the present condition of some of the Cinque Ports, which may now almost be called inland towns.

"Sandwich the Silent," one of the renowned five ports, has long since receded from the shore-line, or rather the shore-line has receded from it, and the distance between them is, it would seem, to be further increased by the reclamation of part of the beautiful and placid Pegwell Bay, for which there is a Bill before Parliament for this year. The records of Sandwich date from the sixth century. In the days of the Roman power, Pegwell Bay had, doubtless, deeper water, and Sandwich stood much nearer the shore than it does now, or it would not have been chosen as one of the five ports. It is situated on the river Stour, which has, in the course of centuries, carried down and deposited, at the estuary, a vast quantity of almost purely alluvial matter, which has been allowed to rest undisturbed on the shores of the sheltered bay into which the river debouches.

The Bill to be brought before Parliament is for the cultivation and improvement of waste lands in Pegwell Bay and Sandwich flats. Waste lands include the surfaces over which the tide flows at ordinary spring tides. The proposed capital of the company is 200,000*l.*, with the power to borrow 66,000*l.* The works include an embankment of about four miles in length, to be at a height of about 20 ft. above high-water mark, and as much more above the sands at low water. The present mouth of the Stour to the sea is also to be stopped, and a short cut or canal substituted. Several carriage-roads will also be constructed under the powers of the Act, if granted. The company asks for powers to bring into a state fit for cultivation such lands as they may from time to time reclaim from the sea. The works proposed are to be executed within five years from the passing of the Act. The tolls proposed to be charged for the use of the company's roads seem ridiculously high,—as, for instance, for every vehicle drawn by a horse or mule, 6d.; by two horses or mules, 1s.; ditto carrying more than eight passengers, 1s. 3d.; for every donkey-cart, 4d.; for every horse or mule, 6d.; for every donkey, 2d.; for every foot-passenger, 2d., &c.

The expense of the works is estimated by Mr. F. H. Falkiner, the engineer, at 170,000*l.* There are more than seventy official authorities, and private owners or occupiers concerned, the former including the Lords of the Admiralty, who will of course take their stand on foreshores, being Crown property, regardless of the rights, or say the reasonable expectations, of those who have incurred the cost of reclaiming the waste. Witness the case of the Thames Embankment.

Whether the present promoters succeed or not, there can be little doubt that the greater part of the shallow part of Pegwell Bay will be eventually converted into dry land, and that the successful works of the Messrs. Brogden, in Morecambe Bay, by which they have added hundreds of acres of fertile land to the resources of the country, will be imitated in the estuaries of the Stour, the Dee, and other tidal rivers.

PROPOSED TOWER BRIDGE.

THERE has been frequent complaint that the Thames has not as many roadways between London on its north and south banks as the vastness of the population to be accommodated, and the importance of the commercial and social interests concerned, demand. Many projects for new bridges, railway and other, have been proposed in successive years, but no additions to their number, except Southwark Bridge, for ordinary traffic and the railway-bridges, have been made since Waterloo Bridge was finished, more than half a century since. London, Blackfriars, and Westminster Bridges are mere renewals of previously-existing communications in the same situations.

One of the Bills to be brought before Parliament in the session of this year is for powers to construct an iron bridge over the Thames, with roadways and approaches thereto, for the passage of foot-passengers, carriages, carts, wagons, horses, cattle, &c., with all necessary works and conveniences, to commence in Fair-street, in the parish of St. John, Horselydown, Surrey, and to terminate in the parish of St. Botolph Without, Aldgate, and district of the Tower, on Little Tower-hill, Middlesex, to the westward of the main entrance to St. Katharine's Docks. It is also proposed in the Bill to take power to make "four tunnels or subways in the line of the proposed bridge, and in or under the bed of the river Thames," to be connected with the footways on the said bridge by means of shafts to be constructed in the piers of the bridge. These tunnels or subways are to be two on each side of the river, each pair parallel, and about 80 ft. apart, and constructed in directions running nearly due north and south. They will be respectively about 150 ft. in length, and distant at their inner ends about 200 ft. from the centre of the river.

Mr. R. M. Ordish, who has achieved a fair reputation in iron bridge-building and iron structures, is the engineer. He estimates the expense at 372,000*l.*; the bridge is to have two spans, and to be of the bow-string girder type. The company necessarily look for their return to powers to impose tolls. These, it is proposed, are to be, for foot-passengers one halfpenny each; horses, mules, or asses, laden or unladen, not drawing loads, one penny each; each horse or beast of draught drawing any carriage, cart, or wagon, twopence; for every carriage, twopence; for every cart or wagon, fourpence; for cattle, sheep, and pigs, fivepence per score. The tolls certainly seem objectionably high; as stated, a two-horse cart or wagon will be charged eightpence, viz., fourpence for the cart, and twopence each for the horses.

The sea-going steamers that stop short at London Bridge, and the sailing-vessels that anchor in the Pool, will have to pass under the proposed new bridge, which must necessarily give a water headway sufficient for unimpeded navigation. This will necessitate approaches that will interfere with a considerable amount of warehouse and other property. It seems questionable whether the fair claims of owners and occupiers can be met out of the residue of 372,000*l.*, after costs of construction have been deducted.

The Building Act.—A paper will be read on Monday afternoon next, at a meeting of the Health Department of the Social Science Association, by Mr. John Liddle, medical officer of health for the Whitechapel district, on "The Defects of the Sanitary Provisions of the Building Act, 18 & 19 Vict. c. 122, with Suggestions for their Amendment." Lieut.-Col. M. Beresford, M.P., will take the chair at four o'clock.

COUNTRY HOUSES.

ARCHITECTURAL ASSOCIATION.

A LECTURE was delivered by Professor Kerr at the last meeting, on "The Design of a Small Country House,"—understood as the residence of an English gentleman and family, living in the manner of their class, within a few miles of London or some large town; the site being three or four acres (more or less), and the cost from 2,000*l.* to 4,000*l.* The lecturer treated in detail all the rooms and other portions of such a house, giving definitions of their special uses, and indicating the most usual methods of plan and arrangement. On matters of much importance affecting such a house and its serviceableness, the following, among other conclusions, were stated:—

Approach.—Let this be from the north, or, if that cannot be got, then from the east. The view of the lawn and gardens must be well shut out by shrubbery (in which no flowers should be admitted on any consideration, the garden being the place for them). An entrance in a prominent position always gives value to a house. *Prospect.*—This should be open on the south, perhaps on the west, with shelter on the east. *Aspect.*—South-east is the most favourable aspect for all the living-rooms of a house, if it is to be had. They will be warmed by the morning sun, will be in the shade in the hot noon and afternoon, and not exposed to the strong winds and driving rains of the south-west. The gardens will be towards the south, and the lawn to south and west,—the sunset is considered of much value to a lawn. The offices should look northwards and eastwards (not westwards), these aspects being of least value. The servants' entrance may be on the north front or east return, with special access from the main road, or, at any rate, arrangements to avoid the necessity of tradesmen's carts stopping in the drive. The sacrifice of aspect to prospect will certainly be the cause of after regrets. In a drawing-room, the most admirable views will grow less interesting in time; but the welcome sunshine and warmth cannot be spared with safety. In a dining-room, sunshine from the west at the customary late dinners will be found a most serious drawback in the use of the room for its most important purpose.

Internal Arrangements.—The *lines of traffic* should always be kept in view. The parts of the house devoted to the family and visitors must, when in use, be crossed by the servants very rarely, if at all. For instance, the dining-room should be served from the kitchen through the servery, without the hall, staircase, or main passages being necessarily passed through. By the second staircase the servants should be able to reach all the upper parts of the house. The drawing-room doors especially should never be passed in carrying to the various rooms. *Main Staircase.*—This should be the way to the bedrooms, and to nothing else (a drawing-room or study upstairs will be an unusual arrangement,—not the normal one; and, however, suitable for some one family, will probably be awkward for those who use the house thereafter). It should be near the entrance, so that ladies may readily reach their rooms to take off clothes on coming home; for convenience on the upper floor, it must be fairly central there. A north window will often be best, as saving the valuable aspect for rooms, and as the north light is clearest, latest, and without sun. *Bedrooms.*—These may be all on one story, or on two. To all the main rooms there must be direct and stately access,—a house sinks at once down to a lower level if it has badly lighted and ventilated passages. The indispensable furniture of every room should be plotted on the plans—the bedstead, dressing-table, and a wardrobe. Two bedrooms, each having a dressing-room [with small bedstead] attached, will usually be sufficient; one being for the heads of the house, the other for married visitors. The rest may be single rooms. *Nurseries* are ordinary bedrooms temporarily devoted to a special purpose. They must, in an English house, be not inconveniently far from the mother's bedroom; at the same time, they may be shut out by a door and lobby from the rest of the story. The day nursery should look southwards.

The lecturer noticed the matter of change of occupants in a house of the class dealt with. Through death, or reverse of fortune, and other causes, property of this kind is constantly changing hands, or receiving fresh tenants. It is therefore desirable for architects to lean towards arrangements found generally suited to

the habits of the larger number of families of the same rank in life, and not to consider merely the immediate wants of a client. As many of the ordinary requirements are founded on what seems like sound reason, they are little likely to be affected by change of fashion. As to the question of regular or irregular plan, regularity seems to add to the general estimate of the serviceableness of a house. Symmetry and simplicity of plan are highly valued. Though wanting in piquancy, and apparently uninteresting, a house possessed of a good and readily apprehended arrangement of rooms, will never want admirers among the English gentry. As to the ventilation lately so much pressed on the notice of everybody, the classes for whom architects have to work will not submit to low temperatures, and possible draughts, and much extra clothing indoors in cold weather;—perhaps (the lecturer said), the indispensableness of much special ventilation is often exaggerated in speaking of the large and lofty rooms—not over-crowded—of the houses we are treating of. In fact, taking them altogether, the English houses are the best designed in the world, the most replete with comfort, and with the best provisions for the special habits of their occupants; it is probably because so high a standard of excellence has been reached that they are so much found fault with.

THE NEW BUILDINGS IN LUDGATE CIRCUS AND FLEET-STREET.

THE extensive and prominent new buildings which have for some months been in course of erection at the bottom of Fleet-street, and are known as Messrs. Cook & Co.'s tourist and excursionist offices, are now fast approaching their external completion, being almost ready for the roof, and will be covered in within the next fortnight. The structure, which will be a decidedly striking feature amidst the various new buildings now being erected in the locality, has no less than four frontages to the several main thoroughfares immediately around it, namely, the Ludgate-circus elevation, and also those in Fleet-street, Farringdon-street, and St. Bride-street. The Ludgate-circus façade, in point of architectural detail and ornamentation, may be regarded as the principal frontage, although the Fleet-street, Farringdon-street, and St. Bride-street frontages are to a great extent uniform with the first-named. The building is 60 ft. in height from the street level to the cornice below the dormers, the latter being 11 ft. high, making the entire height of the elevation 71 ft., and its width from the boundary of the Fleet-street frontage to that in St. Bride-street 130 ft., whilst it is 50 ft. in depth; the entire ground area covered by the structure being about 3,300 square feet. The materials used in the exterior are Portland stone (the ground and mezzanine floors being to a great extent of iron), with granite bases to the entrances, and polished granite piers. The building contains a basement; a very lofty ground-floor, with windows of unusually large dimensions; a mezzanine floor immediately above, together with first, second, third, and fourth stories, in addition to lofty dormers. There are two entrances to the ground-floor portion of the building in the Ludgate-circus frontage. At the bottom of the first-floor windows of this frontage (which also extends around the first floor of the entire elevation) there is a projecting balcony of ornamental ironwork. There are four windows in this story, over which are projecting carved corbels, supporting stone balconettes above at the foot of the second-floor windows, and from these are suspended carved stone pendants. Between the second-floor windows there are raised panels, and immediately above the windows there is a centrepiece in carved stone, supported on either side by scroll brackets, which forms a terminal to the centre window. The third and fourth floor windows are plainer in character, but the dormers above, which surmount the cornice, and which are carried round the entire elevation, materially add to the attractiveness of the frontage. The Fleet-street entrance has a bold and handsome appearance.

The roof will be covered with green Westmoreland slate, harmonising with the general character of the structure. The chief entrance to the interior of the upper portion of the building, as well as to the ground-floor of this portion of the elevation, will be in Fleet-street, and above the mezzanine floor to the top of the building there will be an open staircase, with a roadway of 4 ft. round it, with a lantern light in the roof.

The interior of the structure is commodious, there being not less than forty apartments, several of them of spacious dimensions, in those portions of the building which are above the ground-floor.

The ground-floor portion of the Fleet-street frontage, and also one-half of that fronting Ludgate-circus, is intended to be occupied by Messrs. Cook as their tourist and excursionist premises, as well as a portion of the mezzanine floor above, whilst the arrangements also include an entrance, through Messrs. Cook's premises, to the post-office which has been situated on the site for several years past, and which will continue there, at the rear of the new building. Portions of the ground-floor in Ludgate-circus, and half of the Farringdon-street frontage, will be let for private business purposes, whilst the other portion of the Farringdon-street ground-floor frontage, and that in St. Bride's-street, as well as a large portion of the basement of the building, will be occupied by the Midland Railway Company as a receiving-office and depôt for this part of the City. The upper portions of the building, which include a large and noble apartment on the first floor of the Ludgate-circus frontage, suitable for a board-room or other similar purposes, will also be let for business purposes.

The architect for the builder is Mr. Gundry, of John-street, Adelphi; and the contractors are Messrs. Perry & Co., of the Tredegar Works, Bow; Mr. Burch being the clerk of works.

HEALTH NEAR BIRMINGHAM.

TYPHOID FEVER has attacked twenty-two families at Moseley and Balsall Heath, near Birmingham. The Local Government Board directed Dr. Ballard to visit the locality, and he met the rural sanitary authority on Thursday, the 9th inst., and told them the substance of the report he will make to the Government Board. He finds the ground to be chiefly gravel, and therefore porous. The water supply is derived from wells sunk into the surface gravel. After explaining to the meeting the doctrine of typhoid or enteric fever, and how it is communicated to persons, he said of the examination he had made of the district (according to the *Birmingham Daily Post*):—

"In the part of Moseley where the disease had shown itself, certain conditions existed which were likely to promote its spread when once introduced. First of all, there was the system of disposal of excrement. Throughout the district, the excrement of the population was either deposited in ashpit privies, or carried from water-closets into dumb-wells, cesspools, or drains, where such drains existed. For the most part, the water-closets discharged themselves into dumb-wells, from which there was sometimes an overflow. Occasionally there were separate dumb-wells for the ordinary sewage, slops, washing water, &c.; but in other cases this refuse was discharged into the same dumb-well as the contents of the water-closets. Most of the dumb-wells had permeable walls; but in some cases they were cemented so as to be water-tight as long as the cement held good. Where there was no cement, the liquid matter soaked into the soil, and it was well known in Moseley that such dumb-wells did not require emptying for periods of many years, when they became filled with semi-solid matter. There was no question that where such wells existed, serious pollution of the soil took place. Now, if the excrement, slops, or washings of foul linen, containing the specific pollution of enteric fever found their way into the dumb-well, and then into the soil, the soil became polluted specifically. He was prepared to say that in certain instances the disease had spread through the drinking of water derived from the soil.

When, some few years ago, the Conductor of this Journal, as a member of the Social Science Association, then meeting in Birmingham, pointed out the dangerous condition of parts of the town and suburbs, his words of warning were received with derision and abusive denial.

BEJAPOOR AND ITS MAUSOLEUMS.

IN Capt. Lyon's second lecture at the Society of Arts, on "Indian Buildings and Life," he said:—

The city of Bejapoor was the Mahommedan capital for 200 years, during the time the Mussulman armies were there, trying to get to the south, the Hindoos being determined to stop them if they could. Here the only buildings remaining are the splendid mausoleums which it was the fashion of those kings to build during their lifetime to repose in after death. No doubt it was an excellent plan, but it had one disadvantage, that if by any chance the king happened to die before it was completed, there was no place to bury him in; for each king had quite enough to do to build his own before he died, and could not complete the other. Outside this town (which is the rival of Vijianuggur and Beejnuggur), with every mausoleum that these kings built, they built a small mosque alongside it, and this is the mosque of Ibrahim Rosa, and the other side is the tomb. The peculiarity of the tomb is that nobody has yet been able to discover how the dome is supported. Our engineers have actually asked the Government to be kind enough to allow them to pull it to pieces, in order to discover what supports it. Of course, the Government objected; but, springing out of a flat stone roof, there it stands, and by what means it stands, and why it does not come down, nobody can make out. It ought to, but it does not. All round this building is a verandah, immediately outside the room in which the body reposes. Formerly nothing could exceed the beauty of that verandah. The stone is grey. The whole of the Koran is supposed to be engraved in relief on the walls. It was all gilded, and between the letters was painted a most beautiful, lovely azure blue: and the effect of the gilded letters on a blue ground and the grey stone was something beautiful beyond all conception. Unfortunately, now, except in one or two spots, which were carefully covered up, every sign of it has disappeared; but the natives there show you the blue and gold as it originally stood. Inside the room is where the body reposes. The window above is a solid block of stone, which has been carved into Arabic letters, which every one knows are difficult enough to write; but here the natives have cut away the whole of the stone, leaving nothing but the Arabic letters; and several verses of the Koran are cut in tracery over that window, each window having different parts of the Koran engraved on it, as you see there.

JOSEPH'S TOMB IN SHECHEM.

IN a paper read last week on "Joseph's Tomb in Shechem," at the rooms of the Society of Biblical Archæology, Conduit-street, by Professor Donaldson, he said that there were few incidents in the Sacred Scriptures more touching than the narrative of the pious care with which the children of Israel fulfilled the injunction of Joseph to carry his bones to the land of promise. There is hardly any spot in Palestine which combines, as this does, the tradition of past times and the concurrent assent, as to its authenticity, of the varied sects, whether Samaritan, Jewish, or Turkish; and this is the more remarkable in a country where the struggles of religious strife are so prevalent, and every holy spot is so much the object of violent contention. The approach to the valley of Neblous, at the point where this old ruined tomb stands, is most impressive. Hermon, with its snowy top, rises majestically in the far North. Close to the tomb is Jacob's well, where our Saviour conversed with the Samaritan woman. The well is most frequently dry, and very much choked with large stones. Not far distant is the enclosure of Joseph's tomb, rhomboidal in shape, the inside shorter side measuring 15 ft.; the depth somewhat exceeds that dimension; and the enclosure walls rise some 7 ft. high, with an opening at one end. Opposite the entrance is a small *mihráb*, or prayer-niche, about 2 ft. 6 in. wide, with a circular head: and over it are two inscriptions—the upper one in Hebrew characters, the latter in Samaritan. A narrow, irregular, central, paved path leads from the entrance up to the niche; and on each side, rising 6 in. or 7 in. above the path, is a dais, the one to the left forming a kind of prayer-platform or seat. On the dais to the right is the tomb of some Mahomedan, which is said to be held in great veneration by his co-religionists. At each end of this tomb is a detached pillar or post, some 18 in. in diameter, and rising about 3 ft., scooped out on the upper surface into the shape of a hollow basin, and which has the appearance of having served for fire. The tomb of the Turk is oblong in shape, and rises from the dais in a curved form, with a pointed ridge. The construction of the whole is of the roughest materials, plastered over, as is the custom of such sepulchral erections of the Turks, and has considerable cracks in the walls, threatening speedy destruction. When we consider the pious reverence with which Moses and the descendants of Joseph conveyed their precious relic from the land of bondage, we may conceive that, although the present erection may be on the spot of its ultimate deposit, it is but reason-

able to suppose they followed the custom of the Egyptians, among whom they had so long dwelt, and with whose manner of interment they would have been so well acquainted. If so, they must have made a considerable excavation in the ground, consistent with the exalted position of their forefathers. They must have lined the tomb with stone, and have laid the embalmed body, with its wooden sarcophagus or coffin, with becoming funeral rites. Without making an excavation, it is impossible to ascertain any further particulars of this sacred and interesting spot.

ANCIENT TERRA-COTTAS OF SYRIA.

THE incredulity with which the objects of idolatrous art, recently discovered in Moab, and of which Lieut. Conder sent water-colour sketches to the Palestine Exploration Fund, were received in this country must now be at an end. Some time since, the report of Pastor Weser, the Prussian chaplain at Jerusalem, who himself visited the sites of excavation, was published. An attempt was made to throw doubt even upon that. Now, Mr. Greville Chester, one of the opponents of the genuine character of the objects in question, writes from Jerusalem a full recantation. He says that he has examined the collection of Mr. Shapira, and is convinced of its genuine character and extreme importance. At Berlin the same conclusion was long since arrived at, and Pastor Weser has been elected a member of the Oriental Society, in consequence of the light he has personally thrown on the subject. Lieut. Conder's sketches were confined to the most striking objects, from an art point of view. Some of the jars are covered with incised characters, which, in some cases, are bi-lingual. The British Museum authorities based their condemnation of some of the jars, as forgeries, on the ground that they were impressed with unknown, as well as with well-known characters, a thing most unlikely for a forger to attempt. While we regret that these objects are lost to this country, it is very instructive to see the different tone in which any indication of important discovery is met in Germany.

CHINESE TEMPLES.

THE China correspondent of the *Daily News* gives some interesting particulars of temples in Pekin. It may be useful to our readers to preserve a portion of what he says as to the so-called Temple of Heaven, the most important of them :—

To the eye of a European there is nothing about it to suggest its ecclesiastical character. It is more like one of the fanciful creations of gardener-artists, reminding you of the gardens at Versailles or the Crystal Palace. The circular space on the top looks as if intended for a band to play on. It is somewhat larger than one of the fountains in Trafalgar-square, with a pavement and balustrade of white marble. It stands on two other platforms, all formed of the same material, forming three terraces, each terrace being ascended by a flight of nine steps, or twenty-seven in all, from the ground to the top of the altar. There are four ascents, one from each of the cardinal points. The whole is surrounded by a low wall, with open marble gateways on each side, facing the four ascents. This wall is square in plan, and in the south-east corner is the furnace or altar for burning the bullock, with eight other altars, smaller, and of iron, where offerings to the eight deceased ancestors are also burned, the bullock being offered to Shang-ti alone. . . . . To those who have taken an interest in Professor Smyth's inquiries respecting the Great Pyramid, this Chinese temple ought to have special significance. Although round in plan and flat on the top, it may still be described as a modification of the Pyramid. Its astronomical character is indicated by the great ceremony at the winter solstice. The four ascents, with approaches and gates to the four cardinal points, suggest that an astro-geographical meaning was intended. Most of the imperial temples of Pekin have been constructed with reference to the relation of numbers, and this is particularly marked in the Temple of Heaven. The number nine figures very largely in it. The ascent to each terrace has nine steps, the whole ascent being $3 \times 9 = 27$. The pavement on the circular top is formed by nine circles of marble slabs. The centre circle has nine slabs, the second is formed of eighteen, the third twenty-seven, and so on, each circle being a multiple of nine, till, at the outer circle, it is $9 \times 9 = 81$, being a favourite number in Chinese philosophy. "The same symbolism is carried through the balustrades, the steps, and the two lower terraces of the altar. Four flights of steps, of nine each, lead down to the middle terrace, where are placed the tablets to the spirits of the sun, moon, and stars, and the year god, Tai-Sui. The sun and stars take the east, and the moon and Tai-Sui the west. The stars are the twenty-eight constellations of the Chinese zodiac, borrowed by the Hindoos, soon after the Christian era, and called by them Naksha-tras. The Tai-Sui is a deification of the sixty-year cycle. The present year, 1869, is the sixth year of the cycle, and is denoted by the characters Ki-si, taken from the denary and duodenary cycles respectively. For this year the tablet is inscribed with these characters; in 1870 the characters Keng-wu, next in order, will be taken, and so on."

The work quoted from was published about two years ago, which explains the reference to 1869 and 1870. The same work gives a further illustration of these numbers:—"The balustrades have $9 \times 8 = 72$ pillars and rails on the upper terrace; on the middle terrace there are 108; and on the lower, 180. These amount in all to 360, the number of degrees in a circle. The pavement of the middle terrace has in its innermost circle ninety stones, and in its outermost 162 stones, thus reaching the double of eighty-one, the outermost circle of the upper terrace. So again, in the lower terrace the circles increase from 171 stones, the innermost to 242, or three times the square of nine for the outermost."

ASSYRIAN RESEARCHES.

FIRED by American example, the proprietors of the *Daily Telegraph*, with the concurrence of the trustees of the British Museum and the Lords of the Treasury, have arranged to despatch Mr. George Smith (the decipherer of the tablets relating to the Deluge) to Assyria for further explorations. They propose to devote to the object 1,000 guineas within a period of six months, and are willing to exceed those limits if found desirable. Mr. Smith's official salary will continue. Any memorials of interest discovered will be added to the present collection of Assyrian antiquities in the British Museum. We are glad the Government have met the proposition as they have done, and we heartily wish success to the expedition.

PROCEEDINGS UNDER THE NEW HEALTH ACT.

Macclesfield.—The rural sanitary authority of the Macclesfield Union has directly refused to appoint a nuisance inspector under the Public Health Act, as required by the Local Government Board, notwithstanding that scarlet fever is prevalent to an alarming extent in the Bollington district. On being rebuked, and urged by the Local Government Board, they passed the following resolution by a majority of fifteen to four :—

"That Mr. May be instructed to write to the Poor-Law Board requesting them to accept the appointment of our relieving officers for nuisance inspectors, and that we require none of their paltry allowance, and trust they will interfere less in their official capacity with the Board of Guardians."

Chester.—A meeting of representatives from the different sanitary authorities of Cheshire, has been held in the Town-hall, Chester. The Local Government Board inspector for the district, at whose invitation the first conference of representatives was held, was present. The different authorities were represented. After some further discussion, it was agreed to send copies of the following resolution to the different sanitary authorities in the county :—

"That the undermentioned sanitary authorities, being desirous of combining for the joint appointment of a medical officer of health, be especially requested to name ——— members to form a joint committee to decide on the salary of such officer, and the terms on which he be appointed; to advertise for candidates, and to select one gentleman to be recommended for appointment by the several combined authorities."

Worcester.—A conference of urban and sanitary authorities has been held in the Shire-hall, Worcester, under the presidency of Lord Lyttelton (lord-lieutenant of the county), for the purpose of considering whether the medical officers of health to be appointed under the new Sanitary Act should be appointed by several combined districts to supervise a large area, or whether each sanitary authority in the county should appoint its own officer independently of its neighbours. The urban and rural sanitary authorities of the following nine unions were represented :—Worcester, Droitwich, Bromsgrove, Kingsnorton, Pershore, Upton-on-Severn, Kidderminster, Martley, and Tenbury. It was ultimately resolved, with four dissentients only,—

"That the principle of comparatively wide combinations of sanitary authorities is the best upon which the Public Health Act can be carried out."

COLOUR DECORATION.

ST. MARY MAGDALENE, WANDSWORTH COMMON.

THE chancel of this mission church has lately been decorated in colour by Mr. Charles Hudson, of London. Mr. Edmund B. Ferrey, architect, in the first place gave a slight sketch for the general scheme, and has from time to time been in communication with Mr. Hudson, to whom was intrusted the preparation of the full-size working drawings and the details of the colouring. The church is substantially built of stock bricks, being rough stuccoed internally. The scheme for the decoration of the east wall consists of a plain surbase of chocolate tint; above this are ten square cusped panels, with canopies over of a rich description, containing the emblems of the Passion in various colours; the background is of gold. The hollow of the string-course under the east window is decorated with gilt stars, and over the altar in addition with the *fleur-de-lis*. At the springing line of the window-arch are arranged the emblems of the twelve Apostles and of St. Mary Magdalene, in lozenge panels. The space over is enriched with bold flowing scrollwork, formed of the vine on the north, the maple on the south side. In the centre of each spandrel is a circular panel, containing a subject from the life of St. Mary Magdalene. The east window, which formerly had a bare, close spandrel, has been perforated, and the rest of it glazed with cathedral glass in different shades, ornamentally arranged. The side-walls are also decorated, the bands and horizontal divisions being carried round, but there are no emblems or subjects, and the treatment generally is more simple. The wall over the altar, being covered by a dossel, has not been decorated in colour. The tints principally employed are Mediæval red, with a little black and chocolate. The panelled ceiling, however, has for a ground tint a greyish blue, with paterae. The space over the west side of the chancel-arch is also decorated, the principal feature being that of our Lord sitting in majesty, inclosed by an aureole. In addition to these works, a beam, carrying a rich oak floriated rood, designed by the same architect, decorated in colour and gilding, containing the Evangelistic emblems, has been fixed over the entrance to the chancel.

IRISH BUILDING MATERIALS.

IN a short notice of the Reports on the Dublin Exhibition just now closed, the Society of Arts' *Journal* says,—

The slates shown by the Killaloe Slate Company were of excellent quality, and equal, if they do not excel, the best Welsh slates. The Ventnor Slate Company also showed slates of good quality, and with a very pretty greenish and bluish shade, which would produce a good effect in roofing churches, &c. The specimens of Donegal stone shown attracted much attention. The granite blocks were exhibited just as they were found in the quarries, in slabs, with even, natural surfaces, and almost, if not quite, ready for the builder. The polished red granite is quite equal to that from Aberdeen. The Belfast Portland Cement Company contributed a large number of samples of their production; the articles shown were in every respect excellent. A group of marble pillars or clustered columns of various Irish marbles, with Caen stone basement and cap, carved in natural foliage, and a font in the same style, with various Irish marble shafts, admirably displayed the wealth of the native quarries, and showed the ease with which such materials can be adapted to useful and decorative purposes. The great beauty of the marbles and the high polish and finish they had received, displayed to great advantage the green and black marbles from the quarry near Middleton, in the county of Cork, which is worked by Messrs. Sibthorpe & Son. The latter is little inferior in brilliancy, variety of shade, and contrast of colour and tone

to jasper. For this reason it has been technically named Irish jasper. The practical value of Irish marbles, and the high polish they are capable of taking, were further successfully illustrated by specimens of marble pavement, and by a portion of the altar railings lately erected in the chapel of Trinity College; this last showed the rare qualities of solidity joined to grace and the appearance of lightness.

THE NEW DWELLINGS FOR THE POOR NEAR THE HOLBORN VIADUCT.

ACCORDING to a communication which has just been received by the Holborn Vestry from the City Corporation, it appears that the latter have at length finally decided as to the new dwellings for the poor to be erected in room of the houses removed for the construction of the Holborn Viaduct. The clerk to the Corporation states that the plans for the dwellings are in a forward state of preparation, and that the buildings will shortly be commenced. It appears that the site selected is in Bleeding Heart-yard, a short distance to the northwards of the Viaduct.

SCHOOL BOARDS.

London.—The following report has been presented to the London School Board on the new offices on the Thames Embankment:—

"On the 26th of June the Board decided that four architects should be invited to send in competitive designs for the offices to be erected on the Thames Embankment. The Works Committee were further instructed to make the necessary selection. In accordance with their instructions, the committee invited four gentlemen to send in designs. The conditions and particulars were settled by the Board on the 23th of August, and the designs, which were sent in at the close of November, have now been carefully examined. In arriving at a conclusion, the committee have not only considered how far the original conditions have been complied with, but have given especial weight to the amount of well-lighted floor space supplied by each architect, and to the estimated cost of the proposed building. On the whole, the committee have unanimously resolved to recommend that Mr. Bodley, whose plans are estimated to cost 19,800*l.*, be appointed to carry out his design, subject to the provision that a tender can be obtained from a responsible builder, in accordance with the conditions under which the Board have hitherto employed other architects. They further recommend that Mr. Bodley's plans be referred back to them for such modification as they may consider necessary; and that they be instructed to draught specifications, to obtain tenders, and to bring up a contract to the Board for sealing."

The report was adopted.

Dewsbury.—The foundation-stones of the first three schools projected by the Dewsbury School Board have been laid with public ceremonies.

Northampton. — The chairman invited the Board to consider the best mode of adjudicating upon the plans for the new schools, which are to be sent in or before the 27th inst. The clerk had informed him that there had been 144 applications made for particulars respecting the proposed new schools, and if only fifty of these sent in plans, there would be a hundred designs to be examined, in order to which it was necessary they should be suspended somewhere. He suggested whether it would not be advisable that a sub-committee should be appointed to look over the plans, with power to reject any of them; but if half the number named were rejected, it would still be necessary that the remainder should be deposited somewhere for inspection and examination. Ultimately it was agreed that the clerk should arrange with the town-clerk for suspending the plans in the large hall.

Hanslope. — At Hanslope, situated on the southern border of Northamptonshire, in the county of Bucks, the new school-rooms, which have been recently erected under the direction of the Hanslope School Board, have been opened. The buildings are erected with white brick, relieved by red strings, and are to accommodate 220 children. Mr. Christopher, of Watford, was the architect; and Mr. John Sheldon, of Newport Pagnell, the builder. The schools are situated upon the west side of the road, leading through the parish, and consist of mixed school, 45 ft. by 18 ft.; class-room attached, 14 ft. by 15 ft.; babies' room, 20 ft. by 17 ft.; and infant school, 30 ft. by 17 ft. There are also a master's house and requisite out-offices.

Leeds.—A meeting of the Leeds School Board was held last week, Sir A. Fairbairn in the chair. Among the topics discussed were the correspondence with the Education Department respecting the Board schools, the management and visiting of the schools, the payment of architects' commissions, the question of providing a training college, and the designs for Jack-lane School.——At the meeting of the deputation from the local Board with the Vice-President of the Council, it was arranged that the council's "architect would forward to the Board a memorandum on the whole subject, and he (Mr. Forster) would ask the Board once more to consider the question in connexion with the memorandum; and if the Board after that decided to adhere to their proposals, he did not think the Department should withhold their recommendation to the Loan Commissioners." Mr. Forster alluded to the question of the costs of the schools; and Mr. Jowitt stated that the Board were most anxious to keep down the expense as much as possible, and that they believed they had done all in their power to obtain good schools at small expense; payment for the schools was to be spread over fifty years, and they felt bound to erect strong and substantial structures.

PROCEEDINGS UNDER THE METROPOLITAN BUILDING ACT.

ON the 1st instant, Mr. Arthur Wilson appeared before Mr. Hannay, at the Worship-street police-court, in answer to a summons for neglecting to give due notice to the district surveyor of Shoreditch and Norton Folgate, of certain works done at No. 4, Spital-square. The work for which notice was claimed, was the rebuilding of an addition at the back of the house. The district surveyor had discovered some work in progress at the premises, and was informed that it was being done by a builder named Brown, from whom, after some difficulty, a notice for the work was obtained. This work was completed, but the rebuilding of the addition was not then commenced. This was some time subsequently found to be in progress, and it was ascertained from the workmen that they were employed directly by defendant, who was described as the "owner" in Brown's notice, but no fresh notice could be obtained from defendant, whose address the district surveyor was for some time unable to obtain. In the course of the work, a notice of irregularity had been served at the premises in defendant's name, as builder, and the irregular work was then amended. The district surveyor contended that the rebuilding of the addition was not included in the notice given by Brown, or if it was then a notice of change of builder should have been given.

Defendant stated that he was the owner of the premises; that he had not employed any builder to carry out the work; that Brown was only acting as his foreman; and that he considered the notice given sufficient. Mr. Hannay considered that defendant had acted as the builder, and should have given notice in his own name, which, by his own admission, he had not done. Fined 40*s.*, and 2*s.* costs.

THE DISPOSAL OF SEWAGE.

THE youngest of the local Boards in the neighbourhood of Manchester—that of Heaton Norris, which comprises the districts popularly known as Heaton Chapel, Heaton Moor, and Heaton Mersey,—has recently called in the aid of Mr. James Henry Lynde, C.E., of Manchester, to advise on the system of drainage to be adopted, and the method of disposing of the sewage. Mr. Lynde has had to formulate a new and comprehensive scheme, and in doing so has considered and reviewed various methods recently devised for the removal and disposal of sewage matter.

His own conclusions are these:—

"My opinion is decidedly in favour of a combination of either filtration or deodorisation (upon the Carlisle system, which has proved so successful) and irrigation. Irrigation is the only system that has really effectually prevented the fouling of rivers, and at the same time prevented the waste of the valuable manuring material contained in the sewage.

Should you adopt the system I have advocated, it will be necessary to erect filter-beds, together with the necessary buildings and works for the treatment of the sewage, with the carbolic acid or other deodorising agent, which works will be of an inexpensive character.

The land which might prove most suitable for irrigation consists of two plots, one containing fifty-six acres, which is intersected by the railway, and the other containing twenty acres. These would be provided with main carriers for the effluent water, after being deodorised, along the highest parts, which, after filtering through the soil, would be caught by the deep drains, and be carried off in a pure state to the River Mersey.

In laying this report before you, I trust that sufficient evidence has been given to enable you to arrive at some general mode of action. The cost so much depends upon this that I have found it impossible to submit any estimate with this report."

COMPETITION DECIDED.

START'S HILL ESTATE, ORPINGTON, KENT.

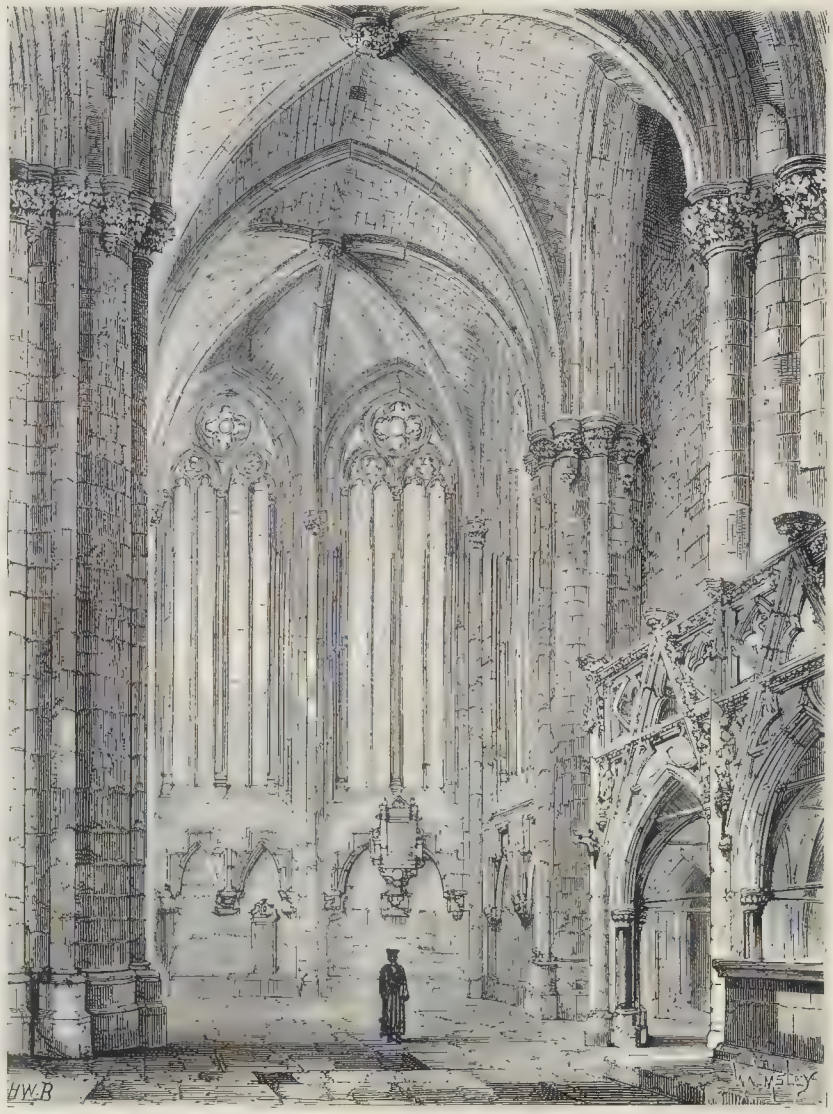
MR. J. LOVIBOND, the owner of this freehold estate, which contains nearly one hundred acres, invited architects, in September last, to submit plans, in public competition, for laying it out. Several were sent in answer to the invitation. The task of adjudication was left to a committee of gentlemen, how appointed we do not know. Mr Lovibond has awarded, on their recommendation, the first premium of 30*l.* to the authors of the design bearing the motto, "Comme il faut" (Mr. T. Batterbury, and Mr. J. Kiddle), and the second premium of 10*l.* to the author of design marked "Bonheur" (Mr. Lewis Solomon). Messrs. T. Batterbury & J. Kiddle, consequently, have been appointed surveyors to the estate.

THE CHURCH OF WETZLAR, GERMANY.

THE great Church of Wetzlar, on the Lahn, though far from being one of the most beautiful or perfect ecclesiastical edifices in Germany, is certainly one of the most curious and interesting. Like many other large churches, it is a complete epitome of the architecture of the country, and for studying the growth and development of Gothic architecture, from the very early and rude Romanesque down to the latest and most eccentric vagaries of German Third-pointed work, we know no building in all Germany where this can be done more thoroughly than in the Church of Wetzlar. We shall not now attempt to describe the exterior of this singular church, as we may have occasion to do so on a future occasion, but shall confine ourselves to the interior. In plan and general arrangement, the Church of Wetzlar consists of a noble and lofty nave, and aisles the same height, attached to the west of which is a singular Romanesque front, with two small towers and a shallow porch between them. To the west of this is an unfinished and roofless addition of late date. There are spacious transepts of singular design: that to the south is beautiful Geometric work, and that to the north, of which we give a view, is rich and fully developed fourteenth-century work. The vaulting of these transepts is singular, and very original. It is treated as though the transepts were apsidal. This will be best understood by reference to our view. The singular arcade below the windows is evidently of earlier date than the superstructure, and is a peculiar example of the very latest German Romanesque work. A fine fourteenth-century rood-screen, consisting of three canopied arches opening to the same number of vaulted bays, separates the choir from this portion of the church. Two of the bays of this rood-screen contain doorways, which open into the choir, whilst the middle one has a glazed grating looking into the choir: in front of the centre bay is an ancient altar, with a slab of black marble, which is not marked with five crosses, as as is usual in all ancient altars we have seen, but with four "tau" crosses at the four angles: this is so singular that we should much like to have some explanation of it.

Beyond this screen is the choir, which is lower than the nave, but very spacious. It has side aisles, and a fine clearstory, and is closed to the east by a noble five-sided apse, with two-light windows in each bay. In front of the clearstory windows is an arcaded passage, and the whole is finely vaulted.

This choir is a noble example of pure German First-Pointed work, and dates from the middle of the thirteenth century. The nave of this church is used by the Lutherans, and the choir by the Catholics. As they are only separated by the before-described rood-screen, of course the religious services take place at different times in the day. The choir is neatly fitted up, and has a modern Gothic high altar, of tolerably good design. It also contains a few singular stalls under the rood-screen, some ancient monuments to priests, and one or two fine life-sized statues in stone. In the nave of the church is an ancient font, a chandelier of the earlier part of the sixteenth century, of coloured iron, and two singular ancient groups of figures, now enclosed in modern cupboards. One is a "Pieta," the most grotesque and repulsive treatment of the subject we have ever seen. The other represents Our Lord's triumphal entry into Jerusalem, and originally used on Palm Sunday for the procession. These date from the commencement of the sixteenth century, and are singular though not beautiful examples of the art of that date.



THE CHURCH OF WETZLAR, ON THE LAHN, GERMANY. —*Interior of North Transept.*

WAREHOUSES, FORE-STREET, CORNER OF MILTON-STREET, CITY.

THE buildings shown by the accompanying engraving are two warehouses just erected in Fore-street, at the corner of Milton-street, City. They occupy the site of some very old timber erections, similar to those now standing (and shown in the view) on the opposite side of Milton-street.

The new buildings have a frontage towards Fore-street of 35 ft., that next Milton-street being 26 ft. The piers, strings, and main cornice of the fronts are of stone; the rest is of brick, some portions of which are of Pether's pressed bricks. The piers of the ground-floor are of marble; the entrance-lobbies of oak.

We believe this to be the commencement of an improved class of buildings in Fore-street,—a street that will very well bear much improvement, consisting, as it it does, of a great mixture of new, and valueless old buildings. The neighbourhood itself is full of associations, and very interesting.

This block has been designed by and carried out under the superintendence of Messrs. George & Henry S. Legg, architects; Mr. William Brass being the builder.

Ramsgate.—Mr. E. Ellice-Clark has been appointed surveyor to the Ramsgate Local Board and Improvement Commissioners.



WAREHOUSES: FORE STREET, CORNER OF MILTON STREET, LONDON.
MESSRS. GEORGE & HENRY S. LEGG, ARCHITECTS.

YORKSHIRE ARCHITECTURAL SOCIETY.

THE annual meeting of the members of this society has been held at the School of Art, Minster-yard, York, the Dean of York in the chair.

The Rev. George Rowe read the report, which stated that for the first time for several years the committee had to report the loss of many members by death or resignation, without any corresponding increase in numbers. The finances, however, were in a satisfactory condition, and there was a large balance in hand. Referring to what was said last year concerning the publication of *fac similes* of ancient stained glass in the Minster, the committee had to regret that circumstances had prevented its progress, so that nothing had been done. The report concluded by a reference to the progress of the works connected with the restoration of the south transept of York Minster, which, under the able direction of Mr. Street, was being rapidly placed in a safe condition.

The report was unanimously adopted. The officers and committee were re-elected for the ensuing year, and Mr. W. D. Husband, Bootham, and Mr. Bradley, Precentor's Court, were admitted members of the society.

The Rev. G. Ornsby, vicar of Fishlake, read a paper on "Yorkshire Churches and Yorkshire Wills;" and the Rev. G. Rowe, principal of the York Diocesan Training College, read one on the five-light west window in the church of St. Martin, Coney-street, York.

SALE OF BUILDING LANDS, LONDON AND WESTMINSTER.

DURING the present week, the Metropolitan District Railway Company have submitted for sale by auction some valuable property and surplus building-land in the City and Westminster. The total value of the land and buildings which have been offered, and to a certain extent sold, is estimated at upwards of 220,000*l.* The sales took place on Tuesday and Wednesday, at the Auction Mart, in Tokenhouse-yard. The property sold on Tuesday is situated in the City, and consisted of four lots, Messrs. Debenham, Tewson, & Farmer being the auctioneers. The first lot consisted of freehold premises in Queen-street, Cheapside, and Great St. Thomas Apostle, adjoining, containing an area of 1,060 sq. ft. This lot was put up at 3,000*l.*, and was ultimately sold for 4,900*l.* The second lot consisted of freehold premises in Great St. Thomas Apostle, containing a large warehouse occupying an area of 1,435 sq. ft. For this lot 6,200*l.* were offered, when 6,500*l.* were named as the reserve, and as there was no advance on this sum the lot was withdrawn. The next lot offered consisted of freehold property, in Love-lane and Botolph-alley, Eastcheap, containing 3,100 square feet, now occupied by several small buildings and ware-rooms of an inferior character, but on which it is expected blocks of warehouses will be erected on the expiration of some existing leases, which terminate in a few years. In reference to this lot the auctioneer stated that the Corporation was about to make a new street close to the property, which would materially improve its value. Before the bidding for the lot commenced, a gentleman present complained that the conditions as to the height of new buildings to be erected on the land contained too stringent restrictions; whereupon the auctioneer observed that there was not any plot of land in the City, containing 3,100 square feet, where a builder could carry a building to any height he pleased. After a spirited competition this lot was sold for 6,200*l.* The last lot offered was the largest and most important of the whole. It consisted of leasehold property in Cannon-street, near the Cannon-street Station, comprising a block of large warehouses and offices, covering an area of 7,100 square feet. These premises are held by the railway company under a lease for 72 years, from Christmas, 1858, at a ground rent of 1,115*l.* per annum, and are let by the company on an under-lease to the India-rubber, Gutta Percha, and Telegraph Works Company for 21 years, from 1867, at 2,500*l.* per annum. The biddings for this lot commenced at 10,000*l.*, and increased to 18,000*l.*, when 20,000*l.* were named as the reserve, and there being no further advance, the property was withdrawn, the auctioneer stating that as the company were very anxious to sell, they were open to receive an offer by private contract.

The company's surplus lands offered on Wednesday consisted of an extensive plot of freehold land in Broad Sanctuary, Westminster, containing an area of 2a. 0r. 11p., within view of the Houses of Parliament, Westminster-hall, and Government Offices, and offering an opportunity for the erection of buildings for national or other purposes. The property was divided into two lots, and its estimated value was set down at about 180,000*l.* Messrs. Rushworth, Abbott, & Co. were the auctioneers, who stated in offering the property that there was not in the whole metropolis an equally large or eligible building site. There being no offers for either lot, the property was withdrawn, the auctioneer stating that the railway company would be willing to receive offers for building plots in smaller quantities.

ARCHITECTURAL ASSOCIATION OF IRELAND.

A GENERAL meeting was held on the 9th instant, the president, Mr. J. J. O'Callaghan, in the chair. The following registry rules, being approved of by the committee, were submitted to the general meeting and confirmed:—

"1. That the registry be open, without fee, to all members of the Association requiring engagements.

2. That the assistants should state the salary required and qualifications at time of registry.

3. That should an assistant be engaged through the registry or otherwise, he shall let the secretaries know in writing, that his name may be withdrawn.

4. That practising architects be noticed by advertisement that the registry is open, and be requested to apply to the secretaries should they require assistants."

Mr. J. L. Robinson, hon. sec., then read a paper on "Architectural Perspective." A discussion followed.

Mr. Longfield, hon. sec., Mr. Early, Mr. Holmes, and others spoke.

The next general meeting will be held on the 30th inst., when Mr. E. Trevor Owen will read a paper on "Architectural Details in Common Use."

PROPOSED "COUNTY COLLEGE."

THE Rev. J. L. Brereton's "County College" scheme is advancing, and likely, we are told, to be entirely successful. It meets with the approval of the tutors and heads of houses in Cambridge, and has promises of support from nearly all who have been instrumental in establishing the county schools.

The plans embrace on ground-floor a large central hall, round which are grouped eight common rooms, 50 ft. by 25 ft.; library, board-rooms, tutors' rooms and library; porter's and steward's rooms. At each end of the principal front are residences for principals, chapel, and lecture-hall.

Above the common rooms are three stories of bed-rooms, each of the 300 students having a small room of about 10 ft. by 7 ft. 6 in.

The front centre of the building is occupied by officers, servants, and so on; the dining-hall and kitchen being above.

The estimated cost is 20,000*l.* The architects are Messrs. John Giles & Gough, and the plan generally is somewhat on the model of the Norfolk County School, now being erected by them, of which the Prince of Wales is the patron.

FALL OF FLOOR IN THE BELVEDERE ROAD.

ON Friday in last week an inquest was held at the King's Head Tavern, Belvedere-road, Lambeth, before Mr. William Carter, coroner for East Surrey, on the bodies of George Bars, aged 63, and William John West, aged 19, who were killed on Thursday by the falling in of a floor at Darfield Wharf, belonging to Mr. Beaumont, of the Belvedere road. Some tons of oats were stored in the upper part of the premises, and the two deceased men were standing below with a horse and cart when the floor above them gave way, and they were buried beneath heaps of grain. On being extricated it was found that both were dead. The cart near which they were standing was smashed to pieces, and the horse attached to it was killed.

The substance of the evidence bearing on the strength of the building and the state of the ruins and cause of the fall was as follows:—Henry Howlett (who said he built the floor), resided at No. 5, Cheltenham-place, Pimlico. Witness was present when the accident happened. He heard a crash, and turning round saw that the end of the floor had fallen. He found that 30 ft. square of flooring had given way, and the corn had fallen. He had no conception of the weight of corn on the floor at the time it fell. He had since, at the request of Mr. Beaumont, inspected the scene of the accident. He thought the beam gave way about half way from the wall to the iron column in the centre, that was about 15 ft. from the entry from the yard. The height of the beam from the ground was about 10 ft. The floor was supported by one entire beam from wall to wall, which was supported in the centre by an iron column. One half of the beam had given way between the wall and the column. Witness did the labour for the building of the floor. He knew the beam rested on stone corbels. The half of the support had broken away. He had examined that part and found that the beam gave way between the wall and the column. That was his opinion. By reason of that giving way the flooring came down. The beam carried joists from another timber at the end. Witness examined the part where the timber broke. He could not see any defect in it. He presumed that the beam broke from the superincumbent weight of corn. He did not see anything to lead him to suppose the beam had been tampered with in any way. There was no doubt in his mind that the deaths were due to the beam suddenly breaking. He did not think the accident could have been foreseen.

By the Jury.—When he built this he had the instructions of the manager. He considered that the floor was capable of bearing any weight that could be put upon it, considering that the ceiling was a very low one. The length of the building was 160 odd feet.

By the Solicitor for Mr. Beaumont.—Witness erected the beam, and he considered it calculated to bear any weight that could be put upon it. He had been upon the premises a few days before the accident. He was called in by Mr. Beaumont to give his opinion upon the stability of the building. His attention was drawn to a slight deflection in the end towards the river. Mr. Beaumont and Mr. Batstone were present; Mr. West (the manager) was also present. His opinion was asked whether he thought there was anything wrong. He gave it as his opinion that some support should be added to the beam near the river; but he thought the other beams were perfectly safe. He had no knowledge as to what weight the beams were calculated to resist.

By the Coroner.—He believed that corn had been placed on the floor which gave way, but not so much as had been put there when the accident happened. He could not speak decisively, but he thought that this was the largest lot that had ever been on the floor. In his opinion Mr. Beaumont had used every reasonable and proper precaution against accident.

By the Jury.—The girder went 9 in. into the wall. The stone corbels were flush with the wall.

Mr. Beaumont was examined by his solicitor. He said that it was suggested to him to have this building erected, and Mr. Duff was suggested as the builder. He put up a part of the building. Mr. Duff was told that the resisting weight of the floor should be to the extent of 5,400 quarters of corn. Mr. Duff prepared the drawings, and witness asked an architect to tell him what the floor would bear. The drawings were submitted to an engineer, who said the floor would bear 50 tons between each of the columns. There were about 400 quarters of oats on the floor which broke; that would be about half what the floor was estimated to bear. He had the most perfect confidence in the erection of the building. A few minutes before the accident he was under the floor himself. He was of opinion that the statement made by the witness Howlett with regard to the breakage was quite correct. On the day before the accident he noticed a deflection in another part of the premises, and told West not to put any more corn there. The witness Howlett was called in and inspected the whole of the beams, and gave it as his opinion that the beam which gave way was perfectly sound. Everything that could be done was done for security in the erection of the building. Mr. West made any suggestion he liked.

By the Jury.—The floor was calculated to bear the weight of 50 tons between the pillars, and there were about 50 tons on the floor altogether, that would be about 25 tons between the pillar and the end walls."

The Coroner having summed up the evidence, the jury returned a verdict of Accidental Death, suggesting that two iron columns should be used as supports in the place of one as heretofore;—a mere rule-of-thumb suggestion, we may add.

As regards the statement that "the stone corbels were flush [*sic*] with the walls," the question might be asked, What is a corbel? Surely there is no such thing as a corbel where the stone is flush with the wall? Even the size of the beam is a point in question.

OBSTRUCTION OF LIGHT.

Pretious v. *Spiers & Pond.*—The plaintiff in this suit (before Vice-Chancellor Sir J. Wickens) is a hatter, carrying on his business on the north side of Piccadilly, at No. 3, and in the front of his house facing that street are nine "ancient windows." The defendants recently purchased the houses on the south side of Piccadilly, opposite the plaintiff's shop, pulled them down, and erected on the site a large building intended to be called "The Criterion," and to be used as a restaurant. The distance between the premises of the plaintiff and those of the defendants was 52 ft. or 54 ft. and the height of the buildings originally purchased by them was about 52 ft. They had, however, so constructed their new premises as to make them, on the whole, 51 ft. higher than the former houses. The plaintiff's case was that he had suffered great loss and inconvenience in his business from the increased height of the defendant's new structure; that previously thereto he had worked without any artificial light in winter (save an exceptionally foggy day) till four o'clock p.m.; but had, ever since the defendants had increased the height of their premises, been forced to burn gas in his shop; and he said that the frequent burning of gas where hats were kept was very prejudicial to them, by destroying their gloss and colour, and rendering constant restoration of them, at great expense, a necessity. When he became aware (as he said he "recently" had) of the height to which the defendants meant to carry their new building, he instructed his solicitors to communicate with them on the subject; and, if requisite, to apply to this Court for an injunction to restrain the defendants from erecting, or continuing, any building that should interfere with the plaintiff's light and air at No. 3, Piccadilly, as enjoyed by him. This suit became necessary. A great deal of contradictory evidence was adduced in it, from which it appeared (*inter alia*) that plans and descriptions of the defendants' proposed building had been published so long ago as March, June, and July, 1871, in the *Builder* and other newspapers; but that the plaintiff's notice was not given to the defendants till Dec. 2, 1872, and the bill not filed in this suit for an injunction till the 10th of Dec 1872. The cause now came on upon an interlocutory motion for an injunction as above mentioned.

The Vice-Chancellor said no rule was better settled than that a plaintiff seeking an interlocutory injunction must show that he had signified to the defendants, at a reasonably early period, his intention to rely on the veto upon their proceedings to which this Court considered him entitled. Here the evidence had distinctly raised the question of "acquiescence" on the part of the plaintiff

He had but weakly supported his case. What had been done was done by the defendants with the greatest possible publicity. The plaintiff saw, or must be taken to have seen, that the building would be a large one. The slightest inquiry would, long before he filed the bill, have enabled him to know what the increased height of the structure would probably be; and on the whole case he must be assumed to have known what was about to be built before any material progress had been made. The motion must therefore be refused.

"I KNOW A HAWK FROM A HAND-SAW."

SIR,—So vast and rapid are now the strides of the pen, and the progress of literature, that one medium is often unconsciously left behind another in the course of events. Thus it has happened that the suggestion which you ascribe to Mr. J. A. Picton, and quote from *Notes and Queries*, was made public beforehand in the *Antiquary*.

In justice to an almost unknown publication, I beg you will allow this statement to appear; the facts have already been made known to Mr. Picton, and admitted by him.

I enclose you a copy of the number in question, vol. ii., No. 33, dated June 15, 1872. A. H.

WARMING.

SIR,—About this time, either two or three years ago, there appeared a letter in the *Builder* from an architect, who had recently built himself a large house,—I think in the neighbourhood of London, and who had succeeded in warming it, quite to his own satisfaction, by means of iron air-chambers fixed behind his room fire-places. I have read the *Builder* carefully every week since that time, hoping to find either a confirmation or a contradiction of his experience; but up to this time I have seen no other communication upon the subject. If your correspondent would say if the system continues to answer or otherwise, he would confer a benefit upon many of your readers who, like myself, wish to make coal go as far as possible in these dear times. READER.

WHITEHAVEN BATHS COMPETITION.

SIR,—Messrs. Dyson & Dyson having written you respecting the above, I now forward you the entire correspondence, from which, I think, you will see that I have just cause to complain of the very unfair way in which they have stated the case betwixt us.

I request your attention to the reservation clause in the advertisement, and the following words, in my letter of November 13th, in reply to their suggestion that I should give a guarantee, "*A hitch has arisen respecting the ground, so that I cannot just now give any guarantee.*" My position in the matter is briefly this. As a member of our Harbour Board, I appealed to my colleagues to convey to trustees or a company a piece of (at present) waste ground, about to be enclosed by erection of a sea wall, for the construction thereon of public baths. The idea being favourably received, I forwarded to you an advertisement asking for designs, &c. This appeared in your issue of October 26th. Immediately after publication, Messrs. Dyson & Dyson, with about thirty others, applied for tracing of ground, &c. The data for receiving designs (originally intended for November 18th) was inadvertently omitted. This being communicated by letter, Messrs. Dyson said it was too limited; it was accordingly extended to the end of the month. At the first meeting of our Board (November 11) the application for ground was complied with, but subject to confirmation or otherwise by Mr. Brunlees, the engineer for the dock works in course of construction. At the succeeding meeting (November 25th), the engineer advised the Board that the ground would be required for railway sidings, &c. Messrs. Dyson's plans had been despatched two days previously, and reached me on the morning of the meeting. I communicated the decision of the Board by first post to all the applicants for designs. The above notice crossed some plans in the transit (these, at the senders' request, were immediately returned), and prevented others from being sent. There not having been any competition, and Messrs. Dyson not having any instructions from me, I much doubt whether they have any claim.

Regarding the merits of their designs, which I forward along with this, I leave you to judge whether, as for work done, the sum offered is not sufficient; and whether the proposed mode of settlement has anything of the nature of a "swindle" about it. . . .

JOHN JACKSON.

*** Mr Jackson appears to have acted with good intentions, and he evidently feels, judging from the offer he has made, that he had no right by certain offers to induce architects to expend time and thought in the preparation of designs, and then when work had been done to withdraw his offers. A moral claim against him certainly exists. What the power of enforcing it may be we will not discuss. Moreover, we feel bound to say (Messrs. Dyson & Dyson continuing to press us for an opinion) that their design for the exterior of the building, as sent to us by Mr. Johnson, is of such a character that no competent judge could have selected it for execution.

POSTAL TELEGRAMS.

SIR,—It is now generally admitted that it is very desirable receipts should be given for telegrams. I have no doubt the reason of the Telegraph Department refusing to give receipts for telegrams is, that it would consume a quantity of paper, and give too much employment to the clerks; but if I may be permitted to offer a few suggestions, I think it could be carried out in this way:—

The counter or receiving clerk should be provided with a rack of small tickets similar to railway tickets, and in the same form, having consecutive numbers, and of various values from one shilling.

A railway date stamp placed on the counter.

These tickets (receipts for telegrams) could be drawn, stamped, and issued to the senders of messages with almost electrical speed.

In cases where it is necessary to produce a copy of a telegram,—if it is after twelve months the Telegraph Department destroys them; and as the production of telegrams would often prove a case, it is an important item to men of business. The following suggestion would avoid this:—

Senders of telegrams should be supplied, either at the telegraph station or for use at their places of business, with books containing postal telegraph forms, with duplicate forms for copies, similar to those which the various telegraph companies supplied to merchants and others, and by the use of carbonic paper copies could be retained.

These copies should be handed, with the original (for transmission), to the receiving clerk, who should affix the date and office stamp upon the copy.

ARTHUR G. NEWTON.

THE RECENT FALL IN BRISTOL.

SIR,—With reference to the paragraph in your paper of the 4th inst., on the disaster which lately occurred at our building, opposite the Railway Terminus, Bristol, we shall be obliged if you will allow us to say, the weight of the roof, which is not at all disproportioned to the supporting pillars, was not the cause of the accident, nor are the portions of the roof remaining in a bad state; so far from their having to come down, they will not require anything to be done to them. The cause of the fall of the roof was the giving way of the foundation of one of the interior pillars, owing to an old tank, which had been long unused and forgotten, existing near it: the tank wall gave way, and the foundation slid into it; and the support being withdrawn, of course the flat roof above and the intervening stories fell to the ground.

The side walls stood the strain of the falling interior without displacement, and the ends of the iron tie-rods, which ran through the building, were even wrenched through them by the falling beams, without causing more damage than the disturbance of the few bricks immediately round them. BROCK & BRUCE.

BELLS.

SIR,—With respect to your remarks about bells, there are two reasons why bells sound best when they are swung. One is, that the mouth of the bell is turned in the direction in which the sound is intended to travel, and another that the centrifugal force throws out the sound. By securing the bell horizontally with a screw-bolt through the head, the first difficulty might be overcome. The second point appears of less importance, but I cannot imagine that a bell would ever sound well with its mouth opposite the floor of the belfry. A. J. BAKER.

DIFFERENCES AT OSWESTRY.

WITH reference to the restoration of the ancient church of Oswestry, now going on under the direction of Mr. Street, a stormy meeting has been held, some of the inhabitants maintaining that the architect desired to make the building as much like a Roman Catholic chapel as possible, others expressing perfect satisfaction. It was ultimately resolved unanimously, amongst other things, that there should be no iron gates and railings to separate the chancel from the nave.

THE OLD MANSION HOUSE AT ENFIELD.

SIR,—I cordially endorse the views you have pronounced in favour of the conservation of this interesting building, *temp.* Queen Anne. What is its early history? Forty years ago I received my early education in it, when, and for some time before, it was well known as a large private school, presided over by an energetic, estimable man, named Hainsworth, who was one of the first to establish the principle of teaching by "firmness and kindness," and with whom "tunding," rods, and birches were unknown. I have a lively recollection of its architectural beauties when trying often to sketch it as a boy; and on revisiting it some years later, when I discovered it to be converted into a most inconvenient railway station, I, too, became impressed with the peculiarities you note. In addition to the ornamental brick entrance porch,—which, by the way, from facing the north, was in excellent preservation,—its internal arrangements and "planning" were admirable. The western façade had a wing of kitchen and servants' offices attached, which, together, formed one side of a large court-yard, the eastern side of which was occupied by a range of buildings which were at my time used as schoolrooms. The northern front was close to a public road, on the other side of which flowed the river Lea. The sunny southern side was occupied by a spacious lawn with forest trees, beyond which was a splendid orchard and garden, in the centre of which was a large and well-stocked ornamental fish-pond, which provided also excellent skating in winter. On the eastern side were paddocks, where cricket and other sports were held. A mansion so completely planned in itself, and in reference to the amusements of fishing, boating, skating, cricketing, &c., so admirably arranged within its own grounds, must have been founded by some one of no mean importance. Who was the founder of it, and who the architect? F. R. WILSON.

SANITARY SONGS.

SIR,—The Ladies' Association of which I am a member desire to thank you for the sanitary song or hymn lately printed in the *Builder* (vol. xxx., p. 1022). It only needs, we think, another stanza or two (somewhat of the following character) to make it perfect, an iliad in a nutshell, so to speak, "on the evils that are wrought" by ignorance and neglect, and the "good that is sought" from the establishment and due observance of true sanitary principles. Such simple rhymes would, as I once before suggested, do immense good if printed in the form of cards, and circulated among the children at all Sabbath and secular schools.

This stanza (a humble imitation, of course, which, it is hoped, will not be considered presumptuous) should follow the line in the original (verse 2),—

"Where plague creeps on by stealth."

"Shall we have putrid beef in the pot,
Potatoes diseased and dear,
Or mouldering bread, or fish to rot;
Or milk made of whiting and 'Simpson' hot,
Or *cocculus indicus'd* beer?"

These adulterations, properly speaking, belong now to the public analyst; but your readers will doubtless remember that the whole subject was thoroughly and continuously exposed in the *Builder* long before a public analyst was hoped for. PRISCILLA.

HOLY TRINITY SCHOOLS, SYDENHAM.

THE plans of Messrs. John Giles & Gough, of Craven-street, have been selected in a limited competition, for the above schools. They are intended to provide for 100 boys, 100 girls, and 150 infants.

ORNAMENTATION OF A NEW RECREATION GROUND IN BETHNAL GREEN.

IN carrying out the several alterations on the Columbia Market estate, purchased by Lady Burdett Coutts for the purpose of making public improvements in the neighbourhood, the Baroness cleared a triangular piece of land at the corner of Crab Tree-row and Hackney-road, on which stood a number of dilapidated houses, and formed the area into an open space for the benefit of the tenants of the Improved Industrial Dwellings, and other buildings in the locality. The Baroness is now about to plant this open space with trees, and also to place circular seats around them for the two-fold purpose of protecting the trees, and also to be of use to the public in fine weather. In addition to the trees and the seats a number of "rests," similar to that in Piccadilly, nearly opposite the end of Down-street, are also to be erected, after which it is the intention of the Baroness to have the land legally made over to the Bethnal-green vestry, so that the same may be preserved as a free and open space for ever for the benefit of the inhabitants.

THE IMPROVEMENT OF SMALL HOUSES.

THE thought has occurred to me that the very numerous class of persons with small and fixed incomes, whom the Chancellor of the Exchequer delights more especially to honour, and whom the general rise in the means of living has put somewhat in a dilemma at this crucial period of the year, might be profitably aided by a little ingenuity exercised in the direction of a more economic arrangement of their dwellings and the more general adoption of domestic labour-saving appliances, and thus be made as comfortable as when, by the neglect of these matters, they are constrained to devote a margin of their income to unprofitable labour. It is true we cannot have Australian villas packed in tins and imported to compete with our speculating builders;

but the object sought after might be gained by reconsidering the arrangement of our own produce. These villas are by no means healthy, unless it be contended that living underground is healthy, as their inhabitants mostly do, viz., in the breakfast-parlour! next the kitchen, where drains are generally defective, and "damp" chronic,—as a sequence, ill health, and this means expense. I heard lately of a man discovering a half-filled well under his floor. "All's well that ends well," doubtless quoth the builder, as he laid the last board that hid his infernal pit. Could not the kitchen be put nearer the bed-rooms, so as to have this office handy for the supervision of the children on that floor? For if a man is to be honoured who makes two blades of grass grow where erst has grown but one, how much more shall he be honoured who makes one servant do where two have done before.

Now, as to the servants' work, there is dirty work and there is clean work. It is in the former of these more especially that I think a saving is to be effected, as it includes cooking, cleaning stoves, passages, and generally "tidying up." Clean work consists, *inter alia*, of making beds, waiting at table, attending the door, crochet, reading the newspapers and penny dreadfuls; these latter occupations are a *sine qud non* in this our day, and must consequently form a factor in our calculations; pianoforte playing (too often a nuisance to neighbours) and subscription to Mudie's are mere accessories of ornamental service, and do not come within our category of necessary. The general adoption of tile hearths and backs and movable grates would save trouble. Then there is a host of capital domestic labour-saving machines,—cleanly closed kitchen-ranges, gas for summer, and more water-taps should be about the place, and the surplus heat from the boiler capable of being utilised when wanted. Then the long flight of stone steps to the front door should be improved away; these occupy much time in keeping trim (particularly if the maid "takes a pride in them," and a pleasure in a comprehensive and contemplative view of the neighbourhood from their summit),—a proceeding, however exhilarating in itself, wasteful of time and adding no dignity to the front of the house.

Giant intellects may consider the solution of this problem beneath their notice, but I submit this intellect, *pace* the elephant's trunk, should be able to pick up the pin of economy as well as root up a tree to let in the light and air of knowledge. I know I have tried to reconcile the conflicting claims in these microcosms of houses, and have found designing large houses child's play in comparison.

JOSEPH IVIMEY.

CHURCH-BUILDING NEWS.

Woodhouse (*Leeds*). — St. Mark's Church, Woodhouse, which has lately been closed, has undergone considerable alterations. The ground-floor has been entirely replanned, the old high-backed pews having been replaced with open deal benches, having solid cut pitch-pine ends. The backs are framed and panelled, with moulded top-rail. The seat-boards are made to slope, as also the backs. A spacious chancel has been formed by raising the floor of the two easternmost bays, and filling in between the columns with wooden screens, the lower part of which is panelled, the upper portion being open framework, with sunk, pierced, and cusped tracery-head, resting on turned shafting. The choir seats are open benches in pitch-pine, with ornamental solid cut ends. The fronts of the boys' seats are of open framework, with cusped heads. The wood flooring under all the seating is raised above the level of the floor of the passages, and means have been used to secure perfect ventilation, as it was found on removing the old floor-boards that the joisting, for want of ventilation, was in many places thoroughly decayed, and could not have lasted much longer. The floor of the chancel and within the altar-rail (or sacrarium) is laid with tiling. The steps to the altar are of white Sicilian marble, with red marble risers. The seating has been stained and varnished. The walls and roofs have been cleaned down, and painted in oil colour. The roofs of the nave and aisles are finished with a bluish-grey tint, and have ornamental patterns stencilled on them. The walls are finished with a buff colour, with a dado of green, having patterns stencilled on. The reveals to the windows are painted in red, with ivy-leaf running round. The walls and roof of the chancel are treated much more richly, the roof having the spandrels filled in with the pomegranate and vine, and angels represented as singing. The east wall has been decorated so as to harmonise with the chancel window (which represents the Ascension), and has angels playing upon various instruments of music, with the text, "God is gone up with a shout, the Lord with the sound of a trumpet" (Psalm xlvii. 5) running across. The reredos is divided into three panels, each containing a picture, in oil colours, the three symbolising the three dispensations, viz., the patriarchal, the Mosaic, and the Christian. The centre picture represents our Lord, as Christian high priest, blessing the holy sacrament; the left hand represents Abraham and son Isaac on their way to Mount Moriah, a type of the willing sacrifice of Christ (Genesis xxii.); the right panel represents Moses lifting up the brazen serpent in the wilderness, a type of the salvation of the Cross (St. John iii. 14, 15). The panels to the left of the reredos will shortly be filled in with subjects, one representing the miracle of the Changing of Water into Wine; the other, the parable of the Wedding Garment. The panels to the right will represent the miracle of the Feeding of the Five Thousand, and the parable of the Ten Virgins. The panels beneath these have the passion-flower stencilled upon a chocolate-coloured ground. The chancel-screens have been decorated in colours. The organ has been repaired and embellished, the pipes being cleaned and decorated with gold and coloured patterns. A new oak pulpit and altar have also been supplied (the wood of the pulpit being more than 500 years old), the gallery-front and organ-case have been regrained, and the seating in the gallery repainted in plain colours. The whole of the decorations have been carried out by Messrs. Powell Brothers, of Park-place, Leeds, under the direction of the architects. The contractors for the wood seating are Messrs. Shires & Son, of Leeds. The pulpit and chancel-screen are the workmanship of Mr. James Wood, of Leeds. The graining and varnishing of the woodwork, and the plain painting of the walls, roofs, and gallery seats, have been done by Messrs. Fred. Jackson & Co., Leeds. The whole of the work, with the exception of the pulpit, altar, and graining, has been carried out under the superintendence of Messrs. Adams & Kelly, architects, Leeds. Gifts have been made to the church by different members of the congregation. Simultaneously with the work of restoration, a new stained-glass window, by Messrs. Clayton & Bell, has been placed in the north aisle by Mr. Thos. Tennant, to the memory of his late wife, who was for many years a communicant and generous benefactor of St. Mark's. The three lights of the window have been subdivided, so as to admit of the treatment in them of six corporal works of mercy. The three upper subjects represent respectively, "The Feeding of the Hungry," "The Clothing of the Naked," and "The Giving of Drink to the Thirsty;" while in the lower are depicted, "The Ministering to Prisoners and Captives," "The Receiving and Entertaining of Strangers," and "The Ministering to the Sick and Dying."

Wellingborough.—The new school church at Wellingborough, which has been dedicated to St. Barnabas the Apostle, has been opened for divine worship: it is an iron construction, in the Gothic style of architecture, very similar to that recently erected on the Lower Mounts, at Northampton, only that it is somewhat larger. The edifice is situated in Oxford-street, off the Wilby-road, just outside the outskirts of the old town, on the borders of the new, and in the midst of a fast-increasing neighbourhood. Its dimensions are these:—On the ground-floor, length, not including the chancel, 54 ft., width 32 ft.; entrance-porch, 10 ft. by 6 ft. The chancel is 24 ft. wide, 16 ft. long. It is divided from the main part of the church by a Gothic arch, and on the south side there is a smaller Gothic arch opening into the vestry. The vestry is 15 ft. by 16 ft. The height to the ridge of the main building is 30 ft., and to the top of the small spire, 48 ft. The spire includes a small belfry. The church is lighted with four small Gothic windows on either side, and at the east end there is a large circular window, filled in with glazed glass of cathedral green, and relieved by a centre colouring, illuminating the sacred monogram, I.H.S. Artificially it is lighted by gas-stand pendants, in the body of the church, and a couple of ornamental and many-lighted gas-standards in the chancel. It is panelled with burnished timber throughout, and is seated, with the exception of the choir-seats in the chancel, with cathedral chairs. It will seat about 350 persons, and afford accommodation for school purposes, according to the Government requirements, for more than 220 children. It was built by Messrs. Kent, of London; Mr. Bold, Wellingborough, having executed the foundation brickwork. The cost of the land, which measures 856 square yards, was 139*l*. 10s., and that of the erection more than 500*l*. in addition.

SCHOOL-BUILDING NEWS.

Garford and Frilford.—A new school for the parishes of Garford and Frilford is to be built immediately from the designs of Mr. Edwin Dolby, of Abingdon, architect. The plans will comprise school-room, class-room, and a teachers' residence, with separate offices for the boys and girls, and a private enclosed yard attached to the teacher's house. The local stone will be used for the walls, and the windows will be of Bath stone, fitted with Messrs. Burt & Potts's iron lights. The roof of the school and class-room will be partially exposed to view. The contract of Mr. R. F. Bryan, of Abingdon, has been accepted, and he is to commence forthwith.

Horton Kirby.—The Bradford School for Little Boys, situated in the parish of Horton Kirby, Kent, near the Farningham-road Station of the London, Chatham, and Dover Railway, has been opened, with some ceremony, by the Mayor of Bradford, Mr. M. W. Thompson. The "Home,"—with which the school is to be connected,—is intended for boys under ten years of age who are either homeless or destitute, or in danger of falling into crime. It consists of ten houses, and the building erected by the Bradford people is to be used as a school. Thirty boys reside in each of the houses, under the care of a man and his wife, as the "father" and "mother" of the family. While the Home provides accommodation for 300 homeless boys, it feeds and clothes them, and gives them a secular and religious education. The boys are then sent to the various trades which they most prefer; and when they are sent out to the world, they are looked after as "old boys"; and if they behave for a certain length of time, they receive prizes. The foundation-stone of the new school was laid on the 13th of July last, with great ceremony, by Lord Frederick C. Cavendish, M.P. On that occasion the Prince Imperial of France presented the prizes to the boys, among whom were a number of "old boys." The new building consists of a main room, 26 ft. by 30 ft., an infant-room, 18 ft. by 19 ft., and three separate class-rooms of proportionate dimensions. In the rear of the building is a covered playground. All the external walls are built of Kentish rag, surmounted with an ornamental slate roof. The cost of the building is about 1,600*l*., and upwards of 1,000*l*. have been subscribed in Bradford. Amongst the donors were Sir T. Salt and Mr. Geo. Salt, 100*l*. each.

Cheadle.—The new church schools at Whiston have been opened. The schools cost in their erection upwards of 600*l*.

Brighton.—The new schools which have been erected in Mount-street, in connexion with St. Mary's Chapel, as a memorial of the Rev. Julius M. Elliott, the late incumbent, have been formally opened by the Bishop of the Diocese. Mr. Elliott lost his life in 1869, whilst descending the Matterhorn. Just prior to his death, says the local *Herald*, he had conceived a scheme for supplying a want greatly felt in the district in which St. Mary's Chapel is situated, viz., of a school on the principles of the Church of England. The congregation resolved to carry it out as the best memorial they could erect to the memory of their pastor. The "Elliott Memorial Schools" were, therefore, raised, at a cost of 2,612*l*., towards which the Misses Elliott gave 1,000*l*. The schools, which are capable of giving accommodation to 132 boys and 200 girls, are to be worked in connexion with the Branch Central National Schools in Warwick-street, which have also been repaired and altered at an expense of 800*l*. The buildings are well adapted for a school of this character; the ground-floor being, as usual, appropriated for the boys, and the first-floor for the girls, with a separate playground for each sex. The external walls, which are built hollow, are faced with Suffolk white bricks, with string courses and arches of red kiln and blue Staffordshire brick. The copings and keystones are of Bath stone; the roofs being covered with Broomhall tiles; and the buildings are plastered internally with Scott's

cement. Sufficient ventilation has been secured by means of open fireplaces fitted with "Abbotsford" stoves, the windows being provided with hung sashes, and ventilators are placed in the floors and ceilings. Mr. John C. Gibbins (Goulty & Gibbins, London and Brighton), was the architect; and Mr. Albert Baker, of Brighton, the contractor.

Books Received.

The Drainage and Sewerage of Bombay: being a Report submitted to the Board of Justices of that City. By their Executive Engineer, HECTOR TULLOCH, Major, Royal Engineers. London: Printed by W. J. Johnson, 21, Fleet-street. 1872.

MAJOR TULLOCH, whose report on the water-supply of Bombay we recently noticed, has also reported, as we here see, on its drainage and sewerage. He reviews all the various schemes heretofore projected, and proposes a new one of his own for the complete sewerage and drainage of the whole island of Bombay at once as by far the most advisable. The island, he says, can be drained on his project without the aid of any new underground channel, and simply by enlarging the present sluices, so that the whole of its sewage can be removed by one single main sewer of moderate size, and can be pumped at one spot. It thus does not matter, as regards the drainage, in what direction the town spreads, as the drainage of each new district can be delivered into the one main sewer by gravitation. The major does not propose to pump the sewage into the sea, but to utilise it, and after utilisation, and when it is pure, to discharge it into the creek north of Trombay, at a point seven miles from Bombay, where there is no large village.

A Digest of the Statutes relating to the Public Health; for the Use of Members of Urban Sanitary Authorities. By GEORGE F. CHAMBERS, F.R.A.S., Barrister-at-Law. Stevens & Co. 1872.

THIS is a comprehensive and popular digest of all the fifty Acts of Parliament and more with which urban sanitary authorities have to deal. Codification is sadly wanting. This Digest treats of Urban Districts only; Rural Districts being reserved for a future publication.

VARIORUM.

IN a paper "On the Utilisation of Waste Coal," by Mr. W. H. Wahl, in the "Journal of the Franklin Institute of Pennsylvania," edited by Mr. Wahl, Ph.D., and others, the author says:—

"The processes for the utilisation of the anthracite waste consist universally in the employment of a foreign material or materials, which shall serve the purpose of a cement to bind the loose particles of the waste together. The cements heretofore used have been both of mineral (incombustible) and of organic (combustible) character. In the majority of instances, as is usually the case with a field of invention just ripening into importance, the patentees of such processes display a characteristic ignorance of, or lofty indifference to, the conditions of the problem they profess to solve. The number and variety of substances which have been secured by inventors, either as cements, or to aid in the cementation or combustion, is well calculated to surprise one unfamiliar with the literature,—if such an expression is allowable when applied to Patent Office records,—of the subject. The several alkaline substances and their silicates seem to have been held in special favour, since they repeat themselves, with some modifications in several places. Lime, either alone or with some subsequent chemical alteration into carbonate, sulphate, or silicate, is claimed; or plaster of Paris or hydraulic cement is used directly. Clay must also be named. Among organic substances may be named pitch, coal-tar, resin, the Trinidad bitumens, asphalte, petroleum residues, dextrine, glue, Grahamite, &c.; while as accessories, employed either to assist cementation or combustion, we have sawdust, chaff, flour, blood, cow-dung, starch, sand, saltpetre, and other substances too numerous to mention. Comparatively few of these processes have ever reached a public trial, as, indeed, few deserve it, and of those which have received attention, none have been more than indifferently successful, either from inherent deficiencies or from commercial reasons."

——*Journal of the Society of Telegraph Engineers.* Edited by Major Frank Bolton, hon. sec., and G. E. Preece, sec. London: Spon. No. 2, Vol. I. This new journal must tend greatly to promote telegraphic progress. The number under notice contains some valuable original communications and reports on telegraphy and electrical science. The journal is published under the supervision of an editing committee.——With the *Gardener's Chronicle* has been issued a characteristic and very fairly executed Almanac, for suspension. The *Chronicle* continues its career with credit to itself and satisfaction to its subscribers.

Miscellanea.

Telegraph Amalgamation.—We learn from *Albott's Monthly Circular* that the preliminary arrangements for the amalgamation of the telegraph lines east of Bombay are now under consideration, and it is gratifying to hear that the representatives from the various colonies in Australia are about to meet in Sydney to fix upon the amount of subsidy to be paid in exchange for a reduction of tariff, thus showing that the colonies are quite alive to the importance of cheap telegraphy, and are prepared to make large sacrifices to obtain it. At the present time the impression, to some extent, prevails, and the question is being actively ventilated, that cheap telegraphy can be brought about by competing lines. Never was there a greater fallacy, and I take this opportunity of warning those who have hitherto done well in their investments to shun proposals having no other justification than mere competition. Attempts at competition draw prominent attention to the great fact that the directors of existing lines must not delay their arrangements for an amalgamation of all submarine cable companies under one great organisation. By this means expenses can be reduced to a minimum, and innumerable other advantages would be attained. At present, without the Boards of any new scheme, there are no less than thirty-four directors on the lines now working, which practically form but one system of communication between East and West,—or, in other words, there is one director for every 298,900*l.* of capital, and no less than eleven of the directors are receiving either double, triple, or quadruple fees by being on separate boards.

Thunderstorms.—Lightning has done much damage in various parts of the country during this strange winter. At Birmingham much damage was done by it. A house in Newhall-street had its roof considerably damaged. A pile of buildings at Perry Barr was partially demolished. Some windows of a building at Oldbury were forced out by the lightning. The storm was also severely felt in Derbyshire. Telegraph-wires were rent and torn asunder. The spire of Newbold Church was struck by lightning, and seriously damaged, so that it was not considered safe. At the time the church was injured, a man engaged in digging a grave in the churchyard was also struck by the lightning, and knocked down in the grave, where he lay stunned for several minutes. At Nottingham two houses were struck and seriously damaged. The electric current struck a stack of chimneys, which it almost entirely demolished, and passed thence to the ground-floor, tearing away the fire-grates of the third-story bedroom and parlours of both houses. A church at Aughton, about a mile from Ormskirk, Lancashire, was struck and damaged. All the windows in the tower were broken and scattered, and a large stone in the base was driven out of the wall. Intelligence has reached Kinsale that the electric force had struck part of the lighthouse on the Old Head, carrying away the lower flooring, the door and window frames, and occasioning other material injury, which has rendered the building rather unsafe. The Trinity Board has sent over an engineer to examine the structure.

Widdrington Church.—Roverberations from the poem of "Chevy Chase," says Mr. Wilson in his "Churches of Lindisfarne," will come into the minds of most persons who hear of Widdrington parish for the first time. Nor will the first sight of the church dispel them. It is a relic of fourteenth-century workmanship, fraught with an air of venerable grace, delicacy, and serenity that is full of charm. It has, however, been much abused by monstrous churchwardenisms; notably the removal of a north aisle, which, leaving no supports, has brought the arches of the fabric all awry. To remedy these defects and to supply additional accommodation for the increasing population of the parish, the church is about to be thoroughly restored and enlarged under the auspices of the vicar, the Rev. R. Firth, M.A.; Lord Vernon, the late owner; and Mr. Hugh Taylor, the present possessor of the Widdington Estate, have both subscribed largely to the work, with which Mr. F. R. Wilson, architect, is entrusted.

Extraordinary Accident at Bolton.—By the bursting of a fly-wheel, at the Bolton Iron and Steel Works, in Black Horse-street, Bolton, one man has been killed, several injured, and great damage done to property.

Gorleston Church, Great Yarmouth.—Mr. Stuart C. Blake, in his new issue of the "Yarmouth Annual," says:—"In the splays of the two north windows in the north chancel chapel, paintings of angels embowered in the foliage and fruit of the vine were discovered. There were three angels in a splay, hence in the four splays more or less of twelve angels were uncovered upon the walls: around the windows many other angels were found. That portion of the north arcade forming the south side of the north chancel chapel was also found to be painted with figures and floral designs, gracefully extending over and fringing each arch. Traces of paintings were discovered on the east wall of the chancel; on the walls of the south chancel chapel (Bacon's chapel), and the west wall of the south aisle near the belfry-stair door. In the nave, remains of paintings and coloured decorations were discovered. Each pillar had been decorated with various colours,—red, black, and brown being most abundant. Many ancient marble sepulchral slabs were found in the floor, where, with their sepulchral surfaces beneath, they had formed part of the pavement. It is very probable that most of them were originally placed in St. Nicholas's, the conventual church of the Augustine Friars, whose house or convent stood in Fen-street, where some of its ruins may still be seen."

Fever Department at South Staffordshire Hospital.—Extensive alterations and additions made to the South Staffordshire Hospital, in Wolverhampton, are consummated by the opening of the fever department. The original building, erected about 1848, was on the corridor plan. The recent alterations and additions consist of the removal of the out-patient department to a new wing, one story in height, on the eastern side, with a separate approach from the Cleveland-road, thus removing it entirely from the infirmary portion of the hospital. The extension of the south-western wing forms two spacious wards. A further addition is the extension of the south-eastern wing for infectious cases, and arranged for six separate wards. The nurses' rooms are now so divided that each nurse has her separate sleeping-room or cubicle. The light and ventilation to the wards have been increased, as also the cubic space to each patient. The building has been heated, and the water-supply and service for hot water in baths, &c., have been entirely re-arranged. The floors of the new buildings are of oak, and the walls plastered with Parian cement. The builder's work has been well carried out by Mr. Horsman, builder, Wolverhampton, at a cost of over 13,000*l.*, from the designs and under the superintendence of Mr. George Bidlake (Bidlake & Fleeming), architect, Wolverhampton. The heating was contracted for by Mr. Blakemore, of Wednesbury.

Bedford Irrigation Farm.—Mr. J. C. Morton's report on the Bedford Sewage Farm is now in the hands of each member of the corporation, and on perusing it, says the *Bedford Times*, we find that it is an exhaustive and thoroughly scientific document. Premising that, as the farm is capable of cleansing the fecal waste of more than 100,000 persons, there is not a chance of the drainage water creating or becoming a nuisance, Mr. Morton devotes his attention exclusively to the subject of farm profits; and he states that, considering the perfect fitness of the farm for the use of sewage, and its fortunate situation, the land must here pay, if ever land will pay, for the cost of pumping the sewage applied to it. Taking the rent, taxes, and cost of pumping, a total of some 1,360*l.*, the rent and manure per acre reach about 7*l.* 10s., and he considers that this for the annual cost of such land is not beyond the amount at which it is possible to make a market-garden pay, especially as the soil is good, deep, easily worked, and well suited for such crops as sewage irrigation is especially capable of benefiting.

Carr and Barlow's Patent Electric Distance Signal Apparatus for Railways.—By this invention electric communication is established between the signal station and a train in motion, and the signal is exhibited on the engine immediately in front of the driver. The apparatus is said to be less complicated than that now in use, and no circumstance of thick weather can prevent the signal being seen and known by the driver. Arrangements have been made with Messrs. Siemens, Brothers, the electricians, for the construction of the requisite apparatus.

American Antiquities.—Reports concur in declaring that in remote parts of Arizona there exist well-preserved and extensive ruins, which are assumed to be those of once populous cities. Colonel Roberts's city covers about three square miles. It is surrounded by a wall of sandstone, "neatly quarried and dressed," 10 ft. or 12 ft. thick, and originally,—judging from the *talas*,—15 ft. or 20 ft. high. Within are the walls of houses, temples, and markets, all of solid stone, and showing excellent masonry. These walls bear numerous hieroglyphics, cut deeply into the stone. The whole of the ruins, like most of those of the Orient, and more especially those of Arabia and Assyria, are more or less buried in sand. According to the account, this city is some 90 miles from the boundary between Utah and Arizona, and an equal distance from the Western Colorado line. It proves to be close to the desert, and, in truth, environed by extensive sandy plans. This accounts for the lateness of modern discoveries, since neither Indians nor whites would be likely, under ordinary circumstances, to penetrate such desolate wilds.

Restoration of Warwick Castle. — Considerable progress has been made during the past year in rebuilding the private apartments and barcnial hall of Warwick Castle, which were destroyed by the disastrous fire at the close of 1871. The external walls have been repaired, the partition walls of the domestic apartments completed, and the work of internal decoration will shortly be commenced. The baronial hall is also progressing satisfactorily; but the workmen have only just begun upon the dining-room and entrance-hall. Amid the rubbish carted away from the ruins of the hall many relics of the curious armour which adorned its walls have been discovered. It is believed that nearly the whole of the steel armour can be restored. Mr. Syers is now engaged on the work. The state apartments, from which the furniture and treasures of painting and sculpture were hurriedly removed, now bear only slight traces .of injury or of hurt.

Co-operation.—Mr. E. O. Greening has been lecturing at the rooms of the Social Science Association on "Co-operation"; Mr. E. V. Neale in the chair. After reviewing the history of the movement and referring to the recent attack made upon it, he said that co-operative societies were yearly increasing in numbers, and, of course, in members: they were fast gaining in solidity and strength. Their growth was even more remarkable, the subscribed capital exceeding 2,750,000*l*., and the business being more than 12,000,000*l*. a year. In England and Scotland alone there were upwards of 400,000 registered members. Although the societies were increasing in material prosperity, he thought he saw a short time back a decline in the number of co-operators; but he was glad to state that lately there had been a remarkable revival in the movement.

The Corinium Museum.—The interesting collection of Roman antiquities found in this ancient Roman town, has been enriched by a donation of an important sepulchral memorial. A few years ago three headstones, commemorating ancient Romans, were found at Watermoor. One of these was at once secured by Mr. T. C. Brown, and presented to the Museum. It represented a soldier on horseback spearing a prostrate foe. The second likewise commemorated a mounted soldier in the same attitude. This became the property of the late Sir Samuel R. Meyrick, and passed into the possession of Mr. George Moffatt, who has presented it to the Museum, where it has arrived. The third monument is a memorial of a civilian. This, formerly in the possession of Mr. P. B. Purnell, has been placed in the museum recently established at Gloucester.

The New Drinking Fountain in Park-lane.—Mr. Thorneycroft is engaged on the new ornamental drinking-fountain which is about to be erected at the expense of Mrs. Brown, in Park-lane, and which is being executed under the supervision of her Majesty's Office of Works. The St. George's, Hanover-square, Vestry, having communicated with the Government authorities as to the alleged delay in completing the fountain, have received a letter from the First Commissioner of Works to the effect that from the artistic character of the fountain much time is required to complete it, but that Mr. Thorneycroft is making satisfactory progress with the work.

Ancient English Wall Paintings. — A circular has been issued by the Science and Art Department, South Kensington, in which it is said:—"The Lords of the Committee of Council on Education consider it desirable that the students of the schools of art throughout the United Kingdom should be encouraged to make copies of ancient wall paintings found in churches or other old buildings in the neighbourhood of their respective schools, and decide that prizes of 5*l*., 3*l*., 2*l*., and 1*l*. should be offered for successful copies of such paintings, with the condition that the Department should have the right of purchasing the drawings sent in at prices to be fixed by the inspector-general of art. . . . . The master of a school of art will be at liberty to prepare copies of such wall paintings himself, and to submit them for purchase; but they will be ineligible for prizes. All drawings must be made to scale, and must be within the size of an imperial sheet."

Report on the Liverpool Free Library, Museum, and Art Gallery.—The committee state in their twentieth and last report, that the success of the institution has, on the whole, fully borne out the most sanguine anticipations of the founders. "The career of such an institution," they remark, "steadily pursuing its course of usefulness, presents few incidents of a sensational character to record. Its best eulogium is the fact of its quietly carrying out the objects for which it was established." During the past year, the schools which have been carried on by the corporation for nearly half a century have been handed over to the School Board. The reporting committee has therefore ceased to have any connexion with their management.

Asbestos Steam Packing.—The raw material, says the *Glasgow Herald*, is brought to the manufactory [of the Patent Asbestos Company, in Glasgow] in considerable quantities from different parts of the world. It comes in sacks and bags like chips and blocks of wood, but of a beautiful white colour. Experiments and study have demonstrated to the proprietors the best method of disintegrating and picking apart these chips and blocks and reducing them to a fibrous condition like jute, flax, or cotton. The material once properly opened up, it is, by means of machinery, which is both simple and ingenious, formed into packing of the usual market sizes. We are assured, adds our authority, that the consumers of asbestos packing express themselves in the warmest manner as to its desirable properties and durability.

Two Building Trade Scoundrels.—Two plasterers, named Mills and Tingay, have been committed for trial by the Cambridge County magistrates, for a violent outrage upon Mr. Richardson, foreman of some building works at Cambridge, where the defendants were employed. In consequence of some insubordination, the two men were reprimanded. They threatened to throw the foreman out of the window, and they were then discharged for their misconduct. The men subsequently waylaid Richardson on the county side of the River Cam, and assaulted him in a very violent manner, so that he was fearfully bruised and injured. For eight days he was in a dangerous state, and it is feared he will not get over an injury to his eyes. His ribs were also broken. The magistrates refused bail.

The Fall of a Church in America.—The *New York Herald* gives an account of a fatal accident at Williamsport, Pennsylvania, on the 25th of December, at the Sabbath school attached to the Baptist church at Newberry. A peculiar shake and quivering of timbers was felt, and the floor gave way, precipitating a whole assemblage into the cellar below. To add to the horror, the oil of the lamps of the edifice ignited and bade fair to destroy all in a general conflagration. The church was on fire, but providentially the flames could be reached and were speedily extinguished. Before the floor gave way many of those within were able to reach the windows and leaped to the ground, a distance of 15 ft. In the panic fifteen people were killed and fifty wounded.

Cemetery for Hampstead.—The Vestry of Hampstead have resolved,—"That a public cemetery is greatly needed in this parish, and that it is desirable that the vestry should consider the best means by which this pressing want may be met." A committee was also appointed to inquire into and report upon the subject.

Utilising the Great Ormes Head.—The boldest headland on the North Welsh coast, bleak and sterile, but forming a welcome shelter to one of the prettiest bays and the most popular watering-places in Wales,—Llandudno,—has been taken in hand by a limited liability company. There is no known mineral wealth, but its surface is available for enterprise, and so a carriage drive is to be constructed round the headland, and pleasure-gardens, with a pavilion, music-hall, conservatories, &c., are to be constructed on the available spaces. The estimated cost of the road is 11,500*l*.; and a further sum of 7,000*l*. will, it is calculated, supply all the other features necessary to convert the bluff promontory into a resort second only to the famous hanging gardens of ancient Babylon in novelty and interest.

Economising Fuel and Preventing Smoke Mr. Joseph Knott, of the firm of Knott & Co., steel manufacturers, of the Highfield Steel Works, has patented an invention for economising fuel and preventing smoke. The patent consists of bringing together two atmospheric pressures which meet in the fire, and create, it is said, a perfect combustion. The patent has been inspected by the mayors of Sheffield and Rotherham, Sir John Brown, Messrs. Brown & Bayley (of the firm of Brown, Bayley, & Dixon), Mr. Bardwell, Mr. Unwin, and Mr. Habershon, jun. They are said to have expressed themselves satisfied with the experiment, and thought that if it would answer as well when applied to a large boiler as in the present instance, it would prove of immense advantage.

The Price of Gas for the Public Lamps. The Metropolitan Board have had under consideration the question of the large price of the gas supplied to the public lamps, and the intention of the companies to increase the cost. The matter has been referred to the Works Committee, with a view to Parliamentary interference in behalf of the consumers, and full time too. The gas companies used to maintain that the price of coal was always a minor consideration as regarded the actual price of gas: that is what they said when coal was cheap; why should it be otherwise now, especially with such rubbishing gas as they but too generally now give? Compared with its dingy, watery, yellow hue, paraffine is like solar brilliancy itself.

Air-Gas Apparatus.—An improved form of apparatus for air-gas is described in the *Notts Guardian*:—"The apparatus for making the gas consists of a meter-like construction, 3½ ft. high, and perhaps 2 ft. across, and it consists of three chambers. Into one of these chambers is poured benzoline or petroleum, or any species of hydrocarbon gas. Whilst the benzoline or hydrocarbon is in this chamber, a fan which is placed in an adjoining chamber (No. 2 chamber we may call it), is so worked by weights and a pulley outside, that the atmospheric air mixes with it, and this having passed into a third compartment filled with sponges forms the lighting gas, which can be at once drawn off in pipes, and used in any quantity."

The Trades' Congress at Leeds.—The fifth annual assembly of the trades of Great Britain, through their representatives, has been opened in the Assembly-rooms, Cookridge-street, when there was a more numerous attendance of delegates than at Nottingham last year. After the verification of the credentials of the delegates, and other formal business, Mr. Lishman was elected president unanimously. He reserved his inaugural remarks until next day, in order that the report of the Parliamentary Committee might be received. Mr. Howell then read the Parliamentary Committee's report, which has since been under discussion.

The Price of Coal.—At a meeting of coal-masters of the Cannock Chase district, held in Birmingham, it has been resolved to raise the price of coal, from 1s. 6d. to 3s. per ton, according to quality. The causes assigned for this advance are the increased activity of demand resulting from the closing of the South Wales collieries, the diminished output due to the inundations, and the additional charges thrown upon coalowners by the Mines' Regulation Act. In East Worcestershire, South Staffordshire, and elsewhere, a similar movement is expected.

Civil and Mechanical Engineers' Society. The next meeting of this society will be on February 7th, there being no meeting this (Friday) evening, as shown on the card.

Re-construction of Weigh-house Chapel. The well-known Weigh-house Chapel, near the Monument, celebrated, for something like half a century, amongst Congregationalists as the scene of the Rev. Dr. Binney's labour, has just been closed, and the interior is about to be entirely reconstructed. The final series, prior to the closing of the edifice for the alterations, took place on Sunday last, when the Rev. Dr. Binney, who retired from the ministry there about two years ago, returned to his pulpit, and preached there for the last time.

Bursting of a Vitriol Chamber at Farnworth.—At Mr. Wilson's, Prestolee Chemical Works, is a mechanics' workshop, and above that was a large vitriol chamber, 150 ft. long, full of vitriol. Suddenly a beam supporting the floor gave way; the floor fell, and the bottom of the chamber burst, releasing all the liquid into the mechanics' shop. The loss of the chamber, vitriol, machinery, tools, and building is estimated to amount to 3,000*l*. Fortunately, no one was working in the place at the time.

Ryde Engineer and Surveyorship.—We understand that Mr. George H. Stayton, C.E., assistant borough engineer of Portsmouth, has been elected to this appointment. There were thirty-nine candidates originally: these were reduced to three, who attended a meeting of the whole council in committee last Monday; the other two gentlemen being Mr. Pollard, town surveyor of Sheerness; and Mr. Boston, of Newcastle-on-Tyne Surveyor's Department.

Houses for Workmen in Paris.—A model *cité industrielle* is now in course of construction between the Faubourg St. Antoine and the Boulevard Voltaire. Nineteen houses are already erected. The tenants are to be provided with gas and water, at rents varying from 6*l*. to 16*l*. per annum. The plan also comprises a number of *ateliers*, with a joint motor of 200 horse-power. In the centre there are baths and washhouses, to be made available at a nominal price.

Dock Accommodation at New Milford.—The long-projected scheme for the construction of docks at New Milford appears at length to have assumed a practical shape, and it is said that preparations are already being made for the commencement of the work at an early date. The chief engineer of the Great Western Railway Company is making arrangements for the immediate commencement of the Great Western Dock.

Leicester-square.—This unfortunate square has been completely enclosed. The posts are about 12 ft. high. It has been said that the square itself will be levelled, asphalte laid down, and the enclosure used as a drill-ground. The hoarding is made an extensive field for advertisements. The greater the nuisance the likelier the remedy. The inhabitants are astir on the subject.

Burning of a New York Theatre.—Descriptions of the total destruction by fire of the Fifth Avenue Theatre, one of the finest in New York, and adjoining the hotel in which the dreadful fire occurred a month ago, are brought by the mail which has arrived at Plymouth. The fire originated by sparks from a defective flue twenty minutes after an audience had been dismissed.

Messrs. Cassell, Petter, & Galpin's Premises, in La Belle Sauvage-yard, are to be extended, and for this purpose they have acquired the greater portion of the ground running round from their back premises alongside the new viaduct railway station, up the south side of Fleet-lane to Prujean-square, in the Old Bailey. Mr. Francis Chambers is the architect.

Retirement of Mr. Cole, C.B.—At the annual distribution of prizes of the Nottingham School of Art, Mr. Cole, C.B., amid expressions of regret, announced his intention, after fifty years of public service, of resigning his post in connexion with the South Kensington Museum. We mentioned this intention some time ago.

The Public Health Act.—It is satisfactory to find the *British Medical Journal* is of opinion that some of the inspectors of the Local Government Board under the Public Health Act should be engineers.

Dr. Williams's New Library.—We are asked to say that Mr. Shillito was the clerk of the works: Mr. March was the contractor's foreman.

Street Improvements in Rome.—An architect and engineer at Rome, Signor Landi, has brought forward a project for constructing a great street through the city, 2½ miles long, and nearly 44 yards wide, to be called the Via Massima. The cost is estimated at 100 millions of francs.

The Proposed New Arboretum at Walsall.—At a meeting of the promoters of this undertaking, it was stated that a sufficient number of shares had now been taken up to justify the directors in commencing the work forthwith.

The Working of the Telegraph.—At the meeting of the Society of Telegraph Engineers on Wednesday week, Mr. Scudamore, of the Post-office, said there were in this country from 10,000 to 15,000 persons engaged daily in the practice of telegraphy, most of them young.

Licensed Victuallers' Asylum.—The annual ball in aid of the funds of the Licensed Victuallers' Asylum, took place at St. James's Hall, on Thursday, the 16th inst., and we believe the executive of this extensive institution were favoured with as numerous a gathering as usual.

Additions to the Caterham Asylum.—At the last meeting of the Metropolitan Asylum Board, the tender of Mr. Henshaw, to erect an additional block of buildings, with recreation-ground attached, at the Caterham Asylum, for the sum of 12,493*l*., was accepted.

Royal Institute of British Architects.—At the next ordinary general meeting of the session to be held on the 20th inst., a paper on "Architecture Practically Considered in Relation to Music," by Mr. H. H. Statham, Associate, will be read.

Public Hall of Unitarians in London.—The Unitarians are about to erect, in a central part of London, a public hall, at a cost of 30,000*l*., towards which subscriptions to the amount of 11,000*l*. have already been received.

Stable Floors.—Messrs. Spiers & Pond have just completed stabling for eighty-six horses, the floors of which are paved with Claridge's Patent Asphalte.

TENDERS

For additional building and recreation-hall to the Metropolitan Asylum for Imbeciles at Caterham, Surrey, for the Metropolitan Asylum Board. Messrs. John Giles & Gough, architects. Quantities by Mr. C. W. Goode:—

Sheffield	£14,980 0 0
Ward	14,389 0 0
Sterlourne	14,100 0 0
Fish	14,100 0 0
Wright, Brothers	13,565 0 0
Musbridge	13,550 0 0
Bolivant	13,495 0 0
Higgs	13,300 0 0
Rankin	13,170 0 0
Wilson	12,675 0 0
Henshaw (accepted)	12,493 0 0

For new public elementary schools for 1,040 children, at Maidstone-street, Haggerstone, for the School Board for London. Messrs. Mileham & Kennedy, architects. Quantities by Messrs. Pain & Clark:—

Crockett	£7,990 0 0
Browne & Robinson	7,950 0 0
Wagner	7,898 0 0
Carter & Son	7,795 0 0
Oxford & Whillier	7,787 0 0
Scrivener & White	7,753 0 0
Kirk	7,665 0 0
Hooper	7,567 0 0
Pritchard	7,522 0 0
Cooks & Greene	7,504 0 0
Bruss	7,440 0 0
Nixon & Son	7,430 0 0
Higgs	7,425 0 0
Henshaw & Co.	7,370 0 0
W. H. & J. Mansbridge	7,193 0 0

For rebuilding 31 and 32, King-street, Westminster. Mr. John Norton, architect. Quantities by Mr. S. J. Thacker:—

	Net amount of contract.	Extra if picked deals or pine.
Lord	£6,700 0 0	£80 0 0
Oldry	6,550 0 0	50 0 0
Tebitt	6,381 0 0	35 0 0
Langmead & Way	6,360 0 0	100 0 0
Staines & Son	6,346 0 0	75 0 0
Bullivant	6,250 0 0	135 0 0
Thompson	6,235 0 0	120 0 0
Atchinson & Walker	6,225 0 0	200 0 0
Rankin	6,175 0 0	40 0 0
Sawyer	6,163 0 0	50 0 0
Crabb	6,122 0 0	25 0 0
Stevenson	6,089 0 0	100 0 0
Wagnor	5,909 0 0	35 0 0
Hughesden	5,812 0 0	156 0 0
Mansbridge	5,687 0 0	100 0 0
Gough	5,650 0 0	200 0 0
Everall & Co.	5,465 0 0	25 0 0
Bleaze	5,300 0 0	30 0 0
Carrod	5,273 0 0	75 0 0

For the erection of schools and residence, Forth-end, Great Waltham, Essex. Mr. Frank Whitmore, architect:—

Smith & Holland (accepted)	£890 0 0

For restoration of roof, Marshbury Church, Essex. Mr. Frank Whitmore, architect:—

Dowsett (accepted)	£174 10 0

For new Swinton Dairy, Swinton-street, for Mr. H. Williams. Messrs. Goodchild & Son, architects:—

Perry (accepted)	£1,080 0 0

For additional works at Worcester House, Surrey. Messrs. John Giles & Gough, architects. Quantities by Mr. Goode:—

Jocelyne	£3,529 0 0

For new schools, Winstanley-road, Lambeth, for the London School Board. Mr. E. R. Robson, architect. Quantities by Mr. G. D. Tasffe:—

Tyerman	£6,839 0 0
Sheppard	6,625 0 0
Manley & Rogers	6,500 0 0
Nixon	6,497 0 0
Browne & Robinson	6,495 0 0
Carter & Sons	6,472 0 0
Newman & Mann	6,470 0 0
Ennor	6,364 0 0
Parsons	6,055 0 0
Stephenson	5,901 0 0

For new studios, Knightsbridge, for Mr. A. S. Lumley. Mr. Henry Shaw, architect. Quantities supplied by Mr. Wm. S. Phinsaul:—

1st Contract.

Plowman (accepted)	£496 0 0

2nd Contract.

Plowman (accepted)	£2,150 12 8

For schools for the London School Board, Cook's-ground, Chelsea:—

Myers & Son	£6,450 0 0
Hill & Son	6,149 0 0
Nightingale	6,050 0 0
Peto, Brothers	6,015 0 0
Carter & Son	5,999 0 0
Browne & Co.	5,996 0 0
Newman & Co.	5,976 0 0
Wigmore	5,108 0 0

For rebuilding Nos. 31 and 32, Throgmorton-street, City, for Messrs. Cohen & Sewell. Mr. E. A. Gruning, architect. Quantities by Mr. James Barnett:—

Perkins	£15,950 0 0
Myers & Sons	15,594 0 0
Jackson & Shaw	14,714 0 0
Trollope	14,648 0 0
Perry & Co.	14,396 0 0
Holland & Hannen	14,255 0 0
Ashby & Horner	14,008 0 0
Conder	13,980 0 0
Ashby & Sons	13,968 0 0
Henshaw	13,390 0 0
Browne & Robinson	13,196 0 0

For rebuilding Nos. 12 and 13, Copthall-court, for Messrs. Cohen & Sewell. Mr. N. S. Joseph, architect. Quantities by Mr. S. Wilson:—

Myers & Sons	£16,784 0 0
Jackson & Shaw	16,430 0 0
Trollope	16,223 0 0
Holland & Hannen	16,386 0 0
Perkins	15,777 0 0
Perry & Co.	15,540 0 0
Ashby & Horner	15,147 0 0
Ashby & Son	14,867 0 0
Conder	14,835 0 0
Henshaw	14,235 0 0
Browne & Robinson	14,182 0 0

For both the preceding jobs:—

Myers & Sons	£33,990 0 0
Perkins	33,072 0 0
Trollope	32,638 0 0
Holland & Hannen	32,493 0 0
Perry & Co.	31,503 0 0
Jackson & Shaw	31,086 0 0
Conder	30,609 0 0
Ashby & Horner	30,458 0 0
Ashby & Son	29,788 0 0
Henshaw	29,220 0 0
Browne & Robinson (accepted)	28,656 0 0

TO CORRESPONDENTS.

Chiselborough.—We have received another letter from the Rector of Chiselborough; but as it is for the most part a reiteration, and would moreover be unequal to reply, we have not printed it.

J. F. (we cannot pretend to teach him his business).—W. W.—A H C P B E F D B—T B M. P G T C—F W. L. R. L—B H S—W H. T M & K.—F M P B. & B.—Amicus.—G. G. S.—J. J.—D. & D.—J. M. G.—H. S. S.—T. B.—London Foreman.—A Foreman.—T. R. T.—G. D. T.—Mr. S.—C. H. G.—J. B.—J H B—W. B. jun—H. T. E.

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Applications, in the candidates own handwriting, stating age and present and previous employment, with testimonials as to character and qualifications to be sent to me at any time within three weeks from this date.—By order,
HENRY S. AVELINE,
Clerk to the Rural Sanitary Authority for the District of Epsom.
Epsom, Surrey, January 15th, 1873.

NANTWICH UNION.—RURAL SANITARY AUTHORITY.—An INSPECTOR of NUISANCES is required for the Rural District of the Nantwich Union, in the county of Chester, comprising an area of 98,524 acres, and a population of 28,828. The salary will be 300*l.* per annum, and the person appointed will be required to reside at such place within the district as the Rural Sanitary Authority shall approve, to devote the whole of his time to the duties of the office, and to provide and keep a horse at his own expense. The Inspector will be required,—
1. To make a perfect sanitary survey of the whole district, including the sewerage systems and water supply of all the villages and places containing a collection of houses under the jurisdiction of the Rural Sanitary Authority of the Nantwich Union, and report generally on its condition and requirements.
2. To perform the duties of Inspector of Nuisances set forth in the order of the Local Government Board dated the 11th day of November last, or as may be contained in such other orders or by-laws as that Board may from time to time issue or sanction.
The appointment will be subject to the approval of the Local Government Board, and, in the first instance, will probably be made for a term of two years. Candidates are requested to send applications (in writing) to me, stating age, residence, and past and present occupation, with recent testimonials as to qualifications and character, on or before the 31st day of JANUARY instant, and the candidates selected will receive notice to attend on the day of election.
JAMES PICK, Clerk to the Rural Sanitary Authority.
Nantwich, 4th January, 1873.

WEST BROMWICH.—SURVEYOR.—The West Bromwich Improvement Commissioners will, on the 6th of FEBRUARY next, APPOINT a SURVEYOR, who will be expected to give his whole time to the service of the Board, and will be required to reside in the parish. Salary, 250*l.* per annum, with use of horse and trap. Applications, stating age, and enclosing testimonials, must be sent under cover, endorsed "Surveyor," to me at my Offices, Paradise-street, West Bromwich, on or before the 21st JANUARY inst.
CHARLES H. BAYLEY, Clerk.
January 2nd, 1873.

BOROUGH of BOLTON.—WANTED, in the Borough Surveyor's Office, a PERSON competent to make TOWN SURVEYS. Must be a good draughtsman. Salary two guineas per week. Application, with testimonials as to fitness for this class of work, to be addressed to the undersigned not later than the 30th instant.
J. PROCTOR, Borough Surveyor.
January 15th, 1873.

BOROUGH of BLACKBURN.—The Corporation of this Borough require the services of a DRAUGHTSMAN for the BOROUGH SURVEYOR'S DEPARTMENT, competent to perform the following duties:—To make surveys, take levels, make plans, sections, specifications, and estimates for sewerage and paving works. To measure the same for contractors, and also apportion the cost to the property owners. Generally to perform all duties required by the Borough Surveyor, under whose direction and control he will be placed, and to devote the whole of his time to the duties of the office. N.B.—The applicant must not be more than forty years of age. The salary will be 100*l.* per annum. Applications, with testimonials, endorsed "Application for Draughtsman," to be sent to the Town Clerk, Town Hall, Blackburn, not later than TWELVE at noon, on MONDAY, the 27th instant. By order,
C. G. H. BECK, Town Clerk.
Town Clerk's Office, Town Hall, Blackburn, January 9th, 1873.

MALVERN LOCAL BOARD.—WATER-WORKS EXTENSION.—A CLERK of WORKS is WANTED for three months, from the 3rd of February next, to SUPERINTEND the ERECTION of a COVERED RESERVOIR at North Malvern. Preference will be given to a bricklayer by trade, and one having had experience in waterworks. Salary 2*l.* 2*s.* per week. Applications, enclosing testimonials, must be sent under cover, endorsed "Clerk of Works," to me at the Local Board Office, Malvern, on or before the 27th day of JANUARY, 1873.
WM. WILKES CAWLEY, Clerk to the Board.

TO SURVEYORS.
WANTED, an ASSISTANT SURVEYOR, capable, under supervision, of superintending the carrying out of sewerage, drainage and other works, of surveying lands, and taking levels. He must also be a fair draughtsman. His services would be required for a period of from one to three years, at a salary of 120*l.* per annum.—Applications with testimonials, to be sent to me on or before FRIDAY, the 31st JANUARY, 1873.
Clerk to the Llanelly Local Board of Health,
Llanelly, January 8th, 1873. Town Hall, Llanelly.

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WANTED, TWO good OUTLINERS.—Apply at Railway Arch, Blackfriars-road.

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The Builder.

VOL. XXXI.—No. 1564.

Ancient Cornish Sepulchral Monuments.

BORLASE is an auspicious name in connexion with Cornish antiquities, and the present possessor of that name, who now comes before the public with an essay on the ancient doctor's favourite theme,* seems to be well imbued with his antiquarian spirit. He appears, however, to be rather too much of a theorist or generaliser on the short-date principle, and follows in the wake of Mr. Fergusson, whom he outdoes, we think, in his attachment to that principle, and overlooks peculiarities, such as that of the wide prevalence of the simulative tomb order, which Mr. Fergusson has already clearly recognised and established.

We are far from insinuating that Mr. Borlase is consciously a theorist; we rather think he sub-consciously holds that it is the long-date people only who theorise, and that he alone, and those of his order, stick to bare facts. What we think, however, is that he generalises too far and too fast upon his facts, even as regards those ancient monumental records which he has carefully selected from the mass as being clearly sepulchral,—and, shall we say, late. With no other than the sepulchral will he deal; and in and about many of those he has selected were found urns and coins, of ancient Roman times. Secondary interments he almost discards, as they do not suit his foregone conclusion; but it is quite obvious that in ancient times, when the inhabitants of Cornwall knew well the purpose of burial-mounds and other sepulchral monuments, and how they were made, and what they contained, they may have frequently reared a fine monument and dedicated it to the remains and the memory of some great chief of their own time and tribe, by simply basing their new monument upon some already accumulated mound or other monument, especially if it were of ancient and immemorial date; and having dug right down at once to the kist in the heart of it, with comparatively little trouble, there buried the remains and the coins and urns, carefully replacing and restoring the monument so as to cause it to look like a span new one. Under such possible,—nay, probable,—circumstances, we think Mr. Borlase generalises, we repeat, too far and too fast when he forthwith concludes that *because* coins of known date have been found in earthen mounds and cairns, or in subterranean artificial or other caves, far less in kists or dolmens, and other monuments connected with ancient hut or cave dwellings; *therefore* the Romano-British occupation is, generally speaking, *the* proved and undoubted date, or a little earlier or a little later, of all such monuments, or of the general run of them.

Still there cannot be a doubt that there are many monuments in Cornwall dating from the close of the Pagan era, after the opening of the Christian, and while the Cornish were still Pagans; and Mr. Borlase gives a very interesting account of these and others, with numerous engravings,—of urns especially, the dates of which, however, in many cases, cannot be established like those of the coins.

In ignoring the immense antiquity of the Pagan era itself, which even a single flint implement of the drift establishes, some antiquaries wilfully close their eyes to the great probability that some at least of evidently the most permanent and most ancient of the monuments may have been more or less nearly contemporaneous with these implements, since many of these monuments,—to the dolmens we here specially refer,—are admitted, even by Mr. Fergusson himself, to be coterminous with the caves of the *arctic* or glacial cave-men; and it is a curious fact that even artificial caves, subterranean, and often beneath the remains of ancient surface hut dwellings, are a peculiarity of the Cornish as well as of other pre-historic monuments. Of some of these Mr. Borlase gives interesting particulars; and, as to both the beehive or other shaped huts, and the caves, as summer and winter residences, respectively, of the ancient Cornish Pagans, speaks of "the ruinous heaps of what were once the dwellings of a large resident population."

"To the cultivation of grain [he adds] *the mildness of the climate [in the summers]* was favourable; and thus in close proximity to these hut villages, it is usual to find plots of ground, artificially levelled, and cleared of stones. The daily consumption was taken from the unthrashed corn, preserved in *caves under the huts*, which also served as refuges for the inhabitants *when the winter was* SEVERE, or danger threatened."

And here we cannot refrain from quoting a passage from *Dark Blue* for January, 1873, which has turned up [in our stray reading, as it refers to just such a state of things as must have at one time existed in Cornwall, much as it now or still exists in Kamskatka, and other nearly Arctic latitudes. It is the Rev. J. G. Wood who writes:—

"Every one who has watched the squirrel in its wild state knows perfectly well that it has two distinct dwellings, one for the summer and the other for the winter. The summer 'cage,' as it is called in the New Forest, where squirrels abound, is slight, pervious to the air, and placed at the end of a lofty bough; while the winter cage is a large mass of dry leaves, moss, and grass, fixed at the junction of a large branch with the trunk of the tree, so that when the inhabitant is within, it cannot be disturbed even by a breath of air, though a violent gale may be blowing. Now there are several parts of the world where men build dwellings of a similar character, light and airy for summer, close and massive for winter. Such, for example, is the habitation of the Kamskatkan, the summer dwelling being a slight structure of branches supported on a sort of scaffold, while the winter house, or 'jurt,' is deeply sunk in the ground, built of stones or large timber, and thickly and warmly thatched. The winter huts of the Tschutski, at the north-east of Asia, are constructed after a similar fashion, the roofs looking like low hillocks surrounded with stones. The ancients as well as the moderns had similar huts, the 'Ganggrabben,' or Passage *Graves* (?) of Scandinavia, so familiar to all ethnologists, being constructed on precisely the same principle as that employed in the Kamskatkan 'jurt.'"

We cannot even be regarded as going out of our way in here noting,—in reference to the fact that in Cornwall, as in Persia and elsewhere, in very ancient times, yet during man's existence in this and other countries, the winters *were* "severe," to an extent far greater than they now are,—that a remarkable mythical allusion to such a state of things in now temperate or warm parallels of latitude is made in the "Zend-Avesta" of Zoroaster and the ancient Persians, or Assyrians and Chaldeans. That allusion has allegorical or mythical reference, by contrast, to the loss of the "delights" or ecstasies of Eden or *Paradise*, and the culmination of the principle of evil in a terrible *winter*, just as in a *deluge*, in kindred documents, of recent interest, such as those of the Chaldeans and Assyrians of the region now called Persia. This is what the "Zend-Avesta" says:*—Ormuz, the God-Light, the good principle, informs Zoroaster that He gave to man a place [or state] of delight [or ecstasy] and abundance:—

"If I had not given him this place of delight, no other being would have given it him. This place is Eiren Vedio, which, *in the beginning*, was more beautiful *than the whole world*, which exists by my power. Nothing equalled the beauty of this *place of delight* which I gave him. I [Ormuz, or the Good Principle] acted first; then Petiâre [the Evil Principle]. This Petiâre Ahriman, full of death, made in the River the great Adder, *Mother of Winter* [the spiral apparent movement of the sun out of and into the hemisphere, *causing winter*, of more or less severity, according to the extent of the spiral, would figuratively accord with this mythical or allegorical *Serpent*, or Adder of Evil], given by the Dewa [or Evil Principle]. *The winter spread abroad*, cold, into the water, the earth, and the trees. *The Winter [this Great 'Winter' of the 'Deluge,'* when, according to Milton, who seems to have adopted this view in his 'Paradise Lost,'—

'The poles of earth were turn'd askance
From the sun's axle,'—

and the winter] *was extremely severe*, ABOUT THE MIDDLE OF IT. It is not until after winter has passed that good things are reproduced in abundance."*

In order to show how Mr. Borlase deals with his extensive subject in this suggestive and interesting volume, we shall now select several passages showing his more general treatment of it, always with passing reference to Cornwall, in relation to definitions of sepulchral monuments, and ancient modes of disposing of the body in burial. He says:—

Sir John Lubbock has summed up the characteristic features of the primitive sepulchre in the remark: "A complete burial-place may be described as a dolmen, covered by a tumulus, and surrounded by a stone circle. Often, however, we have only the tumulus, sometimes only the dolmen, and sometimes only the circle." To this list if there be added "sometimes only two adjacent menhirs, and sometimes only the simple standing stone," under the one or the other head may be classed every mode of interment hitherto discovered in Cornwall.

Firstly, the dolmen, or cromlech.

So much has been surmised and written on the probable derivation of this word, that the subject is only here introduced for the sake of recording the fact that, whatever it may signify,† it was in use as a local name in Cornwall, as well as in Wales or Ireland. "Rescal Cromlegh" represents, in an ancient deed, one of the boundaries of the property belonging to the Deanery of St. Buryan; a tract of country, even at the present day, more full of megalithic remains than perhaps any other of the like extent in the duchy. Unfortunately, the spot cannot be now identified, where this Cromlech—if, indeed, it was one, in the usual sense of the term—stood.

European Cromlechs are capable of division into three classes. 1. The dolmen, or "table-stone" proper, where, as Colonel Forbes Leslie remarks, "the vertical supporters of the tabular stone are columnar," and cannot be said to *enclose* a space. 2. The Larger Kist Vaen, or stone-chest, where, as the name implies, "the vertical supports are slabs;" and, together with the

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* Nænia Cornubiæ: a descriptive Essay, illustrative of the Sepulchres and Funereal Customs of the Early Inhabitants of the County of Cornwall. By William Copeland Borlase, B.A., F.S.A. London: Longmans, Green, Reader & Dyer. 1872.

* See Depuis "On the Origin of all Religions."

* We here incline to identify this great secular Winter with a great secular Deluge: the one no literal or ordinary winter, and the other no mere local and passing deluge of days or months; because, comparing the Scriptural and other accounts of the Deluge after the alleged exit or expulsion of man from Eden or Paradise, with this Zoroastrian "Winter" after essentially the same allegorical or mythical event, it seems obvious that the one coincides with the other; and both, therefore, *may* really relate, mythically or allegorically, to the glacial era, during which great part at least of the northern hemisphere of the earth *was* flooded, or covered by the ocean, as well as subject to more than Arctic extremes of winter and summer. Thus, too, and thus only, geology and Scripture might be re-harmonised in respect to a "Deluge," and thus a light would be shed upon the meaning of the serpent as symbolical of an evil principle, as well as, *per contra*, of a good. (See leading articles in the *Builder* of the 16th and 23rd March, 1872, on "Megaliths and Tumuli: their probable Eras, 'Architects,' and Purposes.")

† After all, the most appropriate and satisfactory derivation of "Cromlech" seems to be found in the Irish "*crom*," Welsh "*crum*,"—"bent," hence "inclined over" (whence the Gaelic cromadh—a roof or vault, and M. Bullet's "ce qui enferme, ce qui couvre;"), and lech, "a stone." In slight confirmation of this idea (which seems much more probable than that it means a "circle"), take a line from the Cornish "Origo Mundi" (2483), where this same word "*crom*" appears as an epithet for rafters, the word being "brâs ha crom y ben goles"—"large and rounded (or vaulted) its lower side." The word would thus apply, like that of "Quoit," to the "covering stone" only, and not to the whole monument.

covering stone, form a structure not unlike what children build with five cards. These were designed to hold the interment within the chamber, and were covered, sometimes very slightly, with conical or other mounds. 3. Monuments, similar in structure to the last, but raised *over* the interment. These were merely cenotaphs, such as are frequently found in modern churchyards, not intended to contain the body, but to mark the spot, where the less pretentious grave was concealed below. Craig-Madden, in Stirlingshire, and many of the rude Irish cromlechs, are instances of this latter class; as well as the more prominent examples in Denmark and Norway, and at Saulcieres, in France, where the kists actually occur on the *summits* of the tumuli. No instances of this latter class are extant in Cornwall.

Of these three classes (and many subdivisions of them might be made, for each individual monument has some distinguishing characteristic of its own), the first, or "Dolmen proper," is comparatively of rare occurrence. In height it much exceeds the others, and the difficulty of its construction must have been proportionately greater. Three of the finest specimens of this class of cromlech are to be found respectively at Pentre Ifan, in Pembrokeshire; Castle Wellan, in Ireland; and Lanyon, in Cornwall. Caerwynen, in the latter county, is another instance of the same mode of construction, and the ruder trilithons of the Continent seem to belong to a like category. The form of these monuments in itself precludes the idea of the interment having taken place immediately beneath the covering stone, or of a tumulus having been raised over them; for, had such been the case, the *débris* of the mound must inevitably have forced its way at once into the chamber, the very result which, it is known, the builders of the kists were so careful to guard against. Dr. Wilson, therefore, regards monuments of this kind as "the true cromlechs," not in themselves subterranean chambers, but memorial structures raised over the grave. Such was the design in the case of one at least of these,—that at Lanyon, in the parish of Madron, the finest and, in all probability, the most primitive of our Cornish prehistoric remains.

* * * *

It may be as well to make a short classification of the various kinds of tumuli which are to be met with in Cornwall.

"The raising of mounds of earth or stone, over the remains of the dead, is a practice," says Mr. Akerman, "which may be traced in all countries to the remotest times." Dr. Wilson adds, that "their origin is to be sought for in the little heap of earth displaced by interment, which still to thousands suffices as the most touching memorial of the dead." It will be superfluous, therefore, to call to mind the individual instances of this practice which history supplies, or to dwell on the memorials which the conjugal affection of Semiramis, or the vast riches of Crœsus, the friendship of Alexander, or the stern obedience of Joshua to the will of the Deity, raised to the honour or dishonour of the noted dead. From times so remote one might, indeed, pass to European examples of much more recent date, and relate how Sigurd Ring, in the eighth century, buried his vanquished uncle in a tumulus after the battle of Braavalla, or how Queen Thyra and King Gorm, in the middle of the tenth century, were interred in a similar manner at Jellinge. Coming nearer home, Mr. Petrie might be quoted for the record of many an ancient Irish chieftain's burial mound; and, lastly, to make the chain perfect down to the present day, one might turn to the American Indians for a similarity in their customs of mound-building, which, when compared with those of ancient Europe, is certainly most remarkable.

We may here intercalate an interesting passage from a recent article by the Pekin Correspondent of the *Daily News*, on Chinese burial-mounds, which will aid in the completion of the "chain" to which Mr. Borlase here alludes. The correspondent is describing a visit to the Ming Tombs; and after speaking of "a long approach, bordered on each side with sculptured animals,"—griffins, elephants, camels, horses, mules, and human figures,—he says,—

"This stone population of man and beasts extends for at least a good half mile, and ends by another triple gate. When you arrive at the end of the sculptured avenue just described, you are in the centre of an amphitheatre of hills, some three or four miles wide. One can see in the distance what seems to be country houses surrounded by trees all round the base of the hills. These are the tombs called Shih-san Ling, or 'thirteen tombs,' which is their number. It would have been impossible to have visited the whole of them, and, as they are all of the same type, we made for the principal one; and a slight description of it will do for them all. Their arrangement is very important as bearing on the old ideas of tomb construction, and particularly that of the barrow or tumulus graves. The graves all round Pekin are simply small mounds of earth, which are to be seen in every direction, and the Imperial tombs of the Mings are also mounds, but large mounds. We visited the tomb of Yung-lo, the third of the race, who died in 1425. A large mound, about 600 ft. or 700 ft. in diameter, forms the sepulchral part of this monument. It is surrounded by a high, crenellated wall of brick, and planted with trees, the pine, with its resinous scent, being most plentiful. The mound is thus made to appear like a strong castle or fort, and it would be taken for something of that kind were it not that it is almost entirely hidden by a series of very important buildings erected in front of it. These buildings are surrounded by a wall forming a long enclosure in front, the whole being about 1,200 ft. long by 600 ft. wide. The buildings within this enclosure are in the form of a palace or temple, with gates and halls and altars, showing that in this part of the world, the tomb, the temple, and the house, are constructed on the same idea. The principal hall is over 200 ft. in length, and is supported by teak pillars, sixteen of which are of great height (about 60 ft.), and nearly 4 ft. in diameter at the base. They are said to have come from Borneo, and were made into a raft, and brought by that means. In this hall there is a shrine, with a tablet in it to the memory of Yung lo."

Suffice it (continues Mr. Borlase), for the present, to say, that as far as Cornwall is concerned, not a single record or available tradition, as to the origin of these mounds, has been handed down to us; although by hundreds they lie scattered through the length and breadth of the country; on the summit of almost every hill, along the edges of the cliffs; wherever, in short, a barren tract of country has afforded them protection from the plough.

In the West the word "barrow" (the more correct pronunciation of the usual term barrow) is applied as well to the refuse heap from the mine, as to the sepulchral mound of more ancient date. In this latter sense it has taken the place of the Celtic "cruc," or vulgarly "creeg," the genuine Cornish word for a hillock or mound, still found among others in the following local names: "Creegcarrow"—Deer's barrow; "Creeglase"—Green barrow; "Cruk heyth"—Barrow-heath; Crig-an-bargus—"Kite's barrow;" and "Creggo" (plural), "The Barrows." The later Saxon word occurs in Hensburrow, Four-Burrow, &c.

The ancient burrows are sometimes piles of earth, sometimes accumulations of stones. In the latter case they are termed "cairns," or by the Cornish, "Karns." Those tumuli, on the other hand, which are composed of earth and stones indiscriminately thrown together, are seldom or never found to be sepulchral in their origin, but have been raised for a beacon, or occasionally for a hermitage to be perched on their summits. It must be mentioned, however, that in the centre of an earthen barrow, a "cairn" of loose stones is very frequently found. In one instance, where this arrangement had taken place (a most promising barrow on the Carnecledgy Downs, near the Nine Maidens, St. Columb), no interment could be discovered, though the mound was clearly undisturbed by previous explorers.

In spite of Dr. Wilson's opinion to the contrary, as regards Scotland, it may be laid down as a general rule in the case of Cornish "burrows," that those formed of earth belong to districts where stone is not readily obtained, while the "cairns" are the natural product of a stony district. Thus, to the St. Colomb, St. Austell, and Lizard districts, the earthen barrows belong; while "cairns" are invariably found on the granite hills of Dartmoor; at Sharpy Tor, near Liskeard; as well as throughout the entire range of West Cornwall.

By far the greater number of Cornish tumuli, whether cairns or barrows of earth, were surrounded by circles of stones set on their edge, not peristaliths or rings of rude pillars apart from the mound, like that at New Grange, but circular base-works or walling; the stones being generally contiguous, and serving both to confine the earth or stones within their proper area, and to support the superstructure of the tumulus. . . .

The sepulchral mounds of Cornwall, whether of earth or stones, range from 15 ft. to 100 ft. in diameter, and from 2 ft. to 25 ft. in height. As it has been usual to classify them according to their form, the reader may learn that he will find in Cornwall—first, the Cone-shaped barrow; second, the Bowl-barrow; third, the Bell-barrow; fourth, the Flat-barrow; and, fifth, the Ring-barrow; a class which may perhaps, with equal propriety, be called the Unfinished barrow.

"Long barrows," "Druid barrows," "Egg barrows," "Twin barrows" (i.e., two surrounded by the same trench), are unknown.

* * * *

The different modes of disposing of the body, which meet the explorers of the early sarcophagi of Great Britain, are three in number. Interments have either been placed in the ground *whole*, or they have been reduced to ashes by (1) *cremation*. Those bodies which have been buried in their entirety are either (2) *extended* or (3) *contracted*. It may be remarked with reference to the practice of inhumation, that throughout the North of England it is by far the most common mode of burial; and that in England generally the contracted form of it has been found to have prevailed very largely. Thus, the Rev. Canon Greenwell, in a letter dated the 12th of December, 1871, informs the author that "out of above 200 interments of what may be considered pre-Roman times," he has only found "a single instance where the body had been buried in an extended position." So much for the north. Coming further south, the combined researches of Sir R. C. Hoare and Mr. Thomas Bateman, tabulated by Sir John Lubbock, show that out of some 500 interments explored with care, only thirty-seven were extended, while 112 were contracted, the rest being burnt.

In Cornwall a marked difference is observable. Well-authenticated instances of inhumation at all are extremely rare. Among these only two or three examples of the extended position actually occur; but the not-uncommon occurrence of empty long graves, whether cut in the hard soil or walled with stones, affords a strong presumption that, had they not been rifled, a similar mode of interment might have been discovered in them. Of the contracted position, only one really authentic instance can be cited.

[The Southern origin,—probably African, as we showed in our articles of March last, already alluded to,—of many of the Cornish aborigines inadvertently comes out in Mr. Borlase's further remarks on cremation.]

The necessity, as he says, for such a course must have almost immediately forced itself upon the denizens of a sultry or tropical climate, where, to bury the bodies in shallow graves unburnt, would only be to spread pestilence far and near.

"That the custom of cremation originated in a tropical clime is, indeed almost beyond a doubt. In South America* the funeral pile is quite as fully recognised as a national institution among native tribes, as ever it is in India. Britain has, therefore, received it from the south."

These references, we may add, go to show that cremation came in with the African, or, at least, the Southern, aborigines, and inhumation with the Asian or Eastern migrants of the Northern region, through the great plain of Europe, while probably a mixed practice came with the South-eastern migration through Persia or Assyria and Asia Minor.

The contracted form of the body in inhumation, resembling the sleeping posture of the Thibetans, appears to have been very general in ancient times, since it prevailed even in America, and Herodotus speaks of its adoption in North Africa.

A CHAT ABOUT GATEWAYS AND PORCHES.

THE idea which an English boy, and thus generally an English man, forms of a gate, is something very different from that which was conveyed by the word before the period of the Great Fire of London. The definition of a gate, as ordinarily conceived, would be an openwork barrier, constructed of wood or of metal, and made to swing upon hinges, the general object being the exclusion of stray cattle, and the ready admission of human beings, and of animals under the care of man. The most exhilarating associations connected with the word are those which attach to the five-barred gate;—visions of hound and horn, of red coats and gallant mounts, of a bright autumnal morning and a free gallop over a grassy country.

Indeed, of the 750,000 persons who enter the city of London every twenty-four hours, we question if there are seventy-five who bestow even the most fleeting thought on the original meaning of those names,—Aldgate, Bishopsgate, Ludgate, Newgate,—that designate the streets

* Dr. Daniel Wilson, "Prehistoric Man," vol. ii., p. 291, makes the following curious remark:—"Mummification, cremation, urn-burial, and inhumation, were all in use among different tribes and nations of South America, and have left their traces no less unmistakably on the northern continent."

through which they so frequently pass. But in ancient London these names had a serious significancy. The form still kept up, on certain occasions, of demanding permission from the Lord Mayor for the Sovereign to enter the City, which has subsided into the simulated presentation of ancient keys at Temple-bar, to be returned with a customary compliment, is a lingering trace of that armed vigilance which, in the days of such ready-handed monarchs as the Conqueror, formed the surest safeguard of the cradle of English freedom. The instance which we have cited is almost the only relic left among us of the ceremonies which formally attached to the guardianship of the City gates.

The inhabitants of York, of Chester, of Arundel, and of some few other of our ancient English towns, may yet retain some feeling of pride in their gates. We need not, even now, leave the shore of England, in order to form an adequate idea of what were once the main features of this important member of our municipal defences. A massive tower, or a pair of towers, joined by a curtain, perforated by a wide and lofty arch, closed at nightfall, or in case of alarm, by ponderous iron-studded leaves of oak, with, probably, a yet stronger grating of wood or iron, that could be lowered from its ambush above, to fall without the City gates; such was the general outline of the structure. A turret, or watch-tower, with a stone stair leading into the vestibule, or arched court forming the central area of the gateway, through which all who used the road must pass, was also usual. Here, in fact, were united the elements of security and of accessibility. There was the outlook post to give warning of danger; the free access for traffic at proper times; and the strength which could resist any hostile attack that fell short of a regular siege.

In the East, the gates of a city were the scene, not only of all extraordinary ceremonials, but of the ordinary administration of justice. Our ancient courts of *pied-poudre* were held at times under trees; but the giving of Oriental judgments is so associated with the city gates that the three treatises of the Talmud that contain the civil laws of the Jews are entitled the first, the middle, and the last Gate. One of the most interesting relics of the architecture of the thirteenth century in Italy is the arched court, entirely open at the sides, in which Charles of Anjou sat, in summary jurisdiction, in his quaint little cathedral city of Sorrento. In this archiepiscopal orange-garden the changes that took place in the form of gate, as war improved the means of offence, are well illustrated. There is first the arch between two towers, flanked by loopholes for archery. Then there is the more complicated structure, approached by a bridge, with curtain to turn the incomer from the direct line, and with chambers from which arquebus-men or even culverins could sweep the path. The double tower was abandoned when gunpowder became common, because the fire from one flanking projection would damage its twin-neighbour; an effect not to be feared from the arrow-flight. Then comes the stately Spanish gateway, a return to something like the Roman arch. And a little within the city the justiciary function of the gateway is performed by a separate building.

Lofty gateways, with battlemented walls and stately towers, blazoned with the sixty-six quarterings of the Imperial House of Austria, tell of foreign rule in Italy. In such gates may be seen the evidence of a state of society when surprise was not dreaded; but when well-established military power, relying on arms and discipline, felt it unnecessary to diminish the pomp of the city entrances for the purpose of defence. We may mention, as connected with massive architecture telling of a power that once bid fair to be the dictator of Europe, an example of that shelter for the applicants for admission, which in Gothic architecture (and in the rural architecture of our own country) has given birth to the porch. Over the great gateway of an ancient palace in Naples, now devoted to the administration of what the Neapolitans ironically term justice, is a large expanded hood, of the most delicately-wrought stonework, reaching out from the wall without prop or support, and entirely sheltering the steps. This stone hood looks almost as fragile as a shell; yet it has existed for centuries, in spite of the earthquakes which compel the partial reconstruction of most buildings in that city at least once in a century.

In ecclesiastical architecture the porch forms a feature of the utmost importance. The principal entrances to large and beautiful churches may be classed in three groups. First, there is what we may call the tunnel mouth; a form of gate or of window in which there is little or no projection beyond the plane of the walls, but where a series of mouldings die away, as it were, into the shadow of the great opening for access or for light. The Porte de Hal, at Brussels, a work of the fourteenth century, furnishes a good illustration of this receding gateway. The west front of Tewkesbury Abbey Church affords a noble example of receding mouldings under a large semicircular arch. The splay, so common in Early English lights, is a kindred feature, although its purpose of admitting the largest quantity of light with the smallest actual perforation in the wall, leads to the reversal of the funnel, the splay being within instead of without. This method of dealing with a doorway, which is mostly to be found in our earlier forms of Mediæval architecture, may be considered as naturally derived from the excavation of rock for structural purposes.

A second form of gateway, being that which has probably attained the highest splendour, is that in which the central façade of a building constitutes a great portico; appearing sometimes even as a separate structure. Something of this kind must have characterised the Temple of Solomon, in which both the height and the width of the porch were greatly in excess of those of the main building, the height being double, and the width nearly one-third greater. Instances of this great façade, often pierced for three gateways, are preserved by some of our English cathedrals with which our readers are familiar.

But the porch proper, as we generally understand the term, differs from either of the above main types of architectural gateway. It is, in its essence and origin, an open and roofed space before the gate, in which the visitors may be protected from the weather while waiting for admission. It is thus a characteristic of a northern country, and springs from the employment of wood for structural purposes. The rustic porch, shaded by ivy, and bordered by the hardy flowers which our forefathers had to cultivate, was the very spot for a calm enjoyment of the long twilights of midsummer. There was a daily convenience in the porch, a real *raison d'être*, which gave an unusual permanence to its use as an architectural feature. To this day it is solemnly reproduced in the dismal stuccoed doorways of our cheap metropolitan houses. Absurd as the two columns, with brick cores and cement casing, supporting a small projecting square, that sometimes, though rarely, is utilised as the floor of a greenhouse are; yet the advantage gained by shelter from the downpour which we may expect for 200 days out of the 365, is such as to enable this often unsightly addition to our doorways steadily to hold its own.

So natural to a northern country is the porch, so readily do its simple requirements lend themselves to the exigencies of every style of Gothic architecture, that the repetition of the idea, within as well as without the building, has become one of the main features of ecclesiastical decoration. Wherever the image of saint or angel was erected on the outside of a building, the shelter of a special porch became obviously proper. This, in fact, is the canopy. Thus it came to pass that, for large statues within or without a building, unless in some instances of special position and dignity, the bracket-stand and the tabernacle canopy became the natural setting. For the stalls of canons and other dignitaries, in abbeys and cathedrals, the general idea of the niche with its sheltering canopy, was developed in the richly-carved choir; the throne of the bishop, or the stall of the abbot, prior, or dean, towering up into a pinnacle expressive of superior dignity. With wooden canopies in the choir, and with stone canopies within and without the walls, was combined yet a third rendering of the original idea of the porch. In the lights of stained windows, where saints or benefactors were portrayed at full length, they were treated like statues, and thus the tabernacle work, which exercised the skill of the carver, was simulated by the worker in glass. While the delicacy of the tracery that was originally intended to admit light, but to exclude weather, forms a main part of the glory of some of our noblest churches (as, for instance, the cathedral of Gloucester), the niche, with its elements of shady recess, of projecting and often foliated bracket, and of tabernacled canopy, is, perhaps, the source of the most abundant architectural decoration of all our pointed work.

There is another form of gateway, admirably adapted for the comfortable domestic life of the easier classes of society, which is so rare in this country that it is not easy to call attention to a well-known and perfect type. On the Continent, especially in Italy, it is of constant occurrence, under the name of the *portone* or *porte cochère*. It is a feature generally conspicuous by its absence in many of our large palatial buildings, in which it ought to form at once a striking architectural feature and a most desirable luxury. To be forced to alight, in evening dress, at the verge of a pedimented portico, in stepping across which wind, and rain, and sleet have a momentary chance of assailing the defenceless visitor, of which they rarely fail to make vigorous use, is, in point of fact, a barbarism. A convenient gateway, leading through the centre of the house to the court-yard around, or in front of, which it stands; with the principal flight of steps leading down, under cover, so that you step from the carriage direct into the vestibule, is an arrangement never lost sight of in Italian palazzi. It is almost a necessity for health (at least for protection from dangerous cold, precisely when the person is least fitted to resist it), no less than for real comfort. The contrast between our metropolitan palaces and those of even a second and third rank in Italy is here extreme. In attending a levee at either St. James's or Buckingham Palace, the silk-clad calves are keenly sensitive to the sharp nip of the March winds. At Caserta, at Naples, at any one of the numerous and noble palaces which adorn the Italian kingdom, those who arrive to pay their duty to the sovereign, step from the very door of their carriages into a carpeted saloon, with the utmost indifference to the state of the weather without.

In some of our public buildings, as at Covent Garden Theatre and the Albert Hall, there is, indeed, the convenience of a large carriage-porch, projecting from the face of the building, which gives a certain degree of shelter to the visitors; but these porches are only rude expedients. In old Saxon times horses and carriages were admitted into the main hall. There is a rude magnificence in this arrangement, which is hardly consistent with our present ideas.* But in rough winter nights, and such is the season which the architect ought chiefly to bear in view, the wind almost invariably sweeps through a projecting carriage-porch with concentrated fury. Direct downpour is averted, and that is almost all. Between the rough barbaric state which admits the champion on horseback into the capacious hall built by William Rufus, and the makeshift shelter of a shed before the door, the simple, commodious, dignified arrangement of the *portone* comes in. It is the only true mode of entrance to a palace or great public building.

Port, portico, and *portone*, while they are variants of the same original word, have thus come by this time to express very different architectural ideas. The root of the word is probably derived from the opening through which burdens were borne, or ported, into a fortified place. The monosyllable is now unused by us, except in a nautical sense, and in such compound words as sally-port and port-hole. In each of these we have an instance of the smallest and least-conspicuous aperture that will allow of the issue of troops, or of the projection of the muzzle of a gun. With our recent improvements in defence, especially with reference to our use of solid planks of iron for the walls of forts and the bulwarks of ships, the port becomes more narrow, so as to be almost invisible from any serious distance, as well as more efficiently strengthened against shot. The ports and gates of all regular fortifications are concealed, as far as practicable, behind an earthen *glacis*, so as to be out of range of the enemy's fire. The architecture of modern war thus abhors the picturesque, and presents a remarkable contrast to the proud castellated keeps of the Middle Ages.

Thus the word port may be taken as associated with that tunnel-formed mouth of which we have before spoken. The portico, both in language and in fact, is the forerunner of the Gothic porch. Whether projecting before the main building, as in the National Gallery and University College, or flush with the façade, as in the paired columns of St. Paul's, the portico is properly a protection against the

* The Saxon hall, modified so as to consist with the extreme of modern luxury, has been reproduced in Stanmore Hall, the residence of Mr. Robert Holland, at Stanmore, Middlesex.

sun—a roofed gallery or promenade, in which the air may be enjoyed by those who linger without the temple, while sunstroke may be averted. This peristyle contrasts admirably with the Gothic cloister, a characteristic example, of which is to be seen at Westminster. The purpose of the cloister is to give shelter from foul weather, as that of the peristyle is to give shade from the sun. They are two parallel developments of a structure originally wooden, one fitted for a southern climate, and the other for our own.

Connected with the various forms of porch, we may mention a subject that has now lost its ancient significance, namely, the mode of hanging the doors. We know from classic history that the distinction between the doors of a house and those of a temple, namely, that the former opened inwards and the latter outwards, was one which it was unlawful to neglect. In many of our country churches we find the doors open outwards into the porch, as all doors should do through which a crowd may have to escape.

There is one innovation which is very rapidly deteriorating our domestic architecture in the matter of doors and windows. We allude to the practice of leaving out the shutters. We fear that this trumpery economy is becoming universal. Street-doors, moreover, are now often pierced for panes of glass, to which no shutter is attached. Shutters are becoming the exception, instead of the rule. The quiet and the gloom, in which all persons sleep best, and without which some nervous temperaments, or hard-worked brains, can obtain no refreshing sleep whatever, are thus sacrificed, to save a few pounds in the construction of a house! It is, in fact, a step in the return to the original wigwam. The number of steps that we have thus taken, and are taking, back towards barbarism is such as to be anything but consolatory, if fairly set forth. Perhaps no blow of equal force has ever been so quietly dealt to that repose which is a necessary element of perfect health, as in the case of this miserable and wasteful bit of parsimony. In Italy, where the great influence of those mighty builders, the Romans, is yet paramount, the shutters of windows and the leaves of doors are such as to shame our trumpery make-shifts. Lofty apertures adorn every building but the very poorest, closed with three-fold care. Without is a strong wooden framework, containing louvre-boards, or what we call Venetian blinds, which admit air when desirable, and a small degree of light. Within this is a substantial pair of glass doors. Within these, again, are shutters, that are at once thief-proof and light-proof. The contrast between the well-appointed windows of an Italian palazzo and the cheap bits of flimsy glazing of which the visitor to London by the Great Western Railway may look out upon such daily-extending acres, is as striking as that between the stuccoed porch and the handsome commodious *portone*. Truly, we may take many a lesson in domestic architecture from the contemporary buildings of Italy.

CARRIAGES AND THEIR WAYS.

IT is scarcely possible to take up a daily newspaper without observing the frightful number of catastrophes which may be classified roughly under the head of "carriage accidents." Putting mere collisions,—the results of unskilful driving for the most part,—restive horses, and so forth, out of the question, we shall soon begin to discover that most of these casualties are owing, in the first place, either to defects in the construction of the carriage and the harness; and secondly, to glaring constructive defects in the roadway over which the carriage is driven. Carriage accidents are of course no modern contingency; only the days are somewhat altered since coaches and six, of the original style and model of the Lord Mayor's state-coach and that of the Speaker of the House of Commons, drew leisurely along that suburb of the city of London which existed from Charing-cross to Temple Bar. The conditions of society have likewise altered, and so have the character of the carriages. The extension of their use is also quite enormous Indeed, it is a sort of necessity of modern life that it shall be more or less *vehicular* in its action of locomotion, and it is hardly necessary to add that speed is the highest quality sought after. From the neat, trim, and tidy brougham of the professional man or the City merchant, although the innumerable categories, to the splendid chariots and sociable landaus of the "upper ten" which glitter and sparkle athwart the long equestrian vistas of Piccadilly and the Park, the one thing conspicuous, the predominant feature in fact, of the whole of them, is that lightness, airiness, and, it is proper to add, elegance of build, which are alone compatible with a high degree of speed. Hence it follows of course that the entire frame-work, as well as the wheels and springs, are reduced to the very minimum of constructive strength. Any part is liable to rupture at any moment. We have seen a patent spring broken over and over again by having simply undergone the process of rapid driving across a hundred yards of newly macadamised road. We have also frequently seen a stylish pole snap near its socket from the simple but obvious cause of the checked inertia of a too sudden pull-up by a fashionable whip. In almost all cases the wheels are possessed of much too narrow tires. Those new-fangled drags, with the long poles and silver swivels, drawn by a pair of high-stepping blood horses, which seem to realise the ideal *curres triumphalis* of our horsey aristocracy, are decidedly unsafe instruments of transit or conveyance. Everything about them is too slender or too slight. The tires of the wheels seem to be gradually approaching those of the velocipide, *i.e.*, only about $\frac{3}{4}$ in. in breadth! and are turned moreover on the outer section to the arc of a very small circle. No doubt, there are precedents for such a model machine. The Louisiana "buggy," with which type they seem to be associated in their construction, has some excuse for slender wheels and narrow tires, inasmuch as it is primarily destined to the purposes of travelling through the half-liquid Missouri mud or the dusty land of the looking-glass prairie which alternately constitute the superficies of the roadways in the neighbourhood of St. Louis or Chicago. There, however, what must be acknowledged at once to be a certain fitness of things, or rather adaptation to purpose, is clearly a piece of blundering imitation and impertinence in Hyde Park or Hounslow Heath. And let us mark the consequences when these attenuated wheels get into the rut of a tram-way rail!—by no means a remote contingency. It is all very well so long as they are *in* the rut; the getting out again is the difficulty,—like the getting out of all other ruts in this unhappy world! Let the shrill whistle be heard and the ugly car be seen approaching: it is well if the fashionable Jehu,—who must turn out at all hazards by Act of Parliament, and turn out too at an angle more or less acute and disadvantageous,—it is well, we say, if there be an escape with only a broken spring or two; and if the whole unsubstantial and airy fabric, with its too confiding occupants, are not relentlessly smashed up at the shrine of this modern Juggernaut! It needs no stretch of imagination to shadow forth such a fatal occurrence.

The tramways, indeed, with respect to private carriages, have very nearly destroyed the superficial safety of our leading roadways. No good coachman will, if he can possibly avoid it, traverse these dangerous thoroughfares. They have cruelly invaded, if not altogether destroyed, the ancient and time-honoured law of the road; and although we must confess a dislike to all manner of pessimists and prophets of evil, we cannot avoid in this case entertaining the strong impression that tramways, as at present constructed and governed, and managed, will prove a perennial source of fatal accidents of the most painful and revolting character. In fact, they have already done so in every large town in the kingdom where they have penetrated. The method their projectors have introduced, of laying down a solid bed of Portland cement concrete roadway, in the centre of a Macadamised road, or even in a street of granite cubes, cannot do otherwise than produce, in course of time, the most serious surface inequalities. It will also be easily understood that the more substantial and solid the construction of the tramway, the worse these inequalities will soon appear in its junction with the roadway. And this is nothing, moreover, to what we may expect to see when the subway has to be taken up for repairs or renewal of rails, or, still worse, to get at the water or gas pipes, or sewers or telegraphs, which are buried beneath their obdurate surface. The effect of a sudden change of temperature,—such as a severe frost following upon a long tract of wet weather,—is too often neglected. The contraction and expansion of the iron rod,—often imperfectly welded,—which forms the tire creates a looseness of the entire circle of wood and iron, which is more prolific of accidents than most carriage people are aware of.

With regard to the defective harness of our fashionable carriages, we have more to say than we can at present find room for. That, too, seems to be suffering more and more from this ill-omened process of tapering off and attenuation. The breech harness seems to have in some cases disappeared altogether. The traces, also, are gradually growing small by degrees and beautifully less. We are given to understand that the modern *improvement* of sewing harness by machinery is gaining ground in the manufacture, and those who understand the value of such seams in woollen or linen cloth, where no such enormous tensile strain has to be encountered, will, perhaps, pause and investigate before they trust their lives to a bran new set of "splendid silver-mounted harness." As to those wretched Birmingham plated buckles, which too often disgrace our modern equipages, the wonder is that they do not more frequently give way at the joints than they actually do. These buckles, we ought to point out, are more dangerous, of course, on account of their smaller size, upon the reins than the traces. It has to be mentioned, moreover, that from whatever cause,—a defect in the process of tanning, it may be, or the employment of inferior skins,—our modern harness is by no means so strong in the fibre as it was, say, five-and-twenty years ago. The breaking, or rather tearing weight, of a modern ribbon of leather, is not nearly so great as that of an ancient one of similar dimensions. The consequences are that, with diminished scantlings on the one hand and deteriorated strength of fibre on the other, the most common of carriage accidents in our days arises from a rein breaking or a trace giving way. It was only the other day we observed, with more than ordinary feelings of regret, a fatal accident of this kind which occurred near Cockermouth. A gentleman was driving his wife out, when the horse, a young and spirited animal (imperfectly bitted, in all probability), took fright and ran away. As the road was long and level, there was not much ground for apprehension to a skilful driver, as there unquestionably was in this case; *but the reins broke.* The horse took a too sudden turning at a narrow bridge, with the parapet of which it came into violent contact, and was killed on the spot. The vehicle was smashed to pieces. The gentleman who was driving escaped with a broken limb; but his unfortunate partner in this life was launched into eternity! We may add, in conclusion, that many an accident on the hunting-field is unquestionably due to a defective stirrup-leather or a broken rein; and we cannot too earnestly insist on their security. Indeed, we hope to see the day when all such important and, in the interests of the public health and safety, vital articles of commerce as carriage-harness and springs, together with their wheels and axletrees, will be subjected, along with iron girders and steam-boilers, glycerine and gunpowder, petroleum and inflammable oils, to the crucial test of a Government stamp and supervision.

THE RATING OF MINERAL PROPERTY.*

IN considering the question of the rating of mineral property, the poor-rate is the most important, and generally when the poor-rate is payable most of the other parochial rates are payable also. The Poor Law of the present day takes its origin and is now based upon an Act of Parliament passed in the reign of Elizabeth; and under and by virtue of that Act a tax was imposed upon every inhabitant, parson, vicar, and every occupier of lands, houses, tithes, coal-mines, or saleable underwood, within the parish, for and towards the necessary relief of the lame, impotent, old, blind, and such others being poor and not able to work, within the said parish. It will be seen that no mine except a coal-mine was by that Act rateable to the poor, although, as Lord Ellenborough has observed, the word "coal-mine" was probably mentioned in the statute by way of example and not of exclusion, and notwithstanding a more recent opinion of Chief Justice Tindall that if the statute were now to be reviewed it would be probably held not to exclude any mine. But, whether by accident or intention, the law remains the same to the present time,—viz., that no mine, except a coal-mine, is liable to the poor-rate.

When a mine is not liable to be rated, the

* From a paper on Mines and Minerals, by Mr Arundel Rogers, read at a meeting of the Institution of Surveyors.

proprietors will not be liable to a rate for engines, machinery, buildings, or any other erections, erected and used solely for the purpose of effectually working the mines, either on or beneath the surface, or for drawing water from off the mine, such erections being regarded as part and parcel of the mine; but all smelting-mills, furnaces, machinery, and buildings necessary for smelting or the like purposes, are not regarded as part and parcel of the mine, and are therefore rateable, although the mine itself may not be rateable.

It frequently happens that iron is intermixed with coal, and in such cases it was formerly doubted whether the entire productions of the mine, including the iron as well as the coal, was not rateable; but it was afterwards decided that the lessees and occupiers of a large tract of land, and of mines which had been discovered under the said land, containing iron and coal intermixed, were not liable to be rated to the poor in one sum for the farm and land, and in another sum for the iron and coals, although sufficient coal only was raised for the purpose of manufacturing the iron, and not for sale,—the Court holding that the lessees and occupiers were not rateable for the iron, but only for the coal, and that, inasmuch as they had been rated for both the iron and coal in one entire sum, the rate being bad as to one was bad as to both; for the Court had no means of ascertaining how much was applicable to one, and how much to the other.

But although mines, except coal-mines, are exempt from poor-rates, under and by virtue of the statute of Elizabeth, minerals are not always exempted, and, consequently, if minerals be raised in any other way than by means of a mine, they will be liable to the rate. Minerals frequently are raised from quarries; quarries of minerals are, therefore, rateable; and, as the question has often been raised whether the working for ores, or the raising of metallic and even non-metallic substances amounts to a mine or a quarry, it will be seen that the attempt we have already made to draw a distinction between the two is not unimportant.

Tolls or dues reserved in kind, in respect of all mines, are also rateable, on the ground that the reservation is a portion of the land itself, and that the persons entitled to them are the actual occupiers of the land; but tolls or dues reserved in money are not rateable to the poor, because such a reservation is a certain fixed payment or rent reserved out of the produce of the land, not amounting to a reservation or an occupancy of the land itself. On this subject, Mr. Justice Taunton, many years ago, is reported to have said, "The distinction is very subtle, but the cases may, perhaps, be reconciled by distinguishing between a reservation of a rent and a reservation of part of the soil; in the latter case the lessor has been considered as occupying that part of the soil which he has so reserved. Here there is a pecuniary rent reserved and no reservation of any part of the soil. A reservation of a portion of the ore in a melted state is in the nature of a money reservation, and therefore not rateable; if in a state only fit to be smelted it is like a reservation of part of the soil, and consequently rateable."

Tolls or dues payable by custom, as in the case of tin-bounding, are subject to the rate, and residence is not necessary to create the liability to pay the rate, whether the reservation is by custom or by deed.

The principle upon which coal-mines are rated is contained in the Parochial Assessment Act, 6 and 7 Wm. IV. c. 96, which provides that every rate shall be made upon an estimate of the net annual value of the several hereditaments rated, —that is to say, of the rent at which the same might reasonably be expected to let from year to year, free from all usual tenant's rates and taxes, and tithe commutation rent-charge (if any), and deducting therefrom the probable average annual cost of the repairs, insurance, and other expenses (if any) necessary to maintain the property in a state to command such rent. The Act also provides that nothing therein contained is to be construed to alter or affect the principles or different relative liabilities (if any), according to which different kinds of hereditaments were then by law rateable.

The Union Assessment Committee Act, 1862, provides that the gross estimated rental shall be the rent at which the hereditaments might be expected to let from year to year, free from all usual tenant's rates and taxes, and tithe commutation rent-charge, and that nothing in that Act contained was to repeal or interfere with the provision of the before-mentioned Parochial Assessment Act, which defined the net annual value of the hereditaments to be rated. The Union Assessment Committee Act, 1862, further provides that nothing therein contained was to affect any special or exceptional principle of valuation.

The provisions in the two before-mentioned statutes are not necessarily inconsistent; and if the principle involved in them had been more closely followed, we should have been spared many inconsistencies in the valuation of mines, for the purpose of rating, which have occurred among the different assessment committees.

A coal-mine must, therefore, be rated, and as soon as it is set to work and produces coal, and only during the time that it is productive. Lord Ellenborough illustrated this principle, by observing that the mine itself being exhausted, the subject-matter of profit is gone, and that being rateable only for the concurrent annual value, during the period for which the rate is made,—if the mine be occupied no longer,—no longer affords any such concurrent annual value,—the subject-matter of the rating is gone.

It also follows from the before-mentioned Acts, that the criterion of value does not necessarily depend upon the actual amount of rent paid to the landlord, but on the sum for which the land or entire property would reasonably let. Consequently, the improved annual value from year to year of the mine, together with the machinery, buildings, and other erections, whether underground or on the surface, and without considering whether the machinery be real or personal property passing to the heir or executor, or belonging, at the expiration of the lease, to the landlord, lessee, or tenant, must be included in the valuation.

No person can be rated in respect of a right of way, of way-leaves, wagon-way, or similar incorporeal rights, because they are in their nature incapable of occupation; but a rate may be made for such rights, in respect of land in the actual and exclusive occupation of such persons in or over which such rights are exercised; and if, therefore, the same person is in possession of the land and of the easement, he will be subject to the rate. The rules which are adopted in rating railways will be generally the best guide in rating all other rights of ways.

The highway-rate extends only to those mines and quarries of stone which had usually been rated to the poor-rate, and are made payable by the occupier. And by 14 & 15 Vict., c. 16, special provisions are made respecting highways, situated in the counties of Glamorgan, Brecknock, Radnor, Carmarthen, Pembroke, and Cardigan; and by the 23 & 24 Vict., c. 68, it is provided that the highway-rate shall be levied on the persons and in respect of the property by law rateable to the relief of the poor in the respective parishes, and shall be assessed upon the net annual value of such property ascertained by the rate, for the time being, for the relief of the poor, provided that the rate shall also extend to such woods, mines, and quarries of stone as were before the Act of 5 & 6 Wm., c. 4, usually rated to the highways.

Mines and quarries are liable to *church-rates*, not as distinct from the land, but as part of the land, and there should be no separate assessment, unless the ownership to the minerals is distinct from the ownership of the soil.

Mines, however, are not usually *titheable*, except by prescription or custom; but minerals or anything else which is part of the soil, as a brick-kiln or salt-works, may be subject to the payment of tithes; as, for instance, in the parish of Wirksworth, in Derbyshire, where the lead-mines are subject to tithes by custom. By the statute for the commutation of tithes into rent-charges, the term "tithes" is defined to mean all prescriptive and customary payments, and special provisions are therein inserted for the commutation of minerals tithes, and whenever mines or minerals, subject to tithes, are commuted by the Act into rent-charges, the rent-charge is to be subject to all such Parliamentary, parochial, and county and other rates, charges, and assesments as the tithes were subject to before such commutation.

The rating of mines, ways, and easements in Ireland is provided for by the 1 & 2 Vict., c. 56, wherein it is declared that the following, among other hereditaments, shall be rateable under that Act, viz., all lands, buildings, *and open mines*; all commons and all rights of common; and all other profits to be had, received, or taken out of any land, rights of way, and other rights or easements over land, and the tolls levied in respect of such rights and easements, and all other tolls; provided always that no mines which have not been open seven years before the passing of this Act are to be rateable until the term of seven years from the time of opening thereof shall have expired, and no mines thereafter are to be rateable until seven years after the same shall have been opened, and mines *bonâ fide* re-opened after the same shall have been *bonâ fide* abandoned, are to be deemed an opening of mines within the meaning of the Act. The rates are to be estimated according to the same principle as that adopted for assessment in England.

The result of the law, as it now stands, may, therefore, be stated thus:—

1. Coal-mines only are rateable to the poor-rate; but machinery and buildings, not absolutely necessary for carrying on a mine, whether it be a coal or any other mineral mine, are rateable.

2. That the mine is rateable only during such time as it is productive.

3. That a mine which is partly coal and iron, or any other mineral, can only be rated in respect of the coal, and then only if the value of the coal can be separately ascertained.

4. That although every other mine except a coal-mine is exempted from rates, all minerals which are raised from quarries are rateable.

5. That tolls or dues payable in kind are rateable, whilst if payable in money they are not rateable.

6. That all way-leaves and other easements are exempted from rates, unless there be land occupied therewith.

7. That all other parochial rates and taxes, including tithes and church-rates, are only payable when the poor-rate is payable.

8. That in Ireland all mines of every description are rateable, but not until after they have been opened for the period of seven years.

Such being the state of the law at the present time, I desire the opinion of this Institution whether any and what alterations can be advantageously made. The subject has recently attracted the attention of the Legislature, and they will very soon again be engaged upon it. Is it reasonable that coal-mines only should be rated, and all other mines be exempted? or that all minerals, if raised by means of quarrying, should be rateable, but if raised from a mine, not rateable? And should (what I think may fairly be called technical) distinctions be allowed to prevail, whereby tolls or dues, reserved in kind, become rateable, whilst the value of such tolls or dues, if reserved in money, are not rateable?

HULL SOUTH AND WEST JUNCTION RAILWAY.

THE first Parliamentary battle of the session of 1872-73, in so far as private Bill legislation is concerned, came off on Monday last in the Court of Mr. Frere, Senior Examiner on Standing Orders. The case was that of the proposed railway to pass under the river Humber, at Hull.

Last year, before the joint Committee of Lords and Commons on railway amalgamation, influential men, more or less intimately connected with the North-Eastern Railway Company, gave evidence to the effect that the North-Eastern Company furnished, in so far as it went, conclusive evidence that in its case amalgamation had proved excellent policy on the part of the companies amalgamating, and without detriment to the public. The company paid amongst the highest dividends of any in the United Kingdom; the public was well served; and the witnesses had not heard of any complaints on the part of the public of defective or irregular service, or because of the amalgamation. A few months have furnished evidence somewhat in confutation of these statements. The merchants, traders, and inhabitants of Hull complain bitterly of their want of railway accommodation, and have determined to supply it for themselves, at a cost of about a million pounds sterling. They had initiated their important project before the amalgamation committee closed its sittings. Of late there has been in the neighbourhood of Hull a plethora of traffic, which the North-Eastern Company, it is alleged, has been unable to relieve. Laden trucks making up trains extending to miles in length have accumulated that the company has not had means of conveying to their respective destinations, and the parties interested have, as a matter of necessity, combined to help themselves, if haply they may. The proposed line

has excited very general and lively local interest, and commands very strong local support.

Certain allegations having been discussed and sworn to, the Examiner ruled that the general plan should, in every case, be made as complete as possible, and that, where there was room to write the numbers, they should have been entered on the general plan, as well as on the enlarged plan. An engineer was called on each side, and, as is not unusual in such cases, they flatly contradicted each other, one contending that nobody, and the other that anybody, could identify the particular properties from the plans as deposited.

On this finding the allegations of the memorial were, in many instances, sustained, and will be reported to the Committee on Standing Orders, who may probably give a dispensation. The ruling is not necessarily fatal to the Bill.

BOARDS OF ARBITRATION IN GERMANY.

A MEETING took place lately between the Association of Berlin Master Builders and the foremen of the Berlin building trades to deliberate upon the advisability of definitively constituting a board of arbitration for the building season of 1873. Boards of arbitration were originated, it is asserted, at Berlin, by Dr. Max Hirsch. The period for which the board of arbitration for the building trades had been provisionally constituted expired with the year 1872.

Director Simon, after explaining the object of the meeting, said it was desirable to have the opinion of the foremen on the subject, and also to ask them whether they would assist the masters in their endeavours.

Dr. Hilse then pictured the present anomalous conditions at the outbreak of disputes, and put it to the meeting whether they were willing to assist in obtaining the object in view.

A long debate ensued, in which it was pointed out by Dr. Hirsch, who had been specially invited by the Association, that all parties of social Democrats were now agreed as to the desirability of arbitration, and that the disputes as hitherto conducted were ruinous. The *Volksstaat* (organ of the workmen) had openly advocated boards of arbitration, and the Carpenters' Union had entered into communication with the Association respecting the laying down of a tariff for piecework. The speaker then entered minutely into the object of the Boards, directed attention to their beneficial activity in England, and requested the meeting to further the definitive constitution of such a Board for the Berlin builders. No opposition was raised in the meeting to the principle of arbitration. The only objections mooted were, that the awards of the Boards were not binding, and that the workmen ought to be consulted first. This latter view was ultimately adopted, and it was resolved to issue an address to the workmen. As soon as the views of the latter are known, the definitive formation of the Board is to be proceeded with. A conference of delegates of social democrats, as well as of the local unions of the building trades, is shortly to be convened.

THE LATE W. W. DEANE, ARTIST.

THE late William Wood Deane was born the 3rd of March, 1825, at Islington; received a classical education under Bishop Jackson, at the grammar school; and was articled to Mr. Herbert Williams, architect, on Sept. 7, 1842. On the 13th of January, 1844, he was admitted a student at the Royal Academy, and obtained a silver medal in December of the same year. He also became a student of the Royal Institute of British Architects, and obtained prizes there in 1844 and 1845. After serving his articles he assisted Mr. Mocatta, and obtained some premiums in competition.

He travelled in France, Germany, and Italy for two years, returned to England at the latter end of 1851, and took the late Alfred Bailey into partnership. During their partnership they built the Langham Chambers. After their separation, in 1855, Mr. Deane built some houses and studios, and put a new stone shop-front to Messrs. Dickinson's, the photographers, of Bond-street; but being averse to the business part of his profession, and being without clients, he mainly occupied himself with making designs and drawings and colouring views of new and proposed buildings for other architects, and in occasionally drawing on wood, for the illustrated papers. He eventually abandoned architecture for painting. He was elected Associate in 1862, and Member, in 1868, of the Institute of Painters in Water Colours, from which he migrated, in 1870, to the old Society. He also exhibited at the Dudley Gallery, and at the Royal Academy. He was attacked with disease of the liver in 1870, and died at his residence, 64, King Henry's-road, N.W., on the 18th inst.

It is rarely we have to deplore the loss of one equally skilled in architecture and painting, and one, too, cut off at the very height of his powers. It is too true that those only who were his personal intimates could appreciate those talents for architecture that were denied a fitting career. Had he possessed a fortune, or a patron, he might have embellished London with his works; for no man ever had a more fertile invention, a nicer feeling for proportion, a greater mastery over detail, nor a more cultivated appreciation of the scope and meaning of his art; but after a fruitless essay of ten years, he turned to painting, where no assistance but skill was required to get competence and fame.

All who are interested in the arts know his charming exposition of the architecture and landscape of Europe, from the slated houses of the old French towns, glistening with the rain, to the yellow spires of Seville, winking in the heat; from the sombre coolness of St. Mark to the brilliant whiteness of the Moorish towers of the Cornice. The loss of the man is even more deplored by those who knew him than the loss of the artist, for it was difficult to know whether one was more attracted by the fine points of his character or by the brilliancy of his conversation.

CHELSEA WATERWORKS.

CONSIDERABLE dissatisfaction has been caused by the proposed works of the Chelsea Waterworks Company, from the fear that their execution will detract from the picturesque beauty of certain localities near the banks of the Upper Thames. The present intake of water from the Thames, under the Act of 1852, is at Seething Wells, in the parish of Kingston, at which point the water is at times turbid and discoloured. It is proposed, by the Bill to be brought before Parliament in this session, to take water at a point above Moulsey Lock, in the parish of West Moulsey. The works will consist of an engine-house at West Moulsey; a reservoir, about 485 yards long and 20 acres area, at East Moulsey; a second reservoir, of nearly the same dimensions, in the parish of Thames Ditton; and a third on the east side of the existing reservoirs on Putney Heath; also six conduits or lines of pipes; a river-wall in the parishes of East Moulsey and Thames Ditton respectively, and on the right banks of the rivers Ember and Thames respectively. The estimated cost of the works is 220,000*l.*, and powers are proposed to occupy a period of ten years in their completion.

IMANUEL CHURCH, STREATHAM COMMON.

A REREDOS has lately been erected in this church, the principal material employed being Caen stone. The central portion of the composition over the altar is raised higher than the rest and is crowned with an enriched cornice, surmounted by a species of delicate cresting. The central panel is composed of a quatrefoil richly moulded, inclosing a white alabaster Maltese cross; a representation of a dove, holding an olive-branch in its beak, occupies the intersection; the background is formed of gold mosaic. The side-panels are composed of cusped circles, with the ears of wheat and the vine inlaid with marble on an alabaster ground. Between these panels come rich hollow mouldings, containing the passion-flower and the lily, bordered by bands of dove marble. At the side of the altar is an arcade of seven bays, with shafts of dove marble. The sill of the east window not being very high, part of the design is carried up between the jambs of the window and the wall. There are three gabled panels on each side, the spandrels carved with flowing foliage, and the copings crowned by sculptured finials. As the east window is composed of stained glass of deep shades, the reredos, as respects *colour*, has been kept rather subdued, dove marble and mottled alabaster being the main *tinted* materials. Some ornamental gratings under the reredos have been picked out in colour by Mr. C. Hudson, of London. The total cost of the work has amounted to about 200*l.*, the whole of which has been defrayed by Mr. William Leaf, of Streatham Common. Mr. Ferrey, F.S.A. (who designed the church), supplied the designs and working drawings; and Mr. J. L. Jaquet, of Westminster, executed the reredos.

MINSTERLEY, SHROPSHIRE.

THE fine old manor-house has been lately restored by the Marquis of Bath. The timber framing exposed to view, on the removal of the plaster which covered the exterior, has been replaced with new oak where the old was decayed, and 9-in. brickwork, plastered, has been used for the filling in, thereby adding considerably to the comfort of the occupiers of the house. Windows, with oak frames, mullions, and transoms have been substituted for plain sashes where the latter had been inserted, and the moulded barge-boards, hip knobs, and brackets are reproductions of the old, which were decayed. The west, or principal front, consists of three wide and lofty gables, with a lower and richer one at the north side running through to the east front, and probably of earlier date. On the east or garden front the two large dormers, of which the valley pieces indicated their size and position, have been restored. The roofs have been covered with Ridgehill tiles. Internally, the panelling has been continued round the hall, and the screen opened out. Mr. Haycock, of Shrewsbury, was the architect; and the contractors were the Messrs. Bowdler & Darlington.

A vicarage has been built for this parish, principally at the expense of the Marquis of Bath, who also gave the site, and of the Ecclesiastical Commissioners, who made a liberal grant. It consists of drawing-room, dining-room, study, kitchen, &c., and six bedrooms, and is built of red brick, relieved with bands of white and black. Yellow Grinshill stone has been used for the heads, mullions, and sills to the windows. The roof is tiled. The work has been carried out by Messrs. Bowdler & Darlington, under the direction of Mr. Edward Haycock, at a cost of about 1,100*l.*

FROM IRELAND.

Belfast.—The foundation-stone of the Ormeau-road new Wesleyan chapel school was laid in April last, and the building, having been pushed forward with much vigour, was opened on the 12th inst. It is situated at the corner of Ormeau-road and McClure-street, and the style adopted is Lombardic, of a simple character. The floor of the chapel is raised above the level of the Ormeau-road by the introduction of a wide flight of steps, necessitated by the ground on which the building is erected. Underneath the chapel, having entrances from McClure-street, is the school-room, 53 ft. by 40 ft., and 12 ft. high, and in connexion with it are four class-rooms, each about 16 ft. by 10 ft., and a room for the heating apparatus and appliances for tea-meetings. The chapel is 58 ft. by 40 ft. on ground-floor, exclusive of vestibules, and has a fall of 9 in. from front towards rear, which gives an uninterrupted view of platform, and the pews are all open. Two wide sets of stairs from the outer vestibule give access to the gallery, which runs round three sides of the building, and is supported by columns. At the rear, and communicating with the chapel, are the vestry and committee-rooms, and over these commodious apartments for the care-taker. The whole of the chapel fittings are of selected pitch pine, slightly stained and varnished. The warming-apparatus consists of hot-water pipes, which run up the centre and round the sides of the chapel. The lower or basement-story is built of rubble masonry, pointed, the remainder being red brick, with white and blue brick dressings, the piers of the entrance-arches having cut-stone moulded bases, and carved caps and key-stones. Accommodation is provided for about 600 persons, and the cost will be about 2,500*l.*, including gas-fittings, heating-apparatus, boundary-wall, and so on. Mr. William Batt, jun., was the architect, the plans having been selected in competition; and the works have been executed by Messrs. Rowley & Mansell. The heating was done by Messrs. Riddell; and the plumbing by Mr. J. Gilroy. The gas-fittings were executed by Mr. W. J. Watson; and the entrance-gates by Messrs. Musgrave & Co., all of Belfast.

DEFECTS IN THE SANITARY PROVISIONS OF THE METROPOLITAN BUILDING ACT.

AT a meeting of the Social Science Association, on the 20th inst., a paper by Mr. John Liddle, Medical Officer of Health for the Whitechapel District, "On the Defects of the Sanitary Provisions of the Building Act, 18 & 19 Vict. c. 122, with Suggestions for their Amendment," was read and discussed; Lieut.-Col. Beresford, M.P., in the chair.

Mr. Liddle said: What I am anxious to do by bringing the subject of this paper under your notice, is to prevent the further erection of unhealthy houses; for unless the existing evil of permitting new houses to be built with a total disregard of such arrangements in the structure and surroundings of a dwelling-house as are necessary for healthy occupation be presented, all the labours of sanitary officers in getting unhealthy houses closed under the Nuisance Removal Acts, or pulled down under the Artizans' and Labourers' Dwellings Act, will be comparatively useless, if similarly unhealthy houses can be built elsewhere, or even, perhaps, on the old foundations of those which have been condemned. The rights of property are, as regards house buildings, unduly considered, while the rights of the public, as regards their breathing the pure atmosphere, are disregarded. The only property that a poor man generally possesses is his health —deprive him of that, and he, and perhaps his whole family, are at once rendered destitute. Such is the demand for houses at the present time among the poor that any place, however unhealthy it may be, will readily find a tenant.

The healthy housing of the population is the foundation of all sanitary improvements, for unless stringent laws are passed to prevent the erection of unhealthy dwellings, the numerous statutes relating to the public health will be of comparatively little benefit. The radical defect in the Building Act is, that it is not complete in itself, but other Acts of Parliament are incorporated with it; and hence an unnecessary amount of trouble is imposed upon builders in having to consult the district surveyor in some matters relating to the building of a house, and the Local Board in others, and no one authority seems to be responsible for seeing that a house is so constructed as to be fit for habitation.

Mr. Liddle, having enumerated what he considered the principal sanitary defects in the Building Act, submitted the following suggestions as amendments. A Building Act should, in the first place, provide:—

1. That no house in any new street shall be occupied as a dwelling-house unless a sewer has been constructed along such street, and a communication by a properly constructed and ventilated drain made from the house to the sewer. The ventilation of the house-drain, into which usually passes the soil-pipe of the water-closet, may, as I am informed by Mr. S. W. Iron, the surveyor to the Board of the Whitechapel District, be easily carried out by fixing a small pipe in the upper part of the soil-pipe, and carrying the same above the roof of the house.

2. That before any house is permitted to be occupied, the road and footways shall be paved, and the surface-drainage properly provided for.

3. That before the building of any new house is commenced, plans of the drainage and of all the sanitary arrangements of the house shall be submitted for approval to the Local Board. This Board shall be invested with power to compel the builder of any new house within the district so to alter his plans, if necessary, for the healthy occupation of the house, as the Board under the advice of its officers shall direct.

4. It shall likewise be made compulsory upon every builder to provide a separate water-closet or privy, and ash-pit, for each house within the curtilage of the house. This provision would prevent the erection of public privies in courts occupied by the poorer classes, which are now, for the most past, public nuisances, and injurious to the health of the people.

5. That during the progress of the building of any house, the surveyor to the Local Board shall be required to inspect the foundation thereof; and if such surveyor be of opinion that the materials which are being used for such foundation are not proper for the purpose, he shall make known his objections to the builder, and shall report the same to the Board. This report having been made, the Board shall have power to prevent the use of all such improper materials.

6. That the walls and foundation of every house shall be so constructed as to prevent the rise of damp.

7. That every new house shall at all times have at the rear an open space of sufficient extent for the thorough ventilation of the staircases and passages. The extent of the open space to be determined by the Act (say 100 square feet), but the plan of this open space shall be approved by the Local Board, before the builder is allowed to complete the building.

8. That the floors of every house shall be properly ventilated, and that the floors of the basement shall not be laid upon the bare ground.

9. That the back yards of every new house, and of the houses now in existence, shall not be built upon without the sanction of the Local Board; and in no instance shall the open space in the rear be less than 100 square feet, and so arranged with regard to the house as to be sufficient, in the opinion of the Local Board, for the purpose of ventilation.

10. That old buildings, such as warehouses, stables, &c., shall not be converted into dwelling-houses, unless the plans as regards all the sanitary arrangements shall have been submitted to, and approved of, by the Local Board.

11. That the same law as regards the width of new courts and alleys shall be applied to old courts, when any of the houses therein have been pulled down; for, if it be deemed necessary that new courts shall be, for purposes of health, of a certain width, it is equally necessary for the public health that the old courts should be equally wide.

12. In order that every new street shall have an adequate supply of sunlight, which is so essential to health, the buildings on either side of the street shall not be permitted to exceed in height the width of the street. This regulation would be of the utmost importance in courts which are not thoroughfares, but such is the desire of owners of property to make the most out of it (and unfortunately such a proceeding is sanctioned by the Legislature), that they are perfectly regardless of the rights of the public to breathe the pure air of heaven and enjoy the light of the sun.

13. That in consequence of danger to the public while walking along the streets by the falling of snow or slates from the roof of any house unprovided with a parapet-wall, no new house shall be considered as completed unless the same is provided with a parapet-wall.

14. That no house shall be allowed to be occupied unless there shall be a passage leading from the front-door to the back-yard; and unless the staircase leading to every room shall open into a landing, so that each room in every house shall be distinct and separate from the other rooms. Under present arrangements it is not uncommon to find that builders, on the score of economy, build houses with the front-door opening direct from the sitting-room, on the ground-floor, into the street, and the stairs leading to the upper rooms opening directly into and forming a part of the lower room, so that the foul air of the lower room is ventilated by means of the staircase into the room above. Such a faulty arrangement also destroys the privacy and comfort of families, by converting rooms so arranged into thoroughfares. There are some houses in the Whitechapel district in which the tenants of one room are obliged to carry all their filth through their neighbour's room before it can be thrown into the privy or drain in the back-yard. This proceeding is not only highly indecent, but, in case of epidemic diseases, is dangerous to health, the germs of such disease being frequently contained in and given off from the excrement of the sick.

15. That no house shall be permitted to be occupied, unless the person letting such house shall have a certificate, signed by the surveyor and medical officer of health to the Local Board, that the same is fit for healthy occupation, which certificate shall be shown to every incoming tenant.

16. That in consequence of numerous unhealthy houses, which are continually being built in the suburbs of London, and also in other large cities and towns, and the suburbs thereof, the area of the new Building Act shall be extended to all large towns and populous cities in England; and that the carrying out of all the sanitary arrangements of habitable buildings shall be intrusted to the Local Boards, who by their several officers would be able to superintend the erection of all houses.

17. That the Building Act shall contain a section to give power to the Local Board to purchase such property, at a moderate compensation, as has been condemned under the Artisans' and Labourers' Dwellings Act by the medical officer and surveyor to the Local Board.

18. That in all cases of dispute between the Local Board and the builder, in regard to plans of drainage and other sanitary provisions, power of appeal to a competent authority shall be given.

In conclusion, permit me respectfully to urge upon this Association the desirability of forming, with as little delay as possible, a deputation to the Local Government Board, and urging upon its notice the pressing necessity of the Government bringing in such a Bill as shall effectually prevent the further erection of unhealthy houses; for so long as houses unfit for habitation are allowed to be built, the labours of the sanitary officers will be comparatively of little avail, and the public will continue to suffer from many diseases which are preventible.

We shall return to the subject.

CONCRETE BUILDINGS.

SIR,—With reference to the history of concrete buildings, the following passage in an interesting work on "Santo Domingo and Haiti," by Samuel Hazard, just published, is deserving of notice. With reference to the buildings in St. Domingo city, it says:—"The walls of the older houses are very solidly constructed, either of stone or the material known as mamposteria, a mode of architecture somewhat similar to that of Cuba. The method of making these walls is simple and economical. The glutinous earth of the vicinity is taken and mixed with lime, and sometimes, as in Cuba, with powdered stone; frames of planks are then made in the desired form, and these are filled with layers of this composition, sand and lime being added. The whole is then moistened with water, well pounded and kneaded, and allowed to dry, when the mould being withdrawn, leaves a firm solid wall, which, on exposure to the air, becomes hard as stone. Even the walls of the city are built in this way."

I am told by an engineer who has visited those parts that the stone used is a description of lava.

T. A. BRITTON.

PERSPECTIVE DRAWING.

IN the course of a paper "On Architectural Perspective," read at the Architectural Association of Ireland, as mentioned in our last, Mr. J. L. Robinson said:—

It is a great error to be careless in the first instance with a perspective, and then bestow a great amount of work on the details. Get in the main lines correctly, and after some practice you will be enabled to fill in the details without rules by merely getting a few main points. Of course the portion nearest the eye should be drawn neatly, and with greater care than the background, which may be treated in a comparatively sketchy manner.

Architects, as a general rule, are too prone to confine themselves to geometrical drawings, which, though exceedingly useful and indispensable, are such that none but a professional mind can grasp, and that few of the uninitiated can understand. We all know who have tried the experiment how difficult, almost impossible, it is to impress a client with the slightest notion of what we mean by an elevation or plan. It is from a want of perspective knowledge not only with the profession, but with the public generally, that is mainly derived the odious custom of having the front of the detached or semi-detached suburban villas of red brick of the most ambitious design, whilst the flank and rear walls are simply dashed, or, still worse, compo'd down and "struck out to imitate stone." This generally arises from an elevation of the front being submitted to the client whilst the sides and back are allowed to shift for themselves. Both architect and employer forget that, when built, it can never possibly appear as on paper. If we cannot have the funds to build such houses of red brick all round, let us have all the walls of good stock bricks, well designed and of good outline, without wigging or shams of any kind; and I have no doubt but that the public would prefer them to the ridiculous mushrooms that are springing up round the city, whose appearance "cannot but make the judicious grieve."

An architect should, when making a geometrical drawing of no matter how trifling an object, have the perspective effect of it in his mind's eye, and he will never make a mistake, or be disappointed

when he sees his design put into execution. Some I have known who, when they are making a design, make a rough perspective sketch on the margin of the paper, to give themselves an idea of the effect, which I consider an excellent practice, and worthy of imitation.

There is no greater aid to the study of perspective than that of sketching from nature, or a close study of completed buildings. If the artist has a good eye and a steady hand, he will see how objects show in perspective, and will after a while be enabled to make perspective views untrammelled by any rules save those of good taste. What can be more agreeable to the architect or artist than to ramble about, sketch-book in hand, and sketch any object that strikes his fancy, and thus lay by a store of pleasant *souvenirs* or useful hints which he may have received on his travels? It is by such means that the mind is to be enlarged and experience gained.

I would now caution you against a fault which I would almost consider criminal,—namely, the deliberate falsification of perspective drawings which some indulge in, in order to give to their designs a better aspect than the working drawings give. This I consider,—and I know you will agree with me,—is a pernicious and dishonest habit, and likely to lead the men who are guilty of it to shame and exposure. It is mostly resorted to in getting up competition drawings. Others, when they introduce figures in the foreground of their dwellings, make them veritable pigmies, ranging from 2 ft. 6 in. to 4 ft. in height. This is done in order to make the building appear of far greater size than it actually is. The cheat is, however, soon detected by comparing the size of the doors and windows and other details with the figures.

And lastly, a word with regard to that not least important branch of the subject, the style of the drawings. Some architects draw them in pencil pure and simple, and I consider few drawings have a neater and better effect than a neatly-drawn pencil-sketch; others outline in pencil, Indian ink, or brown ink, and tint,—much can be done in this way by a clever colourist; and others etch in Indian ink, writing-ink, and brown ink. Etched drawings are very effective, are great favourites, and are open to a wonderful variety of treatment.

GLASS HOUSES AT MILNER FIELD, NEAR SALTAIRE.

AN extensive range of hot-houses has been recently erected at Milner Field, Yorkshire, the residence of Mr. Titus Salt. The garden is a new one—indeed, it is yet in course of formation, by Mr. Marnock. Some particulars of the hot-houses are given in the *Garden*, which may be usefully reprinted:—

The principal houses are ranged side by side, lying due north and south; they are 34 ft. long and 18 ft. wide, inside measure, and are ten in number, and with lean-to houses at either end. All these houses open into a covered corridor, so that every house can be entered without exposing it to cold winds. The walks in the corridor are laid with 3-in. thick Yorkshire flags, and the paths of the houses are laid with cast-iron plates, ¼ in. thick and 3 ft. wide, diamond pattern, supported on angle iron-rails and cast-iron pillars every 6 ft. This arrangement leaves the border free, for the roots of the vines, &c., to run under the paths. Out of each corridor opens a potting-shed, thus enabling plants to be carried into it without exposing them to the cold. The corridors are fitted up with tabling between the doors of the houses, for plants, and a high shelf runs the whole length, for strawberries, &c. The back walls are wired and ornamented with flowering creepers: one corridor with stove, and the other with cool climbers. The houses Nos. 6 and 7 are fitted up with pits in the centre, and slate tables round, supported on angle iron rails and cast-iron pillars. The tables are covered with small cannel coal, which furnishes drainage for the pots, and has the advantage of not becoming green, as do spar and stone. As to ventilation, the whole is worked from the two corridors by handles fixed on each side of the doors entering the houses, working, by means of bevel wheels, a perpendicular shaft with a double thread, which works into a nut attached to the levers for raising the top lights. These threads have all been cut in the lathe, are half-inch (double) pitch, and work very quickly and easily. The side ventilation is worked by means of a similar screw placed under the tabling, which opens and shuts sheet-iron doors into a ventilating-flue in the brick wall between the houses, running to the outside. This arrangement is found to give ample ventilation. Nos. 2, 6, 7, and 11 have side-light ventilation. The south lights in all the houses open if required. There is a rain-water cistern in every house, and a hot-water cistern (wood) in the boiler-house, with a pipe through the wall and a tap in the corridor. This is of large size, and supplies all the warm water for watering purposes. It is heated by a coil of hot-water copper pipes, so there is no fear of rust or other damage to the water. As regards the heating, the whole of the houses are warmed by means of three of Weeks's patent duplex upright tubular boilers; one being only for an emergency. They are so connected that either one, two, or all three can be worked together, or any one will work the whole; and any one of them can be used separately, either for the front or back range, as may be desired. The boilers are about 7 ft. high, and are doing their work admirably. The main pipes are 6-in. ones, and run the length of each corridor, branching out into each house under the doorways. Each house has valves on both flow and return pipes, as have also the main pipes. The valves used are 2-in., 4-in., and 6-in. Peet's patent valves, and, although costly in the first instance, they are certainly most complete. The pine and stove pits are made with maltkiln tiles, about 1 ft. square, supported on T iron bearers, an arrangement which necessitates a very small amount of bottom heat, and works most satisfactorily. The warm air flows through the small holes, so that it is finely divided in the mass of soil to be heated. The pines grown are principally smooth-leaved Cayenne, Queens, and Charlotte Rothschild. The mushroom-house is fitted up entirely with stone and iron, and the work has been executed throughout in the very best manner. The adoption of a plan by which all the largest houses open on to a roomy corridor much facilitates the labours of the gardeners, and permits the houses to be visited in an agreeable manner in any weather. This, or some similar plan, deserves general adoption.

Before long we shall give views and plan of the new residence here.

PROVINCIAL STREET ARCHITECTURE: READING.

WE publish this week an illustration of the market-place front of the new buildings of Messrs. Sutton & Sons, the Queen's seedsmen, of Reading, and append a short description which may prove of interest to our general readers.

During the last few years nearly the whole of the extensive premises belonging to this well-known firm have been either remodelled or rebuilt. The frontage to the market-place remained, however, until quite recently, as heretofore; but possession having been obtained of two houses immediately adjoining, the present handsome structure has been raised.

The various blocks of buildings extend from the market-place, in an easterly direction; then branching southward through Abbey-square, they join the new diversion of the King's-road, opened in 1869 by the Prince and Princess of Wales, and known as the "Prince of Wales-buildings."

The portion shown in our view is built above the ground level, of white Mansfield stone, the basement being constructed in Wheeler & Son's Reading pressed bricks set in cement.

The fascias are of Forest of Dean stone, with sunk letters gilded; the columns of Bristol blue stone and red Bishop's Lydeard alternated. Royal green slates are used for roof coverings, with ornamental cast-iron curb and hip plates, by Walter MacFarlane & Co., of London, and wrought-iron cresting by Margretts, of Reading. The stall-plates are of grey polished granite, sunk-lettered in gilt.

Of the three lower arches of the front, two are windows lighting the retail departments; whilst the third, somewhat more elaborate in design, forms, in connexion with corridors, the main entrance to the whole of the establishment.

The first-floor reached by a flight of Portland stone steps, is devoted entirely to the purposes of a library and recreation-room, and has lavatories attached.

On the second-floor are two large rooms, which may be used as private offices, or for other business purposes. There is a lofty well-lighted upper floor, partly in roof, which by means of a lift, can be connected with the ground-floor and basement.

The ground-floor is 15 ft. high; the first-floor 14 ft. The total height from the pavement line to flat of roof is 63 ft.

The whole of the joiner's work, including fittings, is of oak and pitch pine, slightly relieved with walnut, all French polished, and prepared from the architect's special designs.

Immediately at the rear of the market-place block of buildings, is the sample market, 78 ft. long, where single sacks, as specimens, of nearly all the more bulky garden and farm seeds, stacked in the larger stores are ranged for inspection. The space above the sample market is occupied as an "Order-room," for the execution of orders belonging to the departments of flower-seeds and flower-roots only. Beyond, covering an area where the largest amount of light can be obtained, are the various offices. These offices form two blocks of buildings on each side of an open area. They are lofty and well ventilated, and contain desk-room for about sixty clerks. Each block is two floors in height, so that that there are four floors, each 60 ft. long by 20 ft. wide. In these blocks also are the private offices of the principals.

With these offices terminates that portion of the premises running in a direct line from the Market-place eastward. Here, on the ground-floor from north to south, is one enormous packing-room, 290 ft. in length, covered by other floors, where seeds are weighed, measured, and got together ready to be transferred for packing.

One of the most remarkable of the departments is that devoted to the execution of kitchen-garden seed orders. Here is a room, 92 ft. in length, connected with five smaller rooms, all of which are lighted entirely from the roof. The wall-spaces thus obtained are fitted from floor to ceiling with numberless drawers and shelves, loaded with many thousands of packets of seeds, of various dimensions, ready for sending away.

The floor is occupied by a series of counters running the entire length, and these are full of drawers and bins from which a staff, chiefly of young men, continually weigh and measure the seeds and make them into parcels.

Further on to the south, the buildings are occupied by farm-seeds in sacks, piled in regular order one above another, an avenue being left down the centre. The dimensions of this portion are:—Length, 161 ft.; breadth, 34 ft. The basement portion of these stores is set apart for seed-potatoes, the total length being 138 ft., the width 34 ft.

Connected by a covered bridge with all the foregoing are numerous other stores, also the stabling and covered yard for the vans and carts of the establishment, as well as an engine-house, containing a small but powerful engine, by Shand & Mason.

The whole is terminated by a handsome and capacious lecture-hall, completely fitted, with open-timbered roof, stained and varnished and plastered between rafters.

On the opposite side of the road, Messrs. Sutton have built and fitted up a coffee and refreshment house, which is largely used, not only by their own men, but by many others who prefer getting their meals there to the plan of resorting to an ordinary public-house.

On an adjacent portion of the King's-road, Messrs. Sutton have erected another large store for agricultural seeds, three floors in height. The superficial area of the floor-space is 5,474 ft. At the junction also of the Great Western, South-Eastern, and South-Western Railways are some extensive barns, seed-stores, and other erections attached to their experimental farm.

The contractors for the Market-place portion of the buildings, sample-market, &c., are Messrs. Aitchison & Walker, of Portland-yard, St. John's-wood, London, who have carried out the work very satisfactorily. The carving, in which various representations of agricultural produce are introduced, is by Earp, of London. The steel revolving shutters are by Clark & Co., of London. The encaustic paving is by MacColla, of Victoria-street, London. The gas-fittings are by Hart, of Reading. The oak and walnut counter and fittings to the same are by Barnicoat, of Reading. The offices and portions adjacent are partly by Matthews and partly by Strong & Son, the remainder by Barnicoat,—all of Reading. Mr. Thomas Taylor acted as general foreman.

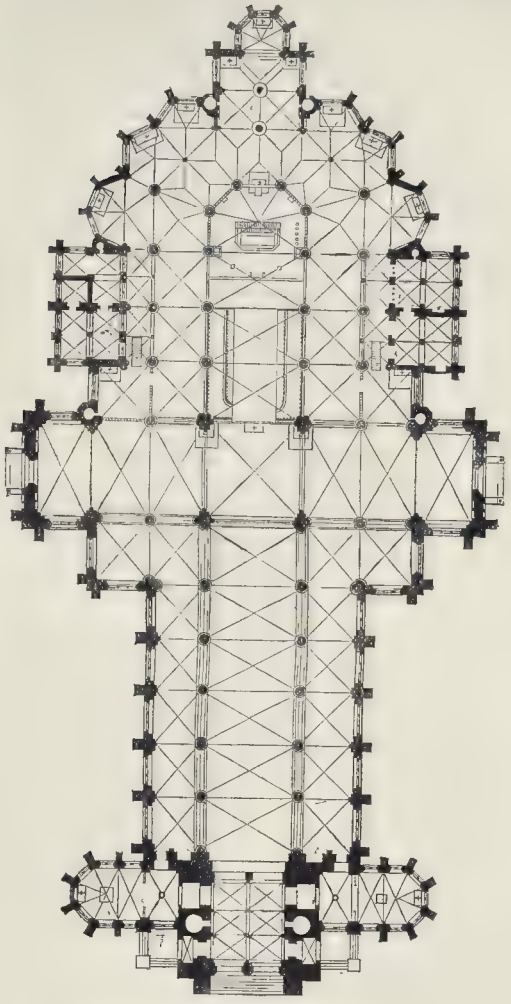
The whole has been erected from the designs and under the superintendence of Messrs. Wm. & J. T. Brown, architects, of Reading; the total cost, exclusive of land and fittings, being about 17,000*l*.



PROVINCIAL STREET ARCHITECTURE: BUSINESS PREMISES IN THE MARKET PLACE, READING, BERKS.
MESSRS. WM. & J. T. BROWN, ARCHITECTS.



THE NEW CATHEDRAL AT LINZ, ON THE DANUBE.—HERR VINCENT STATZ, ARCHITECT.



The New Cathedral at Linz, on the Danube.—Plan.

NEW CATHEDRAL AT LINZ, ON THE DANUBE.

THE new Cathedral of Linz, on the Danube, in Austria, of which we present our readers with an illustration this week, is interesting to all lovers of ecclesiology, from the fact of its being the largest Christian church now being erected in the world. When completed, it will be considerably the largest church in the Austrian dominions, and will be exceeded in size only by two cathedrals in Germany, those of Cologne and Ulm.

This noble building was commenced in the year 1860, and in the year 1864 the lady chapel and crypt were completed, and consecrated by the Bishop of Linz. Since that time the works have been steadily progressing, and it is hoped that the choir, nave, and transepts will be sufficiently advanced to admit of their being used for divine service by the year 1880. We are not accustomed to hear of churches occupying twenty years in building in the nineteenth century, but at the same time it should be taken into account that we are not in the habit of erecting churches the size of the Cathedral Church of Linz.

When it was decided to commence this edifice, a competition was announced, and the plans which were considered most appropriate being those of Herr Vincent Statz, of Cologne, he was appointed architect, and his original design is now being carried out, with very few modifications.

The materials used in the construction of this cathedral are local granite, and a fine sandstone, which is also found not far from the spot.

The church, when completed, will consist of a western tower and spire, the lower portion of the tower forming a porch 50 ft. deep. This tower will also be flanked by two other porches, leading into the western transepts. The western transepts will be terminated to the north and south by apses. To the east of these will be the great nave, of six bays, with a single aisle on either side. There will be transepts, three bays deep, with aisles both to the east and the west. These aisles, however, are a bay less in length than the transepts, so that the extreme north and extreme south bays of the transepts will be without aisles. The choir will be three bays deep, exclusive of the five-sided apse which forms its termination to the east. It will also have double aisles on either side, which will be again flanked by sacristies and chapter-house, each divided by rows of columns into two aisles. The inner aisles of the choir will be continued round the apse, and will give access to six radiating chapels and the lady chapel. The lady chapel consists of a square nave, two bays deep, with a single apsidal projection to the east.

The nave or body of the chapel is divided into two equal aisles by a spine of columns running down the centre from west to east. This chapel has three altars. The church will contain twenty altars. One of the western transepts will be screened off for a mortuary chapel, and the other for a baptistery. There will be a parochial altar at the west end of the choir, under the lantern, and one against each of the great piers of the chancel-arch. The high altar will stand on the chord of the apse, and will have a small altar for relics behind it.

The choir stalls will occupy two bays of the chancel, which will be separated from its aisles by pierced screens.

The style chosen is the Geometrical. The aisle windows will be of three lights, and those of the clearstory of four lights, except in the apse, where these will also be of three lights. The nave will be divided from the aisles by massive cylindrical columns, with octagonal bases and abaci. The triforium will be only a continuation of the lights of the clearstory windows, with cusped heads introduced, and a pierced parapet resting upon a sculptured cornice over the great arches. The whole church will be vaulted in stone.

Under the lady chapel and choir is a large crypt, vaulted in stone.

The following are the principal dimensions of this noble church:—Length, 410 ft.; width across transepts, 200 ft.; western tower, square, 65 ft. at base; nave, 40 ft. clear; height to vaulting, 96 ft.; height to external roof, 136 ft.

Some few years ago, 1867, when treating of the present condition of Ecclesiastical Architecture in Germany,* we gave a small approximate plan of the cathedral, and this for convenience' sake we now repeat.

ON THE TECHNOLOGY OF GLASS.†

Various Kinds of Glass.—Glass is separated, according to its composition or method of manufacture, into:—

I. *Glass free from Lead.*

A. Plate-glass. *a.* Window glass.
  a. Rolled glass.
  b. Crown glass.
  b. Plate-glass:—
  a. Blown plate-glass.
  b. Cast plate-glass.

B. Bottle glass.—
  a. Ordinary bottle glass.
  b. Medicine and perfumery glass.
  c. Glass for goblets, drinking-glasses, &c.
  d. Water pipes and gas tubes.
  e. Retort glass.

C. Pressed or stamped glass.

D. Water glass.

II. *Glass containing Lead (Flint-glass).*

A. Crystal glass.

B. Glass for optical purposes.

C. Enamel.

D. Strass.

Plate or Window Glass.—The glass melted in muffles or vessels is manufactured as plate-glass or as crown-glass. Plate-glass, as its name implies, is formed in large or small plates; window-glass is generally either ordinary bottle-glass or a finer glass of a whiter colour. Recently, thick has taken the place of thin glass for windows, but the colour is hereby considerably increased. That window-glass should be prepared cheaply is an essential point, consequently crude materials are employed,—crude potash and soda, wood-ash, Glauber's salt, ordinary sand, and broken glass from the warehouses, &c. Plate or window glass is generally composed of 100 parts sand, 30 to 40 parts of crude calcined soda, 30 to 40 parts of carbonate of calcium. Instead of the soda may be substituted an equivalent quantity of Glauber's salt. Benrath (1869) found in several kinds of plate-glass the following constituents:—

Silicic acid	70·71 ...	71·56 ...	73·11
Soda	13 35 ...	12·97 ...	13·00
Lime	13·58 ...	13·27 ...	13·24
Alumina and oxide of iron	1·92 ...	1·29 ...	0·83
	99·46	99 09	100·18

Plate-glass is manufactured as crown-glass or as rolled glass.

Crown-glass.—Crown-glass is the oldest kind of window-glass. It is formed in the manufacture as a disc of glass, generally of about 6 in. in radius from the periphery to the centre knot

* Vol. xxv., p. 793.

† From "A Handbook of Chemical Technology." By Rudolf Wagner, Ph.D., Professor of Chemical Technology at Wurtzburg University (already noticed in our pages). Translated and edited by William Crookes, F.R.S. Churchill, New Burlington-street.

left by the glass-blowers' pipes, technically termed the bull's-eye. The largest discs are scarcely 64 in. to 66 in., from which a square plate of 22 in. only can be cut, the bull's-eye interfering with the cutting of a larger size. In the preparation of this glass three workmen are employed: the first takes so much molten glass on the end of a pipe as will serve for a single disc, and passes pipe and glass to the second workman, the blower; he blows the glass into a large globe or ball, which, when finished, he hands to a third workman, the finisher, who opens the globe, and forms the sheet or pane. The labour is divided in detail in the following manner:—The first workman receives the warm pipe, thrusts it into the vessel of molten glass, and turns it steadily round until he has collected upon the end a knob of glass of sufficient size. The weight of this knob is generally 10 lb. to 14 lb. The first workman imparts somewhat of a spherical form by means of the marbel to the solid glass ball, which is now taken in hand by the blower, who, by turning and shifting the glass about, at the same time blowing through the tube, perfects the hollow spheroid. The glass has by this time cooled considerably, and, with the pipe, is therefore returned to the oven, the tube of the pipe being fastened in a fork or in a hook in the ceiling of the oven. As the globe of glass is gradually heated the weight of the rod causes it to flatten out, and it is removed by the finisher as a disc of nearly-molten glass. He places the tube in the cavity of the whip, and by a series of dexterous movements perfects the shape, enlarges the disc if required, or in some cases makes a larger disc by removing the partially flattened sphere from the oven, opening the bottom with a maul or iron rod, and causing the glass to take the form of a disc by means of the centrifugal force resulting from a rapid rotatory motion of the rod. Finally the discs are separated from the pipe by the help of a drop of cold water, and are next placed in an annealing oven, to the number of 150 to 200, to cool. The finished plates are out to the required size; the centres or bull's-eyes serve for the making of strass and for other purposes.

Sheet-glass, or Cylinder-glass.—Rolled or sheet glass is made by cutting a glass cylinder or roll throughout its length, and beating or rolling it out flat on a table. It is for this reason termed sheet-glass. Usually this sheet-glass is used for ground glass, and is further separated into ordinary sheet or roll glass and fine sheet-glass, the latter having larger dimensions.

The preparation of sheet-glass is one of the most difficult processes of glass-manufacture: it may be considered as consisting of two operations:—

1. The blowing of the roll, or cylinder; and
2. The flattening.

After the molten glass has cleared, and attained the barely fluid consistence before mentioned, the workman inserts his pipe into the mass, and by turning manages to accumulate on it a globe of glass, during the time blowing into the tube to keep it clear of the molten glass. The glass now takes the form *a*, Fig. 135. By continued manipulation in the marbel, and by blowing, the enlarged forms, *b* and *c*, and finally *d*, are obtained. The glass has by this time cooled, and is taken to the oven to be reheated. When this is effected, the workman, by means of his tools, by a continued rotation of glass, and by blowing, brings the globe to the shape represented by *f*. He then opens out the bottom of this form with a maul-stick, and obtains the cylinder *e*, which is separated from the pipe by dropping a little cold water on the neck, *o*, joining the two. The removal of this neck is next effected by means of a red-hot iron rod, which also serves to open the cylinder throughout its length.

After a great number of these cylinders have been blown, the operation being generally continued for three days, the opening into plates is commenced. The cylinders are placed in an oven termed the plate-oven, consisting of two chambers, one the heating-room, and the other the tempering or annealing room. In the passage the heated glass rolls or cylinders are suspended upon two iron rods, where they are maintained at a certain heat. The most important part of the plate-oven is the platten, made of a well-rammed fire-clay. A similar plate is placed in the annealing-room. When sufficiently heated, the cylinders are brought to the flattening-table, where they are speedily opened out. A workman receives the flat panes of glass, and leans them against iron bars, in the annealing-room, whence, having gradually cooled during four to five days, they are removed to be sorted and packed.

Plate-glass.—Plate-glass is either blown or cast. The manufacture is very similar to that of table-glass just described. The materials are in great part the same as those employed in the manufacture of fine white glass. This branch of glass-manufacture is most strikingly illustrative of the rapid growth of the industry during the last ten or twenty years. Formerly plate-glass was esteemed an article of luxury, whereas now it is that most generally used for workshop windows, carriages, show-rooms, &c., and for windows of private residences. It far surpasses in transparency and elegance the small panes formerly used. By the glass jury of the International Exhibition of Paris of 1867, it was surmised that before ten years had elapsed plate-glass would be that most generally in the market. The blowing of plate-glass is effected with the same tools as the blowing of table-glass; and the cylinder is obtained in a similar manner. The lump of glass taken by the blower on his pipe from the melting-vessel weighs about 45 lb., from which a plate of 1·5 mètre in length and 1 to 1·1 mètre breadth by 1 to 1·1 centimètre thickness is obtained. But the chief method of making plate-glass is by casting. Cast plate-glass is always made from pure materials, and may be considered as a soda-calcium glass free from lead. Potash-calcium glass is far more expensive, being almost a colourless glass. In England, Belgium, and Germany the raw materials used in manufacturing cast plate-glass are sand, limestone, and soda, or Glauber's salts.

Benrath (1869) found in English (*a*) and in German (*β*) plate-glass:—

	a	*β*
Silica	76·300 ..	78·750
Soda ...	16·550 ..	13·000
Lime . ..	6·500 ..	6·500
Alumina and oxide of iron	0·650	1·750
	100·000	100·000
Sp. gr. .	2·148	2·456

The following description of casting the plates is mainly founded upon the method pursued at St Gobin and Ravenhead. The manufacture is included in,—

1. The melting and clearing,
2. The casting and cooling,
3. The polishing: including
   α. The rough-polishing.
   β. The fine-polishing.
   γ. Finishing.

* * * *

Water-glass.—By water-glass is understood a soluble alkaline silicate. Its preparation is effected by melting sand with much alkali, the result being a fluid substance, first observed by Von Helmont, in 1640.

It was made by Glauber in 1648 from potash and silica, and by him termed fluid silica. Von Fuchs, in 1825, obtained what is now known as water-glass by treating silicic acid with an alkali, the result being soluble in water, but not affected by atmospheric changes.

The various kinds of water-glass are known as potash water-glass, soda water-glass, double water-glass, and fixing water-glass.

Potash water-glass is obtained by the melting together of pulverised quartz or purified quartz sand 45 parts, potash 30 parts, powdered wood charcoal 3 parts, the molten mass being dissolved by means of boiling in water. The solution contains much sulphuret of potassium, which is removed by boiling with oxide of copper. . . . .

Water-glass is an important product in industry. It is used to render wood, linen, and paper non-inflammable. The water-glass of 33° is first mixed with double its amount by weight of rain-water, and is then treated with some fire-proof colouring matter, as clay, chalk, fluor-spar, felspar, &c. The material to be rendered uninflammable is painted with the solution, and again with another coat, after the first has remained twenty-four hours to dry. Wood is thus preserved from being worm-eaten, from encrustation of fungi, &c. Another industrial application of water-glass is as a cement. In this it is equal to lime, and, indeed, is known as "mineral lime." Chalk mixed with water-glass forms a very compact mass, drying as hard as marble. No chemical change is hereby effected; there is no conversion to silicate of calcium, or carbonate of potash; the hardening is entirely the result of adhesion. Phosphate of calcium treated with water-glass acts similarly. Zinc-white and magnesia lose none of their useful properties when mixed with water-glass. Another important application of water-glass is in the painting of stone and concrete walls, and in the preparation of artificial stone. The latter, first made by Ransome, is daily meeting with more extended application in England, India, and America. It is prepared by mixing sand with silicate of soda to a plastic mass, which is pressed into the required shape, and then placed in a solution of chloride of calcium. By this means silicate of calcium is formed, and cements the grains of sand together, while the chloride of sodium is removed by repeated washings. As cement for stone, glass, and porcelain, water-glass is especially useful. It is also employed in the preparation of xyloplastic casts, made of wood rendered pulpy by treatment with hydrochloric acid, and afterwards impregnated with water-glass.

Stereochromy.—An interesting and important application of water-glass is in the new art of mural and monumental painting, termed by Von Fuchs, *Stereochromy* (*στερεος, solid*, and *χρωμα, colour*). There is first to be considered the mortar or cement ground upon which the painting is to be executed. This ground has to receive an under and an over ground. It is essential, of course that the fundamental groundwork should be of a stone or cement possessing every requisite for durability. The next, or under-ground, is made with lime-mortar, and is allowed to remain for some time to harden. When well dried the water-glass solution is applied, and allowed to soak well into the interstices of the mortar. After the under-ground has been thus prepared, the over-ground, or that to receive the painting, is laid on. This consists of similar constituents to the under-ground, with the exception that a good sharp sand is used, and the mixture treated with a thin ley of carbonate of lime. This over-ground of fine cement being nicely levelled, and having dried, it is thoroughly impregnated with water-glass. When this is dry, the painting is executed in water-colours. Nothing further is necessary than to fix these colours, which is effected by a treatment with a fixing water-glass. The colours employed are:—zinc-white, chrome-green, chrome-oxide, cobalt-green, chrome-red (basic chromate of lead), zinc-yellow, oxide of iron, sulphuret of cadmium, ultra-marine, ochre, &c. Vermilion is not employed, as it changes colour in fixing, turning to a brown. Cobalt-ultramarine, on the contrary, brightens on the application of the fixing solution, and is, therefore, a very effective colour. As a decorative art, stereochromy will doubtless attain great importance, the paintings being unaffected by rain, smoke, or change of temperature.

* * * *

Strass.—The imitation of precious stones is an interesting feature of glass-manufacture, and in Egypt and Greece it is an art that has attained to great perfection. All precious stones, with the solitary exception of the opal, can be imitated artificially. The chief constituent of these artificial gems is *strass*, or as it is termed by Fontanier, Mayence base; and in France artificial gems are mostly known as *Pierres de Strass*. This base, then, is colourless, and may be considered as a boro-silicate of the alkalies containing oxide of lead, this being in larger proportion than in flint-glass.

Donault-Wieland found colourless strass, by analysis, to consist of:—

Silica	38·1
Alumina	1·0
Oxide of lead ..	53·0
Potash	7·9
Borax } Arsenious acid } ...	traces
	100·0

This analysis gives the formula:—

$$(3K_2O,6Si,O_2)+3(3PbO,6SiO_2)$$

The various gems are imitated by the addition of colouring oxides, the whole of the materials being ground to a fine powder, intimately mixed, and melted at a strong heat. The imitation of the *topaz* is obtained by taking,—strass, 1,000; antimony, 40; and Cassius's purple, 1 part. The topaz can also be imitated with,—strass, 1,000; oxide of iron, 1 part. The imitation *ruby* is obtained with 1 part of the topaz paste, and 8 parts of strass, the whole being melted together for thirty hours. A ruby of less beauty is obtained with,—strass, 1,000; peroxide of manganese, 5 parts. A good *emerald* can be prepared from,—strass, 1,000; oxide of copper, 8; oxide of chromium, 0·2 parts. The *sapphire* is obtained from,—strass, 1,000; pure

oxide of cobalt, 15 parts. The *amethyst* from,—strass, 1,000; peroxide of manganese, 8; oxide of cobalt, 5; Cassius's purple, 0·2. The *beryl* or *aqua marina* is imitated by,—strass, 1,000; glass of antimony, 7; oxide of cobalt, 0·4. The *carbuncle* by,—strass, 1,000; glass of antimony, 500; purple of Cassius, 4; peroxide of manganese, 4 parts. Much attention has not been paid to the mode in which the colouring is effected by the metallic oxides; nor have experiments been tried with any definite result as to the application of tungstic acid, molybdic acid, titanic acid, chronic acid, and protoxide of chromium, &c.

Coloured Glass and Glass-staining.—Coloured glass may be considered in two classes—that coloured as a whole, and that only partially coloured. The latter is prepared with such metallic oxides as will impart to the glass very intense colour; for instance, protoxide of copper, protoxide of cobalt, oxide of gold, and oxide of manganese. This kind of glass is termed superfine, and is prepared in the following manner:—Two melting vessels are placed in the oven; one contains the lead glass, the other the coloured glass. We will take as an example glass coloured red with protoxide of copper, which if further oxidised imparts a green colour to the glass. The glass-blower dips his pipe first into the red glass, and collects a sufficient quantity to blow; then he dips this into the white glass, and proceeds to form a cylinder or roll, as in the making of table glass. Superfine glass is known as "outside" and "double," or "double layer." In the first case the workman takes a lump of white glass upon his pipe and covers it with the coloured glass; or, in the second case, he takes up only a small quantity of white glass, then sufficient of the coloured glass, and again more white glass. Red glass may be obtained with either Cassius's purple, protoxide of copper, or oxide of iron as the colouring ingredient. Cassius's purple is used chiefly for ruby-red glass. It was long thought that ruby-coloured glass could not be obtained with any other preparation than Cassius's purple; but twenty-five years ago Fuss showed that chloride of gold was effectual. If glass containing salts of gold or protoxide of copper is cooled suddenly, the colour disappears; then if again gently warmed, not quite to softness, the colour suddenly reappears in full splendour. This phenomenon occurs equally in atmospheres of oxygen, hydrogen, and carbonic acid. In the preparation of protoxide of copper glass, lead-glass is taken as a basis, to which 3 per cent. of the protoxide is proportioned. The drawback to the employment of the protoxide is the readiness with which it becomes oxide, thus imparting a green colour to the glass. To prevent this change iron filings, rust, or tartar, is added, or the glass is stirred with green wood. Copper-glass, as has just been said, is colourless on cooling, regaining its colour during the process of annealing. Oxide of iron, known commercially as blood-stone, ochre, or red chalk, is also used to impart a red colour. Yellow and topaz-yellow are obtained by means of antimoniate of potash or glass of antimony, chloride of silver, borate-of oxide of silver, and by sulphuret of silver. Oxide of uranium imparts a green-yellow. Blue is obtained from oxide of cobalt, more seldom by means of oxide of copper. Green results from the addition of chrome-oxide, oxide of copper, and protoxide of iron. Violet is obtained from oxide of manganese (braunite) and saltpetre; black, from a mixture of protoxide of iron, oxide of copper, braunite, and protoxide of cobalt. A beautiful black results from sesquioxide of iridium.

Glass Painting.—The delineation of figures and Scriptural events in coloured glass dates from a very remote period. At first the work was merely mosaic, pieces of coloured glass being inserted in leaden framework. Glass painting was known in Germany in the Middle Ages, and soon extended throughout Europe. In the thirteenth century, when Gothic architecture became prevalent, glass painting also became more general, as until then the heavy, round-arched windows were too small to admit of ornament. But it was not until the fifteenth century that the heavy outlined figures were discarded for the more mingled colours of heraldic device, as seen in the churches of Sebaldus and Lorenz, of Nuremburg, in the productions of the celebrated Hirschvogel family. This style lasted till the sixteenth century, when the glass-maker tried the effects of pigments upon glass. Since that time the art has gradually improved, the improvement at first being most manifest in France and the Netherlands.

The nature of glass painting or staining is in principle the following:—When coloured glass, rendered easily fusible by the metallic oxide it contains, is finely pulverised, and laid upon a plain glass surface and heated, it forms a skin, or "flash," as it is termed, this skin or layer of glass being said to be "flashed on." It is evident that very brilliant effects may thus be attained. The near surface of the glass receives the strong shades and colours, the other or distant surface the lighter tints. White was not employed in the older glass-paintings, but is now used in the flesh tints, pure white effects, &c. Oxide of tin and antimoniate of potash yield a good white. For yellow, Naples-yellow, or antimony-yellow, or a mixture of the oxides of iron, tin, and antimony, or of antimonic acid and oxide of iron, of sulphuret of silver and sulphuret of antimony, or chloride of silver is used; for red, oxide of iron, purple of Cassius, and a mixture of oxide of gold, oxide of tin, and chloride of silver; for brown, oxide of manganese, yellow ochre, umber, and chromate of iron; for black, oxide of iridium, oxide of platinum, oxide of cobalt, and oxide of manganese; for blue, oxide of cobalt, or potassium-cobalt nitrate; for green, the oxides of chromium and copper. Two kinds of colour are distinguished,—the hard and the soft. The soft are called varnish colours, are not very easily fluid, forming a kind of glaze upon the glass. These colours are placed upon the outer surface. The hard or decided tints are semi-opaque, and are placed upon the inner surface of the glass. The binding fluid or vehicle is a mixture of silica, minium, and borax, with which the colour, being previously ground to a fine powder, is intimately mixed. This mixture is painted on the glass with a pencil, and the glass plate is afterwards fired in a muffle. Recently volatile oils have been employed as a vehicle, viz., oil of turpentine, lavender bergamot, and cloves. The burning-in or firing, the colours was formerly effected by placing the glass tablet with dried and pulverised lime in an iron pan raised to a red heat. But recently the muffle-oven has been employed. The bottom of the muffle is covered to a depth of 1 in. with dry powdered lime, upon which the plate of glass is laid, and again a layer of lime. The oven is then raised equally to a dark red heat. After six to seven hours the fire is gradually withdrawn, and the oven allowed to cool. The glass is taken out, cleansed with warm water, and dried.

Enamel.—Bone Glass.—Alabaster Glass.—By enamel is understood, in glass-manufacture, a coloured or colourless glass mass, rendered opaque by the addition of oxide of tin. It formerly was prepared in the following manner:—An alloy of 15 to 18 parts tin and 100 parts lead was oxidised by heat in a stream of air, the oxide pulverised and washed. The mixture of the oxides was then fritted with the glass. An enamel-like appearance is imparted to glass by arsenious acid, chloride of silver, phosphate of calcium, cryolite, fluor-spar, aluminate of soda, and precipitated sulphate of barium. Bone-glass, so called, is a milk-white, semi-opaque glass, containing phosphate of calcium in the shape of white bone-ash, sombrerite, or phosphorite. It is employed for lamp-globes and shades, thermometer-scales, &c. It is made by adding to white glass about 10 to 20 per cent. of white bone-ash, or a corresponding quantity of mineral phosphate. After melting the glass is generally clear and transparent, becoming milk-white and opaque during the process of blowing. The colour is finally developed during annealing. A similar glass to the preceding is alabaster glass, but the latter is more opaque. It is also termed opal glass, rice glass, or rice-stone glass, and Réaumur's porcelain. The materials are the same as in the preparation of crystal glass, of which it may be considered the scum or under-layer of impurities, though it is really imperfectly-prepared crystal glass.

Cryolite Glass.—Cryolite glass, or hot-cast porcelain, has recently been manufactured in Pittsburg. It is a milk-white glass, obtained by melting together

Silica	...	...	67·19 per cent.
Cryolite	...	...	23·84 ,, ,,
Oxide of zinc	...	...	8·97 ,, ,,

Fluor-spar or aluminate of sodium may be substituted for cryolite. Benrath found (1869) in such a milk glass—

Silica	...	...	70·01 per cent.
Alumina	...	...	10·78 ,, ,,
Soda	...	...	19·21 ,, ,,
			100·00

Aventurin Glass.—Aventurin or avanturin glass was formerly made only in the Island of Murano, near Venice, but is now prepared throughout Germany, Italy, Austria, and France. It is a brown glass mass in which crystalline spangles of metallic copper according to Wöhler (of protoxide of copper according to Von Pettenkofer) appear dispersed. Fremy and Clemandot have produced a glass similar to aventurin glass, and which consisted of 300 parts glass, 40 parts protoxide of copper, and 80 parts copper-scale. The Bavarian and Bohemian glass houses produce an aventurin glass rivalling the original. Von Pettenkofer has prepared aventurin glass direct from hæmatinon by mixing sufficient iron filings with the molten mass to reduce about half the copper contained. Pettenkofer surmises, and with good reason, that aventurin glass is a mixture of green protoxide of copper glass with red crystals of silicate of protoxide of copper, these complementary colours giving the brown tint. This glass is also well imitated by melting a mixture of equal parts of the protoxides of iron and copper with a glass mass. The protoxide of copper appears after a long annealing as a separate, crystalline, red combination, while the protoxide of iron is lost in the green colour it imparts to the glass. Pelouze found that by freely adding chromate of potash to the glass materials spangles of oxide of chromium were separated. He termed this glass chrome-aventurin; it has been employed by A. Wächter in the glazing of porcelain.

Hyalography.—Hyalography, or the art of etching on glass, is due to one Heinrich Schwankhardt or Schwandard, an artist living at Nuremburg in 1670. It consists of the following operations:—Powdered fluor-spar is treated with concentrated sulphuric acid in a leaden vessel; gentle heat is applied, the vessel being covered with the glass plate to be etched coated with wax, through which the design is traced with a steel etching-needle. Vapours of hydrofluoric acid (FlH) are evolved, which combine with the silica of the glass, forming fluoride of silicon, $SiFl_2$, and volatilising. The plate is afterwards washed with warm oil of turpentine. The first practical application is due to Hann, of Warsaw, in 1829. More recently, Böttger and Brömeis, with Auer, of Vienna, have improved the processes. The etching-ground used for engraving on metallic surfaces, would not in this case give favourable results. Pül recommends a molten mixture of 1 part asphalt and 1 part colophonium, with so much oil of turpentine as will bring the mass to the consistency of a syrup. Etched glass plates have been used by Böttger and Brömeis to print from instead of steel and copper. In the press the glass plate is backed by a cast-iron plate. The process, however, has not been practically successful: it is better suited to the production of bank-notes, &c., than engravings, the resulting etchings being hard in tone. But for purposes of decoration, etched glass is largely used. By the method of Tessié du Motay and Maréchal of Metz, a bath is made of 250 grms. of hydrofluoride or fluorid of potassium, 1 litre of water, and 250 grms. of ordinary hydrochloric acid. Kessler employs a solution of fluoride of ammonium.

The new and very curious sand process is not noticed in the present edition of Professor Wagner's work, so far as we can see; no doubt it will appear in a future edition.

THE TRADE-UNION CONGRESS AT LEEDS.

THE fifth annual Congress of Trade Unions continued throughout last week, and is now at an end. One hundred and thirty delegates were present from all parts of England and from Scotland. The report of the Parliamentary Committee was read by Mr. Howell, who dwelt on the peculiar significance both of the labour movements and of the labour legislation of the year. The report was a document of great length, which would fill about six ordinary newspaper columns. It commences thus:—

"The year that has just closed marks an era in this trio of trade-unionism. Movements which had been retarded for years have come to the front, and many concessions had been obtained which had appeared to many to be almost hopeless. Foremost among these must be named the agitation that has taken place among the agricultural labourers for better pay and more definite hours. We rejoice to see this vigorous movement, and hold out to them, and wish them, God speed. The nine-hours movement, which originated with the building trade in London in 1859, had sunk into lethargy until the engineers of Sunderland and Newcastle gave a fresh life, and secured their great victory in the autumn of last year. This was soon followed by an active agitation on the part of the

engineers all over the country, and January, 1872, opened with a general concession of the nine hours per day in all the leading engineering establishments of the kingdom. The building trades of London followed with a similar demand, and, after a severe struggle, won. The nine-hours day now bids fair to become general all over the country. The bakers, whose long hours and short pay have long been the theme of philanthropic sentiment, have eagerly and earnestly taken in hand their own work, the result being that in many places they have obtained the concession of a better defined day, together with a substantial rise in wages. Your committee have seen with much pleasure the great growth of trade-unionism during the year. The increase of members has been unprecedented."

The meetings were orderly and moderate in tone. The subjects discussed included the limitation of the number of apprentices to be employed, the tendency of piecework, the competition caused by prison labour, the application of the principle of arbitration to international disputes, and the propriety of returning representative working-men to Parliament.

The following were among the resolutions that were passed :—

That as the principle of arbitration and its application to the settlement of disputes between employer and employed has been economically and morally beneficial to both, this Congress believes that the time has arrived when the principles should be extended to the settlement of disputes between nations, and as much as the law and its equitable administration is the first element of peace in civilised society, and as the absence of international law and international tribunals leads to misunderstanding, conflicts, and war between nations, paralysing industry, entailing heavy financial burdens on the people, increasing the cost of their food, and generally retarding the progress of their civilisation, it is resolved to memorialise the House of Commons to take the necessary steps towards forming a code of international law, and the establishing of an international tribunal; and that the chair sign such memorial on behalf of the Congress.

That it be an instruction to the Parliamentary Committee to be appointed to prepare a Bill founded upon the 1st, 2nd, and 3rd points or suggestions contained in Mr. Crompton's paper, to be submitted to Parliament with the following additions :—"First, to provide for the repeal of all unjust and oppressive penal legislation relating to trade-unions; and to clearly define and consolidate the law into one Act relating to conspiracy, coercion, and intimidation. Secondly, that where a committal takes place before the stipendiary magistrates for any alleged breach of the law arising out of trade disputes between employers and employed, the jury selected to try all such cases shall be taken from the electoral register, either by ballot, or as their names stand in rotation on the said register."

That in the opinion of this congress the system of piecework, as practised in some of the most influential trades of the United Kingdom, is detrimental to the best interests of trade-unions, tends to lower wages, defeats the objects of the short-time movement by giving into the hands of the employers a weapon to use against workmen, and for defrauding the public generally; and further, that this congress recommends to all delegates present to use their influence with their respective societies to do all they can to abolish such a pernicious system.

Mr. Hickes, Leeds, read a paper on the subject of the limitation of apprentices, having special reference to the letter-press printers of Leeds. The writer contended that a journeyman had a right to protect himself, and decline to work with any number of boys a master might think fit to employ. In a vast number of cases—he believed in much the larger proportion—the masters did not train, instruct, and fit the boys to become competent journeymen. That was cast upon the journeymen, and the latter had a fair right to say with how many boys as apprentices they would work.

No resolution was passed upon the subject.

Mr. Cremer, London, moved the following resolution :—

"That this congress are of opinion that the present high prices of coal and iron are due to a combination of coal-owners, and iron-masters, and capitalists, and that such combination is a conspiracy of a graver and much more serious character than the so called gas-stokers' conspiracy, and instructs the Parliamentary committee to institute such proceedings in a court of law against either coal-owners or iron-masters, with a view of ascertaining whether the laws of combination and conspiracy are so framed as to apply to all who combine and conspire, or whether they have been enacted especially to crush combination on the part of working men."

The Congress, however, declined to vote upon this resolution, or rather both it and an amendment on it were rejected.

FATAL BRIDGE ACCIDENT WITH A TRACTION ENGINE AT WOKING.

AN accident, which has proved fatal to three unfortunate men at Woking, keeps the adjacent locality in a state of excitement. The nature of it will appear from the inquest proceedings before Mr. Hull, the coroner for the district, on the bodies of George Reed and William Bird, engine-driver and stoker of the traction engine, who were killed by the catastrophe.

Mr. Miskin, the owner of the engine, was the first witness called. He deposed that the engine was dragging a thrashing-machine to Paper Farm, and it had to cross the bridge after going down Woking-hill. The engine had repeatedly crossed the bridge before, and it weighed about 9 tons, while the machine weighed 3 tons more. The engine was going at the rate of three miles an hour. He gave orders to his men not to venture over unsafe bridges, but as no notice was posted up at this bridge to say it was unsafe he took it for granted it was all right. Some time ago, not thinking the bridge safe, he applied to Mr. Drewitt, and asked him to strengthen it. Mr. Drewitt declined, but gave him some timber, and he strengthened the bridge himself. The old piles were worm-eaten, and he put some new ones in.

In answer to Mr. Smallpiece, who appeared for the Earl of Onslow, the witness said he commenced business with the engine four years and a half ago, and he strengthened the bridge four years ago. He had no means of testing the bridge, but he did his best to avoid all risk of accident. He applied to Mr. Drewitt to strengthen the bridge, but he refused, and said the bridge was good enough for their purposes; but he gave him some timber to strengthen the bridge. It was used for that purpose. The first time the engine went over the bridge he steered it himself. The men with the engine did not carry anything to strengthen the bridges they went over; but in the case of Cart Bridge it was strengthened every time the engine went over it, and the timbers used were kept at a public-house near. George Reed, the driver, had absolute charge of the engine. The same engine and the same driver had frequently gone over the bridge before. No notice of the unsafe condition of the bridge was posted up, and he had never been warned against it. The inquest was adjourned.

A SONG OF HEALTH.

CRIME may crouch with a skeleton-key,
But Plague need unlock no door,
He comes all hours of the night and day
And visits both rich and poor.
The veriest hind, the wealthiest lord,
Will wither beneath his breath;
There's honour in falling by the sword,
But plague brings disgraceful death.

Want and sorrow may visit us all,
And find us free of all blame;
But when by our own neglect we fall,
Then ours are the sin and shame.
Men may talk of the chastening rod,
Yet plague should strike none down;
The laws of health are the laws of God,
They can save a man or a town.

Oh! Statesmen of Britain, rouse ye up,
The way and the will be thine;
The people drink of the poison'd cup,
As if it were blood-red wine.
Think of the millions of human souls
In the lap of want and wealth,
O'er whom the tide of contagion rolls,
And strike a blow for Health!

DECORATION OF BRUNSWICK CHAPEL, BERKELEY-ST., PORTMAN-SQUARE.

THIS chapel, which some few months ago was re-constructed under the direction of Messrs. Hesketh & T. H. Watson, with the exception of internal colouring, has,—under the direction of the architect to the Portman Estate, Mr. F. W. Hunt,—lately been completed.

The walls are finished in a warm stone-grey with a dado seat high in Indian red, finished with lines and running stencil ornament in blue and red, which are also continued round the windows.

The wall-space over the Communion-table is formed into a reredos, in colours and gold, as follows :—

The surface is divided into five panels—a square one in the centre, and two arched panels on each side of the same, the outer one on the right being occupied by the "Lord's Prayer," the outer one on the left by the "Belief"; the inner arched panels have the "Ten Commandments"; the ground of the panels is in a deep blue, the text being in gold. Each panel is separated by a border in stone vellum, outlined in deep red. The spandrels formed by the circular heads are in olive green, and filled with a suitable scroll ornament upon a diapered ground. The centre, or square panel, has at each side a pilaster, upon which are inlaid panels: these are in two hues of Indian red, the panels being filled with a diaper of self hue. From under the panel springs a Greek cross, the ends of which show each way in gold, with diaper pattern upon them, upon a dark silver grey ground; this ground is enclosed by circular lines, and an ornamental border in deep brown and gold.

The church was not closed during the progress of the works, which were executed within a month. The designs were made and the work carried out by Messrs. W. Phillips & Son, Baker-street, Portman-square.

ATHENÆUM, CAMDEN-ROAD.

THIS building was opened on the 11th inst. by the Lord Mayor, president of the institution. The second portion now completed comprises,—on the ground-floor, a reading-room, 40 ft. by 25 ft., and 21 ft. high in clear, and two offices or libraries for books. On the mezzanine floor, retiring-rooms, and on the first-floor a public room, 40 ft. by 25 ft., and 14 ft. high in clear; and four smaller rooms. The basement, which extends throughout, is 9 ft. high in clear, and in it are the keeper's rooms, heating-chamber, and coal-cellar. The staircase to the first floor is 4 ft. 6 in. wide, and that to the basement 4 ft. wide. The exterior of the building is very plain, owing to al the decorative features originally intended having been omitted, to reduce the cost. On the angle of the building is an illuminated clock. The contract for this portion of the building (not including the clock) was entered into with Messrs. Gregory & Knight, for 2,345*l.*, subject to an allowance in respect of the increased rate of wages. The architect is Mr. Frederick Meeson.

THE ENGLISH SCHOOL OF SCULPTURE.

SIR,—In your recent critique of Professor Lübke's "History of Sculpture," you gave a well-merited and much-needed vindication of modern English sculpture. Of the Gothic sculpture of the Middle Ages, that of England certainly shared in the excellence and completeness, if not superiority, of its architecture, as compared with that of Continental Europe, whether as an integral and decorative part of the architecture, or in tombs, the effigies upon many of which still bear abundant witness to the technical excellence of the art, and to full power in purity of feeling and appropriateness of expression. But it is in regard to our modern and existing sculpture that it seems to be taken for granted that we have very little to be proud of, and which it has long been a fashion with would-be critics to decry or speak of with a sort of pitying contempt, unless a purpose had to be served in exalting the name of some present favourite, whose work would otherwise have remained in congenial obscurity. There has been too much of this sort of thing, and the proper estimate of English sculpture has doubtlessly been most injuriously affected thereby, both at home and abroad. The fact is, that the modern English school has languished for lack of encouragement for the higher works of genius. The only two conditions under which the Fine Arts can really flourish have been lamentably wanting in the modern period: these are, when art forms part of the life of a nation, as in ancient Greece, supply and demand going hand in hand under the influence of keen, enlightened interest and criticism, making art a national pride; and (2) when art has its cause and encouragement in the feeling for art possessed by the cultured few who have the power to bestow upon it an enlightened patronage. This was the case mostly among the ecclesiastics and nobles of the Middle Ages, though the nation gained largely in all time through the same.

But modern art in England has existed chiefly under the condition of the artist coming into the market with his wares, as at Exhibitions, &c., and thus becoming necessarily subject to ignorant popular approval or indifference, and the possibly misdirected patronage of the rich, of Government, corporations, &c. Under these conditions, the surprise is that so many works of the highest excellence have been produced, too often, alas! uncommissioned; but proving that in native capacity the English are in nowise behind their neighbours, past or present, in artistic gifts; and while so little opportunity or encouragement for their display has existed, perhaps no other *one* nation could show—say, from the time of Flaxman,—works of greater

interest and merit than those which have appeared among the English school, if not altogether in grandeur of composition and consummate anatomy, yet in an unsurpassed purity of feeling, loveliness of expression, and genuine originality. A long list could be made of such works, which, had they been dug up from the soil of Greece or Rome, would have elicited raptures, and won all the praises of critics and connoisseurs, now either denied to real genius, or bestowed on its opposite. Such works as Bailey's "Eve," McDowell's "Eve," Foley's "Mother" and "Ino and Bacchus," Bell's "Dorothea," Munroe's Child sculpture, with countless other instances at once rush to the mind. Give to English art, in whatever department, a true, generous development in its culture, guidance, and patronage, and we have no reason to think that we are at all behind in artistic faculty, but the very reverse. It is, however, true that save in the native love for and encouragement of landscape art, England has been peculiarly unfortunate; and the greatest genius in historical and ideal art, whether painting or sculpture, as also in architecture, has been wasted among us under the chilling influence above noted.

J. H. B.

SCHOOL BOARDS.

London.—The works committee invited tenders from builders for the erection of a school to provide accommodation for 580 children, on the site in Cook's-ground, Chelsea. The tenders appeared in our list of the 18th inst. The committee recommended the acceptance of the lowest tender, that of Mr. W. Wigmore, amounting to 5,100*l.* The committee also invited tenders for the erection of a school to provide accommodation for 1,186 children, on the site in Maidstone-street, Haggerton. These tenders also appeared in our list of last week. The committee recommended the acceptance of the lowest tender, that of Messrs. W. H. & J. Mansbridge, amounting to 7,193*l.* Tenders have also been invited from builders for the erection of a school to provide accommodation for 720 children, on the site in Russell and Riley streets, Southwark. The amounts were as follow:—A. Sheffield, 6,236*l.*; Benjamin Wells, 6,200*l.*; Joseph Cook, 5,797*l.*; Manley & Rogers, 5,767*l.*; Scrivener & White, 5,764*l.*; Marsland & Sons, 5,740*l.*; W. Shepherd, 5,675*l.*; Wicks, Bangs, & Co., 5,595*l.*; S. J. Jerrard, 5,586*l.*; Cooke & Green, 5,575*l.*; Dove, Brothers, 5,475*l.*; J. & F. Coleman, 5,445*l.*; W. Higgs, 5,405*l.*; W. Howard, 5,280*l.* The committee recommended the acceptance of the lowest tender, that of Mr. W. Howard, amounting to 5,280*l.* The recommendations were agreed to; as also the tender of Mr. J. Spink, of Grove-road, Clapham Junction, amounting to 5,370*l.*, for the erection of a school to provide accommodation for 575 children, on the site of Bolingbroke-road, Battersea; and also the tender of Mr. G. Stephenson, of Beaufort-street, Chelsea, amounting to 5,901*l.*, for the building of a school to accommodate 824 children, on the site in Winstanley-road, Lambeth.

Huddersfield.—A letter was read from the Education Department agreeing to the erection of a school in Almondbury for 412 children. Tenders were sent in for the erection of the Lindley Oakes School, and the following were decided upon:—Masons, Dyson, Bros., Lindley; joiner, James Christie, Huddersfield; ironmonger, James Brook; slaters, Pycock & Sons, Leeds; plumbers, J. H. Taylor & Co., Huddersfield; plasterers, Longbottom & Son; painter, W. T. Earnshaw, Lindley; ventilation, Lawson & Hainsworth; clock and bell, Mr. J. W. Bell, at a total cost of 7,385*l.* 14s.

Stoke-upon-Trent.—Mr. Grose brought forward a series of motions relating to new schools at Kingscroft and Stoke. At Kingscroft Mr. Grose proposed to build a school in two departments for 200 children, as near as possible to the present schoolroom. The second school, Mr. Grose suggested, should be built in the centre of the town. Mr. Grose would build a school of three departments, viz., 180 boys, 180 girls, and 200 infants. Mr. Bishop hoped the Board would hesitate before committing themselves to a serious expense without ample proof that such schoolrooms were absolutely necessary. Considerable room was still to be found in the rector's schools in Stoke. A long conversation followed, but eventually Mr. Grose withdrew his motion, and a committee was appointed to draw up a report on the subject.

Carlisle.—Mr. Wrigley renewed the motion which he had made at the last meeting, that Mr. Birkett be appointed architect of the new Board schools. He moved his appointment on the understanding that he allow the plans to undergo such modifications as shall meet the wishes of the Board. Mr. Hannah seconded the motion, but he was not very well satisfied with any of the plans. His opinion as a practical teacher was that the schools would be all too narrow. The Government had commenced with 16 ft. as the width of their schools, then they got to 18 ft., and though that was still their standard, he believed they were ready to accept 20 ft. Mr. Birkett's would be 20 ft., but they ought not to be less than 25 ft. This opinion was borne out by other School Boards. The Halifax Board had adopted plans of a school 25 ft. wide; the Government considered the width too great, and refused to sanction them, and the Board sent the plans back, asking their lordships to reconsider the decision, and there they were at present. All the plans were L shaped, too, and he had heard that that was inconvenient. In the infant school he could not see the use of three class-rooms, and if the main room was enlarged from 26 ft. to 28 ft., and two of the class-rooms done away with, it would do. The lighting and many other things would have to be altered. Canon Prescott objected to the plans mainly because the houses and water-closets were away from the schools altogether, and that of the infants further than any of the others. Mr. Wrigley pointed out that there was a covered way to the infants' closets. A long discussion ensued, and at length the motion was put and agreed to.

THE CHAIR OF FINE ART AT CAMBRIDGE.

On the supposition that Sir Digby Wyatt will not seek to retain the Slade Professorship at Cambridge, Mr. W. Cave Thomas has offered himself, amongst others, for the appointment. Mr. Thomas says in his address,—

"It is very commonly but erroneously supposed, that the principles of Art must be evolved by some different method than the laws of physical phenomena; that they are in fact inscrutable, shadowy, and free from any hard and fast rule. This is most unfortunate for Art progress. The true principles of Art may be obtained by a strictly inductive method, by careful observation and experiment, by a method as strict indeed as that pursued in the study of any other class of phenomena; the difference merely being, that in the one case we observe and test external phenomena, whilst in the other we have to observe and test the phenomena of our own inner sentient being. Every great work of art is the result of induction, the fruition of careful observation and experiment, from which the painter or sculptor has learnt to eliminate what is variable, what is abnormal, and to present the spectator with those more general, central, or immutable truths of the two worlds of external and human nature of which he must equally be the student."

Mr. Cave Thomas, by a long course of thoughtful study, has well fitted himself for the position he seeks, and shows this by his works both as a painter and a writer.

DILAPIDATION CASE.

COOK *v.* MAGGS.

This action, brought in Westminster County Court to recover the sum of 30*l.*, opened up some questions respecting dilapidation of buildings.

Mr. Cook, barrister, on behalf of the plaintiff, a gentleman residing at 18, Warwick-square, Pimlico, produced the agreement made between the litigants for the tenancy of a house in Myrtle-street, Dalston, and by which the defendant was bound, at the expiration of his lease, to repair the premises and leave them in the same condition as when he entered into possession.

Mr. Brabey, builder, said previous to the defendant taking possession of the premises he put them in thorough repair, and his bill was about 50*l.* for the work he did.

Mr. Bellinger, builder, said he had repaired the premises since the defendant left, and his bill amounted to 22*l.* The roof of the house was in a bad state, and the interior required repainting and new papering.

Cross-examined: Much of the damage to the place arose from the damp; but he could not separate that portion of the repairs from the others. He repaired the house in July last.

Mr. Hall, foreman to Mr. Bellinger, estimated the damage arising from the damp at 10*l.*

The learned Judge said according to this evidence the plaintiff had made no case for repairs, or dilapidations.

Mr. Bellinger here said his estimate for doing the necessary repairs was 22*l.*; but as he wished for the job he did it for 15*l.*

Mr. Witterfield, barrister, contended that the plaintiff was not entitled to any damages for repairing the house. His client vacated it in March, and it was not until July any one from the landlord entered to put the premises in order. During those four months the rain had reached the inside, and not being looked after, this had caused the damage spoken to, and now the landlord wanted to attribute the injury to the tenant who actually had at the time of his quitting paid a builder to repair the house according to the agreement alluded to.

With respect to that part of the claim for rent owing, the defendant had a complete set off, for the landlord still retained 10*l.*, which was given by the tenant as a deposit, when the agreement was signed, and the defendant had further paid 16s. for property-tax, which the landlord was bound to recoup by law.

A number of builders on behalf of the tenant were called, and they each stated that if the premises were left four months unoccupied, or unseen to, the damp would get in and injure the paper-hangings, ceilings, paint, and floor. It was also proved that when the defendant left, he had it repaired at an expense of 3*l.* 4s. by a competent builder.

The defendant's housekeeper stated that before her master left, the landlord's agent called and pointed out what was necessary to be done, and this was carried out.

The learned Judge said he did not remember so weak a case with regard to claims for dilapidation. There was no evidence to show the state of the house when the defendant gave up possession, and the premises could not have been in the same state four months afterwards after being exposed to the rain, and no one to look after them. It was like a house in Chancery. No evidence by receipt had been produced to show that the plaintiff had paid any sum as stated for repairs, and altogether the case was so weak, that he should only give a nominal verdict for the plaintiff, and assess the damages at one shilling for dilapidations.

As to the claim for rent, the set-off had been clearly proved by the receipts, and on that head his judgment would be for the defendant.

"I KNOW A HAWK FROM A HANDSAW."

Sir,—Will you kindly permit me a word of explanation in reference to the letter of "A. H." in your publication of January 18th. As it stands, it would seem to imply that I had borrowed, without acknowledgment, a suggestion made by another writer in another publication, and that I had admitted the fact to "A. H." Such an inference would be entirely contrary to the truth. The theory in question has long been familiar with me. When I wrote the article in *Notes and Queries* I had not seen the *Antiquary*, nor was I aware that such a publication was in existence. "A. H." forwarded to me a copy of the *Antiquary* of a few weeks previously, in which doubtless the same theory was put forth, but treated entirely differently, as any person may judge who will compare the two articles.

It is satisfactory to find that two independent critics should almost simultaneously come to the same conclusions respecting a disputed passage in our great dramatist. Whatever credit may be due to the first publication of it I am quite ready to concede to your correspondent.

J. A. Picton.

*** We print Mr. Picton's letter; but it is quite unnecessary.

A FOREMAN'S VIEW.

Sir,—Seeing a note in the *Builder* of Jan. 11, 1873, referring to the unfitness of foremen, no doubt there are some muffs in that class, and for my part I do not see where, in a few years, there will be found any men fit to carry on good work if the societies are allowed to have their sway. I speak from twenty-three years' experience in and about London as a foreman and master. As soon as a job is commenced in London, all the societies at once seem to be aware of the minutest particulars as regards the quality of work required, and character of masters and foremen. Of course, there are always the usual loafers at the society: they are sent first, and soon get their discharge, as no good; but they have been long enough to spoil any one intending to do a day's work; also to get every particular, and send more of their class. I say, again, it is with the greatest difficulty that we, as foremen, can get men to do the work, as the muff gets the full pay, and a genuine man gets no more; therefore there is no encouragement to persevere, as (according to society rules) he cannot get more money than the muff who works beside him, so he sinks to the same level for want of encouragement. I have had, say, sixty or seventy men in London at a time on a job, and scarcely a man who really could be trusted for one hour to do his work. They required continually to be looked up and shown the simplest and most trifling thing, and then they would take some roundabout way to do it. All the blame is thrown upon the foreman, who is also time-keeper and clerk, sometimes working man, and also draughtsman, as well as storekeeper, for scarcely any more per hour than the muff who gives him so much trouble, when all the hours are counted (as he must spend many hours after the men are gone to keep his accounts in order).

Now I ask the *Builder* what encouragment is there for a first-class man at 50s. per week, when the poorest tool gets 40s. per week?

A London Foreman.

ARCHITECTS' GUARANTEES FOR CONTRACTORS.

In the Bloomsbury County Court, before Mr. L. Russell, judge, the case of Curtis *v.* Solomon afforded some hints to architects and surveyors incautiously becoming responsible for building materials.

Mr. Curtis, a zinc and metal worker, brought his action against Mr. Solomon, an architect and surveyor of Southampton-street, Holborn, to recover the sum of 16*l.* 13s. 9d., balance of work done by a contracter named James, under the following circumstances.

Mr. Curtis stated that, in the beginning of August last, a builder named James applied to him for an estimate for the zinc work required for two houses in the New-cut, Lambeth; and having gone over the matter, he was unable to give any distinct figure, and no special price was agreed upon; and Mr. James, being unknown to him, he told him, before he commenced the job, that he should require some solvent person to become answerable for the payment for the work done; and Mr. Solomon, on being applied to, agreed to become answerable.

He did all the work required, and Mr. James paid him one cheque and Mr. Solomon another, as the work went

on, still leaving the balance now sued for. Mr. James, not being in a position, and refusing, to pay the remainder of the account, he had no alternative but to fall back on the defendant, and for whom the work had been executed to his satisfaction.

In cross-examination by Mr. Lewis, the witness admitted a letter produced to be his handwriting. This letter was addressed to Mr. Solomon, and one part recited, "Mr. James, of Newman-street, has appointed me to do certain zincwork for two houses in the New-cut, Lambeth, and has referred me to you for payment." He received a cheque of the defendant's for twenty-five pounds, after that letter was sent.

The answer to the case was, that James had a large contract with the defendant, and that all the guarantee given by Mr. Solomon was, promising Mr. Curtis to do all he could to see James paid him for the work done, and with this view, instead of giving James a cheque for twenty-five pounds to pay Mr. Curtis, Mr. Solomon sent the money direct to the plaintiff.

Mr. Solomon positively denied giving the plaintiff any guarantee for payment, or saying he would be liable; and Mr. Curtis's own letter showed this by saying, "he was referred to him for payment."

The learned Judge observed that there was a considerable conflict of evidence between the parties, and there was no written guarantee produced, or indeed any reliable parole promise to pay, and in the face of the plaintiff's own letter, he could not do otherwise than find for the defendant.

Verdict for the defendant accordingly, with costs.

WARMING.

SIR,—I observe a letter in your last number signed "Reader," asking if "Lewis's Patent Warm Air-Chamber Fireplaces," which I described in your paper of February 18, 1871, as having used in my residence, continue to answer my expectations.

In reply, I beg to say that they answer splendidly in my house and others where I have used them.

The other day I received a commission to build a house, through a gentleman, a stranger to me, having "been struck with the economical way I had warmed a house" in which I used them. I have advised Mr. Lewis to send his address to your advertising columns, so that "Reader" and others may find him out. F.R.I.B.A.

SCAFFOLD HIRING.

IN the Clerkenwell County Court last week, Mr. Terrey, builder, of Bowling-green-lane, sued Mr. Leggatt, house decorator, of 15, Little George-street, Portman-square, for the hire of scaffolding and trestles, and the sum claimed was 6*l.* 10*s.*

Mr. Terrey stated in March, 1871, Mr. Leggatt was painting the Roman Catholic Chapel, in Rosomond-street, and hired two trestles, boards, &c., for which he agreed to pay 1*s.* 6*d.* per day. A deposit of a sovereign was made, and the goods had not yet been returned. The original value was 10*l.*, and he estimated their worth now at 7*l.* 10*s.*, and deducting the 1*l.* paid left the sum now claimed.

Upon cross-examination by the defendant, the plaintiff stated there was no specific arrangement as to the term of hiring of the goods, or if they were returned in ten days half the deposit was to be returned. He did not agree to fetch them away from the job, but expected them to be brought back by the hirer, which was the custom of the trade.

In answer to the claim, Mr. Leggatt said he agreed with Mr. Terrey for the use of the things for ten days, and the job for which they were required was finished in eight days. The understanding was, that Mr. Terrey was to fetch the trestles, away, but as he did not send for them after remaining at the job for some time, they were sent to witness's place of business, where they were now; but he had not made use of them since. He refused to give them up unless half the deposit was returned. The whole lot were not worth more than 5*l.*, having been strengthened by iron plates.

Mr. Terrey said the trestles were perfectly sound when he let Mr. Leggatt have them, and he paid about 9*l.* 10*s.* for them second-hand.

The Judge said the plaintiff had sued both for hire and value. He could not fire two guns at once, and he must nonsuit him.

The plaintiff did not appear to understand the reason of not being able to recover both ways; but the decision does not prevent him suing either for hire or value at a future time.

ART AND DESIGN.

SIR,—As this subject has attracted much attention of late through Sir Arthur Helps's observations thereon at Portsmouth in these words, "Let us get rid of inaccuracy," &c., it should also be shown in the press, through your kindness, that inaccuracy commences in our schools of art by pupils not holding the pencil aright, as seen in the Bathforum school of art, where some sixty boys were instructed, and only one or two held the pencil right according to a surgeon holding the dissecting-knife, as an example of the scientific mode of holding pencil and pen. Other inaccuracies exist in the patterns of nothing for pupils to copy, whereas nature is full of examples that are worthy of notice, such as are represented in drawings from nature from the microscope by Leeuwenhoek, wherein the first lessons in drawing in parallel, horizontal, and perpendicular lines are available, besides in patterns for artistic work. Furthermore, the performances of celebrated artists in our weekly periodicals and other works show sad falling away from Hogarth's criticism of art and design. The question now is, should science and nature be neglected in preference to men's crude notions of the present day? Again, the drill is introduced into schools; wherefore should pupils be suffered to lounge and appear careless of their work, whilst elegance and gracefulness of the person, and freedom of the thumb, fingers, and wrist, would add to the well being of every pupil? Again, teachers of drawing expect their pupils to draw straight lines, which they cannot draw themselves, and which do not exist in nature.

With these preliminaries, is it too much to suggest a discussion of the subject in private and public meetings to consider before we commit further inroads in inefficiencies, whilst some ten or more objects from nature are ready for examination to supersede present plans?

Let us get rid of rubbish, instead of cherishing "oily talk" from the Privy Council amidst the national disgrace in artistic drawing.

WILLIAM PARKER, M.R.C.S.

PRESENTATION TO AN ARCHITECT.

LET us note a novelty. Last week Mr. Alex. Reid, architect, Elgin, met a large number of his business friends, by invitation, in the Assembly Rooms, Elgin, where, at an entertainment they presented him with a very handsome marriage gift—plate and other articles, to the value of 180*l.*, including a gold necklet and locket for the lady of his choice, as a mark of their respect, and of their appreciation of his professional abilities. Major Johnston, Newmill, presided, and made the presentation in a happy speech, proposing, at the same time, the health of Mr. Reid, and wishing that the interesting event, in view of which they had met that evening, might bring to him every possible happiness. The toast was received with enthusiasm, and Mr. Reid tastefully acknowledged the toast and the presents.

THE STREETS OF DUBLIN.

SIR,—I have been informed that a well-known and well-informed member of the corporation has unexpectedly turned upon that august body, and administered a rebuke, the severity of which can be well estimated by those who know him as an accurate and conscientious observer. The gentleman referred to is reported to have publicly said that the streets of Dublin were kept constantly clean and in a state of thorough repair. . . . . I doubt that Socrates himself ever used more scathing irony against the sophists than did the energetic member of the corporation of this city when he spoke those ever-to-be-remembered words; and I trust that my down-trodden and over-taxed fellow-citizens will with me take heart, now that we have so potent an advocate of those rights for which we pay so heavily, but have not. DUBLINIENSIS.

BARROW-IN-FURNESS.

THE mayor, aldermen, and burgesses of the young and vigorous borough of Barrow-in-Furness have a Bill before Parliament, that has passed Standing Orders this week, in which they ask for Parliamentary powers to accomplish various important objects. These include powers to make additional waterworks and gasworks, and new streets; for extending the limits within which they may supply gas and water; for making a railway or tramway; and for other purposes. The estimated expense of the waterworks is 28,000*l.*; of the two new streets, 33,000*l.*; and of the railway, 1,460*l.* The corporation also ask for powers by the Bill to erect and maintain, at such time as may seem fit, a town-hall and public buildings, at a cost of 25,000*l.*

STEEPLE-JACK ON DARLINGTON CHURCH SPIRE.

DURING the heavy gales last November, the iron rod on which the weather-cock of this church was placed gave way, and its vane is now being restored by Messrs. Sanderson & Proctor, of Huddersfield. In order to reach the top of the church spire, instead of scaffolding, only a few iron spikes were driven into the joints of the stone work at intervals, the workman being slung in a kind of saddle, which was removed higher up as every fresh spike was driven in. A rope with blocks and pulleys was at length securely fastened round the highest part of the spire, and by that means the men ascended and descended in a remarkably simple though dangerous manner. By this means the iron rod, which has been hanging from the top of the spire by the most slender hold, was brought down. It had broken off close by the top of the ball of lead which forms the cap of the steeple, the corrosion being caused by the galvanic action of the two metals, iron and lead. To avoid corrosion in the future, it is proposed to put a cast-iron cap in place of the lead one; and a new iron rod, of a similar design to the old one, with a cross, is being forged by Mr. Jos. Wray, of the Bridge-end. The old weathercock, which is of copper, has been re-gilded by Mr. John Willis, and it was expected that in about a week the whole work would be completed.

MEETING OF DELEGATES OF SANITARY AUTHORITIES AT SHREWSBURY.

ON Friday in last week a meeting of delegates from the various sanitary authorities of Shropshire and some portions of the adjacent counties was held in the Shirehall at Shrewsbury, to consider the appointment of a medical officer under the Public Health Act of 1872. The chairman reported that the following unions assented generally to the joint appointment of a medical officer of health, namely,—Atcham, Church Stretton, Clun, Ludlow, Forden, Shifnal, Madeley, Bridgnorth, and Cleobury Mortimer; and that Newport and Tenbury would probably join. It was resolved that one medical officer of health be appointed for all the assenting unions; that the appointment be made, in the first instance, for two years; that the salary be 800*l.* per annum, to include travelling and all other expenses, and that the medical officer devote his whole time to the duties of his office. It was further agreed, "That the testimonials be examined, and the appointment made, by three delegates from each sanitary authority." The chairman, Captain Severne, and Mr. Corbett, were requested to advertise for candidates, and to arrange the other preliminaries for the election of the medical officer of health.

VARIORUM.

"A FEW Thoughts on Sanitary Questions, by T. W. Wallis," Sanitary Engineer (Larder, Louth), interest us mainly because they are the work of one who some years ago made himself worthily known by the production of some admirable carvings of dead game, for which medals were justly awarded him. Mr. Wallis has changed his profession, and we are sorry for it. The letters here put together doubtless woke up some of the good people of Louth and its neighbourhood, and will do good elsewhere. Nevertheless, we regret his loss in the practice of an art the difficulties of which he had mastered.——A second edition has been published by Messrs. Stevens & Haynes, of "The Rule of the Law of Fixtures," by Archibald Brown, Barrister-at-Law (Bell-yard, Temple Bar, 1872). Its distinctive feature is that it includes a statement of the principal American decisions. Some recent Scotch and Irish cases are also added.——The Council of the Society of Arts have issued in a separate form (Bell & Daldy, York-street), some Reports on the London International Exhibition, 1872, prepared under their direction. As the Council "desire it to be understood that, in publishing these reports, they do not necessarily adopt all the views expressed in them, which must be taken as those of the writers only," the writers' names should have been given.——"Notes on the Elements of Algebra and Trigonometry," by William N. Griffin, B.D. (Longmans, Green, & Co.), includes solutions of the more difficult questions. The student who uses the book in lieu of a master must not turn too soon to this part of it. "Mathematical proficiency results, not from inspecting the solutions of a number of examples, but from the hours of patient thought spent in drawing from them the power of solving other similar examples which may arise."——The new number of the *Quarterly* includes an article on "The Exhaustion of the Soil of Great Britain," which should interest many of our readers.——The *Mechanics' Magazine*, after a career of half a century (being the oldest technical periodical in existence), will henceforth appear in an enlarged and improved form under the title of *Iron*, which sufficiently indicates the more comprehensive programme of the new series as a reflex of everything affecting this important interest and all its ramifications.——"Nations,

Languages, and Tongues." Messrs. Hall & Co., of Paternoster-row, announce, under this title, the publication of a Rudimentary Dictionary of Universal Philology.

Miscellanea.

Decoration of the Mansion-house, London.—The two state drawing-rooms have been painted, gilt, and enriched. The ground of the centre of the ceiling is white, the panels and borders, as well as the surrounding cornices, being etched in gold; the coved portion beyond, extending to the walls, is of a light cream colour, and embellished with elaborate gilding. The *City Press* gives a fuller description:—The walls are painted in parti-colour, a delicate Wedgwood blue predominating, and the large panels are covered with richly-figured amber satin, surrounded by massive gilt mouldings. Both apartments have also been fitted with large dogstone fire ranges, with marble fenders, polished steel bars, and encaustic tile hearths. The Venetian Parlour has been embellished. The centre of the ceiling, like the state drawing-rooms, is white and gold, the enrichment of the panelling being exceedingly artistic. The festoons of fruit and flowers around the cove of the ceiling have also been tastefully ornamented and gilt, while the enrichments and gilding of the bold cornice immediately beneath are a striking feature in the decorations. The painting of the walls consists of a buff ground, the columns and pilasters, together with the panels containing the large mirrors around the apartment, being gilt and ornamented, as well as the framework and mouldings around the large circular window overlooking Queen Victoria-street. The decorations of the Long Parlour (approached from the saloon and vestibule) are among the principal features in the ornamentation of the interior. As regards the ceiling, noted for its elaborate mouldings, and their extreme heaviness, a change has been effected. All the flat portion of the ceiling is in white and gold, while the upright portion is in a light tint, the soffits and the styles being in Wedgwood blue, and the whole enriched by massive gilding. That portion of the walls between the skirting and the surbase is in panels painted in varied rich colours.

The Kendal Sewage Scheme.—Mr. Blackburn, of Aldershott, accompanied by the Mayor and the Borough Surveyor, have made an inspection of the Kendal Corporation land at Wattsfield, with the view generally of advising the Council upon its adaptability for utilising the sewage of the town, and also what in other respects would be the best plan for disposing of the sewage of Kendal. His report will, we understand, be unfavourable to irrigating the greater portion of the recently-purchased Wattsfield Estate, with sewage, on account of the great cost which pumping up the sewage would entail and its comparatively worthless nature when pumped. Mr. Blackburn is of opinion that sufficient land can be obtained below the present farm, which can be irrigated by gravitation. He is decidedly adverse to corporate bodies engaging in sewage farming. A difficulty that has struck him in the way of utilising the Kendal sewage is the unusual quantity of surface and spring water that finds its way into the drains.

Extraordinary Proceedings at the Iron Church, Frodsham.—One morning lately, about two (a.m.), a number of men were found busy, under the direction of the vicar, erecting a wooden addition to the iron church, projecting from one side, and some 9 ft. square, whilst one or two others were endeavouring to demolish part of the work as fast as it was being proceeded with; but, as the vicar's force was much the strongest, and being well supplied with beer and pies, the other party had to give way. Between ten and eleven o'clock the same morning, however, some fresh actors, with axes, saws, files, chisels, &c., commenced, in a very summary way, to reduce the dimensions of the new erection by cutting about 2 ft. off the outer-side, and, as there was no opposing force present, this part of the drama was soon accomplished. It seems there is a dispute between the vicar and the owner of the land adjoining as to the exact boundary of the site of the church, the owner of that land contending that it was an encroachment to the extent of the piece cut off.

Patent Gas-burners.—At a recent *conversazione* of the Birmingham and Midland Institute, Messrs. John Wright & Co. exhibited a series of models of Wallace's patent gas-burners, which are said to have solved the problem of burning a mixture of air and gas with certainty and safety under all conditions of pressure or quality of gas. The lower part of the flame contains a conical space whose surface is of a brilliant emerald green colour; and this is surmounted by a clear amber flame. The temperature of this flame is such that, coming from a half-inch Bunsen burner tube at main pressure, it will, it is said, readily melt brass, silver, gold, or copper. The experiment was made frequently during the evening with copper, the drops of molten metal falling into a glass vessel of water. The temperature of the flame is estimated at about 3,000° Fahrenheit. The size of the burners ranged from the common laboratory burner, consuming 3 ft. per hour, to the steam-boiler furnace, which would burn 80 ft. per hour. Such a burner would need good ventilation.

Fatal Accident.—In St. Bride-street, opposite Harp-alley, Farringdon-street, a stone outlet is being constructed by Messrs. Noel & Robson, contractors for the Metropolitan Board of Works, to carry off the overflow water from St. Pancras, where the storm floods from the Highgate hills are intercepted at Wharf-road, and so directed from the Fleet sewer and emptied into the Thames at Blackfriars Bridge. A wooden platform had been erected about 12 ft. above the level of the railway, and upon this was deposited the wet clay raised through shafts some 50 ft. in depth, and which was constantly being carted away. As Samuel Burton, a bricklayers' labourer, and Samuel Thompson, a miner, were passing under the heavily-weighted platform, the timbers suddenly gave way, and both men were buried under the falling mass of wet clay. Thompson was speedily rescued, and conveyed to St. Bartholomew's Hospital; but when Burton was dug out he was quite dead. Thompson has received such injuries as to make his recovery doubtful.

An Aquarium for Scarborough.—A report, to the town council, of a committee, on a letter from Mr. J. McMillan, proposing to erect a large public aquarium at Scarborough similar to that at Brighton, has been considered by the council. The plans were prepared by Mr. T. Birch, C.E. The committee recommended that the council grant to the promoters for 999 years, the land applied for, at an annual rent of 200*l*. The cost of the construction would be from 30,000*l*. to 40,000*l*. After a long discussion, however, a resolution was passed to the effect that while the council approved of the scheme, the consideration of the terms and conditions should be referred back to the committee.

Grainers and Marblers.—A large meeting, composed of London imitators of woods and marbles, was held on Friday evening, January 17, at the Earl Cathcart Tavern, Munster-square, Regent's Park, to take into consideration the formation of a trade-union, and to discuss various matters connected with their interests. The chair was taken by Mr. Kensit, and supported by Mr. Dickson. The objects of the society were explained by Mr. Jas. M'Intosh in a very able manner, and many useful suggestions were then made and discussed by the several persons. A committee was formed to draw up rules for the guidance of its future members, and, after passing a vote of thanks to the chairman, the meeting separated.

Messrs. Longman's Scientific and Educational Works.—We may do good by directing attention to the remarkable series of educational and scientific books advertised by Messrs. Longmans, Green, & Co., in the present and a previous number of our journal. Their stock of such works must be enormous, and all engaged in teaching or anxious to learn may find in it proper instruments for their purpose. From the list advertised in our present number we would select Ure's "Dictionary of Arts, Manufactures, and Commerce," Brande's "Dictionary of Science, Literature, and Art," and Gwilt's "Encyclopædia of Architecture," as three of the most useful works we know.

Institution of Surveyors.—At the next meeting, to be held on Monday evening, January 27th, the discussion on the Paper by Mr. W. Sturge, entitled "Statistical Notes on the Prices of Agricultural Produce, Labour, and Rent, from the Early Part of the Last Century to the Present Time," will be resumed.

The Wigan Infirmary Exhibition.—At a special meeting of the Wigan town council, a resolution has been unanimously passed, complying with the request of the Wigan Infirmary Exhibition and Bazaar Committee, that the corporation should authorise the mayor to invite the Queen, or such other member of the Royal Family as her Majesty should be pleased to appoint to represent her on the occasion of the opening of the institution. The infirmary has been erected at a cost of nearly 30,000*l*., the whole of which has been raised by public subscription; and the Exhibition and Fancy Fair are intended to raise 5,000*l*. for necessary furnishing, endowment, &c. The district of the institution includes nearly all the mining and manufacturing district of South Lancashire.

London International Exhibition, 1873. The fourth meeting of the committee on cooking was held on Saturday last, at the offices, Gore Lodge, South Kensington. The committee considered certain proposals with reference to a practical and instructive illustration of popular cooking, as adapted to the requirements of the middle and lower classes, and they inspected sites in the Exhibition buildings which appeared suitable for the purpose. After having passed resolutions containing recommendations to her Majesty's Commissioners as to the best executive arrangements for the class, the committee adjourned until Monday, the 27th inst. Much good might be done by this committee.

Ipswich Mechanics' Institution: Portrait of Mr. Thomas Shave Gowing.—A number of friends, recognising Mr. Gowing's long and invaluable services to the Ipswich Mechanics' Institution, determined to have his portrait painted and to present it to that institution. Mr. W. R. Symonds, of Ipswich, was intrusted with the commission, and the portrait is now on view in the library of the Townhall. The young artist, says a local paper, has caught Mr. Gowing's expression just at the time he has set the mechanics' committee in a roar with a pun or epigram. Round the room are hung several paintings by local artists.

Cleveland Institute of Engineers, Middlesbrough.—The monthly meeting of this Institute has been held at Middlesbrough; Mr. Jeremiah Head, president, in the chair. A paper was read by Mr. John Dunning, C.E., on his proposed plan for converting the river Tees into a dock. The chairman, in commenting on the plan, expressed the opinion that it was a very practical one, and that the real difficulties in the way would not be of an engineering nature, but would lie in legal opposition and preconceived notions. An interesting discussion ensued.

Camberwell.—The old mansion situated at the foot of Denmark-hill, Camberwell, which was erected by Sir Christopher Wren upwards of 200 years ago, has been disposed of by auction, as materials, in upwards of 100 lots, and will now at once be demolished, in order to make way for the erection of about 200 houses, which are about to be built on the site and the grounds connected with the mansion, which are about to be laid out in streets. The mansion is identified with Mrs. Thrale and the family who founded the great firm of Barclay, Perkins, & Co., when Dr. Johnson was a frequent visitor there.

Grimsby Docks.—Sir E. Watkin and several of the directors of the Manchester, Sheffield, and Lincolnshire Railway Company, together with Mr. R. G. Underdown, the general manager, and Mr. C. Sacré, engineer, have visited Grimsby, for the purpose of ascertaining by personal inspection the additional facilities required to meet the necessities of the greatly increasing timber trade on the west side, and the general export and import trade on the east side. It is probable that a road at the rear of the timber yards will be taken in and added to the timber ground.

Ancient Architectural Remains in Salisbury.—Remarkable antiquarian discoveries are being made in Salisbury. The massive foundations of the south-east corner of the old monastery are laid bare. The hardness and compactness of the concrete are referred to as showing how well our ancestors understood the art of building; but this hardness of the concrete partly at least depends on its age.

Fine Arts, Oxford.—Mr. John Ruskin has been re-elected to the office of Slade Professor of Fine Arts, in Oxford, without opposition.

Sewerage of Neston and Parkgate.—At the last meeting of the Local Board at Neston, instructions were given to Messrs. Reade & Goodison, civil engineers, of Liverpool, to prepare the necessary plans and sections for the complete sewerage of the district. The water-supply being now completed, a system of sewerage has become indispensable. The question of utilisation is still an open one, but as the nature of the district is adapted to irrigation works, they may probably be eventually adopted.

Ruislip, Middlesex.—This fine old church, which some years ago was restored to a considerable extent by Sir Gilbert Scott, has had a handsome reredos put up across the chancel, and some other works latterly carried out from the designs of Mr. R. L. Roumieu. It has also been warmed by hot water by Messrs. Bacon's patent. Messrs. Hebbins & Tasler, of Kingston, were the masons; and Mr. Cox the builder. The whole of these works have been done at the expense of one of the churchwardens, Mr. R. Parnell.

Winchester New Guildhall.—It is reported locally that in consequence of the extreme wet weather, and the existence already of a slight bulge in the western wall of the large hall (which, however, has not increased for some weeks), the propriety of buttressing the wall has been canvassed in committee. The four statues of Egbert, Alfred the Great, Henry III. (of Winchester), and Florence de Lunn, the first mayor, are placed in position in the front.

Patent Pipes and Boilers.—Mr. T. S. Truss, C.E., has patented a joint for piping which can be applied by any unskilled person. It consists of an india-rubber band, which passes over the ends of both of the pieces to be joined, and which is retained in its place by the application of a circular iron band. This band is divided into three portions, and these are tightened into their places by nuts and screws.

The Rating of Metalliferous Mines.—At Truro, on the 21st inst., a large meeting, which was attended by Mr. Pendarves Vivian, M.P., Mr. Brydges Willyams, M.P., and Mr. St. Aubyn, M.P., was held to consider the subject of the rating of metalliferous mines. A committee was appointed to draft a Bill in which the principle of the rating of lord's dues was unanimously affirmed.

Cannon-street and Ludgate-hill Footbridges.—The Court of Common Council have referred to the Bridge House Committee to ascertain upon what terms and conditions Cannon-street footbridge can be thrown open to the public, and to report thereon to the court; also to inquire and report why the footway at Ludgate-hill had not hitherto been thrown open to the public.

Demolition of a Factory Chimney.—Last week a square chimney-stalk, 144 ft. high, on the site of the Church-street Mills, Preston, was razed to the ground. The chimney, which was 3 ft. out of the perpendicular, stood in a crowded and busy part of the town. The work of demolition, though both difficult and dangerous, was accomplished without injury to the surrounding property, in the presence of a considerable crowd.

South London Working Men's College.—Professor Huxley, F.R.S., the Principal of the College, will preside at a general meeting on Tuesday evening, January 28th, when a lecture will be given by Mr. J. H. Freeman, F.R.A.S., on "Star Showers." New classes in French, Geography, and History will begin, we hear, in the following week.

The late Mr. M. B. Newton.—We regret to hear of the death of Mr. Marcus Bourne Newton, at his residence, Highbury. He was for many years London agent to Messrs. Joseph Cliff & Son, of Wortley, near Leeds. He was well known in the building trade, as a man of information, and was greatly esteemed by all his friends.

Sculpture, Burlington House.—The added story for the Royal Academy, at Burlington House, will receive the adornment of eight statues. These are, of course, to be executed by members of the Academy.

Burlington Fine Arts Club.—An exhibition of the collected works of the late George Mason, A.R.A., has been opened in the gallery of this club, Savile-row, and will be found interesting.

Dalbeattie Quarries.—Some of our readers may be interested in knowing that Messrs. R. & J. Newall's quarry and his polishing business have been transferred to Messrs. Shearer Smith & Co.

TENDERS

For alterations and additions to house and shop at Sydenham, for Mr. J. Smith. Messrs. Tolley & Dale, architects:—

	Contract No. 1.	Contract No. 2.
Burchell	£573 10 0	£160 0 0
Amer	525 0 0	195 0 0
Hollidge	528 0 0	147 0 0
Thomas	520 0 0*	150 0 0

* Accepted.

For main sewers and other works, Portmadoc. Messrs. Roberts & Morrow, engineers:—

Hughes	£1,630 0 0
Jardine	1,551 17 4
Lewis & Davies (accepted)	1,465 0 0

For house for Mr. J. F. Honey, Stockwell. Mr. A. T. Tunewell, architect:—

Snelling	£1,025 0 0
Miller	1,016 0 0
Pharosh	915 0 0
Colldeck (too late)	900 0 0
Harrop (accepted)	855 0 0

For completing two houses, Isleworth-road, Twickenham. Mr. W. C. Banks, architect:—

Farthing	£788 0 0
Vaughan	745 0 0
Story	700 0 0

For the warming of the Memorial Hall, Farringdon-street, to plans prepared by Mr. Hood. Messrs. Tarring & Son, architects:—

Boulting	£793 11 4
Rosser & Russell	670 0 0
Benham & Sons	620 0 0
Gimson	616 0 0
Smith	611 0 0
Rosser & Russell (alternative plan)	577 0 0

None of the above were accepted, but the work was placed in Mr. Hood's hands.

For new Parochial Institution, St. James's, Notting hill. Mr. R. J. Withers, architect:

Webber	£1,749 0 0
Hockley	1,568 0 0
Dove, Brothers	1,485 0 0
Sharpington & Cole	1,477 0 0
Revised estimate,—	
Sharpington & Cole	1,239 0 0

For new premises in Old-street, St. Lukes's, for Mr. T. Mabe. Mr. H. T. Gordon, architect:—

Moreland	£4,539 0 0
Roon & Barton	4,390 0 0
Newman & Mann	4,150 0 0
Lindfield	4,060 0 0
Crabb	4,016 0 0
Ennor	3,904 0 0
Browne & Robinson	3,897 0 0
Sharpington & Cole	3,886 0 0
Thomas	3,795 0 0
Little	3,779 0 0
Woodward	3,775 0 0
Bowman	3,696 0 0
Scrivener & White	3,678 0 0
Merritt & Ashby	3,349 0 0

For the erection of a house on the Anson Estate, in Carlton-road, Tufnell Park, for Mr. J. F. Woulfe. Mr. G. Truefitt, architect:—

Ball (accepted)	£979 0 0

For the completion of the Oval-road Schools and premises, for the Croydon School Board. Mr. C. Henman, architect. Quantities by Mr. J. S. Perry:—

Jarrett	£3,198 0 0
Bourne	3,153 0 0
Smith	3,055 0 0
Hide	2,946 0 0
Wright, Brothers, & Goodchild	2,915 0 0
Hollidge	2,909 0 0
Peskett & Taylor (accepted)	2,775 0 0

TO CORRESPONDENTS.

T B.—T. R.—M.—G. C.—R. L.—S. S. P.—M O T—T. N M.—J. P. P.—J. R.—M. C.—E. H.—O. S.—R. & R.—Dr. M.—A. V.—J. L.—H. F.—R. B.—J. M.—C. & Sons.—P. & T.—G. A.—W. H. R.—L. A. (the papers seem of old date).—R. L. (in type).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

PUBLISHER'S NOTICES.

The THIRTIETH VOLUME of "THE BUILDER" (bound), for the year 1872, is now ready, price One Guinea. Also,

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Rain pipe, Gutter, Stove, Range, and Nail WAREHOUSE, 24, HATTON GARDEN, E.C.
Catalogue, price 2s. 6d. deducted from first order. Estimates free.

CONTRACTS—*continued from p. ii.*

BUILDERS desirous of TENDERING for STABLES, near Weedon, Northants, apply to W. H. FLETCHER, Architect, 8, Bloomsbury-street, New Bond street. Two references required from London architects.

PERSONS desirous of TENDERING for the FORMATION of ROADS, on the Ashburnham Park Estate, near the Grove Hill Station of the London, Brighton, and South Coast Railway, can see the plans and specifications, and obtain form of Tender, on application to Mr. HORACE A. ALEXANDER, Architect, 16, King William-street, E.C.

CHRIST CHURCH, MIDDLESEX. The Churchwardens will meet in their Vestry-room, Spitalfields Church, on TUESDAY, the 11th of FEBRUARY next, at TWELVE o'clock at noon precisely, to receive and open TENDERS for INCLOSING, RAISING, and REPAVING a portion of the Churchyard, Repairing the Wall at 1 Piers in Church street, Providing and Fixing new Iron Gates, Railing, &c. Plans specification, and form of contract, may be seen at the Office of Messrs. TOLLEY & DALE, 13, Angel-court, Throgmorton-street, E.C. and at my Office, 5, Princess-street, Spitalfields, where Tenders (sealed and marked "Tender for Gates") will be received prior to the meeting, at which persons Tendering must attend or be represented. The Churchwardens will not be bound to accept the lowest or any Tender.
SUMERSET J. HYAN, Vestry Clerk.
Dated this 20th day of January, 1873.

TO ENGINEERS and SURVEYORS. The Keighley Local Board of Health are desirous of receiving TENDERS for the making of a new SURVEY and FINISHED PLANS of their district to a scale of 20 feet to an inch. The district lies within a circle of one mile radius from the four cross-roads in the centre of the town of Keighley (except where it touches on the parish of Bingley) about 1,200 acres, and is contained in sheets 185 and 200 of the 6 inch Ordnance map. Copies of the specification and forms of Tender and any further information may be obtained on and after MONDAY, JANUARY 27th, 1873, and sealed Tenders endorsed "Tender for New Survey," must be sent to me before THURSDAY, FEBRUARY 13th, 1873. No allowance for Tenders. The Board do not pledge themselves to accept the lowest or any Tender.
HENRY ALTY, C.E. Engineer to the Local Board.
Keighley, January 15th, 1873.

TO ROADMAKERS and OTHERS.—The Board of Works for the Fulham District hereby give Notice that they will be prepared at their next Meeting, to be held 29th JANUARY, 1873, to receive TENDERS for the CONSTRUCTION of the ROADWAY and PAVING the FOOTPATHS of certain Roads known as Chesilton-road in the Parish of Hammersmith, Stanley-road, Stanley Park road, and Grove road in the Parish of Fulham. A specification of the intended work may be seen at the Office of the Board, Broadway House, Hammersmith, and further particulars obtained after WEDNESDAY, 29th instant. Tenders to be addressed to the Chairman of the Board endorsed "Tender for Making Roads," and "Tender for Paving Footpaths," each to be on a separate form, and must be delivered before TEN o'clock on the morning of the day above mentioned. By order,
THOMAS EDWARD JONES, Clerk.
18th January, 1873.

TO STONE MERCHANTS and OTHERS. The Vestry of the parish of Bermondsey, Surrey, will meet at the Parochial Offices, Russell-street, on MONDAY, the 3rd day of FEBRUARY next, at SIX o'clock in the evening precisely to receive TENDERS for the SUPPLY of 10,000 feet super. of Second-class ROCKHILL PAVING. The Tenders are to state the price at which the stone will be delivered before the last day of March next, alongside Springall's Wharf, below Bridge, or at the Stone Depôt, Maltby street. The time named is to be an essential part of the contract, and a fine of 1l. per day will be imposed as liquidated damages for every day which may be exceeded by the contractor in delivering the stone. The measurement of the stone will be ascertained by the Vestry's Surveyor, whose certificate as to quantity and quality shall be binding upon the contractor. The stone will be paid for within a month after the Surveyor has given his certificate of the value of the stone delivered. The Vestry do not bind themselves to accept the lowest or any Tender.—By order,
BENJ. G. WILKINSON, Clerk.
Maltby-street, S.E. January 22, 1873.

The Builder.

VOL. XXXI.—No. 1565.

Another Look at Bethnal-green Museum.

THE contrast between the plain, unpretending exterior of the building at Bethnal-green, and the opposite character of some of the articles at present grouped in it for exhibition, suggests the reflection whether, regarded in a certain light, the outside aspect is not the more suitable of the two, more in keeping at least with the manners and associations of the district. Of course we are not here thinking of the pictures, the best of which are things that may be equally welcome in palace or cottage; but the articles of ornamental art (furniture, &c.), with which the ground-floor is largely taken up, appear to us not quite the best kind of thing to place in a free exhibition in such a quarter. A large proportion of them, indeed, would be the wrong kind of thing anywhere, consisting as they do to a great extent of that class of modern French *objets de luxe*, such as candelabra, timepieces, bronze and gilt statuettes, &c., the worth of which consists much more in the value and showiness of the material than in any excellence of artistic design, or even of execution. We do not forget that they are intended, to a certain extent, to serve as incentives of workmen in various branches. Still, rather than these gold and ormolu "Cupid and nymph" things, we would like to see a good proportion of the collection illustrating the application of elegance and refinement of treatment to the ordinary furniture and appurtenances of humbler life, not necessarily altogether in a cheap form, but at all events in a form in which the money value of the articles was not their most important claim to attention. In the upstairs cases there are here and there very beautiful specimens of ornamental work, chiefly Italian, but in the collection which first strikes the eye downstairs, gaudiness and mere meretriciousness are the main characteristics. This, as it seems to us, is to be regretted.

As to the pictures which form the main attraction at present, a glance round them in a comprehensive and consecutive manner, may still be *apropos*, more especially as indicating the extent and manner in which different schools are represented. The arrangement of the pictures, by the way, the larger works round the wall and the smaller ones on screens, is very good, and enables each class of work to be well seen. The English school is not largely represented, and chiefly by portraits, including two or three of the best known and finest by Reynolds and Gainsborough. In one of the Gainsborough portraits of a young lady sitting under a tree, the pet dog seated beside her on the bank is a masterpiece in truthfulness of action. Romney's portrait of "Mrs. Robinson" (19) tends, along with other works at present in Burlington House, to raise his name very much above its conventional standing, and puts him nearer Reynolds than it has been the fashion to reckon him. Certain Lawrences in the vicinity look sadly depreciated in such company; and two pieces of tame classicality (*i.e.*, nudity), by Westall and Hilton, are among the things which like some of the Frenchified gilt curiosities downstairs, seem out of place here. It appears scarcely desirable to place subjects of this kind before uneducated spectators, who are apt to take (to say the least), a very vulgar view of them; more especially when they happen, as in this case, to be very poor art. Such a thing as the small "Tarquin and Lucretia," of Cagnacci again (257), in which the subject is certainly not very delicately handled, might as well not have been hung. Not that there is any large proportion of works here to which such a consideration would apply; but, in regard to Art Exhibitions for the masses, the point is worth a remark, whether anything is gained at present by puzzling their propriety with paintings of which they only take in the hard fact, not the underlying ideal: since what a recent writer in the *Contemporary Review* has termed "the law of modesty in art" is not very well understood at present, even among the upper classes in English society. Worth some dozens of average nymph and Venus pictures are Vandyck's grand portraits of "Philippe le Roy and his Wife" (59, 63), lent by the King of Holland, the very embodiments of stately patrician dignity and sense of power.

The multifarious collections of dead game, and so forth, by Weenix, in this vicinity, do not raise one's idea of this somewhat over-valued painter of "still life"; the colours are harsh and crude often, and the texture and brilliant light reflections proper to plumage and fruit are sometimes strangely ignored. "Vulgar," it is to be feared, must be written against these productions, by those who are not taken in by the prestige of a name. Nor do the landscapes of Ruysdael and Hobbema, as seen in conjunction here, altogether realise their reputation. There are finer Ruysdaëls in existence, certainly, than these, but many of this painter's works tell better in engraving than in their original form. The composition is "romantic," "picturesque," and such other adjectives, but then the colouring and the detail, in rocks and water especially, is not that of nature. The Hobbemas are tame, and also with a grey colour not pleasant to the eye. The artist's diploma picture, painted for the Amsterdam Academy (76), in which one would suppose that he would put forth his best powers, is certainly not a work to make much talk about. Both's glowing landscape (90) is a much intenser work, a pleasant atmosphere to be introduced to, and which tells the more from juxtaposition with the small cool Claude (92), which in truth it rather overpowers. The half-length of the Earl of Leicester (94), by Sir Antonio More, is worth attention, for the picturesque and unusual dress, and the pains which the painter has bestowed upon it. The immense advantage which the old portrait-painters possessed in the costumes of their sitters ought to be always taken into account in drawing any comparisons between the artistic results of modern and ancient portrait-painting. Rembrandt's "Youthful Head" (103), his better-known portraits of the "Palekan Family" (100, 107), and his superb "Portrait of an Old Lady" (113), which has been in one of the recent Burlington House exhibitions, are all masterpieces in their way, and things which one is always glad to meet again. Vandyck's "Wife of Cornelius de Vos" (116), with less power than some of his works, may be noted as one of the most beautiful and interesting faces ever seen upon canvas. Two half-length portraits of Jane Seymour and Edward VI. (111, 115), with the name of Zucchero on the frames, but which are more cautiously labelled in the catalogue, "artist unknown," are worth special attention. These are hardly-painted pictures, in low tones on a very dark ground, somewhat resembling in general treatment the small profile portrait by Pietro della Francesca, No. 195 in the present Burlington House collection. In the "Jane Seymour," the drawing of the features is a little stiff and angular, but the general effect, with the pale dress only a little darker than the flesh-tint, and the head-dress, in folds of orange and low purple, is most delicate and unusual. In the other the face is better painted, but the colour not equal to this one. The allegorical picture by Porbus, "The Power of Love" (120) (a very sensuous kind of allegory), is well worth attention for its peculiar *motif* and fine colour, and execution of costumes and accessories. On the small screens in this portion of the collection are some of the finest existing specimens of the two great *genre* painters of the school, Ostade and Teniers, in which especially the splendid composition, both as to lines and lights, whereby the former painter glorified the humblest peasant life of his country, may be studied to great advantage. Among these, "Interior, with Peasants" (128), is perhaps the most perfect. A small Terburg, "A Lady at her Toilet" (170), should be particularly studied; it is a masterpiece of tone and execution in regard both to the figure and the painting of the marble column and cornice which form part of the background; there are few things in the Peel collection at the National Gallery to equal this. Among the few Italian pictures Canaletto is predominant, and is seen here to the greatest advantage; "Venice, from the Giudecca" (256), is a particularly good specimen, with its expanse of reddish brown quay in the foreground, which throws back so well the distant city seen across the water. Domenichino's "Woman in Eastern Costume" (252) is a fine thing in the painter's usual bright, cheerful manner; and Conegliano's "St. Katharine of Alexandria" (265), rather crude in colour, is a capital example of what may be called decorative painting, in style and manner. But worth more than all the other Italian works, and, indeed, one of the finest things in the whole place, is the Giorgione, "Venus disarming Love" (263). The tone of the landscape is quite unreal, it is true, but then so are the figures, and the whole thing is in perfect keeping, and suffused with a glow of colours quite magical in its warmth and intensity. There is no Titian worth saying much about; and the Spanish school is represented mainly by Murillo. There is one fine and well-known Velasquez, the portrait of the little "Infante of Spain" (299), looking like an inverted wineglass in his stiff frock, which, for its splendid qualities of execution, is likely to retain its hold on our admiration more permanently than many pictures of a more aspiring type in regard to subject.

The most interesting portion of the picture exhibition, however, is the French collection; interesting, because of its remarkably high average merit, and because it illustrates a school of painters whose works we have not often such an opportunity of studying and comparing; viz., the French painters of the last generation and the older men of the present generation. Here is the larger copy of Ary Scheffer's finest picture, the "Francesca da Rimini" (366); one of the few works in which the artist escaped from the region of mere sentiment, and rose to the expression of passion and tragic power,—a picture far superior in conception and artistic power to the theatrical "Christus Consolator," or the placid "Dante and Beatrice," by which Scheffer is best known to the English public. Of one most remarkable artist of the same period, Decamps

whose works are almost unknown to the public in England, there are no less than thirty-four specimens, including almost all classes of subject. The largest of these, "The Patrol at Smyrna" (35), has been engraved in an English publication; it is one of the finest combinations of humour and of brilliant execution we know of in modern art: the members of the said patrol, in gay parti-coloured dresses, with their commander in the centre, on a white horse, come tearing at full speed down a stepped street, as if they would break their necks and the horses', but otherwise with a stolidity of countenance and manner clearly indicating that this is merely their way of doing the business. Among other admirable works by Decamp, may be mentioned "A Troop Watering their Horses" (337), "Well in Syria" (482), "Turkish Fortress" (498), "Mules at Boulac" (555), a wonderfully clever thing; "Villa Doria-Pamfili, near Rome" (562): whoever will compare these three last-mentioned works, and notice how distinct they are in subject and treatment, and how excellent each is in its way, will certainly form a very high idea of the versatility and power of this artist, who seems never to have sunk into common-place, whatever he attempted. One picture only of his here must be regretted, "An Execution in the East," as an instance of that tendency to paint subjects of horrible cruelty, which is even a greater blot on modern French art than its sensuality in some other classes of subject; it is a pity such a work was hung. Close to "The Patrol" is one of the finest Corots we know of, "Macbeth and Banquo meeting the Witches" (356: the figures, of course, are quite subordinate to the landscape), and near this is a beautiful landscape by Rousseau (353), in which we look into meadow-land and a stream, through an arch of trees in the foreground. Among the older French painters we find on the walls Watteau, represented in some of his largest and best works; notably his "Picnic Party" (398), a charming group of gay figures, among which should be noticed especially the two couples in the background, where a lady is being assisted to rise from her seat by her companion; anything more natural and elegant in manner than these little figures one could not wish to see. Greuze is largely represented, chiefly by heads in his usual manner, and with his usual merits and demerits. One rather elaborate composition, however, "The Broken Eggs" (468), shows this painter in a class of subject in which we seldom see him, and which in humour and feeling partakes of the characteristics of Wilkie, though the humour is at once less delicate and less genuine than that of the Scottish artist. "The Death of Marino Faliero," by Delacroix (371), is a very fine specimen of this painter. That masculine artist and splendid draughtsman, Horace Vernet, is here in great force; among his larger works are "The Arab Tale-teller" and "Joseph's Brethren dipping the Coat" (335, 338); among his smaller works on the screens are noticeable "A Lion Hunt" (505) and "Fishermen Embarking" (536), the latter a charming and natural work,—a single man in a red cap walking over the beach to his boat in a strong sunlight, which throws his shadow on the face of a quay on the right. Of Meissonier, again, there are a number of specimens, of which each seems the best until you look at the next one; among others, the first picture he ever exhibited, "Visitors" (546), in which his peculiar excellences seem already fully developed. Close to this, "Napoleon and his Staff" (546) is a marvel in minute execution of men and horses; all the characteristic power and expression in the countenance of the man whom Victor Hugo celebrated (in a poem) as simply "Lui," are given on a head about the size of a pea. Some others of these little works are quite beyond praise for concentrated power, brilliancy, and expression; we may name particularly "Throwing Dice" (537), "Subject from the Decameron" (564, a beautiful work), and "Travellers Halting" (587). One work by Dupré, "Crossing the Bridge" (595), illustrates this fine and original landscape artist. Couture's "Masqueraders" and "Duel after the Masquerade" (513, 517), should be looked at for their artistic merits, not to speak of the moral lesson conveyed; and the same painter's "Roman Luxury" (493) contains one of the most excellent specimens of drawing and painting of the female figure we have seen, giving the indications of the main points of the framework without losing softness and delicacy of surface—a very difficult achievement. Among the artists of the last generation, Marilhat should be noticed specially for his "Composition: the Erechtheum" (362), and one or two of his Nile scenes. Among the eighteenth-century men, too, Fragonard will repay attention, for a real beauty and originality of feeling in spite of the tendency of his designs, to "prettiness." "The Fountain of Pleasure" (344), engraved a good many years ago in the *Art-Journal*, is a little composition full of sunny, classic feeling and poetry; and the little figure of the "Lady carving her Name" on a tree (570), despite a certain mannerism in the figure, is a bright vision of youthful beauty and *gaieté du cœur*, which tempts one to look lightly on faults of style. On the whole this French collection affords a very full illustration of some of the ablest artists France has possessed during the modern epoch of painting.

The English and French water-colours, on screens on the ground-floor, contain some fine things; Decamps again being predominant among the French, his "Arabs fording a River" (668), and a "Well in the East" (687), being among the best; Marilhat's "On the Nile" (676), a very fine drawing, should also be looked at. Among the English works are a considerable number of those neat and thinly-washed water-colour drawings by popular artists in this school, which are so like each other in style and handling as to savour of art-manufacture. Those by David Roberts are exceptions, and include some sketches in his finest manner; but the things to look at here are some small works by Turner, particularly "Grouse Shooting," and "Woodcock Shooting" (653 and 657): the latter shows Turner in a subject different from what we usually associate with his name. It is a confined view in a cover, with a high bank of trees on the left; the clear manner in which the slope of the ground is shown ascending between the stems of the trees, the small dark fir-tree in front standing out against the rest of the composition, and the ferns in the immediate foreground, all indicated quite precisely in a drawing which is evidently rapidly executed, show the hand of a master in the art. It is worth while to compare the "Grouse Shooting" with Copley Fielding's "Lock Katrine," on the same screen, and notice the difference between genius and mere facility of hand and prettiness. Perhaps there are no things in the art more certain to keep their place than Turner's water-colour sketches.

Our remarks may, perhaps, serve to direct attention to some of the things not always likely to be noticed by general visitors, or mentioned in ordinary reports of this collection of pictures, which it is to be presumed will have to be removed during the ensuing summer. We must add a word in praise of the catalogue, which is arranged in a manner that might be a model for some other picture exhibitions. The names of artists, in the continuous catalogue, are printed in large black type, in the centre of the page, over the title of each picture, so that it is generally easy to find any particular name by a glance down the pages, but the whole is catalogued over again under the head of artists' names alphabetically arranged, giving under each name not only the numbers, but the titles of all the works of each artist exhibited.

ARCHITECTURE IN REFERENCE TO MUSIC.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Architecture practically considered in reference to music was the subject of an elaborate and suggestive paper read by Mr. H. H. Statham, jun., on the 20th of January, and which was illustrated by a number of diagrams. After some account of St. George's Hall, Liverpool, in respect of sound, contrasting with it the Albert Hall, the paper proceeded:—

It is probable that for the largest class of musical performances, the execution of great works of combined choral and instrumental effect, neither the amphitheatrical nor the theatrical form will be found the most suitable. The form of the complete amphitheatre, though its symmetry and simplicity may seem to recommend it, has this serious disadvantage (when used on a large scale) that the sound, as produced in the orchestra, is not properly controlled and confined in the direction in which it is most wanted. A certain proportion must be observed between height and width, and the wide area of an elliptic amphitheatre requires a lofty roof, and consequently a great space for the production of echo; a space into which the sound is launched with nothing to confine it in the direction of the audience, so that a considerable portion flies off to the roof, and is either absorbed there (if absorbent materials are placed to retain it), and so wasted, or it is reflected back again and becomes a source of serious disturbance. Something approaching to the theatre form is better, as the orchestra can then be confined under a lower roof and between side walls, and the sound driven forward more. If employed on a large scale, there is still the same objection of a necessarily lofty roof and vast centre space, in which much sound is lost and dispersed, besides a degree of difficulty in getting all the audience sufficiently in front and facing the music. Accommodation, too, in such a case must be obtained by the use of successive tiers of galleries, which, except in the front row or two, can scarcely ever be so good for hearing as the uninterrupted area. On the whole, therefore, I believe it will be found that the requirements of the case are best met, and the difficulties best avoided by the long form of room, rather than the theatre or amphitheatre form, and that conduction is a more direct and successful way of conveying the sound to the audience than radiation. The waste space of air in a room of this size may be made much less in proportion to the area than in an amphitheatre. The amphitheatre could not be made to look otherwise than ill-proportioned, unless its roof were placed at something like a proportionate height. For the successful conduction of sound in this way through a long building it is essential that the sound, as produced in the orchestra, should be confined from spreading above or at one side of the performers, and reflected forward as strongly as possible; that the height of the auditorium, though greater than that of the orchestra, should not be such as to give room for any unnecessary loss or dispersion of sound, or to allow space for a disturbing echo from the roof; that for the same end the roof should be nearly flat rather than circular, so as not to collect and focus any reflection of sound which may be inevitable. The orchestra should be constructed principally of wood, and the walls of the auditorium lined with wood; but the walls, as well as the ceiling, require to have their otherwise flat surfaces broken at intervals by projections, in order to avoid the conduction of sound along the walls, and break up any reflection from the ceiling; and careful provision must be made against a return echo from the end of the room. So much for the principal acoustic provisions, which have been before laid down from experiment by some of the best authorities on the subject, and in regard to which I need only observe that my own experience, as far as it goes, completely confirms them. But now as to arrangement of the audience and performers in regard to one another. One of the principal advantages of the longitudinal room is that the audience all sit facing and directly opposite to the performers; not only a better position for hearing, but more comfortable in every way; for although we do not hear with our eyes, there is an irresistible tendency to look towards the quarter from which the sound comes; and in a side gallery in a music hall you will always see the audience with their heads all turned sideways to look at the orchestra. A room with a flat floor, however, is always unsatisfactory for hearing, and I hold that the seats should always rise as they recede from the orchestra. When sitting, as I have often done, at the back of a long flat-floored room at a concert, I have always *felt* that the principal volume of sound was over my head, and out of my reach, so to speak. I adopt the principle called by Mr. Scott Russell the "isacoustic curve." The tendency of this curve is to fall near the point of sound production, and to rise again further on; this brings the front rows of the auditory higher up in relation to the performers, so that the sound is not carried so far over their heads as would otherwise be the case. Another point to be considered in placing the audience is, that for a performance on a large scale (which alone we are now considering), no person who wishes to enjoy the music, or to realise its true effect, would ever choose to sit close up to the orchestra. As concert-rooms are generally arranged, it may be taken as a rule that for this class of performance all the first ten or twelve rows of seats, if not more, are thrown away, so far as any real enjoyment of the music goes. Now we generally find, in connexion with concert-rooms, a considerable space in front of the audience end occupied by a large lobby or crush-room, serving mainly as a waiting-place for relieving the pressure of the crowd in going out or coming in.

Now I have proposed here the system of carrying the auditorium to the very back of the building, and making the entrances to the principal portion of it at the sides, between the auditorium and the orchestra, and transforming the space usually occupied by the front seats, in which no one can hear with pleasure, into a vacant space which may act as crush-room or *foyer* before and after the concert, and as a promenade for part of the audience during the interval which generally occurs in the middle of a performance. If this space were laid with parquetry flooring on joists, with a hollow space underneath, it would not only make a very effective entrance to a room, but would probably act as a reflector and reinforcer of the sound from the orchestra. The fact that any of the audience leaving before the close of a concert would have to pass before the performers, may occur as an objection; but it is only the solo performers in front of the platform who are much disturbed by such an untimely exodus, and by the arrangement of the aisles it will be seen that the audience need not pass near them at all. It may be observed that there should never be a centre aisle between the seats in a concert-room, as this places the solo singer opposite an empty strip of floor instead of a range of appreciative countenances. The possibility of draughts to the performers appears a more serious objection to this placing of the entrance, but I think it may be entirely obviated by such an arrangement as is indicated in the plan, of making the lobbies to the ladies' and gentlemen's cloak-rooms the approach to the inner lobby, and having no communication between it and the outer vestibule; and by keeping the inner lobby well warmed, and with a sufficient outlet at the top, any draughts which might be drawn in would be disposed of here, without finding their way into the concert-room. This is of course only a question of ordinary planning; but I think in all cases of entrances to concert-halls some such decisive means should be employed to shut out any access of cold air from without, which is the cause of much indisposition among singers, independently of the discomfort to the audience.

Now in regard to the orchestra: it may be said that the placing of the various performers not only so as to be well heard by the audience, but so as not to incommode or interfere with each other, has been almost entirely overlooked in most cases. It is generally considered sufficient to make a tier of semicircular stages, one behind another, and the band and chorus fit themselves into these in a kind of promiscuous manner, while the solo singers find room where they can in the narrow strip left for them in front of the band. This might have done very well in old days of smaller performances, and when the band was used much more in conjunction with the chorus than it now is, and for the most part played the same notes which the chorus sang. Now the case is very different; the modern band is much more powerful and brilliant than the old one, and is mostly used quite independently of the chorus and in a different manner: and the usual construction of the orchestra, which crowds the band and chorus together, is a double disadvantage. The band is immediately backed, not by any sound-reflecting substance, but by the mass of the chorus, whose dress forms a body of sound-absorbing material; and on the other hand the singers are liable to be put out and disturbed by the noise of particular instruments close to them; for it may be supposed that a chorus-singer is not likely to go through his part the more correctly with a trombone bellowing in his ear something quite different from what he is singing. The construction of the orchestra which I would propose as an improvement would inclose the band with a kind of wooden shell or sound-board bending round them in the rear, and coming under their feet to the front, the stages on which they stand being carried by framing at intervals. The sound-board would be carried above the heads of the upper rank of the band and bent forward over them to some extent; and then above and behind this and on the upper level would be ranged the chorus seats. By this means I expect that the sound of the band would be thrown forward into the room, while at the same time the sound, especially of the louder instruments, the brass and drums (which are always at the back) would be to a certain extent veiled from the singers, who would be able to hear their own voices better, and hear the band as a consentaneous union of instruments, instead of having here and there a particular instrument close to their ears, drowning everything else.

This arrangement of the orchestra in two tiers would be susceptible also of very good decorative treatment. The orchestra as planned by me is intended to accommodate a band of about eighty; a good average number for the best class of band. It may be useful just to mention how the instruments are generally placed, and what space is required for each. A band of this size would include about thirty-two or thirty-four violins, divided into first and second, and occupying the lower stages to left and right of the conductor (who faces them); about twelve tenor violins placed in the middle of the same stages, between the first and seconds; and from eight to ten violoncellos, and nearly the same number of basses, which are usually divided and placed half on each side, behind the violins. Then there are the quieter wind instruments, the wood instruments, almost always eight in number, which should range in a row behind the tenor violins, as sometimes they are kept more to the left; and at the back are placed the drums, and on each side of them the brass instruments. If the stages are made about 3 ft. wide, it will be found sufficient for the violins; the two back rows should be wider, to allow plenty of room for the larger stringed instruments. About 3 ft. longitudinally should be allowed for each violin, and about 1 ft. more for the violoncellos; the basses, which are very bulky instruments, must be reckoned as requiring nearly 5 ft. to each player. A platform, the width of two stages, should be left in the centre of the two top rows for drums, which for want of such a provision are often very inconveniently placed. The wind-instrument players require little more than easy standing-room longitudinally, their instruments not necessitating much action in playing. These details are not quite superfluous, as I knew a case where an architect was instructed to provide room for a band of sixty, and very conscientiously provided standing-room for sixty persons; which did not quite answer. The organ should be at the back of the whole, behind the chorus, to whom it is the greatest assistance; and it should, wherever possible, be rather spread out laterally behind the singers than projecting forward among them in a square mass: the latter is the almost universal arrangement, but it is bad, as it places a part of the chorus on each side in a recess, where they are not well heard and cannot hear each other; which latter point, it should be remembered, is as essential for satisfactory performance. The rest of the space behind the singers would be filled up with a wooden partition like that behind the band, or it may be partially filled by carrying round some of the larger organ-pipes in a segment of a circle, which would add very much to the architectural effect. In the organ height has to be provided for a pipe 32 ft. long, which is the longest used; but these larger pipes may be placed below the level of the visible organ-case; they will be just as well heard, it being an understood thing that the organ is connected with, and supported by, the same system of timber framing which carries the chorus-seats. The organist should *always* be placed below, in front of the whole orchestra, which, now that the electric movement can be applied, is easily done. This is most important; for when the player is caged up close under the instrument he cannot possibly tell what effect he is producing; but there are very few concert-rooms in England where this has been attended to. Lastly, the solo-singers I would have advanced on a small projecting platform of their own, so as to be a little nearer the audience and farther from the band; by this means not only will their voices stand out better, but they will not be incommoded by the too near proximity of the band.

These deviations from the regular arrangement of the orchestra would, I believe, conduce to the more successful and clear performance of music on a large scale, and to the comfort and ease of the performers in going through their work. The auditorium, it may be observed, is not unlike that of Exeter Hall in general arrangement, but the seats there are not arranged on a curve, and the proportions of Exeter Hall are broader and shorter. But, ugly and faulty in many ways as that time-honoured room is, I have never heard the effect of oratorio choruses on a large scale so clearly and satisfactorily as from the back part of Exeter Hall. I attribute this to the raised seats and to the position of the audience directly facing the performers. The ceiling is low, and it is a question of simple construction of sound. In fact, there is too much sound for the place; and I believe that rooms built on this principle, and with the best acoustic principles and arrangement, might be made much longer than they commonly are, without at all losing the effect of the music. In my plan the auditorium is 150 ft. long, exclusive of the space in front of the audience. The length from the front of the orchestra to the back of the hall, in St. George's Hall, is about 140 ft., and a flight of steps at the back rises to about 8 ft. or 10 ft. above the floor level. From the manner in which a band at the other end can be heard at this extreme point, I have no doubt that, with proper construction, the room might be prolonged 100 ft. further with success. So also Exeter Hall might be prolonged without the gallery, to a very considerable extent, with improvement to the effect. Of course, it may be said that side galleries would give the same accommodation without increasing the length. But side galleries are most unsatisfactory places for hearing music. In one hall with which I am very familiar there are long galleries at each side arranged in a slope, front to back, and which take about 1,000 of the audience. But in those galleries the part in which you can hear the effect of band and chorus fairly even is limited: in all the rest of the gallery it is an unsatisfactory strain to hear. Large windows in any position where they can reflect sound are undesirable, and lighting from the roof is generally bad on this account. On the whole, the windows are probably safest high up in the side walls; and concert-rooms being so much more used by night than by day, lighting is not the most important point. One practical difficulty in dealing with a hall on this plan is, of course, the utilisation of the space under the seats at the back, which is too large an area to be thrown away: in towns it would probably become an available source of revenue as shops or in some similar manner; and where the site allows of no approach at the side, the entrance, of course, would be here.

Very large ideas have been afloat lately as to the number of persons who may be accommodated to hear music in one building; and a well-known writer on architecture has made it a charge against us that we are content with getting three or four thousand people into a concert-room, whereas, if the buildings were properly arranged four or five times that number might hear. This idea I believe to be a complete fallacy, and one which those who build such rooms should discourage. It is impossible by any acoustic expedients to secure that music should be intelligibly heard and effectively rendered in rooms beyond certain limits of size. I say *intelligibly* heard, because that, as before hinted, is really the point. You may no doubt group 15,000 or 20,000 people in such a way that they shall all be within sound of the performers, and have a general notion of what is going on, but that is not hearing music. It does not in the least follow that because 500 performers produce a certain effect in a building of a certain size, 2,000 will produce an equal effect in a building of four times the area; for two reasons. The organ can be in some degree adapted to an increased scale of building, because its sounds are produced purely by mechanism, and by a heavier pressure of wind they can be forced up to a proportionate strength. I do not think these huge over-blown music-mills give as much pleasure to the ear as the old quieter instruments; but it must be admitted that they can make themselves heard. But in regard to other instruments and voices, increase of power can only be got by multiplying the numbers, and this is not the same thing at all. With increase of numbers comes decrease of delicacy, accuracy, and precision; and besides a peculiar indistinctness and want of sharpness of effect, better felt than described, as if the outlines of the composition were blurred and uncertain,—the result, I suppose, of the fact that when a thousand or more performers are to sing together they must be so far asunder that their sounds do not strike the ear with that combined and instantaneous effect which can be secured with a smaller number. In the second place, 15,000 or 20,000 people cannot be accommodated within hearing of music at all except in a building having a great cubical capacity in proportion to its area; that is to say, a vast mass of air space between the performers and a great portion of the audience, and sound cannot, by ordinary means, be forced through this space without a liability to be dispersed and disturbed in its passage. This is not, certainly, a very scientific way of putting it, but this is the only way in which I can explain the singular effect of the

music in the Albert Hall as heard in the balcony. You get a part of a phrase, from the violins for instance, distinctly, and the other portion of it seems to go away somewhere else—

"The rest the gods dispersed in empty air."

You do not hear particular instruments come in when they ought, but you find them out when they have got half through a phrase. This singular effect I noticed over and over again the first time I visited the building. This is not "hearing music." I have heard, within a short period, 1,000 performers in the Albert Hall, 500 in Exeter Hall, and 250 in the Liverpool Philharmonic Hall. The 500 produced the greatest effect; but certainly the 250 in the comparatively small room at Liverpool produced more effect than the 1,000 in the large hall, and as to clearness of rendering, in regard to detail, there is absolutely no comparison. I should apologise, perhaps, for going into what may seem purely musical questions; but the corollary from all this is, that great buildings like the Albert Hall are unsuitable for a clear and intelligible rendering of music: and the result would have been far more satisfactory, for this end, if two halls of half the size had been built, and the audience and performers divided between them. It may be possible to enable 10,000 people, or at all events, 8,000, to hear 500 performers satisfactorily; but I do not believe it is possible to enable 20,000 to hear 1,000 with the like result.

We have been considering, so far, the problem of buildings for large combined choral and instrumental performances only. A different class of performance, however, changes the conditions very much. In comparing vocal and instrumental concerts, it must be remembered that voices can be satisfactorily heard in front only; but the greater proportion of instruments can be heard nearly equally well all round; even the wind instruments, which come nearest to the conditions of voices, can be heard as well sideways as frontways for all practical purposes, and can be very fairly heard even when playing away from the listener. For this reason a central position may become the best for the performers in a building intended specially for this class of music. There is a most beautiful and intellectual class of compositions written by the great masters of the art as "chamber music," consisting mostly of music for three, four, or five-stringed instruments. The idea occurred some few years ago of bringing these works within the knowledge of a larger public by that series of performances which has gained such celebrity under the title of "Monday Popular Concerts." These, though in one sense a great success, are given under the most serious disadvantages from the want of suitably planned and constructed room for them. It is absurd to suppose that the same concert-rooms which are suitable for an oratorio performance can be suitable for this fine and delicate class of music. To treat chamber music so is as reasonable as it would be to place a statuette intended for a drawing-room in the centre of a large square. What is wanted in this case is a room where all the audience shall be as near as possible to the performers, and where there should be as little waste air space as possible. In this case the centre of the room is quite the most suitable place for the performers, and a circular building, with concentric ranges of seats and a raised platform in the centre would be probably the best form that could be employed. The seats for the audience to be arranged on the isacoustic curve, the whole building kept low in comparison with its area, and roofed by a dome, with light iron or timber ribs,* and a central light. The inner surface of the dome should be lined with wood panelling, as also the wall above the top row of seats. The central skylight would be the simplest and most natural method of lighting in a case of this kind; but to obviate the echo from a flat surface of glass, I would glaze the inner skylight as a congeries of small circular lights, with convex glass, the convex sides downwards; this would effectually break up and disperse echo; and at night artificial light could be applied within and above the centre of each of these lights. In a building arranged on this plan there would not be more than about 30 ft. above the players at the highest point. The whole of the resonant surfaces, the roof and walls, would be equi-distant from the players, and the sound would impinge on every point at the same moment. The building, as suggested here, would seat 2,000 people, of whom the furthest row would be within 50 ft. of the players. In such a room I believe 2,000 people would be able to hear string quartette music with the effect which the composer intended. This is certainly not the case with St. James's Hall, where these compositions are now played. It is possible that for instrumental music on a larger scale the central arrangement of the players might be found the best in some ways, as bringing a larger number within good hearing distance of the more delicate passages, though the arrangement and placing of the musicians in such a case is a matter of some little difficulty. I was not aware till the other day that this idea had been practically adopted for some time past at M. Pasdeloup's Sunday instrumental concerts in Paris, which are given in a building at other times used as a circus, the orchestra being placed in the centre. The *Athenæum* contains a long communication on orchestral concerts in Paris, in which the writer mentioned this arrangement as realising a very satisfactory effect, and added, "the matter is worthy the consideration of architects who may have to erect new concert-halls"; and though I think the Albert Hall far too large as it stands, to realise the more delicate effects of orchestral playing, it is very possible that if you were to take the amphitheatre portion alone (omitting the boxes), with a lower roof, and place the orchestra in the arena, it might prove an exceedingly satisfactory arrangement for enabling a large number of persons to hear a symphony to advantage. It would be impossible to place the wind-instruments so that they could be equally well heard by every one; but this, I think, would be the only serious difficulty. Of course, this central arrangement in both cases supposes concerts of instrumental music alone, unmixed with singing. We are not much accustomed to this in England; but this is mere matter of fashion, and since the conditions of successful hearing for voices and instruments are so different, it seems better, when large audiences are in question, not to mix them.

* Timber would be preferable for acoustic reasons, as well as for attaching the wood ceiling, though the practical problem of a low wide roof would be more difficult with timber.

RECONSTRUCTION OF THE INTERIOR OF GREENWICH HOSPITAL.

During the last few months very extensive works have been in progress at Greenwich Hospital, a large portion of the interior having been undergoing structural alterations for the purpose of converting it into a Royal Naval College, which is intended to be partially opened to-day for the reception of students.

The portions of the interior which have been reconstructed in order to adapt them to the educational purposes to which they are in future to be devoted, are generally the apartments which, until within the last few years, formed the home of the old naval pensioners. The hospital buildings, as may be generally known, are divided into four blocks, namely, the King Charles and King William blocks, and the Queen Mary and Queen Anne blocks, all of which are included in the alterations which are now almost completed. In designing and carrying out the conversion of the building, the principle of appropriating the several blocks to the separate and distinctive requirements of the college, both educational and domestic, has been mainly kept in view. The King Charles block, which, under the old *régime*, was principally set apart as the sleeping quarters of the old naval veterans, has undergone a complete transformation. The whole of the pensioners' dormitories have been cleared away, the interior walls having, to a great extent, been removed, and the space so formally occupied has been converted into class-rooms for the naval students who will in future occupy them. These several class-rooms, which are very numerous, have all been decorated, and fitted with gas and other conveniences for their intended purpose.

The King William block, which formerly contained the pensioners' dining-room, is intended to be used as mess-rooms for the students, and in order to adapt it to this purpose extensive structural alterations have been made, including the formation of large and commodious kitchens, fitted up with several ranges and other domestic convenience. It is also intended to construct a spacious lecture-room in this block.

The Queen Mary block during the period of the pensioners' residence was mainly used as dormitories, three floors in the building consisting of sleeping apartments, with long corridors along each side. In addition to these dormitories there was a large and commodious day-room in the centre of the block on each floor, fitted, amongst other aids to comfort with huge old English fire-ranges, around which the veterans were in the habit of relating to their friends and others the scenes which they had witnessed in battle, and otherwise interesting their listeners with many a well-spun "yarn." The whole of these apartments have been completely renovated and decorated, and are now in course of being fitted up and furnished as dormitories for the students of the college. This block is now divided from the ground-floor up to the floors above by a new wide and spacious staircase, and the north-east portion will be occupied by the sub-lieutenants, whilst the southern portion will be set apart for the engineer students when the college is fully opened in October next; and the large day-rooms on each floor, already alluded to, have undergone extensive alterations, and are newly decorated and intended to be used as general and mess rooms by the engineer officers and students. The hospital chapel, which is in this block, has also been renovated and cleaned, and will be opened for services as the college chapel.

The Queen Anne block is intended to be formed into spacious apartments for a museum in connexion with the college. The works in this portion of the building have been somewhat heavy. The block formerly contained twenty-four wards for the pensioners, and these have all been cleared away, which has admitted of an exhibition-room of large dimensions being constructed. Amongst other articles which will form portions of the museum in this portion of the reconstructed interior, are the naval models now at South Kensington, which are intended to be removed to the Royal College at Greenwich.

The above are the chief alterations which have been effected in the interior of the hospital in order to render it available for its future purposes as a naval educational establishment, but still further changes in the building are said to have been resolved upon, one of these being the conversion of the celebrated painted gallery into an elegantly finished mess-room for the officers and students of the college.

The whole of the interior, as reconstructed, will be heated with hot-water pipes, this portion of the works having been carried out by Messrs. D. & E. Bailey, of Holborn. The alterations have been designed by Col. Clarke, C.B., Royal Engineer to the Navy and Director of Works, and carried out under his superintendence; Mr. G. Smith being the contractor, and Mr. Loughborough the clerk of works.

NEW GYMNASIUM BUILDINGS AT THE ROYAL NAVAL SCHOOL.

Whilst the works described above have been going forward at the hospital, an extensive new building for the purposes of a gymnasium has likewise been in progress at the Royal Naval School, on the south side of the hospital itself. This structure has also been designed by Col. Clarke, the Director of Works, Mr. G. Smith being the contractor for the new building at the Naval Schools as well as for the alterations at the hospital. The new gymnasium is being erected on the open area between the present Naval School buildings, and its principal north frontage towards the hospital is uniform in architectural design with the school-buildings themselves. The line of elevation of the new building stands 25 ft. backwards of the school frontages. It is 88 ft. in length, and 32 ft. 6 in. in height from the ground-level to the cornice, the cornice itself being 5 ft. 4 in. in height, surmounted by a balustrade, 5 ft. 2 in. high. The total height of the frontage is thus 43 ft. The building is entirely of Portland stone, the basement being rusticated. At each angle of the elevation there are pilasters, with columns running up between the windows. The principal entrance in the centre, which stands forward several feet beyond the general elevation, and which is 5 ft. in width, has an arched recess, supported by two columns on either side, with ornamental capitals. The central portion of the elevation over the main entrance and above the cornice is surmounted by carving, over which is placed the Admiralty arms, with groups of sculpture above the columns on each side. The gymnasium is approached through an ornamental iron gateway at the central entrance, over which are the royal arms. The interior of the front portion of the building will contain boiler-rooms on the basement. The ground-floor will consist of the instructors' rooms, apparatus-

room, lavatories, and dressing-rooms. On the first floor there is a large gallery opening into the gymnasium, and from this gallery a commanding view is obtained of the gymnasium exercises. On each side of the gallery there are several rooms which will be devoted to executive purposes, whilst on the second floor there are several apartments for domestic purposes. The gymnasium itself is at the rear of the building, and the floor is slightly elevated from the ground-level. Its dimensions are 186 ft. in length by 76 ft. in width, the entire area being enclosed by an elliptical roof consisting of eight wrought-iron ribs, springing from the ground-floor line, the span of the ribs being 80 ft. each. The height of the gymnasium from the ground to the centre of the roof is 31 ft., above which there is a continuous light and ventilator. The building is also lighted at the sides by a series of windows. A large quantity of iron is required in the construction of the gymnasium, which is supplied by the Horsley Iron Company, at Tipton, in Staffordshire.

COMMON-WEAL QUERIES.

CURRENTE CALAMO.

WHETHER a Minister of Public Health is not more indispensable than a Public Prosecutor; and whether both should not be qualified professional men?

Whether a medical officer of health ought not to be a practical chemist, that he might be fitted for his obvious duties as a public analyst; and whether his salary should not be such as would properly remunerate his services, and secure his undivided attention to his office?

Whether every local Board surveyor appointed in the future shall not possess the necessary qualifications of a sanitary engineer?

Whether a person adjudicated a bankrupt three times within seven years, and who on each occasion left nothing for his creditors to realise, should be eligible to sit as member of any public Board or company? and if eligible, whether his citizen right should not be suspended for a limited interval?

Whether these or similar restrictions would not have a beneficial effect, and raise the standard of public representation?

Whether the main drainage and recent sewerage works of London have not greatly exhausted the water-bearing strata of the metropolis, and had an injurious effect on all kinds of natural vegetation in the vicinity of its circuit?

Whether the carrying out of our drainage and sewerage works, as also the sinking of the numerous artesian and other deep producing springs, is not the cause of the gradually drying up of many of the ancient celebrated wells of London?

Whether prevention does not render a prognosis and diagnosis unnecessary, and whether it is not in consequence the stepping-stone and basis of individual as well as public health?

Whether it is not a most unwise and dangerous proceeding to lay out a number of new streets converging to one common centre, and whether the danger and the difficulty are not greatly increased where they are made to converge from different angles opposite a bridge, which has already a line of roadway parallel to the river?

Whether Mr. Lowe has not been contemplating for some time what he can get for public purposes from the City companies, and whether he could not be checkmated by the City guilds at once carrying out a reform in the spirit and purpose of their being?

Whether, in constructing a new town or city, or reconstructing an old or a burned-down one, great parallel lines of streets or roadways, running east and west or north and south at suitable distances, would not be the most judicious and practical method of street-planning?

Whether a provision should not be made in every railway and public improvement Act whereby the poor who are dispossessed will be provided for by the erection of new and healthy homes, or an equivalent for their losses?

Whether the erection of a number of new dwellings for those dispossessed, at a distance from the centre of their employment, is in itself a fair equivalent without some other consideration?

Whether it is not judicious and wise to make our gaols and workhouses as self-supporting as possible?

Whether great mechanical skill or great mental genius in itself ought to be the most prized, and whether one is incompatible with the other?

Whether mental thought in every age did not precede mechanical labour and invention?

Whether both are not twins born of the same parent, and should they not be constant and loving helpmates?

Whether it would not be criminal to draw an invidious line of demarcation that could lead to the divorce of mental genius and mechanical skill?

Whether the rapid increase of population is not a serious fact, and whether it is not the duty of the State to look in time and legislate with a view to the future proper housing and sources of sustenance that will be required by our people?

Whether at some future era of the world all insular nations will not perforce be obliged, through reason of self-preservation, to amalgamate, and whether some non-insular ones will not also have to follow suite?

Whether these natural exigences will not be the natural laws through which all races of mankind will be united,—the touch or force of nature making, at last, "the whole world kin"?

Whether, while we are madly exhausting our coal-fields, we are not most unwisely neglecting the generating power that is to be found in water, wind, and electricity?

Whether the water-force of Artesian wells could not have a more useful mechanical application; and whether wind-sails and water-wheels are not still capable of a much higher phase of development?

Whether the combined waste gases of the animal and vegetable kingdom (living and dead matter) in the metropolis, if collected, would not be sufficient to blow up London; and whether this in itself is not a great waste of power that might be partially and beneficially utilised?

Whether the establishment of an inventors' fund by the State, for the purpose of encouraging and rewarding the authors of really useful inventions, schemes, or systems, whereby the nation at large is benefited, would not exceed in value the ordinary applications of rewards through the action of the civil list?

Whether some of the most deserving of our public benefactors are not left to die in poverty, neglected and unrewarded, after expending a lifetime and exhausting their own private fortune in benefiting the commonweal?

Whether the social reformer who saves the lives of thousands by his public labours is not to be more esteemed by mankind than even he who makes "two blades of grass grow where only one grew before"?

Whether each of us could not do a little individually for the improvement of our species and society during our lives, and would not the sum of our collective labours in each generation have the effect of leaving the world at our deaths in a much better position than we found it?

Whether a simple suggestion thrown out casually, and acted upon, has not often led to important results; and whether it may not be possible that a modicum of good to the commonweal will arise from the penning of these queries?

Whether anybody will thank us if this should happen?

THE DECORATION OF ST. PAUL'S.

THE English, as a rule, are not critical. They do not readily detect anomalies in thought, art, or combination; have no notion of *consistency* in matters relating to art; and are, therefore, insensible to the fact, that any set of men are not fit to deliberate and decide upon any subject; and also to the mistakes, absurdities, and incongruities necessarily consequent on appointing incompetent tribunals. They will elect a committee of able men of business, and believe it competent to settle any question under the sun; entrust any important public work to its guidance, about which, probably, not one of its members has the slightest practical knowledge. In ordinary affairs, the chances are, perhaps, about equal, whether a committee, promiscuously chosen, will be right or wrong in its proceedings and determinations; but in matters artistic, we may safely predict that it will do the very opposite of what it ought, for most unfortunately, every Englishman of fair education has of late got the conceit that he is competent to decide in matters of taste; and the country, under this state of things, may indeed consider itself fortunate, if any great public work, requiring consummate artistic knowledge to direct, be brought to a consistent and glorious completion. In any other country common sense would dictate that the initiative in such undertakings should be entrusted to a body of men, a committee, thoroughly conversant with art.

The first thing to be considered in reference to the completion of St. Paul's is, what were Wren's views respecting it? His views are often confidently spoken of as if they had been embodied in some precise testamentary declaration. If this really be the case, where was the necessity for supplementing Mr. Penrose, who had so long been the cathedral surveyor? But we never could believe that Wren was competent to determine, other than very vaguely, what the decorations of St. Paul's should be, and we are fully confirmed in this belief by Mr. Wyatt Papworth's letters to the editor of the *Times*. There was no sufficient art education in Wren's time, to enable him to form a just and definite conception respecting them. Nor were there then painters, in England at least, able to carry out his views, had they been correct. The ornamental carvings of Gibbons, whatever their special merits may be, are not in a style strictly appropriate to the architecture. His employment on these embellishments was, doubtless, a necessity imposed by the dearth of choice. Wren's towers, with Renaissance clock faces, at Westminster, clearly show that he had no nice and varied discriminating taste. And yet what is there that has been said in reference to Mr. Burges's appointment, which could not have been said with equal or greater force in favour of Wren being competent to *complete* the towerless abbey? But there the towers stand, as monuments of his incapacity to deal with a style to which he had not been to the manner bred and born. The word "*circumspice*," in the inscription in St. Paul's, may have been qualifying, not meant to extend as far as Westminster. In truth, a man who has, by circumstance and inclination, been long bent to a particular kind of art, cannot divest himself of a deeply ingrained bias. The idiosyncrasy will, imperceptibly to the artist, crop up just as it did with Wren at Westminster, and Mr. Burges at Worcester College.

The public appears quite to have forgotten that a Royal Commission* was appointed some thirty years since to collect every available information with reference to the proper mode of conducting great mural works, and the best qualified painter of the time was its chosen secretary. From the various reports published by this Commission, we may gather that when the great buildings in Italy, or more recently in Munich, were completed, the ablest mural painters were called in to decide the iconography and scheme of decoration as regards design and colour; the architect thenceforth only interfering should any architectonic anomalies occasionally present themselves when the designs were inspected, or by furnishing the minor ornamental decorations. The supposed necessity for supplementing Mr. Penrose doubtless arose in ignorance of the separate and special functions of artist and architect in conducting a great edifice to "completion." The time had arrived to call in the painters, not another architect, to determine the iconography, style of design, and scheme of colour. One architect, and that one as fully acquainted with Wren's views as any one is likely to be, would have been, unaided, sufficient for the duties properly devolving upon him at this juncture.

But if what has been done is irrevocable, every precaution must now be taken to guard against a probable Gothic bias in the newly-appointed architect. In this we have no doubt Mr. Burges would concur, and be ready to take to his counsel the best-qualified artists and technical advisers. This, at least, is all that we can now hope for. We fully believe in Mr. Burges's special aptitudes, but if he is to succeed in this undertaking he must, like the great masters of the Renaissance, put aside his leanings to the Giottesque in mural art, which is essentially Gothic, and unfitted for the massive Renaissance architecture. This brings us at once in view of the rock ahead, on which our would-be decorators of St. Paul's are ignorantly and perversely steering. The early Italian style of painting is to their untutored art-mind the true ecclesiastical style, whereas it was only a step in the development of the school. It is Gothic in its leanings, and would be totally unfit for and out of place in St. Paul's Cathedral. The great change in Raffaelle's style of design

* Correspondents of the *Builder* have, *on several occasions*, called attention to this fact.

has often been noticed, but the reason for it has nowhere, to our knowledge, been given. Raffaelle's style, till he became engaged on the great mural works in the Vatican, was, though superior to that of his master and other earlier Italian painters, Gothic in its bias. But as soon as he was brought within the influence of the Revival, of Grecian and Roman antiquities, and was called upon to adorn with his pencil the massive architecture of the Renaissance, he saw that larger forms and a greater boldness of treatment in design would be required to bring his painting into harmony, into unison, with the architecture. Michelangelo had made some ineffective attempts on the ceiling of the Sistine Chapel before he perfectly understood what was required in method of treatment for such an edifice, though he had long previously intuitively felt that a large and grand style of design would be necessary to bring painting and sculpture into harmony with the then prevailing fashion in architecture. It would be far better to leave the grand old cathedral in its smoky and bold grandeur than to deliver it over to our self-styled ecclesiastical decorators, designers of Gothic windows and contorted saints. Two of the greatest absurdities amongst the various items proposed for the "completion" are the insertion of pictures on glass in the windows, as these must inevitably be fatal to the effect of any mural paintings which may be hereafter executed, and the proposed extensive use of Tricquetti's marble inlayings, which, however appropriate to certain other conditions, would in St. Paul's be quite ineffective, and in a brief space of time undistinguishable from plain surfaces.

Let Mr. Burges leave the iconography and mural painting to the painters: he will find his proper vocation in purely architectural matters; in the restorations and subsidiary decorations. And we learn from a reliable source that there are many restorations and repairs needed, which are thus enumerated:—"considerable regilding, replacing of rails, especially those encircling the churchyard, and guarding some of the cracked geometrical pavement; the replacing of festoons that have wholly disappeared." There is no remedy, we are afraid, for the sinking of the piers. So long ago as 1803, a Commission reported that "in certain places they had subsided from 4 in. to 5 in., the dome subsiding with them; that the stones supporting one huge arch had yawned nearly 1½ in., that there were deep indentations in the exterior pillars, caused by rain, and forming channels for it, that the mortar was crumbling out; and that a sad degree of corrosion was in progress. No doubt efforts have from time to time been made to arrest this decay, but all in a partial and perfunctory manner." There is another source of injury not apparently to be reached,—the inherent dampness of the walls. Possibly modern invention may discover a cure for it. We must, however, ourselves protest against the finicking use, the picking in, of mouldings with gold, as recently done. This is suited to palaces, theatres, ball-rooms, &c., but utterly unsuited to a grand style of ecclesiastical decoration.

There is another alteration practicable, and absolutely required, which has been referred to by several writers on this subject, viz., the removal of all those sculptured memorials which have been injudiciously incorporated with the edifice: detached statues and groups may, perhaps, be permitted to remain yet some time longer or in perpetuity. The completion of St. Paul's may, perhaps, more forcibly bring to our minds the necessity there is for an English Walhalla in order to relieve St. Paul's and the Abbey of many monuments, which to improved taste in these matters have become eyesores. And, in conclusion, we venture to express a hope that only a small amount of colour, certainly not pictures on glass, be admitted in the windows, and that the field will chiefly be of "grisaille."

C. B.

Landslip at Oswaldkirk.—For something like twelve months past, on the south-western slope of the Hambleton range of hills in North Yorkshire, has been witnessed the phenomenon of about 10 acres of grass land, comprising portions of five or six fields, gradually and with irresistible force gliding from its original position into the plain beneath, confusing and interfering with old "rights] of property," in the most reckless manner. Other landslips in the locality have taken place, but they were small in comparison. Even a road has been cut into two by the process.

ON CORBELS, CONSOLES, AND BRACKETS.

What is a corbel in architecture, and in what particular is it distinguished from a bracket or console? What is its true origin, and how far has the term been altered in the practice of modern building? Is a *bonâ fide* corbel the emanation of Gothic or Classic architecture? Can a corbel exist without projections, and does it constitute a corbel when it springs from within the face of a wall, or when it is merely affixed? These are questions I would like to put to architects and builders in general, for my own information, as well as for the satisfaction of those who ought to feel interested.

One of our "standard dictionaries" thus defines the term:—

"Corbel, *s.* In architecture, the representation of a basket, sometimes set on the heads of caryatides; the base of a tambour of the Corinthian column, so called from its resemblance to a basket. A short piece of timber, iron, &c., in a wall, jutting 6 in. or 8 in. in the manner of a shoulder-piece; a niche left in walls for images, figures, or statues."

The building workman must have a rather clear head if he would not be puzzled by the above description. I will now quote the description given in a recently-published encyclopædia:—

"Corbel (Ang.-Norm.), in architecture, the name given to blocks of stone projecting from the surface of a wall, to support the machicolations of towers, or the ends of the beams of the floors in old castles. The beams which form what is called an open roof in churches and large halls are often supported on carved corbels. The stones which support the bartizans at the angles of a tower, jutting out in layers one above another, are also called corbel stones, and stones which project in this manner are spoken of as 'corbelling out.'"

The standard dictionary authority gives the pronunciation as *kawr'-bel*; while the encyclopædia puts it down as *kor'-bel*.

Let us take what is looked upon as a better authority than either. In Parker's "Glossary of Terms" we have it thus,—"Corbel (Lat. *corbis*, a basket), a term denoting a projecting stone or piece of timber which supports a superincumbent weight. Corbels are used in a great variety of situations, and are carved and moulded in various ways, according to the taste of the age in which they are executed. The form of a head was frequently given to them in each of the styles, from the Norman to the Late Perpendicular, especially when used under the ends of the weather mouldings of doors and windows, and in other situations. Sometimes, also, masks were introduced." The above definition, on the score of technical description, is, indeed, infinitely better than the preceding ones. The same authority thus describes a console,—"*Console* is strictly the French term for a bracket, or for the *ancones*; but it is commonly used by English authorities also for a bracket or corbel of any kind in Classical architecture." Well, the same author describes a bracket as "an ornamental projection from the face of a wall to support a statue, &c. They are sometimes nearly plain, or ornamented only with mouldings; but are generally carved either into heads, foliage, angels, or animals. Brackets are very frequently found on the walls in the inside of churches, especially at the east end of the chancel and aisles, where they supported statues which were placed near the altars." I may ask here, then, what is a boss? It is also used as the termination of weather mouldings, and in all senses it may be said to be a projection. When it ends a drip-stone is it not called a corbel? Brackets and consoles are used in some cases as trusses. Then are brackets and consoles convertible terms? Brackets in some of our Gothic cathedrals,—for instance, York,—are both beautifully foliated as well as moulded, and spring from, or are supported by, an image. The best examples, I believe, are let into the pillars, columns, or walls, where they are seen and are not affixed; therefore they partake, in these cases I should say, more of a corbel than a bracket, although not intended for the ordinary application of the corbel. There is a beautiful specimen of a corbel in Wells Cathedral, used in the springing and supporting position that ecclesiastical corbels were generally used in in connexion with roofs, not floors.

Chantry altars, in some of our ancient Gothic churches, are supported on "brackets or trusses built into or projecting from the wall." (See Bloxham's "Gothic Architecture.") In other instances these altars were partly supported on brackets, and partly sustained on shafts or slender piers. Now if these brackets were let into the wall, and had their usual projection, were they not corbels *per se*, instead of brackets or trusses? We have some instances, I believe, of double and even triple bell-cots corbelled out from the gable end of our Mediæval churches. These constructions have been called by different names, such as bell-gables, bell-turrets, or bell-cots. When these erections occurred on the apex of the eastern end of the roof of the nave, they were intended for the Sancte bell. Numerous instances could be adduced to show to what extent the system of corbelling was carried out in the exigencies, or in pursuance of the waywardness, of Gothic architects and builders, but it has been left to our times to corrupt and confound, and mix up and muddle the distinct and beautiful terms once used for a specific purpose. We have been told within the last few days by a builder who was giving his evidence in the case of an accident, that "the corbels were flush with the walls." I shall not be surprised in the least if in the next edition of our standard dictionaries or technical manuals our building workmen are informed that a corbel is the name of "any piece of stone, timber, or iron, let in flush with the wall to support a beam or other superincumbent weight."

Notwithstanding the establishment of our school-boards, I greatly fear that the schoolmaster will be a long time abroad.

A Craftsman.

THE CAMBERWELL NEW INFIRMARY.

A large and costly block of buildings, erected by the Camberwell parochial authorities, as an infirmary for the parish, at an outlay of 20,000*l.*, has been in progress during the past twelve months, and is now so far completed that the dispensary and medical staff portion of the building has been opened; but it will be some months before the structure is ready for the reception of patients, for 300 of whom there will be accommodation in the several wards. The building is situated in Havill-street, within a short distance of the new vestry-hall, at the corner of that street and Peckham-road, and which is also now covered in.

The internal arrangements of the building are being carried out upon the most ample scale, the large space within the interior admitting of this being effected. The portion just now opened consists of the basement, which contains the dispensary and rooms and apartments directly with it, including the medical men's consulting-rooms, patients' waiting-room, and drug-room in the front portion, which is divided from the rear of the basement by a spacious corridor, 7 ft. in width. The basement rear beyond the corridor contains the domestic offices, which consist of laundry, kitchens, beer and wine cellars, wash-house, and engine-house and boiler.

The structure itself forms a large square block, covering an area of 1,900 square yards, and an area enclosed by the main frontage and wings of the building give to it within the character of a quadrangle. The main frontage in Havill-street is 150 ft. in length, consisting of a prominent centre and two wings, the latter at the side elevations extending backwards 110 ft. The central portion of the Havill-street elevation is 80 ft. high to the top of the cornice, the wings being 70 ft. in height. In addition to the basement and ground-floor, there are four lofty stories in the central elevation, and three stories in the sides or wings. The elevation is comparatively plain. The prevailing materials used are white bricks, with a free admixture of red brick, and stone dressings. The windows have stone springers and keystones. Between the window-heads and sills of each story there are bands in red brick, filled in with encaustic tiles, carried across the entire elevation; the cornice at the extreme height of the elevation is of red brick. In the central portion of the elevation is a stone balcony, projecting from the top of the first story, above which a lofty window, in Bath stone, with red brick arched headings, and stone springers and keystones, is carried up to the top of third story. The windows in the upper part of the central elevation form also a prominent feature. They are carried much higher than the two side portions of the frontage, and contain nine clustered windows, the whole being surmounted by a gable. The whole of the windows in the elevation, with the exception of those just named, are in three bays. The principal entrance, which is immediately under the large

central window, has on each side carved stone piers, surmounted by a stone carved archway.

The ground-floor of the central portion of the elevation contains the house-surgeon's sitting-room, and also the matron's sitting-room, both in front of the building, the one on the right and the other on the left of the principal entrance. A wide corridor divides this portion of the ground-floor from the rear, and this corridor leads to the house-surgeon's bedroom, lavatories, stores, and other offices. The first floor contains the matron's bedroom, the nurses' day-room, nurses' kitchen, stores, and nurses' dormitories. The second and third floors are reserved as special wards, whilst the fourth story in the centre of the building beneath the gable will be exclusively set apart as servants' dormitories. The whole of both wings, inclusive of both the ground-floor, and first, second, and third stories, are being fitted up exclusively as patients' wards, the female wards being in the south wing, whilst the male wards are in the north wing; these several wards having accommodation for 168 patients, and with the special wards in the central portion of the building, there will be accommodation for 300 patients. The arrangements for conveying patients to any part of the building are on a scale of unusual completeness. In the corridor opposite to the principal entrance there are two lifts connected from the ground-floor with the top of the building, by one of which patients can be conveyed to and from any of the wards in the several parts of the building, and the other is a dinner-lift. In addition to the space occupied by the building itself, there are extensive recreation-grounds for the patients attached, upwards of 1,000 square yards in extent, the entire area of the Infirmary and grounds being upwards of half an acre.

Mr. W. S. Cross is the architect, and the contractor is Mr. Hart, of Southwark.

THE PRESERVATION OF ANCIENT MONUMENTS.

At the last meeting of the Anthropological Institute, Sir John Lubbock said, in reference to the Bill he was about to introduce in the House of Commons for the preservation of historical monuments and antiquarian relics, that it had already received the support of the most eminent archæologists. The great difficulty in dealing with monuments was that it interfered with what are called "private rights"; but we might attain our object by scheduling those monuments which appear most worthy of preservation, and give notice to their owners, thus preventing them from being wilfully destroyed. Some efforts had been made by our representatives abroad to induce the Turkish Government to take steps for the preservation of monuments in its territories, and he did not see how we could ask foreign Governments to exert themselves to preserve their monuments when we did not take the trouble to preserve our own. Near to Marlborough, until recently, there existed three dolmens, one of them being destroyed simply in order to repair the roads with the stone, and the second had entirely disappeared.

Mr. Franks said that the Dutch Government were fully alive to the necessity of preserving these monuments, every year a certain number being purchased by the State. Out of fifty-four megalithic monuments in one province, fifty-one had been thus purchased for the country.

Mr. Conway asked if the Dutch Government found much difficulty in inspecting or in guarding them; because, if so, sooner than have these monuments under inspection, the farmers would destroy them, and the result would be, probably, a general devastation.

Mr. Franks stated that, in the case of Holland, a map was made out, with every monument marked thereon.

Mr. Howard said that in Wales there were a great number of dolmens scattered over the coast. The farmers did not object to them, but to antiquaries trespassing on their lands.

Mr. Dawkins said there were a great many monolithic monuments in the Isle of Man, and that, owing to the force of popular superstition, they had been hitherto remarkably well preserved. Unfortunately, however, for the monuments, the superstition was disappearing before the spread of education, and it was to be feared that many of these ancient remains would be destroyed unless something were done to secure their preservation. Some years ago a party of antiquaries had the boldness to examine a sepulchral chamber under one of these monuments, near to St. John's Church, where the Tynwald is situated. They had meddled with human bones; and the farmer on whose ground the monument stood, killed a heifer, and burnt it, as a propitiatory sacrifice, lest the sacrilege should lead to some evil results to himself.

In answer to Dr. Hyde Clark, Sir John Lubbock said that no information had been received from the Foreign Office relative to what had been done in other countries as regards the preservation of historical monuments.

THE LATE MR. SLATER, ARCHITECT.

WILLIAM SLATER, who died on December 17th, in his fifty-fourth year, was a son of the late Mr. Slater, of Daselbeech, Northants; his early years were spent in his native county, and when sixteen years old he came to London, and was articled to the late R. C. Carpenter, and thus, from the first, began the intimate friendship which, up to the death of Mr. Carpenter, existed between them.

In the early days of the Gothic Revival they worked together with enthusiasm in the preparation of some of Mr. Carpenter's earlier designs, as St. Stephen's, Birmingham; St. Paul's, Brighton; St. Patrick's Cathedral restoration, Dublin; Cookham Dean Church; Campden House, &c.; and he thus acquired that love for, and appreciation of, English Gothic, which remained with him when various fashions of foreign Gothic in after years distracted many leading architects. Besides assisting in these works, Mr. Slater helped Mr. Carpenter in his district of St. Luke, Old-street, and also in the district of Islington.

During many years Mr. Slater lived in Mr. Carpenter's house, in Guildford-street and Upper Bedford-place, and the greatest intimacy existed between him and Mr. Carpenter's family, to whom his kind and affectionate nature very much endeared him, and by Mr. Carpenter himself, also, he was held in the greatest esteem and confidence.

For a short time before Mr. Carpenter's death Mr. Slater took an office in the Adelphi, with his old friend and fellow-pupil, Mr. William Smith, and commenced his first works, the restoration of Weldon, Islip, and Stanwick churches, and a new parsonage at East Haddon, and with Mr. Smith erected a new town-hall at Loughborough.

When Mr. Carpenter died, in 1855, he was advised by some of the oldest friends and clients of Mr. Carpenter, such as Mr. Beresford Hope, Canon Woodard, the Rev. B. Webb, the Rev. E. Tower, and others, to return to his late friend's office, and undertake his engagements, both in his own interest and for the benefit of Mr. Carpenter's widow, and the future advantage of his son. Mr. Slater accordingly took his place, and resumed the works left incomplete, such as Bedgebury Park, Lancing and Hurstpierpoint Colleges, Earl's Shilton and Sompting Churches, &c.; and he was appointed to succeed Mr. Carpenter as architect to Chichester Cathedral, and architect for the restoration of Sherborne Abbey choir. He also carried out at this time new buildings for the King's School, and St. John's Almshouses, Sherborne, and many church restorations and other buildings in the neighbourhood, for Mr. G. D. W. Digby.

In his native county Mr. Slater restored very many churches; amongst which were Higham-Ferrers, Kingsthorpe, Finedon, Easton-Mandit, and Woodford; and, with Mr. Smith, the grand old church of Brixworth. Many churches for the Duke of Buccleuch were restored under his care, and many other churches in different parts of England, such as St. John's, Devizes; St. Leonard's, Bridgenorth; and Etchingham, Wadhurst, Burwash, Deerhurst, Ditchling, Rustington, Alcomb, and Goudhurst churches. He erected new churches at Edinburgh, Belfast, Bray, Dunkeld, St. Kitt's, Devizes, and Mogger-hanger, as well as the new Cathedral of Kilmore, Ireland, and restored Limerick Cathedral. Houses were erected by him at the High Beeches, for Mr. Loder, one for the Dean of Kilmore, besides many parsonages and schools, including the large school of St. John, in St. Pancras parish.

The restoration of the choir of Chichester Cathedral was commenced under Mr. Slater's care; and in conjunction with Sir Gilbert Scott he carried out the reconstruction of its tower and spire; and with Professor Lewis he restored the grand Priory Church of St. Bartholomew the Great, in Smithfield. During these and the subsequent years his friend, Mr. Ingelow, was in his office, and assisted him greatly in these various works.

In 1863 Mr. R. Herbert Carpenter, having been articled to him, became his partner, and up to the day of his death they worked together in the most perfect friendship. Under their direction the restoration of Chichester choir was completed. Hurstpierpoint Chapel, and new churches at Bootle, Outrington, Dumfries, Belfast, Church-Lawford, Southend, Milton, Burwash-Weald, &c., were erected, and the new cathedral of Honolulu commenced; and restorations carried out at many churches, such as Calne, Bruton, Middleton, Thornford, Thurnby, Henfield, Tortworth, Burton-Latimer, Earl's Barton, Strixton, Amport, Hemington, Tisbury, Bywell, Stapleton, Stapleford, &c.; also the restoration of Brigstock Manor House, for the Duke of Buccleuch, Holdenby House, and the Bishop's palace at Chichester. They also erected Lord Salisbury's new mansion in Arlington-street; the mansion at Seacox-heath, for the Right Hon. G. J. Goschen, M.P.; the new colleges of St. Chad, Denstone, and St. Saviour, Ardingly, and the new buildings of St. Nicholas College, Lancing (the chapel of which is yet in course of erection); the King's School buildings, Sherborne, and works at Cheam School, Surrey. Amongst the works which are still being carried on by Mr. Carpenter are the new church and schools of St. Mary the Virgin, Soho; the new church of St. Michael, Enfield; the completion of St. Paul's, Brighton; and the last work on which Mr. Slater was engaged, even on the day of his death, the new chancel and apse of St. Mark's, Myddelton-square, where he had been churchwarden for twenty years.

His character may be summed up in a few words. He was a man of rare simplicity and nobility of mind. Earnest, indefatigable, and zealous in all which he undertook, trouble was what he never cared for in perfecting work which he had undertaken; while the stores of knowledge on which he drew were alike extensive and accurate, and his natural good taste saved him from the snare of that overstrained attempt after eccentric originality in which architects even of high authority are sometimes prone to indulge. His private life was marked by the depth of his religious convictions, and by the kindliness and cheerfulness of a thoroughly sweet disposition.

STREET SUBWAYS.

PARLIAMENTARY powers for the construction of sub-aqueous communications in London have been obtained with little difficulty; and the Tower Subway is evidence that, with modern mechanical and engineering appliances, such communications can be opened in a space of time, and at a cost, marvellously small, as contrasted with the time occupied and the money expended in the construction of Brunel's first celebrated and unfortunate Thames Tunnel. Notwithstanding these circumstances, the powers given to construct subways under the Thames do not seem to lead to rapid and assured successes. The Tower Subway Company have failed to carry out their original design of conveying passengers by steam power between the Middlesex and Surrey sides of the river. The steam engines for raising and lowering the hoists, and for drawing the omnibus through the subway, have been removed long since from the bottom of the shafts; the iron chambers in which the passengers ascended and descended, and the iron omnibus, have long since been taken to pieces and cleared away; and now passengers pay simply a toll of a halfpenny each, ascend and descend the shafts by commonplace stairs, and make their way, with as little bumping as possible, through the 7-ft. tube.

Concerning the other subways under the Thames, for the construction of which Acts have been obtained in former sessions of Parliament, —the City and Southwark, and the Temple subways—nothing is now heard.

There is another use to which subways may be applied in London that it seems strange should escape the attention of the Metropolitan Board of Works and the Corporation of the City of London. We refer to their provision as a means of avoiding the dangers of a number of our most perilous street-crossings. The moot point, subways *versus* bridges, has been discussed very fully, and the discussion has been carried over many years; but passengers continue to be run down in the public streets, the crossings become more crowded and dangerous daily, and

no remedy is applied. How long are the passengers that have to cross daily or occasionally at the Mansion House, at the bottom of Ludgate-hill, and other dangerous places, to have to do so with paralysing fear? How many more victims are to be crushed to death, or maimed, and injured for life by the Juggernaut of our streets before the authorities provide an ægis? It is simply a question of time, and of the extent of sacrifice that must be made; sooner or later footways under or over the carriage ways *must* be provided at numerous crossings, and the sooner a beginning is made the better. With many persons it will be quite a minor consideration whether they have to ascend 20 ft. to get to the top of a foot-bridge, or to descend 10 ft. to get into a subway: the paramount consideration is, *any* means of getting across rather than by threading a way among the vehicles. The Ludgate-circus, in course of formation, furnishes pressing claims for some such safe provision for foot-crossing. The safest part of that crossing is, curiously, that at which it is most gorged with traffic, namely, the corner at which the old building remains as yet undisturbed, and where the stream of vehicles has to be crossed at a simple right angle. In other portions of the crossing, vehicles of all kinds, driven at all speeds, taking all kinds of angles and curves, have to be met, and Scylla can only be avoided at the imminent risk of encountering Charybdis. Only the other day a serious accident befell a well-known literary man at this place. His brain and spine were seriously injured, and his arm put out of joint. Leaving behind in the mud a packet of valuable manuscript, he was carried away unconscious to St. Bartholomew's Hospital, and thence to his own residence, his useful labours suspended for an indefinite time. The police force told off to regulate the traffic at this crossing may have been reinforced, but some more certainly trustworthy safeguard than this is imperatively demanded.

Glasgow Subway.—One of the private Bills of the session is for a subway under the river Clyde, commencing on the north side of the river and harbour of the city of Glasgow, at or near Anderson Quay, and terminating on the south side of the river, at or near the east end of Springfield Quay, in the parish of Govan; the capital of the company, in shares and loans, to be 33,000*l.*, and the works to be completed in five years. The proposed toll is to be one penny per foot-passenger.

THE PROPOSED NATURAL HISTORY MUSEUM, KENSINGTON.

Sir,—I shall be glad if you can allow me space in your periodical to correct an error which has crept into the notice which appeared in the *Builder* of Jan. 4, 1873, concerning the proposed Natural History Museum at Kensington, and which, if unexplained, would leave a very wrong impression of the work of the late Captain Fowke, Royal Engineers, with respect to that building.

It is therein stated that, "as so often happens with designs which are the result of competition, it was found that much of the ingenuity which had been displayed in this design (Captain Fowke's) had been thrown away in consequence of the arrangements being incompatible with the absolute requirements of the authorities; and that to meet those requirements it was impossible to retain any large portion of it." This, I think it will be allowed, is calculated to convey the idea that Captain Fowke had paid so little attention to the conditions laid down for the guidance of the competing architects that his design, to which the appointed judges awarded the prize, had to be virtually abandoned on subsequent examination by the "authorities," whoever they were.

Those conditions, which were laid down by the trustees of the British Museum, were printed at the time; and I think it will be found on reference to them that Captain Fowke's design, as originallly approved by the judges, provided for them completely. So fully was his design criticised in this respect by the authorities of the museum, that observations in detail upon it were made at the time for the consideration of the judges or of the Government. These criticisms, which, on the whole, appear to have been favourable to Captain Fowke's design, were replied to by him on the points on which objections were made to it, and he showed in these replies how fully he had provided for the official requirements. Other objections there were to his arrangements, but they were upon matters open to discussion, and upon which Captain Fowke's opinion was at least as valuable as those of his critics.

After his plan was accepted, it is well known that he had frequent consultations with Professor Owen on the subject, by whose advice he may have made some modifications in his original design. But the best proof of the correctness of his own views with respect to the general arrangement of the galleries is, that after these ten years of delay, Mr. Waterhouse has virtually adopted them, as shown in the plan of his design in your paper of the 11th. And as regards floor space, Captain Fowke's ground-floor contained nearly double the area of Mr. Waterhouse's.

The extract from your paper to which I have taken exception must also be considered, I think, to imply that in the writer's opinion Captain Fowke's design had the fault of crudity common to many competitive plans. But considering his large previous experience in the arrangements of exhibitions and museums, and his known specialty in that line of architecture, I should hope that such an implication could not have been really intended.

The question of the general merits of Mr. Waterhouse's plan, as compared with Captain Fowke's, would lead me far beyond the object of my letter, which is to clear his memory from the imputation of a want of careful thought in the preparation of his design. As, however, the course pursued by the Government with respect to this building leads one to the consideration of the general question of the best mode of obtaining designs for our public buildings, perhaps you will allow me to recur to the subject on another occasion.

T. B. Collinson, Colonel,
Royal Engineers.

CHAMBERS OF COMMERCE AND RAILWAYS.

At the approaching annual meeting of the Association of Chambers of Commerce important propositions are to be discussed in relation to railway amalgamation, management, and improved communication. It will be proposed that the report from the Joint Select Committee of the House of Lords and the House of Commons on railway companies' amalgamation be considered, and that a deputation from the Association be sent to the Government, to support, or otherwise, all or any of the recommendations of the Committee; also, that a deputation from the Association of Chambers of Commerce wait upon the President of the Board of Trade and the Home Secretary, and urge upon the Government the desirability of an inquiry by Commission or Select Committee into the question of railway management, with reference to the convenience and comfort of passengers, and the diminution of the number of accidents, both to passengers and railway servants. The inhabitants of Southampton have for a long time past been greatly dissatisfied with the insufficiency of their means of communication by railway with other localities, and maintain that this circumstance has greatly impaired the prosperity of the port. The Southampton Chamber sends the following proposition for consideration by the Association:—

"That it is of paramount importance to the commercial and manufacturing interests of the kingdom that additional railways between the northern districts and the southern ports should be sanctioned by Parliament."

The proposed Swindon, Marlborough, and Andover line is a project of the present session that comes within the scope of the resolution.

ENGLISH ARTIZANS FOR ATHENS.

Mr. Watson, our representative in Athens, in a recent official return, says, he has been informed by several persons resident, in whose judgment he places reliance, that there now exists an opening in Athens for a limited number of skilled British artizans. He has consulted on the subject with various persons established, and with several employers of workmen, and these have replied to his inquiries:—"Do not discourage English artizans from coming to Athens. Steady skilled men might make their way here very well." The demand, however, for English labour would seem to be only for men skilled in making, managing, or repairing machinery, and for locksmiths, bell-hangers, house-decorators, sign-painters, and cabinetmakers. As to the quality of workmanship in Athens, the inconvenience, expense, trouble, and, in fact, the impossibility of getting any repairs done to houses at the worst season of the year are very harassing to the occupant, with respect to locks, door-handles, varnishing, &c.; and in Athenian rooms their condition is utterly disgraceful. As a means of obtaining furniture the possessor of empty rooms has to purchase at sales—when these occur, such articles as may be presented, without regard to his taste or to their corresponding with each other. The German cabinetmaker is often unable to execute an order under months. Such being the state of things, it would be a boon to the more civilised portion of the community if some English artizans, of the crafts indicated, could be made to see their way to emigrate to Athens with profit to themselves, as in that case some of the blanks in the skilled labour market would probably be gradually filled up; besides, were a better quality of skilled labour introduced into Greece, it might be hoped that a taste for better workmanship would thus be, ere long, created amongst the Greeks: above all things, however, they must be temperate.

NEW POST-OFFICE, ST. MARTIN'S-LE-GRAND.

The new Post-office building at St. Martin's-le-Grand, erected from the designs and under the superintendence of Mr. James Williams, of H.M. Office of Works and Public Buildings, is rapidly approaching completion. We publish in our present number a view of the exterior and plan of the ground-floor. In another issue we shall give a plan of the upper story. The building is rectangular, having frontages of 286 ft. to St. Martin's-le-Grand and Bath-street, and frontages of 144 ft. to Newgate-street and Angel-street, and is 84 ft. in height from the paving line. It stands on a base of granite from the De Lank quarries, and the whole of the fronts have been executed in Portland stone of the hardest "Whitbed." The building is four stories in height, exclusive of the basement, and the floors will be thus appropriated:—The basement will be partly occupied as office-rooms, partly for stores, and partly by the department of the telegraph engineers, the large room in the centre being used as a battery-room. The ground-floor will be occupied by the Postmaster-General and the Accountant-General. On the first floor will be accommodated the secretaries and their staff; the third and fourth floors being appropriated to the telegraph department. The fourth floor will be especially devoted to the telegraph instruments and the pneumatic tubes will be laid on to it, establishing communication with the district offices. The large instrument-room is 125 ft. by 80 ft.

It was originally intended to provide a Public Office on the ground-floor of the building, and a central hall was accordingly constructed. It is now, however, found necessary to abandon this scheme, and the central hall will be occupied by the staff of the Accountant-General.

In the north court there will be placed four steam-engines, each of 50-horse power, for working the pneumatic tubes, and the works are in hand in the south court to provide for the boilers. These comprise a large boiler-house, and a chimney about 20 ft. higher than the main building. An Artesian well is also proposed for the supply of the large quantity of water required, and a small engine will be kept at work at pumping to the large tanks (two of 6,000 gallons each), at the top of the building.

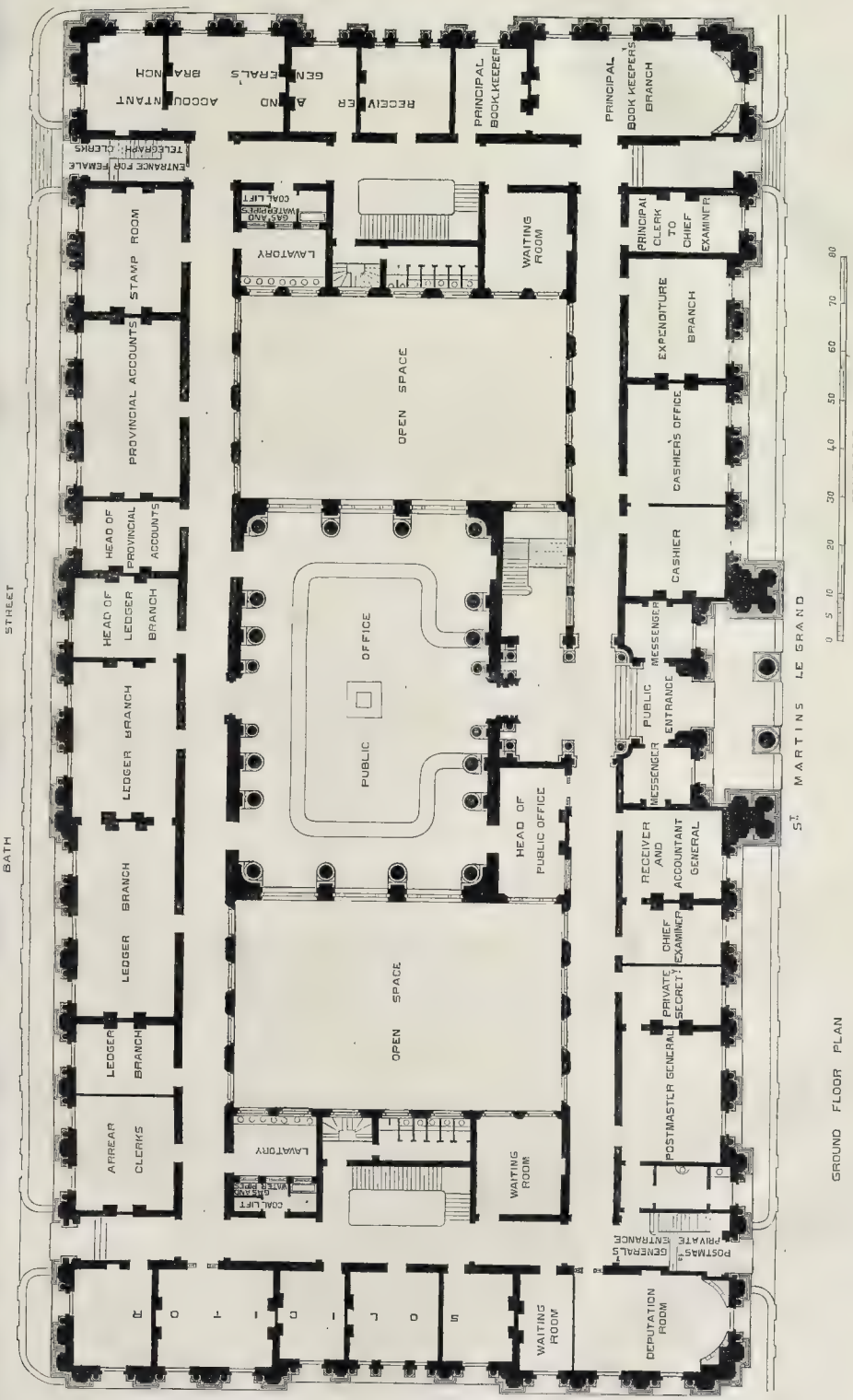
The plastering is now for the most part completed, with the exception of the central hall; much of the joinery fixed; and the special fittings commenced. It is calculated that about three-quarters of a mile of instrument-tables will be required in the telegraph-galleries.

The building was commenced in December, 1869, the first block of Portland stone being laid by the Right Hon. A. S. Ayrton, M.P., the First Commissioner of Works, on the 16th of December, 1870. The contractor is Mr. William Brass; the clerk of works, Mr. William Trickett. The contract amounts to 129,718*l.*

The whole of the carving and sculpture has been executed by Mr. Barnie Philip. The site cost, we believe, in round numbers, 300,000 .



THE NEW POST-OFFICE, ST. MARTIN'S-LE-GRAND.—Mr. James Williams, Architect.



GROUND FLOOR PLAN

THE NEW POST-OFFICE BUILDINGS, ST. MARTIN'S-LE-GRAND, LONDON.

DEFECTS IN THE SANITARY PROVISIONS OF THE METROPOLITAN BUILDING ACT.

At the close of Mr. Liddle's paper, of which we gave a summary in our last (p. 63),—

Dr. Hardwicke said, that in the district over which he had supervision there were above 300 houses annually built. There were two striking defects in the present way of building houses, which were not provided against by the existing law. One was the wretched foundations on which they were raised. The surface of the ground was frequently taken off, and a large portion was filled up with rubbish, which he had often found by analysis to be organic refuse. And much offensive matter was under many houses, and was used also in the making of mortar. He had seen the latter substance giving evidence by its yellow colour of the presence of such objectionable material. Such houses might well be called disease-traps. The dampness which defective construction caused also gave rise to much sickness in the new building. Another defect was, that when new streets were formed, the local boards did not take to them, and form the roads in proper time. A long period generally elapsed before this was done, and the consequence was that a low class of tenants got into the houses, and the whole neighbourhood became deteriorated. The sloppy condition of these neglected streets gave rise to much sickness. One great cause of shortcomings, he thought, arose from the fact that the Metropolitan Board of Works had no sanitary officer connected with themselves to whom to appeal in doubtful matters. He believed the Artizans and Workmen's Dwellings Act was in practice totally unworkable.

Mr. P. H. Holland thought the paper which had been read was characterised by great common sense. There was one portion to which, however, he must take exception, and that was the recommendation, as he understood it, that the whole of the management should be under the local boards. He thought it extremely important that the control should be rather under one separate board. The little local boards were the most troublesome bodies that were ever created. If the power were given to them, how were they to be controlled, and made answerable for neglect? It was highly necessary, he thought, to have a body constituted for the management of such matters which would not be under local influence. If the local boards were to be supreme each in its own district, we should have the sanitary measures carried out in some, and neglected in others. There should be, in his opinon, but one authority for the whole of London. A great defect in the appointment of district surveyors was, that they held their offices in conjunction with their own private businesses. The result was that their own business naturally had their first attention, and the public business was consequently neglected. He thought the district surveyors did more harm than good. London was certainly one of the worst built cities that could be found. Fires in provincial towns were not so destructive to human life as here. Fire-escapes were rarely found in these towns, nor was their absence felt. He thought the district surveyors simply looked at the letter of the law, and to them he referred much of what was objectionable. Were not lath-and-plaster walls very common? and what could tend more to the spread of fires when they broke out? Why had the surveyors allowed this and other equally unwise things to exist? A large sum of money was spent in recompensing their services, which would be better spent in engaging the whole services of a smaller number, and relieving them of the necessity of following private employment. We should get a number of new houses properly built, and then we should have specimens of what houses ought to be. They could not be found in London, at a price within the means of the great bulk of the people. Then where could they find houses properly ventilated? The means of exit from churches and other such buildings were very meagre, and in case of alarm of fire would be certain to lead to persons being crushed to death. Would not in such cases the fault of the architects amount to manslaughter? Fatal results had followed in some instances; and in such a place as Exeter Hall, for instance, a sudden alarm would lead to lamentable consequences. He almost despaired of seeing architects doing their work intelligently.

Mr. G. Godwin rose to protest against the unfounded attacks upon district surveyors made by the last speaker. They had simply the power of seeing the Building Act carried out, and this they did in the majority of cases most efficiently. They were certainly constantly foiled in their endeavours, but they did the best they could. In the matter of foundations, for example, the Act said walls must be on a solid foundation *or* a layer of concrete; the Act did not say what must be under the concrete, nor of what thickness it should be laid. If the surveyor found defects which were not expressly provided against in the Act, and went before a magistrate with his complaint, he would certainly lose the day. Ventilation did not fall within his province; he had no power whatever to interfere. The impatience of the public to pay for anything for which there seemed no immediate necessity, was an obstacle to be overcome before this could be properly carried out. The surveyors were not responsible for the construction of drains. That was a matter under the Metropolitan Management Act. Now that a new Bill was under consideration was the time to strengthen it by the representations of the bodies who have had experience in matters which it is designed to meet. Most of what had been brought forward by Mr. Liddle had already been laid before the Metropolitan Board of Works. He (Mr. Godwin) had no fault to find with what he had said. The clauses in the present Act respecting underground dwellings were found to be nearly nugatory in their operation. It was a difficult task to find out whether rooms had been slept in, and this was the way it was enacted they should be dealt with. All that the district surveyors could do in the matter was to say whether or not rooms that were pointed out to them were or were not fit for occupation according to the Act.

Dr. G. Ross wished to draw attention to the defects in the 29th section of the Building Act. In a very crowded neighbourhood, a man might build in his back yard, so as to double the number of those for whom accommodation was provided. The Act, he had found, impeded the action of officers of health, and tended to increase sanitary evils. By evading the provisions, any proprietor could go on increasing the number of houses. Attics must be, by the Act, at least 7 ft. high over half their area: why not all? This part of the house, for various considerations, should, if anything, be more lofty than any other. There was no cause, in his opinion, that was half so important as good, sound, wholesome buildings. Many of the poorer class were brought into the low state of health in which they were found to be in consequence of the close, small, crowded houses in which they dwelt. He thought the Artizans' Dwellings Act might be made extremely useful. Many houses had been pulled down to make way for improvements, and many poor people had been turned out without compensation, and had gone to increase the number of the inhabitants of already overcrowded neighbourhoods. This was a hardship, but still, if sanitary improvements were to proceed, he could not see how such could be avoided. There would be a great difficulty in providing compensation, for it might tend to encourage so great an expenditure that few local boards would find courage to commence any sanitary works when so great an expense would follow. Still something might perhaps be done in this direction. He could himself testify to the abominable stuff that was used sometimes in making mortar. Often that which was taken from the sewers was used in making mortar. Another evil was, that contractors took away the gravel on which a house was thought to be built, and substituted loads of rubbish. This, which was done everywhere, should not be allowed.

Mr. Edwin Chadwick thought it was deplorable that the subject brought forward by Mr. Liddle should have made so little way, and that even of first-class houses it should still be a sanitary rule that they are unsafe to inhabit until nine or twelve months after their construction. Speaking not long since to the superintending registrar of a suburban district, and expressing surprise that although much money had been spent no progress had been made in the reduction of the death-rates, his answer was, that the death-rates were kept up by the building of new houses (the constructions by which the death-rates should be reduced), for soon after a block of new houses was entered, or within a month or two after, the doctor's carriage was seen at the doors, and not long after that he, the registrar, had to record additional deaths, especially amongst children. The fact was architectural construction and sanitary construction were different things, and sanitary science, or responsibility for sanitary results, had not yet been conjoined with architectural art and practice. Soon after the publication of the sanitary report, he had been requested to join a committee of first-class or palace architects, to frame a new Building Act for the metropolis. He had begged to be excused from that service, because their regular doctrines and practice were so little in accordance with what he considered the chief objects to be aimed at, that there would be no use in going into the subject with them. He could not hope to alter their fixed opinions, and should be in a minority of one. At that time he objected that the functions of the officers superintending new buildings were fragmentary, incomplete, and misfitting. The district surveyors as a class were doubtless very respectable men, but the duties assigned to them were fragmentary and incomplete. Look only to the sanitary arrangements required as respects the basement. The subsoil drainage, which is requisite to keep the road firm and in line, is the same that is required to abate damp in the site of the house and its grounds. The house drain — the channel that is to remove putrescible matter, and not let it permeate and pollute the subsoil—required care in its firm construction, and in its adaptation to the discharge into the street sewer, to make both drain and sewer complete and self-cleansing, and act as one piece of work. The drain that is to carry off the horse-dung and surface-washing from the roads—on which there is often as much putrescible matter to be removed as from within the houses—must also be well adjusted and self-cleansing, and well adapted to the street sewer, in which refuse should not be kept stagnant, as it usually is, with other matter, but to be at once removed from beneath the site of the town before it can enter into noxious decomposition. The impermeable drain of the house, and the impermeable drain of the road surface, the sewer of the house and road, required therefore careful adjustment to act as one work, to carry their contents in one direction, whilst the permeable subsoil drain of the road and the permeable subsoil drain of the house and land required careful adjustment, to carry their contents in another direction. Would any one, laying out work intelligently, *de novo*, think of treating this combined drainage apparatus in parts to be dealt with independently? But in administration there was one officer, the building surveyor, who has only supervision of one part,—that is the house, and not always of the house drain, or the sanitary arrangements for the immediate removal of putrescible matter. Then there was the road-surveyor, who had nothing to do with the subsoil drainage, on which the wear of his road mainly depends, nor with the sewer, which is to receive its surface drainage, and which, if it be a permeable sewer, may let out sewage, and let it permeate the subsoil, as well as take it in. Then there was the drainage surveyor, who had charge of the street sewer only, and very little charge in the way of adjustment, with the tributaries, the house, or the road drains, the capillaries of a proper system of sanitary work. Each of these officers had usually to be sent for at different times, when they could be got from their private practice, to supervise their respective bits of unsystematised work? Could there be any arrangement more calculated to ensure misfits, and disjointed, imperfect, and therefore wasteful work? and to do it at a great expense of separate time, notices, and separate service? Surely we might hope for an advanced perception of the economy; of a better organisation; of the functions requisite to insure efficiency and economy in local works, under the superintendence of officers, with the qualifications of sanitary engineers, giving their whole time to the performance of their duties.

Mr. Baldwin Latham, C.E., observed that he could not at all agree with Mr. Holland in the remarks he had made with reference to the incompetency of the district surveyors of London to discharge their duties; on the other hand, he agreed with Mr. Godwin that these officers were thoroughly competent to discharge the duties they were called upon to perform, and moreover they were the only class of officers who, by examination, had proved themselves competent to discharge their duties, which were entirely of a structural character. He, however, thought, with Mr. Chadwick, that it would be an advantage for the officers who had the structural control of buildings also to have sanitary control. Probably it would be well that some central authority should be appointed, with absolute control over the construction and sanitary requirements of all buildings hereafter to be or at present erected. The question was a very much larger one than that of merely applying a certain Act of Parliament to the metropolis. There

were many large towns and country places that equally required a Building Act, and it would be well for the Association to promote some measure whereby a general Act of Parliament should be introduced that could be applied to the whole country. It was true, that under the provisions of the Local Government Act, Local Boards had power to make by-laws for regulating buildings; yet it was notorious, especially in districts in which building operations were carried on to a great extent, that those interested in promoting such building operations took care to have such representatives on the Board, that either the by-laws were favourable to their scheme, or were not put in force against them. An examination of the by-laws of various Local Boards would show a marked difference. Usually in the districts where they were most required the by-laws were most defective; while in districts where there was but little building going on, the by-laws were of a very perfect character. With regard to by-laws, it had been decided that the by-laws of Local Boards do not apply to buildings erected previously to the passing of the Act under which they were framed; consequently, open spaces about old buildings were built upon, excluding light and air, to the detriment of the people inhabiting the district. The sweeping away of the by-laws which now regulate the construction of buildings, the passing of an Act of Parliament applicable to all parts of the country, regulating their stability, the means for the prevention of the spread of fire, and their sanitary requirements, would be a great boon to the country at large.

Professor Donaldson could affirm almost all Mr. Liddle had said. He did not agree with those who thought that the Local Boards should be consolidated into one body. He thought, considering the different operations, it would be impossible to put them all upon the shoulders of one man. In his own district no houses could be built unless the plans were submitted to the Local Board. Certain conditions in the sizes of rooms should be observed. But the regulations it was found very difficult to carry out. He himself had from time to time made reports to those under whom he acted; but frequently no attention was paid to them. The surveyor often went round, and made his report, and they often proved to be nothing more than waste paper. This was very discouraging. With regard to the overcrowding of rooms, it was a shame to society that matters should be as they were. He did not think these defects could be fairly charged to the surveyors. They were anxious to do their duty; and if their suggestions were not carried out, the fault did not lie with them. The walls of a house should be built on concrete, and the direction of it should be left to the district surveyor, who should be allowed the power of advising the magistrate. At the present time, if a complaint were made, the builder would bring half a dozen builders to show that he had built the house properly, and the magistrate would say that the weight of evidence was in his favour, and the surveyor would have to sustain the costs of the action. He (Professor Donaldson) thought the whole area of the basement should be covered with concrete. The difficulty in the adoption of suitable measures lay in the fact that there were men in the House of Commons and on the Local Boards who were themselves builders, and from them great obstructions were likely to be encountered. He could not see how it could be that gravel should be forbidden to be taken away, for it was the property of the owner of the soil. If a man wished to take it away, and sell it, he did not see how he could be hindered from so doing. The observations about the reservation of a proper area for ventilation were excellent; but he thought they could not be carried out where space was very valuable. Area was more necessary to be given in the sleeping-rooms. He hoped the suggestions of Mr. Liddle would come before those who were engaged in drawing up the new Building Bill.

Mr. J. P. Seddon called attention to the matter as it concerned the roofs of houses. The usual little flimsy sheet of slate was not sufficient in the face of great calamities from fire, such as had occurred in America. The roofs should be made more uninflammable. The construction of our houses was in the hands of speculating builders. The way in which our streets are built is the curse of the age. Matters should not be left so much in the hands of builders. Architects were not employed for one-tithe of the houses that were built.

Mr. Harry Oliver wished to say that he thought Mr. Liddle should make himself well acquainted with the Bill about to be brought before Parliament. This, he thought, he had failed to do. Before any action was taken by this Society, it was very requisite that this should be done. Much that was suggested, he thought, would be found in that Bill; and if anything should remain, it would be received with thanks. It was important medical men and architects should act in harmony. Matters could be better carried out when the efforts of the one body did not infringe upon those of the other.

The chairman (Lieut.-Col. Beresford, M.P.) deprecated the idea that this question should lie with the Metropolitan Board of Works. They were so overwhelmed with work, that the less that was put into their hands the better. There was a competition between three different authorities who acted in sanitary matters; these were the Metropolitan Board of Works, the Thames Conservancy, and the Corporation. This had, in some cases, produced confusion. He thought the Public Health Bill was a most excellent Bill as far as it went. That Bill not only gave the power of dealing with sanitary matters, but it made it compulsory that its enactments should be carried out. There should be a power invested in certain authorities of seeing to the making good roads and the foundations of houses. In his own neighbourhood he had tried the effect of the existing means; it was in the case of a place which was in a disgraceful state. He had addressed a letter to the Sanitary Board; the property was immediately inspected, and shown to be in a state injurious to health. The private owners had subsequently received orders to put it in order. If we failed to get all that Mr. Liddle proposed, we had the present Act to fall back upon, and this he had proved was not inoperative. He (the chairman) thought the water question went side by side with the building. There should be a constant supply, and better facilities for establishing it. One gentleman drew a distinction between the living part and the sleeping part of houses. He (the chairman) was afraid that, for a vast number of families in London, this distinction did not exist. He trusted the matter now discussed would go to the Local Government Board, and influence their decisions.

Mr. Liddle was glad to find that almost all the speakers agreed with him generally. He was perfectly well acquainted with all the amendments in the existing law proposed by the Board of Works, and he had been informed that that body did not intend to bring in any Bill. He thought they could not be successful in any sanitary works, as they had no medical adviser to help them. The great absurdity of the present state of things was the different and distinct Acts which referred to matters substantially the same. To build a house a person must consult half a dozen Acts. Those should all be brought into one.

On the motion of Mr. Edward Pears, it was resolved unanimously:—

"That the paper be referred to the Committee of the Health Department, with a view to considering the desirability of making representations to the Local Government Board in favour of an amendment of the Act."

NOTTINGHAM SCHOOL OF ART.

THE annual distribution of prizes to the successful students in connexion with this institution took place on January 15th, in the Mechanics' Hall. There was a large attendance. Lord Belper presided, and among those present was Mr. H. Cole, C.B., who delivered the prizes, and on this occasion announced his own retirement from the Science and Art Department.

Mr. Cole said, had he been present last year, he should have ventured a few observations to them on the position in which Nottingham stood with regard to art and its fitness for establishing a museum of science and art. He was particularly happy in not having to talk about an anticipation, but rather of a promise which had been held out, and amply fulfilled. They knew that the Museum of Art and Science in this town had had a beginning, and he hoped it was the commencement of much greater things in the future. He thought that Nottingham was distinguished for its modern architecture; and though they could not perhaps equal Lombard-street, yet they were superior to many other towns. He hoped his lordship would not think he was saying too much if he said that Nottingham was more distinguished in this respect than Derby, and he also believed that Leicester was a long way behind as compared with Nottingham Their school of art was, in some respects, the very first school in the country. It was certainly the cleanest and best kept, and he could show by figures that it occupied a high position in the work it did. All these facts made him concur in thinking that Nottingham might take the lead in the country in establishing a museum of science and art, and in setting an example to other towns in England. He regretted to state that in this matter England was behind the Continental countries. They were aware that they could not go from London to Paris without lighting on several museums of this kind. He thought, however, that the various matters he had mentioned justified him in asking them to consider the question of establishing a museum of science and art. He had taken some trouble to look about in ascertaining what would be a good site, and the conviction in his mind was that they had a site already prepared,—one that would act as a beacon to all the Midland counties,—and that was the Castle. If they did what they could with the Castle, he believed that it would be one of the very finest things in all England. He was told the trustees of the Castle were quite willing to help them, and he had already seen a plan and design that had been made for building up the Castle again, and preserving the design of the old building, which was attributed to that distinguished architect, Inigo Jones. An architect to whom Nottingham owed much of its originality and beauty, had prepared a plan, and he dared say it would not long be a great secret. The question was, was Nottingham to assist in an operation of this kind? His strong faith was that it would. He wished to tell them, as a fact, that Nottingham had taken public money for master's prizes more than the average. With regard to the students, he reminded them that there were 120 schools competing for the State medals, gold, silver, and bronze. Gold medals had been given away for seven years, and there were not more than ten gold medals given every year. The seventy medals that had been given away had been competed for by 120 schools, the average being less than a medal per school, and of the seventy Nottingham had gained no less than six. In fact, the medals taken by Nottingham,—and no doubt their skill in cock-fighting, prize-fighting, and rifle-shooting had something to do with the result,—were eight times the average of the schools of the whole kingdom.

Mr. Rawle, the head-master, addressed the students.

From a Department of Science and Art report, recently issued, we observe, that in the Government examinations in drawing of 1872, the Nottingham school has again, for the fifth year, headed the lists, and has, for two years running, beaten the South Kensington and other metropolitan schools. We give the names of some of the schools which have taken the greatest number of prizes:—Nottingham, 56; Birmingham, 51; South Kensington, 42; Derby and Duffield, 10; Glasgow, 39; West London, 37; Manchester (G.S.), 33; Bloomsbury, 28; Leicester, 28; Lambeth, 27; Dublin, 25; Edinburgh, 25; Bristol, 24; Sheffield, 24; Manchester (R.I.), 23; Brighton, 22; Exeter, 22; Lincoln, 22; Liverpool (S.D.), 21; Newcastle-on-Tyne, 20; Bradford, 19; North London, 19; Belfast, 18; Leeds (M.I.), 18; Sunderland, 18.

IRRIGATION IN NORTHERN INDIA.

INSTITUTION OF CIVIL ENGINEERS.

AT the meeting on January 14th, the paper read was "On the Practice and Results of Irrigation in Northern India," by Colonel W. H. Greathed, C.B., Chief Engineer of Irrigation to the Government of the North-Western Provinces.

The object of the paper was to describe what had been done and what was now doing in that portion of Upper India where irrigation had been longest practised, and on the largest scale. The tract of country under consideration was included between the Himalaya range on the north, the River Brahmaputra on the east, and the rivers which merged into the Indus on the west.

The people of the North-Western Provinces had practised sinking wells for irrigation from the earliest periods. The depth at which water was found in the Plains varied from 10 ft. to 50 ft. below the surface. At the lesser depth a little pit supplied as much water as could be lifted in a day in a jar attached to a light

balance-beam worked by men. Two men could keep a plot of an acre watered, but the demand on labour prevented its employment on a large scale. Pits of this description fell in during the rainy season, and had to be annually renewed at the cost of the tenant. Deeper wells, lined with brushwood cylinders, and worked by bullock power, cost from 5*l.* to 18*l.* apiece, and employed six men and three pairs of bullocks every day to keep five acres watered.

Extracts were given from the official account of the famine of 1868-9, describing the desolation in districts unprovided with canals, and the security of those that were irrigated.

The scheme projected for turning all available waters to the greatest advantage was next detailed. The characteristics of the rivers Ganges and Jumna, which included between them the larger part of the zone of "Plains," were identical. Both rose in eternal snows, and both received large affluents before leaving the mountains. The drainage area of the Ganges was 11,200 square miles, that of the Jumna 7,800 square miles. The flow of water in the greatest floods was respectively 230,000 and 160,000 cubic feet per second, and when these rivers were at their lowest, from the middle of January to the end of March, the flow was reduced to 4,000 cubic feet and 2,000 cubic feet.

The Ganges Canal was perhaps the largest work of the kind in the world. Its full capacity was 6,500 cubic feet of water a second. The width of bed on the Solani Aqueduct, eighteen miles from the head, was 164 ft., and the depth 10 ft. The main channel was 348 miles in length, and it was navigable throughout; the branches were 306 miles in aggregate length, and the distributaries 3,071 miles. A carriage road was kept up on all main and branch canals, and the banks were planted with timber trees. The flow of water per second in 1870-71 was 4,300 cubic feet, and 767,000 acres were watered in 5,061 villages. Irrigation commenced twenty-two miles below the head works, and was diffused over an area 320 miles long by about 50 wide. The sub-Himalayan drainage, which the canal crossed, was passed partly into, partly over, and partly under the canal. The works in the upper part were chiefly constructed on block foundations, perforated with wells, by means of which they were sunk in running sand to a hard stratum. The Solani Aqueduct spanned a valley two miles and a half in width; its foundations were supported by the pressure and friction of wet sand, and no subsidence had occurred. The slope of the country in the upper part of the canal was much more rapid than that given to the canal beds,—a difficulty which had been overcome by masonry ogee falls; in place of these, vertical weirs with long crests were being built on new canals. The difficulty of the conditions under which the Ganges Canal works were commenced was detailed, and the functions of the canal officers. The earning of a cubic foot of water on the Ganges Canal, in 1870-71, was 4*d.* per annum; on the Eastern Jumna, 59*l.*

The net income of all the canals in the North-Western Provinces, in 1870-71, after the payment of working expenses, was 182,437*l.*, being 6·64 per cent. on the capital cost of 2,714,631*l.*

The Agra Canal had been projected for the irrigation of the Muttra and Agra districts, on the right bank of the Jumna, below Delhi. A weir, 2,428 ft. long, had been built across the Jumna, at a point where a spur of quartz from the Aravali range abutted upon the river. The work had no foundations. It consisted of two parallel masonry walls, 2,428 ft. long, running from end to end of the weir, of which the footings rested on the fine sand of the river-bed at low-water surface level. Between these walls, which were 26 ft. apart, stone was packed, and a slope of stone was constructed, up stream with a base of 40 ft., and down stream with a base of 200 ft. Scouring sluices were constructed on one flank of the weir, to keep a clear channel in front of the canal head. This weir, when partially constructed, had satisfactorily withstood the greatest known flood on the Jumna.

The financial results were also explained. At the end of the year 1871 upwards of a million acres were irrigated from existing works, which afforded a net return of 182,500*l.* The capital expended had been 2,747,000*l.*, and the net profit on the whole was 6·64 per cent. When fully completed, the cost of the undertakings would amount to about 7,500,000*l.*, with a return of 12 per cent. on the capital when the canals were fully developed.

The principal canal in operation was the Western Jumna, an old Mahomedan work. It had paid nearly 2,000,000*l.* clear profit, after repaying capital. The Baree Doab Canal, taken from the river Ravee, was constructed on the model of the Ganges Canal, and was gradually making way.

There were profitable inundation canals on the Indus, the Chenab, and the Sutlej. The Sirhind Canal, now under construction, would cost about 2,000,000*l.*, and irrigate a country where rain was very scarce. It was calculated to pay about 9 per cent.

In conclusion, it was stated that about 250 engineers, of and above the rank of assistant-engineers, are employed, under the Indian Department of Irrigation, in developing the advancement and prosperity of the country.

GAS EXPLOSION: HYDRAULIC GASELIERS.

A SERIOUS gas explosion has occurred at Pierrepont-street, Bath. An escape of gas being suspected in the parlour, a workman was called in. No sooner had he struck a light than an explosion took place, hurling the man from the steps on which he was standing, and breaking the fan-light over the street-door. The cause of the escape was want of water in the pendant. Workmen dealing with gas ought to know better than to strike a light on such an occasion. As to the want of water, this is the fitting time and place to recall what we said about three winters ago as to hydraulic gaseliers. Water is not only ready to evaporate in a short time, but also, when frost comes, to burst the tubing, and thus it incurs a double risk. We then stated that oil was much preferable to water; and we have now to notify that a gaselier which we supplied three years since with oil has continued till now in good order, a little oil having only once been added. No frost has injured it, and no risk has been run from escape of gas; neither has the oil given the slightest disagreeable smell. Never mind what gas-men say about oil in hydraulic gaseliers (it was colza oil): water suits *them* best, explosions notwithstanding.

BUILDINGS IN BIRMINGHAM.

THREE blocks of buildings are being erected fronting to New-street, Birmingham, the total length being 238 ft.; also buildings on each side an intended passage from New-street to the London and North-Western Railway Station, the frontage being 154 ft.; and another range of buildings opposite the station on each side, the upper stories being carried over the passage, and having a frontage of 80 ft.

Part of the erections is arranged as a hotel, and the remainder is to be let as shops, warehouses, and offices. The materials employed are white brick and stone. The style is Italian, with considerable ornamentation, both in terra cotta and in stonework, the whole of the front being carried on iron columns, and so arranged that the plate-glass extends in front of all the supports, so as to give the greatest possible amount of space for the display of goods; but, unfortunately, in an architectural point of view, this detracts from its effect, as it gives the buildings the appearance of standing on glass. Part of the buildings next New-street is now being proceeded with under contracts entered into with Mr. John Garlick and Mr. Charles Jones, both of this town, and the other portions will be commenced as soon as possible. Mr. Thomson Plevins, of Birmingham, is the architect engaged upon the works.

THE SALT STATUE FOR BRADFORD.

A WOODEN structure, opposite the Bridge-street corner of the new town-hall, has been put up on the site of the statue to be erected to Sir Titus Salt, bart., in order to give some idea as to whether the site would be really a suitable one. This structure, which has been undertaken by Messrs. Farmer & Brindley, who have executed the whole of the carving in the new town-hall, is in an advanced stage of completion. The form of the erection is quadrangular. The base consists of four steps, on the top of which is placed the pedestal, the whole raising the statue 8 ft. above the level of the road. Over the statue is a canopy, supported at each corner by clustered shafts of polished Shapp granite. These shafts support the arches of the four sides of the principal stage. The four arches are decorated with gablets terminating in stone finials. Over this principal stage is an intermediate stage, with niches in each face of the structure, for the reception of four statues, representing Charity, Justice, Temperance, and Prudence. The upper part of the canopy is decorated with arches, gables, and angle pinnacles, and terminated by a stone spire, rising to a total height from the ground of 45 ft. The whole edifice has been designed by Messrs. Lockwood & Mawson, the architects of the town-hall, and is in harmony with the architecture of that building. The statue itself is also very nearly completed, in the studio of Mr. Adams Acton, the sculptor. The figure is being executed in white Carrara marble, and represents Sir Titus seated in a chair: although in a sitting posture, its height is 7 ft. The stone of which the canopy is formed was all obtained from the Cliff Wood Quarries, out of which the whole of the stone used in the front of the town-hall was also obtained.

STATION PLATFORMS.

CAPTAIN TYLER, in reporting to the Board of Trade upon the accident which caused the death of Sir Donald M'Leod, recommends a uniform standard for passenger platforms and carriages on the metropolitan lines, and suggests that in the meantime the carriages should be supplied with continuous footboards. Captain Tyler also points out the necessity for careful supervision in regard to the starting of the trains. The danger of the platforms on the metropolitan lines we gave urgent warning of the year before last, and previously; but it required the sacrifice of some special personage ere anything could be done. As long as only an obscure victim now and then was mangled and destroyed, the railway Juggernaut just moved on as before; but now we shall have something done.

SIR,—Doubtless the public will appreciate the valuable recommendations made by Captain Tyler for improvements in the heights of railway platforms and continuous carriage footboards as a preventive, in some degree, of those frequent accidents to which Sir Donald McLeod unhappily fell a victim.

I should, however, like to call attention to a matter which seems to have been overlooked. The means of platform ingress and egress being in many instances by one gateway, there must be a risk of persons rushing after a train in motion if the gate be left open for the exit of arriving passengers, or if it be closed when the train is signalled the latter have to waste time in waiting for the not very active porters to open the gate when the train has left, a constant occurrence at some of the metropolitan stations. Now, to avoid both these difficulties I would suggest the erection of high iron turnstiles to open in opposite directions: thus, when a train is signalled "in" the inlet turnstile should be locked, the other being free for exit, but provided with a lock for wholly closing the platforms.

If this plan were adopted, one divided way would suffice at all stations where room was not available, and effect a saving both in officials and the time of the travelling public.

ARCHIBALD D. DAWNAY,
Assoc. Inst. C.E.

APPRENTICESHIP TO BUILDING TRADES.

BENFORD *v.* WAINWRIGHT.

THIS action, brought in the Marylebone County Court, concerning apprenticeship, is deserving attention.

The parents were the plaintiffs, suing, as next friends, Mr. Wainwright, for the sum of 11*l.* 10*s.* 6*d.*, part of premium paid on account, and the addition of the Inland Revenue stamp for indenture for apprenticing the son, and the indentures being cancelled afterwards.

Mrs. Benford, the mother of the cancelled apprentice, said by the terms agreed upon her son was apprenticed to the defendant, and Mr. Wainwright drew up the indenture for her to sign for the boy. She paid 10*l.* down, and at eighteen months' end she was to pay another 10*l.* When she signed the indenture, her son was sent to see how he liked the trade of a builder and cabinet-maker, and he brought back the indenture of the apprenticeship for her to sign. The way the indenture was drawn up caused her to refuse having farther to do with it. She upon this, no desiring her son to leave the cabinet or building trade, got another copy of indenture made out, and sent it to the master, along with 1*l.* 10*s.* for the stamp. This the master refused to sign, and the mother of the apprentice now asserted to the Court that the second document was very little different from the first.

The master did not look upon this in the light advanced by the parents, and would not sign the second copy of indenture, the important point being the hours of work for the lad; and as the indenture was incomplete, the mother withdrew the proposed apprentice, who had been with the mahogany builder over three weeks, and appeared to like the trade.

The mother applied to the defendant, after she had taken the embryo apprentice away, and demanded the moneys she had paid the master back.

Counsel were engaged in this knotty apprenticeship dispute, and it was elicited in cross-examination by Mr. Sleigh that the lad had actually been paid wages, and that the cause the mother did not complete the indentures was that the hours were too hard on the apprentice.

Mr. Warner Sleigh, for the defendant, said this was no ordinary case of apprenticeship. If actions of this nature were to stand, builders would not teach boys their trade upon this whim of their mother. The boy was ready to go back to his master, and the master willing to have him, as an apprentice and teach him his trade. The mother, however, by some woman's whim wanted her son back again. It was not only customary to the cabinet and building trades to take lads on trial, but it generally occurred that the premium for the apprenticeship was withheld until the boy had what was termed a trial. First, the master had an opportunity to note what sort of a lad he was going to bind himself to for seven years, and the young apprentice was afforded an opportunity of learning the nature of his trade, and the sort of home he had to look forward to. This was a fair bargain on each side. On the other hand, apprentices were taken as paupers, and in that case the guardians were bound to look after their wards, but seldom did, and this apprenticeship ended in the lads running away or turning out indifferent workmen. It became, therefore, the master's direct interest to exact a deposit to bind the bargain. It was not to be supposed that lads should enter a building or cabinet-making firm, give a month's trouble to masters, foremen, and leading men to instruct the arts and mysteries of a trade, and then, upon the mere whim of a mother,—who had better have left the apprenticeship to her husband,—come back to his client and say, "Unless you alter our first copy of indenture to my liking, my son shall not be bound to you; and, as you refuse to do so, hand me back the deposit. Another feature in the case was the bringing an apprenticeship dispute into a county court. The magistrates had always adjudicated here, and had legal powers to cancel an indenture and imprison an apprentice for wrong doing to his master. Here, however, the lad was not finally bound, but willing to serve. In the City of London there was a high official called a Chamberlain first especially appointed by Edward VI. to look after the apprentices, and so unruly were these young gentlemen as to need a "Bridewell" to correct their bad habits. That had now been pulled down, and it seemed all the good old apprenticeship laws and customs had gone with it, or such an action as this could never have been instituted. On behalf of builders, cabinet-makers, and others, he called upon the court to repudiate this claim.

Mr. Macnamara, the judge, said in this case he must act as *amicus curiæ*, as, whichever way he might decide, it would lead to unpleasantness and ill feeling, and particularly to the one most interested; for even if the boy returned to the proposed master, the mother would never be satisfied.

Mr. Sleigh, interrupting, said the master had not broken his contract by not teaching the lad his trade, but his mother had.

The Judge said that appeared to be the case, but all parties here were in a fix. The Judge was to decide a matter of trade custom that was disputed, and which, perhaps, should have been brought before a magistrate. If the parties would take his friendly judgment, it would be that the plaintiff should divide the ten pounds, which would recoup the master for his trouble with the boy, and this judgment would perhaps rule other cases that might come before County Courts, on the side of equity. It was not to be supposed that masters were going to the expense and trouble of keeping lads a month on trial without any *honorarium*. The value of the stamp might be got back from Government if the suitor sued the Chancellor of the Exchequer, supposing that the stamp had been got.

The parties to the cause had a conversation, and agreed to the Judge's verdict that each party were to pay their own costs, and the defendant return five pounds.

[In this rather important case with respect to apprentices, no direct decision has been arrived at. It is clear, however, that the County Courts have jurisdiction between master and apprentice, and even in the case of a lad actually apprenticed, the County Court Judge, sitting as a magistrate, has powers to deal with apprentices over police magistrates. It was stated outside the court, that a police magistrate had actually referred the case to a County Court.]

THE OLD HOUSE, ENFIELD.

SIR,—It will interest your readers to know that the magnificent brickwork alluded to in your journal of the 11th and 18th ult., has been secured for the South Kensington Museum. The Old House is now being razed; and experienced workmen are engaged in taking down the brickwork for the purpose of removal.

Mr. Alexander Andrews, with whom I have spoken on the subject, does not agree with your correspondent, Mr. Wilson, in calling the old house the "Manor House," as Lysons speaks of the Manor House (for some time the residence of the Wroth family) as having been "long pulled down," in his time, and which seems to have stood on the Chase, some distance from the town.

TH. BATTERBURY.

THE EFFECT OF CHARCOAL ON PLASTERING.

SIR,—I have a kitchen in which a good deal of charcoal is used in the usual way in little open fires along one side of the room, and to its use I attribute the falling away of large patches of the plastering on the ceiling and the upper portion of the side walls, as well as the whitewash by which it has been yearly coated. It is lofty enough, and there is a ventilator in the ceiling sufficient for the purpose; and the position of the roof would seem to favour its action, as the kitchen is a detached building, and is ceiled a considerable way up the roof inside. I have tried painting it, but it seems to blister and break, or crack, but does not come off easily; but its appearance is bad, and it is getting so unsightly that I expect I must take off all the plastering, and do it again. Now, may I ask, through your valuable paper, what is the best mode to do it, so as to resist the sulphurous vapour given off by the charcoal? In some similar cases, I am told that when the lime is mixed with coal-ashes instead of sand, it is not so much affected, but I have never seen it used in a dwelling-house; while in some of the hop-kilns, where large quantities of sulphur are used as well as charcoal, the ceilings are composed of tempered clay; but this would not do so well in my case, as a decent appearance is required. Possibly some of the cements so much in use now would answer the purpose, but I would prefer lime if it could be made to do.

Perhaps some of your readers will kindly help me in the matter. At the same time, it is needless to advise the charcoal being discontinued, for I have already urged that, with no better result than the choice of a strike or revolution. I expect amongst the many remedies or appliances now at hand for every evil, some one will be able to give a practical and not expensive one for the above. In so doing he will confer a favour on a twenty years' subscriber.

L. L.

HOW FAR IS AN ARCHITECT LIABLE?

SIR,—I have had built two houses, at a cost of 500*l.*, employed an architect to make plans, &c., and see everything done properly, and paid the whole of the cash on the faith of his certificates. Ten months elapse; the pumps then draw air. On examination, the whole of the lead pipe proves to be full of sand-holes, and not of the quality specified, necessitating the substitution of new, at a cost of 6*l.* Now, sir, what is the best thing to do? The contractor has since died. Can I recover of the architect?

M. H.

*** This, though a small matter, raises a large question,—one by no means settled, and on which we shall be glad to hear what correspondents have to say.

NEW DRINKING FOUNTAIN IN CHESTER.

MISS HUMBLE, in memory of her two sisters, and her brother, the late Mr. E. Humble, has presented to the corporation of Chester a drinking-fountain. It is situated at the junction of the Tarvin and Christleton roads, in the suburb of Boughton, and has been recently opened. The main body of the structure, surmounted by a hood, is hexagonal in plan, three sides having inscribed panels alternating with a bowl on each of the other sides. The bowls are of grey granite, polished inside, with fine axed exterior surfaces, on which lotus-flowers are carved, while leaves of the same plant encircle the rock-faced recesses above them, out of which the water flows. A willow wreath is cut upon a torus, forming an appropriate neck mould for a memorial fountain. The feed-pipes are long brass unions, constructed so as to present only a strong shield of brass to mischievous persons, the water flowing from openings in the pipe, about 3 in. back in the stonework. The overflows from the bowls feed three troughs for cattle; these troughs face the panels, and are easily reached from the side of the road, the curbstone alone intervening. All the stonework is of York stone, with the exception of the bowls.

The hood terminates with a bronze and gilt lamp, the ladder-rests serving as guides to wayfarers.

The presentation is recorded on one of the panels; and the texts, St. Luke xviii. 16, and St. John xiii. 14, occupy the other two.

Messrs. Harrisson & Seaton, Liverpool, were the architects; and Mr. H. Wigginer was the contractor.

THE TRADES MOVEMENT.

The Building Trade of London.—It will be remembered that last summer the operatives in the various branches of the London building trade made a demand for an increase of one penny per hour in their rate of wages, and that the employers conceded one halfpenny. The Central Association of Master Builders have just received notice that this year the men intend to "stand out" for the other halfpenny, making their wages 9d. per hour, "in accordance with the terms of their original memorial." The notice fixes the 19th of July next as the date for the increase to come into operation, and adds that, "considering the increased cost of the necessaries of life, they find the purchasing power of money, within the last few years, has been reduced at least 20 per cent."

The South Wales Strike.—A meeting of the fitters and smiths, carpenters and other "tradesmen," employed in the Dowlais, Plymouth, and Cyfarthfa works, has been held at Penydarren, for the purpose of considering their position in relation to the strike. In the course of a temperate discussion it seems to have been made pretty clear that all present were desirous of continuing work, and ultimately a resolution was passed to the effect that "each man was at liberty to do as he pleased," go to work or stop out.

Strike through a recent Act of Parliament.—A strike of the chain-cable makers of the north of England (which will extend to other parts and to the metropolitan iron-works) has occurred, for an unexpected reason. The Trinity House Brethren, the Admiralty, and the Board of Trade, finding that shipping have been long supplied with defective iron cables, by which vessels have been lost in far greater number than from bad anchors, introduced a Bill into Parliament to remedy this serious evil; and now the Chain-Cables Act has come into force, which requires that before a chain is passed, it shall undergo a test, according to size, up to 40 to 50 per cent. above the Admiralty strain, so as to prove the quality of the iron and workmanship. The additional proof has caused the chain-cable artizans to use more skill, labour, and time, than in former days, and for these extras they have demanded an advance of wages at the rate for heavy chains of 6d. per cwt., and then reduced their request to 3d. per cwt. The employers, however, hold out against both demands; and as the men, since the Act in question was mooted, have husbanded a fund to meet a strike, the chain-cable making is likely to want many links before the men make any more cables. The dispute opens up some serious misgivings as to past shipwrecks.

ACCIDENTS.

Fatal Scaffolding Accident near Newport.—The platform part of the scaffolding of a new bridge now in course of construction over the river Usk, near Newport, recently fell into the river. One man was drowned; two are missing; and four others injured, two of them seriously.

Fall of a Building at Walkley.—The gable end of a dwelling-house in course of erection in Industry-street, Walkley, has collapsed, and caused considerable damage to property, though, fortunately, not to life. The gable end had lately appeared very insecure. The bed in which the tenant and his wife were wont to sleep, was completely overwhelmed with building material of great weight.

A Building Set on Fire by Lightning at Blackburn.—The stables belonging to Miss Thwaites, Beardwood Cliff, near Blackburn, were recently set on fire by lightning. The house being two miles distant from the town, the roof fell in before the engines could arrive. The stables are of recent construction, with a roof of pitch pine, and the damage done will be about 300*l.* The horses were got out of danger with great difficulty. A pear-tree on the north side of the stables was split by the electricity, and the coachman was thrown to the ground. No person, however, was injured.

Fatal Fall of a Bricklayer in Belgravia.—At 134, Ebury-street, Belgravia, a bricklayer, in the employ of Messrs. Walter & Sons, builders, Pimlico, was walking along the parapet, which is a very high one, and occupied by officers of the Footguards, quartered in Chelsea New Barracks. He fell head foremost on to the hand-rail of the area steps, and from thence back on to the spikes, and turned over on to the stone, smashing rails and stone, and deluging the pavement and area-steps with blood. A lady and gentleman passing by narrowly escaped the body falling on them, but were covered with the blood spurting from the poor fellow's head.

Fatal Fall from a Furnace.—An inquest has been held at New Town, Millom, says the *Carlisle Journal*, on the body of Thomas McWilliam, aged 32 years, who had met with a fatal accident on the previous day. Deceased was engaged at the Millom Ironworks, and about half-past three o'clock in the morning he was at work filling metal into the furnaces with a wheel-barrow. Near where he was walking along on the top of the furnaces there is a lift used for raising the ore from the ground to the top, which is a distance of 50 ft. Down this lift McWilliam by some means or other fell, and met with immediate death. The jury returned a verdict of "Accidentally killed," but as this was the second death of a similar nature at that place they recommended that a gate should be placed in front of the lift.

Fatal Fall at Arborfield, Reading.—An inquest has been held before the county coroner, at Reading, on the body of John Buckland. Emma Hiscock said deceased was repairing a porch. Hearing a "crash" I went down at once and

found deceased on the ground and the ladder broken. He appeared dead. Only about three minutes elapsed from the time I saw him alive till I found him dead. No one was working with deceased, nor was any one near him at the time. Just before the fall deceased cautioned me against letting the children get under the ladder as it was unsafe. Deceased was perfectly sober. A labourer said, I spoke to deceased during the day, and he told me he was afraid of his ladder as it was very weak. Deceased brought the ladder with him. A verdict of "Accidentally killed by a fall from a ladder" was returned.

Great Fire in Gateshead.—One of the most destructive fires that have ever occurred in Gateshead has just taken place. The scene of the fire was the well-known saw-mills and timber-yard of Messrs. Heggie, which are situate in Hillgate, about half a mile from the Tyne Bridge. The portion next and highest up the river was occupied as a timber-yard, whilst lower down, and stretching from the shore to the narrow street which leads to Hillgate, were the extensive planing and saw mills. Adjoining these was the tar-yard of Messrs. Heggie, who are also rope-manufacturers. The fire spread with such rapidity that the entire premises from end to end was one mass of fire. Even a new crane, which cost 300*l.* some short time ago, fell and was broken in several pieces. Messrs. Heggie have been very unfortunate, having been burnt down before on one or two occasions. The damage is estimated at between 20,000*l.* and 30,000*l.*, which is partly covered by insurance.

SCHOOL BOARDS.

London.—I am in a position, says the London correspondent of the *Weekly Scotsman*, to give you an idea of what the total cost of the operations of the London School Board will be for providing school accommodation for the 100,000 children needing it. The first sum raised by the Board was 40,000*l.*, which means a rate of a halfpenny in the pound all over the metropolis. The next sum was 75,000*l.*, which a rate of little more than three-farthings in the pound would make up. A further sum of 62,000*l.* was asked, which represents about another rate of three-farthings in the pound. It is estimated that this will be all that the Board will require to provide for the 100,000 children up to March, 1874, so that the total cost will entail a rate of about twopence and the one-tenth of a penny or a halfpenny a year, for the three years and some months which the Board expect to exist. It is intended to apply again next session for an Act of Parliament to continue the tenure of office of the present members for five or six months beyond the three years, so as to enable them to complete the work they have entered upon.

Sheffield.—The first schools built by a school board in Yorkshire have been opened with some little ceremony by the board, in Sanderson-street, Sheffield. The schools are of stone, and have cost something like 5,000*l.* Convenient playgrounds are attached.

Miscellanea.

Water-supply for Fires at New York.—In the *American Gaslighting Journal* is an article quoted from a contemporary in which it is stated that there is a project in New York for an indefinite supply of river-water in case of fire, with powerful engines for raising it, together with a system of special mains throughout the city. Power could also be sold to warehouses, stores, and manufactories. Five millions of dollars are mentioned as the probable cost of establishing the new works; and this sum would, at all events, it is said, cover the cost of works for supplying the lower part of the city with water, supposing the new system to be confined to that quarter which is in greatest danger from the present lack of pressure; and it is just in this district that small motors are most in demand. The sale of power to 500 buildings at an average of 1,000 dollars each, would, it is estimated, pay the interest on that sum, and perhaps the cost of maintenance.

Manchester Aquarium Building.—Good progress is being made with this building. It is now almost a matter of certainty that the building may be open in May, in time for the Whitsuntide holidays.

Dr. Borlase, the Cornish Antiquary.—Mr. W. Copeland Borlase, of Castle Horneck, author of the valuable work on "Cornish Sepulchral Monuments," reviewed by us last week, has opened the session of the Penzance Institute, Mr. Thos. Cornish, the newly-elected president of the society, presiding. From a report in the *Cornish Telegraph*, it appears that Mr. Borlase read a paper on the well-known Doctor Borlase of the last century. The doctor at first lived at his father's manor-house, at Pendeen, St. Just, a house possessing many noteworthy features and associations, but the rectory of Ludgvan soon became Dr. Borlase's life-long abode. One aspect of the doctor's many-sided life dwelt upon was his communications with the fashionable and literary world, with which his connexion was largely kept up through Dr. Oliver, a Cornishman, who became the chief physician at Bath. Letters from Dr. Oliver were read, and two unpublished from Pope to Dr. Borlase were referred to, in one of which is given a fuller description than any other by the poet himself of his grotto, which was much enriched by Borlase's presents of minerals. The scientific labour of Dr. Borlase might be divided into three parts: the earlier occupied by archæology; the middle age by the history of natural phenomena; while his latter days were taken up in making collections for a parochial account of Cornwall, containing the heraldry and genealogy of the county. In his day there were very few antiquaries worthy of the name. In 1754 appeared the first edition of the "Antiquities of Cornwall." Though it contained some theories not now accepted, its facts were unimpeached and valuable. Borlase's age was an age of collecting without a sufficient rudimentary knowledge to make any adequate generalisations possible. Gropings in the dark were many of the best efforts. A manuscript volume, however, by Dr. Borlase, contained many views on submarine upheaval and the causes of earthquakes, which might be placed almost side by side with those of Sir Charles Lyell; but the volume was not published. Mineralogy also engaged much attention, and was the subject of many letters between Borlase, Gronovius, Linnæus, &c. Every morning Dr. Borlase rose at five, and every evening retired to rest at nine, continuing these hours until his death at Ludgvan, on the 31st of August, 1772.

The Buried Valley of the Mersey.—A paper has been read before the Liverpool Geological Society, by Mr. T. Mellard Reade, C.E., F.G.S., on this subject. It was of a mixed engineering and geological character, commending itself to those who have a taste for practical science. Mr. Reade stated that he was led to investigate the form of the rocky bed of the river Mersey, by finding that in the upper reaches of the river the rock lay at a depth considerably below the deepest part of its present bed, which is situated between Seacombe and the Rock Lighthouse. The ancient or pre-glacial course of the river was traced past Runcorn Gap, and the question of its course onwards to the sea next considered. The author's reasons for not considering the valley to be a lake-basin were also given; and that there had been an outlet, at a regular gradient, to the sea, or a sub-aërial valley, where the estuary now is, when the land was higher, with respect to the sea-level, was argued from the following facts:—That a bed of water-worn gravel or stones, mixed with red sand, though sometimes absent, usually lay upon the rock. That this red sand being due to the grinding down of the Triassic rocks, when the whole country was enveloped in ice, like Greenland of the present day, if there had been no outlet for the sub-glacial river, a great accumulation of *débris* would have taken place in the bed, which, on the supposition of an outlet, was being continually carried seaward by the sub-glacial river. It was also shown that, in Greenland, rivers coursed over the surface of the ice, and then, plunging below it, flowed underneath to the sea.

The Linoleum Manufacture.—The report of the Linoleum Manufacturing Company (Limited) shows an available total for the year of 22,583*l.*, including a previous balance of 2,435*l.*, and recommends an appropriation of 19,500*l.* to a dividend at the rate of 20 per cent. per annum (of which 4,766*l.* were paid in July), leaving 3,083*l.* to be carried forward. For the previous year the dividend was also 20 per cent., 2,000*l.* were added to reserve, and 2,188*l.* were carried forward. Linoleum floor-cloth is a decided improvement on wax cloth. We believe the paint in it is mixed with cork, and the colours and designs generally are good.

The Early Monuments of the British Isles.—Mr. John S. Phené, F.S.A., has delivered a lecture in London, on the more recent discoveries of archæological relics of remote antiquity. In the course of his lecture he gave a *resumé* of his own explorations conducted during the past year. These extended at intervals from May to December, and comprised the examination of tumuli on the Cotswold Hills; of cromlechs at Harlech and other places in Wales, and in the counties of Dublin, Down, and Antrim, in Ireland; a somewhat extensive survey of the round towers of Ireland; and a close and critical examination of the domed structures on the Boyne Water. Various interesting results of a novel character attended his examinations, such as a distinct identity being established in the construction of the cromlechs in the north of Ireland and in Argyleshire, by which a strong corroboration is given to the historical tradition of the invasion of that part of Scotland now known as Argyleshire by the Irish Dalriads. He found appearances of a careful and systematic erasure of, he assumes, incised devices, or perhaps records, on the stones in the chambered tumulus of New Grange, the parts not so erased having the various emblems so well known to antiquaries still upon them. In the neighbourhood of triple-peaked mountains in Wales he discovered Celtic remains similar to those he had identified with the localities of such mountains in Scotland.

Box Edgings.—This is a very good time to make new and re-form existing edges of box. The *Gardener's Magazine* gives some hints on the subject:—The ground is made ready for the reception of the plants by being made level, and then trodden or well beaten down to a level with the existing walk, or the intended height of the one to be made. A trench, about 6 in. deep, must be neatly taken out, the soil brought out into the walk, and the back of the trench made perfectly straight for the pieces of box to lie against. The side of the trench should be made rather sloping, and in laying in the box keep it in its place with the left hand, and fill in a portion of the soil with the other; when a tolerable length is done, fill a further portion of the soil in with a spade, give it a good treading, and then fill the remaining part in, and when made firm the operation is complete, and nothing remains but to put the gravel in its place. In preparing the box for planting, strip off the moderate-sized sprigs with a portion of the roots adhering, and trim so as to form a miniature fan. The tips of the shoots should be cut off, and also a part of the old hard wood at the bottom when it is too long, and likely to prevent the piece lying nicely in its place. Each spray should be as near in size as possible, to prevent any unnecessary trouble when laying it in.

The Proposed South London Museum.—A public meeting has been held at the Lambeth Baths, Westminster-road, in promotion of the movement now in progress for the establishment of a museum in the South of London. Mr. John Locke, M.P. for Southwark, occupied the chair, and was supported by his colleague, Colonel Beresford, M.P., and a large body of local and influential gentlemen. The chairman, in opening the proceedings, expressed his hearty concurrence in the object of the meeting, which, if carried out, would tend to the great advantage of the working population of the southern districts of the metropolis. The establishment of a museum and gallery of fine arts in South London would go far to educate the masses of the people. He pointed out the advantages which had resulted to the East end of London by the establishment of the Bethnal-green Museum. There was a large piece of ground, called the Glebe Land, at Newington Butts, which could, he said, be obtained as a site for the proposed museum. Mr. Clements, the chairman of the provisional committee, detailed the progress already made by the movement, which has been of the most encouraging character. The meeting pledged itself to use its best efforts to ensure the success of the movement, and other resolutions in furtherance of the object of the meeting were adopted.

The Dorchester Surveyorship. — Mr. John Wood, of Wolverhampton, has been appointed surveyor of the borough of Dorchester, at a salary of 120*l.* per annum, it being an understanding, seemingly, that if he be hereafter appointed also inspector of nuisances an addition to his salary must be made.

Mr. Stansfeld and the Surveyors of Highway Boards.—A deputation, appointed by the District Surveyors' Association, have waited upon Mr. Stansfeld at the Local Government Board, to urge upon him the better management of highways generally, and placing the appointment of surveyors of highways in the hands of the Local Government Board. Major Allen, M.P., in introducing the deputation, said they represented an association comprising 130 highway districts. They desire to have their appointments taken out of the hands of the ratepayers, and to be under the Local Government Board, so that they might be placed on a footing sufficiently independent to allow them to do their duty without fear or favour. Mr. Edward Hicks, chairman of the Surveyors' Association, said they wished to be under the control of the Local Government Board in a similar way to the officers under the Public Health Act. Mr. Stansfeld said he did not think they could make the charge for the maintenance of roads an imperial charge; but there was a strong feeling where there were great thoroughfares near populous towns, for widening the area, so that the cost might not fall so heavily upon a small district. A county charge would necessarily imply county control.

Coal *versus* Colliers.—A miner, referring to the new advance of coal, pertinently asks whose fault it is this time that coals are raised. For twelve months past it is the colliers who have been popularly blamed for forcing up the price of coal by their reckless demands, but it is high time, he thinks, that the facts should be known. "Eighteen months ago," he points out, "coal that is being sold now for 17s. and 17s. 6d. at the pit-mouth, sold for about 8s. or 8s. 6d. per ton. I believe," he says, "it is the opinion of the public that we miners are receiving the benefit of this enormous advance of coal; but I will tell you the facts: we had 6d. per day rise in October, 1871, and we have received no advance of wages since. During the past year, we had our hours of labour reduced from eleven to eight, but the 6d. rise we had in 1871, and the reduction of hours together, would not make more than 2s. 6d. per man per day. Now let us assume there is one ton of coal per day drawn per man,—and coal is now just as much again per ton as it was in September, 1871,—there is 6s. 6d. or 7s. clear profit more than there was two years ago on one single ton of coal." They who can cheat the public in this way would, under far different circumstances, make expert pickpockets.

New Reredos in St. Mark's Church, Lewisham.—A reredos of Caen stone has been erected in this church, the design of which comprises a centre portion of three moulded arcades with marble clustered shafts, the arcades the width of the altar-table, and pinnacled supports crocketed on either side, containing four niches for the reception of figures of the Evangelists. The middle compartment of the arcade is deeply recessed, and a statuary Calvary cross on a gold ground placed therein, and above it is erected a light tabernacle-canopy, supported on four polished Peterhead shafts, with the angels Michael and Gabriel supported on pinnacles on either side. In the panels of the side compartments are carved on a diapered ground the symbols of the Agnus Dei and the pelican, and in the spandrels the Dove and the Alpha and Omega. The whole is profusely carved, and has been studied throughout with a view to its emblematical teaching. The work has been executed by Mr. George Whittingham, of Kennington Park-road, from designs by the architect of the building, Mr. William C. Banks, of Gracechurch-street, who also has designed the scheme for filling the whole of the traceried windows with stained glass. The portion of the reredos already erected is the gift of Mr. J. Lonsdale.

St. Michael's, Highgate.—The reredos of this church has just been revised and restored by Messrs. Cox & Sons. Over the altar-table has been placed a carved stone panel representing, in life-sized figures, the Breaking of Bread at Emmaus, the figure of Christ being central, with one of the disciples on either side. The background is filled with tracery and carved foliage, and in the panels on each side are the Commandments, illuminated. The tracery is filled in with the passion-flower, the Agnus Dei, and the Pelican. The lower portion is diapered in rich brown and gold. A text runs through the whole,—"Their eyes were opened, and they knew Him."

The Bourne at Caterham.—The Bourne water has again made its appearance, and last week it was running strongly through Caterham Valley. Aubrey, the historian, says the *Croydon Times*, records a curious superstition concerning this subterranean stream. In speaking of Caterham, he says,—"Between this place and Coulsdon, in the bottom, commonly called Stoneham-lane, issues out sometimes (as against any change in our English Government), a Bourne, which overflows, and runs down in Smitham Bottom to Croydon. This is held by the inhabitants and neighbourhood to be ominous, and prognosticating something remarkable approaching, as it did before the happy restoration of King Charles II., of ever glorious memory, in 1660;—before the Plague of London in 1665;—and in 1688, the era of another change of the constitution." The stream has already reached the Brighton-road, where a culvert has been made by the local Board to receive it into the Wandle. Before the erection of this culvert the southern portion of the town and the Old Town used to be inundated at its rising.

Paper Wheels. We now learn from the monthly scientific paper in *Chambers's Journal* that the article in question is made by treating waste-paper, or paper-pulp, or vegetable fibre with chloride of zinc [would not oxychloride of zinc be best?], and subjecting it to pressure, whereby it becomes hard and tough. The hardness and toughness may be varied according to the strength of the bath of zinc solution, and the material produced will be flexible as leather, or rigid as wood. It takes colour readily, and can be used as floor-cloth; it is a substitute for leather, both soles and uppers; can be fashioned into gas-pipes, handles for whips, for saws, and many kinds of tools; into buttons, combs, pulleys, and so forth, and into large sheets for roofing. It promises to be useful for ornamental purposes; perhaps, for coats and trousers; and paper already manufactured may be toughened by being passed, unsized, through the chloride of zinc bath.

Borrowed Capital for Land.—Mr. Mechi, says:—The time is fast approaching when the surplus capital of trade, commerce, and manufactures, will find its way to a food-producing channel. There is plenty of room for it, without any fear of its overflowing the banks. A farmer who owns the land he farms said to me last week,—

> "Twenty-two years ago I borrowed between 7,000*l.* and 8,000*l.* of the Government loan, paying 6*l.* per cent. per annum to liquidate principal and interest in twenty-two years. I drained all my stiff land 3 ft. deep and 4 rod apart. The twenty-two years have expired, and now I am free of charge, and have all my drains as perfect as at first, barring sundry removals of roots and trees, &c. My land and crops have been improved, and it has been altogether a satisfactory and profitable affair."

Well, then, for 6s. 6d. an acre (less than the price of a bushel of wheat) annually during a period of twenty-two years, this land has been permanently improved, the produce greatly increased, there has been a large augmentation of capital, and profit to landowner and tenant and the country at large. Why is it that some 20,000,000 of acres are still awaiting a similar manipulation?

Opening of New Picture Gallery in Brighton.—The Picture Gallery in connexion with the Free Library and Museum has been opened, but without any inaugural ceremony, the formal dedication to the public of the entire building having been made during the visit of the British Association in August last. The permanent opening of the Library and Museum has been delayed by circumstances, and up to the present time the arrangements for the picture-gallery only have been completed. The Library and Museum will, however, be shortly finished in their entirety. Taken as a whole, says the local *Herald*, the exhibition, both in oil and water colours, is one of the finest to be found in the provinces, including as it does the works of Phillips, Millais, O'Neil, Faed, the Linnells, Solomon, Frith, Frère, Marcus Stone, Sir John Gilbert, T. S. Cooper, Hunt, Cox, Copley Fielding, Vicat Cole, Richardson, De Wint, &c.

Meeting of Grainers and Marblers.—Mr. Jas. MacIntosh thinks it an error to describe the meeting held by this trade on the 17th ult. as a "meeting for the formation of a trade-union," "the object being that of benevolence." He adds that the purposes of the society were not set forth by him, but by one of the promoters of the meeting.

Japanese Progress.—A prospectus of *Tai Sei Shimbun*, or *Great Western News*, a native Japanese paper, edited by a Japanese resident in London,—Office: 3, George-yard, Lombard-street,—has been issued. It says the immense advance which Japan is making in material progress renders the present moment opportune for the establishment of a newspaper in the metropolis of the West, to serve as a means of communicating further knowledge of Western arts and policy among the millions of Japanese who are now desirous of learning all they can of foreign nations. The paper will be illustrated, so as to convey the most vivid ideas of the objects explained, and to simplify description. A portion of the first number will be circulated among the Japanese reident in Europe and America, and the remainder will be forwarded to Nagasaki, Yokohama, and Yedo, for circulation in the Japanese Empire.

Monumental: St. Mary's Church, Eynesbury.—In the porch of this church there has just been erected a mural monument of Caen stone, in the Early English style of architecture, to the memory of the late Mrs. Humbley. The inside arches, with moulded bases and carved caps, are supported upon marble shafts, forming three spandrels, in the centre of which is the inscription, in indelible letters, in a quatrefoil within a circle of marble; and in the side spandrels are carved, in bold relief, the lily (on the left) and the rose (on the right). On each side, also, is a moulded sunk panel. The shafts are green serpentine marble, the quatrefoil and circle being statuary Marble. The monument has been erected by Mr. W. Wade, of Eaton Socon, St. Neots, by the direction of Captain Humbley.

Self-working Ship Ventilation and Ship Pumping.—An invention of great advantage to ships has been successfully tried at Plymouth. Foul water and foul air in the lower part of the ship are both pumped out by the mere rolling of the ship. Two iron cylinders, connected below by a tube, are placed one on each side of the vessel. From each cylinder a pipe descends into the air or water that is to be pumped out, and a similar pipe rises as an outlet above. The cylinders are filled with quicksilver, and being connected below, as already stated, each roll of the ship produces an alternate rise and fall of the quicksilver, creates thereby a vacuum, into which the bilge-water rushes, and is pumped out at the vent in a continuous stream. The cylinders which expel air are filled with water; but their action is the same as here described.

Crags and Cairns.—Under this title Mr. Garner, F.L.S., has read a paper in the Stoke Townhall, before the North Staffordshire Naturalists' Field Club, on the boulders and other traces of glacial times in that part of the country, and on implements of the glacial drift and ancient megalithic and other monuments. Views of cromlechs and dolmens, and stone circles, were exhibited, and also flint implements. A paper, by Dr. Davis, was also read as to barrows and caves. Dr. Davis was wrong in supposing that Professor Huxley regarded the Neanderthall skull as evidence of the supposed "missing link" between apes and men. To the best of our recollection Huxley held precisely the contrary opinion: yet he is spoken contemptuously of by Dr. Davis on this false supposition.

Malden and Worcester Park. The new entrance over the green joins the old road opposite the late lodge. A new lodge and three villa residences have been erected, with conservatories attached. These new buildings, now nearly completed, are in the Swiss style. The ground-floors are of red brick, with stone dressings, and the first floors and gables are of timber and stucco, with roofs of ornamental tiling. The gables are finished with verge boards and finials. The architects are Messrs. John Giles & Gough, of London; and the builders are Messrs. Hibbins & Trasler, of Kingston. The whole of the works were carried out under the superintendence of Mr. Mark H. Judge.

Technical School for Edinburgh.—A preliminary meeting of persons favourable to the establishment of a technical school in Edinburgh has been held, under the presidency of the Lord Provost. Resolutions were adopted to the effect that such a school was desirable, and that a portion of the surplus funds of Heriot's Hospital might very properly be set apart for its maintenance. A committee was appointed to prosecute the matter.

Saxon Antiquities.—A collection of Saxon antiquities of rare value has just been presented to the library and museum of Trinity College, Cambridge, by the sub-librarian of the society. For some time past excavations have been going on on the site of an Anglo-Saxon cemetery situate at a place known (and described on maps 200 years old) as Edix-hill-hole, near Orwell, Cambridgeshire, and some curious remains have been brought to light. The donation includes various implements in iron, as spear-heads, shield-bosses, and handles, &c., and some articles used in hunting and in domestic life. There are also articles of pottery.

The Smoke Nuisance.—The high price of fuel is reviving an interest in South Staffordshire in the question of smoke consumption at the iron-works and other manufacturing establishments. At the last meeting of the Wolverhampton town council, a resolution was carried by a slight majority in favour of instituting proceedings against manufacturers at whose works the smoke nuisance existed. The town clerk, however, said that the majority was so small that he should decline the responsibility of acting in the matter until it had been brought a second time before the council.

Colliery Gas Lighting.—The Marquis of Lothian has just completed new gasworks to supply with light the colliery offices, home farm, and colliery villages on the estate of Newbattle Abbey, and eventually the underground workings in the coal-mines. The works are erected at the village of Newtongrange. The gas is clear and brilliant, being made from the best parrot coal. The whole works have been carried out under the supervision of Mr. Davidson, manager of his lordship's coal works.

Rise in the Value of Property.—The owners of property situate at Carbrook and Attercliffe, Sheffield, have unanimously resolved to raise all cottage house-rents by amounts equal to 15 per cent. The determination has been come to, owing to the great demand for dwellings, consequent upon activity of trade, scarcity of accommodation, high price of building materials, labour, and land. The resolution affects many thousands of houses, chiefly situate near the great iron and steel works.

The Leicester Municipal Building Question.—A meeting of the Municipal Buildings Committee, consisting of the whole of the Council, has been held at the Town-hall, Leicester, for the purpose of taking into consideration the question of municipal buildings. It was ultimately resolved "That the municipal buildings be erected upon the old cattle-market site, with a frontage to Horsefair-street, Bowling Green-street, and Bishop-street, and that the question of plans and the erection of municipal buildings be referred to a sub-committee to be reported upon at a future meeting of the committee of the whole council."

Wax-Chandlers' Hall, Gresham-street West.—The Court of this ancient company met at dinner last week for the first time since their hall was decorated. The works include an improved system of lighting and ventilating by means of a large sun-burner, which brings into strong relief the decorations, Elizabethan in character. The works have been executed by Mr. Edward Jenner, of Belgrave Mansions, under the superintendence of Past-Master Quallett, surveyor.

Charges under the Workshops Regulation Acts at Dudley.—At the Dudley Police Court, Mr. Jones, sub-inspector of factories, appeared in support of a number of charges against different persons for contravening the Workshops Regulation Acts. Fines of 10s. in each of several cases, and of 20s. in one case, were inflicted against employers, and of 1s. against parents, for allowing children to be worked beyond the proper number of hours per day, and for want of educational certificates.

Fire-damp.—Mr. Charles Kidd, M.D., writes to the *Times* as follows:—

"An interesting discovery has been made in America, the birthplace of our chief discoveries as to the reactions of gases, vapours, &c. Blake, of Boston, gives several cases of persons taken apparently dead out of coal mines restored to life by inhalation of oxygen. This gas seems a perfect antidote to fire-damp; in some cases there was relapse when the oxygen was discontinued, but on resuming its inhalation the patients were saved. Next to the value of the Davy-lamp must rank the great efficiency of this gas in the too-often painful scenes in coal mines, where hitherto nothing was done to restore life, as no antidote was known."

Trees in Brighton Streets.—Another step in the planting of the streets of Brighton with trees has been taken. Two lines of fine young elms (presented by the Earl of Chichester) have been planted on the outer skirts of the central pavement of the Steyne. It is intended to plant two other lines just inside the Steyne enclosures, to run parallel with those outside, so as to form an avenue from Castle-square to St. James's-street. Eastern-road is also to be planted from the College to Kemp-town, and Buckingham-road on both sides.

Public Health Act, 1872: Engineering Department.—Mr. Robt. Rawlinson, C.B., has been appointed Chief Inspector and Consulting Engineer; Major Tulloch, R.E., has been appointed an Inspector. Mr. Rawlinson ceases to hold country inquiries, as formerly, but may be called upon for any special report. His duties in future will be chiefly in the Local Government Office, Whitehall.

The late Mr. William Harry Rogers.—We are sorry to hear that this gentleman, long well known as a designer and draughtsman, died on Sunday night, the 19th ult., of *phthisis pulmonalis*, after ten months' illness. Mr. W. H. Rogers, who was the son of the eminent wood-carver of that name still enjoying a hearty old age, was but forty-seven years of age, and leaves a widow and six children.

The Sea-wall at Dawlish.—The south-westerly gale of Saturday night and Sunday caused high tides to undermine a further portion of the sea-wall against the South Devon Railway at Dawlish, about 120 yards above the last breach. Some 25 yards of foundation have been washed out. The wall for some distance is much endangered, and masons have been busily employed in shoring it up.

M. J. B. A. Lebas, the eminent French engineer, is dead. It was he who placed the obelisk of Luxor in the Place de la Concorde. He was born in 1797, and was a pupil of the École Polytechnique. In 1849 he published a memoir, entitled, "L'Obélisque de Louqsor, Histoire de sa Translation à Paris."

Explosion of Gas at the New Relief Offices, Islington. An explosion of gas has occurred at the New Relief Offices and Vaccination Station, now in course of erection in Islington, whereby two grainers have met with severe injuries.

The Royal Academy.—At a meeting of the members of the Royal Academy on Tuesday night there were elected as associates—painters, Messrs. H. W. B. Davis and J. Hodgson; and engraver, Mr. T. Oldham Barlow.

The National Theatre at Washington.—The National Theatre in this city has been totally destroyed by fire.

TENDERS

For a pair of semi-detached villas at Hastings. Mr. G. Stooke, architect. Quantities supplied:—

Tapper	£2,900	0	0
Cousins (accepted)	2,620	0	0

For alterations and additions to servants' offices, Sandridge Court, Surrey, for the Right Hon. the Earl of Cottenham. Mr. R. Martin, architect. Quantities supplied by Mr. Fred. Sparrow:—

Bridgman, Nuthall, & West	£955	0	0
Ward	790	0	0
Jarrett (accepted)	760	0	0

For new premises for the *Standard* newspaper, St. Bride-street and Shoe-lane, City. Contract No. 1. Excavations and concrete. Mr. Horace Gundry, architect:

Baker & Son	£1,990	0	0
Lucas, Brothers	1,650	0	0
Smith & Co.	1,597	0	0
Holland & Hannen	1,544	0	0
Perry & Co.	1,500	0	0
Trollope & Sons	1,488	0	0

For the erection of two warehouses in Wood-street-square, for Mr. T. Loverdge. Mr. Herbert Ford, architect. Quantities by Hovenden, Heath, & Berridge:—

Myers & Sons	£3,680	0	0
Scrivener & White	3,669	0	0
Nightingale	3,470	0	0
Brass	3,459	0	0
Perry, Brothers	3,393	0	0
Stimpson & Co.	3,383	0	0
Williams & Son	3,330	0	0
Kilby	3,252	0	0
Henshaw	3,231	0	0
Crabb	3,100	0	0

For alterations, repairs, and additions to a house on Beeston-green, Bedfordshire. Mr. Lacy W. Ridge, architect:—

Camplin	£888	0	0
Dabb	865	0	0
Twelvetrees	778	0	0
Harvey	684	0	0
Warr	670	0	0
Coles	619	10	0
Dunham	595	0	0
Prout	575	0	0
Carter	549	0	0

For building in Bread-street, Cheapside. Messrs. Tress & Innes, architects:—

Hawtrey & Son	£13,617	0	0
Hill & Son	12,720	0	0
Browne & Robinson	12,667	0	0
Brass	12,570	0	0
Conder	12,131	0	0
Sewell & Son	11,885	0	0
Fish	11,525	0	0
Peto, Brothers	11,145	0	0

For villa residence, with studio, at Haverstock-hill, for Mr. G. G. Kilburne. Mr. T. Batterbury, architect:—

Linzell & Son (accepted)	£1,500	0	0

For the erection of two new business premises in the High-street, Bedford, for Mr. W. Roff, confectioner. Mr. F. T. Mercer, architect. Quantities supplied by him:—

Foster	£3,460	0	0
Cumin	3,229	0	0
Spencer	3,200	0	0
Taylor	3,139	0	0
Moore	3,122	0	0
Corby	3,113	0	0
Chibnall	3,055	0	0
Haynes	3,053	0	0
Potter	3,050	0	0
Lilley	3,046	0	0
Hull	3,000	0	0
Carter	2,999	0	0

For the erection of new shop, &c., and alterations to 522, Kingsland-road, for Messrs. M. H. Runchman & Son. Mr. W. Seckham Witherington, architect:

Elkington (accepted)	£500	0	0

TO CORRESPONDENTS.

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PROSPECTUS

This Company is established for the purpose of acquiring and commercially developing the British and Foreign Patents for Improvements in the manufacture of Gas for Lighting and Heating purposes, known as Rick's Patents.

The invention has not been brought before the public until after it has been thoroughly tested on an extended and practical scale, with results conclusively favourable to its great commercial value.

The advantages to be derived from the manufacture of gas by this process are exceedingly important, combining,

1. A very large saving in the cost of manufacture.
2. The production of gas of greater purity and brilliancy than ordinary coal gas.
3. A saving of labour in gas-making to the extent of 50 per cent. thus reducing to a minimum the liability of strikes.
4. Simplicity of apparatus.
5. Adaptability to the lighting of Houses, Factories, and Mansions, Railway Stations, &c. situated at a distance from gas-works.
6. Facility of adaptation to existing gas-works at small cost.

The new gas, although produced from hydrocarbon vapour, differs entirely from air-gas, or instead of common air, a specially prepared gas, of a permanent character, is employed, which requires far less spirit to give it illuminating power, and possesses the further advantage of being able to travel through pipes without deposit or loss of illuminating power. It is also, unlike some air-gas, unaffected by changes of temperature.

It will be of especial value where heat as well as light is required, since, before the gas receives its illuminating properties, it is a powerful heating gas, and yields oil at so cheap a rate that it must prove a source of extended usefulness, and of important revenue to this Company.

In addition to the above, the Patents comprise a new Process for the manufacture of gas for heating purposes, also of very great value.

The process applied to Gas for Lighting purposes has been submitted to the most rigid tests, at works specially erected and quite independently of the Patentee, by several of the most eminent Gas Engineers and Professional Authorities, whose reports in detail will be found enclosed, and it will be seen they agree unanimously as to the value of the Patents, both scientifically and practically.

The following are the gentlemen referred to:—

Messrs. Joseph Quick & Son, M. Inst. C.E. London.
R. P. Spice, esq. C.E. London.
F. W. Hartley, esq. Gas Engineer and Analyst, Westminster.
Henry Gore, esq. C.E. Consulting Gas Engineer, London.
Dr. James Louttit, M.D. M.R.C.S.E. Gold Medallist in Chymistry, Who has consented to join the Board of Directors.

In addition to the Patents granted for the United Kingdom, the necessary steps have been taken to secure Patents for the following countries, from many of which a large business is expected:—

France	Brazil	Trinidad	Bahamas
Belgium	Argentine Republic	Barbadoes	Bermuda
Prussia	Uruguay Republic	Sydney	Cape of Good Hope
Russia	Paraguay	Turkey	Demerara
Bavaria	United States	Dantzsan	Chili
Austria	Canada	Provinces	Newfoundland
Italy	India	Greece	Vancouver Island
Saxony	Ceylon	Egypt	Peru
Spain	New South Wales	Japan	Bolivia
Portugal	Victoria	St. Lucia	Venezuela
Sweden	Queensland	St. Kitts	Columbia
Denmark	Tasmania	Antigua	Guatemala
Norway	New Zealand	Montserrat	Nicaragua
Mexico	Jamaica		

The special process of manufacture of gas for lighting purposes under these patents is amply described in the reports of the above-mentioned gentlemen, by which it will be seen that a new discovery of immense importance has been arrived at.

By this process great economy in the cost of manufacture is effected, the cost of production of gas of 25 candle-power delivered into the gasholder by the New Process being under 1*s.* 8*d.* per 1,000 cubic feet, while the present coal-gas with coals at 20*s.* per ton costs 2*s.* 4*d.* net per 1,000 cubic feet, being 40 per cent. higher than by the New Process.

A larger saving even than this will be effected in places at all distant from the coal centres, whilst in foreign countries, to which coal has to be transported for the manufacture of gas a saving of from 1*s.* to 6*s.* per 1,000 cubic feet will result from the adoption of Rick's Patents.

In view of such very great economy, commercially, it is not unreasonable to expect the gradual adoption of the process by existing companies all over the world.

The accompanying reports speak highly in favour of the process as regards the production of illuminating gas of a permanent character, of high power, and of great purity; it makes no smoke, is not injurious to the skin, and from its purity will not injure plants, pictures, or wares of art of a delicate character.

Another advantage in the manufacture of gas by this process is the saving of labour an important matter in the time of strikes and combinations, as shown in the recent gas stokers' strike), the saving of at least one-fifth of every 20*s.* that is to say, that one man is sufficient to perform the same work which has hitherto required thirty: the economy thus effected is self-evident.

With regard to the apparatus required for the process of this Company, existing gas-works can easily or at slight cost be made available at very moderate cost. The process can also be applied to single houses, mansions, factories, or other establishments at a distance from towns where this gas can be supplied, of equal power and brilliancy to gas in towns, but manufactured on the premises from simple apparatus, easily managed, free from risk, and not liable to get out of order, and at a low cost. A very large revenue is expected to be derived from this source alone.

With a view to enabling the most thorough tests to be applied to the process, and to give further a full and complete examination of the results, the Company have erected works on a practical scale at Battersea, which gas engineers and intending Shareholders are invited to inspect.

The Patents of the Company include, as above stated, a process for the manufacture of gas for the generation of steam and other heating purposes, which are alone of great value.

By such process gas can be produced at a cost of 7*d.* per 1,000 cubic feet, available for the generation of steam for steam vessels, and by its application it is expected the cargo will be greatly increased.

The sources of revenue open to this Company are therefore of a highly remunerative character, and the Directors confidently look forward to most gratifying results from the adoption of their Patents.

The Directors have taken special pains to satisfy themselves of the value of the new process for practical purposes on the largest scale, it being their opinion that at no distant date it will, to a great extent, supersede the present mode of manufacturing gas.

Negotiations for the acquisition of the Company's Patent rights in several Foreign Countries are already entered upon, and apart from the large sums thus to be obtained, a moderate royalty for the use of the invention will alone, it is confidently expected, yield very large returns to the Shareholders.

The consideration to be paid to the Vendor for all Patents, British and Foreign, and for all future improvements by the inventor, is 50,000*l.* in cash, and 75,000*l.* in Shares of the Company; also one-tenth of the surplus profits in every year, after the declaration by the Company of a dividend of 25 per cent. and one-tenth of the net proceeds of any foreign Patents which may be sold for sums in gross.

In the event of no allotment being made to any applicant, the deposit paid will be returned forthwith, without deduction; should the Shares allotted be less than the number applied for, the surplus paid on application will go in reduction of the amount payable on allotment.

Scrip Certificates will be issued on receipt of the amount payable on allotment until the full amount of the Shares has been paid, when they will be exchanged for Share Certificates.

Copies of the Articles of Association of the Company and of the Agreement for the purchase of the Patents, may be inspected at the Offices of the Solicitors of the Company, Messrs. HARGROVE, FOWLER, & BLUNT 44, Coleman-street, E.C. London, and 3, Victoria-street, Westminster, S.W.

Applications, accompanied by the payment of 1*l.* for each Share applied for,—which must be for not less than 20 Shares,—will be received on the form enclosed, which can be forwarded either to the Consolidated Bank, Limited, Threadneedle-street, E.C. London; or to HENRY BROWNRIGG, Esq. the Secretary, at the Company's Offices, 31 and 32, Lombard-street, E.C. London.

Prospectuses and forms of application can be obtained of the Brokers of the Company, Messrs. HUGGINS & CO. 1, Threadneedle-street, E.C. London; or of the Secretary, at the Offices of the Company.

By order of the Board,
CLAUD HAMILTON, Chairman.
HENRY BROWNRIGG, Secretary.

31 and 32, Lombard-street, E.C. London,
January 24, 1873

Cards of admission, available for Gas Engineers and others interested in this great enterprise, to see the Works at Battersea, can be obtained on application to the Secretary, or to the Engineers of the Company.

The following contract has been entered into

24th JANUARY, 1873 Between WILLIAM ECKERSLEY, of the one part, and BENJAMIN SMITH, on behalf of the Company, of the other part.

THE NEW GAS COMPANY, Limited.
Capital, 500,000*l.*

First Issue of 250,000*l.* in 50,000 Shares of 5*l.* each, of which 35,000 shares are now offered for subscription.

FORM OF APPLICATION.

To the Directors of the New Gas Company, Limited.

Gentlemen,—Having paid to your Bankers the deposit of 1*l.* per Share, I hereby request that you will allot to me ..... Shares of 5*l.* each in the New Gas Company, Limited, and I hereby agree to accept such Shares, or any less number you may allot me, and to pay the further instalments mentioned in the Prospectus, dated 24th January, 1873, and I authorise you to insert my name in the Register of Shareholders for such Shares as may be allotted to me.

Dated ..... day of 1873
Name (in full) .....
Residence .....
Occupation .....
Signature .....

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ALBERT W. FAIRLY, Borough Surveyor, &c.

No. 6, Abbot's-walk, Reading, January 24th, 1873.

CITY of NORWICH.—NOTICE to ENGINEERS, SURVEYORS and ARCHITECTS.—Any Person desirous of obtaining the APPOINTMENT to the OFFICE of ENGINEER, SURVEYOR, and INSPECTOR of NUISANCES of the Corporation of Norwich, are requested to forward testimonials of their qualification and competency, with particulars of age and previous occupation, addressed to the Town Clerk, Guildhall, Norwich, before ELEVEN o'clock on FRIDAY, the 14th day of FEBRUARY next. As the duties of such Engineer, Surveyor, and Inspector will comprise the Municipal as well as the Sanitary and Burials Board business of the Corporation, a candidate must possess a practical acquaintance with the ordinary works connected with engineering, drainage, sewerage, road-making, and street-paving; also to be competent to prepare surveys and levels, prepare plans of estates, buildings, and the necessary drawings and estimates for works of every description, and to take charge of the sewage pumping-station at Trowse, and the delivery of the sewage to the Corporation farms, and take all the duties required on the lands for the utilisation thereof, and he will be less responsible for the due execution thereof, as well as any other works which may fall within the duties of an Engineer, Surveyor, Architect, or Inspector of Nuisances, under or in respect of the Municipal Corporations Act, the Nuisances Acts, and the City of Norwich Act, 1867, or any of them, or the bye-laws made in pursuance thereof, with the exceptions of Inspector of Markets, Provisions, Hackney Carriages, Common Lodging Houses, the Impounding of Stray Cattle, and the Supervision of Street Obstructions. The person appointed will not be allowed to take private practice, but may take consulting practice with the consent of the Executive Committee. The Corporation will provide Offices, Coals, Gas, and Cleaning, and an Assistant Surveyor and Draughtsman, and an Assistant Sanitary Inspector, who are to act under the direction of the person appointed. The salary will be 450*l.* per annum, from which the Surveyor is to provide, except as above mentioned, all assistance as may be required in order to carry out the duties appertaining to the Offices, to the satisfaction of the Corporation, and the several Committees thereof.—By order,

W. L. MENDHAM, Town Clerk.

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The Builder.

VOL. XXXI.—No. 1566.



Proposed Cathedral Church of St. Mary, Edinburgh: Principles of Design.

IN our present number we give a view of the design submitted by Sir G. G. Scott for the proposed cathedral church to be erected in Edinburgh, and which was selected, when in competition with others, by the Trustees.

In the observations that accompanied the design, the architect has explained the principles which guided him, and has produced so interesting a document that we are led to print it entire:—

In compliance with your invitation, I submit for your examination the designs I have prepared for your proposed cathedral church of St. Mary, at Edinburgh.

In designing a church which is to take the rank of a cathedral, and that in the metropolis of Scotland, and which must, nevertheless, be capable of being erected for a moderate sum, one has to consider carefully what are the architectural, and what the ritual, essentials of a cathedral, as distinguished from a church of less dignified rank.

It would not be easy to define the essential differences found to exist among ancient churches between a cathedral and an abbey, or even a great collegiate church. The latter were often promoted to the higher dignity, and were found in every way fitted for it. Our own question, however, lies between a cathedral and a parochial church; and even here it is not so easy as it might appear to define the difference, inasmuch as many large parish churches equal, and even exceed, in scale and dignity of aspect cathedrals of the smaller size. In the present instance even, the proposed dimensions of the cathedral are equalled by those of some parochial churches, and in some instances the ritual arrangements of such churches may also be on a nearly equal scale.

Our aim, then, must, I think, be *positive* rather than *relative*. The church must, both within and without, bear such unmistakable credentials of high dignity as to be obviously suited to its rank as the chief church of the diocese, and that which its chief pastor adopts as more especially its own; and perhaps the great essential is that the choir should be of such ample dimensions as to allow the diocesan clergy, from time to time, to assemble there in the presence of their bishop.

There are, however, no universal rules for the form of a church of cathedral rank. If we were to say that it should have a *central tower*, it would at once occur to every one that many broad and several in Great Britain have not that feature. If we were to moderate this demand, and say that it should, at least, be *cruciform*, it would be replied that we have in Britain at least two,—*Dunblane and Llandaff*,—which are not so; and so on: no feature can be named which is the special and unvarying characteristic of a cathedral. All, then, which can be demanded for it is that it should be as dignified a church as the circumstances at command will permit, and that it shall, as a rule, be the noblest church in the city and diocese in which it is placed.

Although, however, a cruciform plan and a central tower are not indispensable characteristics, it must be admitted that both are in a high degree conducive to dignity of aspect, and are consequently most desirable features in a cathedral church. No plan is so noble or so impressive as that which is founded on the cross, and the cross plan is never so emphatic as when a central tower crowns its intersection.

I have therefore chosen as my [more normal] design the customary and typical form of a cruciform church, with a central tower, only making the central crossing, with the nave and transepts, unusually wide in their proportions, so as best to provide for congregational purposes, and so constructing and planning the supporting piers of the tower as to offer the least practicable amount of obstruction to view and voice.

I have in this design given *aisles* on *either* side to the transepts as well as to the other arms of the cross, which tends to produce a great amount of space in the part most useful to the congregation. As, however, you appear to lay special stress on this point, I have considered other methods of providing for it.

Had I been called in without being subjected to the ordeal of competition, I should have laid before you several methods of arrangement for your consideration and choice, giving you my views upon each. Competition, however, is attended with this great practical evil, that it interferes with that power of confidentially laying the whole case before you, which is customary when an architect of known experience is called in at once as your selected adviser.

There are at least *three* schemes which I ought to submit for your consideration, but your conditions would appear to demand that, if I should lay each before you, I should accompany each by the great list of drawings which you demand,—a labour which would exceed my command of time. I have, however, ventured on one alternative scheme, for which a very few drawings would have sufficed; but, out of conformity with your terms, I have treated it as a distinct design rather than a mere variety, and given it a complete set of drawings of its own.

This design, distinguished as Design B, is founded on the celebrated alteration made by Alan de Walsingham in the Cathedral of Ely, where, on the fall of the central tower, he omitted to rebuild the four great piers which had supported it, but,—stepping onwards to the next in every direction,—converted his central space into a vast octagon. This plan, though less dignified in external aspect, has very great practical advantages as regards the actual uses of the church through its affording a great and unobstructed space in front both of the choir and the pulpit for the congregation.

In neither design, however, have I introduced a lantern rising high above the general elevation of the interior,—that being injurious to the acoustic qualities of the church; and, with the same view, I have shown all parts of the roof as vaulted either with stone or wood,—*i.e.*, the choir and the aisles with stone, the nave, crossing, and transepts with wood; the latter being particularly favourable to sound.

In my design B I have, to avoid undue length, shown the choir as projecting a certain distance into the central octagon, an arrangement very favourable to acoustic objects; but, lest this should not find favour, I have, by a fly-leaf, shown an extension of the choir which would keep it wholly within the eastern arm of the cross.

Could I have afforded time for the preparation of a third design, it would have had a central tower, with a shortened eastern arm, the choral arrangements extending westward into the crossing. The nave would have been widened for congregational objects, and the organ placed in one transept. The aisles of the nave in the two bays next to the transept would have been extended in width to provide for more persons near to the pulpit, &c. I do not, however, like this plan so well as the two which I have worked out.

In my design B, as I could not have a central tower, I found that I must either place the tower in some irregular position, which seemed hardly to suit the site, or I must have a façade with two towers. Were this, however, as is most usual, at the west end, it would be attended with the disadvantage of placing the best façade towards the less-frequented quarter. I have, therefore, so far deviated from custom as to make my twin steeples to flank the eastern instead of the western front, so as to be seen centrally as you approach through Melville-street.

This arrangement, though less customary, is not contrary to precedent, as many old churches on the Continent have their twin towers both at the east and the west, and some even to the transepts.

If, however, a western façade be preferred, you will easily imagine the change, by fancying the lower windows of the east end omitted, and a portal introduced in their stead, or, rather, by imagining the central portion of the west front substituted for that shown between the towers in what is now the eastern elevation.*

Returning to the internal arrangement, I will mention, that I have not ventured to show a high choir-screen, fearing that objections may be felt to it, but have shown a low screen or septum, like those at Florence, Monreale, &c. I should, however, as a matter of taste, rejoice to substitute the higher form of screen. Nor have I shown close screens or canopies on the sides of the choir because they render the choir aisles unavailable except for passages.

I have provided for the organ in this manner: The lighter parts, especially the "choir organ," with the keys and the organist's seat, I have placed close to the first bay on the north of the choir; but the larger and more cumbrous parts I have placed in the eastern aisle of the north transept, immediately behind, a place where the sound would spread itself freely through both choir, transepts, crossing, and nave. The communication would be by trackers passing beneath the floor of the aisle. There is, however, the possible alternative of placing the organist and the choir organ, &c., as already mentioned, but placing the heavy parts in the triforium of the choir and transept.

The arrangements of the choir will speak for themselves.

The seating of the nave, &c., would be by means of chairs.

The question you have suggested as to the place for the congregation during ordinary daily services as distinguished from their place on greater occasions, I have carefully considered, but do not see any necessity (but the contrary) for providing a distinct position.

It would seem to me a great pity that the services on minor, though the most frequent, occasions should be in a less dignified place than at other times. It is an arrangement not known in this country, excepting for early services; nor do I think it desirable.

The question whether, at ordinary week-day services any part of the congregation should be admitted within the choir, seems one which should be left to the decision of the bishop and clergy. It is not essential to the arrangement to decide it while planning the cathedral, as, if not so admitted, they would simply occupy the space in front of the choir-screen, according to their numbers.

Though the choir of a parochial church should be so planned as to hold no more than the clerical and choral bodies, that of a cathedral should do more,—it should be capable of containing in addition so many at least of the diocesan clergy as are likely, on any great diocesan occasion, to assemble.

This renders the choir somewhat larger than would on ordinary occasions be needed. I would not by any means, on Sundays or on festivals, allow this excess of room to be occupied by the congregation; but whether the rule should be so severe at ordinary daily service is a question I would not take upon myself to decide.

In both designs I have placed the chapter-house near the north-eastern angle, approached by a cloister-like passage. I have not provided it with stone seats, thinking it improbable that they would be used. Its design is really a square, but by a peculiar treatment, partakes also of the octagon, making, as I think, a pleasing and picturesque variety from the accustomed forms.

I have provided several vestries, *e. g.*, for the bishop, the clergy, and the choir.

In selecting the variety of architecture on which to found my design, I have met with some little difficulty. I desired that it should not, at the least, be discordant with the finest of the Scottish examples; but here we have an *embarras de richesses*; for we find in Scotland noble examples of nearly every period. Putting aside the Norman, we have glorious examples of the

* This second design did not go before the trustees, a question having arisen as to how far it was or was not consistent with the programme.

Transitional style, as at Kelso, Jedburgh, St. Andrew's, parts of Holyrood, &c. We have the developed Early Pointed, as in the greater part of Holyrood, the whole of Glasgow, Elgin, and many other grand examples; the earlier Decorated, as at Dunblane, Sweetheart Abbey, &c., and the later styles in very many others.

I have myself, however, been most impressed by the earlier phase of the Early Pointed, a style which especially unites the architecture of Scotland with that of the North of England, and is one capable, as I think, of the greatest possible degree of dignity united with a reasonable amount of simplicity and any amount of beauty. It always strikes me as more noble than the more developed Early Pointed, while it is both more simple and far more dignified than any variety of the Decorated style. The north aisle at Holyrood is a fine example of it, as are many parts of Jedburgh and most of St. Andrew's Cathedral. In England one of its finest examples is in a border county. I refer to the exquisite sanctuary of Tynemouth Priory, which unites the severe dignity of the Transition with the richness of the developed Early Pointed. On this variety, then, I have founded my design. In no other, whether in Scotland, England, or Wales, do we find nobler composition more carefully-studied detail, or a closer union of simplicity with architectural beauty. But the style of St. Andrew's, Glastonbury, and St. David's, needs no apology from any British architect.

In following this style, however, I have avoided merely transitional features, such especially as the round arch, and have made my style purely and strictly Pointed, though, as at Jedburgh, I have not scrupled to introduce here and there ornamental details which retain reminiscences of the Norman. No one who is acquainted with the western portal and the little cloister doorway at Jedburgh,—two of the most exquisite gems of architectural art in this island,—will find fault with this.

In placing the church upon the ground, I should be disposed to make the axis coincide with that of Melville-street, so that the eastern part, with the central or the flanking towers (as the case may be), may be well seen down that street. Its western façade would, in a similar manner, be seen from Grosvenor-crescent.

As I presume that several ecclesiastical residences will be needed, I should suggest that one should be placed a little back from the south-eastern and south-western angles of the ground and the others picturesquely distributed about the northern end of the ground in which place also should stand the episcopal residence.

I should most unquestionably retain East Coates House.

In a part of Edinburgh so essentially new, it is a most happy circumstance to possess upon the cathedral site a veritable old Scottish building. It is very picturesque in its design, and will become more so by careful restoration. Its internal accommodation is open to improvement, and I have no doubt that by judicious treatment it may be made a comfortable residence, while its presence will add much to the picturesque grouping of the ecclesiastical buildings.

I intend the building to be wholly of stone; I reserve the power to make a careful selection of stone for the different works, should I be intrusted with the work, according to the position of the different parts and also with reference to cost. My present impressions are in favour of Dalmeny stone for the external wrought work; Hales, Cragleith, and Redhall stone for rough walling and plain external facing, which is to be in irregular courses. Whether the internal plain wall-faces will be of wrought stonework must depend upon cost. The choice of the internal wrought stone must depend upon its functions and position. Parts carrying much weight would probably be of Dalmeny stone; other parts may be of Fifeshire or other stones less costly to work.

The ribs of vaulting to choir, aisles, and other parts vaulted in stone to be of one of the stones last alluded to. The filling in between the ribs will be either of wrought stone, stone in irregular courses, or rubble faced with plaster, according to circumstances.

I have made a calculation as to the cost which gives a result as favourable as I could anticipate; but as such works as this are rarely erected in our day, I will not pledge myself to meet your views with minute accuracy, but content myself, as I should have done had I been selected your architect without competition, with carefully aiming at the prescribed sum; and I believe that, with care and reasonable economy, and possibly with the aid of some safety-valves, it may be realised, though it would not be wise in a matter proverbially so much of a lottery as the cost of a large building to pledge oneself too minutely. My object has been to give the best and noblest church which your conditions appear to admit.

I have made this my anxious aim, but beyond this I will not bind myself further than to say that I believe I have realised my aim with very reasonable accuracy. Some of the more decorative fittings, such as the reredos, may be looked for as individual offerings, and the painted decorations would not be included.

I will ask one favour: as I have given nominally two designs, though really two varieties of the same idea, I will beg of you, if the matter comes to a vote, to view the two as one, so that I may not run the risk of being outvoted by my own supporters.

My name not appearing, it may be right to say that I am an experienced church-builder, and can refer you, though it will be needless, to a long array of ecclesiastical works; and, should I be honoured by your appointment to this great and important work, I shall devote my best energies and my most anxious exertions to rendering it worthy of the diocese of Scotland's chief city, and worthy, also, of a place among the architectural monuments of that famous metropolis.

One thing I see I have omitted: I refer to the clock; but I cannot bring myself to disfigure the tower (or towers) with a prosaic dial. For the clock and its works the room is ample, but, in a district where every house is replete with timepieces of every variety, I would conjure you not to disfigure your cathedral with clock-faces, but to be content with chimes, which may be constructed with any degree of horological or musical elaboration.

LEICESTER-SQUARE: A RETROSPECT.

"Leicester-square has nothing remarkable in it but the inclosure in the middle, which alone affords the inhabitants round about it something like the prospect of a garden, and preserves it from the rudeness of the populace, too." Thus wrote the editor of the *Gentleman's Magazine*, in the year 1733; but how different is the condition of the square now. Who would have prophesied that a fashionable place of the eighteenth century, containing many noble mansions, in one of which lived a queen and several generations of the royal family, and in others Sir Isaac Newton, Sir Joshua Reynolds, and Hogarth, should, in the nineteenth century have been allowed (although still in the centre of London and close to some of the chief thoroughfares) to fall into a condition that makes it a disgrace to the metropolis?

In the year 1658 we find by the famous map of Richard Newcourt (engraved by William Faithorne) that the site of Leicester-square was occupied by a field, with a footpath across it leading from the back of the mews to a lane, now Princes-street. To the north is a large house, surrounded by a wall, with a garden behind, which adjoins the Military Yard, founded by Henry Prince of Wales, and afterwards kept by Foubert, in the reign of Charles II., as an academy for riding. This was Leicester House; but when the square was planned, the house must have been pulled down, and placed further back; because a line drawn from the road, now Piccadilly, by the old gaming-house at the top of the Haymarket would strike through the gardens at the back of the building. In the map another house is marked as standing on the site of Cranbourne-street, the gardens of which run north to St. Giles's Fields. Leicester House takes its name from Robert Sydney, Earl of Leicester, the father of Algernon Sydney, of the handsome Sydney of Charles II.'s Court, and of the Sacharissa of the poet Waller. The house was built upon Lammas land, and the Earl appears by the accounts of the parish of St. Martin to have made yearly payments for the Lammas of the ground occupied by the house, gardens, and field in front. Lord Leicester did not die until 1677, but he does not seem to have lived in his house for some years before his death. The unfortunate Elizabeth, Queen of Bohemia, died here on February 13, 1661, and afterwards it was a favourite home of foreign ambassadors, among whom were Colbert and Prince Eugene.

In 1718 the Prince of Wales (afterwards George II.) bought Leicester House and took up his residence there on the occasion of his quarrel with his father. His son, Frederick, Prince of Wales, followed the example set him, by quarrelling with his father and living in Leicester House. There is a scarce print of the square which shows this Prince proceeding in a sedan to St. James's, attended by his suite and by halberdiers. There is another in Strype's edition of Stow, which shows the house well, with its courtyard in front and garden in rear. The Prince's widow, the mother of George III., was living here in 1761, according to Dodsley's "London and its Environs," and her son the Duke of Gloucester in 1766. About 1778 the house was let to Sir Ashton Lever, who filled it with his Museum of Natural History. These large collections were offered to the public in a lottery, but only 8,000 guinea tickets were sold out of 36,000. However, the proprietor allowed the lottery to take place, and although he held 28,000 tickets, he lost his museum, which was won by a Mr. Parkinson, who only held two. In 1791 New Lisle-street was built on the site of the gardens. On the west side of Leicester House was built Aylesbury House, called after Thomas, second Earl of Aylesbury, who entertained Peter the Great here when he visited England in 1698. It afterwards passed into the Savile family, through the marriage of Charles, third and last Earl of Aylesbury, with Lady Anne Savile, eldest daughter and co-heir of Sir William Savile, bart., second Marquis of Halifax, and has since been known as Savile House. George III. lived here when Prince of Wales, at the same time that his mother was living next door at Leicester House. Sir George Savile, bart., M.P., possessed Savile House in 1780, when it was stripped of its valuable furniture, books, and pictures, by the Gordon rioters, who burnt all the property in the fields in front. At the same time these agents of destruction tore down the railings and used the iron for weapons. Early in the present century the house was rebuilt, when it was opened with the exhibition of Miss Linwood's needlework, the commencement of a long series of miscellaneous exhibitions, which continued here till the house was destroyed by fire in 1865. Miss Mary Linwood, the mistress of a boarding-school at Leicester, commenced the imitation of pictures in 1785, and in the following year received a medal from the Society of Arts in honour of her work. When she had succeeded in finishing a sufficient number of her productions they were shown privately at the Pantheon, and in 1798 they were first exhibited publicly at the Hanover-square Rooms, where 40,000 visitors attended to view them during the first season. Soon afterwards the collection was removed to Savile House, and exhibited there till the lady's death in 1844. 3,000 guineas were refused for the chief work, viz., "Salvator Mundi," after Carlo Dolci, and Miss Linwood bequeathed it to the Queen, but so reduced was the value of these works at her death, that when Messrs. Christie & Manson sold the collection by auction, all the pictures, except a few which were reserved, did not realise more than 1,000*l*.

On Feb. 28, 1865, Savile House was burnt, and among the spectators at the fire were the Prince of Wales and the Duke of Sutherland. Although eight years have passed since then, the site, in spite of several proposals to utilise it, has remained unbuilt upon, and the unsightly gap still remains.

Hogarth came to live in Leicester-square (then more commonly called Liecester-fields) in 1733, and remained there till his death in 1764. His house was on the east side, and the most northerly of two houses afterwards joined as the Sablonière Hotel. Hogarth's sign was "The Golden Head," and outside his house he exhibited a head cut out of pieces of cork by himself. There is an engraved card of Hogarth, dated April, 1720, which announces him as "Engraver at ye Golden Ball, corner of Cranbourn Alley, little Newport Street." Next door to Hogarth's lived John Hunter, who built a gallery at the back of his house, in 1785, to hold his museum, the nucleus of the celebrated Hunterian Museum of the Royal College of Surgeons. The Sablonière Hotel has lately been pulled down, and in its place has arisen a new building, occupied by Archbishop Tenison's School.

Sir Joshua Reynolds lived at No. 47, on the west side, from 1760 till his death, February 23, 1792, and here have met all the celebrities and beauties of his time. The charming picture of "Puck," which was cheered when it was sold by auction to the poet Rogers, was painted by Reynolds from a little child that he found on the

steps of his house. Alderman Boydell was much struck with the portrait of the naked boy, and wished it could be introduced into his Shakspeare; a friend, therefore, suggested that Sir Joshua should turn the boy into Puck by adding fawn's ears, and seating him upon a mushroom. The painter's handsome house was subsequently held by the Earl of Inchiquin, then by the Western Literary and Scientific Institution, and is now in the possession of Messrs. Puttick & Simpson, the auctioneers. In 1787, Lawrence, then a mere boy, was induced by his friends to open his studio in Leicester-square; but this rivalry with the great master was not continued more than a year.

On the 2nd of June, 1851, Wyld's Great Globe, built over the centre enclosure, was opened. This vast representation of the world was 65 ft. in diameter, and occupied 10,000 square ft.; its proportions were ten miles to an inch horizontally, and one mile vertically, and to view the whole more conveniently the world was turned outside in. When the huge building to contain this globe was erected, it was looked upon with favour because it rescued the square from the dilapidated condition it was in,—a condition that is said to have given rise to Ledru Rollin's work on the decadence of England.

When the Great Globe was cleared away, in 1862, the miserable remains of the equestrian statue of George I.* were disclosed to view, and several practical jokes were played upon it. This statue had once been brilliantly gilt, and about 1754 was brought from the Duke of Chandos's seat at Canons, near Edgware. May we hope that something is now to be done with the square, and that the disgraceful condition in which it has so long been left will be followed by a better state of things. Is the hoarding raised round the open space a preliminary step in the good work of making the enclosure agreeable to the eye, and creditable to the neighbourhood? If not, Parliament should interfere. Private rights, if there be any, have been allowed there long enough to contravene the common weal.

GENERAL EXHIBITION OF WATER-COLOUR DRAWINGS.

(AT THE DUDLEY GALLERY.)

THIS, the ninth of the annual exhibitions of clever, pleasant, and pretty drawings that for the time past have regularly disproved that the two water-colour societies show fully enough how strong and prevalent this readiest means of making pictures popular really has become, might be judged to be the best of them; even without the great help that some extraordinary assistance lends. It is worth the unfair fare of a bi-quadrupeded cab, or plodding soles' pilgrimage through miles of such sludge and slush that Christmas leaves in liquidation of its debt of white snow and firm footing, to meet with prosperity and success, for they are very dear—very scarce—things nowadays. Strikes are striking, far and wide. A stone dropped into water makes many circles before they merge into nothing.

There is scarcely a drawing here that may not be thought good of its kind; and to specify reason for commendation through 500 little claims for it, would be beyond reasonable expectation of what type-notice can do for what is being so constantly done. Such pictures, however, as Mr. E. Burne Jones paints are quite exceptional, compared with ordinary productions: they are so strong, so fine, in a perverted taste, that they may lead,—or mislead,—to a wrong teaching. Heavy swollen eyelids, lithe supple limbs, and such graces as are cheap,—though they may not always be held so,—are Mr. Jones's adumbrate views of woman's charms. "The Hesperides" (482) is splendid in colour: a diatribe on "red;" the tamed serpent that sticks like one to the apple-tree,—could there be greater anomaly?—the grass and pink daisies, all wonderfully well done, bespeak acknowledgment of great power in apprehending the resources of colour, and the work is a magnificent specimen taken in this light.

"Love among the Ruins" (179) treats of blue as the Hesperides do of red. This, at first sight, might be taken for an illustration of Coleridge's poem, "Geneviève;" but it is not. There was nothing blue about her.

Some critics will find metaphor in every inch of this,—it is their wont; but there is bad perspective, and more than that, to leave question if the picture is entirely a good one.

There are many clever drawings amongst the more than 500; but they are in the near neighbourhood of "Old Masters," and it is a scoff and a shame to talk or write of present art when a swept crossing leads to what art was. It is a dead religion; but a lively faith in handiwork's worth still exists.

* The statue has been supposed by some to be a representation of George II., and by others of William III.

PROFESSIONAL PRACTICE OF ARCHITECTS.*

(4.) *In Dealing with Money.*

Generally.—Let no money pass through your hands (except the salary of the clerk of works). The method of trade payments will probably suggest itself, and you will with difficulty get credited with taking extra trouble and no profit. Of course you can sometimes safely deviate from this rule, when your client is an old personal friend, or is disconnected with business, and looks on you as a friend as well as professional adviser. Avoid ordering goods. Select on occasion what you want from a manufacturer's stock, and let the contractor order and take every responsibility. If you only make stipulations as to the understood selling price, the contractor will make a profit on the transaction, and usually, therefore, take more interest in it. You will also be relieved from liability to be charged for the goods, and at times from even more unpleasant suspicions. Get the habit of treating questions affecting money with much care. It is a very important consideration among private persons and with the Government and all public bodies in England.

I. *Estimates.*—These you will do well to make deliberately (never guessing at a price), in no very sanguine spirit,—of course, possessing yourself of thorough knowledge, and dealing with complete honesty with your own judgment. Such approximate estimates should be made and submitted before tenders are received from tradesmen. It will always be well to make it clear that no one can tell what everything is going to cost. This will be the case especially when the foundations are doubtful, or when the work is to be done in great haste (*e.g.*, the cost of theatres is almost invariably arrived at after completion). In works of repair to a decayed old building, many works may prove necessary, when hidden parts are uncovered,—rotten timbers to roofs may require replacing, walls underpinning, &c. In the case of new buildings, cubing out is a valuable mode of arriving at an approximate estimate. Wisely and carefully applied, it is a very safe guide. Always follow the same method of measurement: either (1) from the ground-floor line, (2) from half-way between floor and bottom of footings or from the top of the footings, (3) from bottom of footings, or even (4) bottom of all artificial foundation. Method 3 is the safest in general results. Make a separate item of an extraordinary amount of concrete. Half-way between the top of the walls and the apex of the roof will usually be a fair height to measure to. If the chimneys are elaborate and high, an extra allowance must be made. Keep the divisions of the building separate,—the more elaborate main building, the plainer offices, the stables, and any structure differing in elaboration or kind of materials from the rest. Your skill will be tested in applying the proper price. You must devote some special work to the acquisition of experience, to ascertaining the prices at which buildings actually erected work out; and do not fail to tabulate for an easy reference every new building or work of any size you have designed and executed. Check the estimate thus obtained before using it:—(1) By putting a price on each square (100 superficial feet) of each story; *e.g.*, for ordinary buildings not too high nor elaborately finished, 30*l.* per square per story might usefully supply a rough check. Of course, for increased accuracy, this method requires delicate adjustment for each building in question. Or (2), you can take out approximately the principal quantities, and price them; *e.g.*, the gross amount of brickwork; the number of different openings (putting an inclusive price on each); the floor, joists, and ceilings measured together, the roof and all coverings. Applied boldly, this rough measurement need take little more time than cubing. At the same time it will be even less reliable unless experience has taught a good deal pretty accurately as to the cost of the various parts. Another method (3), is to put down so much per room, or (4), per occupant. For stables, 100*l.* per horse for plain ordinary work, ranging up to 250*l.* per horse. For schools, 5*l.* a scholar, or 6*l.*, 7*l.*, or 8*l.*, according to circumstances. For hospitals, 40*l.* to 50*l.* per bed has done the work, and they have cost as much as 500*l.* per bed or more.

As to *Builders' Estimates* [or "tenders"].—They are obtained on the general understanding, in limited competitions, that the lowest will be accepted, either without revision or as a basis for negotiation. Therefore, if for any reason no pledge can be given that a tender can be recognised in this way, it must be expressly notified to the contractors when they are first asked as to the matter. These tenders will be influenced greatly by the facilities given for carrying on the work, by the contractor's, more or less, complete knowledge or ignorance of the materials to be used, and by his confidence in, or distrust of, the ability and character of the architect. In every case *quantities* of some sort are indispensable. The employment of a man who is a quantity surveyor and nothing else, has many advantages. He will, if a capable man, be cool; will work with a good deal of system; give time uninterruptedly to the work; and will look on everything with a keen, critical eye, and an entire freedom from prejudice. An architect taking out his own quantities will be helped to profitable work, and may gain some critical insight into details that he would otherwise have overlooked; but the opinion of people of much experience is against his employment in this way. For there are certain risks. The architect may be too sanguine, and pass lightly over unusual work. The advantage will be lost of a new eye and mind, in the detection of laches, and the clearing up of difficulties; and the payment will usually be received from the builder, making the architect in this respect legally the builder's servant. An architect should not go further than the following arrangement:—He should bring in a surveyor of good repute to share the work and the remuneration; and the responsibility should fall wholly on this surveyor, whose name alone should appear, and who should receive the builder's payment. Quantities might be simplified of much of their detail without harm being done. It is, however, the recognised practice to have all the detail that is practicable. Thus nothing is allowed to escape, and contractors are guided by the minutiæ in estimating the quality of the work. Prices may indeed be put to everything by the builder's clerks; but he will himself take something off, and trim his tender generally, if he is anxious to have the job.

II. *Accounts.*—(*Price settled for Works at the Close.*)—The quantity surveyor in large works, with many deviations from the contract, will often be employed. A schedule of prices in the form of a priced bill of quantities will then be found very useful. In smaller works it is a good plan to make up the account with the builder. Usually, however, he presents an account first, and it has to be dealt with as may prove necessary. Explain to the client as much as he wants to know (no more). An architect's statements of accounts should be short (on one sheet of paper), stating contract and agreed amount, value of additional works beyond that of omissions and money provisions — the principal additional works being. . . . . amounts paid, and balance. The full detail of each item should be kept, and supplied at once if asked for. It is the custom for an architect not to state the detailed prices if he can help it. Builders object to their prices being known, and should always be very formally consulted before priced items are sent to any one. Stand by a settlement stiffly. Of course, before it is come to, you will be satisfied that it is just to both sides. . . . . Sometimes a contract is for everything to be measured and valued at the close of the works. Rarely recommend this course. Works always cost more when thus executed; but it may be indispensable for buildings commenced and completed in great haste. The contractor should in such a case be a man of tried character, who will want more work from you and others known to you. . . . . When the agreement is for labour and materials at prime cost, and 7 to 10 (or other sum) per cent. profit, a special system of periodical checking will be necessary; but this method of payment is comparatively rare.

III. *Professional Charges.*—Avoid working for

* From Lectures by Mr. Roger Smith,—see pp. 15, 24, *ante*. We commend these and the previous notes to the careful consideration of young architects.

any one besides your client, and receiving payment for such services. The builder will often want extra drawings or copies, or to pay for trouble that you might avoid,—or on other specious pretences it may be made clear to you that money will be paid if you are willing to receive it. The sole purpose is to get you under the thumb, and keep you there till the building is completed. If this sort of thing is suspected, a client will go to some one else next time; and if it gets abroad, respectable architects and builders will have nothing to do with such an architect. For all charges the R. I. B. A. paper gives the present general practice throughout the United Kingdom. Young men may not, in justice to the rest of the profession, take work at less than 5 per cent.; but they may justify their appointment in place of older men by giving a greater amount of personal trouble and extra service for the recognised remuneration. The 5 per cent. charge must be regarded as a give-and-take arrangement, having one great advantage,—that clients know, thereabouts, what they will have to pay,—and on the whole it does not work very unfairly in a varied practice. Try to keep as closely to it as possible without doing yourself obvious injustice; do not charge all you might charge, using your rights as to extra charges with moderation. Present your account in small compass and neat form: "To professional services in receiving instructions in [quote services as detailed in R.I.B.A. rules] . . . for . . . . ; the amount expended under the architect's superintendence being . . . . *l.* [deduct any amount from the builder's bills on which you were not consulted, especially if you do not approve what was done.]" On this amount calculate the commission. Charges for special services, disbursements, and travelling expenses will then follow. Although the per-centage charge is thus legally (and to our advantage) recognised as superseding charges for time and trouble, you will do well to keep a careful diary, and have a clerk's diary with the time on different works recorded. Occasionally work out from these the exact cost of the drawings for a building. You will then see whether you are carrying on business extravagantly. If you have to live by your profession this is of much importance. Or you may find that you could be less niggardly, and safely indulge yourself in some more expense. Keep a small set of books, and take stock of your position at intervals to see how you stand, generally and with reference to special works. These books may be (1) a ledger, containing the details of each undertaking extracted from time diaries, &c.; (2) a bill-book for copies of accounts; and (3) a cash-book for all payments and receipts. Obtain payments on account while the works are going on. On small works (under 2,000*l.*) one payment shortly after signing the contract, and another when all is being drawn to a close, should meet the bulk of the charges; only a small balance being left for the final payment. In larger works obtain payment at the time, and on the amount of each certificate. Avoid most thoroughly any mistakes or discrepancies in money statements. Let every such statement be in writing, or, at any rate, make a careful memorandum. Many worthy people who are easily managed as to many things, are very difficult about money matters, and nothing but the evidence of habits of extreme care can make them trust you fairly.

(5.) *In dealing with "Law" and "Property."*

To deal fully with the class of business managed by surveyors would require several lectures; in one, notice can only be taken of the portions of the subject cropping up in ordinary practice. The case is rare in which an architect can dispense with surveying, and devote himself wholly to the design and superintendence of works of real architecture. Frequently the money to be earned by other practice is wished for; and it is often necessary to give good service on any matter allied to building, or a valuable client may find that some one else could serve him better. Most young men would therefore do well to be "architects and surveyors," and prepare themselves accordingly.

I. *Law.*—Every Englishman is supposed to know the whole law of his country. Ignorance cannot be accepted as an excuse in any case. Bearing this in mind for your own sake, you will find it frequently necessary to take much pains to ascertain the right and wrong in any procedure, and will soon acquire a wholesome distrust of any smattering you can obtain from general text-books; for the greater part of the law of England is not in Acts of Parliament, but in the recorded decisions, and precedent is of extreme importance. Prefer, therefore, to follow a customary course, for which you have good precedent, rather than any innovation of your own. Use words and phrases well established and recognised; or, if you are obliged to deal with a case that is new to you, use the plainest commonsense English possible, and avoid any pretence of legal technicality. If a "penalty" is prescribed in case of non-completion of works by a certain time, it will probably not be enforced, or the amount of damage actually sustained will be specially assessed; but if a certain sum is fixed as "liquidated and ascertained damages," it may be held back without question. If a committee is made to enter into a contract with a builder, it will not be a serviceable contract; but certain individuals must be specified, who are to be separately liable. (An incorporated body may, however, enter into a contract through officers or under their seal, according to their special form of incorporation.) And many other instances might be adduced of the necessity of conforming to the legally accepted way of putting things. If anything goes into law it means delay,—no telling how prolonged. This is owing to the great pressure on the Courts, and perhaps in part to the confirmed habits of the legal profession. Even in ordinary matters, delay, seemingly quite avoidable, is apparently looked on as proper. Consider litigation, therefore, as one of the most serious evils you can encounter, and give any amount of time and trouble, and make any possible sacrifice in order to avoid it. If, however, it must be resorted to, let it be done, with the cost counted, and boldly, and well. Shrewd men say, "Consult a rich lawyer: he will [keep you out of lawsuits if he can." A prosperous and well-established man should, in fact, be preferred to a man hungry for practice, and not eager to point out the weakness of a case intrusted to his guidance.

As to (1) *Contracts for Buildings*, it is desirable to have a carefully-drawn legal contract prepared by a solicitor. If this is not authorised, any sufficient written memorandum will generally be sufficient. As an instance, letters were simply exchanged, with reference to an important building matter, and the contract was considered so binding that 5,000*l.* were paid to put an end to the arrangement. The following simple form was recommended by an eminent Q.C., now a well-known judge. It should be placed at the end of the specification and a set of general conditions of contract.:—"I undertake to perform the above works, under the above conditions, for the sum of £—— (Signed) A. B. Accepted (signed), C. D. London, January, 187—." On the subject of contracts, read D. Gibbons,—"The Law of Contracts for Works and Services" (Weale's Series). As to (2) *Certificates* for payments to a tradesman, "for works being executed by him at ——"; let them be on an engraved form, with counterfoils, and addressed to the client. At the bottom of each should be put a statement as to the previous certificates. (In arranging the amount, to be paid, let the builder bring his figures, to show how he makes up what he asks for. In the absence of express stipulation he may be paid the same proportion of the value of extra works as of those under the original contract.) For (3) *Orders for Extras*, under any large or special contract, the solicitor should supply the form. Much injustice may possibly be done if the technicalities of the contract are not minutely observed. Generally, for anything unusual, always advise that a good lawyer shall be employed to shape the document. When (4) *Building on Leasehold Property*, see to the covenants of the lease, and have everything formally observed, all consents obtained, and restrictions complied with. Decline, as a rule, to get the consent of adjoining owners. This will be better done, when a matter of any favour, by the building-owner himself. In (5) *Works in London*, the Building Act, the Local Management Acts, and all by-laws, and the new by-laws of the water companies, having the force of law, must be carefully studied, and their provisions complied with. The main purposes of the Building Act are to secure (1) fair stability, and (2) the most obvious and simple precautions against fire and the spread of it. As a rule, never build less substantially (in any part of the country) than the schedules of this Act stipulate (and never build 9-in. walls, even for upper stories, if you can get 14-inch). A public building is to be done to the satisfaction of the district surveyor, who will generally require that the structure shall be somewhat stronger than a building of an ordinary kind. For your own sake, it should not be weaker. Some of the requirements of the Act can be dispensed with, if the consent of the Metropolitan Board is first properly obtained; *e. g.*, for a detached house, projecting eaves, wooden barge-boards, or bay-windows, and wooden porches or verandahs may not be objected to. (6.) Light and air are the subjects of much contention in works in large cities; the action of much recent decision being really prejudicial to architecture, and to the improvement of our cities. Much of this injury should be prevented by the more universal widening of streets, and by the adoption, as a rule, of compensation for deprivation. Still you will have to regard for the present the rules as they stand in legal minds. If you are consulted, therefore, by an injured person, keep in mind the fatal effect of delay in the assertion of your client's position; let an injunction be obtained, or steps taken in view of one immediately. (7.) *Disagreements may occur.*—The builder may sue for money, extras may be disputed, perhaps the client refusing to recognise the orders, or the work may be said to be unsatisfactory, and he may decline to pay. Or the architect may have to sue for his charges, or even for wrongful dismissal. Some of these may be contemplated and provided for by an arbitration clause in the contract; otherwise it will probably be referred to an arbitrator, either a barrister or an architect, by the Court, or by consent. The submission to arbitration (no matter how small may be the matter in dispute) should be drawn by a good solicitor, and should specify the arbitrator, and (very precisely) what is referred to his decision. On the admission or rejection of evidence you should be prepared, if acting thus as referee, with a knowledge of the rules of law, so as not to risk the invalidation of the award. This award should be made as bare as the verdict of a jury, and specify no reasons. In all cases but the most simple, have your award revised by a good lawyer.

II. *Property.*—An architect should be the right man to advise on questions affecting the management and value of houses and other buildings, and of building land. The business will usually come through solicitors, who will do the legal part, leaving to you all the purely technical work, and the responsibility for it. (1.) In dealing with Dilapidations under leases and other tenures, nothing but experience can render you ready and self-confident. Let students take every opportunity of following actual cases, and ascertaining what is taken or not taken, and why, and what disputes (if any) arise. They can in this way only acquire knowledge as to the exact legal force supposed to be attached to the terms in covenants. Questions as to fixtures, also, and their value, and the right to them, will frequently demand quick and (of course) correct decision in actual practice. (2.) *Valuations of Property* are usually required for (*a*) mortgages and (*b*) for sales or purchases. (*a*) These do not usually involve so much responsibility as the others, owing to a proportion only of the reported value (one-half, or a little more) being advanced; (*b*) a valuation to guide or determine actual purchase or sale is often of great interest, well paid for, and—if thoroughly reliable,—as valuable a service as can be rendered by an expert as to buildings. The methods of calculation are simple, involving little mathematical skill in application; but experience and talent can alone determine the letting, or probable letting, value of a building. Inwood's Tables, Mr. E. I'Anson's recent paper at the R.I.B.A., and similar sources of information, should be studied and at hand. Continual attention extended over many years, many precedents, and much sagacity, can alone enable you to give reports that will stand the test of after-experience in difficult cases. Valuations of ordinary leasehold and other simple tenures you will not find difficult, if you devote to each case pains, and thought, and system. (3.) *Laying out Estates for Building Purposes.*—The technical part can be done by any architect with the most ordinary common sense. To determine, however, the class of building that would be proper, or likely to tempt speculators; to settle the frontages and lines of road so as to make the most and the best of a property, will require a good deal of general intelligence and information with reference to the views of builders, and ordinary tenants, and house-buyers. Settle firmly, and maintain stoutly, conditions as to what shall be permitted or not on the estate. Endeavour as much as you can to enforce good sound building, thorough drainage, and a fair architectural

appearance; make and maintain covenants as to subsequent alterations of property, so that they may not in any case be undertaken without consent being obtained. At times, from the want of this provision, the whole of the houses in a street may be depreciated in letting value, and much unfair annoyance given, owing to the erection of some after-addition to one building. A laundry recently erected at the back of a house in London has lowered the value of eight houses in the street adjoining 10*l.* or 15*l.* per year, and much damaged the adjoining houses,—a wrong for which there exists no remedy. Try, therefore, in the creation of house property, so to design and regulate the buildings, and the legal covenants affecting them, that an even hand may now and hereafter be kept over the whole, and no gross injury permitted to be done by one leaseholder to another. (4.) *The Management of Estates.*—Much lucrative occupation, in the receipt of rents and keeping property in order, falls into the hands of architects and surveyors who are good men of business, especially in the case of the large leasehold estates of noblemen and others in London. This work is not by any means so dull and commonplace as it might seem to an outsider. It has the merit of being very useful; for often the only mitigation of the miseries of London buildings is found in the skill, and tact, and right feeling, and dealing of the comparatively few men who are in the position to exercise these qualities in such business. London suffers grievously from the system, now and heretofore pursued, in land letting, by which a large secure income realised by the landowner is obtained without much difficulty, and everybody else who is connected with the property is disgusted, and even injured. Unintelligent planning, and faulty and dishonest construction have been indulged in, so that houses generally are a crying disgrace. Perhaps resulting from this, the public cares hardly at all about good building or good drainage. You will, therefore, have difficulty,—perhaps will run risks,—if you press too hardly on speculators. In the long run, however, pecuniary advantage may in some cases be secured by assuming a higher standard than ordinary, and keeping to it. At least you, and those for whom you act, will have the satisfaction of setting a good example where it is much wanted.

In the general sketch thus given of the practice of architects, it has been made evident that many good qualities and attainments are wanted,—both in the man and the expert,—in order that he may be successful and useful. Fair success is, however, probably within the reach of any one who is well-intentioned, and can and will take pains. As compared with most other callings, there is in our profession a wider range of occupation, and better opportunity for the development of the various sides of a man's character. There is, above all, the possibility of real distinction, and of the building up of character, and position, and influence, in which no natural gifts, no possible excellence in education, no amount of general or special attainment, will be found superfluous.

RESISTANCE OF STONES TO CRUSHING.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

At a meeting of this Society in New York, on January 8th, a paper, by Mr. Charles B. Richards, of Hartford, Conn., recording "Experiments on the Resistance of Stones to Crushing," was read.

The specimens tested were old and dry samples, well selected, of various American building stones, worked into 1 in. and 1½ in. cubes, with flat and smooth faces.

The testing machine used was built, after a long experience with two smaller and similar machines. It is arranged to weigh the strains upon a sensitive platform scale of 50 tons capacity, and is well adapted to quickly give accurate results.

The specimens were crushed between the plane faces of two hardened steel hemispheres, the curved portions of which were seated in corresponding cavities of steel blocks, fixed in the machine. Single thicknesses of "lace" leather were interposed between the stones and metal surfaces: thus the pressure was uniformly distributed; it was in all cases applied to the faces of the cubes parallel to the natural bed of the stone, and carefully increased to rupture by pouring shot into the hollow weight by which the strain was caused.

Tables were presented, giving the minimum, mean, and maximum resistance to crushing, per square inch of the specimens tested.

Sixteen specimens of granite from six quarries gave from 8,620 to 15,622 lb. minimum; 9,838 to 18,778 lb. maximum strength. Fourteen specimens of sandstone from three quarries gave from 5,806 lb. minimum, and 8,956 to 10,928 lb. maximum strength. Ten specimens of *white marble* from three quarries gave from 3,905 to 12,917 lb. minimum; and 5,976 to 13,972 lb. maximum strength,—each being 1 in. cubes.

The specimens failed by breaking up into slender prisms and pyramids, with axes normal to the pressure.

HOW FAR IS AN ARCHITECT LIABLE?

Before making up one's mind that the contractor would himself be legally liable in "M. H.'s" case,* one would ask a number of questions, and then be perhaps a little doubtful. Was the lead pipe clearly defective when fixed? In what did it differ in quality from the specification? Not the weight, nor size? Was the contract a low one, and the work not intended to be first-rate? Was a set-off agreed against extra work done? It needs no racking of the brain to make out a sober numerous series of answers implied in questions. Let us, however, drop questioning as to the legal and moral liabilities of the contractor, and conclude that he is to blame without a doubt; and that, with equal certainty, he cannot personally make good his misdoings, frauds, or errors. Is the architect liable? Here, again, we find self-questioning as to the variations without controversy fairly made by every architect in the conduct of any work. Has the architect stated that the pipe should not have been used, and that he did not know of the variation? If so, we have touched the realisms. Was he bound to know of it, or to suffer, if need be, for his overlooking it? Clearly it would have been better for everybody if he had found it out, and insisted on remedy or recognised recompense. Many architects, especially those not overburdened with work, take a deal of pains,—for which they receive neither thanks nor adequate pay,—in worrying everybody as to every item of construction and fitting; sometimes with very pleasing results in efficiency and special contrivance; sometimes, it is to be feared, with some injustice to a contractor who has not expected to be criticised so sharply, and with a lawsuit or arbitration at the end of all. The former result will of course depend mainly on real knowledge, command of temper, proper feeling, &c.; all the things, in fact, that go to make up a man it is a pleasure to meet, as distinguished from a mass of punctilios and conscientious querulousness. The extra services, of which we are speaking, may be given from all kinds of motives,—as a study, from personal interest in a special work; for experiment, and the sake of making it succeed, in order to impress the sense of capacity and personal energy on a client and his connexion,—perhaps in some instances from the architect's love of work in general, and specially for the work of his profession. I think, however, that no one contends that they are given as a part of the "professional services included in the ordinary charge of 5 per cent." In the last [confirmed at a General Conference of Architects of the United Kingdom, 1872] "Schedule of Rules for Professional Practice and Charges of Architects,"—Clause 2 gives "General Superintendence of Works (exclusive of Clerk of the Works)," as thus included. The intention of this phraseology is, I take it, to indicate the conclusion I have stated above, viz., that special, detailed, minute superintendence is not what the architect offers (except under special bargain), or what anybody has a right in thought, or by law and custom, to ask for, for the accepted standard remuneration. I need not say anything about the position that the clerk of the works occupies, and his liabilities, and the architect's as affected by his employment.

These are quite questions apart, and difficult ones, too, it may be said; though something fairly approaching uniformity of practice and customary understanding is, I think, in existence for the best works,—in spite of the occasional aberrations of suspicious boards and meddling committees. Suffice it to say that the architect confessedly incurs many responsibilities in respect of design, directed construction, &c., and that, with reference to general superintendence, he is responsible in practice for furnishing such intelligent direction of the works in progress as may tend to secure the right interpretation and carrying out of his designs, but that he needs never pretend to do the duty of a clerk of the works,—certainly not on buildings at a great distance from his place of business, and perhaps nearly unlimited in number, extent, and variety. Every reasonable juryman would estimate the probabilities of the case,—the understanding of the employer underlying an architect's engagement, the real satisfaction with which a man is thrilled when he is told that his architect has no leisure to give to his special design,—by his own common sense; and should not, under any decent judicial direction, be led to credit an architect with responsibilities for services which the client well knew from the first that he would never try to perform. And the terms of employment and rate of charge apply equally to the whole profession. The good sense of the general mass of people recognises this, for the most part, very thoroughly. The world-embracing Leviathan is consequently employed only on works where public subscriptions are necessary, and must be got from all parts, and the work is merely of public interest; and the expense of a clerk of the works is, of course, not worth consideration. On works of private kind, on the contrary, it is more general to have a local or a younger man who will be likely to do, in return for the same pay, many works of supererogation,—among which would probably be, with good luck, the detection of an attempt at the use of a wrong sort of pipe, either through the evil intention or blunder of a builder or some of his people.

Has, then, "M. H." no remedy? Suppose the builder's liability clear, did not the contract provide for the liability going beyond his death to his "heirs, executors, administrators, or assigns"? Is there no estate? or would "M. H." be unwilling to risk his action, or maybe to bring penalties on a family without its support and head? If so, one can only regret that inevitable loss has come to him, and hope that, in building as in other business and affairs of his life, those contracting with him will hereafter do him justice both by their fair dealing and intelligence,—or that they will survive the time that may be necessary. This is the kind of consolation that most of us find in our ears and in our own minds when we are unfortunate enough to have been thoroughly defeated by man or circumstance. X.

* See p. 91, *ante*.

This question may be considered in the following manner:—

1st. The architect and contractor together will be made, as far as legally possible, responsible for the production in due time of a result realising all that custom, common sense, and durability could demand in carrying out the client's instructions.

It were impossible for an architect to supervise every portion of material used in a building (even if he were always on the spot), because a very small defect in timber, iron, or lead, would sometimes be almost invisible, and yet exist, and if there, be calculated to produce serious trouble, or perhaps danger; but it is, however, customary in most works of any importance to employ a clerk of works, who will, in doing his duty efficiently and conscientiously, discover and condemn whatever material can be found by him in the works which shall in his opinion (subject to the architect's approval of his decision) be unfit for the purpose the contractor would use such material for; but the most watchful supervision being liable to sometimes fail in discovering what it would be desirable to discover, and therefore the onus of responsibility is legally borne by the party most capable of making it a light one, by himself, his foremen, and workmen, each and severally, doing their best to ensure that the materials they use are really what they ought to be for the purpose. There is also another reason why the contractor should, according to the dictates of common sense, be held liable for bad materials or workmanship discovered after the settlement of the account, *i.e.*, because it is *his* work, and not the architect's. If the architect's work should be done improperly, he would alone have to bear the blame; then why should he be saddled with the blame attached to defects which his most conscientious and attentive care (given so far as compatibility with other duties would admit) had been unable to detect, but

which the contractor had at the least a much better opportunity to discover?

Then, in the case cited by "M. H.," we should deduce from the foregoing reasoning that the contractor was legally and properly liable, and the architect consequently not liable; and the decease of the contractor did not and could not transfer this liability to the architect, to whom it never belonged, but transferred it to the contractor's estate; and if the executors or administrators (if such have been appointed) have not yet paid the debts, there would perhaps be a possibility of recovering the loss, but otherwise it would assume the form of an irrecoverable debt owed by the deceased contractor to his employer, the architect's client.

HENRY AMBROSE.

SIR,—I, with many others, shall watch with interest what correspondents say upon the question raised by "M. H." in your last. *Many*, like him, have been fearfully deceived. I am amongst the number, only that I purchased house property to the value not only of 500*l.*, but 500*l.* multiplied by twenty-one. I, like him, employed an architect to see everything done properly, and paid the whole of the cash *on the [illegible] of his certificates*." But a short time elapsed, and I found the partition walls on the basement without foundations, so that I was subject to the expense of making good these serious defects *as well as circumstances would allow*; drains were laid on the *flat*, and soon were "as full as they oggy;" faulty tanks put up: plumbers' work defective; in fact, every part showing what is usually known as "scamping!" I have had the property for some years, and it has been a constant expense, and likely to be, from roofs to basements, and below basements, so that it has been like buying the houses a second time, and they can never be after all as they would be if honest men had built the property.

Like "M. H.," I inquired if I had any redress from the builder or the architect. I was told that having paid my money upon the faith of the surveyor's certificate that I employed, I had no redress; that there was nothing to be done but make the best of a bad bargain; and a bad bargain I have, indeed, found it. I enclose my name. A SUFFERER.

THE WORK OF THE WESLEYAN BODY.

THE eighteenth annual report of the Wesleyan Chapel Committee, 1872, just now published, shows under the heading "Building Department," that the following cases have been sanctioned by the committee during the year:—

125 Chapels, at an estimated cost of ...	£191,840
23 Ministers' houses, ditto	14,115
45 Schools, ditto	27,306
56 Enlargements and alterations ditto	14,801
72 Model plans of cases previously sanctioned, at an estimated *additional* outlay of	20,715
34 Organs, at an estimated cost of ...	7,778
Total 336 cases.	Outlay... £306,555

These figures, when compared with those presented last year, show a decrease of eleven chapels, but an unprecedented increase of 19,649*l.* in the proposed outlay; an increase of ten minister's houses, and of 6,773*l.* in proposed outlay; an increase of four schools, and of 41*l.* in proposed outlay. Upon the whole there is an increase of twenty-two cases, and of 76,789*l.* in proposed outlay.

Views and particulars are given of many of the chapels, the most important of which are the Victoria Chapel, Queen's-road, Manchester,—Messrs. Clegg & Knowles, architects; and Launceston Chapel,—Messrs. Jas. Hine & Alfred Norman, architects.

SANITARY ENGINEERS AND THE GOVERNMENT.

WE mentioned in our last the attendance of a deputation of Local Boards' Surveyors and Sanitary Engineers on Mr. Stansfeld, with the view of obtaining a more independent position under any new legislation than they hold at present. Strong efforts were made in this direction before the passing of the late Health Act, but failed. The Local Government induce local authorities of appoint medical officers and inspectors by bearing half the amount of salaries, and protect such officers. The engineers and surveyors, although the active executive and practical officers, are left entirely without protection. It is now proposed to make another effort in view of amended or additional sanitary legislation, and to form an "Association of Sanitary Engineers and Surveyors." The Local Government Board have, in the opinion of many, while attaching importance to the functions of the medical officer and inspector, shown entire neglect of the equally important and executive official the "town surveyor," who will become the unprotected "catspaw" to carry out the measures suggested by protected medical officers. Most sanitary authorities screw salaries down as low as possible, and thus obtain inferior men; while such is the case there will be but little sanitary progress.

An advertisement in our last issue announces a meeting of civil engineers and surveyors, at present holding appointments under corporations, Local Boards, and other sanitary authorities, will be held at the Institution of Civil Engineers, Great George-street, Westminster, at two p.m. on Saturday, February 15th, for the purpose of forming an association, and for the discussion of other matters of importance. Those who are interested should attend and help.

MR. SPURGEON'S NEW COLLEGE.

NEW buildings are about to be erected on an extensive scale for Mr. Spurgeon's Students' College, in connexion with the Metropolitan Tabernacle, at Newington. It appears from a statement made by Mr. Spurgeon last week that the funds towards the erection of the new buildings are making considerable progress. Upwards of 6,000*l.*, he said, had already been collected, but that a large additional sum was still required. The new building, which is to be erected on a site near the Tabernacle, will also be used for a Sunday school, as the present schoolroom under the Tabernacle is said to be ill-suited for the purpose.

THE COAL QUESTION.

THE price of coal in London while we write is 2*l.* 8s. a ton!—an unprecedented price, one is apt to say; yet that is not so, according to a writer in the *Daily News*; for so long since as February, 1814, the war price was 2*l.* 11s. 8d.! In February, 1851, it was 12s. 3d.! The writer referred to says:—

"If, to-morrow, the colliery owners of Durham were to notify to the London Coal Exchange that they had resolved to raise the price of coals by 20s. per ton, remonstrance might be useless; the infliction must be submitted to. They know, and use, their power. It would, indeed, be unfair to charge them with 'gagging' the supply, but they are reaping the advantage of having had the supply 'gagged' for them by their workmen. To quote Sir William Armstrong, 'Coal-owners have long been aware that limitation of quantity was the only effectual mode of raising price, but they have never been able by their own action to maintain a restricted production. At last their workmen have done it for them, and we see the result.' It may be added that we feel it as well as see it. At this moment the restriction so produced is rather too tight for the coal-owners. The demand is so keen that they could sell as many coals again at full prices as they do now, if they only had them to sell. But they cannot get the colliers to win more coals than they did before, no matter how high the scale of wages may be,—in fact, the work being piece-work, the get of coals diminishes in proportion to the increment of wage, since the collier is not ambitious of realising a fortune, but is content to receive and enjoy nearly double the wage for about two-thirds of the work he was wont to do in times less prosperous. He is, it is true, in a chronic state of demanding an advance, and his demands have abstract right on their side, looking to the prices which the owners obtain; but when he gets an advance he discounts it by winning so much less coal. So the process goes on and on, towards what climax who shall say"?

A movement is said to be on foot in the North Midland counties to press upon the Government the necessity of instituting a full and fair investigation into the increased price of coal, which is interfering materially with both manufacturing and domestic interests. It is proposed that the court of inquiry should be constituted of men of known ability and unflinching impartiality, who would call before them men from the ranks of coal proprietors, and also men connected with the colliers' unions, and those, working as colliers, not connected with the colliers' unions. The object of the inquiry would be

"to ascertain if the sole cause of the present high price of coal is the advance of colliers' wages and the short time movement, and other alterations which have been brought about in the working of coal-mines, not forgetting the charge so frequently made against the colliers of late that they are so idle and intemperate now, in consequence of the great wages they receive for a day's work that the output is seriously limited."

Mr. C. Seely, jun., M.P. for Nottingham, who is a very extensive colliery proprietor, has promised to promote this official inquiry, and to give evidence if called upon.

A new company,—the Diamond Fuel Company,—has been incorporated, with a capital of 200,000*l.*, in shares of 5*l.* each, to acquire and carry on the works now in the hands of Messrs. Barker & Clare, at Stratford, Essex. The process consists in the conversion of slack or duff, coal-dust, or small coal, into solid and compact blocks in combination with ingredients which render them, says the *Mining Journal*, actually superior as a fuel to the lump or screened coal itself. The machinery used in the production of the diamond fuel is almost entirely self-acting, the material being scarcely touched from the time it is first lifted to the machine until it is ready for the market; and as it is intended to establish works and depôts at Liverpool, Hull, Swansea, Newcastle-on-Tyne, Sunderland, &c., the expenses of carriage both for raw material and marketable fuel will be reduced to the minimum.

GUILDS AND TRADE UNIONS.

AT a meeting of the Society of Arts on the 29th ult., Dr. John Yeats read a paper on Guilds and their Functions, which will be found in full in the *Journal* of the Society. It is an interesting condensed view of the subject, though open to discussion in some parts. The writer properly urges the existing guilds to assist in the technical education of the country. Towards the close of the paper Dr. Yeats says:—

"Closely connected with the subject of the guilds is that of their modern analogues—the trade-unions. Enough has been already said to show that the principle and practice of labour-combinations is not in itself the novelty, dangerous or beneficial, which it is sometimes asserted to be. As a national institution this is one of our oldest; and if for a time it fell into desuetude, the present century has witnessed its revival with a new power and a promise of long-lived vitality. Like their Mediæval forerunners, trade-unions are societies which have a double object—to provide regulations for some one branch of trade, and to form amongst its members a mutual benefit society. It is the union of these two objects, declared incompatible by the opponents of the system, which has given an opportunity for much of the vituperation cast upon the institution. But that such a union has heretofore existed, the statutes of every craft-guild prove; and that such a union has not been as pernicious as its enemies predict that it must necessarily be, is proved by the longevity of the old guilds, and by the harmony which long existed between the masters and men of the crafts thus united.

As England was the birth-place of the guild, so it has been of the modern association, and the scene of its most extensive development. It was an aggravation of the circumstance which, more than any other, contributed to the decline of the craft-guilds, that gave rise to the trade-unions. As already shown, the growing power of the capitalist rendered it impossible for the craft-guild to exist in its original form. Contrary to old custom and legislation, masters ceased to be men who had passed through the grade of apprentice and journeymen. The rise of the cotton manufacture, the employment of steam-power, and the introduction of costly machinery, made the possession of a large capital still more indispensable to the master. Prices of all commodities had risen, while wages had relatively fallen. Labour was no longer the co-adjutor, but rather the bond-servant of capital. The more intelligent of the town populations began to perceive the power of resistance which combination would give them. Some funds they had, collected for mutual assurance purposes, for friendly societies are of older date than trade-unions. The first efforts of the new unions were directed against the violation of the Act, 5 Elizabeth, c. 4, which limited the number of journeymen and apprentices each master was allowed to keep. It was only at a later period, when they felt their power, that trade-unions began to frame regulations relative to wages, hours of labour, &c., and to organise strikes as a means of attaining their ends.

Two generations ago trade-unions were scarcely known. Amongst the earliest were those formed by the clothworkers of Leeds, in 1802; by the shipwrights of Liverpool, at the close of the eighteenth century; and by the hatters at a somewhat earlier date. In their infancy they were illegal, and were compelled to carry on their operations under the guise of friendly societies, in order to evade the provisions of the Act against combinations of workmen (39 & 40

Geo. III., c. 106). In 1824 they received partial legal recognition, which has been still further extended by recent legislation. In the last twenty-five years their development has gone on with extraordinary rapidity. The *Fortnightly Review* of December, 1867, says:—'Trade-unions are already a distinct power in the State, and are rapidly advancing to a foremost place amongst national institutions. Nearly 2,000 of these are now spread over the kingdom, ramifying through every county, and ensconed in every town and almost every trade.' Since this was written the movement has extended to the agricultural labourers. But not only are these societies becoming truly national; some are forming international connexions, and others are likely to follow the lead thus set. The International Working Men's Association was avowedly formed with the object of uniting the labourer and artizan classes in every country, for the purpose of mutual aid in case of need. The association, under its present leaders, has, however, assumed rather a political than an industrial character, and as such has no connexion with our subject. Accepting the existence of the institution as an undeniable and potent fact, it will be sufficient for our purpose to point out that there are not a few particulars in which trade-unions might learn a useful lesson from the old craft-guilds. They might more closely imitate their scrupulous avoidance of acts of illegality; they might exhibit a little more of that charitable spirit of the old guilds, which looked beyond the immediate interests of their own fraternity; they might connect themselves, as their predecessors did, with works having for their object intellectual and moral, as well as material advancement; and last, but not least, they might emulate their zeal for the doing of honest, man-like work, and for the checking of fraudulent tricks too common in every trade. Mr. Holyoake has well said, in a letter to the *Pall Mall Gazette*, dated July 4th, 1870:—'We have strikes against receiving low wages. There are no strikes against doing bad work. All over the land a good deal of work is executed that is so shabby, so bungling or dishonest, that it is a degradation to be connected with it. If it was known that a unionist was a more reliable workman than any other, that he could be depended on to do good work, and could not do bad,—that he put his character into his work,—a unionist would be the most popular of workmen, and wages would stand higher than any combination could raise them. It ought to be impossible for employers to find men who will execute any shabby work. It is a sort of crime against the honour of industry, a fraud by connivance upon the purchaser."

BRISTOL.

Consecration of St. Matthew's Church, Moorfields.—The church of St. Matthew, Moorfields, St. George's, has been consecrated by the Bishop of Gloucester and Bristol. The site is between the school premises and Redfield House. The church is in the thirteenth-century style, and of Pennant stone. When completed, it will consist of nave, side aisles, north and south chapels, apsidal chancel, and sacrarium, with tower and spire 120 ft. high; the south chapel forming the minister's vestry, and the north chapel the organ-chamber. The estimated cost of the building is 3,000*l.* The contract, just finished, is for the erection of the nave, south aisle, chancel, sacrarium, south chapel, and tower, up to the level of the clearstory windows, at a cost of about 2,000*l.*, leaving the north aisle, north chapel, and completion of the tower and spire to some future day. The church, when completed, will seat 700, and the present section 150 persons. The contractors are Messrs. William Banner & Co., of Bristol. The masons' work has been executed by the Messrs. Beaven, of Bedminster; and the tiling, glazing, plastering, &c., by Messrs. W. Cowlin & Son. The architect is Mr. J. Neale, of Bristol. Among the presents that have been made are three stained-glass windows in the apse, given by Mrs. David Cooper, in memory of deceased children. The pulpit is that which formerly belonged to Emmanuel Church, Clifton. The edifice may be termed a working man's church. There is still a deficiency upon the first contract, amounting to between 200*l.* and 300*l.*, whilst 1,000*l.* more will have to be raised before the church can be completed.

St. Werburgh's Church.—A paragraph, published in a contemporary, says the local *Times*, in reference to the removal of this church, is inexact. The sum provisionally agreed upon by the bishop and the late lord chancellor for the church and churchyard was 9,500*l.*, and it is not expected that any action will be taken except upon the basis of this agreement. Again, the site for the future church is not yet decided upon, but Ashley-hill has been proposed as its site. The Sanitary Authority have given notice that they will require also, for the widening of Small-street, the rectory-house of St. Werburgh's and the house adjoining, but this will be at a separate valuation and by separate agreement.

Opening of St. Simon's New Schools.—The new parochial schools, begun last spring, for St. Simon's parish, Baptist Mills, are now complete, and have been formally opened. The schools are situated close to the church, at the east end. Opposite the front door is the door of the infant schoolroom, 60 ft. by 27 ft.; a class-room, 22 ft. by 20 ft., occupies the corner to the right of the porch. At the left side of the building is the girls' school, 60 ft. by 21 ft., with class-room adjoining, 21 ft. by 16 ft. The schools will accommodate 465 girls and infants. The amount of the contract (which has been carried out by Mr. J. P. Stephens) has been 1,344*l.*, including extras; the site cost 465*l.*, and the expenditure for gas, sundries, and fees of the architects (Messrs. Medland, of Gloucester), has brought up the total outlay to about 1,900*l.*

ARCHITECTURAL ASSOCIATION.

AT the last ordinary meeting thanks were voted to the Prime Warden of the Goldsmiths' Company for permission to visit the hall, and to Mr. R. Hesketh, the architect of the recent alterations, for accompanying the members over the works. There is a rare profusion of rich foreign marbles in the entrance-hall, and in the construction and decoration of the principal staircase, as we have already told our readers. The principal suite of rooms has also been redecorated, and the great hall rendered more roomy for balls by setting back the wall-line between the large main columns, the continuous dado being thus parted with. Thanks were also given to Mr. Williams, the architect to the new Post-office buildings, for his permission to visit them, and for his personal explanations.

A paper was read by Mr. John Sulman on "Teachings of some old Churches in Northants," following the course of a tour made last year as the holder of the Pugin Travelling Studentship. The district thus travelled over was the centre and south-east of the county,—the kind of triangle included between Northampton and Raunds (about twenty miles to the north-east) and Rothwell (about fifteen miles north of Northampton); additional buildings being also visited to the south of Higham Ferrers and west of Northampton. The paper was illustrated by numerous drawings hung on the walls, and by sketches on the blackboard. Mr. Sulman mentioned that Northamptonshire vies with Lincolnshire and Somerset for the first place among the English counties for the possession of the largest number of Mediæval parish churches of excellent architecture. The good building stone, the wealth of the district, and the power of the religious orders, no doubt, contributed to the result. Though the country is not flat, but rolling and well diversified, spires are frequent,—almost ever-recurrent. They are generally characterised by peculiar lightness and grace, some of this being due to their being pierced with two,—sometimes with three,—tiers of spire-lights. The strong, sturdy type of spire hardly appears at all. Probably the so frequent use of this feature was a fashion, once well set, that worked its way down the Nene valley, and then gradually through the length and breadth of the district. At any rate, in walking through, the original meaning of the word "steeple-chase" is driven on the mind, and the possibility of indulging that amusement at any village green in most directions, with only a two or three mile run. The churches mostly have nave aisles, and frequently a chapel joins the chancel. There are few transepts. The towers are almost universally at the west end, opening into the churches by good tower arches. Among a considerable number (about fifty) of churches carefully studied, only that of Barton Seagrave (a mile or two from Kettering) showed a central tower,—a small Norman church, built no doubt before even the rudimentary stone spire had been introduced. In truth, the excellence of the towers and spires is generally not carried into and through the rest of the buildings. The good ashlar has seemingly given out in many cases, and a less complete and noble class of work been the result. Saxon work is found at Earls Barton and Brixworth. The Transitional (Norman to Early English) nave arcades at Rothwell might fit a large minster, and there are also one or two towers and various other remains of this date scattered about. The greatest architectural movement took place, however, in the Early English era (about 1230 to 1250), when many churches were founded and others rebuilt. Decorated additions and insertions are frequent: the remarkable little Church of Wimmington, Beds (half a mile from the border, and about two miles from Rushden), is throughout of the same Late Decorated date, even down to the font, and is said to have been built and finished within two years. In the Perpendicular period, dissatisfaction with the lighting heretofore enjoyed led to the introduction of the clearstory; few churches in the county being left untouched. The sudden transition from the old high-pitched to the flat roofs that became customary probably originated in the desire not to dwarf the towers,—designed before the clearstories came into fashion. Mr. Sulman directed attention to the special features found at each place; among the rest the tombs at Brington; the farm-house at Yardley Hastings; the strainer arches at Easton Maudit, Rushden, and Finedon; the strange, once-inhabited tower at Irthlingborough, were noticed. Also the characteristics of the perfect west end of Raunds, locally known as "The Gentleman," as contrasted with "The Lady," at Stanwick,—that almost unique octagon tower and spire, with its wonderful delicate grace. Some remarks were made on the subject of rough masonry in the interior of churches, it being maintained that the architecture must be bold and broad to stand the test of proximity to such unsmoothed surfaces, and that rubble may be too rude to be safely shown in any interior. Also that there is little doubt that in the majority of cases plastering, whether for painting or for smoothness, was contemplated, in many instances from the first, and actually put on very frequently for the latter reason only by the Mediæval builders. External variegation with bands, of rich brown ironstone alternating with white stone, is found in the towers of St. Peter, Northampton, and Irchester (noticeable also as the most slender spire in the county). Of internal wall-painting many interesting portions of the Early English well-drawn figures and conventional foliage remain at Barton Latimer (four miles from Kettering), illustrating the legend of St. Catherine; and at Great Addington and Barton Seagrave churches bits of the decoration may be seen, giving fair promise of good success from judicious scraping. At Wimmington some of the original Purbeck paving quarries remain in various parts of the floor, showing clearly that the designer from the first contemplated the present slope from the west up to the east end,—a plan tried also at Rushden, but in neither case (Mr. Sulman thought) with good result. In civil architecture the quaint, very picturesque, never-completed, ruined Late Elizabethan Market-house at Rothwell was described; its plan being simplicity itself,—an oblong, with an oblong projection in the centre of each side and each end,—the lower part with open arches all round, and the general design very pleasing.

THE GUILDHALL, TEMPLE BAR, NEW LIBRARY, AND CITY TEMPLE, AT THE COURT OF COMMON COUNCIL.

AT the last meeting of the Court of Common Council, attention was called, by Alderman Sir Francis Truscott, to the dangerous condition of the council-chamber. Some of the walls, he said, were much cracked, and the architect had to make an examination of the building before the meetings of the Court, in order to see whether it would be safe for them to assemble in it.

Mr. McGeorge said the City Lands Committee would look into the matter. He expressed his opinion that the council-chamber was not large enough, and that the committee-rooms were inadequate.

Mr. Pedler said, notice had been sent to some builders in London, asking for tenders for the erection of the new Law Courts. He asked the chairman of the City Lands Committee if his attention had been called to the circumstance. The proposed building would very much dwarf Temple Bar.

Mr. McGeorge said the Government, under the Act obtained for the construction of the Law Courts, had power to remove the Bar, but only with the consent of the corporation. He apprehended the corporation would not wish to see such an interesting memorial removed.

Replying to Mr. Clark, Dr. Sedgwick Saunders said the architect was devising means to improve the ventilation of the new library, which was admitted to be defective.

Mr. Deputy Fry moved, pursuant to notice,—

"That the church and congregation connected with the Poultry Chapel having purchased of the City a freehold site on the Holborn Viaduct, at a cost of 25,000*l.*, upon which they are now erecting a church, to be known as the City Temple, designed (exclusive of large provision for day and Sunday schools) to accommodate 2,500 persons, and involving an expenditure of more than 31,000*l.*, thus making a total minimum outlay of 56,000*l.*, this Court being desirous of evincing its interest in so great a movement, and in recognition of the public spirit displayed in the determination to perpetuate a long-existing connexion with the City, do present to them a pulpit, to be for ever held as the commemorative gift of the Corporation of London; and that it be referred to the City Lands Committee to carry the same into effect, at an expense not exceeding 300 guineas."

The hon. deputy said that the congregation had received upwards of 50,000*l.* for the site of their late chapel, and, instead of removing to the suburbs, where land was cheap, they had determined to remain in the City, although a much larger expenditure was thereby entailed.

The motion was opposed; and Mr. Shaw said that in 1820 the site of the Poultry Chapel was bought for 2,000*l.*, and the congregation, after having had the use of it for fifty years, had been paid upwards of 50,000*l.* for it. With regard to the site on the Viaduct, if it had been sold at the same rate as other land in the neighbourhood, it would have realised 15,000*l.* more than the City had received for it. If the money were to be voted as a bonus, what were they to say to Negretti & Zambra and other purchasers? He thought a more legitimate proposal would have been for the gentlemen connected with the chapel to come forward and offer to place a stained-glass window in Guildhall.

Mr. Bedford said if the motion were carried, he would ask a contribution of 500*l.* to St. Sepulchre's Church for their public spirit in throwing a piece of ground into the public way, and in consideration of the circumstance that they were about to erect a handsome new tower.

The motion was ultimately carried.

A NOTE FROM ITALY.

A CORRESPONDENT, dating from Rome, writes:—Mrs. Salis Schwabe, who passes her life in doing good to the poor and the miserable of this world, has been striving for the last ten years to get a better state of things introduced into Naples for the very poorest,—the young lazzaroni, but obstacle on obstacle arose, and only last year did she obtain what she wanted, a *locale* in which to begin her work. The municipality gave her a convent that had been confiscated, and the Government promised her 1,000*l.* to put it in order; so the affair was begun last February, and then in May she had to be in England. The architect, siding, it is to be feared, with the party which is inimical to the cause of progress and education, left the building much in the same state as when Mrs. Schwabe left; and, in a state of desperation, she, not being able to leave England, induced a friend to try and finish and furnish the schools. The present municipality, elected after the triumph of the clerical party in the summer, had put a suspension on all the works, and nothing was being done. Money had been misspent, and those interested have been forced to go to Rome, and put themselves under the mercy of the Ministers and Government, and, as I now write, a telegram is expected to state the result.

The misery and degradation in some parts of Naples are indescribable; and the clerical municipality has deducted from the allowance for education 42,000 francs a year. The man who has done this said, in full council, he was not sure whether education did not help to fill the prisons; that only religious teaching could help the poor to be better.

A week ago the first stone was laid in Rome of the American Episcopal Church, to be dedicated to St. Paul. It is to be built at the angle of Via Nazionale and Via Napoli; the former is the new street now being built leading from the Santa Maria Maggiore to the Corso. The position is excellent. The ground cost 60 dollars a mètre; the whole, 20,000 dollars. The church is to be in the Italian Gothic style, and to hold about 800 people. The Americans have thus gained the initiative in planting *within* the walls of Rome their Episcopal Reformed Church. The stone was laid on St. Paul's day, and English and American clergy joined in the ceremony, the Bishop of Derry officiating.

It is to be hoped the English, though more suitably supplied with a temporary church than the Americans have been, will not be long before collecting the required sum for the commencement of their church. The overcrowded state of the English church shows the necessity of providing a large and, it may be hoped, a handsome edifice.

The weather has been damp and unhealthy in Rome, but a fine day does much to raise the tone of movement and gaiety. New buildings are progressing.

WOKING BRIDGE ACCIDENT.

A CORRESPONDENT sends us rough sketches of some existing bridges on the river Wey, and says,—"I presume they have been continually patched for the last half-century, a new rail or girder being put in when one gives way and not before. There are some half dozen bridges of this pattern over the river Wey above Woking, and three above Guildford; the first one at Broadford, near Shalford Railway Station, being very rickety and unsafe for a public thoroughfare." If the sketches give a correct idea of the structures in question the sooner the Highway Board or other competent authority direct the attention of the proper officer to them the better. We shall otherwise soon hear of another accident in this neighbourhood.

ACCIDENTS.

Destruction by Fire of the North Surrey District Schools.—One of the largest fires known for some time in Lambeth took place early on Saturday morning, in last week, and resulted in the total destruction of the North Surrey District Schools, in the Anerley-road. The building consisted of two floors, about 60 ft. by 60 ft., used as workshops for shoemakers and tailors, and was entirely burnt out, and the roof was burnt off the carpenters' workshops, &c., adjoining, and the contents damaged by fire and water. The cause of the fire is unknown.

Damage to Ryle Pier.—About midnight, on Wednesday in last week, a large barge in a gale struck against the pier with great violence, and damaged the structure for a distance of about 30 yards, tearing up the rails of the pier tramway. The ship, which was laden with timber, and bound for Poole, was completely dismasted.

Fall of Machinery into the Usk.—A somewhat remarkable accident took place last week, near Newport, in Monmouthshire. An iron bridge over the River Usk is in the course of erection on the Pontypool and Caerleon Railway, and a stage was placed over the water to carry certain heavy machinery used in pile-driving. From some unexplained cause the stage gave way, and precipitated the machinery and a number of the workmen into the Usk. One is known to be drowned, and two are missing. Four others were injured,—two seriously.

Partial Fall of a House in Bradford.—The back of a building in Ranter-court, Craven-street, Wapping-road, fell outwards, and six people who were in the house had narrow escapes. The house is one of a block of five situated in Ranter-court. Although antiquated and somewhat dilapidated in the exterior, in the inside they appear to be substantial enough. At the back of this block a large weaving-shed is in course of erection, and the necessary excavations for building purposes are being actively proceeded with. The foundation has been dug almost close in a line with the back wall of this block of dwelling-houses, and it is thought that this may in some way have been the cause of the accident.

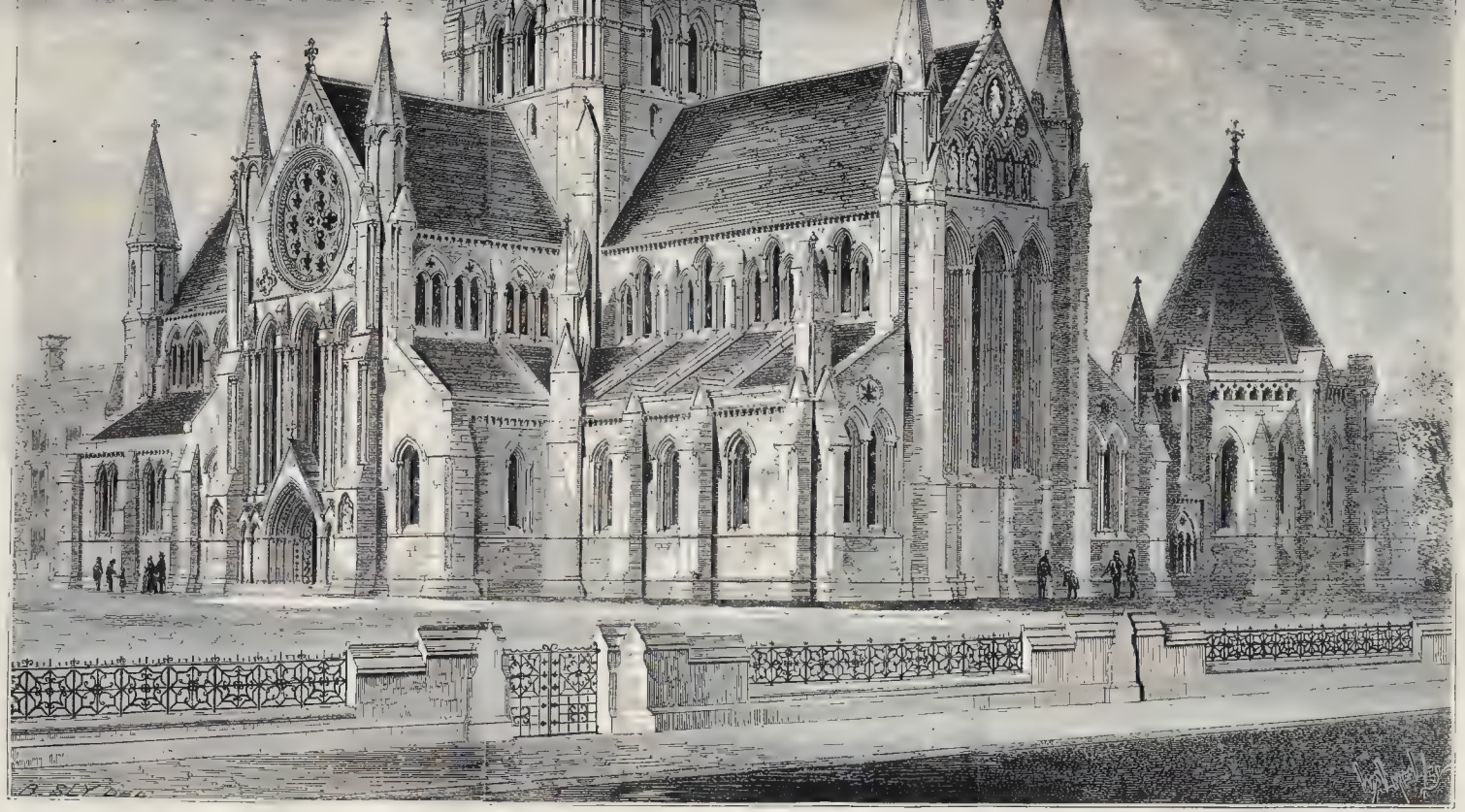
Fatal Scaffold Accident near Bishop Auckland. An inquest on the body of Jesse Burge, who met his death by the falling of a scaffold, at Coundon new church, near Bishop Auckland, has been held at Old Counden, before Mr. Thomas Dean, deputy coroner. The evidence of Mr. Townsend, clerk of the works, went to show that deceased and a man named Rule were engaged plastering the ceiling, and were on a scaffold which appeared sufficiently strong for the purpose. He had a short time previously ordered them to stop work, as the frost was severe, and they said they would just use up what lime they had up. They, however, continued to go on, and a labourer named Alexander Davidson, had taken up a hod of lime, about nine stone. He threw it down on the scaffold, and the two plasterers both stepped up at the same time to get some, when a beam—one of the main supports of the scaffold,—gave way, and the whole three were precipitated to the ground. Burge fell with his neck upon a wall intended to support the floor, and fractured his neck. Several beams also fell upon him. The other two were severely injured, and lie in a precarious condition. The jury gave a verdict of "Accidental death."

SCHOOL BOARDS.

Metropolitan Board.—At the last usual meeting of the School Board, it was resolved "That the tender of Mr. W. Shepherd, of 101, Bermondsey New-road, amounting to 6,728*l.*, for the erection of a school to provide accommodation for 899 children on the site in Battersea-road, be accepted; and that the tender of Messrs. D. King & Sons, of 5, Mitre-street, Aldgate, E.C., amounting to 6,628*l.*, for the erection of a school to provide accommodation for 1,088 children, on the site in Olga-street, Roman-road, be accepted." It was further resolved,—That the tender of Mr. W. Webster, of 8, St. Martin's-place, Trafalgar-square, W.C., amounting to 617*l.* for excavating the foundations for the Board offices on the Thames Embankment site, be accepted.

Carlisle.—The discussion of alterations of the school plans was the first business. Mr. Hannah said there had been some new schools at Penrith constructed on the L shape, which he objected to. In order to see those schools he went to Penrith, and had the advantage of being there on the same day as Her Majesty's Inspector. He found the schools in many respects fitted for their object, but there were also objections to them. The master of the Penrith schools had not much objection to the L shape, but he thought it was very much too narrow, and was sure that if they went in for a wider school, it would be much more favourable. Those schools had been built according to the Government regulation 20 ft., but he trusted he would induce the Board not to adopt that width. There was now much agitation on this point, among other places, at Halifax and Leeds, the Boards at which places had sent a deputation of five members to Mr. Forster in London. Those Boards favoured a width of 30 ft. Mr. Forster had stated that those regulations came into force at the very beginning, before he had gone into office at all, when Parliament was only granting certain sums, and these regulations might have been passed to spare the money. He added that the Boards ought now to be allowed by their lordships to put up buildings which they considered best fitted for the district. There was another point, that of light, and he was a strong advocate for as much natural light as possible. He moved that the width of the boys' and girls' schools be 25 ft., and the infant schools not less than 30 ft. The chairman seconded the motion, at the same time expressing his approval of the L shape. Mr. Birkett, who was present, explained that in drawing the plans he had gone according to the regulations of the Department, not having felt himself justified in departing from them, though he quite agreed with all that Mr. Hannah had said. The original width was made that the number of pupils accommodated on one side of the school should not be more than on three rows of desks. If they increased the width to 22 ft. it would require four rows of desks, and if increased to 25 ft. it would require five rows of desks to accommodate the pupils; so that in gaining the advantage of having more room for class teaching they lost the advantage of the other mode of teaching in having such a great depth of desks. His own inclination was to adopt a width of 23 ft., with four rows of desks. The broader it is the shorter it will be, as the area must necessarily be eight superficial feet to each pupil. Considerable discussion ensued, and it was at length decided to adopt the L shape, that the boys' and girls' school should be 25 ft. wide, and that the infant-school should be 28 ft. wide, Canon Curry dissenting from the latter portion of the resolution, thinking that the width of the plans, 26 ft., was sufficient. Considerable discussion ensued on details, and it was determined that the vice-chairman, Canon Durham, Mr. Wrigley, Mr. Clarke, and Mr. Hannah, be appointed a committee to consult with the architect and submit his plans as amended to the next meeting.





PROPOSED CATHEDRAL CHURCH OF ST. MARY, EDINBURGH.

Selected Design: Sir G. Gilbert Scott, R.A., Architect.

NALYSTS AND MEDICAL OFFICERS OF HEALTH.

Wandsworth District Board of Works.—The neral purposes committee submitted Drs. uter and Moore as candidates for the office of alyst, and the former, who has already been pointed to the parishes of Lambeth, Camber- ll, and St. George the Martyr, was selected. was then agreed, upon the motion of Mr. dgson, that the payment should be by fees, d on a scale to be hereafter determined by e Board.

Whitechapel District Board of Works.—Dr. dy has expressed his willingness to undertake e duty of analyst to this board for six months, the following rates:—For the first hundred ses, at the rate of one guinea for each analysis; r the next fifty cases, at the rate of half a inea each; and for any number of subsequent ses that might occur during the half-year at e rate of 6s. for each. Dr. Tidy's offer was cepted. In St. Pancras the fee has been fixed 2s. 6d.

The St. Pancras Vestry have appointed r. Stevenson, the medical officer of health for e parish, to the post of analyst. He is to be id "for such reasonable laboratory and other penses as may be actually incurred by him ring the ensuing year." It is provided, how- ver, that the expenditure must be limited to 00*l.* At the end of the year the vestry will consider the whole question, with a view to ake a permanent arrangement.

In the Bethnal Green Vestry Dr. Jarvis, edical officer of health, who was appointed blic analyst for the parish, has submitted a t of articles required for carrying out the work that office, and asked to be empowered to fit a laboratory and purchase the necessary struments, at a cost not exceeding 100*l.* A mmittee of seven members was appointed to ake inquiries and advise the Board upon the atter.

Marylebone Vestry.—A communication has en received from the Local Government Board senting to the appointment of Dr. Whitmore food analyst, &c., for the parish.

The Holborn and St. Giles's District Board Works.—This Board has agreed to unite with e Clerkenwell Vestry in the joint appointment an analyst, and they have resolved to apply Dr. Letheby to allow his name to be brought rward as a candidate.

Miscellaneous.—The St. Saviour's District oard have agreed to pay Mr. Bianchi a nominal lary of 50*l.*, as analyst. Dr. Corner, the edical officer of health for Mile-end Old Town, as been appointed also analyst. In Hackney, r. Tripe, the medical officer of health, has been ected. In St. George's, Hanover-square, and helsea, it has also been resolved to include the fice of analyst in the duties of officer of health. he Whitechapel Board have appointed Dr. eymott Tidy. Dr. Hardwick has been elected r Paddington; Dr. Vinen for St. Olave; Dr. oodfrede for Poplar; Dr Letheby for the City; r. Bernays for Camberwell; Dr. Pavy for St. uke's; Dr. Rogers for Limehouse. With three xceptions, the local authorities of each district ave elected their own medical officers of health analysts.

The Gloucester Town Council have had a long tting to discuss the question of the appoint- ent of a medical officer under the Public Health ct. A committee of the Council had recom- ended the appointment of an officer for the ty only, at a salary of 100*l.* per annum, con- itionally upon half the salary being paid by the ocal Government Board, and that the appoint- ent be for one year, in order to see how the ew system works. This was agreed to. It as stated that the Local Boards and sanitary uthorities of the suburban district of Gloucester ould probably join with the city, and appoint e same gentleman.

The Carlisle Council.—The Town Clerk, at a ecent meeting of council, reported that a meeting ad taken place between the Town Improvement ommittee and the county authorities, who, owever, were not then prepared to recom- end the appointment of a public analyst. r. Wheatley asked how long they could defer is. Some public bodies had deferred it for an definite period, and did not mean to appoint e until they were obliged to do so, or it was ressed upon them till they were compelled to ke decisive action; and the county magistrates ad given to understand that they did not intend do it until they were pressed.—The Town lerk: There is no special time mentioned that makes it incumbent upon public bodies to make the appointments. With regard to the appoint- ment of a medical officer and inspector, the committee had met the rural sanitary authority; but they had no report to make. He believed that the authorities of the several unions com- municated with had all declined to join in the appointment of a medical officer.—Mr. Cock- burn: There is nothing in the Act to prevent that standing over?—The Town Clerk: No.—The subject then dropped.

Liverpool.—Several cases were recently brought before the Liverpool stipendiary ma- gistrate in which certain tradesmen were charged with selling adulterated butter. All the cases were dismissed by the magistrate, on the ground that the defendants did not appear to have a guilty knowledge that the butter was adulterated. It is clear that if this be the true interpretation of the law, no one can be convicted for the sale of adulterated articles, and the Act might just as well not have been passed. The Liverpool Corporation have appointed a public analyst, at a salary of 200*l.* a year, and naturally they do not look with favour on a decision which reduces their appoint- ment to a comfortable sinecure, and have deter- mined to ask the Court of Queen's Bench for an authoritative declaration of the law.

Bedford Town Council.—At a special meeting of this council, acting as the sanitary authority for the borough, Alderman Bull said that by a resolution of the Board passed some few weeks ago it was decided that the two offices of medical officer of health and analyst for the borough should be held by one gentleman, and he proposed that Dr. Charles Edward Prior should be appointed to these offices. It was then resolved that Dr. Prior be appointed medical officer of health for five years, at a salary of 100*l.* per annum; and also borough analyst for the same period, at a salary of 50*l.* per annum. There were no other candidates.

Berks.—A conference of Guardians of the Poor and the members of the various sanitary authorities in the county has been held at the Grand Jury Room of the Assize Courts, Reading, to discuss the 10th sec. of the Public Health Act, which imposes on the Sanitary Authority the duty of appointing an officer of health, and also an inspector of nuisances, and other officials. The meeting was convened by Mr. Henley, Poor- law Inspector. It was moved:—

"That the several sanitary authorities of the county do for the period of twelve months act independently of one another as regards the appointment of a medical officer of health."

It was also moved as an amendment,—

"That, recognising the principle of combination, it is desirable that the county of Berks be divided into two or more districts, and that the several town and county sanitary authorities be respectfully invited to co-operate in the appointment of a medical officer of health for each district."

Among the speakers was Mr. Walter, M.P., who said that it appeared to him that the Legislature itself was chiefly responsible for the difficulty which they were at present endeavouring to re- move. He supported the amendment. Mr. Henley said that at Birmingham the medical officer of health, who was also the public analyst, received a salary of 650*l.*,—500*l.* for being medical officer, and 150*l.* for the office of analyst. After some further conversation, the amendment was carried by 20 votes to 18.

NEW GAS COMPANY (LIMITED) FOR HEATING AND LIGHTING.

A new gas company is being formed, with a capital of 500,000*l.*, one-half to be issued in 50,000 shares of 5*l.* each, of which 35,000 are offered for subscription. The object in view is to purchase certain patents for 50,000*l.* in cash, and 75,000*l.* in shares of the company, with one- tenth of the surplus profits in every year, after the declaration by the company of a dividend of 25 per cent., and one-tenth of the net proceeds of any foreign patents which may be sold for sums in gross. The chief patents to be used in return for this valuable consideration are what have been known as Ruck's patents. A practicable model gas manufactory has been built at Batter- sea, and experiments have been there exhibited of the working of the process. Steam (or water of course) is decomposed by highly-heated coke or charcoal, into free hydrogen, mixed with car- bonic oxide and carbonic acid gases, and some sulphuretted hydrogen, which last is sepa- rated from the gas, but the carbonic gases remain, unless when the carbonic acid is to be removed by the help of caustic soda. The resultant gas is to be used for heating pur- poses only, as hydrogen gas in burning gives little light but much heat. But the gas is also to be converted into gas for illuminating pur- poses by being charged with petroleum vapour, which is said to form with the hydrogen a more or less permanent combination, and a rich hydro- carbonaceous gas, yielding a light equal to 16·6 candles burning 120 grains of sperm. Of course the heating gas and the gas for light will require to be separately prepared and distributed in two separate sets of pipes to their respective desti- nations. The decomposition of water or steam by highly-heated carbonaceous substances into hydrogen and oxy-carbonaceous gases is not new, but there seems to have always been some difficulty until now in making practical use of the process. We may add, that without com- mitting ourselves to the present or any form of the process as an improvement on the usual mode of gas-making, we should be glad to hear of the practical success of any form of gas manufacture which could render us even a little less dependent on colliery-owners and colliers, either for light or for heat.

TECHNOLOGICAL EXAMINATIONS.

The programme of examinations in the technology of the arts and manufactures of the country, is now ready for issue, and may be had on application to the secretary of the Society of Arts. These examinations will be held annually, in conjunction with the examinations of the Science and Art Department.

In 1873 examinations will be held in the technology of cotton, paper, silk, steel, and carriage-building.

The examinations of the Science and Art Department will be held during the first three weeks of May.

The following prizes are offered by the Society of Arts in each of the five subjects mentioned above:—To the best candidate in honours, 10*l.*; to the best candidate in the advanced grade, 7*l.*; to the best candidate in the elementary grade, 5*l.*; and the Council appeal to the companies of the City of London, to merchants and manu- facturers, and to members of the Society gene- rally, to aid them by contributing to the prize fund.

THE OLD MASTERS AND THE WORKING CLASSES.

A correspondent calls upon us to urge the Council of the Royal Academy "to set apart a week, or some few evenings before the Exhibi- tion is closed, at half-price, so as to allow the lovers of art among the working classes an opportunity of studying these grand old pictures. I believe the Academy adopts a similar plan in their summer exhibition of modern paintings." We are disposed to think the Academy scarcely needs any urging in the matter. But will the working classes—or, as we would rather say, the wage-class—take advantage of the opportunity if it be afforded? Unless we are misinformed, they do so in the summer only to a trifling extent. They thus weaken the hands of those who would increase their enjoyments and facili- ties for self-culture.

ACTION FOR SEWER WORK.

WIGMORE *v.* WHITE.—BROMPTON COUNTY COURT.

Mr. Laxton, who appeared for the plaintiff, a builder, of Fulham, in his address to the Court, observed that the action was one of some im- portance to contractors for making sewers and to boards of works. His client sought to recover the sum of 18*l.* of Mr. White, who, being of the same trade as the plaintiff, should have known better than to have raised any dispute to the claim.

Mr. Wigmore, in reply to questions, stated that some- time since he entered into a contract with the parish of Fulham to construct a sewer in the Munster-road, and whilst the works were in progress Mr. White called upon him and informed him he was the owner of several houses bordering on the sewer being made, and it would be a good opportunity to have a drainage from his property run into the sewer, instead of into cesspools, as no doubt the district or parish surveyor would ultimately order a proper drainage to be made; and, acting up to Mr. White's directions, his men made junctions with six houses into the sewer.

The sum claimed was for material, labour, watchman, and other expenses incurred.

In cross-examination, the plaintiff said he had not got

the job specifically that what he did was to go to the parish account. The work he did was certainly not included in the parish contract. The surveyor to the Local Board gave him orders to make junctions into the sewers, but gave him no instructions to do Mr. White's work. If the surveyor had given him any such orders, he should have charged the work to the parish of Fulham, and not to the owner of the houses, Mr. White, and it would, of course, have become part of his contract with the parish. It was immaterial to him which paid him, but unless the surveyor certified to the work done, the parish would certainly refuse to pay for Mr. White's junctions.

Mr. Bean, the surveyor to the Board, confirmed the plaintiff's view of the matter with respect to the parish not being liable for the work under the circumstances stated, and positively stated that the work done was no part of the contract entered into by the parish of Fulham with Mr. Wigmore. It might be, and probably would have been, that if Mr. White had made a formal application to have his houses drained into the sewer, the Board of Works for the Fulham district would have issued orders to have had the junctions made at the cost of the parish, and then the contractor would have been paid extras. But when owners of property gave such orders, the parish of course had no control over the matter, further than the surveyor seeing that the junctions and drainage were properly made.

In answer to the case, the defendant point-blank denied his liability, and contended that the parish was liable. Mr. White also denied giving Mr. Wigmore any orders to do the work for him, for he could have done it himself. He spoke to the district surveyor, and he considered it was being done under his direction; and that when done he should have to recoup the parish the usual apportionment of the cost of the work. Had he thought Mr. Wigmore was going to do the work and then make this claim, he would have let the drains remain as they were, as the drainage answered all purposes. The charge, too, he called exorbitant; and as the ground was already opened, and materials and labour to hand, the sum of 6*l.* would well pay for the work done.

The Judge said he had the most positive evidence that the contractor had no right to do this work at the parish expense without orders from the surveyor, and the surveyor had given no such orders. He also considered that defendant had given the plaintiff the order to do the work, and he was liable to pay for it. With respect to the amount he thought it would bear a little cutting down, and he should make a deduction of 3*l.* Judgment for 15*l.*, with costs of counsel, attorney, and witnesses, which, with Court fees, will add about 10*l.*, besides defendant's solicitor and expenses.

BETHNAL-GREEN MUSEUM.

Sir,—Permit me to correct an accidental error in the article on Bethnal-green Museum in your last week's issue. The two noble Vandykes, Philippe le Roy and his wife, are not "lent by the King of Holland," but, like all the other pictures, by Sir Richard Wallace. The note in the catalogue, by which the writer seems to have been misled, "from the collection of the King of Holland," refers to former and not actual proprietorship.

C. C. B.

EXPENDITURE OF METROPOLITAN BOARD OF WORKS.

Sir,—At the last meeting of the City Commissioners of Sewers, the chairman said:—

"Now, let us see what other public bodies are doing. I take up the accounts of the Metropolitan Board of Works—not in any bad spirit, but to draw a comparison between that body and this Commission. I find that they have expended on the fire brigade 15 per cent. of the receipts; on works 32 per cent.; and interest 53 per cent. of the whole expenditure. That is a startling statement. We do not expend 5 per cent., or little more than 2½. The Corporation are nearly as bad as the Metropolitan Board of Works; they spent one million in interest on the Holborn Valley Improvement. I hope you will give your careful attention to this."

Allow me, as a ratepayer, to call attention to this. Out of every shilling of the rates collected we have to pay 53 per cent. for interest, while the inhabitants of the City only pay from 2½ to 5 per cent. This is not the way to encourage either art or labour, at this time when everything is dear, and no wonder that rates and taxes are high when more than half is spent in interest on loans.

Joseph Ash.

ENGINEERS' ACTIONS.

BIRCH V. THE EXMOUTH DOCKS COMPANY.

This action (in Court of Queen's Bench) was brought by the plaintiff to recover a certain sum of money for professional services rendered by him as engineer in the construction of the Exmouth Docks. The defendants pleaded not liable.

The plaintiff, residing in Victoria-street, Westminster, brought the action to recover a sum of 2,189*l.*, commission at the rate of 5 per cent. on works executed by Mr. Jackson, a contractor, in constructing the Exmouth Docks. In the course of the evidence it appeared that there was actually no company, and also that there were no shareholders. Mr. Jackson, the contractor, undertook the construction of the docks and execution of the works for a number of shares as security, amounting in representative value to 60,000*l.*, and for 15,000*l.* worth of debentures, and on the completion of the works to hand the docks over to any company that might be formed. The shares had never been disposed of. They had been deposited as security for advances by the contractor, who was still in possession of the docks, which had been opened in due time for traffic, but the gross takings last year amounted to only 970*l.* By a subsequent engagement the contractor was to pay the engineer's, the secretary's, and the directors' fees, and he qualified the directors, who were his nominees, in order to carry on the works.

The Lord Chief Justice, in summing up the evidence, said there could be no doubt this was a contractor's or paper company. There was *primâ facie* evidence that the plaintiff was appointed by the company, but the defendants contended, although there was a formal appointment, there was a distinct understanding that he must look to the contractor for payment. The engineer, the solicitor to the company, and the secretary went to Parliament and obtained a Bill without a single shareholder, and the plaintiff must have known that this was Jackson's speculation and enterprise.

The jury retired, and after two hours' consideration of the evidence passed in the privacy of their room, returned into Court and gave a verdict for the defendants.

"WARMING."

Sir, Your correspondent on the above subject will find the benefit he and others desire in making coal go as far as possible in a room fireplace, by using Milne's Patent Pyro Pneumatic Room Grate, which has been adopted by Government, and is fitted into several public and private buildings. The patentee is preparing tubes to join those of the grate, so that one small fire shall warm three apartments, and in this special case partly heating a passage in their course to the rooms.

Several experiments have proved that an ordinary-sized room can be warmed to 57° Fahr., the outer air being 29°, consuming only one pound of coal per hour, while with a moderate fire 5,000 cubic feet can be raised to 63°, the outer air being 34°.

The grate fits into a common fireplace complete in itself. In party-walls, the tube communicating with the outer atmosphere is readily introduced behind the base-plate.

Another Reader.

THE STAGES AND SEATS ON THANKSGIVING-DAY.

In the Court of Queen's Bench, on January 31st, Mr. H. James, Q.C., on the part of the Corporation of the City of London, moved for a rule calling on Mr. E. B. Gammon to shew cause why an award should not be sent back to the arbitrator for an amendment, or set aside, upon the ground that there had been a mistake in making it. The facts were these:—"Upon the occasion of the Queen and the Prince of Wales going to St. Paul's upon the Thanksgiving-day, the Corporation employed Mr. Gammon to erect certain stages and seats. Afterwards a dispute arose as to the amount to be paid, and the matter was referred to the arbitration of Mr. Anson, architect. He awarded Mr. Gammon 2,082*l.* It now, however, appeared that, by some accident, credit had not been given in the award for a payment of 500*l.* by the Corporation on account, which had been made before the reference.

The Lord Chief Justice.—You are willing to pay the 1,582*l.*, about which there is no dispute?

Mr. James.—At once.

The Lord Chief Justice.—Then take a rule to shew cause; but let it be part of the rule that the 1,582*l.* be paid to Mr. Gammon.

Rule granted.

BOND-STREET IMPROVEMENT.

Sir,—In November last the Clarendon Hotel, Old Bond-street, was sold by auction, and I now hear that it is intended shortly to pull it down and rebuild, with shops or otherwise. The site has the immense frontage of 200 ft. in all, and it runs up to a part of the street which is very inconveniently narrow. Is this not an excellent opportunity to widen the street, and cannot the extremely wealthy parish of St. George, Hanover-square, afford to do this with or without the help of the Metropolitan Board of Works? The poor-rates of St. George are known to be among the very lightest of the West-end parishes. Bond-street, in the neighbourhood of the Clarendon, requires to be widened to the extent of 10 ft. or 15 ft., especially in that part near to Grafton-street, where it is wholly inadequate to the traffic. In the season of an afternoon there is a constant blockade, and the pavements are as insufficient as the carriage-way.

Entail Agent.

COMPETITIONS.

Essex. The Birdbrook School Board have selected the design sent in by Mr. Frank Whitmore, of Chelmsford, architect, for the proposed new schools and master's residence to be built in that parish.

Palmer's Endowed School, Grays, Essex.—The designs of Mr. Thomas Rook Maples, of London, have been selected. Thirteen architects competed; the designs of Messrs. Wilson & Wilcox were considered second.

STABLING AT GREY TOWERS, NEAR MIDDLESBROUGH.

The comfort and convenience of a *covered* stableyard have been exemplified during the last season's frightful rainfall in one which has been carried out, during the year just passed, for Mr. W. R. J. Hopkins, of Grey Towers, in Cleveland, from the designs of Messrs. Ross & Lamb, of Darlington. Entering through a spacious archway, beneath a clock-tower, the visitor emerges into a stable-yard, entirely covered with a glass roof, sufficient ground space being allowed to drive even an unruly *four-in-hand* into, round, and out again. The value of being able to drive into immediate shelter is felt both by host, visitors, grooms, and helpers; doubtless, also by heated and exhausted horses, as the latter are apt to suffer from the chill and exposure consequent upon unharnessing in severe weather.

The range of buildings comprises stall and loose-box accommodation for about twenty horses, with ample coachhouses, harness-rooms, washing and cleaning rooms, smithy, &c.; also two dwellings for coachman and grooms; the whole being constructed at a cost of about 5,000*l.*

"I KNOW A HAWK FROM A HANDSAW."

By an accident I did not see the *Builder* of January 11, until last night. On the 21st of May, 1843, a friend of mine, who is a native of Norfolk, made the following memorandum in my "Shakspeare":—

"The expression in Shakspeare, 'I know a Hawk from a Handsaw,' should be a 'Hawk from a Hanser,' *i.e.*, I know the heron from the hawk that pursues it. Hanser is the common word for heron in Norfolk, and other parts of England.—G. P. B." R. A. P.

TIMBER IN FLUES.

A Fire has lately occurred in an old house which I inhabit, by which it is proved that a great deal of *timber* is contiguous to the flues of the chimneys.

Can you suggest what remedy I have with regard to making the *flues* secure? D. F. G.

*** A careful examination should precede advice. The introduction of flue-pipes might be found practicable and sufficient.

NORTHUMBERLAND HOUSE.

The Metropolitan Board of Works at their last meeting adopted a report of their committee, who have been negotiating with the Duke of Northumberland or his solicitors for the transfer of the Northumberland House property at Charing-cross, to the Board for the Thames Embankment approaches. The Duke was willing to sell the property for 500,000*l.*, and the committee to recommend its purchase for that sum. The Board, in adopting the report, have agreed to refer the subject back to the committee, with instructions to carry out the recommendations of the report.

We are not glad that the old façade is to come down. We must look into the matter.

THE EFFECT OF CHARCOAL ON PLASTERING.

Sir,—Your correspondent "L. L." in your last impression asks about a remedy for injury to plaster-work arising from the sulphur emitted by burning charcoal in his kitchen.

As sulphuric acid acts immediately in destroying all animal and vegetable organism, the hair which should be in ordinary plaster would furnish the means of disintegrating the fibre of the plaster, as well as acting on the surface of the same injuriously, if it is unprotected by any covering of a character sufficient to resist the action of the gas.

No doubt, Keene's, Parian, or Martin's cement, would be sufficient, or a coating of the same, from ⅛ in. to ¼ in. thick, on the surface of the ordinary plaster-work; but pure, coarse, plaster of Paris, would be cheaper, and would suit the purpose, or a coating of the same about ⅛ in. to ¼ in. on the surface of the ordinary plaster would do.

Of course, *pure water* must be used in all cases; foul water would furnish material for the sulphur to act upon.

John Davidson.

CHURCH-BUILDING NEWS.

Manchester.—The new church of St. Martin, German-street, Oldham-road, has been consecrated. The new parish is composed of part of St. Peter's, Oldham-road. The site cost 1,600*l.* The church consists of nave, 30 ft. wide, and aisles and chancel. The tower (the spire to which is still wanting) and main entrance are placed at the German-street end of the north aisle, and nearest to Oldham-road. A second entrance is provided from German-street into the south aisle, and each of these protected by an inner wooden porch for the prevention of draughts. The church accommodates 531 adults (320 of the sittings being wholly free and unap-

propriated), and cost, including tower, under 3,000*l*. The front, next German-street, and the tower are of Pierrepoint walling, with stone dressings, and window and door tracery.

York.—St. Martin's Church, Coney-street, which has been long in the hands of the restorers, is now completed, and opened for divine service. The additions, and in some instances transformations, are many, and some of them are works of an ornate and expensive kind. An entirely new stained-glass window has been put in at the east or sanctuary end, and a new organ has been placed in the church. The east window is the work of Messrs. Heaton, Butler, & Bayne. This window consists of five principal lights, and each of these contains a couple of picture panels of sacred pictorial subjects. The smaller top-lights are filled in with stained glass geometrical figures at present; subsequently, we believe, to be supplanted by designs in accord with the pictures in the large lights below them. The seats for the congregation are all new and are open, of oak, carved at the ends; and the choir-stalls are the same. The roof,—of pitch-pine, stained —is new, and covered by lead externally. The seats, choir-stalls, screens, reading-desk, pulpit, and roof-work, have all been done by Mr. Wignall, joiner, while the carving of the woodwork has been done by Mr. Jones, wood-carver. The window-glass, stained and otherwise, has been taken out and cleaned, and new leaded, and replaced by Mr. Knowles, glass-stainer. New gas-standards, rising from the floor, in tracery designs up the standards, topped by gaseliers have been placed in the church by Mr. Holmes, gasfitter. A row of gas-lights has been placed under each sill of the clearstory windows at the east end, for the purpose of lighting up the sanctuary and choir-stalls. All the masonry has been done by Mr. Keswick, builder. The new organ, by Brindley & Forster, of Sheffield, having decorated metal pipes on its west and south sides, has been placed in one of the arcades of the north aisle at its east end. The whole outlay for the restoration of the church, inclusive of the new organ, is about 3,500*l*. The parish subscription to this amount was 800*l*. The organ cost about 500*l*. out of the sum total.

Winkleigh (Devon).—All Saints', Winkleigh, now in process of restoration, stands upon high ground, and not only are the hills of Dartmoor seen distinctly from its site, but from the top of the tower no less than twenty-four parish churches may be counted. Several years ago Mr. Ewan Christian, architect, restored the chancel, and now the rest of Winkleigh Church has been almost entirely taken down, and is being rebuilt from the designs and under the supervision of Mr. John F. Gould, of Barnstaple. The north wall and the lower part of the tower are old; so also are the granite piers and arches of the arcade separating the nave from the north aisle, and about half the roof-timbers: excepting these and a few other minor items, all the work will be new. The upper part of the tower has been rebuilt, and surmounted by carved pinnacles. It rises to a height of 80 ft., and has been further strengthened by new buttresses. These latter, as well as the belfry windows and the new windows of the church, are of Hatherleigh stone, the walls of the structure throughout being of local stone, quarried in the immediate neighbourhood. Middlecott stone, a warm, red material, is being introduced in the south porch and other parts of the building. The tower will be utilised by a peal of six new bells, supplied by Messrs. Mears & Stainbank, of Whitechapel; and there will be a new clock, by Funnell, of Brighton. In plan, the church consists of chancel, nave, north aisle, the Loosedon aisle, organ-chamber, vestry, and west-end tower. The interior is still in the hands of the artificers. The roof, partly old, is of English oak. The effect of this roof will be enhanced by painted decorations. A considerable amount of mural decoration is also contemplated. The seating is to be all of the best English oak. A new organ is in the hands of Messrs. Hill & Sons, of London. It will have a case of oak, designed to harmonise with the other fittings of the church, and will be placed in the new organ-chamber on the north side of the Lady-chapel or north-choir aisle. The architect employed is Mr. John F. Gould, of Barnstaple. He is represented upon the spot by Mr. George Vickery, as clerk of the works. The stone and wood carving, of which there is a great deal, has been placed in the hands of Mr. Harry Hems, sculptor. Mr. J. Dendle, of Barnstaple, builder, has the contract for all the carpentering and joiner's work. Mr. G. H. Pinckard, of Godalming, Surrey, is the donor of funds for the carrying out of the restoration; and the organ is the donation of a lady connected with his family. It is expected that the church will be ready for opening about midsummer.

Hastings and St. Leonard's.—It is in contemplation to erect a second church in St. Paul's parish, mainly for the use of the poor who at present attend divine worship in St. Paul's Schoolroom. The present parish church is found to be totally inadequate to the demands for seats made upon it, and another church is to be erected in a less-fashionable part of the parish. To aid in this work the rector appeals to his parishioners at large. It is proposed to purchase an iron church for 900*l*., and towards this amount the rector has himself contributed 200*l*. There is no doubt, it is believed, but that the money will be almost immediately forthcoming.

Ticehurst.—St. Augustine's Church, Flimwell, has not been built many years: it is a district church carved out of the old extensive parish of Ticehurst. The present incumbent (the Rev. J. C. Eagleton), aided by several friends, has raised funds for putting a steeple on the square tower, and for having a peal of bells. The works were being performed by Messrs. Carrick & Balcomb, builders, Ticehurst. On erecting the framework of the steeple, and at the point of rearing the main upright centre-piece of timber, the gear work gave way, and it was precipitated with great force into the roof of the church, knocking a hole right through, shattering the slates in all directions, and the pieces of timber that fell snapped, from the great force, in four distinct pieces, like so many pieces of tobacco-pipe. This will be a loss to the contractors.

Hadnal (Shropshire). — The parish church, which has been closed for some time past for the purpose of undergoing a complete restoration, has been reopened. The improvements comprise the removal of the gallery and pews, and of the plaster from the internal walls, which have been repaired and pointed, dressed stone being substituted for plaster in the window jambs, heads, and sills. New boarded and quarry floors, and a new warming apparatus, have been provided; and the nave is fitted with convenient seats of pitch pine, varnished. A trench has been formed round the church, and the churchyard has been drained. The contractors were Messrs. Bowdler & Darlington, who have carried out the work, from the design and under the superintendence of Mr. Edward Haycock, architect. The warming apparatus was supplied by Mr. W. Dodwell. The total outlay has been 321*l*. When funds are forthcoming, it is intended to add a small chancel (for which plans are already prepared), and, if possible, a new vestry and organ-chamber.

Bradford.—A meeting in furtherance of a project to erect a new church in connexion with St. Jude's, has been held. The Rev. J. Eddowes, who presided, said it was intended to build a useful church, with clergy-house and schools. The site has been secured, and part of the purchase-money paid. A resolution was passed, pledging the meeting to use its best endeavours to erect a church, to be dedicated to St. Mary Magdalene, in the White Abbey district; and a committee was appointed to carry out the resolution. About 1,700*l*. were subscribed at the close of the meeting.

SCHOOL-BUILDING NEWS.

Great Missenden (Bucks).—Two new national schools, with class-rooms and teachers' residences, were on Thursday, the 16th ultimo, opened here with considerable *éclat*, by the Duke of Buckingham and Chandos, who was supported by a large number of the local nobility, clergy, and gentry. The buildings are intended to supply the educational wants of Great Missenden parish, under the national system. The school-rooms accommodate together 210 scholars. They are of brick and stone in Early English design, with uncoloured brickwork inside. The cost of the school-rooms only has been about 4*l*. per head, and the total expenditure somewhat under 1,500*l*. The site of half an acre at Lee was presented by Mr. C. G. Du Pré, M.P. The contractor was Mr. F. Taylor, of Uxbridge; and the architect, Mr. Arthur Vernon, of High Wycombe. The whole of the works under the contract were executed at about 25*l*. under the stipulated sum.

Amersham.—A new National School is to be erected at Amersham, Bucks, to accommodate 284 children, and an Infant School at Woodrow, in the parish, for thirty. It is expected that this same voluntary effort to provide the requisite schools will be much cheaper than to allow the formation of a School Board. Half an acre of the glebe land is secured in a favourable position, and the works are expected to be commenced forthwith. The commission has been entrusted to Mr. Arthur Vernon, architect.

Westerdale (Yorkshire). — Contracts having been signed, the new school is to be commenced at once. The plans and specifications have received the seal and approval of the Committee of Council on Education. The school, designed by Mr. Henry Perkin, of Leeds, is in the Gothic style, and is to be built of hammer-dressed wall-stones, with bosted-hewn dressings, having open-timbered roof, plastered between the roof spars, covered with Welsh slates, with bell-cote on the ridge of dressed timber, slated, and finished with iron terminal. The plans were submitted in the autumn by Mr. David Hartley to the Hon. Colonel and Lady Caroline Duncombe, who expressed their entire approval of them, and the funds for the erection of the school are almost entirely raised.

FROM SCOTLAND.

Leith.—The Post-Office authorities are endeavouring to procure a site for a new post-office of much larger dimensions than the very small existing one in Bernard-street. The building plans are in course of preparation, and the erection will, it is understood, be of a handsome, if not highly ornamental, character, and will be within easy distance of the Exchange Buildings and the Corn Market.

Castlecary.—For many years past extensive mining operations have been carried on in the neighbourhood of Castlecary Station, on the Edinburgh and Glasgow section of the North British Railway, and in the course of these operations the limestone—the mineral wrought, —has been excavated for some distance underneath the railway. About the new year a "sit" took place, and in consequence the whole railway track for about a quarter of a mile subsided to the extent of nearly 2 ft. Fortunately, the trains which passed over the place met with no interruption before the mishap was discovered. The station-house and offices were very severely injured by the occurrence, and in some places openings occurred through which a man could thrust his arm. In fact, the station altogether presented a very dilapidated appearance. In a short time the railway was repaired, but fears were entertained of a further subsidence, which has taken place this time to the eastward of the station, and stretching towards the lofty viaduct which spans this part of the glen. The subsidence was about 2½ ft. in depth, and of considerable length, and a large body of the *employés* have been busy raising the line to its normal level. Although this subsidence reached very close to the viaduct—one of the highest on the line,—it is not considered probable that it will go further in that direction, as the bridge is resting upon the solid, and for some distance the strata are intact. Curiously enough, by the last "sit" the condition of the station-house has been much changed, and the wide openings which were previously made have to a great extent been closed by the stones regaining their old places.

Glasgow.—A meeting of gentlemen interested in the formation of a Technical College in Glasgow has been held. It was stated that 12,000*l*. have already been subscribed. Various suggestions and proposals as to the scope and nature of the institution were made, and a few additional members of committee appointed.

Keith.—The new town-hall, the gift of Mr. William Longmore, banker, Keith, has been opened. Mr. Longmore at the opening handed over the titles of the property to nine trustees for the behoof of the town and parish of Keith. The hall is expected to cost 2,000*l*. A portrait of Mr. Longmore, which will cost 150*l*., has been presented to that gentleman as an acknowledgement of his gift.

Liverpool Architectural and Archæological Society.—The paper read on Wednesday evening was by Mr. Samuel Huggins, "On the Revival of Art in Liverpool." The council are arranging to hold a *soirée*, in April next, commemorating the twenty-fifth anniversary of the society.

Books Received.

Manual of Mythology. By Alexander S. Murray, of the British Museum. London: Asher & Co. 1873.

Although founded on a popular German work, "Der Olymp," written by Herr Petiscus, Mr. Murray has made this manual his own by general revision and a new introduction. He has added too, a brief account of the Scandinavian, Old German, the Indian, and Egyptian mythologies. Read as a whole, the book gives a very interesting account of the growth and influence of the early religions.

In the myths, awkward as some of them may sound in modern ears (to a people more fastidious as to words than acts), morality or immorality was scarcely involved. For instance, when we find the natural process by which the clouds pour out their rain upon the earth and are again filled from the sea, described as Hermes (the god of rain) stealing the cattle (clouds) of Apollo, we cannot attach to the story the idea of criminality which it at first suggests. Similar interpretations we must be prepared to seek throughout the mythologies of the Indo-Germanic races. It is vexatious to find the Olympian deities of our childhood such as Neptune, Mars, Vulcan, Juno, disappearing into Poseidon, Ares, Hephaestos, and Hera. But it cannot be helped, with a view to the rest of Europe, and Mr. Murray is never above giving both names. A number of engraved illustrations increase the value of the book, which is addressed as well to the general reader as to the higher classes of schools and art-students. The author is correct in saying that, in forming an opinion of the usefulness or otherwise of a knowledge of the ancient mythology, whatever its apparent or real shortcomings may have been, it exercised enormous influence on the education and life of at least two of the most highly-cultivated nations of the earth.

VARIORUM.

We take a paragraph from "Facts and Hints" (Cassell & Co.) about charcoal:—"Billets of any kind of wood are heaped up into piles, usually in the form of pyramids. The whole is then covered with earth, leaving an aperture at top and bottom for a current of air. The pile is now set fire to, and when completely ignited throughout, the apertures are closed, and the fire consequently smothered. In this process all the juices of the vegetable, its oil, &c., are dissipated, leaving little more than its woody fibre. It loses about three-fourths of its weight, and what remains is called charcoal. This charcoal contains, besides carbon, small quantities of different kinds of earth, and it is now supposed by some a proportion of oxygen. When charcoal is burnt, its carbon unites with the oxygen of the air and so much heat as to give it the gaseous form, and constitutes carbonic acid gas, or fixed air."——*Cassell's Magazine* for February has a paper on the Darien Canal, by Mr. W. H. White. The writer says,—"The real difficulties of this route lie in the eight miles of mountainous country between the plain of the Napipi and the Pacific. To pierce this a tunnel, or deep cutting, or a combination of tunnelling and open cutting is essential. Commander Selfridge recommends a tunnel five miles long, 120 ft. high, 70 ft. wide, and containing a depth of water of 26 ft.! This tunnel would form the summit-level of the canal, and would be 130 ft. above the sea, or 90 ft. above the junction of the Atrato and Napipi. On the eastern side it would be approached by a channel 120 ft. wide at the surface, from 90 ft. to 100 ft. wide at the bottom, and containing 26 ft of water. Deep cutting would be required for some distance from the eastern end of the tunnel, and nine locks capable of containing the largest ships, are proposed for the purpose of overcoming the rise of 90 ft. The western end of the tunnel would be 130 ft. above the Pacific, and almost close to the sea, a series of locks and basins being provided for the transfer of ships from the sea-level to the canal."——*Iron* says of the St. Gothard Tunnel:—"By the latest Swiss advices, the works for this undertaking seem to be actively pushed forward. The dimensions of the tunnel are the same as at Mont Cenis,—6·8 by 7·6 mètres; its length is 15,568¾ mètres (15½ kilomètres, or about 9½ miles, ascending 220 mètres; gradient, 1 in 70), from Goschenen, on the Cisalpine, to Airolo, on the Trans-Alpine side. Progress has already been made by the contractor, M. Favre, with the headings at each end of the tunnel. The summit-level is 1,152·3 mètres or 3,780 ft. above the level of the sea."——The *Art Journal*, treating of the Fish in Ornamental Art, says,—"We cannot now presume to positively define the motives that led to the symbolic use of the fish in Christian art. It is curious that the letters of the Greek word for fish are also the initial letters of the words 'Jesus Christ, the Son of God, the Saviour,' while Tertullian and several others of the early writers suggest a fresh train of thought, since they frequently term their converts *pisciculi*, in allusion to their new life through the waters of baptism. In some instances the fish may have been rudely cut on the slab in token that the deceased was a fisherman or sailor; but as signs that clearly refer to the worldly occupations are few in number, while the fish-form is very abundant, we may, we think, very reasonably assume that in most cases, at least, it was employed as a symbol, not in the lower, but in the higher significance. In the works of the early illuminators, many examples of the use of the fish will be found, in some cases as an accessory, while at other times the flexibility of the creature is taken advantage of in the formation of entire letters: a C may be composed entirely of the fish-form, while two in combination are used to form the letter O."——With last Saturday's edition of the *Reading Mercury* were re-issued copies of that journal published February 1st, 1723, one hundred and fifty years ago. The *fac-simile* illustrates the diminutive size of newspapers a century and a half ago, the dimensions of its pages not exceeding 9 in. by 7 in. Two paragraphs in it serve to show the state of London at that time:—"*London*, January 28. On Saturday night last a clergyman was attacked in a chariot in High Holbourn, at seven in the evening, and robbed of 15*l.* besides his watch." "On Saturday night last a gentleman, in his chariot, passing the King's-road near Chelsea, four footpads suddenly rushed out of a hedge, commanding the coachman to stand; but he driving on, they fired a pistol at him, and he fell from the box, and broke his arm with the fright; whilst the footman behind discharged a blunderbuss amongst the rogues, and killed one of them on the spot; the others made their escape."

Miscellanea

Royal Institution, Albemarle-street.—The laboratory department here, at the back of the main building, has been rebuilt under the direction of Mr. Harwood, architect, Messrs. George Smith & Co. being the contractors. The *Metropolitan* gives some particulars:—There are three floors; the lowest, the laboratory proper, devoted specially to chemical operations, with a large room, 53 ft. by 36 ft., and 15 ft. high, and a small open yard for ventilation closely adjoining, on the other side of which are small brick chambers, containing several various sets of hot-water apparatus in use for different purposes about the general structure, and fitted up some time ago, severally, by Messrs. Norris, Quarm, & Clements, Mr. Lynch White, and Mr. Perkins. The floors are all of Dennett's patent, *i.e.*, concrete, and the roof of the same material. They are carried upon cast-iron columns where required, and wrought-iron stancheons, made by Messrs. Moreland & Sons, of Old-street, and the floors and roof are of asphalte. This portion of the work has been executed by Mr. W. Wright, of Duke-street, Westminster. On the floor above is another laboratory, more particularly devoted to scientific investigations as distinguished from chemical. Clark's patent steel revolving shutters are provided to the external windows, and a skylight is protected in a similar way. On the floor above is what is called the lecture-room, about 22 ft. by 12 ft., communicating with the already existing theatre by means of a new main staircase.

Society for the Encouragement of the Fine Arts.—On Thursday evening in last week, at the Society's rooms, 9, Conduit-street, Mr. T. H. Thomas delivered a lecture—the first this season,—on Greek Art, Mr. Soloman Hart, R.A., in the chair. It was numerously attended. On the walls of the gallery were arranged some careful studies from the pencil of the lecturer of the *chefs-d'œuvre* still remaining to us of the Classic beauty of old Greece. At its conclusion, the chairman, Mr. Sadler, and Mr. George Browning made a few critical remarks.

The Improved Industrial Dwellings Company (Limited). Established 1863.—The report prepared for presentation at the nineteenth half-yearly meeting of shareholders states that "the directors recommend that the usual dividend, at the rate of 5 per cent. per annum, free of income-tax, be paid, which will absorb 3,334*l.* 13s. 1d., and leave a balance of 2,403*l.* 19s. 8½d. At 31st December, 1872, 1,268 dwellings were erected and occupied, and 262 were in course of erection. The buildings in Crabtree-row, Shoreditch, were not completed by the contractors until the end of September, and those in Ebury-square until the end of December. In both cases the applications were greatly in excess of the number of dwellings, and the buildings were at once fully tenanted. Owing to the difficulties which existed in the building trade, the directors were unable during the past year to proceed with new works; but they are now taking steps to obtain tenders for covering the two sites in Commercial-road, Whitechapel, and the dwellings will be commenced within the next few weeks. The additional site in Pimlico, offered by the Marquis of Westminster, will be taken up shortly, and the directors believe they will be able to obtain a small site in Stingo-lane, Marylebone, negotiations having been re-opened with the Metropolitan Board of Works for that purpose. The directors, therefore, hope to provide during the coming year nearly 250 additional tenements, to accommodate about 1,100 persons.

Progress shown by the Income-Tax.—The property and profits assessed to Income-tax in the United Kingdom for the year ending the 5th of April, 1871, amounted to 419,850,798*l.*, being 21,622,000*l.* more than in the preceding year. There was an increase of 20,311,000*l.* in England, and of 1,359,000*l.* in Scotland, but a decrease of 48,000*l.* in Ireland. The profits of trades and professions, public companies, railways, ironworks, gasworks, &c., assessed under Schedule D for the year 1870, yield an increase of 10,644,000*l.* in comparison with those for the year 1869—9,833,000*l.* in England, 719,000*l.* in Scotland, 42,000*l.* in Ireland. In 1853 the gross annual value assessed was 47,559,474*l.* for lands, &c., and 46,959,338*l.* for houses; in 1870, 56,540,000*l.* on lands, &c., and 82,732,000*l.* on houses. The profits charged to Income-tax in respect of "trades and professions" under Schedule D, in Great Britain, were 75,008,000*l.* in the year 1853, and 129,773,000*l.* in the year 1870-71. In order to make this comparison, a portion of the present constituents of Schedule D—viz., railways, canals, mines, &c.,—has been excluded from the figures for 1870, because it did not form part of that schedule (but of Schedule A), in 1853. A comparison of the profits assessed under those heads for the same years gives remarkable results. The net receipts from Income-tax in the year ending the 31st of March, 1872, amounted to 9,328,102*l.*—viz., 3,325,492*l.* under Schedule A, 434,903*l.* under Schedule B, 897,541*l.* under Schedule C, 4,125,324*l.* under Schedule D, and 544,842*l.* under Schedule E.

The Newington Butts Improvement and the Building of the New Churches.—A public meeting, which was held in St. Mary's School-room, on Tuesday evening, for the purpose of raising funds for the re-building of the new parish church, in place of the old church, which is to be removed for the widening of Newington, showed that, notwithstanding all difficulties in connexion with the improvement in question had been removed, its ultimate accomplishment is still a matter of uncertainty. It transpired, from what took place in the course of the discussion at the meeting on Tuesday, that the Act of Parliament under which the improvement is to be effected provides that, unless a sum, in addition to the like sum paid by the Board of Works (which is 5,000*l.*), be raised before the end of next year, the improvement cannot be accomplished, as the powers of the Board for that purpose come to an end. It was therefore urged that it was of the greatest importance that a vigorous effort should be made to raise the money on the part of the parishioners and others who are in the habit of using the thoroughfare, which is at present dangerously narrow. The meeting resulted in several large sums being subscribed, in order that such a pressing improvement may at once be carried out.

Cambridge Slade Professorship.—Mr. Sidney Colvin, M.A., of Trinity College, has been elected Slade Professor of Fine Arts at Cambridge, in succession to Sir M. Digby Wyatt.

Earthquakes. — These manifestations of physical commotion are still pretty frequent here and there throughout both the western hemisphere and the eastern, but especially in the eastern. On the 19th ult., an earthquake startled the inhabitants of Rome from their sleep. The shock was repeated two or three times. The Baron de Cosson, writing from Cairo, says that a shock of earthquake was felt by many persons there on the 12th ult. The oscillations lasted about a minute and a half. The movement resembled that experienced on a very small boat in a little chopping sea. Five hundred people have been killed by an earthquake in India. Information received at Madras stated that on the night of December 15th, a shock of earthquake took place, from the effects of which the people throughout the district safely escaped except in the town of Lehree, in Eastern Catchi and Zebri, where 500 lives have been lost from the fall of houses and walls, and only twelve persons were saved. The earthquake was also felt in the Rohree division, at Sehwan, Dadur. At Shikarpore the shocks were so much felt in the town that small articles were upset. The shocks were also felt at Jacobabad.

Great Fire at the Royal Military Academy, Woolwich.—On Saturday morning of last week, about four o'clock, a fire broke out in the Royal Military Academy at Woolwich, and before it was extinguished the large central block, known as the Clock Tower, was totally destroyed. This building was two stories in height, and measured about 90 ft. square. It contained the class-rooms for the students, the library, and other offices. All these rooms were entirely burned out. The books used for educational purposes and the papers belonging to the students were saved, but the military library was lost. It is believed that the fire arose from a flue connected wirh the hot-water apparatus for heating the building. A court of inquiry, composed of officers representing the various branches of the service at Woolwich, commenced an investigation, on Saturday, into the circumstances attending the fire. At present the evidence clearly points to the flue of the heating apparatus as the origin of the fire: and now that the mischief is done, it seems that this flue, which could never be properly swept, has been long regarded as a source of danger by many of those connected with the establishment.

Overcrowding at Workington.—The *Carlisle Journal* gives a sad account of the want of house accommodation and overcrowding at Workington. The writer says:—"The population during the last three years has increased by nearly as many thousands, owing entirely to the extensive and rapid development of the iron trade. The building of houses has not kept pace with the increase of population, and the consequence is that the value of house property has advanced upwards of 100 per cent. Some new houses have been built, but for every one erected there is half a dozen tenants. Many of the persons inhabiting such places have been taken seriously ill with rheumatic fever and other ailments, brought on by the damp and unhealthy state of the rooms in which they had taken up their abode. The most serious evil, however, with which Workington is afflicted at the present time is overcrowding. The town is literally swarming with people whose habits, under the most favourable conditions, are not conducive to health, and who are huddled together in a state of filth and misery which is positively frightful."

St. George's, Hanover-square, and its Sewer-men.—The St. George's, Hanover-square, Committee of Works have considered a report of a sub-committee, recommending that the wages of the sewer-men and the flushers should be increased. The surveyor, Mr. H. T. Tomkins, said St. James's, Westminster, paid its sewer-men 5s. per day, finding boots, a slop, and a hat; St. Luke's, Chelsea, 4s. 8d.; the Westminster District (St. Margaret and St. John) Board, 6s., finding boots; Paddington, 5s. 4d.; Hampstead, 4s., with boots; Marylebone, 4s. 6½d., with boots. As for ordinary sewer-men, St. James's paid 3s. 10d. and 4s. per day; Chelsea, 3s. 10d.; Westminster District, 3s. 10d. and 4s. 2d., with boots; Paddington, 4s., with boots; Hampstead, 3s. 6d., with boots; St. George's had one man at 3s., one man at 3s. 2d., four men at 3s. 10d., one man at 4s., and two men at 4s. 2d. per day. Mr. J. Morris moved that the sewer-men have 1s. extra per week, which he considered equal to the wear and tear of the boots. The motion was adopted.

Belfast Architectural Association.—A meeting of the Belfast Architectural Association was held on Monday evening last, at the Museum. Mr. Robert Young occupied the chair. Mr. R. Watt read a paper on "Architectural Education." The reader referred to the great want that existed for a thorough systematic training for architectural students, especially before entering an office. He suggested that, as a step in the direction of supplying this want, architecture should be recognised as well as engineering in the Queen's Colleges, and advocated the appointment of a lecturer on architecture at each college. He recommended that the Belfast Architectural Association, until something better be substituted, should take up this work in Belfast, and, as a commencement, open classes for instruction in the science and history of architecture, and offer prizes to the younger members for drawings. The Association have already a class of design meeting fortnightly, and which is largely attended.

Society of Engineers.—At the first ordinary meeting of the Society of Engineers for the present year, the president, Mr. Jabez Church, presented the premiums of books which had been awarded to the following members for papers read during the past year, viz., to Mr. E. G. Bartholomew, for papers on Electric Telegraphy; to Mr. W. H. Fox, for a paper on continuous Railway Brakes; and to Mr. H. Davey, for a paper on Milford Haven and its new pier works. The president then delivered an inaugural address in which he reviewed the progress of engineering practice during the past year, noticing in the first place the advances made in sanitary engineering, that being the branch of the profession in which his practice chiefly lay. He then proceeded to notice successively the inauguration, progress, and completion of various large and important engineering works in the metropolis, in the provinces, and abroad.

Competition Designs for the New Chester Workhouse.—A correspondent of the *Chester Chronicle*, under the signature of "Fair Play," gives some good advice. He says:—"As the designs for the new proposed workhouse have now been sent in, I would beg to suggest to the authorities that they should engage a large room, to properly exhibit the merits of each; and, if possible, after the award has been made, a public exhibition of the drawings should take place; as there will probably be forty or fifty sets of drawings, which will cost the competing architects from 50*l.* to 60*l.* each set, and these, if mounted on stretchers, as they generally are, will require an area of 150 superficial feet of wall-space to each set of designs. Also I would suggest, for the satisfaction of all parties, that a disinterested architect should be called in to assist the guardians in arriving at an ultimate decision upon the merits of those to whom premiums are to be awarded."

Fires in Churches.—A fire broke out the other day in St. Stephen's Church, Pratt-street, Camden Town. The fire was discovered by smoke issuing from the roof. Several engines were quickly on the spot, and the firemen soon extinguished the flames, but not until about 15 ft. of the roof was much damaged. The fire was supposed to have been caused while the church was being heated previously to the commencement of morning service.——Abberley Parish Church, situated about a mile and a half from Witley, Worcestershire, has been almost totally burnt down. The entire edifice was enveloped in flames when the fire was first discovered, and nothing was left standing but the tower and two of the outer walls. It is supposed that the fire was caused by the overheating of a stove. The erection of the church, which was completed in the year 1852, cost upwards of 8,000*l.* The edifice was partially insured.

A New Public Hall for Leicester.—A meeting of the members of the Leicester Literary and Philosophical Society, and other gentlemen interested in the matter, has been held in the mayor's parlour, at the town-hall, the object of which was to consider the advisability of taking steps towards the erection of a new and commodious hall in Leicester, in which public lectures and meetings can be held. It was resolved,—

"That this meeting cordially commend to public support the proposal to raise the sum of 3,000*l.* towards the expense of providing, in connexion with the museum, a large lecture-hall, and suitable accommodation for the School of Art; such sum to be offered to the corporation of Leicester, on condition that they spend an additional sum, of at least equal amount, on the accomplishment of the two objects."

Leeds, Castleford, and Pontefract Junction Railway.—The object of this Bill now before Parliament, and unopposed, is the construction of railways between Garforth, on the Leeds and Selby Line of the North-Eastern Railway, and Castleford, on the York and North-Midland Line of the same Railway, and the Pontefract and Methley Branch of the Lancashire and Yorkshire Railway at Houghton, with junctions to and power to use the North-Eastern Railway Company's Railway and Stations at Garforth and Castleford, and a branch to the navigable River Aire, in the parish of Ledsham. It is promoted by the various landowners interested and backed up by several of the large companies. If an act be obtained, it will bring into the market a considerable amount of coal, so that the public may be considered interested in the success of the scheme.

Protection of Norwich Cathedral from Fire.—Efforts are being made to minimise the damage to Norwich Cathedral should a fire unfortunately break out in any part of the building, and the chief constable, and a number of the fire brigade, with Mr. Brown, the architect to the Cathedral authorities, have conducted an experiment (under the direction and in the presence of the Dean) at the south-east side of the Cathedral, to ascertain to what height water could be thrown from the hydrant on Live's Green. It was evident that water could not be thrown to a greater height than 50 ft. or 60 ft., not sufficiently high to reach the roofs of the aisles, much less that of the nave; and steps will, it is said, be taken to put down a hydrant with shorter hose in the Palace Garden. It is also contemplated to provide hydrants at other places.

Inhabited House Duty.—The tax on inhabited houses in Great Britain was charged, in the financial year 1870-71, on 178,796 shops or warehouses, of the aggregate annual value of 9,198,808*l.*, the gross amount of the duty charged on them being 229,953*l.*; also on 68,635 beer-houses, of the annual value of 3,588,428*l.*, the amount of duty being 89,686*l.*; also on 28,167 farmhouses, of the annual value of 679,203*l.*, the duty amounting to 16,939*l.*; and also on 520,795 dwelling-houses, of the value of 27,548,687*l.*, the duty amounting to 1,032,208*l.* The total is 796,393 houses charged, their annual value being 41,015,126*l.*; and the gross amount of duty charged was 1,368,786*l.* Only houses of 20*l.* per annum and upwards are taxed.

A Grateful Architect.—A correspondent writes,—"The subscriptions in promotion of the scheme for providing a townhall for Paisley, have received a most remarkable stimulus. The sum collected amounts to about 10,500*l.*, thus leaving about 500*l.* to be raised by Mr. Clark and those gentlemen who have embarked with him in the undertaking. Mr. Clark states that a well-known architect in London, on seeing the notices in the *Glasgow Herald*, regarding the proposed hall, has, unsolicited, offered to furnish the committee with a design and plans as a contribution from one who cherishes the remembrance of many agreeable associations with the old town!"

Inventors' Institute.—On Thursday evening in last week, Mr. F. H. Varley in the chair, a paper was read by Dr. Calantarients "On a Means of Preventing Pipes or Vessels Bursting from the Effect of Frost." The theory of the invention was that as water in passing from the fluid to the solid condition expands one-twelfth its bulk, if a space were secured inside the pipe equal to the additional volume of the ice, the expansion will take the direction of this space, and fill it without producing extra tension on the pipe. An internal air-tube of india-rubber was the means proposed, and the idea met with favour in the long discussion which ensued.

Norwich Surveyorship.—The town council, after rejecting a motion for rescinding a previous resolution that the new city engineer and surveyor shall not be allowed to take private practice; also resolved, "That the salary of the surveyor be 475*l.* a year, with the same privileges as Mr. Morant enjoyed, the corporation providing an assistant-surveyor." Mr. Lake was then appointed the assistant-surveyor; and the town clerk was instructed to advertise for a surveyor.

English for Japan.—It is seriously asserted that endeavours will be made by the ruling powers of Japan to substitute for the native tongue of that country English as the best and most copious vehicle of thought.

Walsall Cottage Hospital.—The annual meeting of the subscribers to this institution has taken place at the hospital. The annual balance-sheet showed that the income for the year amounted to 1,169*l.* 17*s.* 3½*d.*, and the expenditure to 700*l.* 9*s.* 4*d.* The annual report opened with congratulatory sentences on the increase of the contributions. About two-thirds of the more serious cases brought into the hospital were from accidents in connexion with mining. 208 cases had been treated during the year in the in-patient department, and 2,182 in the out-patient department.

Purchase of Railways by Government.—The *Birmingham Daily Post* gives prominence to the following announcement:—We have reason to believe that the acquisition of the railways by the State is now seriously engaging the attention of the Government; and that an investigation is in progress—conducted by a member of the Cabinet, in conjunction with one of our ablest permanent officials—to collect information necessary to enable the Government to come to a conclusion as to the opportunity and the terms of purchase. It is not improbable, we are told, that a beginning may be made next year with the Irish railways.

Clement's Inn, Strand.—The Society of Clement's Inn are forming a new roadway to their property, the value of which will be much increased by the erection of the new Law Courts, close by. Losing their old entrance they acquired from the Commissioners of Works a site for a new roadway, 25 ft. wide, which will open into the Strand, just in front of St. Clement Danes' Church. This work is now nearly done, and has been carried out by Messrs. Dove Brothers, from the design of Mr. Raphael Brandon, architect to the society. The road has a subway, containing the drains, and gas and water pipes.

The Law Courts. -According to the *Law Magazine*, the quantities being ready, builders have been invited to compete, and in a few weeks tenders will be delivered. The work is divided into two contracts, the first containing the central courts and rooms attached to them; and the other, the east wing facing Bell-yard. The builders tendering are about twenty in number. According to another statement nothing is to be done till the proposed scheme of Law Reform has been brought in.

Patent Pipes and Boilers.—The patents of Mr. T. S. Truss, C.E., of the Crown Works, Friar-street, London, for jointed pipes, coils, and boilers, are about to pass into the hands of a new company, to be named the Patent Pipe and Boiler Foundry Company (Limited), with a capital of 80,000*l.*, in 16,000 shares of 5*l.* each, of which 11,000 are offered for subscription, as appears from our advertising columns. The patents of Mr. Truss are well known. This business is an old-established one.

New Bridge over the Dwina. -The new railway-bridge over the Dwina, near Riga, is one of the most important works lately undertaken in Europe. Its length is 2,444 English feet. The undertaking was promoted by a joint-stock company, and executed under the supervision of Colonel von Struve, of the Engineers. The bridge was commenced the 22nd of May, 1871, and on the 27th of October, 1872, was so far completed that the first locomotive could run over it.

Reading Architectural and Archæological Society.—On the 22nd ult., an essay on "Stained Glass" was read by Mr. Clayton R. Rolfe, at the Athenæum. The essay gave an account of the various styles of painting in glass, and in the latter part of his paper showed the necessity existing, in the present phase of ecclesiastical art, for a greater harmony between the ornamental glass and general architecture of our churches.

Miss Susan Durant, the well-known sculptor, is dead. She was a pupil of Baron de Triquetti, and was constantly commissioned to execute works in her own peculiar line by her Majesty and other members of the Royal family. Miss Susan Durant was widely known both in London society and also in Paris, where her death has recently occurred before attaining middle life.

Burning of Court-house, Quebec.—The Court-house in this city has been destroyed by fire. All the records of the colony, the register of titles, and other deeds, together with many important historical documents, are burnt.

The New Domesday Book.—It is asserted by the *Echo* that the work is rapidly progressing under the management of the Local Government Board, at whose office half a dozen gentlemen are constantly employed upon the returns, the local operations being conducted by the clerks to the boards of guardians, who are specially paid for the labour. Can this be correct? Surely some other organisation would be necessary?

An "Amalgamated Labour Union."—A giganticas sociation, to be called the Amalgamated Labour Union, is said to be in course of formation. It is to comprise the Amalgamated Society of Railway Servants, Amalgamated Society of Lightermen and Watermen, the Labour Protection League, and the Carmen's Association, the total strength of which is estimated at 100,000. Its great object, of course, is to protect the interests of labour.

The City Flour Mills.—According to the London correspondent of the *Manchester Guardian*, the plans for rebuilding the large and so-called fireproof City Flour Mills are now complete. The estimated cost of restoring the fabric and the machinery to their original status is about 40,000*l.*, nearly the whole of which falls upon the insurance companies.

Middlesbrough.—The erection of commodious buildings for the "Erimus" Club is to be proceeded with immediately, at a cost of 2,500*l.*, from the plans of Messrs. Weatherill & Moses, architects, of Stockton-on-Tees, whose designs were selected in a limited competition. This club derives its name from the motto on the Middlesbrough coat of arms, "Erimus."

Poplar.—According to the *Daily Chronicle* an action has been taken by Messrs. Hill, Keddell, & Waldram, contractors, against the Poplar Guardians for a sum of 800*l.* for extra work in connexion with the building of the new workhouse. It has been decided by the guardians to resist the claim.

Prospects of Barrow.—The *Barrow Herald* is informed that the Barrow Iron Shipbuilding Company have let a contract for the erection of houses on Barrow Island at a cost of 50,000*l.* If house accommodation could be supplied, work could be found for 20,000 additional men.

TENDERS

For carcass of warehouse Victoria street, Bristol, for Mr. R. H. Symes. Mr. J. Mechelen Rogers, architect. Quantities by Messrs. Strudwick & Mennie:—

Wilkins & Son	£2,700	0	0
Davis & Son	2,400	0	0
Summers & Ford	2,267	0	0
Stephens	2,221	0	0
Humphreys	2,208	0	0
Storkey & Veale	2,100	0	0
Howell	2,020	0	0

For the erection of St. Mark's Church, East-street, Walworth, Surrey. Messrs. Henry Jarvis & Son, architects:—

Adamson & Sons	£5,740	0	0
Shepherd	5,700	0	0
Myers & Sons	5,675	0	0
Downs & Co.	5,390	0	0
Dove, Brothers	5,345	0	0
Henshaw & Co.	5,320	0	0
Colls & Sons	5,260	0	0
Tarrant	5,143	0	0
Marsland & Sons	5,131	0	0
Thompson	4,778	0	0

For schools at the Mornow-road, Fort-road, Southwark, for the London School Board. Mr. Rowland Plumbe, architect. Quantities supplied by Mr. L. C. Riddett:—

Sheffield	£8,956	0	0
Cook	8,750	0	0
Marsland & Sons	8,500	0	0
Scrivener & White	8,312	0	0
Wells, jun.	8,150	0	0
Cooke & Green	8,041	0	0
Gammon & Sons	7,999	0	0
Jerrard	7,987	0	0
Shepherd	7,950	0	0
Higgs	7,923	0	0
Kilby	7,700	0	0

For alterations to the Britannia Tavern, Kingsland-road, for Mr. M. Ullmer. Mr. E. Brown, architect:—

Marr	£469	0	0
Sanders	425	0	0
Christoffer, Bros.	413	0	0
Pringle	404	10	0
Blackmore & Morley	387	0	0
Ferne	345	0	0

For new shop-front and fittings, sundry alterations, and repairs at No. 138, High-street, Clapham, for Messrs. Powell & Blunden. Messrs. J. & A. E. Bull, architects. Quantities supplied:—

Pearce	£309	0	0
McLachlan	298	0	0
Nightingale	298	0	0
Thorpe & Son	267	0	0

For schools at Hughes's Field, Greenwich, for the London School Board. Mr. E. R. Robson, architect. Quantities supplied by Mr. H. T. Northcroft, Son, & Neighbour:—

Higgs	£6,543	0	0
J. & H. Coleman	6,389	0	0
Perry & Co.	6,275	0	0
Cooke & Green	6,269	0	0
Jerrard	5,974	0	0
Johnson	5,950	0	0
Cooper	5,850	0	0

For the erection of school and residence, for the Llanelhaiarn School Board, Carnarvonshire. Mr. Walter W. Thomas, architect:—

H. Jones	£1,090	0	0
W. Jones	650	0	0
Roberts (accepted)	550	0	0

TO CORRESPONDENTS.

G. E. (asylum about to be built at cost of Mr Holloway, at Virginia Water, is not commenced. We understand that the working drawings are being made, with view to obtaining tenders).—Mr. K. (next week).—F. R. M. (next week). -A Joiner (next week).—G. H. (illustration was not published. A description has been given).—J. V.—J. R. G.—C & Co.—H. B. W.—H. & R.—P.—Sir G. D.—M. R.—J. H.—H. T.—T. R. S.—P. M.—W. & M.—T. L. D.—R. Y.—W. T. C.—F. W.—W. R. C. J. F. C.—T. & Son.—J. G.—H. A.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

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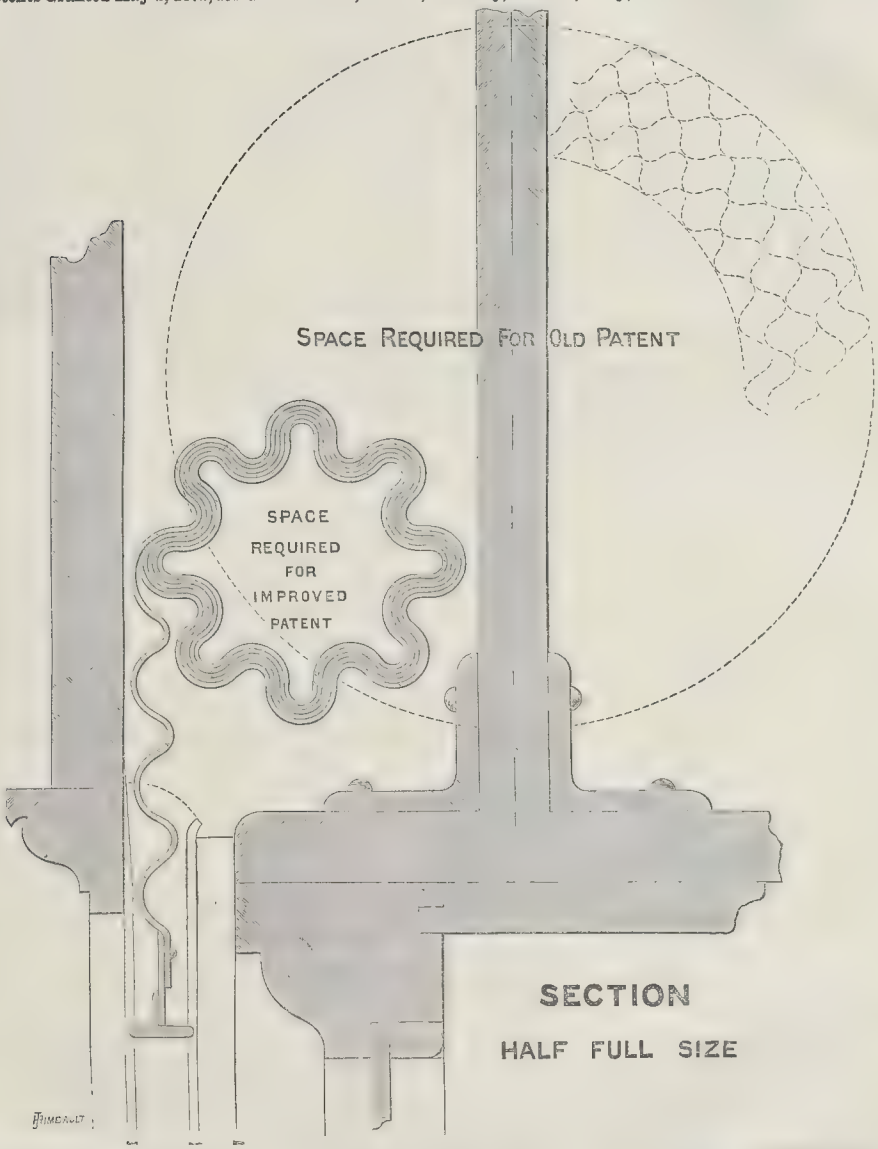
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Guildhall, January 23rd, W. L. MENDHAM, Town Clerk.

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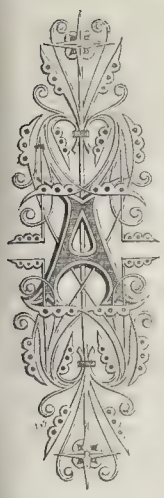
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VOL. XXXI.—No. 1567.



Covent Garden Market.

PICTURE of fields over which streets and squares have since been erected cannot fail to strike the popular imagination by the change it discovers. We see this change continually occurring in the outskirts of great cities, but it seems hard for us to realise that the centre of London was in the same condition a few centuries ago. Few who go to buy fruits or flowers at Covent Garden Market think that before the abolishment of conventual establishments by Henry VIII. the place where they are walking was occupied by the garden and burial-ground of a convent, although the name tells them that it was so. In the grand distribution of ecclesiastical spoils, Edward Seymour, Duke of Somerset, brother-in-law of Henry VIII., and afterwards Protector of the Realm in the reign of Edward VI., obtained the land previously belonging to the Westminster monks as part of his share. In the year 1552, however, when he was beheaded, it reverted to the Crown, and "a patent [was] granted to John, Earl of Bedford, of the gifts of the Convent Garden, lying in the parish of St. Martin-in-the-Fields, near Charing Cross, with seven acres, called Long-acre, of the yearly value of 6*l.* 6*s.* 8*d.*, parcel of the possessions of the late Duke of Somerset, to have to him and his heirs, reserving a tenure to the king's majesty in socage and not in capite" ("Privy Council Records," March, 1552). The earl built himself a timber mansion in the same year on the site of Southampton-street, with a garden that ran down to the Strand, and an entrance from that thoroughfare, but the rest of the land he did not use. Covent Garden continued for some years to be an enclosure or pasture, extending westward from "the comune high waye that leadeth from the Stronde to St. Giles-in-the-fyeldes" (now Drury-lane), almost to the present St. Martin's-lane. Queen Elizabeth's trusty Secretary of State, Sir William Cecil, lived in a house on the north side of the Strand, almost adjoining Bedford House, of the presence of which we are reminded by Burleigh and Exeter streets, the titles of himself and of his son. This mansion was originally built upon the site of the parsonage-house of St. Martin's-in-the-fields by Sir Thomas Palmer, in the reign of Edward VI. Adjoining his house Cecil had an orchard, and in September, 1570, Francis, Earl of Bedford, K.G., granted to him by a lease of twenty-one years a portion of the pasture of Covent Garden, which was next to his house, at a rent of 5*s.* a year. This lease is printed in the *Archæologia* (vol. xxx., p. 497), from which we quote the description of the land:—"That the said Earle of Bedforde, for the goodwyll he beareth to the said Sr. Willm. Cecill, hath demysed, graunted, and to ferme letton, and by these presentes dothe demyse, graunte, and to ferme lett unto the said Sr. Willm. Cecill, all that his porcyon or percell of grounde lyenge in the east ende, and being percell of the enclosure or pasture communely called Covent Garden, scituate in Westm', which porcyon the said Sr. Willm. Cecill doeth and of late yeares hath occupied at the sufferaunce of the said Earle, and hath bene and ys nowe dyvyeded from the rest of the said enclosure called Covent Garden on the west syde of the said porcyon or p'cell nowe demysed w^th^ certayne stulpes and rayles of wood, and is fensed w'th a wall of mudde or earth on the east next unto the comune high waye that leadeth from Stronde to St. Gyles-in-the-fyeldes, and on the west end towardes the south is fensed w^th^ the orcharde wall of the said Sr. Willm. Cecyll, and on the south end w^th^ a certayne fence wall of mudde or earthe, beinge therbye devyeded from certayne gardens belongynge to the inne called the Whyte Heart and other tenementes scituate in the high streate of Westm., comunly called the Stronde." The word "stulp" used in this lease is now obsolete, except in the county of Norfolk, and signifies a low post or boundary.

We hear no more of Covent Garden until about the year 1630, when another Earl of Bedford began to clear away the old buildings that were scattered over the ground, and to form the present square, by building, from the designs of Inigo Jones, a church and piazza, in imitation of the square at Leghorn. In H. Lestrange's "Annals of the Reign of Charles I." we find this adventure mentioned, under the date 1632:—"The king having granted leave to the Earl of Bedford to edify at pleasure upon the Convent Garden, it being a very ample and spacious area and content, the earl plied his design with such celerity and quick despatch, as he soon reared such numerous rows of stately and ambitious buildings as made old London envy the magnificence of her sub-urbieary city." A new fashionable quarter had been much required, and the Earl of Bedford's houses were soon let to those members of the aristocracy who had no family mansions in London. In 1634 the earl granted a lease of two houses in the Piazza to Sir Edmund Verney, Knight Marshal to Charles I., from which we learn that the colonnade was originally termed the "Portico-walk," and, therefore, that the mistake of calling the arcades the Piazzas, was of later date. A covenant was made that the earl should have free "ingresse, egresse, and regresse, into, out of, and from the sayd messuages, upon, by, over, and through the sayd Portico-walke, and that he, together with other his majesty's subjects, may at all times walke in, upon, and over the said Portico-walke, to and fro, at his and their own will and pleasure." Also, "that Sir Edmund Verney may expell, put, or drive away out of the said walke any youth or other person whatsoever, which shall eyther play or be in the said Portico-walke, in offence or disturbance to the said Sir Edmund Verney." The annual rent was "one hundred and threescore poundes,"—a large sum in those days,—which shows that the neighbourhood was in high repute. The inventory of fixtures is a very full and curious document of some interest in the history of building in England. It is printed in the *Archæologia* (vol. xxxv., p. 197).

Hollar's view of Covent Garden was taken about the year 1647, and represents a very handsome square. It is taken from Russell-street, looking straight at the church, and shows the colonnade on the south-east side, which was destroyed by the fire in the last century. Through the columns we get a peep at the trees and garden-wall of Bedford House, on the south side of the square. The centre is inclosed by open posts, and the old gabled houses in Henrietta and King streets are well shown up, adding greatly to the general picturesque effect.

The market originated in a few temporary stalls or sheds, which grew up under the shadow of the garden-wall of Bedford House. The squatters who held these stalls seem to have been recognised in 1656, as at that date the churchwardens of the parish made payment as follows:—"21 March, 1656. Paid to the painter for painting the benches and seates in the Market-place." Ten years later trees were planted "in the broad place"; and in 1668 money was collected from the inhabitants towards the expense of erecting a column in the centre of the square, which had been inclosed with railings 60 ft. distant from the buildings. This column, with a dial on the top, was taken down in June, 1790. The various improvements made in the centre area are noticed in R. Brome's comedy, "The Wedding of Covent Garden," which was published in 1658:—

> "Of Covent Garden, when he wrote his book,
> Some ten years since, when it was grown with weeds;
> Not set as now it is with noble seeds,
> Which makes the Garden glorious."

In 1671 the Earl of Bedford obtained a patent for his market, and eight years afterwards it was rated to the poor for the first time, when there were twenty-three salesmen, severally rated at 2*s.* and 1*s.* Fireworks were exhibited in the centre of the square in 1672, and again in 1690. On the last occasion they were "performed at the charge of the gentry and other inhabitants of the parish, for the joyful return of his Majesty from his conquest in Ireland," on September 10th, and were considered of enough importance to have a print made to celebrate them. Accounting to the parish books, the expenses of this entertainment were not very great, and the individual inhabitants need not have been much out of pocket:—"1690, Sept. 23. Paid to Mr. Brown, for 200 of flagots and 30 brushes for bonefire for the parish, 1*l.* 12*s.* 6*d.* Sept. 25th, Mr. Stokes, for a barrell of ale for the bonefire, 1*l.* Given to the watchmen to drincke att the king's returne from Ireland, 2*s.* 6*d.* 1691. Given to Stokes and y^e^ watchmen to drincke at the bonefire and fireworks, 10*s.*" The crowds who attended these jollifications seem to have injured the enclosure, so that it was necessary to employ men to repair it:—"Oct. 12. Pd. the labourers and carters for 4 dayes worke, in laying and spreading the gravell, 1*l.* 6*s.*"

About this date Covent Garden was a favourite rendezvous of the fast men of the day. In Shadwell's play of "The Scowrers" (1691), one of the characters says, "Why, I knew the Hectors, and before them the TityreTu's. They were brave fellows indeed. In those days a man could not go from the Rose Tavern to the Piazza once, but he must venture his life twice." There is an old print of Covent Garden of this time, which shows Young Ramble and his drunken companions raising a riot. On it are the following verses:—

> "Young Ramble, without wit or dread,
> Does now a drunken party head:
> They sally forth, and scour the street,
> And play the Devil with all they meet;
> Swagger and swear, and riots make,
> And windows, lamps, and lanthorns break;
> Make all that dare oppose them fly,
> And midnight magistrates defy.
> On mischief bent, there's not a man
> Among them but does all he can:
> Streets, alleys, lanes, a hundred pass'd,
> To Covent Garden come at last.
> There we present 'em to your sight,
> And show their madness in its height.
> See Ramble, though he risks his life,
> Will from the husband force the wife;
> As rudely his companions treat
> All that in petticoats they meet:
> The women struggle, scream, and scratch,
> Loud swear the men: —In come the watch,
> Alarm'd by the outrageous noise,
> And fall upon the roaring boys.
> Uplifted staves, drawn swords oppose,
> And stabs are well repaid with blows."

In 1704 Bedford House was pulled down, and the market, which had up to this date crouched beneath the shadow of its wall, was pushed into the centre of the square. Strype describes the look of the place about this time as follows:—"The south side of Covent Garden-square lieth

open to Bedford-garden, where there is a small grotto of trees, most pleasant in the summer season; and on this side there is kept a market for fruits, herbs, roots, and flowers, every Tuesday, Thursday, and Saturday, which is grown to a considerable account, and well served with choice goods, which makes it much resorted unto." The market continued to prosper, and the sheds were gradually enlarged, and upper stories were added to them. This growth was watched with dislike by the vestry of the parish, who addressed a memorial, in 1748, to the Duke of Bedford, complaining that bakers, cooks, and retailers of gin lived in the added apartments, "to the injury and prejudice of the fair trader;" and further, that the value of house-property in the neighbourhood was reduced by the growth of the market; but apparently the complaints were disregarded. The place continued to deserve its ill name, as the resort of disorderly characters. Shenstone, writing in 1744, tells his friend Jago, that in the Piazza large bodies of pickpockets "attack whole parties, so that the danger of coming out of the play-houses is of some weight in the opposite scale when I am disposed to go to them oftener than I ought." There is a print, "invented and engraved by L. P. Boitard," of "The Covent Garden Morning Frolick, Oct. 9th, 1747," in which are figured some of the notorious characters of the day. The principal group consists of a drunken woman asleep in a sedan-chair, with a roaring man on the top of it. The woman was Bet Careless, and the man mad Captain Montague, a well-known noisy bully of the day. In front of the sedan is a little fellow carrying a hurdy-gurdy. This was little Casey, an extremely ugly and vicious blackguard, whose home was the dunghill. Montague and others of his set encouraged this shoe-and-stockingless link-boy, on account of his low wit. These noisy people found accommodation at the low publichouses of the neighbourhood which were kept open all night. One of these was Tom King's Coffee-house, a mere shed beneath the portico of St. Paul's Church, but made famous by its introduction into Hogarth's print of "Morning." Another was Carpenter's Coffee-house, originally the Queen's Head, but more generally known as the "Finish," one of the market sheds on the east side of the square, nearly opposite the "Hummums." Ned Shuter, the comedian, at one time a livery servant to Lampe, the composer, of Covent Garden Theatre, was pot-boy here. The presiding genius of the place, was one Jack Tetherington, a queer character, depicted in one of Deighton's caricatures as a "Deep-un." As most of these night-houses were frequented by those who had taken more liquor than was good for them, they were the scenes of frequent quarrels. One of the standing rules of the "Finish" was, that if any young man unacquainted with the place appeared in a cocked hat some regular customer of the house should force him into a quarrel. An amusing scene in which John Kemble figured, is related by John Adolphus (Recollections, p. 88). The great actor, tipsy but majestic as ever, marched into the tavern, and attempted to lead the conversation, but at last, highly indignant at the little consideration with which he was treated, he swept with one tragic sweep of his arm all the glasses of liquor off the tray that the landlady was bringing into the room for her guests. By this performance he severely cut his hands, and some friends immediately put him into a hackney coach, and sent him home.

In 1829 the sheds were all cleared away, and the site for the new market was prepared. The new building was erected in 1830, from the designs of the late Mr. Charles Fowler, at the expense of the Duke of Bedford. The market gained its great fame while it was excessively ugly, and the old sheds were as much frequented as the new building. The chief feature of the new market-house is the centre avenue, which became popular at once. Lately the holders of stalls have loudly complained of their unprotected condition, and the landlord has been asked to place a covering over them to prevent some of the inconveniences of our changeable climate. This demand he is supposed to have refused, and, in consequence, the complainants have threatened to leave in a body, and remove to Farringdon Market. Doubtless the present market, although it is a great improvement on the miserable sheds of the early part of the century, is much behind in grandeur and convenience what a market of such fame, and the chief market moreover of London, should be. Country towns have now handsome market-houses, and we might fairly look to the Duke of Bedford, who receives so large an income from Covent Garden Market, to make it worthy alike of its fame and of our great city.

FLUES AND CHIMNEY STACKS.

The visitor who arrives in London by either of the railways that lead from a port in the Channel is presented with a spectacle to which no other European capital that we can at the moment call to mind furnishes a parallel. If he is a habitual denizen of the metropolis, or a man whose thoughts are too actively engaged to allow of his eyes distracting their course, he will pass it without remark. If he be a foreigner, a stranger, an intelligent child, or a person tormented with an inquiring disposition, he will be struck with the vast array of helpless uglinesses that stand out above the roofs of the houses. On every side, as far as he can see from the lofty viaduct over which he whirls, stretches a forest of abominable forms. No weather-beaten and gnarled thorn-bushes, no pollard willows, no knotted oaks, form so fantastic a group. No storm-driven vessel holds out such intelligible signals of distress. Nowhere is it written in such large letters, "Wanted, an intelligent supervisor."

We speak, of course, of those complex and varied abominations the chimney-pots. Pots, indeed, is a complimentary term. Iron and zinc, brick and terra-cotta, are all pressed into the service. It is enjoined by the religious law of the Jews that if, during the long-continued exits from Palestine, they build houses for residence in any other land, they shall leave a portion of the edifice incomplete, in memory of the desolation of the Temple and Holy City. Not a house is to be seen (for example, from the South-Eastern Railway) which would not fully carry out this injunction. In fact, the chimney appears always to be left in the state of a rudimentary stump, on which smoke-doctors of all grades set forth their wares for display. At times the builder is also a smoke-doctor. Then you see the little brick stump twisted into uncomfortable zigzags. But none the less are these zigzags crowned each with its special pot, or cowl, or smoke-ladder, or abomination of some kind. And one very remarkable feature of the case is that never,—as a rule with few exceptions,—is there any unity, or even harmony, in the terminals of the same house. Every chimney, and every flue in each chimney-stack, has almost invariably its special pot, unlike that which adorns its neighbour, as if it were a necessary means of asserting the individualities of the flue.

This was not always the case in England. We have, in those country localities which have as yet escaped the improvement of modern times, many an example of a chimney which combines the two requisites of utility and of beauty—which are at once striking, and even noble, architectural features, and perfect appliances for thorough warming and ventilation. Great care was bestowed, not more than 200 years ago, on this important feature of the domestic architecture of a cold and variable climate. Bricks were moulded on purpose to build architecturally-designed chimneys. Fret-work, or spiral-work, or lozenge-work, deftly executed in well-cut or well-moulded brick, adorns groups of lofty turrets that, high above the tufted trees, denote the locality of the old hall. There is a fine instance at Chenies, Bucks, the site of the mortuary chapel of the Dukes of Bedford. An old house, once forming a quadrangle, has now sunk into a modest abode for the Duke's steward, with a wing tenanted by cotters. But the long row of chimneys, each standing on a base of its own, and forming so many bold projections from the line of the building, each of the size of a moderate apartment, rise into a pictorial feature that tells of the stately dignity, no less than of the well-considered comfort, that were studied by the architect of the "old house" in Tudor times.

It seems to be the case that it is to the great storm of 1705 that we owe very much of this unfortunate decadence in our domestic architecture. We have been visited during the present winter with storms of unusual fury. To say nothing, here, as to the effect of rain, that of wind has been most formidable. Trees of many centuries' growth have been torn from the earth, upheaving a very mountain of earth with their roots, or torn or twisted branch from branch. In Marlborough Forest alone ninety trees have thus perished. It is not the patriarchs of the forest alone that have suffered. The most remarkable proof of the fury and also of the cyclonic character of the storms that we have noticed, was in the case of a perfectly sound and healthy young holly-tree, a standard in a hedge, that had its head positively wrung off by the wind. But, while slates have flown too thickly to be pleasant, we have not heard much of the fall of chimney-stacks. Few have been left to fall.

When we examine what was the form of the chimney-stack in some of those yet remaining noble country-houses that were built round a central court, we shall the better understand how it has occurred that we have fallen into the unfortunate habit of building our houses, as regards the smoke-flues, inside out, and of thus wasting both fuel and other possible advantages.

Early English houses differ from those in Italy, among other things, by the special character of the chimney. The first step from the simple plan of having louvres in the roof for the escape of smoke rising from an open fire, was to build a stack, or tube, of fireproof materials, under which the fire should be lighted, and through which the smoke should readily escape, without entering the room. At the present day we may see the invention in this, its simplest form. Around the fringes of land taken for conversion into railways, by each deep cutting or lengthened tunnel, few Englishmen can have failed to observe the upspringing of a colony of labourers. Shealings of turf, or shanties of slabs, give snug shelter to many a hardy "navvy,"—the one structural feature of the building being, almost invariably, a brick chimney. In a structure of a little higher pretence, the smith's shop, which is an essential feature of these nomadic villages, the same feature is prominent. The shop itself is usually of the most flimsy and temporary description. The roof may be sheet iron, slate, or even painted canvas. The sides are the roughest and thinnest slabs, put together with a slight overlap. But the hearth, forge, and chimney are of brick, and give a permanent air to the slight shedwork which surrounds them. We have a good illustration of the antiquity of building of this mixed sort, in the fact that the turbary rights, in the New Forest, are attached to chimneys of not less than sixty years old,—a provision that seems to carry back the evidence of the antiquity of this mode of building to the time of William Rufus himself.

As wood became less and less employed for the material of English houses, the use dying out with the discontinuance of projecting stories, and of the picturesque timber mansions yet to be seen in many of our western counties, the chimney still maintained its original independence. It formed a main feature, or group of features, of the house, both in plan and elevation. It was, originally, a square chamber, at the side or end of the main hall and principal apartments, in which the fire was kindled on dogs, from which heat radiated to the larger room, and in the sides and corners of which a snug evening might be passed on the benches which lined the wall. High up towered the stack, ending in an ornamental tube of brick, and so raised as always to insure a sufficient draught. In fact, the whole structure was a tower to some extent independent of the walls of the house.

As architecture sank, economy became more dominant than the decent pride which our ancestors took in rearing their abodes, and sea-coal more and more extensively supplied the place of wood for fuel, the chimney shrank from its normal form of an independent stack into the miserable little square flues which are practised in the outer walls of our rows of houses. But, while shrivelled to an atrophy, the smoke-tube still unfortunately maintained that position, with reference to the plan of the house for which there was a good reason in the case of the old chimney-stacks. The English, of all people in the world, like to go step by step. When an improvement, or at all events an alteration, is effected, it is not our habit to sit down and consider what other alterations ought to accompany it. It thus not unfrequently occurs that positive improvements, introduced without due consideration of all their bearings, involve such counterbalancing disadvantages as to do more harm than good, and either to cause a step backwards in civilisation, or to be, after a short time, thrown aside, from no inherent fault.

Thus, with coal-fires and close grates a smaller chimney became both possible and convenient.

That being the case, the proper thing would have been to study the chimney *de novo*, to investigate the proper size, height, and position of the ventilating apparatus of the new fuel. Nothing of this kind seems to have been done. The historic chimney was allowed to dwindle into a vertical channel too weak to bear its own weight, or to resist the wind for more than a few feet or inches above the shelling roof. It was still left in the outer wall, when its transference to the inside of the building would have been attended by great advantages. And thus, while doing the utmost possible to rob the house of the heat generated by the combustion of a given quantity of coal, it rarely succeeded in averting the nuisance of at least occasional smoke.

To this very day the scientific study, and consequent final determination, of the best form of stove, chimney, and general ventilation for a dwelling-house of any given size, is an unattempted problem. Some architects attain credit and success by retracing their steps as far as possible towards the Tudor chimney. But with the great majority of builders the chimney is one of those unknown and confusing forces the operation of which they fail to predict, as is usually proved by the fantastic variety of cowl, chimney-pot, or tall-boy, that does anything but adorn the sky-line of a house.

It is the more necessary that this question should receive that degree of attention which should remove it from the dominion of the rule of thumb, and bring it under that of definite architectural practice, from the fact that there are, on the one hand, great facilities now placed at the service of the builder which were unknown a quarter of a century ago, and, on the other hand, some of the appliances of our increased luxury are subject to derangements which not only for a time destroy comfort, but often permanently injure health, or even terminate life.

In fact, it must be considered to be nothing short of barbarous to regard, in designing a house, the smoke-flues as mere unimportant issues for the smoke of a given number of fireplaces, and nothing more. Ventilation must, in any architecture worthy of the name, be considered as a domestic requisite of as much importance as illumination itself. Connected with ventilation, or the arrangements for the admission of oxygenated air, whether cold or warm, to the apartments, together with the withdrawal of the air that has become vitiated, either by respiration, by combustion, or by the result of any vital or domestic process, is the important question of water-supply.

We have little doubt, from various distinct reasons, which it would be easy to adduce, that the entire separation from the dwelling-house of every kind of office, is the most sanitary arrangement possible. Such was the case in the time of the blooming beauties whom Reynolds and Romney loved to paint. The most delicate woman would be compelled to face the frosty air, in the old-fashioned arrangements of the country mansion, to the great advantage of her constitution. That has now become rare anywhere, and impossible in towns. We are not proposing to revert to a state of things that has become impracticable although we cannot but intimately connect increased luxury with diminished health. But now that water, led on through pipes, has become an integral part of our domestic economy, at all events in towns, it is no small disgrace to us that the arrangement of these pipes is invariably that which is most certain to bring work to the plumber. The rueful effects of the thaw which succeeds the first sharp frost of a winter seem, year after year, as if they resulted from the operation of some natural and unavoidable law, instead of from our own slovenly neglect. We know that, when the wind is in the north, in certain months, the temperature sinks below freezing point. We know that pipes containing water are burst by frost; and yet we contentedly build, year after year, acres of cisterns fed and connected by miles of pipes, as if frost and burst-pipes were things utterly unknown in England.

Certain precautions might greatly diminish, if not altogether obviate, much of this recurrent disaster, discomfort, and danger. A certain amount of additional outlay, if rendered imperative in the building of every house, would be repaid over and over again by the avoidance of pecuniary cost to the occupant, to say nothing of the avoidance of a cost not to be estimated in money. We may venture to indicate some of the leading principles which no builder ought to neglect.

In the first place, in every house, from the cottage to the palace, the chimney stack or stacks should form a distinct feature of the plan, being one or more hollow towers rising direct from the level of the foundations. There can be no objection to their being so bonded with the walls of the house as to save unnecessary brick-work, but they must be channels complete in themselves, and must contain no timber passing through their walls; and the position of these ventilating towers should, as a rule, be within and not without the house, so as to economise heat.

To every fireplace should be attached a separate smoke-tube, which will be best when it is an earthenware pipe, properly fitted and jointed, and led from the stove to the top of the chimney within the stack, and with no connexion with any other smoke-tube. The proper diameter and minimum length for these smoke-tubes should be decided by experiment, and reduced to a tabular form, as a definite part of architectural theory.

To every fireplace should be provided a communication, on the level of the floor, with the outer air, — thus ensuring a feed-blast for the fire. It will be convenient to attach a damper or shutter to this aperture. In houses of any magnitude, the upcast air may be directed under the floors, to corridors or other spots fit for the admission of a ventilating draught. The waste heat of the kitchen fire, passing into the air-stack at a low level, may thus be made available for warming and ventilating the whole house. The details will depend on the circumstances of the building, but the principle should always be kept in view. Ventilating tubes, or openings from near the ceiling of the apartments, may also form a valuable part of the same system.

All gas-pipes, bell-wires, speaking-tubes, or electric wires may be readily carried from floor to floor through the air-stacks.

The pipes supplying water to the cisterns should also be brought through the air-stacks, care being taken, wherever the system of water-supply is at all complicated, to form such connexions as shall insure a circulation of water below the freezing-point. The hot-water apparatus, warmed by the kitchen fire, and supplying baths on the bedroom-floor, which is now much employed, ought in the same way to be connected with the air-stack. Of course, proper arches should be turned at the bottom of the stack, and where the pipes are led out, closed with a slate or stone slab, so as to give access in case of need.

The details of such a plan as the above are for the decision of individual architects; but as to the importance of the principle, as regards health, comfort, saving of expense, and absence of annoyance, there can, we think, be no doubt. In our present state of civilisation, with the horror entertained by many people of draughts, and with the improved and almost air-tight closing of doors and windows, that is effected by the employment of seasoned wood and good workmanship, it has become absolutely necessary to provide for efficient ventilation. The air-passages and water-conduits that are required for our present mode of life can no more be neglected or omitted with safety than the respiratory and circulating channels of the animal frame can be injured with impunity. There is something more than mere analogy between the two systems. The home of the body must be cared for as a protection for that which is the home of the soul, and it is only by foresight that this can be done. A small extra outlay, in the first instance, wisely directed to meet the inevitable demands for air, fire, and water, will be repaid by the durability, as well as by the healthy and comfortable character of the building; nor can there be any doubt that, when the system once receives the attention which it requires, the demand for properly-ventilated and chimneyed houses will be such as to leave those in which these requirements are neglected the last to find tenants or purchasers.

Increase of Salary to Surveyor of St. George the Martyr's Vestry.—The local Roads Committee recommended that from and after January 25th the salary of the surveyor be paid at the rate of 250*l.* per annum. The chairman, in moving its adoption, said that with the amount of work done, and the way in which it had been carried out, he certainly thought they would not be doing wrong in making the proposed increase. The motion was unanimously carried.

EXCAVATION OF THE ROMAN FORUM.

EVER since, at the beginning of this century, the antiquarian interest in the remains of ancient Rome first awoke to any great extent, the different Governments of the day have considered it a moral obligation to assist more or less the work of excavation. The present Government has granted an annual subvention of 100,000 francs, and splendid results have crowned the work under the direction of Signor Rosa. No part of the old city has occupied more attention and labour than the Forum, formerly the busiest, now the quietest, part within the walls. What was in classic times the proudest quarter of the metropolis, the present century found a pasturage for cattle and the undisputed playground of Roman children. The French Government of that time first began to lay bare those remains of architecture on the slopes of the Capitoline Hill, which had stood in direct connexion with the Forum, and which surrounded the latter part of the "Via Sacra" leading from the Forum to the Temple of the Capitoline Jupiter. Nothing could then be done for the excavation of the Forum, and it was left to the generosity and antiquarian interest of a highly-cultivated Englishwoman, the Duchess of Somerset, to establish the meaning of that column, standing singly like a riddle, erected in honour of Phocas, as the inscription proved. On this occasion, those large regular tufa slabs were met with which form the pavement of the Forum, while the neighbouring streets are paved with polygonal basalt blocks. Along the edge of the travertine pavement, which was three steps higher than the roadway, compact blocks of masonry, partly well preserved, were found, which seem to have served as bases for columns or statues. If the explorations had at that time been continued, it would have been possible then to establish what we now know, that this row of bases formed the southern limit of the Forum. As the excavation of the single column had led to such remarkable results, the Papal Government resolved to continue explorations near the three marble columns, the architraves of which were partly preserved, visible in the direction of the Palatine. Without much trouble it was established that they belonged to a temple, since proved to have been dedicated to Castor and Pollux; the greater part of the stairs was also laid bare, which led from the hall of the Temple to the street. But the considerable sums spent by the Papal authorities, especially in 1829 and 1830, for the conservation and laying open of antique buildings,—for instance, of the Colosseum,—contributed little towards the excavation of the Forum, though all the different Governments which Rome has seen since the beginning of this century willingly contributed to the attainment of that object. Even the Republican interregnum of 1848 at least prepared a decree ordering the complete excavation of the Forum. But no former Government finished the work, an essential step forward in this direction being only lately made under the present Government. The much-disputed question of the area of the Roman Forum, of which no classic writer gives clear indication, has at last been brought a step nearer its solution. The length of the south side, from which that of the other probably differs very little, is, according to Canina, about 95 mètres. Although the length of the Forum is thus approximately fixed, this cannot be said of its breadth, and considerable difficulties will have to be overcome before the whole area is laid bare. The works have not up till now come into conflict with the traffic of the modern city; on the western side alone a small part being covered by a street. A difficulty arises as to the northern limit of the Forum. This crosses under a very much frequented street, not easily to be diverted. It leads, as proved by passages from classic writers, as well as by modern inquiries, in a straight line from the Arch of Septimius Severus, in the direction of the Temple of Faustina, opposite the Temple of Castor, and was formed by the same "Via Sacra," one end of which we met with already at the Capitoline Hill. One part of this road, recognisable by its basalt pavement, is seen under the arch itself. It was brought to light before near the Temple of Faustina, and its existence, about midway, in a straight direction, has also been established. Everything, therefore, points to the conclusion that the limits of the Forum are formed by a line which, beginning at the left wing of the Arch of Septimius, extends as far as the corner of the Column of Phocas, turns here to the east, and, skirting the basements, reaches the corner which lies opposite to the

steps of the Temple of Castor and Pollux; then, touching the street lately laid open, leads at a right angle to the "Via Sacra," which latter reaches the beginning of the boundary-line again at Septimius's Arch. It is a little space which is enclosed by these lines. According to measurements the Forum is 63 mètres broad on its western side. This would give, therefore an area of 5,985 square mètres if the space were everywhere rectangular; but this is not the case,—the longer sides converge towards the east, and we may therefore take the area of the Forum as about 5,000 square mètres. It will be asked, how is it possible that such a small place sufficed for the Roman people? In answering this, we must take into consideration that the place was selected and formed at a time when the later greatness of the city was never thought of, and when it was found, already in the last century before the Christian era, that it was becoming too small for all the business transacted there; commerce, and after that the juridical part of the Roman public life, were moved from it. In the place of private houses, those basilicæ were erected, of which one, the Julian Basilica, built by Cæsar, extending along the whole length of the Forum, has been laid open. The works in the Forum are progressing steadily, though with a more limited supply of labour than last winter. About one-third of the whole mass of earth, accumulated during centuries, and from 7 mètres to 12 mètres thick, has been removed. Much has been accomplished, but more remains to be done. The harvest of sculptures, as well as of important inscriptions, has been inconsiderable. This was to be expected; for no other part of the old city has been so open to explorers, and none has been so often rummaged as this. In September of last year, however, a valuable find, to which we have already alluded, was made. This is the now well-known marble bas-reliefs, found near the corner where rises a Middle-Age tower. At two different portions of this tower, to which they appear to have served as supports, hidden by other materials, is now disclosed a row of portions of wall, occupying from 12 mètres to 15 mètres, decked on both sides with costly sculptures, which have apparently served for the decoration of the rostrum. The reliefs would display to the eyes of the people standing below an historically-arranged series of notable events having relation to the Forum. The position in which they have been found opens a fresh field to topographical conjecture and inquiry; whilst the reliefs themselves are of the greatest importance, not only on account of their historical import, but on account of the brilliant quality of their execution, which appears to belong to the last bright epoch of Greek art in Rome. The reliefs are to be exhibited at the forthcoming Vienna Exhibition.

In connexion with this subject may be mentioned, that within the last few days a tomb, of very beautiful architecture, has been discovered at the Villa Casalli, near the Appian Way. It consists of three chambers containing four coffins, of white marble, decorated with sculptures. The latter represent, in relief, the Muses, Bacchus, and Ariadne; a hunt of wild beasts; and the door of a sepulchre. It is assumed that one of the Muses, whose head is decorated with flowers, represents one of the deceased persons whose remains are here entombed. The sepulchre bears the inscription, "TITVS OLIVS NIKEPHORVS." The letters, the style of the sculptures, and other details, place the tomb in the time of Septimius Severus. The hair of one of the female figures is arranged in the characteristic fashion of Julia Mammæa, in the form of a diadem, with high forehead.

"ARCHITECTURAL DETAILS IN COMMON USE."

UNDER this title Mr. E. T. Owen is reading some papers to the Architectural Association of Ireland. In the course of the first, the reader said the use of iron, however manufactured, has of late years taken a prominent place in many buildings, and of course is admitted to be a most important material, and is perhaps destined to become still more important in future architectural works; but I at present do not believe that, as a purely architectural material, it has been fairly dealt with. But, like many other useful things, it can and does help the architect and builder over many important difficulties, which might otherwise cost a little more money. But in really good architecture, whether costly or otherwise, there are certain situations and conditions in and under which it should not be admitted. I know a building (not in Ireland, by the way) the construction of which will be sufficient to serve as an illustration of the use, and also of the abuse, of that material. In the building alluded to there are four stories, exclusive of the ground story, which is a lofty one, resting on an iron girder, supported in its turn by a series of thin metal columns; and the space beneath is equal to fully one-half of the whole ground floor, and this covered space is used by large numbers of persons every day; and what I think objectionable is this,—to say nothing of the general construction,—that these columns, girders, &c., are all carefully concealed, and boxed up in such a way that no possibility is afforded of getting at them, should any contingency arise requiring their examination, without considerable and unnecessary expense; for they are made to assume, by dint of bracketings, boxings, and any amount of plaster, &c., the proportions and external appearance of an elaborate and full-blown order in one of the richest of the Classic styles, so as to have quite a presentable appearance. Now, I will not only venture to say that this mode of treating materials is not to be recommended, being anything but true architecture. But I will go further, and say that it is to be positively avoided as dangerous, although the danger may appear remote; and I fancy that, did the human beings frequenting that building know anything of construction, and happen to think of the Chicago or any of the great fires of late years, their placid endurance of such things would come to an end. It is the architect's duty, as best he may, to disabuse the public mind of its tendency to obtain too much of him, under the mistaken idea of economy.

Similar objections might justly be raised with regard to street architecture, so called, in our large cities, where we see story after story piled one over another, apparently in "mid-air"; but we, the experts in such matters, know better; for we have observed that they are carried upon refined and sometimes very elegant castings, like bamboo canes, placed a little to the rear of the glass or other equally fragile front. Now, all that business and common sense require can be obtained without this; and being architecturally bad and dangerous into the bargain, we should set our faces against such temptations, without fear, even although we know it to be possible that Mr. So-and-so will get his builder to do what his architect would not (I mean no offence to the builders, though).

If, however, cases should arise in which such a mode of construction is resorted to under special circumstances, when heavy masses may have to be carried over space, in no instance should the iron beams or other medium of support be so situated as to be concealed or difficult of access; but I would recommend as preferable, in the majority of cases, the retaining of the unmistakable, though somewhat antiquated, brick or stone vault, arch and pier, without forgetting the old and honest timber-work, whether in the roof, truss, framed partition, or simple beam, as things less likely at times to overwhelm us with sudden destruction, than some of their more modern competitors, which after all give one the idea of clever architectural gymnastics,—a mountebank on stilts, looking very extraordinary, but at the same time showing a rather undesirable method of progression. In a former paper, it was my intention to go into the subject of roof construction, but time, then as now, would not admit of my devoting sufficient care to that important requirement of almost every kind of building, because drawings of each kind ought to illustrate such a paper; but I will endeavour to give a hint or two, if you will accept it as such, for consideration. I suppose I may imagine that we have done with the vault or dome, in old-fashioned materials at least, for all future time, and that we must confine ourselves to timber, iron, &c., and perhaps concrete. Now, I think a great respect should be given to timber, because ideas in that material are not even yet exhausted. The ugly, but serviceable and common tie-beam—whether king, queen, or a combination of both—is familiar to each of us, as is also the hammer-beam, and the varied forms found in old works, in many of which the effort to get rid of the horizontal beam without waste of material is evident. Now, whilst respecting all, whether ancient or modern, for the useful suggestions they may contain, we should try to make intelligent progress from the apparent success or comparative want of it which the various kinds present, by studying the circumstances which appear to govern each particular case, rejecting what is not now necessary either in quantity or quality of materials, or the principle of construction adopted, provided always that we are quite sure that the conditions by which we may be governed are so far in advance that we can honestly lay claim to better things. A very flat-pitched roof requires very different treatment to a steep one, yet you will sometimes see that the latter has equally heavy timbers to the former, which is unnecessary, the spans being supposed to be the same,—the transverse strain being so much greater in the one case than the other. Both kinds have their legitimate place, but I can see no good reason for the unwholesome fear of showing the outside of a good high-pitched roof, provided it keeps out the weather better than the flat one—at least, in this country,—and you make the interior of it to some extent available, which can almost always be done. Neither should architects, I think, be so very much afraid of varying the angle of the pitch of roofs in the same building for the sake of symmetry only, when leading conditions point out that it would be an advantage to have it otherwise. At the same time, liberty must not become licence, irrespective of sound and lasting construction; and we must therefore endure a certain restraint in the consideration of the proper points of bearing, thrust, and support. The abominably ugly and wasteful roofs put up of late years, are a disgrace to the generation, and especially so as the same amount of material and labour would, if properly used, have made them fitting and pleasing accessories to the general composition of which they form a part; but I suppose that in the "good old times" the architect was partly his own builder, and in some cases quite his own client, and that stocks and shares, and everything except pious contributions to the good work, were then unknown. Concrete and similar compositions may tend somewhat to modify the more ordinary and unpretending class of buildings, and perhaps take a more important place than it now does, in an architectural sense; but it has not yet stood the test of time, or other trials to which all kinds of buildings are more or less liable, and therefore it should be employed with due caution: for instance, it would not probably be the best material for a work required to withstand intense heat, although it might resist the weather for ages; and whilst it is well adapted to the formation of a level, strong, and inexpensive floor, it might not prove a good thing in connexion with a lime or malt kiln, or even a baker's oven. Perhaps a good deal more may be done than has hitherto been by using concrete in combination with other materials, not only as grouting similar to what we see in old Roman works, but in courses and blocks forming important parts of a structure. We must be content, however, to move cautiously, testing every new invention as we go.

THE RIGHTS AND WRONGS OF ARCHITECTS' ASSISTANTS.

A GENTLEMAN, who calls himself a Superior Assistant, has favoured us, in a badly-written letter, with the information that he was employed, on his own terms, to assist an architect in the preparation of drawings for a recent competition, and that he executed, in fact, the greater part of the work; and he calls upon us, somewhat noisily, to make public his name, and to claim for him the credit of being the real author of the resulting design. We learn further from his letter that he was paid all he charged—was, in fact, treated with very great kindness and confidence by his employer; that giving such assistance is his mode of livelihood at present; and that he is already at work in another office affording temporary aid.

It ought to be unnecessary to say that we decline compliance with his request. If we did state his name, it would be to gibbet it for the benefit of others. Unless our notions of right and wrong have become sadly old-fashioned, his conduct, as stated by himself, will be viewed by every honourable mind with feelings the reverse of flattering.

Judging from parts of this "superior assistant's" communication, we doubt altogether his ability to make the design to which he refers, however much he may have contributed to it, under the control and direction of his employer. But supposing that he had done so, the case would remain precisely the same. He offered

certain assistance for a certain salary, and was paid it fully and fairly. There was no arrangement that he was to be personally identified with the work, or in any way responsible hereafter: there was the universally-accepted understanding to the contrary; and in seeking to break this he takes a step towards the destruction of confidence calculated to do the most serious injury to the rising members of the profession, many of whom find it absolutely necessary, both on financial grounds and for the sake of acquiring knowledge and experience, to seek employment with architects in actual practice.

It will be a bad thing for the friendless aspirant, when the established and prosperous architect has been taught to fear that his share in the production of designs sent out in his name will be weighed and measured and published by those he has paid and instructed to assist him.

This matter is the more *apropos* just now in consequence of the attack recently made on Mr. Ross, of Inverness, who submitted an able design for the proposed cathedral in Edinburgh. Of Mr. Ross personally we know nothing whatever,—we never saw him, so far as we are aware; but we do not hesitate, in the interest of justice and decency, and a regard for the best interests of the profession, to say that a more scandalous endeavour to ruin a professional man was never made by professional brothers. It has, in fact, so much the aspect of a conspiracy; the in and out workings in it of one or two hands are so obvious, that an acute lawyer, properly instructed, would probably considerably astonish those who have been guilty of the outrage.

As to a letter published by the assistant employed by Mr. Ross, Mr. G. F. Roper, setting forth that he made the design, and not his employer, we will simply say that we regard it as a breach of confidence which will probably do the writer all the harm that he evidently feels it ought to do him.

NEW BUILDINGS IN WELLINGTON-STREET, COVENT GARDEN.

DURING the last few months, the neighbourhood of Wellington-street, Covent Garden, has been undergoing some considerable improvements by the erection of new buildings. Prominent amongst them are the large and commodious premises at the corner of Tavistock-street and Wellington-street, for Messrs. Findlater & Co., which are now almost finished, and the new Covent Garden flower-market adjoining, the Wellington-street elevation of which has only just been finally completed. The first-named premises are exceptionally lofty as compared with the rest of the buildings in the immediate locality. The height of the building is 62 ft. from the street level, and the width of the Wellington-street and Tavistock-street elevations (which are uniform), 50 ft. each, whilst at the angle of the two streets there is a third and prominent frontage, which contains the main entrance to the premises. In addition to the basement and ground floor the building is four stories in height. The ground plinths all round, up to a little above the street level, are of granite, whilst the main body of the building is of white brick, with Portland cement dressings. The ground-floor has three wide segment-headed windows in the Wellington-street and Tavistock-street elevations respectively, whilst the four stories above have four windows each. The architect of the building is Mr. V. Gore, and Messrs. Cubitt are the contractors.

The elevation of the Covent Garden flower-market is about 45 ft. in height and 50 ft. in width. The materials used are white brick with Portland stone window frames, cornice, and balustrade, the whole enriched with terra-cotta decorations. There are two spacious entrances 9 ft. each in width, with arched headings, with a window of similar character in the centre. On each side of the window there are stone piers, recessed arches in terra cotta, springing from them over the window and the two entrances. Above these arches a terra-cotta moulding is carried across the elevation. Over this, again, corbels in terra cotta support a cornice of Portland stone, the elevation, which as a whole is bold and effective, being surmounted by a balustrade, also of Portland stone. This building has been erected from the designs of Mr. Rogers, Messrs. Cubitt being the contractors, as well as for the building adjoining.

METROPOLITAN CONSTANT WATER-SUPPLY.

AT the last week's Metropolitan Board of Works Meeting, the Works and General Purposes Committee presented a report upon the regulations made pursuant to the provisions of the Metropolitan Water Act, 1871. The committee were of opinion that the Board should not take any steps at present with a view of giving notice for a constant supply of water in any of the districts of London. They recommended that the subject be referred back to them, with authority to represent to her Majesty's Government the imperfect state of the law, and the necessity for new legislation on the subject. The motion was adopted.

At the last meeting of the St. George-the-Martyr (Southwark) Vestry a resolution was adopted, declaring the rules for a constant water supply to be unnecessarily stringent, arbitrary, and enormously expensive.

Colonel Beresford has given notice in the House of Commons that on March 7th he will call attention to the necessity for a constant supply of water being given throughout the metropolis, and will move for a Select Committee on the subject.

THE METROPOLITAN GAS SUPPLY.

IN consequence of the defective quality of the gas supplied by the Phœnix Company to Battersea and that neighbourhood, the Wandsworth District Board of Works have resolved to bring the subject under the notice of the company with a view to secure an improvement in the illuminating power of the gas supplied to the street lamps.

Notice, says the *Daily Chronicle*, having been given to the Marylebone Vestry by the Imperial Gas Company of their wish to terminate the present contract for the supply of gas, the former asked for the definite decision of the company by the 1st of February. A reply was received in which the company state that it is impossible for them to give any information at present as to whether they will raise the price of gas or not. They will shortly have to enter into a contract for the supply of 400,000 tons of coals, the price per ton being 33s. as against 18s., the present contract price; but they hope that a favourable turn in the coal market will come before they are compelled to enter into the contract, and enable them to continue the supply of gas at existing prices.

DESIGNS FOR MOUNTAIN CHAPELS.

OUR readers may remember that at the annual meeting of the Carlisle Diocesan Church Extension Society, last August, the Bishop of Carlisle referred to the tendency to pull down the mountain chapels in his diocese, and rebuild them in a fashion which did not quite suit the scenery in which they were placed. The Bishop expressed a wish to have something like a model design for a mountain chapel,—"something of a solid and solemn character, which would seem to tone and harmonise with the mountain solitudes in which they were placed." Mr. Schneider took up the suggestion, and offered 20 guineas as a premium for the most suitable design, and a second premium was also offered. The matter was placed in the hands of the Central Committee, who, at their next meeting, directed the secretaries to advertise the scheme, confining the competition to Cumberland, Westmoreland, and Lancashire. About fifty sets of plans have been sent in to the committee, and are now being exhibited. The *Carlisle Journal* says,—"They are naturally and necessarily of a very various character, and the contrasts in men's minds of ideas formed on certain stated grounds are somewhat amusing. The bishop asked for something 'solid and solemn.' Some architects have met the bishop's demand by offering light, airy, and exceedingly pretty structures, but infinitely more fitted for the quiet of a fashionable square in a large town than to encounter the rude blasts among our Cumberland mountains. Others seem to entertain the opinion that there is nothing more 'solid and solemn' than an old barn, and accordingly adhere as rigidly as possible to that model,—of which there are already too many copies in Cumberland dales. Others, again, there are with which we must express much satisfaction. They are substantial, do not lack a certain massive kind of elegance in real keeping with the design, and are relieved from tameness by Gothic porches, strong buttresses, and pointed gables. The design which to our mind is most faithfully described by the bishop's words is that signed 'Vivo in spe.' This is a picturesque little chapel, bold and effective, with strong tower and spire, neither of which is without beauty, well buttressed, and wearing a general air of substantiality. The design of 'Ilex,' too, is very pleasing to the eye in its general features, though somewhat wanting in simplicity, and in some respects perhaps too ornate; but it contains the elements of success, and, with slight modifications, might be rendered very suitable."

HEREFORD.

THE borderers of England, whether on the north or on the west, were bold, hardy, and aggressive races of men, having for their patrimony the moor and the morass, the wild, bleak upland which occurs on the Scottish frontier, or the steep crags and rugged defiles which gave strength and, in ordinary cases, impunity to the Welsh. The Scots, indeed, came of the same stock with the English, and had recently formed a part of the same kingdom, under the same lords; nor was the land immediately south of the Tyne or the Tweed materially richer than that to its immediate north. But the Welsh had other more potent and better causes for their continual and ferocious transgressions. They were the earlier possessors of the whole country,—a possession still attested by the hills and rivers, and, indeed, by the names of many of the chief cities of England. They were of an entirely different blood and language from either Saxon or Norman: by the one they had been gradually driven into the western and less-fertile tracts of the island, and the other held them cooped up and at bay within their mountain fastnesses, and responded to their continual partisan warfare by occasional invasions on a large and, for the time, irresistible scale.

Full in view of the Welsh mountains were spread out some of the most fertile lands in Britain,—cultivated, inhabited, and fortified by the invaders, who, not content with the slopes of the Cotteswold and the velvet meads on the left bank of the Severn, had pushed their conquests far beyond the right bank, holding the stately ridge of Malvern and the rich pastures of the Teme, the Lug, the Frome, the Worm, and the Wye, even up to the Dyke of Offa. That dyke, still to be traced along much of its length, was felt to be a perpetual mark of inferiority, an abiding affront to the patriotic feelings of every Welshman between the estuaries of the Severn and the Dee. No marvel, then, that the Welsh were ever insurgent, ever breaking forth with fire and sword into the English territory, and especially into the most rich and, by nature, least-protected tract of it, the fair county of Hereford.

Herefordshire was first subjugated by the Romans. Three miles north of the city are the remains of a camp, probably Roman, covering about 30 acres of ground, and now known as Sutton Walls, a little south of which runs the line of the road which led to the Roman town of Magna Castra, four miles to the west, and was continued onward in the same direction.

At what precise period Herefordshire passed under the Saxon yoke, and became annexed to Mercia, is unknown,—probably under Offa, early in the seventh century. The see was founded in 680, when a synod was held here under Putta, the first bishop. Sutton or Southton, so called from its position close south of the Roman camp to which it has given its name, was at a very early period a residence of the Mercian kings. Here, in the middle of the eighth century, resided the celebrated Offa, probably during the construction of his dyke, which passes about six miles to the west; and here in 794 was committed the murder of Ethelbert, his intended son-in-law, a deed which led to the aggrandisement of the cathedral church, to which his penitential donations were largely paid. A charter of King Cœnulf, A.D. 799, mentions Hereford, as do others by Deneberht, in 802 and 803, the last recording certain "*monasteria quæ olim in antiquis dictis ad Herefordensem ecclesiam præstita fuerunt.*" Sutton continued a Mercian palace until the union of the seven kingdoms, under Egbert of Wessex, in 827.

Edward the Elder, a great constructor of strong places, who repaired the citadel and walls

of Chester in 909, is said by Grafton also to have fortified Hereford, erecting a strong castle there. His sister Ethelfleda, a still greater castle-builder than he, and to whom are due the mounds of Tutbury, Tamworth, Leicester, and some others, was the widow of Ethelred, Duke of Mercia, in 915, when the Danes had advanced by the Wye, and taken captive the Bishop of Archenfield. She attacked and defeated them before Hereford, no doubt making use of the new defences. She died shortly afterwards.

Early in the eleventh century, the Saxon sway had been so far extended as to have left the Dyke behind, and Wales was regarded as a part of England, and an attempt made to force it to contribute to the common tax for the defence of the island against the Danes. For this purpose Edwin, the Ealderman of the Mercians, led an army as far as St. David's, punishing the people for their refusal. At that period, and during the reign of the Confessor, the Welsh were led by Griffith-ap-Llewelyn, the ablest of their princes, and, indeed, the only one who ever held the Welsh together, or gave the English cause for anything like serious apprehension. Aided sometimes by the Danes from Ireland, sometimes by traitorous Saxon chiefs, and sometimes even by the discontented Normans, he is found during the first half of the eleventh century waging on the whole a successful war against Herefordshire. It is certain, from the number, magnitude, and character of the existing earthworks, that Irchen or Archenfield, called from its beech-trees "Trefawrth," by the Welsh, and sometimes by the English, "Fernley," had from a very early period been inhabited by the English; but either distrusting these, or because he wished to quarter afar off the visitors whom he attracted, but of whom he was afraid, the Confessor made large grants of land along this district to his Norman courtiers, with whom, therefore, Griffith had not unfrequently to deal.

The earliest of these grants seems to have been made to Richard Fitz-Scrob, whose fortress, built after a fashion till then unknown in England, gave great and general offence. His original castle has been replaced by later structures, now also in ruin, but the earthworks are probably original; and the name of Richard's Castle shows how deeply the fear of its builders was impressed upon the people; and it is, moreover, a very rare example of a parish bearing a purely Norman name.

These grants were opposed by Earl Godwin and his sons, and it was to enforce his remonstrances against them that the English Thane led a force from Beverstone, and challenged the Confessor to give up his stranger favourites,—a struggle which finally ended in the temporary banishment of that truly English earl.

In 1052, during Godwin's exile, Griffith invaded Herefordshire, and advanced as far as Leominster before Fitz-Scrob and his Normans were in the field to meet him. They were beaten in a pitched battle, and upon open ground.

In 1055, the earldom of Hereford was in the hands of Ralph, surnamed "the Timid." Griffith, uniting with Ælfgar, the Saxon lord of the East Angles, who was accompanied by an Irish force, burst into Archenfield, and again laid waste the border. Two miles from Hereford Griffith and Ælfgar were met by Earl Ralph, who seems, with the Norman contempt for infantry, to have placed undue weight upon his cavalry, the result of which was a complete defeat. Griffith entered Hereford, which was undefended, sacked and burnt the city, treated the cathedral and the clergy with excessive severity, and destroyed what the "Brut" calls the gaer, that is, the castrum or fort. The account seems to imply that the city was not then fortified. Mr. Freeman thinks the gaer was a work of masonry. However that may be, there is little doubt but that it was a work on the site of the later castle, for by the river-side, for defence, it would certainly be placed; and as the position of the cathedral has doubtless always been the same, there would scarcely be room for a fortress between its precincts and the western marsh. The position of the bridge, too, is probably ancient, and this would lead into the city, not into the gaer. The appearances of the earthworks, as they existed before the removal of the mound and the filling up of its proper ditch, much resembled those of Tamworth, and other works attributed to Edward and Ethelfleda, and the gaer may well have been of that date, so far as the earthworks were concerned. This inroad of the Welsh in 1055 was the most severe and the most lasting in its effects of any on record. All Archenfield suffered, and traces of the spoiler are recorded long afterwards in Domesday.

Although Godwin's return from banishment in 1052 had been followed by the putting forth of most of the Norman intruders, Richard Fitz-Scrob, one of the most offensive, seems to have remained, and long afterwards to have put down Edric the Wild; and his son Osbern, after a short exile in Scotland, came back to Herefordshire, and held office and dignities both before and after the Conquest.

In 1055 Godwin was dead, and to Harold, as Earl of the West Saxons, it belonged to redeem the disgrace incurred by Ralph the Timid. He lost no time in preparation. In the course of the same year he mustered his forces at Gloucester, and by his mere presence cleared Hereford of the Welsh and Ælfgar. He at once fortified Hereford. Whether he restored the castle is unknown, but he surrounded the city with a wall, no doubt along the line of the later structure. Mr. Freeman supposes Harold's work to have been a mere "dyke of earth and loose stones," or as Florence of Worcester describes it, "*Vallum latum et altum.*" Domesday, however, records a "murus" at Hereford, as having stood in the time of the Confessor, so that Harold, when Hereford came under his immediate government, may, as Mr. Freeman suggests, have replaced his vallum with a wall of masonry. Harold's defences probably did not include the suburb, which even then must have existed, since we read in Domesday of Burghers within and Burghers without the walls; though the latter would derive a not incomplete protection from the broad belt of marsh which then surrounded the city.

Griffith had sought and received terms of peace. Nevertheless it did not suit him to allow Hereford to become a strong post. Early in 1056 he again crossed the border. He was opposed by Leofgar, the new bishop, who, however, was slain in the first combat. His successor, Ealdred—a man of equal determination with better fortune—held the Welsh in check, and negotiated a peace, and the fortifications of Hereford were completed.

In 1062 Griffith again appears upon the scene. Probably he traversed Herefordshire, for he crossed the Severn in the diocese of Worcester. On this occasion Harold,—appearing not as the defender of this or that province, but of the whole kingdom,—executed a counter movement, and invaded North Wales. This was followed in 1863 by Harold's great invasion, in which Griffith was murdered by his own countrymen, and Wales submitted, having deprived herself of her greatest son. It was at the conclusion of this war that Harold employed himself in constructing a sort of hunting-lodge for his sovereign in the low lands of Gwent, at Portskewet, where earthworks are still seen. The lodge was attacked and destroyed while in progress by Caradoc-ap-Griffith-ap-Rhydderch, of South Wales.

Hereford played no part in the Conquest; but the city and shire occupy a respectable place in the Domesday Survey, where the customs are related in great detail. The king had six moneyers there, and the bishop one. Of the city burgesses 103 held of the king, and 27 had held of Earl Harold. All the tenants of the burgh were liable to military service against the Welsh.

The customs called of the Welsh in King Edward's land in Arcenefeld, or Irchenfield, also there recorded, are curious, and show not only the early existence of a local militia to resist the Welsh, but that the people were mostly of Welsh blood, and were employed against their countrymen. The King held three churches there, and the priests of them were to be the King's legates or ambassadors in Wales, and when the army marched against an enemy, to the men of Archenfield was committed the post of trust and danger. During the advance they were to form the "Auantwarde," and in retreat the "Redrewarde."

Such, then, having been the antecedents of Herefordshire, it is not to be wondered at that it was bristled with strong places, nearly all of which show indications of early dates, and in many may be traced the mount, or motte, which in England there is strong reason to regard as in favour in the tenth century. Domesday, usually so silent as to fortresses, and enumerating only forty-nine in all England, mentions in this county eight, and two strong houses. There were, however, many more, and at this day there remain traces more or less considerable of twenty-eight, of which many preserve the mount, and others earthworks of an early character. Similar works are found at Brecon and Builth, places known to have been held by the English at an early period. No doubt, these strongholds, originally strengthened with timber, were burned again and again by the insurgent Welsh; but the positions of most of them were well chosen, and each had its surrounding estate, so that when, after the conquest, the great Norman barons marched into Wales, they constructed upon these sites castles of masonry after their fashion, of which a few remain, though many, having been destroyed, have been rebuilt in the reign of Henry III., or later.

William's arrival no doubt confirmed and extended any local power that may have been allowed to Richard Fitz-Scrob and his son, under Harold. Osborn, as sheriff, held Hereford, and either he or the first Norman earl probably rebuilt the castle in the Norman manner.

William FitzOsborn, the great Norman chief, "*Magister militum bellicosus,*" Earl of Hereford from 1067 to 1071, was a fearful scourge of the Welsh, whom he drove back and vanquished on the banks of the distant Rhymny. To him are attributed the castles of Strigail, Clifford, Wigmore, and Ewias, that is, the Norman part of them, for some at least preserve older earthworks.

Roger de Bretuil, William's third son, succeeded him in the earldom. He plays no part in the history of shire or castle. Failing in rebellion in the eastern counties, he ended his days in prison.

When Bretuil died is unknown, but in 1138 Hereford, commanded by Wm. Talbot, held out successfully against Stephen, during a long siege. In this he was much aided by Milo, the constable of England, who received the earldom of Hereford from Maud in 1140, and it remained in his family till the end of the century. Milo's patent gave him the moat, probably the "motte," and all the castle. As earl, however, he was less fortunate. Stephen returned and took the castle, and wore his crown in state in the cathedral.

Roger, son of Milo, was in opposition to Henry II., but escaped by the wise counsels of Foliot, the bishop. In the reign of John a less discreet, or bolder prelate, Giles, Baron de Braose, united with Llewelyn; but, failing to bring over the men of Hereford to support him, died in exile. The castle seems then to have fallen into the possession of the Crown, and so to have remained. Prince John gave the custody of it to Roger Bigod, and in the sixth of his reign as king, and in the 7th of Hen. III., William, brother to Thomas, Lord Cantelupe, and sheriff, was also governor. The turbulent reign of Henry III. gave value to the castle of Hereford. 15 Hen. III., John Fitz-Terrick and Wm. de Stowe, surveyors of works at Hereford Castle, were allowed 20*l.* for repairing the walls. 16 Hen. III., Terrick and Roger Carlton were surveyors of mangonels and petards within the castle. 26 Hen. III., John and Roger le Werrur were surveyors, and had spent 7*l.* 8*s.* 6½*d.* on artillery, and 12*l.* 1*s.* 4*d.* in making a trebuchet called "Blythe," and 40*l.* 14*s.* 4*d.* in building a tower in the castle. 42 Hen. III., the castle was in the hands of the sheriff, Hy. de Pembridge, until the barons forced the king to appoint John de Grey.

44 Hen. III., Roger Mortimer was governor, and penetrated into Wales as far as Builth. He was, however, in turn attacked, and held the castle, though for a few weeks only, against Simon de Montford and Prince Llewelyn. Bishop Acqua Blanca was taken and imprisoned at Eardesley. Peter de Montford, the earl's son, had charge of the county, and employed the issues of the former in the repairs of the latter. After the battle of Lewes, Prince Edward was a prisoner here.

Edward's escape hence has often been related. Widemarsh, whence he galloped off, still bears that name, and lies about a mile north of the city.

During the whole of this time, from 1199, the title of Earl of Hereford had been borne by Henry de Bohun, whose mother was a coheir of a previous earl, but neither he nor his celebrated descendants, Earls of Hereford and Essex, although they held Huntington Castle and the lordship of Brecknock, and built the Castle of Caldecot, ever seem to have been seized of that of Hereford, which remained in the Crown.

Soon after the time of Edward's flight, John le Werrur and Wm. Valet were surveyors of works for the king, at Hereford, and charged 45*l.* 6*s.* 10½*d.* for repairs of the walls and of the king's houses. Wm. Capon also held lands at Marden, by the serjeantry of keeping the door of the castle, and this, under Hen. III., was commuted into military service.

Possibly the castle was employed as a local

treasury for 1 Edward I. Henry Pigot held 46 acres *in capite* by the tenure of transporting the king's treasure from Hereford Castle to London. In the same year Richard Porter and Richard le Panner, surveyors, charged 21*l.* 1s. 6d. for expenses and repairs of the king's house in the castle, and in the next year they had fifteen oaks from the king's forest of Haywood, a mile south-west of the city, allowed for repairs.

2 Ed. I., Giles Berkeley, sheriff, had spent 4*l.* 15s. in repairs, and in 7-8 Ed. I. Roger Burghull, his successor, had spent 2*l.* 5s. 4d. Hugh Turberville, one of a very unruly race, had, it appeared, when sheriff, burnt and destroyed in the castle the king's house, and certain engines of war and military stores, to the value of 100*l.* For this he had a pardon, 5 Nov., 48 Hen. III., but the debt remained, and, 9 Ed. I., the sheriff was ordered to distrain upon his goods.

12 Ed. I., a new chapel was erected in the castle, and the barons of the exchequer, by the king's precept, allowed Roger de Burghull 10*l.* 6s. 8d. on that account. 15 Ed. I., Henry de Solers, a Herefordshire man, had charge of the castle, with arms and stores. 32 Ed. I., Miles Pychard charged 40 marks for repairs, which were disallowed because not certified by the surveyor. John de Acton was governor, 33 Ed. I.

1 Ed. II., Alan Plukenet, keeper of the king's forest of Haywood, was to allow twelve oaks and stone for the repairs of the castle walls and towers. Ralph Freeman held lands *in capite*, in Fromyngton, by the service of carrying the cord round the castle walls when they were measured. 5 Ed. II., he paid half a mark for his relief, and commuted future payments for 7s. 7d. per week. 10 Ed. II., Hugh de Hacluyt charged 5*l.* for repairs.

13 Ed. II., Sheriff Richard Walwyn charged 6*l.* 13s. 6d. for repairs. At the close of the reign the queen held a great council at Hereford, and Hugh le Despenser, the younger, was hanged upon a tall gibbet, outside Friar's Gate. During the reign of Edward II., Wales was loyal, and Hereford therefore neglected. John of Gaunt was its governor, 1 Rich. II., but even his great love of building was not exercised here. As late as 8 Hen. VI., the city had a grant of timber to replace the wall where wanting.

The castle lay unnoticed, and more or less of a ruin for some centuries until it became the scene of one of the struggles between Charles and his people. It was first seized by Sir Wm. Walter, for the Parliament in 1643, with the city, then also walled, and the position of which is naturally strong. He retired from it before Prince Maurice, but shortly afterwards, without stroke of sword, recovered possession, again to retire, so that in 1644 it was still held by the king. In 1645, however, its troubles began in good earnest. Leslie and the Scots laid regular siege to it, and from the south of the Wye opened a destructive fire upon the Castle, Cathedral, and Bishop's Palace. Sir Barnabas Scudamore, with eleven guns, held out stoutly, beat off an attempt at a storm, and forced the enemy to be content with a stockade. As the mills without the walls were destroyed, others were extemporised within them. The Scots then encamped on Burton-shaw Meads, close under the castle, between it and the river. Scudamore, whose defences were out of repair, and his garrison weak, sent out for country folks to assist as workmen. The enemy found this out, and entering under that pretext, succeeded in taking the place. Much injury was then done to the public buildings, and the castle, as belonging to the Crown, and a ruin, was sold about 1652, for the value of the materials.

DESCRIPTION OF THE DEFENCES.

The Castle of Hereford was one of the strongest, most advanced, and most important fortresses upon the Welsh March, and one which being posted in a very fertile and open district, was peculiarly offensive, and very liable to the attacks of the Welsh people. The present remains are not inconsiderable, but as is often the case with fortresses of pre-Norman date, they are confined chiefly to earthworks, and include but slight traces of the later or defences of masonry.

The castle was placed upon the left or northern bank of the Wye, east of and below the city bridge, the cathedral, and in some measure the city, of which it occupied the south-eastern corner. Though excluded from the city liberties, it is, in common with the city, covered at some distance by a steep slope, at the foot of which lies the Yazor brook, which, rising far off to the west beyond Kentchester, and the remains of Magna Castra, supplied the broad tract of lowland still known as Forster's Moor, Moorfield, Canon's Moor, Prior's Moor, Eastern Moor, Moor Barn, and Widemarsh, to the north-west of the city, and which, after skirting its north front below Baron-court, turns Monkmoor and Sculf Mills, and finally falls into the Wye, at Eign Mill, some traces of which remain about half a mile in advance of, and below the castle. The ground thus included is to the north-east, a broad and dry platform of gravel, very fertile, and probably employed as a safe pasture in wild times. The lower tract to the north-west, now drained, and either cultivated or built upon, must in former days, have been an almost impracticable morass.

The city of Hereford, within its walls, was, in plan, about three-fourths of an irregular circle, placed upon the Wye, which forms its concave chord. Its dimensions were, north and south, 600 yards; east and west, 770 yards; and along the river-bank, about 600 yards; including the cathedral and the castle. The total girth was about 2,350 yards. The walls,—no doubt Norman,—upon the older lines were confined to the landward sides, excepting about 50 yards above the city bridge, and were in length about a mile and a quarter. They were pierced by six gates,—Wye Bridge, removed in 1782; Friar's Gate and Eigne, on the west, removed in 1787; Widemarsh Gate and Bye or Bishop's Gate, towards the north, removed in 1798; and St. Andrew's or St. Owen's Gate, on the east, removed in 1786.

The walls were reinforced by fifteen hollow mural towers, placed from 75 yards to 125 yards apart, or at a "flyte shoot,"—explained to be within 400 yards, and here much less. They were rather more than half-round,—that is to say, their side-walls were a little prolonged or stilted in plan, and they were 34 ft. high, having a cruciform loop in front, and probably two others laterally. Of these, two at least remain and are accessible, though their upper half has been removed. The intervening curtain was 16 ft. high on the interior, but it was built against the old English bank, which thus covered the lower 6 ft. of the interior face, and served as a ramp. Besides the two towers already mentioned, and which stood on the north-west face, the wall may be traced along the western side from Bishop's Gate, — now "the Commercial-road,"—to the river-bank. Where it has been pulled down the step remains, and the difference between the level within and without is brought to view. Of this wall the part from the Friar's Gate to the river is open to view from the exterior paddock. The ditch has been partly filled up, but the wall remains about 12 ft. high, unaltered, save by the removal of its upper 4 ft. or 6 ft. At regular intervals along it of about 50 ft. are broad pilaster buttresses, of slight projection, and without sets-off. These die into the wall below its present top. There do not appear to have been any mural towers on this part of the wall. Some kind of manufactory conceals the termination of this wall upon the river, where there was probably a tower; and from this point to the bridge a line of modern houses effectually conceals any foundations that may have escaped. The tracing out the town wall, or what remains of it, though aided by parallel streets, representing the rampart within and the ditch without, is a delicate operation; for the lowest houses of the city are here found, and the inhabitants seem to drive the trade of those who, at Jericho, dwelt in a similar locality. That part of the wall showing the pilasters is, no doubt, the original Norman wall. The part beyond, or, at least, the towers upon it, is probably of the time of Henry III. The wide modern street called Commercial-road, and which takes the place of the old Bishop's Gate, has, of course, caused the removal of all traces of the wall near the site of the gate; but the line may still be traced round the eastern quarter of the city, as far as the angle of the castle. Here, as before, are two roads,—one inside and one outside the line of the wall,—the actual place of which is shown, sometimes by a few stones built into the walls of later houses, and sometimes by a dip of nearly 6 ft. in level. Beyond St. Owen's Gate the actual wall remains for some yards, and may be seen from the exterior road. It extends to the counterscarp of the castle ditch, where it ends abruptly, having been in part pulled down.

The city bridge crosses the Wye by six arches, roundheaded and all apparently old. One is stiffened with three plain square ribs, and another shows traces of a similar addition. The bridge has bold piers, and advantage has been taken of this to widen it by turning a subsidiary arch, about 5 ft. wide, on each face, so that the old work is partially concealed. It does not appear where the fortified gateway was placed; probably upon the last narrow arch on the city side. This does not, indeed, show any trace of having been perforated for a drawbridge, and tradition places the gate at the outer end.

Next to and a little below the bridge, near the river bank, and a little south of the centre of the city stands the cathedral, and below and next to it the castle.

Besides the cathedral and its appendage of St. John's, there stood within the walls four churches—St. Nicholas's, All Saints', St. Peter's, and St. Owen's. There was also St. Martin's, beyond the Wye, destroyed during the civil wars. The disposition of the streets is irregular, and in no way cruciform or indicative of any Roman arrangement. Thus situated and defended, Hereford was a very strong place, as it had need to be, for it was exposed to the fierce and repeated attacks of the Welsh, who especially resented, as was natural, the conquest of their most fertile provinces by the invaders.

The castle, as has been said, occupied the south-eastern quarter of the city. It lay in the parish of St. John. Leland describes it as one of the fairest, largest, and strongest castles in England.

It was composed of two wards placed side by side along the bank of the Wye, not actually on the stream, which, when the defences were of earth, might have undermined them; but about seven yards distant from and on the edge of a steep sloping bank, about 8 ft. above the water.

In general plan the eastern ward was an oblong, the sides being nearly straight, and the east end narrower than the west. The eastern end runs at right angles to the river, and measures along the old line of its wall 100 yards. The south or river front measured 175 yards, as did the north front. The west front, connecting the two, measured 196 yards. This inclosure formed the eastern or lower ward, and contained about 26,000 square yards.

The upper or western ward was applied to the end of the eastern, and like it rested on the river. In form it was rounded, or rather irregularly polygonal, and composed of a large conical mound, wholly artificial, with a circular circumscribing ditch. Within the ditch it measured, on the east and south sides each 100 yards, and, on the three remaining sides, 60 yards each. It was, therefore, in girth about 380 yards, and in area about 14,000 yards. Thus the area of the whole castle, ditches included, might be about 8¼ acres. The eastern ward is stated to have contained about 5¼ acres.

The earthworks of the lower ward are tolerably perfect. They are composed of a steep bank along the north and east sides, from 15 ft. to 30 ft. high, the highest and broadest part being at the north-east angle, where there was probably a tower. This bank has evidently been thrown up out of a broad and deep ditch, which remains perfect and full of water, on the north front; but has recently been filled up along the east as far as the river; nor do there remain any traces of the castle mill, which stood at its junction with the river. The ground is raised along the river front about 4 ft., and may have been higher. Along the west or side towards the upper ward, the bank has been thrown into the ditch, and there is only a trace of either. Leland says there was "a great bridge of stone arches, and a drawbridge in the middle of it, to enter into the castle;" but even in Leland's time this was gone.

The entrance to this ward was evident at its north-west angle, where the moat is crossed by a causeway, and the public now enter. There was a gate-house in Speed's time, which he places, probably by an error of drawing, near the middle of this face. But the bank is there far too high, and the ditch far too deep and broad, to allow of the entrance being placed there.

The modern museum built on the river at the south-west angle of the ward, or rather between the two wards, and over the line of the ditch, contains some parts of an older building, and a doorway of the time of Henry III. or Edward I. This building probably guarded the opening of the middle ditch into the river, and was also the gatehouse between the two wards. Speed shows

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a sort of water-gate here, which is probable enough. The surface of the lower ward is level. In it stood the chapel of St. Cuthbert, with a semicircular apse, and in Speed's time also two small dwelling-houses. Leland says, "There is a fayre and plentifull spring of water in the castell, and that, and the piece of the brooke coming out of the ditch, did drive a mill within the castle." This was in addition to the mill outside and north of the castle, and probably was a part of the present museum-house.

The earthworks of the upper ward have unfortunately been destroyed, the mound and banks thrown into the ditches, and all made level, and much built over. The site of the mound is occupied by an enclosed three-cornered kitchen-garden. The well or spring spoken of as St. Ethelred's, remains. It opens behind the museum building about 50 ft. from the river, and 6 ft. or 8 ft. above it. As it is described as being further north, it is probable that when the ditch was filled up a pipe was laid to bring the water out at its original level. This ward contained the mound known as the Castle Hill, and which seems to have been removed early in the present century. It was girded at the base by a polygonal curtain wall, outside of which was the ditch. It is difficult clearly to understand how the mound was occupied. Leland says "there was one great tower in the inner warde." Sir Henry Slingsby, in his diary, in 1645, describes Hereford city as not much unlike York, "for it hath a round tower mounted upon a hill, like to Clifford's Tower, and the mills near it, with some little works about, having the river Wye running close by; but the walls, though they be high, yet are not mounted upon a ramp, as York walls are." This is intelligible enough, the walls spoken of having been at the base of the hill; but Leland speaks also of a donjon or keep, of what plan is unknown; but upon its wall ten half-round towers, and within, what appears to have been a square tower of considerable height, in the base of which was a dungeon. We may safely conclude from Sir Hy. Slingsby's very clear account that the mound carried, like Cardiff and Kilpeck, a shell-keep; but this could scarcely have been furnished with ten half-round towers. These probably belonged to the *enceinte* wall below. The keep was entered, it seems, from the south-east side by a flight of steep steps up the mound. In the mound was a well, lined with stone, as at York.

The castle ditches were wide, deep, and filled with water, not from the river, or but partially so, but from a brook, which seems to have fed the city ditch on this side, and on reaching the castle at the north-east angle to have divided, a part running direct along the east front of the lower ward, to the river, and the other part supplying the north ditch, and the ditch which divided the upper from the lower ward, and the ditch which passed round the east side of the ward, and divided it from the cathedral precinct. This latter ditch also received some little contribution from St. Ethelred's Well, a spring on the north side of the upper ward, already mentioned. The castle mill stood at the junction of the eastern ditch with the Wye. The water in the castle ditches was of course penned back for the use of the mill, and to strengthen the defences, and it seems to have flowed back upon the city ditch as far as St. Owen's Gate, thus strengthening and connecting the city and the castle.

We have, then, to recapitulate, as the constituent parts of Hereford Castle, an oblong space, with the river on one side, and high banks and ditches on the other three. One end was cut off from the rest, and had its proper ditch, more or less circular, and within it a conical mound, with a table summit, and upon it a shell keep, with some kind of central tower, probably an addition. At the base of the mound, within its ditch, was a second wall, many-sided in plan.

The lower ward no doubt had its walls along the summit of the earthworks, and these probably were low, by reason of the height of the bank and the depth of the ditch beyond. There was a gatehouse at the land entrance at the north-west angle, and a water-gate at the south-western, where also was the passage between the two wards. Very likely there was a postern at the south-eastern angle, where is now a footway.

There is a general resemblance, as regards the mound and bank, between these arrangements and those at Wallingford, Wareham, and Tamworth, and with what is related of the Castle of Worcester.

G. T. C.

1873.

FILTERED WATER FLOATING SWIMMING-BATHS.

We believe that the Legislature must sooner or later entertain the question of the establishment of large swimming-baths within easy reach of all townspeople,—that is to say, a large bath in each comparatively small district. The largeness is necessary to give a sense of pleasure and enjoyment to persons performing a mere requirement of health. Merely to provide a bath of sufficient dimensions to enable people to wash themselves is not sufficient,—at least, it is not sufficient to begin with. When the habit has been acquired, and the personal benefit has been experienced, of frequent bathing, smaller baths may be sufficient. In the beginning, however,—and we have yet to make a beginning in this matter,—it is necessary to create a sense of refinement in the vulgar by offering pleasure with utility. The many baths that have been already established have mostly proved failures, for two reasons,—the one being the smallness, and gloominess, and general discomfort of the place, the cause of which is chiefly to be attributed to the high price at which alone land can be purchased in large towns in situations suitable for baths, and the consequent failure to pay a reasonable dividend on the large amount required for the construction of a proper bath; and the other, that they are situated in such out-of-the-way places as to be unknown to many who would make use even of them. Although we believe that ultimately such baths as we have indicated must be constructed in every large town, with the assistance or by the direct control of the Imperial Legislature, we are sensible that they cannot be of immediate attainment; and in the meantime it may be well to consider the practicability of making use of rivers.

As almost every large town is situated on a river, it is to it that attention is naturally first directed; but the very thing which makes bathing-places much required,—population,—is also the cause of the pollution of the river, and, in fact, it would be hard to find in England a river running through or by a large town which is fit to bathe in.

The following communication by Mr. Chas. Slagg, C.E., suggests a scheme for the construction of floating swimming-baths, to be placed on rivers the water of which is not clear enough to bathe in.

It is proposed to place floating baths in the current of a river, and by means of tide wheels to utilise the motive power of the current to pump water into the bath from a well into which the river-water enters through a filter in the bottom of the vessel.

It is proposed to make the length of the swimming-bath 120 ft., and its width 30 ft.; and the outside dimensions of the vessel, 200 ft. long and 44 ft. wide. A platform 12 ft. in width is to run round the swimming-bath, its width being divided into three portions. The middle portion, 3 ft. in width, is to be occupied by dressing-boxes. The inner portion, 5 ft. in width, is to project over the side of the bath, and form a promenade, being 2 ft. or 3 ft. above the level of the water in the bath. The outer portion of the platform, 4 ft. in width, is to form a gangway upon which persons will arrive, and from which they will depart; the entrances to the dressing-boxes being from this outer gangway.

Near to the filter at each end of the vessel is placed a pair of tide wheels or current wheels, connected by a shaft across the deck of the vessel, upon which is to be a spur-wheel and gearing, working a crank shaft and the pumps. Two pumps are to be placed in a well at each end of the vessel. The pumps are to be of equal capacity, and one is to supply the water to the bath, while the other exhausts it from it. Adjoining the well is to be a space in the bottom of the vessel, from which the planking is omitted, and in its room is to be placed copper wire-gauze grating, such as is commonly used in water works to strain the water. This grating, which is to be flush with the underside of the bottom planking, is to be supported by bars of wood properly framed together. Upon the grating is to be laid wool, cotton, flax, hemp, or other fibrous material, or a mixture of two or more of such substances, upon which are to be placed coarse sand and gravel. By lowering the water in the well by pumping, a head is created outside the vessel sufficient to cause the river-water to flow inwards to the well through the filtering medium.

The bottom of the vessel slopes downward from each end to the middle of its length, so that when the swimming-bath is filled with water there shall be a depth of from 4 to 5 ft. at each end, and from 8 ft. to 10 ft. in the middle. Those who prefer a header may choose the centre portion of each side of the bath.

Seeing that the power to be applied is costless nearly, -constant, nearly,—and in most situations of sufficient force to elevate the water to a height from which it may descend in a shower through a perforated floor, it is proposed to pump the water into an elevated tank of, say, 8 ft. clear headway, and containing, say, 5,000 gallons, at each end of the vessel, and so to afford a shower-bath, douche, or other similar form of bath, on a large scale. A space at each end of the swimming-bath 6 ft. in width, and 30 ft. in length, or whatever the width of the vessel may be, is to be allotted to those who may take their bath in this way, either solely or before plunging into the swimming-bath.

Thus the outward aspect of the bath will be that of a long barge, with a row of dressing-boxes along each side and across each end; a tank overhead near each end, and near each tank a wheel, something like the paddle-wheel of a steamboat (and protected in the same manner), which will be slowly turned by the current and pump filtered water into the tank, from which it will descend either through the shower-bath or directly into the swimming-bath, at the discretion of the bath-attendant.

A nearly constant current of fresh water will be caused by the action of one set of pumps withdrawing the water and discharging it into the river, while the other set draw water into the bath through the filters. For a short time before and after the turn of the tide, the wheels will not work; but there will be water in the tanks, to the amount of from 5,000 to 10,000 gallons, always ready for use.

If the total elevation of the water, including both the supply and exhaust, be taken at 20 ft., and the time in which the tank (containing 5,000 gallons) is to be filled, at one hour, the power to be exerted by each pair of wheels will not be more than half an effective horse-power. Taking the velocities of the tides of the Thames, recorded by the Ordnance Survey Commission, by Mr. Rennie, and by Mr. Hawksley, and making the wheels light, it may be said that the current is fully equal to this power, without here going into figures of detail.

In respect of the form of the filter here described, it may be worthy of remark, that although on land upward filtration is objectionable, because of the difficulty of dealing with the accumulation of mud underneath the filter; yet in this case it is of a good form, because the current in the river has a constant tendency to wash away any accumulation that the motion of the water inwards tends to cause at the entrance.

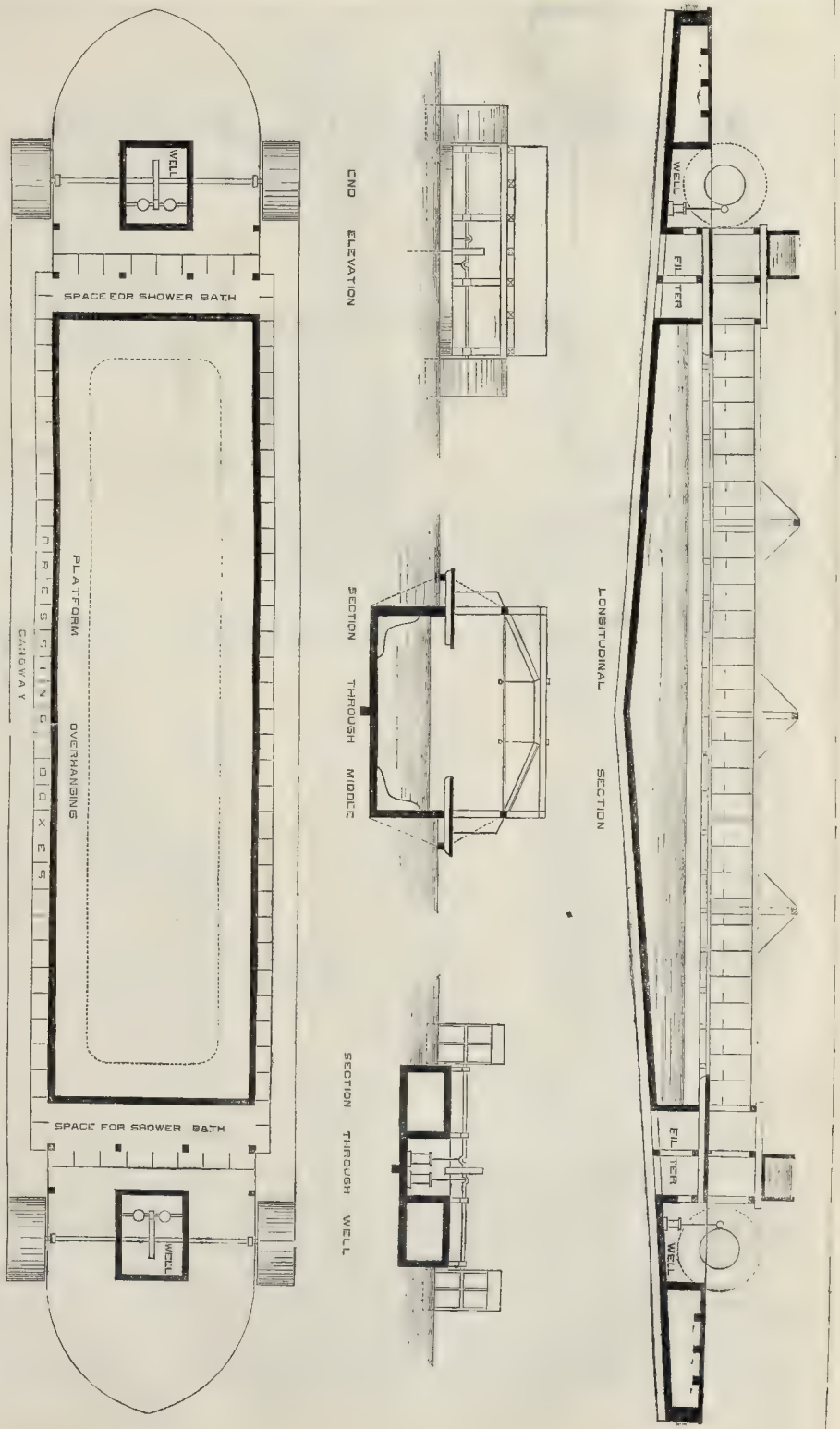
It is proposed to establish, in connexion with the Bath, a service of boats to and from each shore, one payment to include all services. (This expense is included in the estimate to follow; but another and perhaps better plan would be to make arrangements with the steamboat companies.)

It is proposed that a launderer be employed to wash and dry the towels on board the vessel, for which there is room below deck at each end of the vessel. A sum is included in the estimate for the purchase of boats, washing and drying machines, towels, and other stores.

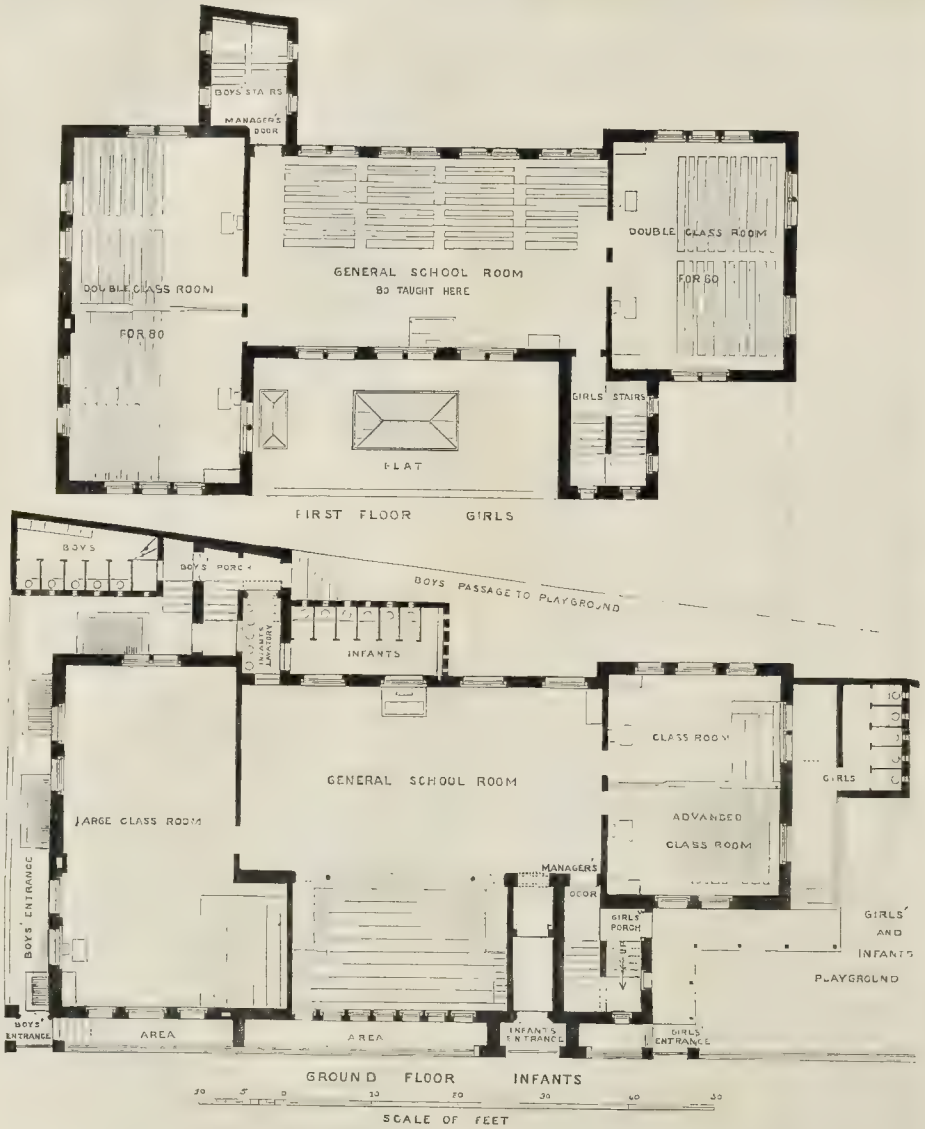
A ticket-box is to be established on each shore opposite, or as nearly as may be, to the bath, the rent of which is included in the estimate of expenses.

In situations where there is no current of water, or an insufficient one, it is proposed to place a small steam-engine on board the vessel, in substitution of the wheels.

Note.—The details have been worked out, and show the following results. The cost of each bath, completely furnished, is estimated at 3,000*l.* The estimated net annual income, making the charges small, and after paying all expenses, is 278*l.*, or fully 9 per cent., calculated for half the year, or twenty-six weeks. No account of Sunday mornings is taken in this estimate; but until nine o'clock the bath might be opened either free or at a nominal charge. Neither is any return estimated during the remaining half-year; but possibly some use might be found for the bath during that time also.



SCHEME FOR PROVIDING FILTERED-WATER SWIMMING-BATHS IN IMPURE RIVERS.



PUBLIC ELEMENTARY SCHOOLS, BLUNDELL STREET, ISLINGTON.

SCHOOLS FOR THE LONDON SCHOOL BOARD,

BLUNDELL-STREET, ISLINGTON.

The public elementary school now in course of erection in Blundell-street, Islington, is one of those for which the School Board for London invited designs in limited competition. The design which was successful was that submitted by Mr. T. Roger Smith, and it is being carried out, under his superintendence, substantially as submitted.

The chief difficulty attending the planning of this school rose from the fact that only a comparatively moderate portion of the site, and that of a somewhat inconvenient shape, was available for building. The design, however, supplies all the required accommodation, and, on the whole is believed to do so in as efficient a manner as if there had been no irregularity of site. The design was arranged for 740 children—300 infants on the ground floor, 220 girls on the first floor, and 220 boys on the second. The building will, however, seat eight more in each school, making the total accommodation 804.

The infants' school-room is on the ground-floor, and the principal gallery is placed in a recess, partly top lighted, which is not carried higher than this floor. A large class-room occupies one end of this room, and a second or double class-room, separated by a movable partition, is placed at the other end. The entrance for the infants is direct from the front, and adjoins that for the girls. They share the girls' play-ground; their conveniences are at the back of the main building; their cloak-room is under the large gallery.

The girls' entrance is from the front, and adjoins that for the infants. They have a staircase without winders, and with a central solid wall, and are accommodated in a school-room 22 ft. by 42 ft., seated for eighty children, of two grades, with a double class-room 20 ft. by 40 ft., also seated for eighty children of the next two grades, at one end, and a class-room 20 ft. by 26 ft., seated for sixty children of the two highest grades, at the other. The class-rooms obtain side light. This has not been obtainable in the school-room: the children there have the north light behind them. The girls have a cloak-room in the basement, and their conveniences are approached by a covered way. They share part of the playground and the use of the playshed with the infants.

The entrance for the boys is entirely at the opposite end of the building from that for girls and infants, and is at the rear. A separate



SCHOOLS FOR THE LONDON SCHOOL BOARD, BLUNDELL STREET, ISLINGTON.—MR. T. ROGER SMITH, ARCHITECT.

access to their playground has been preserved for them at the rear of the building. Their staircase, school, and class rooms are similar in size and arrangement to those below them, which the girls occupy.

The original design provided for an additional story, over the boys' school-room, to contain a drawing class-room and teachers' rooms. This will be dispensed with in carrying out the building. The basement, besides some teachers' rooms and boys' and girls' lavatories, will contain a residence for the care-taker and the necessary furnace-room.

The entire building will be warmed by a hot-water apparatus in the basement, from which heated air will be conveyed to every school and class room by flues provided for the purpose. This apparatus has been designed and arranged by Mr. D. O. Boyd.

With reference to through window-ventilation for all the school and class rooms, the windows will have the casements hinged at the bottom, and opening inwards, such as are often known as "hospital windows."

The material is brick, with stone sparingly introduced, and the roofs are slated. The contract has been taken by Messrs. L. H. & R. Roberts, of Islington, at the sum of 6,370*l*. The clerk of works is Mr. Joshua Lewis.

THE WASTE OF COAL.

On the 1st inst., Sir W. G. Armstrong delivered the presidential address to the North of England Institute of Mining and Mechanical Engineers. It included many valuable observations, but we are forced to confine ourselves to those on one subject. Sir William said,—As I shall speak of coal in an economic as well as in a technical point of view, I cannot well avoid making some reference to its present excessive cost, because coal, like everything else, must be governed in the extent of its application by its price in the market. In addressing an Institution, so largely composed, as this is, of colliery proprietors, it is not an agreeable task to dwell on the evil of dear coal; but our Institution is not a commercial one, and I must speak of this subject, not as affecting individual interests, but as bearing upon mechanical art and national prosperity.

For many years past the consumption of coal has been increasing at the rate of about 4 per cent. per annum, computed in the manner of compound interest. We are all familiar with the cumulative effects of compound rates of increase; and it is easy to see that if the consumption of coal continued to advance at this rate, we should speedily arrive at impossible quantities. Thus, in eighteen years our present enormous consumption would be doubled; in thirty-six years it would be quadrupled; and in fifty-four years it would be eight times greater than at present. It is clear, therefore, that our consumption has been increasing at a rate which could not possibly last. If nothing else was destined to arrest it, a failure of mining labour was inevitably approaching to have that effect; but a few years would probably have yet elapsed before the number of hands became inadequate to meet the required demand, had not the miners precipitated the event by restricting the hours of work.

The hours of mining labour in this district, twenty-five years ago, were nine per day. At a subsequent date they were reduced to eight, then to seven, and finally to six. Hitherto the men have worked eleven days a fortnight, but it seems doubtful whether more than ten can now be worked, consistently with the very proper limitations of the recent Coal Mines Act, in regard to the labour of the boys. The full hours per fortnight will therefore at the most be sixty-six, or thirty-three hours per week of labour at the face of the coal; but as it is only the steadiest men that work full time, the average time will, of course, be considerably below that limit. I am not aware to what extent reduction of time has been carried in other parts of England, but we hear of the same policy of restriction, either of time or output, or of both, being put in practice in all the important coal districts. I do not suppose that the average output, per man, has fallen off proportionately to the reduction of hours. The men work hard, even harder than formerly, while at their posts; but it is impossible that so great a reduction of working time can have taken place without so lessening the output, per head, as to neutralise, in a great degree, the increase of production due to the numerical growth of the mining population.

Under these two conditions of increasing consumption and restricted labour, we have reached a point at which the demand has overtaken the supply. As yet, the deficiency cannot be great, for it has only very recently become apparent. Consumption does not advance by jumps; and we may assume that if a progressive increase of 4 or 5 per cent. per annum could have been maintained in the production of coal, a balance would still have existed between supply and demand. Though production has ceased to keep up with demand, it has not, so far as we can judge, actually receded; and it would therefore appear that a small addition to the present supply would restore the equilibrium. But small as the deficiency must be, it is sufficient to create a sense of scarcity, and, as a consequence, to send up prices to a famine pitch.

The situation is a grave one, and the public has not yet fully realised how very grave it is. Taking the present consumption at 110 millions of tons (exclusive of exportation), and estimating the extra price to consumers at 8*s*. a ton over all, the annual loss to the community from the additional cost of fuel amounts to 44 millions sterling. Had a Government tax of 44 millions been levied upon coal, in addition to existing taxation, the effect would have been regarded as utterly ruinous, not only in regard to its prodigious amount, but on account of its repressive effect upon every kind of production. Yet, it is a fact, that we are now paying the equivalent of such a tax, with this unfavourable difference—that the money does not go into the coffers of the nation. Whether it chiefly goes to coal-owners or coal-miners is a question which I need not discuss; but I may observe, that the restrictive action of the men has benefited their employers as well as themselves, and that the public are the only sufferers. Coal-owners have long been aware that limitation of quantity was the only effectual mode of raising price; but they have never been able, by their own action, to maintain a restricted production. At last their workmen have done it for them, and we see the result.

Whether the trade of the country will bear up against the heavy burden of dear coal, combined as it is with dearness of other products, arising from similar causes in other industries, is a question on which I shall not attempt to prophesy. It will be more to the purpose to consider what can be done to mitigate the evils under which the nation is now labouring in regard to the price of coal. It is vain to appeal for relief either to coal-owners or coal-workers. Self-interest is the ruling principle of trade, and it is visionary to expect that men will sell either labour or the produce of labour for less than the market price. However generous a man may be, he will not exhibit his generosity by selling an article below its value. Speaking, then, as one of the public, and not as a coal-owner, I say we must strive to economise the use of coal; speaking as president of an institution of mining and mechanical engineers, I say we must endeavour to make up for the deficiency of human labour by a more extended use of machine labour.

The waste of coal, both in domestic and manufacturing use, is a threadbare subject; but there never was a time when its consideration was of so much importance as at present. The small deficiency of supply, which is now so violently stimulating the market, would be just as effectually expunged by economising consumption as by increasing production. If, on the one hand, the mining population could easily, by a few hours' addition to their weekly labour, restore the equilibrium between supply and demand, so, on the other hand, consumers, taken as a body, could do the same thing, by discontinuing in a small degree those reckless habits of wasting coal to which they obstinately adhere.

The consumption of coal takes place under three great divisions, each absorbing about one-third of the whole produce: — 1st. Domestic consumption; 2nd. Steam-engine consumption; and 3rd. Iron-making and other manufacturing processes. In the first two divisions the waste is simply shameful; in the third it is not so great, but still considerable, though in some processes, and especially in the smelting of iron, economy of fuel has been so diligently pursued that there remains but little apparent scope for further saving.

I shall not dwell on the waste of coal in domestic consumption, as it is scarcely a subject for engineers; but the circumstances of the times are such as to forbid my passing it unnoticed. It is impossible to conceive any system of heating a dwelling more wasteful than that of sinking the fireplace into a wall directly beneath the chimney, which carries off the products of combustion. Nothing can be clearer than the advantage to be gained by merely advancing the fireplace a little into the room, and constructing it with proper heating surfaces, as in the "Gill stove" and in many other stoves acting on the same principle. There is no occasion to shut out the fire from view. Neither is there any difficulty about ventilation, since fresh air can easily be introduced from the exterior by a pipe delivering its supply against the heated plates, so as to temper the air before it enters the room. By this simple and unobjectionable departure from the conventional fireplace, the quantity of coal required to produce a given heating effect might easily be reduced to one-half, and still greater economy would be effected by the use of hot-water apparatus, which, however, has the objection of being too costly in first outlay to admit of very general application. For cooking purposes, also, the consumption of coal is in most houses equally extravagant, and I may add, equally inexcusable, since the means of prevention are attainable by the adoption of known methods and appliances for concentrating the heat upon the work to be done.

THE SIMPLICITY AND SAFETY OF SEWER VENTILATION.

In the course of a paper on this subject recently read, Dr. Alfred Carpenter said the principle to be avoided is stagnation; the principle to be inculcated is movement. Keep any quantity of sewage moving, and no evil will arise; keep the air contained in sewers in a similar state of movement, and no danger from it is possible. Given a number of cylinders with increased area, but decreasing capacity, the problem is how to obtain such a circulation of air in those cylinders as shall prevent the possibility of stagnation of any air contained in them. I contend that if the superficial area of the smaller ends, if open to the air, be greater than the square of the cross sections of the sewer itself, and if no dead ends are allowed in any house-drain or branch sewer, and if every soil-pipe is extended upwards in a straight line above the watercloset, so as to provide the openings, there will be a constant current of air from within the sewer through the house-drains into the open air, which will prevent the possibility of stagnation, and cut short the evils which spring from the introduction of sewer gases into houses. It is true that occasionally there might be a reversed action in consequence of the disuse of, or the stoppage of, a given sewer, by flooding. This would be occasional only, and would not be attended with danger to the inmates of the houses or the sewer.

If sewage is running down a drain or sewer, it will be always found that air is passing upwards, and thus alterations in the pressure occur; and there is a difference in the density of the air, which will be sufficient to produce a movement. The saturation with moisture will also vary, being always greater in the sewer than in the external air; there will also be variations in temperature: if the air is cold out of doors there will be an escape of warm air. This is constantly seen in snowy weather and frosty seasons, when a melted space is observed around the gratings in the streets, and on the iron doors which cover the man-holes; whilst if the air is warmer outside, the difference in the quantity of contained moisture keeps up the circulation in the same direction. The wave of sewage passing down a sewer displaces an equal wave of air, which rushes up to occupy the space vacated by the sewage. The intermittent discharge of hot water also assists in the same direction, and it is not found that the temperature of town sewers ever falls below 42° or 44° F.

Thus, then, there is an alteration of density produced by the wave of sewage passing down a sewer, commencing a circulation, which is kept up by the difference in the physical states I have already mentioned. Now, if we provide a sufficient number of openings at the smaller ends of the house-drains, so that every branch communicates directly with the open air, and no dead ends exist at all, we shall bring into play every one of the forces which arise from differences of density of temperature and moisture; whilst, if there

should be new productions within the sewers themselves, another powerful agent comes into play, namely, the law by which gases diffuse themselves into space. These altogether will effectually prevent that stagnation which gives rise to danger in sewers. The openings will act, to some extent at least, in manner like to the stomata in the leaves of plants, and the pores in the skin, by promoting an interchange of material and keeping up circulation. Thus stagnation will be prevented, and without stagnation there will be no production of those matters capable of setting up disease in the human frame; or if those matters are produced in the first instance above ground, and are discharged into sewers, there will be not that concentration of matter which is necessary for evil to arise from it, and no reproduction of matter will be possible. The constant current of air through the sewer will act upon such morbific matter, if it should float about in air in such a way as will oxidise it and render it innocuous, depriving it of its malignant power.

It is really curious and trying to read in local journals of intelligent men recommending the erection of furnaces for the destruction of gases, and the expenditure of large sums of money for the purpose of dissipating noxious fumes, when it is so much more easy to prevent their production altogether, if the simple plan I advocate is put into general operation. Let it be general, and the production and spread of typhoid from sewer gases will altogether disappear from the list of causes of death in towns, with a general plan of sewerage.

There may be any number of water-closets on the same pipe, one above another, with but one ventilator. It is not necessary for the extension to be carried up a long distance above the houses unless the houses are very crowded, and the openings likely to be in close courts or alleys. It may terminate as soon as possible, and if it is near to an outer wall (as it always ought to be), it may pierce the wall and be left so, being cut off and left flush with the outer surface of the wall, cemented into it, and covered over by a perforated iron grating. The tall erections and queer-looking things that one sees about in all directions when ventilation is practised, are unnecessary. They are put up by persons who do not understand the principle for which ventilation is carried out—namely, not for the purpose of carrying up stinks and dangerous miasms, but to provide a draught which will prevent the origin of danger altogether.

If a sufficient number of the openings I have indicated be provided on a given sewer—namely, at least one for each soil-pipe, and one for each branch drain, which may be used for any other purpose (and which it is not possible to cut off, so that the communication is indirect only), no evil will be generated in the sewer, for no stagnation will arise, no reproduction will be possible, and no concentration can take place. It unfortunately happens that the principle is ignored, or the operation of it reduced to a minimum by putting a number of right angles on the ventilating pipe for the purpose of carrying it round spoutings, string courses, and the eaves of the house, or any other impediments which may happen to come in the way.

It may be said that the plan I advocate speaks of outlets only, but there must be inlets for the air which is to continually traverse the house-drains. These inlets in the Croydon districts have been made in the public sewer by openings which occur every 100 yards. They are covered by gratings, and guarded by baskets containing charcoal, placed in a particular manner, so that the charcoal cannot get wet. In the majority of instances these openings are inlets for air, and if they are examined in dry weather, the charcoal is seen to be covered with dust, proving that air has descended into the sewer. In some the charcoal is always black, and from some of these I have known a foul smell proceed when the basket of charcoal has been temporarily removed. It is seen that the openings nearest to the outlet, that is, in the lowest part of the sewers, are inlets; whilst those near to the upper end are outlets.

The same rule applies to the openings which exist in London streets; some of them give out sickening odours, which are deprived of their dangerous qualities by dilution with fresh air, a process by which their striking character is often made more manifest, but their evil nature reduced. The tendency among local authorities is to diminish these openings, whilst the curative plan is to admit more air, and remove the deposit which gives rise to the smell.

ON CYLINDRICAL OR COLUMNAR FOUNDATIONS IN CONCRETE, BRICK-WORK, AND STONEWORK.

This was the subject of a paper by Mr. John Milroy, C.E., read at the Institution of Civil Engineers, on January 28th. In this communication a description was given of an attempt which had been made by the author, acting partly in concert with Mr. J. W. Butler, to render concrete, brick, and stone, more easily available for cylindrical foundations. After alluding to brick cylinders, which had been in use in India for centuries, and had more than once been suggested for home works, it was remarked that probably the engineers for the trustees of the Clyde navigation had been the first to adopt them in connexion with a great and important undertaking. In 1869, the trustees requested Mr. J. F. Bateman and Mr. J. Deas to report on the best means for providing a large and progressive extension of quayage, suited to the present and future requirements of the harbour of Glasgow. With a view to obtain a greater depth of water than could be had alongside the existing quays, their attention was directed to iron cylinders, and subsequently to brick cylinders. The result was that, in 1870, an arrangement was made with the author, in conjunction with the late Mr. Brassey, to construct in brick cylinders, to some extent as an experimental work, the Plantation Quay, an extension westward of the wharfs on the south side of the Clyde. After a brief introductory description of this work, the author confined his remarks to a novel manner of making the brick cylinders, to the mode of sinking them, to the form of the shoe, and to the general arrangements adopted in the execution of the work.

The Plantation Quay was founded on 100 brick cylinders, sunk in a continuous line close together, so as to form a length of 400 yards of quay. The wells were 12 ft. in external diameter, and 2 ft. 4 in. thick, thus having an internal diameter of 7 ft. 4 in. Their shape was circular, except at the points of contact, where they were formed with tongue and groove, *i.e.* a square projection fitting into and sliding in a corresponding recess in the adjoining well. From the bottom of a trench which was cut down nearly to the level of low water, the cylinders were sunk about 36 ft.; but the earth on the river side was removed when the sinking was completed, and dredged to a depth of 20 ft. below low-water level, thus leaving a length of about 14 ft. of cylinder beneath the dredged bed of the river. The cylinders were only carried up 2 ft. above low-water mark; a plug of concrete was then lowered to the bottom of each cylinder, to give it a proper bearing, and to protect the rest of the filling from disturbing influences, when the cylinders were refilled with the sand and other materials which had been excavated. On this foundation, suitably prepared, the rest of the quay was built as an ordinary retaining wall.

Instead of constructing the cylinders brick by brick, *in situ*, as was the custom in India, the author resolved, with a view to the expeditious execution of the work, to pursue the novel course of making them in rings, in frames placed on a platform near the line of the quay, and then to put them together, *in situ*, after they had been allowed to consolidate. Close to the line of the cylinders, over which was erected a high gauntry, with a steam traveller, a wooden platform was laid with a low gauntry, carrying a steam traveller. On this platform the rings were moulded in frames, which were constructed of wood in four sections bolted together. Annular layers of wood were fixed to the platform, in such a way that their outer edges might keep the frames in place, while their inner edges served as guides in shaping the eye of the rings. When a ring had been built up with bricks and Portland cement, and had partially set, the frame was removed, and the ring, which weighed between nine and ten tons, was allowed to stand a few days to consolidate thoroughly. When the ring had become thoroughly indurated, it could be removed by means of the travellers and a line of rails, either to be fixed in place or to be stored up for future use.

In practical construction, concrete differed from brick cylinders only in this, that they must be made in frames or moulds, and that an internal as well as an external frame must be used. In choosing between them, the question was chiefly one of expense. When their relative cost was equal, concrete was perhaps to be preferred, as the process of mixing the concrete and filling the frame was so simple that it could be carried on, under proper surveillance, with unskilled labour. In this connexion, mention might be made of the application by Mr. J. W. Butler of Mr. Ransome's artificial stone "apcrite," on the same system as that employed by the author. Having conceived the idea that it was admirably adapted for the construction of cylinders, he made and sank, in 1871, at the Hermitage Wharf, on the Thames, some experimental cylinders with complete success. They were 8 ft. in diameter, and 9 in. thick. The courses or rings were moulded in frames, and were cemented together with the mixture of which they were composed.

THE WALLS AND FLOORS OF HOSPITALS.

It would appear from Dr. Langstaff's address to the Southampton Medical Society,* that many existing hospitals are too large to afford the best chance of recovery of patients who undergo surgical operations. It is impossible to ventilate large wards efficiently while the patients are there, for the foul air arising from their bodies and their wounds hangs about the bedding, furniture, and walls, and cannot be got rid of without first removing the patients. The remedy for this, radically, is to build a large number of small separate rooms, instead of the few large ones now generally existing; but in trying to make the best of what we have, Dr. Langstaff says he has found—as well as other physicians whom he mentions,—that the floors and walls of a hospital, after continued use, absorb matter which leads to the outbreak and spread of disease; and that it behoves, therefore, to apply to them a non-absorbent material, and one that can be readily cleaned. Parian cement has of late years been much used for the walls of hospitals and large buildings; but although this answers very well for small surfaces, yet for large surfaces, its want of elasticity causes large numbers of minute cracks, which afford lodgement for the noxious material floating in the air.

When these Parian walls are cleaned, the surface matter is washed into the cracks, and thus forms an organic nidus for the propagation of a poison. The best method, he believes, of rendering hospital walls and ceilings non-absorbent is to paint them on a smooth surface with several coats of paint, and finally to varnish them, or, in the case of Parian walls cracked as described, a solution of paraffine, either in turpentine or paraffine oil, thoroughly applied to the walls with a brush, will entirely fill up the cracks. Hard paraffine is a white, solid, volatile substance, very like white wax, and its affinities are so feeble that it has derived its name from this peculiarity. It is applied to floors as well as walls. Floors in this country, says the author, are as a rule very badly laid, and when they are washed and scrubbed, the organic matter is driven into the interstices, and thus cleansing by washing is of all things the most noxious, and the more it can be done away with the better.

Dr. Langstaff has tried, and found it to answer very well, the following process for rendering wood non-absorbent: — A quantity of hard paraffine is first melted in an iron or earthenware vessel, and whilst hot it is painted over a portion of the wood, and then is ironed into it with a box-iron, heated from the interior by charcoal. The paraffine in this way is driven out into the wood to a depth of something like ¼ in., and a surface of paraffine is thus procured. The superfluous paraffine is scraped off, and the floor is brushed with a weighted hard brush, and the oftener it is brushed the better the surface obtained. The floor thus prepared is not sticky, requires no re-application of the material, and scarcely any fluids spilled on it will affect its surface. It has proved not to be slippery, when list slippers are used.

"When floors are laid, especial care should be taken that the planks (boards?) of which they are composed be jammed up closely together, and they never should be permanently nailed down till they have been placed a year or more. The planks should be oak, the smaller, in reason, the better." It is useful to have a doctor's opinion on these things, even though a practical builder may modify the details.

Digest of Sanitary Law.—In reply to Sir M. H. Beach, Mr. Stansfeld has stated, in the Commons, that the digest is already in type, and the question of printing is simply one of time.

* Hospital Hygiene, by Charles Langstaff, M.D., M.R.C.S.E. London: J. & A. Churchill. 1872.

SCHOOL BOARDS.

London.—The Rev. B. Waugh asked whether arrangements had been made to have a large hall in any of the schools of the Greenwich district. Mr. C. Reed, M.P., said the Works Committee had the question under consideration. No arrangement of the kind had yet been made. Mr. Tabrum said the subject was before the working drawings committee, and it was considered important that there should be in each division at least one school where there should be a hall or room large enough to hold a meeting for the examination of scholars, or for other collective gatherings.

Reading.—Mr. Joseph Morris read a report explanatory of several plans for schools which he had sent in, and one was selected and adopted by the Board.

Appleton Wiske.—A new Board school has been opened here. The building is of brick, without any attempt at ornamentation. The principal room is 39 ft. by 20 ft.; the class-room, 12 ft. by 20 ft.; and the ceiling across the collar-beams, 15 ft. from the floor. The desks and seats are Messrs. Sidebotham & Co.'s patent "national desks," which form either a table, a desk with a gentle slope, or a seat, when the desk is turned down for the back to rest against. The contractor for the building was Mr. Thos. Peacock, of Northallerton, who sub-let the joiners', ironmongers', plumbers', painters', and glaziers' work to Mr. James Park, of Appleton Wiske. The whole of the work has been finished; and the total cost, including the site, buildings, desks, &c., has been rather under 4*l.* per scholar, which is one of the cheapest Board schools yet built.

PAROCHIAL RELIEF.

LAST Monday evening, Mr. E. J. Castle read a paper at the Rooms of the Institution of Surveyors, Great George-street, on the "Origin of Parochial Relief."

The present system of parochial relief, he said, is based upon the 43rd Eliz., c. 2. But though this statute is the basis, it is not the origin of the system. It is true, a popular idea exists that up to the dissolution of the monasteries by Henry VIII. the charitable institutions of the country were sufficient to support the poor, and that the Act of Elizabeth was passed in order to meet the wants of the new order of things. This, however, is not the case. The Act of Elizabeth is only one link in a long chain of legislation—and the result of a system that sprang into existence in what may, as far as law is concerned, be called pre-historic times, and which had been gradually developed up to the last Parliament of Elizabeth, when, from causes that were pointed out, further legislation ceased, and we have had to be satisfied to base our system of parochial relief upon an Act which all must admit to be unequal in its operation and full of anomalies. In the last session of Parliament, however, there were symptoms that the governing powers were awaking from their lethargy, and a draft of a Bill was brought before this Institution which offered some hopes of improvement; these hopes, however, for a time, fell to the ground, and it is impossible to say whether they will ever be realised. In the meanwhile, it may not be out of place if I bring before this body the gradual process which produced the Act of Elizabeth. It is true that the information is, at present, only to be collected from old Acts, many of which were long since repealed, and expunged from our statute-book. Yet, I think, from their perusal, I shall be able to throw some curious light upon the domestic history of England, especially with regard to the predecessors of the modern pauper.

The various steps in the process were then described with some minuteness, and the reader concluded thus:—The Act of Elizabeth refers to personal as well as to real property, but owing, perhaps, to the difficulty of assessing personal property and, perhaps, to the modern principle of throwing all burdens upon land, a custom sprang up in many parishes of not assessing this property, and afterwards by an annual statute personal property is declared not rateable; otherwise the Act of Elizabeth remains untouched in principle to the present time. To sum up the history of these statutes, we find that, from the earliest period, the right of the poor to parochial relief has always been admitted; but that the Legislature rested content with declaring this to be the law, directing its earlier efforts—not to the support of poverty, but to its suppression, — going so far as to punish vagrancy with whippings, the stocks, branding, slavery, and even death. That gradually, however, the real difficulty became apparent, and it was discovered to be quite as important to find food and work for the poor in their parish, as it was considered to be to force the destitute by all means to return there. That the legislature, having this former object in view, for some time attempted to carry it out by appealing to the charity of the parishioners, by instituting collectors for the poor, and arming them with such power as religious and moral influence could give; but these in their turn being found ineffectual, authority was given to the civil powers to make an order upon the person contumaciously refusing to contribute, and then the next step was taken, and a general assessment to the relief of the poor was instituted by the Act of Elizabeth. All legislation ceased there; for, at the very session of Parliament at which it was passed, the first growl of the coming storm was heard,—the first spark of that spirit which was afterwards to light up a civil war flashed forth. Elizabeth, as Hallam tells us, retired from the struggle, and when the Commons resented her interference in a money bill, she declined the contest. James I., as we know, struggled through his reign the best way he could, with what money he could get; being the English Solomon, he was prepared to, and always did, argue the point with such of his Commoners as would listen to him; but his pugnacity went no further. Charles succeeded, and we know with what result. Of course, while John Hampden was stirring up all England on the question whether he was liable to contribute to the Royal Exchequer 20*s.* for ship-money, there was very little attention paid to the wants of the pauper, whether a sturdy valiant beggar or one really destitute. All further legislation was thus arrested. And such as it was it remained, and on the Act our system of parochial relief has been built,—a system which no Government has been bold enough to interfere with since.

In the discussion that followed, Mr. Ryde said that the statute of the 43rd Elizabeth was one of the best Acts of Parliament that the Legislature in its wisdom ever passed, considering the length of time which has passed, and that no material alteration has since been made in it. Mr. Chatfeild Clarke thought that the operation of the Poor-law was most inefficient, and failed to provide adequate relief in the greater number of cases with which it attempted to deal. As demonstrated in the present day, it was inefficient to relieve the necessitous poor, and was doing an immense deal of mischief in its dealing with the number of cases of chronic vagrancy and half-pauperism. We have utterly failed, he said, to deal with this subject. The chairman (Mr. Clifton) was of opinion that the labour test, which was in operation in the reign of Henry VIII., was a very advisable thing. With regard to dealing with the poor, he said that in Holland the law was very strict as to vagrants. If a man is found begging, the first thing to do is to teach him some useful trade. If he is again caught begging, he is physically punished; and by the effectual mode in which beggars are dealt with, very few of them are seen by travellers in that country.

ORGANS IN CHURCHES AND CATHEDRALS.

SIR,—In the course of a paper read the other day before the Institute of Architects, part of which you did me the honour to print in the *Builder*, some remarks were made in reference to the unsatisfactory way in which the organ is commonly placed in modern churches, in regard to musical effect, by being penned up in a small chamber in one corner of the building. It is still more to be regretted that this system of hiding the organ out of the way, as if it were something to be ashamed of, is being extended to our cathedrals, and that upon very high architectural authority.

In a letter to the *Builder* some time since (July 2, 1870), I called attention to the plan proposed by a distinguished architect, in restoring and re-arranging one of our existing cathedrals, of cutting up the organ into pieces and placing it up and down in the triforium and in the choir aisles. In the very interesting report upon the intended Edinburgh Cathedral by the same architect, printed in your last number, the same system is definitely proposed for the treatment of the organ in this new structure, in the following paragraph:—

"I have provided for the organ in this manner: the lighter parts, especially the choir organ, with the keys and the organist's seat, I have placed close to the first bay on the north of the choir; but the larger and more cumbrous parts I have placed in the eastern aisle of the north transept, immediately behind, a place where the sound would spread itself freely through both choir, transepts, crossing, and nave. The communication would be by trackers passing beneath the floor of the aisle. There is, however, the possible alternative of placing the organist and choir organ, &c., as already mentioned, but placing the heavy parts in the triforium of the choir and transept."

Now, sir, every organ-builder and every organ-player knows that such an arrangement as is proposed here cannot be satisfactory for an organ, so far as musical effect is concerned. The second alternative, of placing parts of the instrument in the triforium of the choir and transept, would allow the best chance for individual pipes or stops to make themselves well heard, though they would be somewhat too high up; but such an arrangement would necessarily entirely destroy the homogeneous effect of the instrument, by cutting it up into parts and making it speak in different directions. But the other position, in the transept aisle, is quite as undesirable, as indeed seems almost self-evident from a glance at the plan of the cathedral; for it has certainly an odd look to see something on the plan labelled "grand organ," and hidden away in the remotest corner of the building, which is, in fact, the case. The arches of the transept aisles are about 27 ft. high to the apex; and as the organ placed in such a building would, no doubt, be a large one, it would be as effectually boxed up and injured in effect as the smaller organs are in the smaller "organ-chambers" of our modern parish churches. It is totally out of the question to suppose that anything worth calling a "grand organ" could realise a "grand" effect when placed in such a position. If the organ in such a case were to be in the transept at all, it should, to enable it to speak out properly, be in the principal aisle with plenty of space above and around it, and this would not be at all a bad position for accompanying the singing of a congregation seated in the nave. Or it might be divided into a north and south organ, and placed in each transept, the instruments to be used together or separately at discretion, which might be accomplished easily by applying the electric movement instead of the ordinary "tracker" system. The old position over the choir screen is, for musical effect, about the most satisfactory which the instrument could have, but this increased size of modern organs is, no doubt, a difficulty in regard to this situation. I believe, however, it would be quite possible to place the larger (pedal) pipes lengthways under the floor and within a portion of the choir screen, and thus to reduce the portion placed aloft on the screen to more reasonable proportions, without materially separating the two parts of the instrument. But probably the best possible position for the grand organ, both for musical effect and for combining with and assisting congregational singing, would be the west end of the cathedral, where the instrument could be arranged in two blocks or towers on each side of the west doorway and window. This position would lend itself very well to architectural effect in the treatment of the organ-case, which would not interfere with the view of any important part of the building; the instrument would be so placed that the sound could freely expand in the direction in which it is wanted, and would be confined by no intervening walls or piers; and it would be possible to support the voices of the congregation, in those parts of the service in which they joined, without drowning those of the choir, who would be accompanied by the small choir organ placed close to them, as already suggested in the architect's report. There would probably be no obstacle to placing the two instruments, by electric action, under the control of the same player, who would then enjoy an opportunity for regulating and combining the musical service of choir and congregation, such as no cathedral organist has hitherto possessed. If such a scheme were found, however, to entail more expense than might be judged desirable, at least the organ should be placed in an open and (as far as possible) in a central position, and not in an aisle or corner of the building. The feeling of modern church architects seems to be, to get rid of the organ as much as possible, as an impediment to the architectural effect. Surely it would be more reasonable to recognise the fact that larger organs are built now than were formerly placed

in English cathedrals, and to provide for them accordingly, and make them a part of the architectural design, rather than to evade the difficulty by placing an organ where it never can have its proper effect.

Of course, the present remarks are made merely from a musical point of view, and are not intended to be taken as in any sense a criticism of Sir G. Scott's plan, architecturally regarded. But the pointed reference to the proposed position for the organ in his report, naturally suggests a word on the subject, in the interest of those who have most to do with organs practically, especially as organists and organ-builders probably do not in general read architectural papers much, and are commonly not aware till it is too late that the chances of the instrument being well placed have been sacrificed by the architect, as in nineteen cases out of twenty they are. The case of the proposed Edinburgh Cathedral only differs from that of most other modern churches in that the building is a larger and more important one, and the organ to be erected in it will probably be a large and valuable one; if so, and if it is placed in the position at present proposed, there can be no doubt that half its value and half its effect will be thrown away. In placing larger organs in existing cathedrals, such a disadvantage of position may in some cases be unavoidable; but surely the building of a new cathedral is an opportunity for securing something more satisfactory than this kind of make-shift arrangement.

H. H. STATHAM.

THE TRADES MOVEMENT.

Builders' Labourers at Lambeth Baths. — A meeting of labourers has been held in the Lambeth Baths, New Cut, under the auspices of the General Labourers' Amalgamated Union. There was a large attendance. The chair was taken by the Hon. Auberon Herbert, who was supported by the Rev. G. M. Murphy and others. The chairman said he must congratulate them on what they had done. He objected to strikes, but he knew that sometimes they were necessary. He urged them to be careful before resorting to extreme measures. By uniting together they made themselves powerful, but they should be careful how they used their power. By uniting together they might obtain better and cheaper food, they could have their own clubs, their own libraries, and obtain every opportunity of improvement and instruction.

The following resolution was carried unanimously:—

"That this meeting, composed of labourers in the building trades, having sent a respectful memorial to the employers in September last, asking for an advance which would bring their wages from 6d., and in some instances, 5½d., to 6d. per hour, and having given six months' notice of the same, which expires in March next, instructs the executive council of the Labourers' Union to take such steps as they think necessary to insure this legitimate claim of the workmen, and especially requests that all conciliatory means should be adopted before any extreme measures are resorted to."

Another resolution, in favour of the release of the imprisoned gas-stokers, was also passed.

The Leamington Builders' Association have met to consider a demand made by the operatives in all the branches of the trade for shorter hours and increased wages after the 25th March. It was unanimously resolved that the present state of the building trade, coupled with the increased price of all materials, prevented the possibility of the terms of the men being conceded, either with respect to hours or wages. The secretary was directed to communicate the decision of the masters to the trade council, representing the operations in every branch of the trade.

Operative Painters' Union, Birkenhead.—The biennial conference of this union has been held at the Crown Hotel, Conway-street, Birkenhead; Mr. Hewitt in the chair. The report of Mr. Sharples, the general secretary, which was read, stated that the union was financially in a much better condition than on any previous meeting. During the past year sixteen new societies had been formed in connexion with the general union, several of them being in the neighbourhood of Birmingham and the Potteries. Mr. Sharples recommended the members to give their attention to the provisions of the Trades Union Bill, and make every endeavour to secure its repeal.

Workmen's Demands.—A number of hammer-drivers in the employment of Messrs. John Brown & Co., armour-plate manufacturers, Sheffield, have been dismissed from their work for demanding to be paid full scale of wages when the hammers were idle from accident or other cause. It is supposed that the firm will be able to obtain men to supply the vacant places, though the hammer-drivers are entreated by the men who are out to keep away from the town.

SANITARY AND SOCIAL MAXIMS.

More hints on health we here epitomise,
For youth and age, for wise, and otherwise.

Destroy the cause, you cure the evil.

A house without a drain,
Is like to be a house of pain.

Neglect your health and you neglect *your* business.

If the room be damp, light a fire;
If always damp, pray retire.

Keep no secret to the injury of your health.

Wearing your broad-cloth
Will prevent the moth.

Look up the past character of your home, as you would that of your new servant.

Let the pump run dry
Where a cesspool's nigh.

There is only one natural death, all others are unnatural.

As the crow flies
Should the man rise,
Moving straight to
The goal in view.

The way of right,
Is "a right of way."

Captured lock-pickers sometimes plead guilty; brain-pickers never.

No broken leather
In any weather.

Clean in home, clean in person.

Never take things for granted:
Provide for what is wanted.

Bad food, bad blood.

Habitually lazy, habitually criminal.

A street crossing, a street danger.

Through jumping at conclusions
Come most of our illusions.

Houses "built to sell"
Are very seldom built well.

Snub the child, spoil the lad.

A breach of faith
Is a serious scath.

In quenching your thirst don't drown your senses.

Live in a hovel,
You're prone to grovel.

The rich are poor if poor in health,
The poor if healthy have real wealth.

STATE OF THE CAMDEN-ROAD.

SIR,—Would you permit me, in a few words, to state a grievance in your columns, as this may be the surest means to its remedy? The Camden-road, N.W., in which I reside, is the highway by which the cattle collected in the New Market are distributed to the purveyors of beef and mutton. It is also a highway for human beings, and was for their convenience first designed and carried out. The mid-portion of the road has for some time been given over to omnibuses and tramcars. The cattle, therefore, goaded on by the drovers, rush helter-skelter through any vacant channels left open by the dominant public conveyances, and, without respect to passengers or pavement, tear along, to the terror and confusion of women and children, who fly for refuge into the gardens, and close the gates of the villas, where these are fortunately open. This you will, perhaps, say, sir, is very fussy and silly of us. That we ought to have more presence of mind, and open our umbrellas or parasols, as it is somewhere related a lady once did, in the face of the beast. But we have not the courage of that lady, in this district at least; and I have often seen the strongest sex trying to look cool, and keep an even state when a herd of cattle on the stampede has been behind them—the drovers swearing, the cattle lowing, and the dogs barking, —and even they have sometimes to dodge an infuriated animal, or take shelter. But I find I am going off, like all my sex, into the minutely descriptive; whereas I only took up my pen to suggest, that the authorities should fence the pavement with iron posts and rails along the Camden and other roads similarly circumstanced.

AN UNPROTECTED FEMALE.

SAXON CHURCH AT BRADFORD-ON-AVON.

SIR,—As it was by you (Aug. 22, 1857) that the first decided opinion was given as to this ancient church being clearly a pre-Norman structure, you will, I hope, give me the opportunity of drawing attention to an advertisement in your columns respecting our efforts to recover and ultimately restore it.

We have waited for many years in the hope of preserving this precious relic of former days. Matters were complicated by the fact of the chancel and nave belonging to different proprietors.

An opportunity offering a few months ago of purchasing the chancel, I at once embraced it. Our Wiltshire friends have since supplied the funds.

We have now a chance of obtaining the nave. But, in addition to present subscriptions, we want at least 300*l.* Then, we hope, will follow the restoration, which will cost 500*l.* more. So that we want some 800*l.* in all.

Two of our greatest living authorities have, after careful examination, pronounced it to be *unique*,—"the only one perfect surviving Old English church in the land, and possibly in Europe."

In the name of the trustees, I venture to ask earnestly for help in this our effort permanently to preserve so invaluable a memorial of the past.

W. H. JONES (Treasurer),
Prebendary of Sarum, Vicar of Bradford-on-Avon.

HOW TO PREVENT DAMP FROM ENTERING INTO STONE.

SIR,—Permit me, through your valuable journal, to give to the public a piece of information which they have long been inquiring after. Many have asked the question, how can we prevent damp from entering into stonework? and some have asked if it is possible to prevent vegetable substances from growing upon stone. The following ingredients melted and mixed together and applied while in a hot state to the surface of the stone will prevent all damp from entering into it, and also those vegetable substances from growing upon it:—1½ lb. rosin, 1 lb. Russian tallow, 1 quart linseed oil. This simple remedy has been proved upon a piece of very porous stone made into the form of a basin, and two coats of this liquid being applied, caused it to hold water as well as any earthenware vessel.

WILLIAM CROSS.

RE BUILDING ACT.

SIR,—Dr. Little, in his paper "On the Sanitary Defects of the Building Act," seemed desirous that the parish surveyors should administer, and the local boards control, the Act.

I have no hesitation in saying that if this were carried out no greater mistake could be made, and no better arrangement for destroying the surveyor's independence could well be devised, inasmuch as the members of the local boards are mostly owners of small house property, and are very testy if their rights, as they call them, are interfered with.

That professional appointments should be made by an independent body (now the case with District Surveyors by the Metropolitan Board) is felt very strongly throughout the country, and formed one of the requests, a few days since, of the deputation that waited upon Mr. Stansfeld in reference to the management of highways and other matters.

I have said that professional appointments by local boards are bad, and will give one of many illustrations of the reasons why I think so. Soon after I was appointed to a district I had occasion to serve a formal notice for irregularity on a member of the local Board. A day or two after I met the individual in question, when the following dialogue took place:—

M. L. B.—You are our new district surveyor?

D. S.—I am.

M. L. B.—I have received a notice from you to alter the footings of my buildings.

D. S.—Yes.

M. L. B.—Do you know, sir, that I am a member of the board of works?

D. S.—No, I hear it now for the first time; but as I find that to be the case you are in the position of one who should teach the public how to observe the law, and not show them how to break it, by using your official position as a shield. I have to inform you that unless you correct the mistake forthwith, I shall proceed by summons in forty-eight hours.

The effect was marvellous, the work was correctly done; and ever since when we meet he very properly "doffs his castor." Now, what would have been my position had he been one of my masters? In fine, I would say a public officer, whether he be a district medical officer or district surveyor, cannot avoid treading on the toes of some one in his district, if he does his duty; and if these somebodies have the power they will not fail to let him know it, and if his income is an object interests will clash: therefore I have come to the conclusion that such officers should be appointed by the central authority.

EXPERIENTIA DOCET.

ACTION FOR TRESPASS, &c.

CLIFTON *v.* GLAVE.

In this action, before the Lord Chief Justice Cockburn, the defendant pleaded not guilty under the Metropolis Building Acts.

The plaintiff, who was a widow, carried on business in New Oxford-street, on premises which formed part of the Arcade, as a perambulator and invalid-chair manufacturer. The defendant was a draper, occupying the whole of the other portion of the Arcade premises. Disputes had taken place between the parties as to whether a wall, with a shop-window looking into the Arcade, which window had been in the possession of Mrs. Clifton during the whole of her tenancy, was a party-wall or not. The defendant sought to block it up, as he was desirous of adding the Arcade to his other premises to make further shop accommodation, and he gave notice under the Metropolis Building Act of his intention to block up the window. The plaintiff, through her attorney, disregarded the notices. On the night of Feb. 16, 1872, the plaintiff and her family were aroused by a loud knocking, and on her coming down to the shop, she found the defendant, with his shopmen and carpenters and bricklayers, to the number of thirty, taking down the shutters. She remonstrated with him, but to no avail. The shutters were taken down, the sashes were cut, and the plate-glass taken out and carried away. A number of bricks were passed from hand to hand, and the bricklayers bricked up the aperture. The defence was that the aperture in question had been made in the party-wall; that the defendant had a perfect right to insist upon its being built up; that he gave the required notice; and that he had it built up at night in order not to interfere with the day business.

Eventually, and before the case was concluded, the parties agreed upon two sums, which were handed up to his lordship to arbitrate between them.

Lord Chief Justice Cockburn said, he had no hesitation in awarding the largest sum, because the course adopted by the defendant was an unjustifiable proceeding.

Some matters of detail as to the future were then agreed to by the parties, and, in addition, a money verdict was taken by consent for the plaintiff.—Damages 200*l.*

ARCHITECTS TAKING OUT THEIR OWN QUANTITIES.

SIR,—Will some of your numerous readers kindly inform me if it is the practice amongst architects now to take out their own quantities? I have a bill sent me which I decline to tender upon, for the following reasons:—first, as a member of the Builders' Society, I am, by agreement with the R.I.B.A., precluded from taking other than quantities supplied by an independent surveyor; secondly, the gentleman who has forwarded them to me is a Fellow of the above Institute, and the charge made is 2½ per cent., which sum I know is excessive, considering no labours of any kind are taken in the bills, simply cube stone, &c. How ought builders to act in such cases as this? I might add, the quantities are in manuscript.

A BUILDER.

STROUD GENERAL HOSPITAL COMPETITION.

SIR,—I trust that the committee of the above may be rewarded with a crowd of designs in answer to what I may be allowed to call their ridiculously liberal offer of premium. Ten guineas! Ten pounds ten shillings! and for what? Why, sir, for nothing; for a mere flea-bite of work; for a hospital to accommodate twenty-four indoor and sundry out-door patients, for surgery and consulting-rooms, for residence for house surgeon and hospital staff; the whole of which will not cost more than 4,000*l.* Why, sir, this fatuously lavish committee is actually offering more than one quarter per cent. for this paltry amount of work. To be sure, there is to be considered as a set-off against this,—the fact that only one, and possibly none, of the designs may be premiated; but when one goes in for a good thing, one does not care for an insignificant risk. Now, sir, my object in writing to you is to point out what I consider to be a serious financial blunder on the part of the hospital authorities. There is no charge made to competitors for the plans and sections of the site. This must be considered a most culpable oversight on the part of men who should watch with jealous care the interests of the subscribers, and demonstrates most clearly the most criminal prodigality of their actions. If a small large of, say 5*s.* each, had been made for these particulars, as much money might have been made as would have paid the premium, and if the committee had chosen afterwards to withhold it, here would have been a nice modest little sum honestly earned, which might have been added to the funds of the charity. In the interest of the hospital, I ask whether you think it would now be too late to rectify this blunder?

CHARLES TURR.

SIR,—I understand when the form of advertisement for this competition was framed, a motion that a larger premium should be offered, and the successful architect employed, was lost. It is also the opinion of a member of the committee that the buildings could be carried out very well by a clerk of works, without the aid of an architect. In justice to intending competitors, I trust you will have the goodness to insert this letter.

ONE WHO KNOWS.

BUILDERS, HOUSE DECORATORS, AND HOUSE AGENTS.

Smith v. *Cook.*—This action, in the Marylebone County Court, is one that is likely to crop up in a wide field of litigious oats, consequent upon house agents turning their pursuit into that of builders and house decorators, and builders, by way of retaliation, taking upon themselves the business of house agents. Builders at the West End in an extensive way have now in their windows, not only the old auctioneers' slips of estates to sell and let; but old-established house agents and auctioneers, on the other side, take in orders for rebuilding and repairs, although, as a rule, knowing nothing whatever of architecture, surveying, or even the size of a brick.

The consequence of this competition is generally an appeal to a County Court Judge, who cannot be expected to be posted in estimates, prices of materials, wages, and so on. It also usually occurs that each side bring witnesses who directly contradict each other in all matters that the judge or jury require to be enlightened on. The counsel and solicitors in the cause make the fog denser, and, it may be added, the truth is more an exception than the rule.

In the present action, Mr. Smith is a house painter and decorator, of Tavistock-crescent, Westbourne Park, and sued the defendant, who is a resident of Swindon, for 16*l.* odd for commission, in regard to letting a house in Leamington-road, Bayswater.

From the evidence of Mr. Smith, it seems that he was employed to repair the house by the outgoing tenant, and afterwards became the agent for letting the premises; and he introduced a tenant, a lady, who was accepted by the landlord, the defendant; and for this agency he claimed the sum referred to.

The Judge felt a difficulty in deciding the claim, and appealed to Mr. Clarke, the solicitor for the defendant, if it were not a case for a compromise; and eventually a verdict, by consent, for 5*l.* was agreed to; and the judge, Mr. H. J. Macnamara, observed that he was relieved by a satisfactory termination.

OLD HOUSE, ENFIELD.

SIR,—A friend has pointed out to me that both Mr. Andrews and myself have mistaken, in Mr. Wilson's letter on the above (referred to last week), the word "Mansion House" for "Manor House." Kindly allow me to correct the mistake.

TH. B.

WORKMEN AND THE FOREMAN.

SIR, On reading a letter in your impression of the 25th ult., under the title of "A Foreman's View," and knowing that you always take an impartial view of every question, I think it but justice to our trade to say a few words in reply, as the world might be led to believe we are not what we profess to be,—that is, mechanics capable of doing a fair day's work for a fair day's pay, and that we are all governed by societies and their rules.

I have worked for several London firms, and under several different foremen, and quite coincide with your correspondent of the 11th ult. on the inability of the generality of the masters' representatives. The way in which "A London Foreman" vindicates the character of his class is not, in my opinion, quite so creditable as it should be,—by running others down to justify himself.

He states that, as soon as a job is started, or about to start, all the societies know all about it, also the characters of the masters and foremen; and I ask, why should they not know? Has not one man a right to know the character of the other to whom he is about to sell his labour, and also the character of the one by whom he is to be governed or controlled? If they are conscientious and upright men they will not be ashamed of being known by either society or non-society men.

Then again, with regard to the batch (which your correspondent would lead us to believe are all *loafers*) that apply first: surely there are some good men to be found among them. They are not all bad; yet how often do we find that the *muff* (if I may borrow the term) is kept on, and the good man discharged. For why? Because of that system which, I am sorry to say, is, and I am afraid always will be in existence,—I mean, the tipping or fleeing of the foreman, which is one of the greatest disgraces to our trade. Of course, there are many exceptions, and it would be injustice to say that all foremen are alike.

Now, about the *muff* staying long enough to spoil a good man, or one intending to do a good day's work. May not part of the fault rest with the foreman as well as the muff? I would ask your correspondent, how often does the man go and make a few simple, yet necessary, inquiries, and get snapped at as if he were one of the brute creation (which, of course, betrays ignorance)? And is not that enough to spoil his former good intentions, and make him not only disgusted with the job, but also with the man whom he is under?

I can assure you, sir, I have known several instances of this sort, and where the man was really a better and more competent person than the one over him. If your correspondent would look to this part a little, I do not think he need fear the muff spoiling a good man, or any difficulty in obtaining men to do his work, although I should be very sorry to dictate to him.

There are some foremen who get their work done and are respected by the men as well as the master, although they have the same difficulties to contend with as "A London Foreman"; and how is it? Why, simply because they act impartially, and do unto others as they would be done unto.

A JOINER.

"I KNOW A HAWK FROM A HANDSAW."

SIR,—I have been much interested by the ingenious interpretations, by several of your correspondents, of this well-known passage. None seem to me so like the author's evident meaning as the indignant repudiation of ignorance of the distinction between two birds somewhat similar in kind. It is, I think, the reading adopted by Mr. Barry Sullivan, and reads thus:—"I know a hawk from a heron. Pshaw!" Having heard it read with the proper emphasis, I was convinced it must have been the real intention of an author most of whose figures of speech are peculiarly clear, forcible, and apt.

Dublin. WM. STIRLING.

SIR,—I should deem myself wanting in respect for your many courtesies if I passed this matter unnoticed.

The word *hanser=heron* needs confirmation. I do not find it in Halliwell's Dictionary of Archaisms and Provincialisms, or in Bailey, or such other authorities as come within my reach. Your correspondent quotes no authority, and this point will have to be made clear.

I do not *deny* the word; but "hanser" looks very like *anser*, the Latin for "goose." Norfolk is famous for Michaelmas poultry, and for other things.

But, supposing "hanser" to be a genuine word, it might be corrupted from "halcyon," the kingfisher; and even if ultimately proved to be a corruption of *heronceaux*, let me remind your correspondent, with all due respect, that "hanser" is not *handsaw*.

A. H.

HIGHWAY DISTRICT SURVEYORS.

SIR,—In your impression of last week I observe an article headed "Sanitary Engineers and the Government," in which it is stated that a deputation of *Local Board surveyors* waited upon Mr. Stansfeld, &c. As one of the said deputation, allow me to state that the deputation consisted of five members of the *Highway District Surveyors'* Association, representing upwards of 130 highway districts, situated in all parts of England. Highway district surveyors are appointed under 5th & 6th Wm. IV., cap. 50, and 25th & 26th Vict., cap. 61, an Act that does not apply to *Local* Boards. I may here mention that the Association is of long standing, and numbers about 150 members, its great object being the introduction of more efficient men as surveyors to districts. That this is necessary you will understand when I state that the districts are composed of from four to 160 parishes, with a superficial area of from 10,000 to 80,000 acres, and a length of roads varying from 40 to 800 miles; and as the sole charge is vested with the surveyor, you, Mr. Editor, will understand that he should be a competent man. The duties include the reconstruction of various bridges, embankments, sewers, and other improvements; and as nearly the whole of the *old* bridges (mostly timber) have (or will shortly have) to be reconstructed, you will at once see the class of men required. I shall be most happy to give any further particulars as to our Association, and earnestly solicit the support of our brother surveyors.

ONE OF THE DEPUTATION.

ENLARGEMENT OF BRIXTON PRISON.

WITHIN the last few months the convict prison on Brixton-hill has been undergoing very extensive alterations and enlargement, the interior having been almost entirely reconstructed. The old treadmills, to which in past years prisoners were sent for hard labour, have been altogether removed, and in their place a large number of workshops adapted to almost every description of handicraft and trade, have been erected, and in future convicts sentenced to penal servitude, and different periods of imprisonment, will have to work at the trades which they may have respectively followed. A considerable number of experienced warders from other prisons have recently been drafted to the Brixton establishment, and are now engaged in superintending and teaching the prisoners various trades in masonry, carpenter work, smith's work, shoemaking, tailoring, and other branches of employment, the result being that a large amount of work is now daily turned out, and the labour of the prisoners realises a considerable return. Amongst other articles produced, the boots of the metropolitan police-force are now manufactured at the prison. Insubordinate and obstinate prisoners are sent to Chatham Dockyard. The alterations which have been made in the building have been carried out by the prisoners under the superintendence of the prison authorities.

PICTURES FOR THE LONDON INTERNATIONAL EXHIBITION, 1873.

A meeting of noblemen and gentlemen has been held at Marlborough House, presided over by the Prince of Wales. The object of the meeting was to create a permanent organisation for promoting the exhibition of the best modern British pictures upon a system somewhat similar to that successfully pursued for more than half a century by the British Institution. General Scott read a memorandum. It is proposed in the International Exhibitions to collect only the works of contemporary painters in oil and water colours. This is a field of action which is not covered by any existing institution.

General Scott explained that the Exhibition of 1873 would consist of:—(A) Paintings in oil and water-colours which have been executed since 1863, and have been exhibited at the Royal Academy, the Water-Colour Society, and similar established societies, contributed direct by the artists or by proprietors. (B) New works submitted for the first time for exhibition. (C) A representation of the works of John Phillip, R.A., who died in 1867, and of Thomas Creswick, R.A., who died in 1869 (for this a special part of the Exhibition Galleries will be assigned). (D) A collection of paintings in water-colours by artists who have died since 1863 (for this division a special part of the Exhibition will be assigned if found to be desirable).

The Marquis of Westminster expressed his willingness to act on the committee, and to lend pictures; and several gentlemen spoke in the same sense. A general feeling was expressed that the proposed limitation of ten years was too short, and that it ought to be extended to at least twenty-five.

"ENGLISH ARTIZANS FOR ATHENS."

In consequence of our paragraph on this subject (p. 84, *ante*), we have received eight letters from artizans expressing desire to go to Athens, and asking for introductions to Mr. Watson and answers to various questions. Mr. Watson is the representative of this country in Athens, and his report is an official one. We cannot attempt to go any further into details. We simply stated the general opinion at which he has arrived, and persons disposed to go would have to obtain such information as they could, and act on their own responsibility.

Our Foreign Office would probably give some additional information if applied to.

THE COAL QUESTION.

Good will no doubt come out of the evil of the coal famine. An impetus has been given to coal-cutting by machinery, for one thing. The proprietors of Hetton Colliery, after having tried various coal-cutting machines, have adopted the patent of Messrs. Baird, of Gartsherrie Iron-works, in Scotland. The machine is driven or actuated by compressed air, worked at a pressure of 45 lb. to the square inch. For something like a year one, and the only one of these machines yet in operation, has been at work in Gartsherrie Colliery, where it has been seen by many scientific and practical men, including not a few members of the Iron and Steel Institute of Great Britain. The machine can cut 350 ft. of coal per night of eight hours, thus yielding from 70 to 75 tons of coal, or a production equal to that of forty men. Only three, or at most four men are required to look after it. The compressed air is brought in cast-iron pipes to the machine, which is upwards of 300 fathoms from the pit bottom. The revolution of an endless chain gives motion to the coal-cutters, nine in number, and an ingenious arrangement enables the machine to propel itself along the face of the seam. The proprietors of the Hetton Colliery are the first, after the Gartsherrie firm, to resolve on the adoption of these machines. It is estimated that the total number of people employed in and about the coal-mines of this country is upwards of 360,000; and by the universal adoption of the Gartsherrie machine it is estimated that the odd 60,000 would be almost sufficient to raise the 120,000,000 tons of coals which are now annually produced in Great Britain. The use of compressed air also gives improved ventilation in the mine, and the use of the machines reduces the waste from 12 to 4 per cent.

Another machine, which is likely to be brought immediately into prominent use, is Clayton & Co.'s patent for the condensation of peat turf into fuel-bricks, almost as dense, it is said, as coal. It is proposed to utilise the great mosses near Dumfries, and so convert them into rich arable land, while reaping a valuable crop of fuel as the first-fruits. Even were coal as cheap as ever it was, it is said that this will be a highly profitable process. The total cost of production is stated at 5*s.* a ton.

ARCHITECTS' LIABILITIES.

In reference to the letter of "M. H.," on this subject, I think there need be no hesitation as to whom the liability rests upon. If the plumber has not complied with the contract entered into by him, he can be prosecuted for fraud. If the architect prepared a proper specification, and gave a reasonable amount of superintendence, he has done his duty; he is only remunerated by a small commission,—the tradesman receives a *profit*, and thereby becomes a responsible party. It is too much the fashion for clients to aim at obtaining eighteenpence for a shilling, and let their work get into the hands of unscrupulous men, who would evade their duty if even the architect spent the whole of his time upon the works. I think there is a great want of explanation in the scale of charges issued by the Institute, as no mention is made of the amount of attendance supposed to be included in the 5 per cent. commission, although charges for *extra* attendance are named. The only remedy against bad work is to employ tradesmen of known character and ability, and allow them a fair remuneration. It would be impossible for an architect to be certain of the quality of many of the materials used in the building without applying chemical and other tests, which would involve such an amount of labour and expense, that he would be better without the commission.

I have myself gone very deeply into these matters, and the more I do the more is expected. Clients have purchased materials, and employed jobbing hands with no experience, and considered it my duty to act the part of a builder's foreman (without extra pay of course). In works of magnitude, and at other times, when opportunity offered, I have tested a variety of articles, and having pretty well ascertained where I can depend upon having the genuine thing, I frequently give the names of the manufacturers from whom I desire the articles to be obtained; but without a clerk of works this cannot be properly enforced. There is no material more adulterated than paint, yet how is an architect in the ordinary course of his duty, to ascertain that he is not cheated? Frequently the workman himself does not know; the appearance of the work does not show it,—it is time that proves it.

I have tested specimens of white lead (the foundation of most paints), and the quality called "Best" in the trade I have found to contain 30 per cent. of adulteration; the same with cements, and many other things. Before an architect can be saddled with responsibility, it must first be shown that he has not given proper directions, or a reasonable amount of care in supervision; in addition to which it should be borne in mind that there are plenty of contractors who would rob their employers if every workman had a policeman at his elbow. Builders, as a class, have degenerated, and the cause is attributable to the employers alone, who have taught them dishonesty in inciting them to take work at less than cost price. Z.

THE NEW NORTH BRITISH RAILWAY SLEEPING-CAR.

The new sleeping-carriage, specially constructed for the North British Railway Company by the Ashbury Railway Carriage Company of Manchester, has been tried on the North British system between Glasgow and Edinburgh. The carriage was attached to the express train leaving Glasgow at 1 p.m., and reaching Edinburgh at 2·25. The carriage is 30 ft. long and 7 ft. 6 in. wide, outside measurement, and 6 ft. 10 in. from the under side of roof to the floor in the centre inside. The body of the carriage is divided into one second-class compartment at one end, and a luggage compartment at the other end; the centre portion being fitted up as two first-class saloon compartments, with communicating lobby between them, on one side of which lobby a lavatory, and at the other side a watercloset are provided, a water-tank on the roof giving supply for both. The interiors of the first-class compartments are panelled on the sides and roof with silver walnut wood, with mouldings of ebony and gold. The seats and backs are trimmed with crimson velvet, on a basis of spring mattress, with sofa springs and horse-hair stuffing. The seats and backs, three in each compartment, are by a simple arrangement made so that the seat will fold up, when the back, by a slight pull, comes forward and falls down, forming a comfortable bed 6 ft. 3 in. long, with pillow or cushion. This, when not required, by a very slight lift, is replaced in its original position, and the seat again resumes its usual form, as in a first-class carriage. The whole of the furniture and mountings in the first-class compartment, outside and inside, are silver-plated. The carriage can be ventilated as required, at the bottom or top, by movable louvres and slides, and is carpeted with pile carpet on a layer of kamptulicon.

DIOCESAN TRAINING COLLEGES FOR SCHOOL MASTERS AND MISTRESSES, DURHAM.

Handsome voluntary subscriptions have been raised in the diocese for enlarging both these colleges; the former at present contains accommodation for forty-six students, and it is proposed to enlarge it, so as to accommodate in all seventy students, at an estimated outlay of 2,500*l.* The latter has now accommodation for forty-six students, and this building will be enlarged so as to accommodate twenty-four more students, or seventy in all, at an estimated cost of 3,000*l.* The latter work has been already commenced, and the former will shortly be so.

Mr. William Crozier, county engineer and architect, has been appointed architect for both works.

DR. BORLASE.

Sir, — With reference to this Cornubian author and his early residence, I have visited it recently. It is a curious specimen of seventeenth-century domestic architecture, I think; and in the inner courtyard a platform or rostrum may be seen, from which Samuel Wesley addressed the people when he was in Cornwall.

In Mr. Blight's "Week at the Land's End" there is a view of this old manor-house, as seen from the south, which is an accurate sketch of the building. It is only a few miles from St. Just, in Penwith, at Pendeen, and close to the sea. Near the house is a long underground gallery or cave, described by Dr. B., in his work upon the antiquities of Cornwall. Mr. Blight's work, above mentioned, contains also an engraving of a curious old house at Newlyn, near Penzance, now or formerly the "Keigwin Arms," which I have seen. It merits the notice of antiquaries, as does the old house of Kenegie, near Penzance. Chr. Cooke.

Miscellanea.

A New Industry in Tasmania.—The commencement of iron-mining in Tasmania seems likely, says a Launceston paper of Tasmania, called the *Cornwall Chronicle*, to open up a variety of industries. Messrs. Harrison & Just have patented here and in Victoria and the other colonies an invention by which asbestos is likely to be turned to very profitable account in the manufacture of fire-clay and fire-clay articles. The incombustible character of asbestos, and the refractory nature of the serpentine rock in which it is found, attracted the attention of Dr. W. H. Harrison, and the necessity for securing large supplies of refractory fire-bricks suggested to him the possibility of combining the two substances—the one incombustible and fibrous, the other refractory—in such a way as to produce the required article. Experiment is said to have justified this expectation. The material, it is hoped, will also be useful for gas retorts, crucibles, fire-bars, pipes, and other articles besides fire-bricks.

Books on Art and Science.—Our advertising columns contain a further list of important works on Art and general literature published by Messrs. Longmans, Green, Reader, & Dyer. We point to it less for the sake of the publishers than for that of our readers.

National Health Society.—Dr. Hardwicke, medical officer of health for Paddington, has read a paper at the rooms of the Social Science Association, Adam-street, Adelphi, "On Model Dwellings of Workpeople in Towns." Mr. Pennington, the chairman, in introducing the lecturer, dwelt upon the importance of the subject of model dwellings, especially in a country like England, where a larger proportion of the population lived in great towns than in any other country in the world, and in twenty-six towns alone the population exceeded 100,000; and he recommended a royal commission to inquire into the condition of the people in large towns. Dr. Hardwicke, in the course of his paper, said that amongst the various social problems requiring solution, an important one was as to the best manner of effecting a reform in the dwellings of this country, especially among workpeople. The present state of unhealthy dwellings was both physically and morally bad. They endangered health, and were strong incentives to intemperance. It was the duty of Government to avert these dangers without delay. As far as the present model dwellings were concerned, they had never been profitable to capitalists; but objection to them had been taken on account of the external staircase and the deficiency of sunlight. Too much supervision, too, was objectionable. The *familistère* of M. Godin, at Guise, near Paris, gave the best example he knew, showing better than anything else what might be done in the matter of model buildings.

The Want of Additional Dwelling-houses in Nottingham.—At a recent meeting of the Town Council, the Parliamentary Committee presented a report in which they said:—"Your committee consider that there are many cases in which it would be beneficial, both in a sanitary and moral point of view, to allow of dwelling-houses being erected with less than three bedrooms. Your committee therefore recommend that section 125 [of the Nottingham Enclosure Act of 1845] be amended so as to vest a discretion in the Council to allow dwelling-houses to be erected possessing less than three bedrooms above the ground-floor thereof." Mr. Manning remarked that they had passed a resolution whereby thirty-seven poor people were dispossessed of their dwelling-houses, and he was informed there were 600 artizans' dwelling-houses required for the accommodation of the working-classes in the town. There was a clause in the Enclosure Act which prevented very much the building of working men's houses, and therefore the Parliamentary Bills Committee had agreed to the report, the adoption of which he begged to move. Alderman Enfield seconded the motion, and it was carried.

London and County Bank.—The directors at the meeting held on the 6th, announced that after paying interest to customers, and all charges, allowing for rebate, and making provision for bad and doubtful debts, the net profits amount to 104,803*l.* 9s. 6d. This sum, added to 10,634*l.* 11s. 10d. brought from the last account, produces a total of 115,478*l.* 1s. 4d. The directors recommended the payment of the customary dividend of 6 per cent. for the half-year, with a bonus of 4 per cent., both free of income-tax, which would amount to 100,000*l.*, and leave 541*l.* 13s. 4d. as a reserve to meet interest accrued on new shares, and 14,936*l.* 8s. to be carried forward to profit and loss new account, and this was agreed to. The present dividend and bonus added to the June payment will make 20 per cent. for the year 1872. The amount of discounted bills and advances to customers in town and country is 12,099,252*l.* 17s. 5d., and the liabilities of customers for drafts accepted by the bank is 4,243,844*l.* 18s. 7d.,—making a total of 16,343,097*l.* 16s.

The Enlargement of Durham Gaol.—At the adjourned Quarter Sessions for the county of Durham, Mr. Crozier (county architect) said it was contemplated making 102 cells, with six rooms and six workshops underneath, which were much wanted. There were two sets of yard water-closets, and three heating-rooms, where heating apparatus was kept.—The chairman said there was another plan, to carry round the west wing in order to meet the south wing. This would cost 5,000*l.* more. The estimate for the extension of the new south wing was 8,308*l.*, while that for the extension of the west wing was 5,342*l.* The south wing would give 102 new cells, and the extension of the west wing 63. It was resolved "That the magistrates carry out the whole plan, at a cost of 13,650*l.*"

Choke-damp Experiment in the Paris Catacombs.—Captain Denarouze is proving to the *savans* of Paris, that if miners henceforth perish from choke-damp it will not be through the fault of science. His demonstrations to this effect are made in the catacombs, under the Rue d'Enfer. The purpose is to show that, by an apparatus analogous to that for breathing and working under water, the same freedom of movement may be obtained in the midst of choke-damp, or carbonic acid gas, which, in fact, is a kind of water, though invisible, and drowns those plunged in it without protection, just as water does. A "hood and mouthpiece" for protection, with a supply of vital air to breathe, were experimented with in this country between thirty and forty years since; and it is not more than a year or two, we recollect, since the subject was mooted with reference to colliery-accidents from choke-damp in England.

The Manchester Town-hall Contracts.—The Manchester city council occupied a considerable portion of their last sitting in discussing the new town-hall contracts. The subject was introduced by Alderman Heywood, who moved that the course suggested by the sub-committee for the completion of the work, viz., that Messrs. Smith & Sons, the contractors for the mason-work, be invited to send in a schedule of prices, be approved and adopted. The proposition, however, was strongly opposed: it was said that justice would not be done the ratepayers in regard to the contracts unless they were thrown open to competition; and that the amount likely to be saved by public competition would not be less than 50,000*l.* Mr. Mark Price reminded the council that the new town-hall would cost 1,000,000*l.*, which would lay upon the ratepayers a perpetual rate of tenpence in the pound. An amendment was ultimately carried that the remainder of the contract be let by public competition.

Atmospheric Bells for Buildings.—The atmospheric system of communication for houses, hotels, warehouses, factories, and so forth, fitted up by Messrs. Homfray & Co., seems, so far, superior to the electric system, in that when once fitted it requires no further attention; its sending power is constant, thus the disadvantages of defective insulation and the maintenance of batteries, are entirely done away with; whilst the annoyances arising from slack wires, common in the usual crank and wire system, are in this unknown. Instruments with indicating tablets and bell attached placed in any desired position, show the number or name of the room or rooms from which the bell has been rung; the tube or tubes acting as the conductor of air between press-button and the bell can be placed out of the sight, and laid down and soldered in the same way as gas tubing. They deserve the attention of persons building, or tired of the old system.

Improvement of Houses of the Poor.—The special committee formed by the Charity Organisation Society to consider what steps can be recommended with a view to improving the dwellings of the poor throughout London, held its first meeting on Wednesday last, at the central office of the Society, 15, Buckingham-street, Adelphi, under the presidency of the Lord Mayor. There were present, among others, the Marquis of Westminster, Earl Fortescue, Lord Mahon, M.P., Mr. Andrew Johnston, M.P., Mr. Kay-Shuttleworth, M.P., Mr. Eastwick, M.P., Sir Baldwin Leighton, Mr. Liddle, Dr. Ross, Dr. Hardwick, Rev. W. Denton, Miss Octavia Hill, Mr. Godwin, Mr. W. H. Hall, Mr. R. Freeman, Mr. Gilbert, Lord Robert Montague, Mr. Bosanquet, Mr. Gatliff, Mr. Fletcher.

Foremen Engineers.—On Saturday evening last the members and friends of the London Association of Foremen Engineers and Draughtsmen dined together at the City Terminus Hotel, under the presidency of Mr. John R. Ravenhill, C.E. The chairman, proposing "Science," illustrated the practical application of his subject by stating that he had that day received, answered, and received a reply to, a telegram from Egypt; Professor Goodeve, noticing the probable supersession of the use of iron by that of steel, said he had recently seen the latter material manufactured under a pressure of 8,000 tons.

The Royal Gold Medal.—The Council of the Royal Institute of British Architects have resolved to recommend to her Majesty the present president, Mr. Thomas Henry Wyatt, as the recipient of the Royal Gold Medal for 1873.

The British Archæological Association.—On Wednesday night in last week a special general meeting of the Sheffield Architectural and Archæological Society was held at the Rooms, School of Art. A sub-committee that had been appointed to wait on the public bodies of the town, and to communicate with the Duke of Norfolk, reported that the proposal to invite the British Archæological Association to hold its next Congress in Sheffield, met with the most cordial approval. The Duke of Norfolk, through Mr. Ellison, forwarded a letter expressing the pleasure it would afford him to take part in the proceedings if the time of the meeting did not clash with other engagements. A resolution was unanimously passed inviting the Association to come to Sheffield.

Unsafe Landings. — The St. George's, Hanover-square, Vestry have considered a letter from their solicitors (Messrs. Capron & Co.) with respect to the case of the "St. George's, Hanover-square, Vestry *v.* Col. Hamilton" (of Eaton-square), who was summoned before the magistrate at the Westminster Police Court for the expenses of repairs done to the landing in front of his house. Messrs. Capron informed the vestry that the magistrate, finding, under the 226th section of the Act (Metropolis Local Management Act), he had large discretionary powers, had decided to divide the expenses between the vestry and Col. Hamilton. After some debate, the vestry agreed to accept the magistrate's decision.

The Dublin Tramways Company. — The report of the directors to be read at the third ordinary half-yearly meeting, on the 20th inst., shows that the gross receipts from all sources amount to 23,745*l.* 4s. 10d., and after paying all working expenses, there remains a net profit of 7,829*l.* 7s. 4d. available for division, out of which it is proposed to appropriate sufficient for a dividend at the rate of 12 per cent. per annum free of income-tax, leaving the sum of 1,229*l.* 11s. 6d. to be added to the reserve fund. This fund will then amount to 2,458*l.* 19s., of which the sum of 1,229*l.* 7s. 6d. has been invested in Three per Cent. Consols, as certified by the auditors. The account looks healthy and the prospect promising.

Royal Architectural Museum.—Mr. J. F. Redfern will give practical descriptions of the figure sculpture in this Museum on Saturday afternoon, Feb. 22, and the two following Saturdays. Mr. Thomas Peard has promised two addresses on the Art of Producing Artistic Iron Work, on March 15 and March 22. Any may enter free. We would further draw attention to the fact that art-workmen's evening drawing and modelling classes are now in full work in this Museum, at seven o'clock every Monday, Wednesday, and Friday evening, at nominal cost for entry.

Tangye's Wall Steam Engine.—Those who think it better to distribute the steam power required in manufactories ever a number of small engines rather than confine it to one large one, an arrangement which has its advantages, will find Tangye's engine well suited for this purpose. Where workshops consist of three or four floors, an engine of 4-horse or 6-horse power can be fixed on the wall of each floor to work the machinery on that floor, quite independent of any other, saving the floor space, as well as the brick foundation required by any other kind of engine.

New School for Bermondsey.—On Monday a new school attached to St. James's Church, Spa-road, Bermondsey, was opened by the Princess Teck, in the presence of the Lord Mayor, the sheriffs, and a number of the clergy and leading inhabitants. The cost of the school was 1,350*l.*, of which 1,050*l.* have already been subscribed, leaving a deficiency of 300*l.* The building is Gothic in design, and consists of one large room and one class-room. The architect is Mr. R. Hesketh; and the builders are Messrs. Downs & Co., of Union-street, Borough.

The Removal of the Snow.—In the Chelsea Vestry the surveyor reported that the snow had been left, by the contractor, in twenty-nine streets. Mr. Fisher moved that a fine of 5*l.* be inflicted in each case, making in all 145*l.* This not being seconded, he then moved to fine for fifteen streets, a total of 75*l.* To this there was an amendment, that the question stand over for a fortnight; but this was lost. Mr. Davidge then moved a fine of 30*l.* for six streets, which was carried.

Sanitary Requirements of Metropolitan Workshops.—At a meeting of the Metropolitan Association of Sanitary Officers, held on Monday evening, in the hall of the Institute, Alderman's-walk, Bishopsgate, a lecture was delivered on the above subject by Mr. Thomas A. Dennis, the chief sanitary inspector of the parish of Shoreditch. He dwelt strongly on the necessity of efficient ventilation and the use of the syphon traps in all cases of sewer drainage, as being the best means of rendering water-flushings effectual when there was a proper supply of that important material.

The Americans and Mr. Bessemer.—The Americans have adopted a novel method of showing their appreciation of Mr. Bessemer's services to science. In the midst of one of the richest iron and coal districts in Cincinnati they have begun to build a new city, which, from its geographical position and local advantages, will probably become one of the largest centres of trade in America. To this city they have given the name of Bessemer.

Pavement of Worcester Cathedral.—Lord Dudley has offered to defray the cost of a flooring of white and black marble to the nave of Worcester Cathedral in lieu of one of stone and slate, and the offer has been accepted by the Restoration Committee. The cost of the marble flooring will be between 4,000*l.* and 5,000*l.* The choir is already floored with encaustic tiles and marbles of various colours.

Glass-lined Pipes.—In New York, glass-lined iron pipes, it is said, are being used to convey water, as the friction is lessened, the pipes are always clean, and the water is kept pure. Between the glass and iron is a layer of plaster of Paris, which, being a non-conductor of heat, prevents the water from freezing in the winter. Whether this layer prevents the contraction and expansion of the iron from destroying the coating of glass may be a question.

'A Mortuary Chapel for Scarbro'.—The parish vestry have resolved that "it is expedient, as well on sanitary grounds as for the convenience of lodging-house keepers and for the interests of the public generally, that a mortuary chapel be erected at the cemetery;" and "that the Burial Board be requested to carry the foregoing resolution into effect, at a cost not exceeding 200*l.*"

Metropolis Buildings Act Amendment. On Wednesday last, Dr. Brewer brought in a Bill to repeal the 55th clause of 7 & 8 Vict., cap. 84 (the Metropolitan Buildings Act), so far as it relates to the slaughtering of cattle for human food. The Bill was read a first time, and the second reading was fixed for April 2.

The Works of the late Mr. George Mason, A.R.A.—Unusual pressure compels us to confine ourselves to recommending all our readers, who love art, to visit (through a member of the Burlington Fine Arts Club), the collection of pictures by the late Mr. Mason, now collected in the Rooms of the Club, Savile-row.

The Labour Question.—On Monday evening last, at the sessional meeting of the National Association for the Promotion of Social Science, Mr. Alsagar H. Hill read a paper "On Impediments to the Circulation of Labour and Suggestions for their Removal."

New Mint Site.—Mr. Ayrton has obtained leave to bring in a Bill for the removal of the Royal Mint to the new site selected for it.

TENDERS

For the restoration of Pulham St. Mary Magdalene Church, Norfolk. Mr. R. M. Phipson, architect :—

Hawes	£2,571 5 0
Cornish	2,360 0 0
Ludkin & Wells	2,250 0 0
Botwright	1,871 18 0
Grimwood & Vine (accepted)	1,825 0 0

For alterations and additions to Yelverton Rectory, Norfolk. Mr. R. M. Phipson, architect :—

Wright	£1,868 0 0
Downing	1,876 0 0
Nowell	1,698 12 0
Cornish	1,685 0 0
Hawes (accepted)	1,523 0 0

For additions to Thorsby House, Kenilworth, for Mr. Alfred Jepson. Mr. George Hart, architect :—

Jones	£1,310 0 0
Davis, jun. (accepted)	1,277 10 0

For the erection of Norgrove buildings, Clark's-place, Bishopsgate street Within (comprising wine-vaults, shops, and offices). Mr. Alfred W. Archer, architect :—

Harding (accepted)	£2,354 0 0

For the erection of schools, Olga-street, Bow, for the London School Board. Messrs. Hammack & Lambert, architects. Quantities by Mr. T. E. Mundy :—

Gibson, Brothers	£8,302 0 0
Newman & Mann	8,246 0 0
Wood, Brothers	8,073 0 0
Linzell & Son	7,993 0 0
Ennor	7,901 0 0
Williams & Son	7,666 0 0
Wicks, Bangs, & Co.	7,651 0 0
High	7,490 0 0
Marsland & Son	7,340 0 0
Roberts, Brothers	7,225 0 0
Dove, Brothers	7,115 0 0
Perry & Co.	6,680 0 0
King & Son	6,623 0 0

For building the Royal Marine Inn, Silver-street, Taunton, for Mrs. Crane. Mr. A. W. Galbraith, architect :—

Fox	£440 0 0
Templeman & Handford	420 0 0
Moss	392 10 0
Smith	360 0 0
Spiller	338 0 0
Yandell (accepted)	317 0 0

For alterations and additions to shop and premises, Nos. 91 and 93, High-street, Kensington, for Messrs. Barker & Co. Mr. J. Houle, architect. Quantities by Mr. D. Cubitt Nichols :—

Langmead & Way	£1,395 0 0
Bowles (accepted)	1,341 0 0

For the erection of a nave for St. Paul's Church, Bath. Messrs. Wilson, Willcox, & Wilson, architects. Quantities by Mr. Arthur Deane :—

Hunt	£4,182 0 0
Ridout	4,085 0 0
Long	3,872 0 0
Morgan & Lovell	3,760 0 0
Mullings	3,600 0 0
Long	3,498 0 0
Bladwell	3,350 0 0

For warehouses, Holborn Viaduct. Mr. H. H. Collins, architect. Quantities supplied by Messrs. Batstone & Hunt :—

Kirk (accepted)	£7,067 0 0

For the erection of an Oddfellows' Hall, Devizes. Messrs. Wilson, Willcox, & Wilson, architects. Quantities supplied by Mr. Arthur Deane :—

Marquis & Munro	£1,670 0 0
Long	1,598 0 0
Chivers	1,550 0 0
Randell	1,420 0 0
Mullings (accepted)	1,350 0 0
Brown	1,310 0 0
Aldridge	1,288 0 0
Durke	1,275 0 0

For dwelling-house, Portmadoc, for Rev. W. Ambrose. Messrs. Roberts & Morrow, architects :—

Humphreys	£520 0 0
Roberts & Jones	509 0 0
Griffith	478 0 0
Davies (accepted)	474 0 0
Hughes	394 0 0

For rebuilding the premises, Nos. 44 and 45, Milk-street; City, for Messrs. Corke, Abbott, & Co. Mr. Edmund Woodthorpe, architect. Quantities supplied by Messrs. Welch & Atkinson :—

Sewell & Son	£3,674 0 0
Macey	3,560 0 0
Ashby & Sons	3,443 0 0
Brass	3,435 0 0
Pritchard	3,372 0 0
Cooke & Green	3,351 0 0
Perry, Brothers	3,339 0 0
Colls & Sons	3,260 0 0
Conder	3,220 0 0
Turner & Sons (accepted)	3,147 0 0

For alterations and additions to mansion at Kingswood Warren, Surrey. Mr. William Smith, architect :—

Manley & Rogers	£5,347 0 0
Patman & Fotheringham*	4,750 0 0

* Accepted.

For English Presbyterian Memorial Church, Waudsworth. Mr. T. Aragall, architect. Quantities by Mr. N. C. McIntyre North :—

Jackson & Shaw	£5,643 0 0
Perry & Co.	4,800 0 0
Henshaw	4,789 0 0
Avis & Co.	4,723 0 0
Colls & Sons	4,700 0 0
Higgs	4,678 0 0
Adamson	4,651 0 0
Nightingale	4,614 0 0

For Coombes Croft House :—

Hinde	£1,085 0 0
Jarvis	809 0 0
Rest & Brown	790 0 0
Linzell & Son	693 0 0
Chapman	695 0 0
Humphreys & Son	650 0 0
Blandford & Jones	645 0 0
Chitts	635 0 0
Bullford (accepted)	557 12 0

For alterations, extensions, and new fittings at 117, Victoria-street, Westminster, for the Army and Navy Co-operative Society, Limited. Mr. Thomas Dudley, architect :—

Wagner (accepted)	£1,035 16 0

For new show-rooms and alterations at Nos. 73 and 75, Brompton-road, S.W., for Messrs. Lewin Crancour & Co. Mr. A. Payne, architect :—

Wagner (accepted)	£395 0 0

For the first contract, Messrs. John Brinsmead & Sons' pianoforte manufactory, Kentish-town. Mr. Charles E. Evans, architect :—

	Additional Story.
Morter	£9,830 ..... £1,140
Brass	9,780 1,120
Scrivener & White	9,478 1,094
Longmire & Burge	9,235 1,153
Kelly, Brothers	8,657 1,160
Gibson, Brothers	8,590 1,035
Manley & Rogers*	7,977 1,120
Niblett & Son	7,299 958

* Accepted.

TO CORRESPONDENTS.

R. (advertisement will be found in our last issue).—H. T. C. (the tenders received us from more quarters than one).—H. A. (the District Surveyors Association ("Building Act" may be addressed at No. 9, Cotland street, W.).—H. A. V. ("Navvy" has become the correct word).—L. C. R. (published last week).—H. T. (next week).—R. A. D. next week.—G. G. (thanks).—J. P. S. (thanks).—A. & W. H. P. P. O. S.—E. W. C.—W. B.—H. W. P.—W. W. H.—Unmust.—C. E. E.—C. W. P.—A. B.—A. A. C.—Dr. W.—Dr. H.—R. & M.—E. W.—T. A. M.—W. R. B.—W. W. & W. H. R. W.—T. N.—T. A.—Dr. M.—W. H. J.—R. M. P.—G. S.—W. C.—J. C.—D. B.—J. W.—W. J. W.—J. C. P.—C. C. R.—G. A. W.—One Willing to Go.—One Anxious to Travel.—W. J. B. M.—W. Y.—Athens. R. T.—T. T. G.—A. W. G.—B.—K. & Son.—W. T.—F. A.—J. B.

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The Builder.

VOL. XXXI.—No. 1568.

*A Health Book.**

THE plain meaning of Public Hygiene is defined by the author of a hand-book just now published to be "that branch of sanitary science which concerns the physical condition of communities." This being so, it may be said to be the most important of all sciences; for what, indeed, is the practical value of the acquirements of any other science or any other knowledge if the physical condition of the people amongst whom it is taught and acquired is not of a high status? The most valuable of all knowledge taught to men of low physical condition, even if they are capable of acquiring it, cannot be retained and effectually made use of. Hygiene, then, is the foundation of all other useful sciences, and must precede the effective exercise of every other species of knowledge. "It embraces a consideration of the various influences operating upon society, whether for its material good or its actual deterioration, with the view of extending the former, and preventing or ameliorating, as far as possible, the effects of the latter. It involves the enactment of laws by which the safety of the whole may be protected against the errors of a part, and, above all, it aims at the prevention of disease by the removal of its avoidable causes. In a wide sense, therefore, the science of public hygiene enlists the services of the people themselves in continuous efforts at self-improvement; of the teachers of the people, to inculcate the best rules of life and action; of physicians, in preventing as well as curing disease; and of lawgivers, to legalise and enforce measures of health-preservation. But while it is the special province of the medical profession, as guardians of the public health, to study the causes of physical deterioration and disease, and to point out how far these causes may be controlled or averted, the general well-being of the people must mainly depend on their own exertions and self-restraint. Sanitary improvements in man's material surroundings will not compensate for social transgressions against laws of morality; for public virtue is essential to public health, and both to national prosperity.

The time, however, has gone by when people can be dragooned into cleanliness, or be made virtuous by police regulations, and hence it is that the most thoughtful amongst practical reformers of the present day base their hopes of sanitary progress on the education of the masses as the real groundwork of national health. The people must be taught that good conduct, personal cleanliness, and the avoidance of all excesses, are the first principles of health-preservation; that mental and physical training must go hand in hand in the rearing and guidance of youth; and that morality does not consist so much of a blind observance of the *formulæ* of empty creeds, as in a hearty submission to precepts of health. Nor is this all. They must be interested systematically in the general results of sanitary progress, and become more intimately acquainted with the social and material causes by which it is impeded. Unless a knowledge of these fundamental principles of hygiene be widely disseminated amongst them, it is in vain to expect that legislative enactments, however well devised, will succeed in raising the standard of public health to any considerable extent. If it be objected that such knowledge cannot be imparted in schools [which we deny], it may at all events be conveyed through the public press and from the pulpit; or is it too much to hope that the wordy warfare concerning the origin of human life may speedily give place to united efforts in striving to prevent its appalling waste?"

These words of Dr. Wilson are words of the highest wisdom. Taking this wide view of the scope of the public health, the author discusses the subject under the three sections of—1. Hereditary influence; 2. Causes of deterioration and disease; 3. Preventable disease. After some remarks on the subject of heredity, the author says that the causes of deterioration and disease are of two kinds,—social and material. Legislation can control the material influences, such as impure air, impure water, insufficient or unwholesome food, dampness of soil, deficiency of warmth, &c., and the removal of these causes is the principal aim of practical hygiene as enforced by legislative enactments; but "the social causes of deterioration and disease, on the other hand, are little, if at all, controlled by State interference, and hence their removal, as far as possible, must depend mainly on individual or combined efforts, dictated by a sense of duty, which may be either egotistic or philanthropic, as the case may be. It is here that the effects of education, whether imparted in the family circle and school, or from the pulpit and platform, or by the public press, will be tried and tested." In the rapid growth of town population there is reason to fear that the average physique of the English race has of late years become lowered, but at the same time there are good grounds for believing that the deterioration has reached its culminating point. "Already the results of sanitary improvements in many large towns are beginning to declare themselves, not only in a lessened sick-rate and death-rate, but in an apparently healthier tone of public opinion. The working-classes in all parts of the country are bestirring themselves for more leisure and more pay, and so far they have succeeded. It remains to be seen whether the leisure will be spent in self-improvement, or the extra pay be judiciously applied, and not worse than wasted." So far as these (social) causes are concerned, the hopes of progress and improvement must rest on education wide-spread and general. The fundamental principles of personal and domestic hygiene must become matters of intelligent conviction amongst all classes, and especially amongst the upper and middle, that they may help those of the lower who are unable to help themselves. For it cannot be denied that there are multitudes in all our large towns so heavily burdened with the load of a vitiated heritage, and so hemmed in with the barriers of foul air, filth, and want, that teaching and preaching can only be felt as bitter mockeries unless these barriers are first removed. Herein lie the duties of sanitary authorities, and in their compulsion by legislative means there is at last some hope that amelioration and enlightenment may penetrate even to these depths.

We know that of the 120,000 preventible deaths in a year in England and Wales, each unit represents a larger or smaller group of other cases in which preventible disease, not ending in death, though often of far-reaching ill effects on life, has been suffered. And while these vast quantities of needless animal suffering, if regarded merely as such, would be matter for indignant human protest, it further has to be remembered, as of legislative concern, that the physical strength of a people is an essential and main factor of national prosperity; that disease, as far as it affects the workers of the population, is in direct antagonism to industry; and that disease which affects the growing and reproductive parts of a population, must also in part be regarded as tending to deterioration of race.

The chapter on Food contains instructions on the appearances of sound and unsound meat, and the means of judging it.

The chapter on Air and its contamination shows that the peculiarly fœtid smell of sewage gas is owing to the presence of organic matter more than to the gases given off, which are carbonic acid, nitrogen, sulphuretted hydrogen, light carburetted hydrogen, and ammonium sulphide. Dr. Odling believes it to be carbo-ammoniacal. It is alkaline in reaction, and speedily decolorises solutions of potassium permanganate. Like other organic effluvia, it promotes the growth of fungi, renders milk sour, and taints meat. The great interest which attaches to this important subject rests on the development and spread of enteric fever. The actual poison may, like the miasmata which give rise to ague, be inappreciable to the senses, or by chemical research; but Dr. Murchison met with, during the four years 1858-62, few examples of enteric fever which, on investigation, he could not trace to defective drainage, the existence of which was sometimes unknown to the inhabitants of the infected locality.

The point to be borne in mind is this, that sewers often become the real channels by which the contagion is propagated. The sewer air, laden with the specific poison, readily finds its way into houses on account of its greater tension, and in consequence of badly-trapped or imperfectly-ventilated drains. It may be inappreciable to the senses, but its baneful effects make themselves felt none the less.

Supposing that sewage-tainted air is kept out of dwelling-houses, the impurity of the air which people inhale is measured by the amount of carbonic acid gas it contains, arising from the exhalations of the body and the products of combustion that pass into the room from lights. It is found that 1 cubic foot of coal-gas destroys the oxygen of 8 cubic feet of air in combustion, and produces about 2 cubic feet of carbonic acid gas, besides other impurities. As a common gasburner burns about 3 cubic feet of gas per hour, the importance of having these deleterious products of combustion carried off by special channels is obvious. All things being considered, the author is of opinion, founded on experimental data, that the cubic space of rooms should be such as to allow 3,000 cubic feet of air per head per hour to pass through them without perceptible draught. Thus, if the space be only 100 cubic feet, the contained air must be renewed thirty times per hour, in order that the standard amount be supplied; whereas in a room of 1,000 cubic feet, only three renewals of air will be required. What, then, is the minimum amount of cubic space through which the standard amount of fresh air can be passed without perceptible movement?

Professor Pettenkofer has answered this question experimentally, and has found that, by means of artificial ventilation, and with the aid of the best mechanical contrivances, the air in a chamber of 424 cubic feet can be renewed six times per hour without creating any perceptible air-currents. Providing that perfect artificial means be employed, and the air warmed, such a room as this can be efficiently ventilated, no doubt, but with natural ventilation it is impossible to do it. Dr. Parkes maintains that a

* A Handbook of Hygiene. By George Wilson, M.A., M.D. Edin. London: J. & A. Churchill. 1873.

change of air four or five times an hour is all that can be borne in this country, and this would require an initial air space of 750 to 1,000 cubic feet. Practically, the difficulties of ventilating small spaces efficiently are due not so much to the movement of the contained air as to the relative position of the inlets, these being necessarily so near the person that the draughts are disagreeable or injurious. So far as our own experience goes, it is found to be difficult, even with the aid of a well-devised plan of ventilation, to supply the necessary amount of fresh air per head per hour without creating perceptible draughts, if the space be less than 600 cubic feet. The Barrack Commissioners recommended a space of 600 cubic feet per head, and insisted that the air should be renewed at least twice every hour. "The only safe principle," they said, "is to have a large margin for contingencies; and the question really is not whether 600 cubic feet per man be too much, but whether 600 cubic feet be enough for all the purposes of warming, ventilation, and comfort." Experiments that have since been made prove most incontestably that even this allowance is inadequate. The Commissioners themselves observe, "It has been said that the question of cubic space is simply a question of ventilation, but it is rather a question as to the possibility of ventilation. The more beds or encumbrances you have in a room, with a limited cubic space, the more obstruction you have to ventilation; the fewer the beds the more easy is it to ventilate the rooms. There are fewer nooks and corners, fewer surfaces exposed to the movement of the air, and less stagnation. We have been in rooms, both in barracks and hospitals, in which the atmosphere was positively offensive with the doors and windows open."

The force of gaseous diffusion, upon which the uniform constitution of the atmosphere itself depends, is manifestly inadequate as a ventilating power. It operates chiefly in producing a tolerably equal distribution of the gaseous products of respiration and combustion throughout the air contained in a room, but aids only to a very slight extent the removal of these impurities from the room, while it is altogether inoperative as regards the removal of organic impurities.

Of the methods of natural ventilation, that of Mr. Potts has been well spoken of. It consists, as our readers know, of a hollow metal cornice running continuously round the room, and, being divided longitudinally, one half brings fresh air into the room, while the other division removes the foul air. We are sorry to say we have been obliged to hear of failures in practice. Then there are the methods of Mr. H. Varley, Mr. McKinnell, Dr. Stallard, and others. Of the ordinary method of warming a room by an open coal fire, it is found that nearly seven-eighths of the heat generated passes up the chimney, along with a quantity of air, varying from 6,000 to 20,000 cubic feet per hour.

Of the methods of testing the quality of air and of water, several are stated. As to the harm done by impure water, Dr. Wilson rightly says,—"It must be remembered that the effects of impure water, like the effects of impure air, may engender a general impairment of the health, without giving rise to well-pronounced disease."

Some very judicious remarks are made on the construction of dwellings, on hospitals, on the removal of sewage and its purification and utilisation, on the effects of improved drainage on public health, and on preventive measures and disinfection.

This handbook ought to be in the hands of every medical officer of health, and of every inspector of nuisances in the country; and, considering that government in this country exists for no other purpose than the public welfare, we believe it would be a very proper application of public money if the Local Government Board should issue to the persons above-named this handbook for their guidance; and not only this, but Dr. Parkes's work on "Practical Hygiene." Probably the medical officers may possess these books, without putting the Department of State to any trouble in the matter, but it is less likely that the inspectors of nuisances will possess them, and yet it is almost more necessary that it should be in their hands than in those of the medical officers.

Institution of Surveyors.—The next meeting will be held on Monday evening, February 24, when a paper will be read by Mr. R. B. Grantham, entitled "Private Agricultural Railways."

THE GREAT INDUSTRIAL QUESTION IN SOUTH WALES.

The position of the iron-workers in South Wales has been so far changed, since the date of our former remarks on the subject of the strike,* that we are not without some hope that even the interval which necessarily elapses between the penning and the printing of our observations may witness a renewal of the industrial life of this great district.† However that may be, a few considerations may be usefully submitted to our readers. We ventured on the last occasion, to give counsel to the men; it may not be altogether improper now to offer a word of suggestion to the masters.

Since we pointed out those serious practical objections which, in our judgment, rendered the plan of arbitration altogether illusory and inapplicable in the present instance, the arguments for that procedure have been tacitly abandoned. The parties were neither of them competent to come into a court of arbitration. The grounds of the original dispute were capable of exact definition without any such process. The further questions, which appeared as likely to follow when the first was solved, were such as no arbitrators could deal with. For discussion of an amiable and conciliatory nature between one or two trustworthy representatives of men and of masters, there was, indeed, ample room. Nor do we think, from former experience of the settlement of very angry disputes, that there should be any hesitation on either side in following such a course. But this is not the form which the proposals have yet assumed on either side.

Having a word to say as to the double-shift question, the peremptory refusal of which has probably damaged the union far more than its leaders have at all imagined, we first refer to that later proposal which seems, as we write, to hold out the olive-branch. It is one that is eminently English,—candid, honest, and manly. If the owner of labour,—the workman,—has a right to demand a fair day's wages for a fair day's work, the purchaser of labour,—the master,—has an exactly corresponding right to demand a fair day's work for a fair day's wages. If the question is put on the simple ground of right and wrong, there can be no second opinion in the matter.

Difficulties, of course, will arise in the application of any new principle. We can see many in the present instance. But that they should prove insuperable, in the face of any real wish, on both sides, to agree, we do not for a moment believe. Our counsel, then, to the masters is this. Facilitate the acceptance of your terms by the men. Give them no excuse for the feeling that you seek for triumph. If they are willing, on agreed terms, to give up the position which you have all along declared to be untenable, let them, at least, march out with the honours of war. If they dread the reproach of being "turn-coats," more than they dread cold, hunger, and all the evils of idleness, respect an honest pride, and give your enemies (we do not mean your men) no excuse for working on an honourable, even if a misguided feeling. It is only by the adoption of a large, liberal, Christian policy of this description that harmony, if restored, can be maintained.

As to the difficulties of detail, we have a suggestion to make. We are not aware whether it has been distinctly pointed out that the rise in wages has been hitherto accompanied by an equivalent fall in production. Taking the figures which have been published from time to time, it comes out that the sole advantage derived by the labourer in the South Wales district from increased wages has been, that he has worked fewer hours. It is also, we fear, but too certain that many of the hours thus withdrawn from toil have been spent in the public-house. When the wages that were earned by fifty hours' labour have been so raised that they could be earned by forty-five hours' labour, the workman has worked five hours less. He has not increased his comfort, laid by for a rainy day, or in any way added to his savings. He has simply done so much less work. The consequence to the master has been, that while he has paid ten per cent., let us say, higher wages, he has received ten per cent. less output. Thus the rise in wages has been a direct loss to the master; a loss to threefold the amount in the first place, and to a much larger extent afterwards, to the public; and a gain to no one. For the less laborious existence of the labourer has not been to his advantage, if we may take the consumption of strong drink as an indication.

We have a word or two to say to the men as to the opinion so generally held among them that it is wise to keep up the level of wages, by diminishing the quantity of work executed. But we wish to keep to the practical question first. We conceive that, if we have at all clearly stated the case, the experience of the masters is to this effect. The higher wages we pay, the less work is done. Give us some guarantee that this state of things shall cease. We are quite willing to pay, and pay very handsomely, for work. We neither can nor will pay for idleness.

Let the men, then, meet the question like men. The justice of the position cannot be for a moment called in question. It used to be the pride of the English workman,—an honest pride which distinguished him not only from the slave who worked because he was forced, but from many a foreign workman, who, we are apt to think, does not know what a good day's work is,—that it was his habit to do his full duty in this respect. It was an honest pride. Such a duty is due to a man's self-respect, to his family and to his country. Let the English workman's pride have its proper influence now. We think we can suggest a mode that shall obviate the difficulties of detail which seem (and not unnaturally) so formidable to the employers of labour.

From day to day, from week to week, from pay-day to pay-day, fluctuations occur in the yield of a colliery or an ironwork that cannot be compensated by a sliding scale of wages, without complication so great as to be impracticable. From year to year, however, a broader average can be taken. It may be possible even from quarter to quarter.

We propose, then, that the proportion between wages and output which subsisted before the last rise of the former, or that which has been the average of the last twelve years, should be taken as the basis of an arrangement. We say twelve years, because that time covers a cycle of depression and elation in the trade; the quotations for bar iron in 1861 having been 6*l.* 5*s.* per ton. Let the men go to work on the lowest scale of wages, but with the understanding that it will be entirely their own choice if this weekly payment should be any more than what they will understand as a "sub," that is, a payment on account. At the end of three months the output of the period can be ascertained with tolerable accuracy. Let a percentage be then paid to every man, calculated on his time and rate of wages as set down in the time-sheets for the three months. This sum, given as a bonus, might be given in such a form as to encourage prudent and economic habits. It might, for instance, instead of being handed over to the workman or to the safer custody of his wife, be paid to the savings bank on his account. Many a man would hesitate to draw out a little nest-egg of this kind for the purpose of drink or of luxury who would find the bonus in money burn its way out of his pocket. The workman would soon understand that the money was actually his. With the sense of proprietorship might come some of its pride and its prudence. At all events, we should give these principles of economy a chance. The sole objection that we see to the proposal would arise from any difficulty that the masters might find as to the declaration of the output of their works. But this can hardly be insuperable. They are bound by the Act of last year to make a return to Government of their output. The general output of a district is to be published, but not the details. If it prove injurious to any individual proprietors to make known their shares in the general industry of their district (and we are far from attempting to deny that there may exist good and adequate reasons for this feeling), the remedy would be to make the general output of the district, which must be published by the Government, regulate the bonus or percentage to be paid at every work. Or each proprietor might make a special bargain with his own men, regulated by the district output compared with the number of men employed.

As far as the public are concerned, the broader the basis taken the better. And who are the public? The population of Great Britain, in 1869, was 25,075,782 souls. The male persons at work in the collieries, in that year, were 345,446. We must take these males as representing a population of at least a

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* See p. 38, *ante*.

† Resumption of work has taken place in one establishment, on a compromise. In the remainder of the district the difficulties are rather on the increase.

million and three-quarters. That is to say that the colliers form rather more than one-fourteenth part of the British public. We wait for the returns of the current year to ascertain how large a proportion of the British public consists of those who depend for sustenance on the industry of iron. But it is stated that the abstinence from work of 10,000 colliers in South Wales keeps from 50,000 to 60,000 ironworkers idle,—that is to say, from 250,000 to 300,000 and upwards of mouths hungry, in that district alone. The iron smelted in Wales in 1866 was less than the fifth part of the entire yield of Great Britain. These considerations show that, if we take iron and coal together, the families dependent on these great industries must form not far short of one-seventh part of the public of Great Britain.

Now, it is stated, (they are not our own figures, but they present nothing that is incredible) that the loss which the labouring population have sustained by the idleness of the past few weeks amounts to no less a sum than 400,000*l.* sterling. Further, the loss sustained by the public, in consequence of the rise in the price of coal, is estimated at no less than forty millions sterling. This loss may not, it is true, be accurately represented at so much per head all round,—in that case it would already have inflicted a penalty of 32s. per head on every individual in the United Kingdom, being nearly 2s. more than the annual contribution per head required for the interest of the National Debt. As far as the direct consumption of coal for household purposes is concerned, the rich man pays more than the poor man in proportion to the number and the size of the fires which he keeps up.

But the coal required for domestic consumption is less than 18 per cent. of the total yield. In 1869 it was returned as 18 million tons out of 107 million tons. The exportation in that year was 10 million tons. The remaining 79 million tons were therefore employed in the manufacture of pig and merchant iron, in working coal and other mines and in smelting, in steam navigation, in railways, and in gas and water works. Thus the rise in price directly tells on all hardware and ironmongery, upon all tools and materials for industry, on freight and carriage, on public convenience and security. And that loss will be, proportionately, far more heavily felt by the poor than by the rich, and that for this reason: the poor man buys in smaller quantities than the rich man. He thus buys of the smaller dealer, and almost invariably at a higher price in consequence. An additional step in the detail of distribution is taken for his convenience, and for that he, and he alone, has to pay. Therefore, if the public has been put to an expense of 40 millions by the strike, or 32s. per head, the 3¼ millions who form the coal and iron part of the public can hardly estimate their portion of this loss, up to the present time, at less than 3 millions sterling. This is a terrible tax for idleness to have imposed upon industry.

This brings us to the question of the double shift. We approach it thus, because we wish the workman to come with us. We are not endeavouring to persuade our readers of the truth of our own views. We only aim at placing before them such facts, and such considerations, as shall lead them, if they reflect, to the only sensible conclusions.

The working men of this country are a large and important body, constituting the very pith and backbone of the commonwealth. Their power is extraordinary,—for good or for evil. They are only just beginning to realise this great political truth; and it is no wonder that, in trying to ascertain what their real strength is, they may try at times in the wrong direction, and thus effect evil instead of good. Their power, rightly exerted, is the mighty and illimitable force of industry. In their thews and sinews, educated hands, and still more (when they occur) educated brains, resides the true capital of the country. We know that this is not the customary language of educated writers. But we are fully prepared to show, with all the exactitude of logic, from the works of no less distinguished a political writer than Mr. J. S. Mill, that the value and importance of what is commonly called capital—that is to say, the accumulated produce of labour,—is grossly, ridiculously, and mischievously over-estimated. Indirectly the working man feels this; and we think nothing has tended more to diminish the influence of public writers, clergymen, and the educated classes generally on the industrial portion of the populace, than the false reliance which the former have been taught, by a school of non-practical writers, to place upon the store which may at any time exist in the hands of the non-working classes.

But it is only by its activity that industry asserts its power. The moment that it begins to think that it can do more by idleness than by exertion, it treads the downward road. Now every attempt on the part of the working man to limit the output of his industry is an appeal to the power, not of labour, but of idleness. It is an attempt that will certainly defeat itself. We need not speak of the concurrence of mechanical power,—that is to say, of the new contrivances for substituting machines worked by steam for human labour, to which every rise in the price of the latter gives so much stimulus. This is an important element in the case, but for the present we only allude to it. We will suppose that the workman effects all that he hopes to effect by limiting his labour. By working only twenty-four hours a week, and raising, let us say, a third of what he could easily send up from the pit, let us suppose that he has increased the nominal wages that he received two years ago. But by how much has he caused the price of coal to advance? By how much the price of every article dependent on coal? As matter of ordinary fact, the selling price of almost every article of consumption is at least one-third above its wholesale price—that is to say, something like the double of the cost price. Now, if the workman raises his wages, say 10 per cent., not by industry, but by idleness, he may pocket, or he may drink, the extra six shillings per week, if he earns ten shillings a day. But how much more will he have to pay for everything that he consumes? He has set an increase of cost in motion that multiplies at every step. To the workman, as one of the public, the effect is disastrous. We might go step by step through the inquiry, but the result would not differ much from this dry, ugly one. For the six shillings per week that the workman has raised his wages by under-working, he will have to pay from twelve to eighteen shillings per week in the increased price of everything he consumes, if he maintains the same degree of comfort that he had previously attained.

It is by increasing the accommodation of the public, of which he forms so important a part, and by increasing the means of the employers of labour to pay remunerative wages—that is to say, by increasing their profits—that the workman can most essentially benefit society, and benefit himself. If we once master this great economic truth, the effect on our industry will be more precious than the addition of a vast province to our empire. Almost the entire industrial movement of the past few years has neglected, or violated, this fundamental law. We have seen that, in South Wales, a rise of 10 per cent. in wages has been accompanied by a fall of 10 per cent. in production. That is a direct loss to the master. It can only be recouped by time at the expense of society, and it is so recouped, if at all, by putting society to the increased expense of 30 per cent.—not in the price of coal alone, but, more or less, in the price of every article into the preparation of which coal enters. Thus, the price of that great necessary of life, salt, sprang up at one bound to treble its amount, in consequence of the rise in the cost of fuel necessary for the manufacture. The rise stopped the trade. People would not buy salt, for which they had been in the habit of paying 7s. at the price of a pound. It fell then to 12s., or a little under double its former price. But the collier's wife will find that she has to pay much more than double the price for her small consumption of salt than that which sufficed before the coal famine was occasioned, not by the hand of God, but by the ignorance of man.

The workman then has first to understand that the more productive his industry is, the better it is for himself as well as for every one else. He will then see that it is not by diminishing, but by increasing his output, that he can better his condition. No other course is possible in the long run,—and that run will be run out within a year or two.

Productiveness of labour is increased, without any cost to the workman, by the use of all machinery that facilitates labour. We are not now speaking of machinery which replaces labour. Mr. Babbage (as quoted by Mr. J. S. Mill in his "Principles of Political Economy," chap. ix.) says that the only economical mode of employing machines is to keep them working through the twenty-four hours. This would require three relays of labour. No doubt, in mines, where the sunlight is of little importance to the work, this would be the most economical arrangement. It is not, however, that now preferred. Mr. Brogden has invited the Welsh workmen to divide themselves into two relays. By this simple change in habit, all the fixed expenses of great works,—plant, interest, depreciation of stock (which goes on faster while machinery is at rest, in many cases, than when it is in motion), office and corresponding expenses, agency, and a host of other details of outlay, would at once be halved. The master could then afford to pay better wages for human labour,—that is to say, for industry, not for idleness. The public would gain by a decline in price, or, at all events, by an arrest of the upward movement. If the double-shift were combined with such a system of bonus as we have above indicated, the impetus given to the industry of the district would be unprecedented; and those who would first and foremost benefit by the change would be the industrious workmen and their families.

It is quite true that the renewal of activity, which is not an idle dream, but a condition that might become verified within a few weeks, will run us on another horn of a dilemma. We refer to the exhaustion of our coal-fields. Our readers will remember our remarks on this subject a year ago. The future course of the coal industry we indicated to lie between two extreme conditions, that of the total exhaustion of all our available coal by the year 1945, and that of the duplication of the then quoted price by the year 1886. We have approached much more rapidly than could have been expected to the latter limit. The effect of this approach on the contraction of yield, and that on the duration of supply, has yet to be ascertained. It may be some time before we can ascertain the results of the actual check. What enterprise may have been directed, by the choking of the main supply in England, to the opening up of those foreign coalfields which are twenty times the area of those in England, has yet to be found out.

Into this, however, we need not now enter. The present famine in coal depends, to a great extent, on artificial causes. We are more concerned to remove these, than to anticipate the evils of subsequent exhaustion. When natural causes alone are at work, as in the case of the definite exhaustion of a known source of supply, compensation often occurs. It is when economic law is directly violated, that compensation is less probable. We speak to the industrious, and in behalf of a great industry. We have, we trust, made plain that it is from the increase, and not from the decrease of his industry that the condition of the working man can alone be improved. The workman now in question can earn, during short hours of toil, more than many a curate, or educated man in many a profession and calling, can call his own. We are anxious that their high rate of wages should be accompanied by habits of providence and self-respect. "England expects," was the immortal word, "every man to do his duty." Men who strike, except against intolerable injustice, and as a last resource, do not do their duty,—either to their country, their families, or themselves. We take a position almost singular among educated writers as to the value and the rights of labour. But the future of labour can be elevated only by proper industry. Inasmuch as we admire and defend the rights of labour, we condemn what may be called the unrights of idleness. This terrible weapon is double edged. It is even more fatal to those who employ it, than to those against whom it is directed. Idleness is the weapon of the strike-maker. To employ it, in the great majority of cases, is at once a blunder and a crime.

REFEREE'S REPORT ON THE DESIGNS FOR ST. MARY'S CATHEDRAL, EDINBURGH.

PERMISSION for publication of Mr. Ewan Christian's report having been given by the trustees, we print the more interesting portions of it:—

"Agreeably to your request communicated to me by Mr. Phin, I have made a careful examination of the several designs submitted in competition for the proposed cathedral for the Episcopal Church of Scotland in Edinburgh; and in the report which follows, I will as briefly as possible give you the result of my labours.

I may perhaps be allowed, in the first place, to congratulate you on the admirable manner in which your invitation has been responded to.

The care and skill which have been bestowed on the preparation of the respective designs, and the beauty of many of the drawings, is very remarkable; and it can hardly be doubted but that, by judicious selection from amongst them, you can scarcely fail in securing a building not only well calculated for the purpose in view, but one that shall be a noble addition to the ornamental structures of your city.

As, however, the object of my report is practical rather than descriptive, I propose in this sense to review the several designs in regular order as they hang upon the walls, and to report upon each, first, as to agreement, with instructions, and afterwards as to arrangement, construction, architectural character, and estimates. With regard to the last very important point, I would, however, most carefully guard against any misconception as to the limits within which I have confined my examination. I have not proposed to myself, and you would not expect that I should undertake, the duty of a professional valuer; but for the better understanding of the designs themselves, and to enable you to form a more accurate judgment than you otherwise could, as to their *proportionate* costliness, I have made a series of approximate calculations, which, while probably sufficient for this purpose, must not in any sense, or in any case, be taken as representing ultimate expenditure. Without such data, founded on careful measurement and calculation on one uniform basis, it would indeed be quite impossible to arrive at a proper understanding on this point; and without such close examination as has been required for attaining to this result, many important points of difference might possibly have been overlooked. But as regards your ultimate selection of a design, these calculations must not so far weigh as to determine a choice. Each competitor who tells you that his work, according to the design submitted, can be executed within the designated limits of expense, must be believed to be correct, until he is proved to be wrong; and provided that in this particular you adopt and abide by a very strict rule, he must in all fairness be allowed full opportunity of proof.

The authors of two first-class designs state that they believe that those designs can be executed for the sum stipulated by the trustees, 'Fidelitas,' 'In hoc Signo ✠'; and there is a third, "Non ignotæ Civitatis Municeps," of equal beauty, to which, although its author adds no exact estimate, my calculations will show, that if the first-named could be carried out for the required sum, this could certainly be done for much less; and there is yet another, "Auld Lang Syne," of which, though he will not give any definite estimate, its author says that he has aimed at execution within the sum named by the trustees.

If you select any one of these, or, indeed, any other design, the first test that must be applied is that of cost; and should the author of that you most approve be unable to find responsible contractors to execute his building as designed within the specified sum, or a moderate addition thereto—say, not exceeding 10 per cent.,—you must, in all fairness, put such design aside, and allow the next on the list to be similarly tested. I do not say that this is a rule that should always hold good, because a case of competition might be conceived where none, or only one design, might be deemed worthy of its object,—but that is not so in this instance; on the contrary, there is rather a difficulty in the other direction, and so many having done so well, the rule should be applied with unflinching sternness."

Mr. Christian then reviews the various designs [illegible], and thus concludes:—

"Having now, as briefly as practicable, described in detail the respective designs, it only remains for me to make a few general observations, and to state my own views as to the order of merit. In all such structures, and, indeed, it lies at the foundation of all really good architecture, the arrangement of the ground-plan is a matter of very primary importance.

In respect of this feature, I can have no hesitation in ascribing the first place to the design marked '✠ In hoc Signo' [Mr. Street]. I do not think it would be possible to design a better or more suitable arrangement, than, for the purpose in view, is here shown. It is in every respect excellent. The plans of 'Non ignotæ Civitatis Municeps' [Mr. Burges], and 'Fidelitas' [Mr. Alex. Ross], though worked out on different principles to the last-named, are both also in most respects good. The latter is much larger than the former, but neither appears to have been so expressly designed for congregational purposes as the first I have described. They may be considered, I think, as about equal in merit. The plan of 'Auld Lang Syne' [Sir G. G. Scott], is a good one, but it is wanting in protection for the doorways, which in your climate must, I think, be a matter of necessity; and I think also it is inferior to the others already noticed, in matters of detail, such as the provisions for vestries and general communication. In respect of plan, however, each of the foregoing designs must be deemed superior to either of the remaining two.

In respect of solid goodness of construction, your instructions as to cost and what is desirable in a cathedral structure do to some extent clash. There can be no doubt, I think, but that a church vaulted throughout with stone is in many respects more desirable, more solid, and necessarily more substantial than one roofed only with wood. Within the present century there have been two fires which have destroyed wood groining in York Minster, and during my examination of the designs, there has occurred at Canterbury another, which serves very strikingly to illustrate the protection afforded by stone. My own judgment, however, accords with that of the architects who have deemed it impracticable within your limit of expenditure to vault throughout the loftier and larger parts of the church, because it is not only the actual vault that has to be considered; but also the greater solidity of the walls, pillars, buttresses, &c.; still, as providing for vaulting throughout, the design of 'Fidelitas' is in this particular the most valuable. The designs marked 'Auld Lang Syne' and '✠ In hoc Signo' provide stone vaulting for choir and transepts, and for the aisles; and the former, for the Chapter House also; but in each of these the nave is groined in wood. The design marked "Non ignotæ Civitatis Municeps' and ⊕ [Messrs. Peddie & Kinnear], provide for stone vaulting only in the aisles, the loftier parts of the church being wholly covered with wood; and in the design 'Essayez-moi,' wood roofing is employed throughout.

In this particular, therefore, 'Fidelitas' stands first; '✠ In hoc Signo' and 'Auld Lang Syne' are respectively equal, and inferior only in the nave; 'Non ignotæ Civitatis Municeps' and ⊕ are also equal in respect of this point, though the latter is far below the former as regards the quality of roof substituted; and 'Essayez-moi' is in every respect the last.

As regards architectural character, 'Fidelitas' and 'Non ignotæ Civitatis Municeps,' both are so beautiful in general design, that I think, in respect of detail, it would be hard to balance their respective merits; but, as a composition, whilst there may be, and I think there is on the whole, partly for constructive reasons and for general solidity, more dignity and cathedral-like character in the design marked 'Fidelitas'; yet there is not less beauty, whilst there is perhaps more general richness and picturesqueness of effect in that of 'Non ignotæ Civitatis Municeps.' Both the eastern and western fronts in the latter are richer, and, to my mind, more beautiful than those of 'Fidelitas,' and the western front especially is throughout a most finished and beautiful composition. As regards interior, also, excepting in the point of stone vaulting, which, considering cost, I believe the author to be right in omitting, I must also say, that in my judgment the design of 'Non ignotæ Civitatis Municeps' is preferable to that of 'Fidelitas.' The design marked '✠ In hoc Signo' is also one of great excellence in respect of detail, and although perhaps more severe in its general character than either of those first mentioned, yet it is wrought out in a bold and vigorous style, combined with much elegance, and would undoubtedly, if executed, produce externally a dignified and noble result, whilst the interior would be remarkably light and elegant. It is evident, from careful examination of the design, that the architect has in several points felt himself straitened by the limits of the estimate, to which he has rightly endeavoured to conform. As regards 'Auld Lang Syne,' the observations already made in my detailed report will sufficiently show my views as to general character; and I think I need add nothing further on this point, except to say, that if you desire to select the best design of those submitted, your choice must be limited to one of these four.

As to plan, there can, I think, be no doubt whatever; as to construction, all are good; and although, as to architectural character, there may be room for difference of opinion, yet in my own judgment the design of 'Non ignotæ Civitatis Municeps' for general elegance would bear away the palm.

On the subject of cost, as regards the selection of a design, the observations at the commencement of this report will, I think, sufficiently explain my views; but on the pages which follow you will see in figures the general result of a comparison of areas and cubical bulk, and approximate estimates of proportionate costliness deduced therefrom. You will observe in the valuation prices, in respect of the church, a somewhat considerable variation in the multiplying figures. This result per foot cube has been arrived at by carefully-detailed calculation according to quantities, of the cost of a corresponding portion of the building in each design, made on one uniform basis as to materials and labour, with such differences only as regards the latter as careful consideration of work to be done, may have in each case dictated.

The striking difference between the work of 'Fidelitas' and others in this particular cannot fail to be noticed; but it chiefly lies in the great solidity of walls, the massive flying buttresses, and the stone vaulting throughout, on which, for the main building, none of the other competitors have ventured.

In conclusion, I would say, that having, as I believe, faithfully given you in the foregoing pages the result of much and very careful examination of the designs submitted to your consideration, I trust that you may be guided to a sound and just decision respecting them. The opportunity is an important one, and the subject demands at your hands the greatest possible care and impartiality in forming your final judgment."

THE NEW BUILDINGS AT THE DISTRICT RAILWAY STATION, BLACKFRIARS.

Two prominent and striking blocks of buildings have for some time been in course of erection at the Blackfriars station of the Metropolitan District Railway. One is a hotel or restaurant erected over the superstructure of the station itself, the other is a number of shops extending in the direction of Queen Victoria-street to the bridge carrying the Chatham and Dover Railway over that street, and forming a quadrant. The first-named building is externally completed, with the exception of some gilding and ornamentation of handsome iron balconies in the elevation, fixed upon the projecting stonework. The block of shops, which when finished will materially improve the architectural appearance of the locality, is in a less advanced state. The hotel is a structure somewhat *bizarre* in character, erected in the Oriental style of architecture. It is very lofty, being 80 ft. in height from the street level to the pavement, in addition to an Oriental minaret or tower at either end 50 ft. high, the elevation thus having a very commanding view of the Thames Embankment westward. The building, which is 80 ft. in width, contains within itself three distinct stories irrespective of the ground-floor forming the railway station, and will be approached at the north angle by a wide stone staircase which is carried to the top of the structure. The elevation is faced with white Suffolk brick, the windows and general dressings being of Bath stone, white and blue tiles, and dark red bricks, being freely introduced into the elevation for decorative purposes. Windows with Moresque horseshoe heads are grouped on the several floors, the range of windows in the third floor being arcaded. The handsome ornamental railings and balconets in front of the second and third story windows form a marked feature in the elevation, and when these are enriched by gilding and parti-colours the effect will be still more heightened. The entire area of the floor above the railway station is being fitted up as a dining-room; the second floor as a coffee and smoking room; and the third floor as a billiard-room, which we understand is large enough to contain ten tables. All these several rooms are now being richly decorated in distinct colours, that in the dining-room being red, the coffee and smoking room green, and the billiard-room blue. It is stated that Messrs. Spiers & Pond have become the lessees of the building. The block of houses and shops adjoining, already alluded to, which will form the quadrant as far as the viaduct across Queen Victoria-street, are intended to be ornamental architectural structures, harmonising to a certain extent with the building already described although the elevation will be considerably lower

the height of this last-named block being about 50 ft.

The architect is Mr. F. J. Ward, of Albert-buildings, Queen Victoria-street; and Mr. W. R. Lacy, of Clapham, the contractor.

THE NATIONAL SAFE DEPOSIT COMPANY'S NEW BUILDINGS AT THE MANSION HOUSE.

AMONGST the numerous large edifices which are at present in course of construction in Queen Victoria-street, the costly building now in progress for the National Safe Deposit Company, on the triangular piece of ground to the west of the Mansion House, merits a notice. This building, when finished, will be one of unusual extent, involving an outlay of more than 30,000*l*. Owing to the heavy character of the work in clearing away the earthwork for the foundations, and the construction of the basement and sub-basement now in progress, it will yet be some time before the superstructure itself shows above the ground level; but in the meantime we may state that the preliminary work is actively proceeding, and that that portion of the basement at the angle of Queen Victoria-street and the Mansion House, is considerably advanced towards completion. The building, which will contain three frontages, is intended, in point of architectural character and effect, to be equal to the several new structures in immediate proximity to it.

The site on which the new building will stand has a frontage to Queen Victoria-street 124 ft. in length, 100 ft. to the Mansion House, and 100 ft. to Bucklersbury; the whole covering an area of about 6,500 superficial feet. In view of the special uses to which it is to be devoted, the building is to be fire and burglar proof, for the safe custody of negotiable and other securities, the company intending to take in charge every description of securities, bullion, money, plate, jewels, title-deeds, wills, and other documents; guaranteeing the safety of the same, when required, on certain specified terms. The strong-rooms in the interior of the building will be under the ground level, in the basement and sub-basement, at present in course of construction, the sub-basement having flagged floors laid upon a thick mass of concrete resting on the London clay. The upper chambers will have fireproof floors, levelled up from the strong segmental arches that form the ceilings of the rooms in the sub-basement. The basement chambers will also have fireproof ceilings. Each strong-room will have four ranges of safe-racks, two of the ranges being placed back to back on iron frames running along the centre of the room, and the other two with their backs to the partition-walls. In order to give access to the ranges of safes, there will be a longitudinal passage of 2 ft. 6 in. wide between the rows. The company will have their own day and night watchmen; and from a patrol chamber round the strong-rooms each room may be inspected at any moment.

The architect for the new building now being erected for the company is Mr. Whichcord; Messrs. Peto, Brothers, being the contractors.

HOUSE FOR THE SCIENTIFIC SOCIETIES.

A COMPANY is being formed to provide improved house accommodation, on reasonable terms, for certain of the learned societies in London, with a capital of 40,000*l*., in 4,000 shares of 10*l*. each. Mr. William Newmarch, F.R.S., is chairman of the board of directors, and Mr. G. W. Hastings, deputy-chairman. The societies which have so far taken part in the discussions and negotiations are,—Statistical Society, Social Science Association, Institute of Actuaries, Iron and Steel Institute, Meterological Society, Juridical Society, Anthropological Institute, Photographic Society, and Royal Colonial Institute, and several other societies are known to be favourable to the scheme. The directors have good reason to believe that a freehold site and building adequate for at least twelve societies may be obtained for abont 35,000*l*., and will show a rental of, say, 2,500*l*. per annum (to be obtained from societies paying rent in proportion to space occupied), and from other sources. Mr. Thomas Bellamy is the architect. There seems no reason whatever why such a scheme should not be successfully carried out provided a proper site be obtained. If they bury themselves in a hole in Westminster, as the Architectural Museum Committee, for example, have done, where no omnibuses pass, and to which you cannot direct a cabman with less than a quarter of an hour's speech, the money will be wasted.

LEICESTER MUNICIPAL BUILDINGS COMPETITION.

THE Leicester Town Council have again advertised for designs for their proposed New Municipal Offices. Surely this is very unjust to the authors of the selected design in the former competition (Messrs. T. Barnard & W. Smith). Their design was chosen as the best by a large majority (27 to 17), but endeavours to have the buildings erected on a different site altogether, if possible, have prevented hitherto this adoption. Now this alteration has been carried, all the plans submitted in the former competition are useless in their present form; but this ought not to prejudice the successful competitors.

Having fairly gained distinction in the original competition, and having produced the best design for a very difficult site, the Council ought in all fairness to appoint them as their architects, and commission them to alter the design to suit the new site.

CHESTER WORKHOUSE COMPETITION.

IN reply to the advertisement issued by the guardians in November last, thirty sets of designs for the proposed workhouse have been received, and exhibited at the townhall. The following list of them has been prepared:—

No.	Motto.	Estimated Cost. £.	s.	d.
	NORTH AVENUE.			
1.	Experiar	29,940	0	0
2.	How now! What will the citizens say?	30,000	0	0
3.	Fidelis	...	...	
4.	Dera	30,000	0	0
5.	Tout Ensemble	30,000	0	0
6.	Ventilation	30,000	0	0
7.	Saint Michael	30,000	0	0
8.	We Fight to Win	27,000	0	0
9.	Cestria	30,000	0	0
	CENTRAL AVENUE.			
10.	Wheat Sheaf	30,000	0	0
11.	Pro-bono Pauperum	30,000	0	0
12.	Convenience and Salubrity	30,000	0	0
13.	Castrum	29,566	0	0
14.	Spero	30,000	0	0
15.	Chester	29,190	0	0
16.	Rusticus	29,200	0	0
17.	Compact Plan	35,000	0	0
18.	Tria Juncta in Uno	...	...	
	SOUTH AVENUE.			
19.	Palmam Qui Meruit Ferat	29,790	5	0
20.	O	...	...	
21.	Laus Optima	30,000	0	0
22.	South Front to Chester	30,000	0	0
23.	Dee	30,000	0	0
24.	Classification	30,000	0	0
25.	Dee Side	30,000	0	0
26.	Alpha	30,000	0	0
	FRONT OF ORCHESTRA.			
27.	Rus	30,000	0	0
	PLATFORM.			
28.	Excelsior	30,000	0	0
29.	Experience the Proof of Convenience	30,000	0	0
30.	Idonium	30,000	0	0

The *Cheshire Observer* says,—"We have heard on the authority of professional men, that there are many excellent plans in the competition which must have cost considerable time, to say nothing of the expense or experience to produce. The competing architects are furnished by Chester, London, Birmingham, Liverpool, Leeds, and other places." At a meeting of the guardians on the 15th, it was stated that active canvassing was going on, and very proper indignation was expressed by some of the guardians present. An endeavour will be made, we hope successfully, to induce the Board to call in an independent and competent architect to assist them in making the selection.

INAUGURATION OF THE CLARENCE HYDRAULIC DOCK AT MALTA.

THE Anglo-Maltese Hydraulic Dock has been inaugurated with great ceremony, including, of course, a banquet. The lifting and "christening" of the Lift were done by Miss Paget, the daughter of Lord Clarence Paget, in presence of the Governor and Lady Van Straubenzee, Lord Clarence Paget, Mr. Reed, and many others. The vessel which Miss Paget "lifted" by turning the wheel that set the hydraulic rams in motion was H.M.'s ship *Cruizer*, which was lifted, crew and *Cruizer*, as she floated, till her keel rose into daylight, by the fine invention of Mr. Edwin Clark, C.E.

The lift consists of a double row of iron columns, each containing a hydraulic press; these hydraulic presses are simultaneously worked by a powerful steam engine, and their combined action is brought to bear upon a series of iron girders of great strength. Over and on to these girders an iron pontoon or dock is floated, and upon this pontoon the ship is floated; suitable blocks, adapted to the form of her bottom being provided upon the pontoon. The hydraulic rams are then set to work and raise the pontoon with the ship on it out of the water; the water in the pontoon is then allowed to run out of it, and the buoyancy of the pontoon then floats the ship. The pontoon with the ship upon it may then be removed from between the lifting columns, and replaced by another, and so on; thus the only limit to the docking power is the number of pontoons provided. The contractors who built the Clarence Lift were Messrs. Emmerson & Co.

Lord Clarence Paget incidentally stated at the banquet that Malta is lamentably deficient in hotels, and that the population is increasing to an alarming extent. The last census shows that it amounts to nearly 124,000 inhabitants in a proportion of 1,200 to the square mile, being denser than that,—as far as he was aware,—of any country on the globe; and what is still more striking and appalling, is its rapid increase, something like 1,000 in every year. There were proposals of emigration to India and the West Indies, but he strenuously advocated the colonisation of the shores of the Mediterranean in the Arab district of Cyrenaica,—the rich quondam region of "the gardens of the Hesperides." Arrangements with the Arabs, he thought, might readily be made.

SCHOOL BOARDS.

London. — The Works Committee invited tenders for the erection of a school to provide accommodation for 1,167 children, on the site in Monnow-road, Southwark. The list of tenders has already appeared in our columns. The committee recommended the acceptance of the lowest, that of Mr. A. Kilby, of 193, Salmon-lane, Limehouse, E., amounting to 7,760*l*. The committee also invited tenders for the erection of a school to provide accommodation for 1,102 children, on the site in Wornington-road, Chelsea. The following are the amounts of the tenders:—G. Stephenson, 11,230*l*.; J. Grover, 9,112*l*.; Adamson & Sons, 8,195*l*.; W. Wigmore, 7,495*l*. The committee recommended the acceptance of the lowest tender, that of Mr. W. Wigmore, of Bradfield House, Fulham, amounting to 7,495*l*. Tenders were also invited for the erection of a school to provide accommodation for 1,084 children, on the site in New-road, Wandsworth, the amounts of which are as follow:—Gammon & Sons, 7,563*l*.; Nixon & Sons, 7,397*l*.; J. Tyerman, 7,298*l*.; Myers & Sons, 6,992*l*.; J. Cook, 6,991*l*.; Newman & Mann, 6,930*l*.; Cooke & Green, 6,895*l*.; Marsland & Sons, 6,895*l*.; W. Higgs, 6,430*l*. The committee recommended the acceptance of the lowest tender, that of Mr. W. Higgs, of Crown Works, South Lambeth-road, amounting to 6,430*l*. The committee subjoined the amounts of tenders received for the erection of a school to provide accommodation for 766 children, on the site in Hughes's-fields, Deptford:—W. Higgs, 6,543*l*.; J. & F. Coleman, 6,389*l*.; J. Perry & Co., 6,275*l*.; Cooke & Green, 6,265*l*.; S. J. Jerrard, 5,974*l*.; F. Johnson, 5,950*l*.; J. Cooper, 5,850*l*. The committee, in this case also, recommended the acceptance of the lowest tender, that of Mr. J. Cooper, of 221, Camberwell-road, S.E., amounting to 5,850*l*. The recommendations of the committee have been agreed to by the Board.

Leeds.—The School Board have decided to appoint an architect to superintend the erection of their schools, seven of which are to be immediately proceeded with. The Board declined to alter the width of the schools to 22 ft., as recommended by the Education Department. There are already 10,259 scholars in the Board schools.

Carlisle.—With respect to alterations of plans agreed upon, Mr. Hannah said that the committee had consulted with Mr. Birkett, and the alterations suggested had been made. A draft plan, showing the alterations, was submitted by Mr. Birkett, and considerable discussion again ensued as to whether a covered way should be made to the infants' offices, and whether part of the infants' playground should be roofed in. After various

suggestions, a member asked if the boys' playground was to be covered. Mr. Birkett: The boys are supposed to be hardy. Even in London the Board only recommends covering for girls and infants, and they are generally supposed to be 10 degrees softer than we are.—The girls' and infants' playground being virtually one, this was thought objectionable, and it was decided to divide them. With regard to the coverings, it was determined to erect covered sheds in the girls' and infants' playgrounds, not in the boys'. One or two other alterations were made, and it was then decided to omit the dwelling-house, which would not affect the symmetry of the building, and could be erected at any future time. Permission was then given to Mr. Birkett to send a preliminary plan to London, and ask whether the Department would sanction it.

Worcester.—Mr. E. A. Day, architect of the new Board schools, offered various suggestions, such as lowering the floor of the infants' class-room 6 in., so as to reduce the number of steps; the construction of two skylights over the porch, so as to secure more light; the placing of a lightning-conductor on the bell-turret; an alteration of the plan as regarded the coal-store, so as to economise ground space; the insertion of two circular windows in the gable of the girls' room; the laying down of heating-apparatus, &c. Mr. Day submitted plans of the new premises, and explained the improvements he suggested. The cost of the alterations, independently of the extra cost of the heating-apparatus (occasioned by the increased value of iron), would be about 41*l.*—Alderman T. R. Hill said it was strange that, after all the pains they had taken to avoid having any extras, these propositions should be made to them.—Mr. Scott said he did not wish to make any reflection on their architect; but he should like Mr. Day to explain why these things were not thought of before.—Mr. Day replied that it was an acknowledged fact in carrying out work practically that ideas for improvement suggested themselves which did not appear in the drawing.—It transpired that the principal part of the work connected with the alteration of the coal-store had been already executed, Mr. Day explaining that he considered the alteration would be so great an improvement that he had gone on with the work, in order that the erection of the building should not be delayed. Several members of the Board expressed their disapproval of being asked to sanction any alteration after it had been commenced or completed. A proposal that the surveyor's suggestions be adopted, with exception of the construction of a lightning conductor,—the cost of the whole work not to exceed 37*l.* 10s.,—was carried by seven votes to two. The subject of obtaining the necessary lighting, heating, and hot and cold water supply to the Board school was discussed; and ultimately it was decided to advertise in the local papers for tenders for the execution of the work.

IRON AND COAL.

Earl Dudley and Messrs. Barrows, who now lead the changes in South Staffordshire, have announced that orders for coals can only now be executed subject to special arrangement as to prices, or at the prices current at the time of the delivery of the iron. Earl Dudley's black diamonds no doubt far excel his white ones in value, if they do not do so in lustre.

The leading iron merchants in South Staffordshire, by reason of the announcement just made to them on the part of Lord Dudley and Messrs. Barrows, have advanced the price of iron by twenty shillings per ton.

It is stated that in consequence of the high price of coal, arrangements are being made for putting out of work next week about 300 furnaces in the North of England iron district. This will be equal to one-seventh of the entire number.

The price of coals in London has been lowered by 3s. to 4s. per ton more than once of late, and the various descriptions of Wallsend are now quoted from 40s. to 44s. At most of the collieries in the neighbourhood of Chesterfield coal has been reduced by 3s. per ton on the pit's bank. On the other hand, nearly all the South Durham collieries have again advanced their prices by 2s. 6d. to 3s. per ton.

At a numerously-attended meeting of the South Staffordshire and East Worcestershire Coalmasters' Association, held at Birmingham, it has been resolved by a small majority to give the colliers an advance of 6d. per day. The price of coal was immediately afterwards raised by 2s. per ton.

Mr. Stephen Gregory, of Brailes, near Shipston, brickmaker, says that, having sunk a shaft upon his premises, he has come upon what he believes to be indications of the proximity of coal. He alleges that he has "cut through an ironstone bed, and different beds of fossil," and he invites inspection of the workings.

Whitecliff Bay, Isle of Wight, is likely to become a place of some importance from the fact of large deposits of coal having been found there within the last few days. The shore of the bay is usually covered with large deposits of sand and shingle, but the late gales have stripped it completely bare, and left exposed a seam of coal extending in a straight line from the foot of the cliffs down to low-water mark (a distance of from 70 to 80 yards), and from thence out into the sea. The seam is from 6 ft. to 7 ft. in width, and has been dug out by local fishermen and others to the depth of 6 ft. without any signs of exhaustion, but apparently widening as it deepens. In the cliff the seam appears to take an upward course. The coal appears to be of the ordinary character, free from slate, and burns well. Explorations will, no doubt, be at once made to ascertain its real extent. At present it can be dug out upon the shore with as little labour as would be required to cut an ordinary drain, and the seam in the cliff could be worked, it is said, at as little cost as a chalk or gravel pit in the side of a hill.

Coal-cutting machines are coming into more notice than heretofore. The new coal-cutting patent of Messrs. Gillott & Copley, of Barnsley, consists of an improved mode of mounting the cutter-wheel. By the invention of Mr. Wm. K. Birkinshaw, of Derby, the machine gives motion to a horizontal revolving disc or saw, and is fitted on a travelling carriage with traversing gear for regulating the pressure of the disc or saw during its revolutions on the face of and in cutting into the coal to be worked.

In the House of Commons the other day the subject of coal in China was alluded to. Mr. Akroyd asked the Under-Secretary of State for Foreign Affairs if his attention had been called to the statement from competent authorities that the coal-fields of China cover an area of upwards of 400,000 square miles, as contrasted with the comparatively small area of 12,000 square miles in Great Britain; if his attention had been called to the report of Baron Von Richthofen, printed at Shanghai in 1870 and 1871, respecting certain coal-bearing provinces, notably that of Shansi, containing some 30,000 square miles, with beds varying from 12 ft. to 30 ft. in thickness, whilst the system of coal-bearing strata in this province was about 500 ft. in thickness, containing besides an inexhaustible supply of iron ore; and asked whether her Majesty's Government, by concerted action and in co-operation with the Powers who were parties to the Treaty of Tien-Tsin, would endeavour to negotiate a supplementary treaty to provide for the safe investment of British and European capital in mining enterprise and in connecting lines of railway, under proper safeguards protected by the contracting Powers. Lord Enfield said there was no reason to doubt the accuracy of the reports in reference to the quantity of coal in China. Indeed, they were confirmed by the reports of our own consuls; but with regard to the obtaining the sanction of the Chinese Government to the coal being worked by foreign enterprise, Sir Rutherford Alcock had used his utmost endeavours, but unhappily without success hitherto, in this direction. He (Lord Enfield) could only hope that, sooner or later, the Chinese people would see their way by their own industry and capital to develop these resources.

"I KNOW A HAWK FROM A HANDSAW."

Sir,—If your correspondent "A. H." will consult Richardson's Dictionary, under the word "Heron" he will see all about the Hernshaw; and why the man must have been very ignorant of falconry—and in those days of most other things—who "did not know the hawk from the hernshaw." He will see that Chaucer spells the word "Hernsewe" without the "h." It also appears in the not uncommon surnames *Hearn, Earn, Erne,* "Hanshaw," or "Henshaw," and "Earnshaw." On the Orwell, in Suffolk, the heron is still called the hernshaw by old-fashioned country people, and the word probably lingers in other parts of the country where the bird is frequently seen.

C. J. Gedge.

WILLESDEN, MIDDLESEX.

At a recent meeting of the Architectural Association, a paper was read by Mr. F. A. Wood, giving a history of the Church of St. Mary, Willesden (about four miles north-west of the Regent's Park, and two miles from Willesden Junction); the details gathered from the muniment-room in St. Paul's (London), from the records in the Augmentation Office (full lists of the Church's goods, 5 Edward VI.); also from old wills, church-rate books of the last century, &c. The church is of some interest (1) as an old church of a small parish well clear of Old London, but now nearly reached by unbroken masses of building; and (2) in connexion with the pilgrimages to Our Lady of Willesden, very popular among the lower classes in the fifteenth century. (3) The building contains some good remains of various dates, and is but little known. The connexion of the monks of St. Erkenwald (Bishop of London 675-697)—now represented by the Dean and Chapter of St. Paul's—with the district is another point worthy of note. A charter of King Athelstan (925-941) gave Neasden (a hamlet a mile from Willesden Church) and Willesden, then two farms or two manors, to these monks to pray for his soul. Long after that time the whole of the district must have been a continuous forest, broken only by a few cultivated openings and by spots where the stagnant streams prevented the trees from flourishing. At such a point (the site of the present parish church), on the edge of the forest and the edge of a wide marsh, a chapel or oratory was built for the twenty-eight families mentioned in the Domesday Survey. This was perhaps served occasionally by a priest sent from the cathedral; or it may have been simply an oratory like that at Kilburn.* Some remains of this church (of Early Norman date) have lately been found, and the font, long supposed to have been removed here, now appears matched by these portions of the early building. The neighbouring church (about two miles away) of Kingsbury, though containing traces of still earlier work (Roman tiles, &c.), was probably built on the same model,—a plain oblong structure without aisles. This Kingsbury Church,—now sadly defaced and mutilated,—has never been added to since it was first built on the picturesque little knoll overhanging the Brent, in the midst of primeval forest that stretched unbroken all the way to the Chilterns.

Mr. Wood then traced the further history of the church and parish: mentioning the new church of the twelfth and thirteenth centuries (complete in 1249), the original church remaining, in his opinion, as the north aisle;—the first appointment of a vicar about 1200,—the dilapidation of the chancel as evidenced by a petition to the dean and chapter of St. Paul's about temp. Rich. II.; the building of a new chancel, south aisle, and tower early in the fifteenth century; and the modern history,—the work upon it in 1851, and the recent additions. In connexion with the relations with St. Paul's, it may be mentioned that about 1103 this parish was divided into two great divisions, each division subdivided into four prebends. To the west and north, Harlesden, East Twyford, Neasden, and Oxgate; the other division comprising Willesden, Brandesbury, Mapesbury, and Chamberlain's Wood. These names appearing on the stalls in the cathedral, mixed up with names of well-known places, sometimes puzzle people a little

* Kilburn (Saxon, *kele*, cold, and *bourn*, a rivulet), now the well-known populous suburb (three miles from Euston Station), was on the main St. Alban's road (through Edgware) in King Stephen's time. Fitzstephen speaks in strong terms of the dangers ("wolves, bears, men,—worse than either") that lurked in the forest immediately beyond the environs of the metropolis. The road, in fact, after it had ascended the hill above Kilburn, called Shoot-up Hill, descended into a dense forest, which continued the greater part of the way. The Kilburn (now the Ranelagh sewer) separated the civilised from the savage part of the road. Travellers would wait to make up parties for the purpose of protection in passing these dangerous roads. This would afford time for offering up prayers for protection, and on safe arrival thanks would be given. An oratory had been established here by a hermit. This became the Priory of St. John the Baptist. On the death of Maud (first wife of Henry I.), three of her maids of honour were the first nuns, and built convent and church under the auspices of the Abbey of St. Peter, Westminster. As St. Peter's and St. Paul's were always at variance, we may understand that the buildings of St. John's at Kilburn would be looked upon with jealous eyes by the Dean and Chapter of St. Paul's, resulting in the erection of the second church at Willesden, the work similar in character to that in the eastern crypt at Canterbury (A.D. 1174). The Kilburn was not a pretty sparkling brooklet only; in one of the charters it is called Cuneburna (the brook of the kine);—no doubt in a widened portion the cows came to drink out of it.

who are not in the secret. At this (1103) time, these two divisions of the parish were completely separated from each other by dense oak forest, the acorns of which, according to Domesday, would afford food for 650 swine. The chapel at Church End served one division, while no doubt the neighbouring peasants of Willesden proper (thirty families, in Domesday) resorted to the oratory at Kilburn, used also by the residents at western Hampstead.

The local pilgrimages of the Middle Ages, Mr. Wood said, would form a very instructive and very interesting chapter in a history of the national manners. They were supported by popular feeling,—not by the noble and rich. Curiously enough, the literature of the day contains scarcely any allusion to them, except towards the period of their decadency, and then all that is said of them is to their discredit, and condemns them both in their origin and consequences. In a list of the goods of the church in 1249, mention is made of "two large sculptured images of the blessed Virgin." Along with the dedication of the recently completed Church of the Virgin, an attempt was thus made to give her special honour. It is most probable that one of these was afterwards the miraculous image of Our Lady of Willesden, placed in the north aisle (the original Norman church), the proper position of the altar of the Virgin being always on the north, to the right of the high altar (to her son). It may well be that the publication of some well-believed miracles either originated or revived the pilgrimages, and produced a devotion, the fruits of which helped to the works undertaken to the church in the fifteenth century. But whatever may have been the origin, the successors of the early pilgrims were not gifted with very fervent devotion, and if we may believe enemies, the scenes at the festivals of Our Lady of Willesden were the reverse of edifying. In fact, these pilgrimages became pleasant excursions into the country,—a sort of picnic of the poorer citizens of London; and the stricter class (the great middle class) of the time, denouncing pleasures they did not care to share, spoke of them roughly. They had degenerated into fairs, such as any one may see now at the patterns of Ireland, or the Pardons of Brittany. The church profited by the gifts of those who attended, but the district suffered from the congregation of the idle and disorderly. The pious, well-to-do farmer was not only shocked by the profanity, but also disgusted by the conduct of the pilgrims who came to the parish to break down his hedges, steal his fowls, and set a bad example to his servants. This sort of sentiment had quite as much to do, Mr. Wood thought, with the suppression of the local pilgrimages as any religious motives. The image was destroyed at Chelsea, in the first or second year of Edward VI. (at the same time as that of "Our Lady of Walsingham"); and the north aisle, where it had stood, was pulled down. The tradition in the parish is that nothing was suffered to remain that would recall the past superstitions. The church as it now stands, contains some very fair brasses; one of Bartholomew Willesden, in civilian dress, to the time of Henry VII., and his wives. "In these brasses," Mr. Wood remarked, "if a man has but one wife, both look out of the brass; when he has two, they are placed one on each side, looking at him." In the will of William Lickford, died 1517 (vicar of Willesden, prebendary of St. Paul's, and Chancellor of the diocese), now at Doctors' Commons, he desires that he may be buried before the altar of the Virgin in his church at Willesden. The inscribed brass, depicting him as a vested priest, still remains in the church,—another relic of the destroyed north aisle—the aisle at last replaced by the recent addition. In the discussion after the paper, allusion was made to the three-light window, inserted in 1851, at the west end; and the opinion expressed that there was sound reason for the almost universal custom of putting an equal number of lights in west windows in the old time. By this difference from the eastern end, a judicious distinction is made, which it is neither necessary nor desirable to abandon.

ARCHITECTURAL DETAILS IN COMMON USE.

CONTINUING the observations on this subject, read at the Architectural Association of Ireland, Mr. E. Trevor Owen said,—There are many unnecessary and expensive things in every style and order which I think may be omitted with general advantage and without prejudice to the main points of the composition, for a refinement of parts to such an extent as sometimes to be lost sight of altogether, from the fact of their position being necessarily too remote, cannot conduce to the end in view; but, whether in that case or not, such details as label mouldings, a repetition of moulded strings, too great an elaboration of base courses and plinths, and sometimes even the cornice itself, are amongst the number that may, under many circumstances, be dispensed with, giving more consideration to well-balanced proportion, grouping, and outline of such portions as cannot be omitted from the nature of the general arrangement of the plan, and this with a careful use of the materials at hand, will seldom fail to produce the most satisfactory results. But perhaps some one will say that this tends to the "churchwarden style." However that may be, my view of the subject is to avoid meanness as much as prodigality in design and attempts at display, probably produced by Portland cement, rough stucco, plaster casts, and "machine-made" mouldings, &c., at per 100 lineal feet, superficial yards, or by the gross, as the case may be.

Do not use ornamental details—I was about to say indiscriminately, or solely because the several kinds may have been found to be beautiful or very appropriate in this or that building, but rather take calmly into consideration the varied circumstances and requirements of your work as they *naturally* occur, then, supposing that you have arrived at a just conclusion as to what will best suit those circumstances, show as plainly as you can a reasonable cause for the mode of treatment adopted in every part of the work. In the use of sculptured work, is it not objectionable to observe a good thing done too much? Some object from nature has perhaps been lovingly worked out by the carver (sometimes to the surprise of the architect himself), and forthwith its effect is spirited away, or at least depreciated, by too great a repetition, overlooking the fact that a single object or mere point of beauty in the right place will never weary or become common.

In our ordinary city houses, amongst other things capable of improvement, may be mentioned the entrance-door. The peculiar whims and fancies displayed in some are decided examples of what to avoid. Of course, we have all more or less respect for what is called "Classic," but not when so distorted and misplaced, though dignified by the name of portico, as in the case where an order is crammed under a semicircular arch forming the outward termination to an entrance-hall or lobby, from 8 ft. to 10 ft. wide, though composed of two unexceptionable columns, with entablature to match, beautifully painted in imitation of what it is not, standing out from the plainest possible red brick, "tuck-pointed," and most likely "raddled" front, accompanied by inconsistently [plain rectangular openings in wearisome square miles of such fronts by way of windows. Is not this a very faint but true picture of our present "street architecture"? And as we see it repeated from time to time, apparently to the entire satisfaction of all parties concerned, until at least two-thirds of our towns and cities are so disfigured, it becomes a somewhat serious consideration whether, after all, true and consistent work in common things will ever again be seen—that is, from the palace to the college; and if in some providential way it does partially appear, whether it will be appreciated generally. We may have tried hard to believe in the painted Venus of the late sculptor, Gibson, and not feel much regret at having failed to appreciate it (the paint, not the sculptured marble), because this bedecking and besmearing otherwise good work is in the same objectionable manner.

If we take into consideration the labour of skilled workmen in every branch connected with building, and the materials employed—frequently of a costly nature,—and the evident industry and perseverance expended in many very indifferent designs, and compare it with what might have been done had the same efforts been rightly directed, we should find that real extravagance had been indulged in, though quite unwittingly. Our plain duty would, therefore, appear to be the task of teaching as much as in us lies, that right way whereby we shall not only disseminate the beautiful and true more widely, but, in so doing, save also our clients' pockets.

During the discussion which followed,

Mr. Longfield (hon. sec.), said that dentils are most effective members of a cornice, and that the use of triglyphs in Classic work may be accounted for quite as well as many features in Gothic. We ought not to forget that it is from Classic art we have obtained our caps and bases. Pediments are a very natural form, provided always that what is behind them is not a sham. Architecture in the present day is copied from what has been done in the past. Everything seems to have been done already. If anything is to be done in the way of a modern or Victorian style, it must be a mixture of the old styles, as in music with the same notes any amount of variety may be obtained.

Mr. John L. Robinson said that he agreed with Mr. Owen that triglyphs in the Doric order were shams, being an imitation of what they were not—viz., ends of timber or wood construction. As for Gandon's works—the Custom House, Four Courts, and Bank of Ireland,—none could deny the ability with which those buildings had been treated, and with a freedom which might well be copied. Wall columns in Classic were, he considered, not to be deprecated when used for the only purpose to which they are legitimately adapted—as buttresses to strengthen a wall, and perform the same function as buttresses in Gothic. As for iron construction, in New York they go so far as to form the framework of the building of iron bars and girders, and to hang thin slabs of marble, sometimes only 1 in. thick, in front, giving the appearance of a solid ashlar building; while in reality it was a mere skeleton of iron without constructive truth. As for the pitch of roofs, he thought that they should be as high as possible. He thought that too little care is bestowed on the surface decoration of roofs. Often in buildings where various coloured materials have been used we find the roof left one flat surface of the same colour. Could it not have been treated as the walls, with parti-colour or scolloped slates? or, better still, broken up with dormers, lunettes, or ventilators? He was of opinion that the grouping or outline of a building is of far greater importance than the detail. As for the plainer of our middle-class houses, from the earliest ages the bulk of the population lived in comparatively flimsy and plain dwellings. He considered that the very unsatisfactory appearance of modern street architecture was due to the fact that the houses were roofed parallel to the street, and not as they ought to be, at right angles to it, as we see in old houses of the Queen Anne period in the liberties of Dublin; the effect of the gables, as they are vulgarly called A roofs, being most picturesque and pleasing. No trace of the middle-class dwellings of the ancients remain, and it is considered that they must have been very rude indeed, although the ancients have left behind them such beautiful temples.

Mr. Mitchell said that he agreed with Mr. Longfield that dentils were a beautiful form of ornament (no matter what may have been their origin), somewhat analogous to the billet moulding of Gothic. He thought it would be an evil day when vaulting was disused. As for iron being the building material of the future, he would rather say of the past, as eminent engineers have discovered, that it will not bear exposure to the weather. The iron bridges will not last half so long as the stone ones, and when this was generally known, the use of iron would, he was sure, be discontinued. Iron is not, from the evidence of Captain Shaw, of the London Fire Brigade, a fireproof material; he would prefer a wooden beam to resist the action of fire. He thought that every one with artistic taste would not be sorry to see the last of iron in architecture. Mr. Owen might have laid greater stress on truth,—a truthful building may be designed in any style.

PROGRESS OF THE ST. GOTTHARD RAILWAY.

THE Swiss Federal Council have sent to the different subsidising Governments their first report on the progress of the undertaking, from which we obtain the following particulars.

In an introduction the report gives first the history of the foundation and constitution of the St. Gotthard Railway Company, the appointment of the council of administration ("Verwaltungsrath"), as well as the election of the board of directors, at the first meeting of the council. Then follows the report on the raising of the necessary capital and details as to the financial combination, the names of the different bankers who formed the latter, and the proportion in which each member of it subscribed.

On April 2, 1872, the council confirmed the elections by the board of the principal officials

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of the railway, who are the following:—M. Gerwig, of Karlsruhe, was appointed chief engineer; Dr. Schweizer, of Zürich, first secretary of the board and the council; M. Kaltbrunner, of Geneva, French secretary to the chairman of the board, and translator at the meetings of the council; Professor Zähringer, of Laufenburg, chief accountant; M. O. Gelpke, of Berne, chief of the topographical section of the technical central bureau. The Federal Council, at the same time, appointed M. G. Koller, of Winterthur, Federal inspector of works at the St. Gotthard. The board of directors was divided into three different departments, of which the first, the political, comprised the business of the railway, so far as it is of a political character, as well as its relations with the administrations of other railways; also the construction of the railway, with the exception of works above ground ("Hochbauten"), and the rolling stock, under the direction of the chairman of the board, Dr. Alfred Escher. The second department, under the superintendence of the vice-chairman, M. Zingg, includes the management of the finances, with the construction of the works above ground, the tolls, and correspondence resulting therefrom with other railways. The third department, comprising the legal business of the company, the rolling stock and traffic, the administration of the local finances, the superintendence of the offices and buildings of the company, and the correspondence connected with these subjects, is under the supervision of M. Weber.

The superintending engineer had already provisionally entered upon his duties on March 1, 1872, and had set to work at once in forming the necessary technical staff. More than 1,200 candidates applied, of which many were men high in their profession. The applications have not all been considered yet, but 100 persons have already been selected, of which half are employed in the canton of Ticino; the rest partly in the central office at Zürich, partly in Lucerne and Uri.

The preliminary technical work could now at once be proceeded with. For this purpose, sections were formed in Lucerne, Wasen, Göschenen, Airolo, Faido, Bellinzona, Locarno, and Lugano, and those points were first attacked whose execution required a longer time, or which had to be done by a certain specified time. These preliminary labours advanced at such a rate that already, in June of last year, the plans for the large tunnel, for the stations of Göschenen and Airolo, and for the lines from Biasca to Langensee and from Lugano to Chiasso, could be submitted to the Federal Council and the cantonal governments. The Federal Council had already sanctioned the plans for the definitive direction of the axis of the tunnel and its normal cross-sections, those for the station of Göschenen and the northern entrance of the tunnel, for the height of the station of Airolo and the southern entrance, for the execution of 100 metres of the tunnel from the north and of 600 metres from the south, as well as the plans of the works of the firm of Sillar & Co., at the bridge over the Moesa, near Bellinzona, and at the tunnel of Paradiso, near Lugano, which are by this time partly executed.

The surveys for the lines from Biasca to Langensee and from Lugano to Chiasso had especially to be pushed forward, it being the intention to open them for traffic within two years and a half, reckoning from October 22, 1872; and the surveys are, indeed, so far advanced that the final plans may be prepared and the works commenced at once. The tracing and the locality of the principal stations at Bellinzona, Lugano, and Locarno, have been sanctioned by the council of administration, and are only waiting for ratification by the government of the canton of Ticino. The surveys of the routes from Airolo to Faido, and from Göschenen to below Wasen, have so far progressed that the central bureau will be able in the course of this winter to work out the tracings, and by the beginning of spring to submit the definite plans. The staff at Lucerne is occupied with tracing the lines which are to connect the St. Gotthard Railway with the Central and North-East Railways. All these geometrical labours are founded on the levellings of MM. Benz and Spahn, begun under the supervision of the Federal Geodetic Commission, at the instigation of the Gotthard Committee, in 1869, and completed in the course of 1872. The details of these interesting works are contained in the yearly reports of MM. Hirsch and Plantamour, directors respectively of the observatories of Neufchâtel and Geneva. The very extensive and difficult works for determining the axis and height of the tunnel and the altitudes of the two entrances were begun by M. O. Gelpke in 1869, continued during 1870, and completed in 1871. The notices of the separate determinations and triangulations of the survey, as contained in the report, give the expert an idea of the magnitude and difficulty of the work. According to them, the two extreme points of the tunnel at Airolo and at Göschenen are 15,568 metres 616 millimetres distant from each other. The exactitude of the works and of the calculations leave nothing to be desired; but it is intended to submit the determination of the axis to a second test by means of staking out the ground and astronomical verification during the course of the coming summer. The direction of the tunnel deviates from the meridian 1° 55′ 30·1″ towards the west.

The Gotthard tunnel will have in its cross-section the same dimensions as the Mont Cenis tunnel. A later slight alteration of the axis, causing the same to come nearer to the village of Airolo, will offer many advantages, amongst others that of protection against avalanches. The station will be erected on the meadows between the village of Airolo and the river Ticino. The same is the case with the station at Göschenen, which will stand in the angle formed by the two arms of the Reuss named respectively the Gotthard and Göschenen Reuss. The latter station will have a length of 480 metres, that at Airolo of 700 metres. From Göschenen downwards in the direction of Wasen the maximum fall will be 25 in $^{a}/_{oo}$; from Airolo to the precipices of Stalvedra the fall is a little less. The stipulations of the convention of October 15, 1869, have been strictly observed; as regards the height of the tunnel (6 metres to 8 metres, by a width of 7·60 metres), the definitive project is more favourable than that of the surveyors, MM. Beckh and Gervig, which served as the basis to the convention. The tunnel will have two lines of rails, and will be straight, with the exception of a curve of a radius of 300 metres in a length of 145 metres, near the southern entrance, which connects the axis of the tunnel with the axis of the Airolo station. The tunnel itself has a length of 14,900 metres, and its greatest elevation above sea-level will be 1152·40 metres, instead of 1163·33 metres, the maximum elevation allowed by the stipulations.

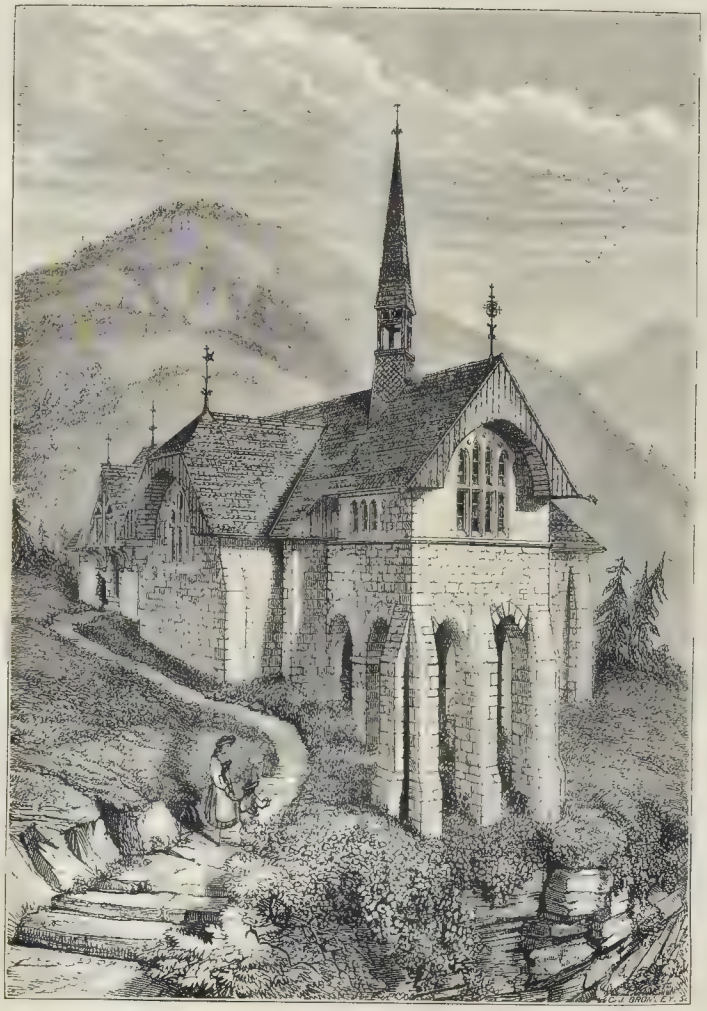
On the 4th of June of last year the works were definitively begun, to permit of the tunnelling experiments of an English company, not, after all, proceeded with. The stone hitherto met with is a hard and close gneiss-granite with a course strongly tending towards the south-east, in a direction from north-east to south-west. It is presumed that this rock reaches as far as the Urnerloch, a distance a little over 2 kilometres. Rails have been laid down for the transport of material to the workshops, and the brickwork for the repairing and engine sheds has been finished. On the 1st of July the works at Airolo were taken in hand, and M. Favre began his operations on September 13. By November 30, the depth of the gallery had been advanced 91 metres, i.e. on both sides of the tunnel 96 metres. As far as 36 metres, earth mixed with sand and gravel, with partial percolation of water, was met with; then came about 29 metres of layers of limestone, with considerable afflux of water; then follow layers of mica-schists and feldspath. An exact description of the geological features of the work is to be published.

The *Alpenpost*, in a communication from the superintending engineer, furnishes some details of the geological formations met with up to the present time in driving the tunnel. Their features are much more simple on the north side than on the south. At Göschenen, in the forecutting, granitic gneiss was met with; at a distance of 26 metres a layer of chlorite was cut into, but this soon ceased. The rock is quite dry, and while towards the surface it shows two courses, at 30 metres it is compact, and of a concholdal fracture. At Airolo, on the south, however, rubbish of a moraine-like nature, seemingly resting on peat, was first cut through; the gallery then runs, at 40 metres, through yellow limestone; at 48 metres through gypsum containing a course of anhydrite; at 64 metres, through talc and mica-slate; and still further on, through magnesian limestone and similar *débris* of rock; at 85·7 metres a bed of *débris* being entered, the afflux of water, which carries into the gallery *débris* of mica-slate and quartz-blocks, was 30 litres per second. After this latter stratum of about 4 metres thickness had been cut through, easily crumbling mica-slate was met with, which, at 100 metres, increased in compactness, and showed alternate, soft and hard layers. According to calculations, the outflow of water at the mouth of the tunnel amounts to 37·5 litres per second. At 34 metres from the entrance, in widening the gallery, 14 metres under the surface, another bed of peat underneath moraine *débris* was found; it contained well-preserved remnants of wood, probably of the birch. Collections are to be made of the different kinds of rock met with. At every 100 metres, or in places where the nature of the ground suddenly changes, cubical pieces are to be cut out, numbered, and provided with labels showing at what distance from the tunnel entrance they were to be found. They will be inspected by experts twice or three times during the year, and then sent to the authorities at Berne, who will forward specimens to the universities of Zürich, Berne, Basle, Berlin, Milan, Rome, and Florence. The villages of Altorf and Airolo will also each receive a complete collection. At both entrances of the tunnel, besides, a list of these stones, with number, kind of rock, date of cutting, distance from the tunnel entrances, name, layer, and temperature of the rock, as well as that of the springs found, and mathematical notices relating to the construction of the tunnel, will be placed. Meteorological investigation will also be instituted during the progress of the works.

As regards the granting of the contracts for the tunnelling works to M. Favre, the report adds the reasons which determined the Federal Council in its choice. The convention which the latter has concluded is in accordance with the obligations undertaken towards the subsidising States, as well as with the different resolutions passed by the Federal Council in this matter; the contract further offers all possible advantages from both a legal as well as a technical and financial point of view; the conditions are more favourable than those of all other competitors; and the character and position of the entrepreneur offers all desirable guarantees. The Italian Government, it is to be hoped, will by this time have been better informed by the report of the Federal Council than by the complaints of interested engineers.

The first year of operations for the great work has been fixed by the Federal Council from October 1, 1872, to October 1, 1873. After the lapse of that space of time, the Federal Council is obliged, by the 17th article of the International Convention of October 15, 1869, to render account to the contracting States of the money spent in the construction of the railway.

Later advices state that all difficulties raised by the Italian Government have been removed, and the programme has been accepted. An agreement satisfactory to both sides has been come to as to the acquirement of the boring and air-compressing engines used at the Mont Cenis tunnel. We take the following additional data from the above-mentioned programme for the first year. It is intended to employ, at both ends of the tunnel, boring-engines of greater power than those used for the Mont Cenis tunnel, to be driven by engines of 500-horse power. At the north end, a waterfall of the river Reuss, near the entrance to the tunnel, is to drive turbines; and at the southern side the waters of the Val Tremola will have to perform the same function. Motive powers, such as were employed at the Mont Cenis tunnel, are not practicable at St. Gotthard. The contractor considers it possible, with an expenditure of two million francs, to complete his preliminary arrangements by the 1st of July, 1873; and he calculates to be able, from the 1st of January, to proceed with the work at the rate of 100 metres per month, at each end. The estimate for the first year is as follows:—1. Machinery, tools, preparations of all descriptions, 2,000,000 fr. 2. Tunnelling: direction levels at Airolo, 145 metres, at 1,500 fr. per metre, 217,500 fr.; boring of 1,800 metres of the principal tunnel, at 2,800 fr., 5,152,000 fr.; walling, according to the different sections of the report, 1,458,050 fr. 3. General expenses of administration and preliminary work for 1·840 kilometre, at 97,000 fr. per kilometre, 178,480 fr. Total, 9,006,030 fr. According to Art. 17 of the above-mentioned convention, the Federal Council will give notice at the end of the first year to the subsidising States what sum has actually been expended. At the same time, the ninth part of the third of the subsidies, payable in equal yearly portions (28,333,333 fr.), will be due to the amount of 3,148,148 fr. Total, 12,154,178 fr. This is 14·3 per cent. of the whole subvention.



IMMANUEL CHURCH, SAMADEN, SWITZERLAND.—Messrs. George & Vaughan, Architects.

IMMANUEL CHURCH, SAMADEN, SWITZERLAND.

The question of designs for Mountain Chapels being at this moment on the *tapis*, we make it an opportunity to give an illustration of the picturesque little church that has lately risen upon the granite heights of the Upper Engadin.

Two years ago, the English who were filling the hotels at the pleasant village of Samaden, found no better place for their Sunday service than the coffee-room of Bernina's Hotel. At the suggestion of the Rev. Stenton Eardley (then staying at Samaden), M. Bernina gave the site, some materials, and a donation towards the erection of an English church. The building-fund (about 1,200*l.*) has since been raised entirely by the exertions of Mr. Eardley, and the work was paid for by the time of the consecration last summer.

Messrs. George & Vaughan were consulted as architects, and they have designed a building quite in harmony with its position. Being 6,000 ft. above the sea, and a day's journey from any town, skilled labour was hardly to be had. The low walls are of granite, quarried from the rock on which the church stands. The fall of the hill from west to east leaves the chancel high above ground; it is carried on open arches, beneath which is a precipice. The choir forms a picturesque feature above the village.

The roofs and spire are covered with shingle, and the boarded Swiss gables have been used, as giving the best shelter from the snow, and as being more easy of construction than the usual stone coping. The east window is filled with glass by Messrs. Lavers & Co.; and there is a reredos of Messrs. Powell's glass mosaic.

The four Evangelists, occupying panels in the pulpit, were carved by Mr. Forsyth, but the rest of the joinery and carving is Swiss work, as also is the parquetrie floor.

NEW REREDOS, GLOUCESTER CATHEDRAL.

Here may be seen a representation of the reredos which has recently been set up in Gloucester Cathedral, from the design of Sir Gilbert Scott, and at the cost of the munificent Freemasons of the province. It is 17 ft. 5 in. in width. A horizontal line of carved stone extends across where the communion-table will be placed. Above this are seven niches, filled alternately with statues and sculptured groups. The subjects, from left to right, are:—Moses bearing the Tablets of the Law; group, the Nativity; St. Peter; group, the Ascension; St. Paul; group, Entombment of the Saviour; David, bearing the Harp. The groups are good works of art. The central one, the Ascension, is 5 ft. in height; and the side groups are each about 4 ft. 3 in. high. The statue of St. Peter is of Painswick stone; the other figures and the groups are of stone from Mr. Wingate's quarry, at Crickley Hill. Over the figures and groups are wrought canopies; above these are three open pinnacles, with statues of angels; and surmounting the central pinnacle is the cross, 27 ft. from the floor. The groups and statues are by Mr. J. H. Redfern, sculptor; and the other portions of the work were executed by Messrs. Farmer & Brindley.

The drawing we have engraved was made from a very excellent photograph, the production of Mr. Abraham Thomas, of Gloucester.



THE NEW REREDOS, GLOUCESTER CATHEDRAL.—SIR G. G. SCOTT, R.A., ARCHITECT.

ARCHITECTS AND DRAUGHTSMEN.

SIR,—That the architectural profession, in common with nearly every other in this country, has become overstocked of late, is a statement which the members of that profession will probably be, for the most part, the last persons to contradict. Certain movements, partly connected with art, partly with ecclesiastical feeling, gave no doubt a great impetus to the practice of architecture during the past thirty or forty years, and brought many workers into the field, a considerable proportion of whom have made what is called "a good thing" of it. The profession has acquired a higher status, in some points at least, and a greater popularity; and, as in nearly all such cases, the re-inforcement of its ranks has proceeded in a more rapid ratio than the increase of professional work. The superfluous number of recruits, who were not able to find for themselves a separate "connexion," wide enough to establish a business upon, found an outlet for their abilities in assisting those more able or more fortunate persons who had been first in the field, and had accumulated more work than they could carry on unassisted; and the occupation of architectural draughtsman became almost established as a recognised branch of the profession. For some time past, however, there have not been wanting indications that this subordinate rank has become inconveniently crowded, bringing with it the usual and well-known results of an excess of supply over demand in any department of human labour. In the present day, it seems almost equally a matter of course that those who find those results affecting them, in the usual shape of hard work and low remuneration, should bethink themselves of the modern weapon of combination, which has been handled with such effect in some of the lower strata of the labour market, in order to better themselves. Hints, at all events, are bandied about which indicate that this idea has suggested itself to the mind of architectural draughtsmen. We hear of comparisons instituted between the incomes obtainable by architects' assistants and those realised by mercantile clerks, who occupy the same relative position in regard to their principals; and the hasty inference drawn is, that the latter have only to league together, and to stand out for their own terms.

It may be hoped that so unphilosophical a view of things is not likely to be widely accepted by a body of men possessing a fair average of education and culture. It is impossible to suppose that a comparison between the rate of salary of the mercantile clerks and of the architect's assistant, could seriously be adduced as a basis for consideration, without any recognition of the vast difference in proportion between the average gains of the principals in each case. And it is scarcely possible that the evils and risks to all parties, attendant upon any combination for the purpose (to use plain English) of raising wages, can need to be pointed out, at this time of day, to any but the most unthinking. But there is a point of view in which the draughtsman has a cause of complaint to a certain extent,—a cause originating in a defect in the professional system, and which might be curable, without recourse to attempts at artificial modifications of the scale of remuneration.

There are, in fact, though not, perhaps, in name, two very different classes among those who act as assistants to architects in large practice. Those who merely profess the practical operation of drawing plans,—that is to say, of assisting the architect in framing the necessary instructions to the contractor,—are fulfilling an ordinary and necessary part in the division of labour, and stand to the architect in the same relation in which the operative bricklayer, mason, or joiner, stands to the contractor. Work of this kind is really skilled labour, but not headwork; and the fact of the architect delegating it to other hands in no way affects the ultimate result for which he is responsible, and for which he is paid by his client. But there are now a certain number of men in the profession, ranking as architectural draughtsmen, who are really subordinate architects doing headwork, designing, &c., for and in the name of their principal, who has not time to do it all himself. The mere draughtsman occupies, as I observed, no anomalous position, but a perfectly natural and ordinary one, having its counterpart in every other department of labour; and his remuneration, unless he tries the dangerous experiment of (temporarily) raising it by combination, must be regulated by the usual laws of supply and demand. But the assistant architect is, on the contrary, in a somewhat anomalous position. He is supplying, in fact, at a greatly reduced rate of remuneration, the work for which his principal is paid, and with the merit of which his principal is publicly credited. Now, if architecture really is, as I hope and believe, a recognised art, and not a mere business, this certainly is a somewhat anomalous position, and the result is unsatisfactory. The public do not get what they really pay for, *i.e.*, the skill and thought of the eminent architect himself; the assistant architect gives thought and ability, so far as they go, without getting any credit for them; and the architecture in most cases probably suffers, either from the inferior ability, or from the necessarily inferior interest in, and responsibility for the work, on the part of the assistant.

I am not necessarily blaming any one; still less am I taking up the cudgels for the assistant architect as against the principal. The arrangement is a habit we have adopted, and it is probably adopted in general as a matter of course by both sides. What, it may be asked, is a man to do, who has gained such a reputation that he is entrusted with more work than he can design and oversee personally? Is he to lose the advantage of his superior ability? By no means. Somebody ought certainly to pay him for his superior ability: and this "somebody" is the public. At present the public pay nothing extra for it. There is a standard of 5 per cent., below which I certainly think the architect's remuneration should not fall (unless in some very exceptional cases); work which is not worth that is pretty sure to be bad. But if an architect acquires such a reputation that more work is crowded on him than he can attend to,—if, in any other words, the public prefer to employ A. rather than B., C., or D.,—the plainest course open to A. is to raise his terms. This would have one of two effects; it would either enable him to remunerate his assistants adequately, or it would set free the surplus work, which he could not personally undertake, to be carried out, at the ordinary rate of remuneration, by those who at present work as his assistants at much less than that rate, and without the credit due to them for their work. There seems no more reason why an architect should not take this means of making capital out of his superior talent, than why a painter should not.

The result to the pocket of the eminent architect would be much the same as at present; the result to his reputation probably better; and he would have the satisfaction of reflecting that his superior abilities were paid for not by his humbler brethren, but by the public who have the benefit of them.

A PROVINCIAL ARCHITECT.

RAILWAY MANAGEMENT.

THE subject of railway management is certain for some time to come to occupy a considerable degree of public attention. Government naturally shrinks from incurring the responsibility of taking such an enormous increase to its burdens as the management of the railways of the United Kingdom, the control of 800 millions sterling of capital, the administration of the affairs and direction of an army of 300,000 specially educated, experienced, and trained officers and men, and the exercise of the vast amount of patronage involved,—the exercise of a kind of power for which Governments, which a breath may make or unmake, are in the nature of things unsuited.

Short of the purchase and absolute control of the railways and canals of the kingdom, however, there appears to be a growing opinion that the State authorities should possess a greater degree of power in the direction of these modes of national communication than has been hitherto exercised, and the manner in which such power is to be employed is set forth in the Railway and Canal Traffic Bill that has been prepared and brought into Parliament in the present session by Mr. Chichester Fortescue, President of the Board of Trade, Mr. Childers, and Mr. Arthur Peel.

A prominent feature in the Bill is the appointment of a permanent tribunal to exercise jurisdiction in railway affairs, such tribunal to consist of not more than three commissioners and two assistant-commissioners. The salary of the chief commissioner not to exceed 3,000*l.*, of the other commissioners to be not more than 2,000*l.*, and of the assistant-commissioners not more than 1,500*l.* per annum each respectively. One of the commissioners must be learned in railway and other departments of law, and another must have railway experience. The commissioners may sit at such times and places as they may think proper, either separately or together, and in open court or with closed doors. They are to have powers to determine differences between railway and canal companies; and to exercise, by transfer, certain powers and duties, in relation to railways, that are now exercised by the Board of Trade. They will have jurisdiction in questions of through routes, and the appointment of rates as between companies, and will be the intermediary authority between the Postmaster-General and the railway companies, in the matter of carriage of mails. Various other powers are to be exercised by the commissioners, and certain new duties are imposed by the Bill upon railway companies. One of these is of an extraordinary character, and can only be carried into effect by the expenditure of an enormous amount of work. The eleventh section of the Bill provides, that every railway company and canal company shall keep, at each of their stations and wharfs, a book or books showing every rate chargeable for the carriage of traffic, other than passengers and their luggage, from that station or wharf, including any rates charged under any special contract. Every such book shall distinguish how much of each rate is for the conveyance of the traffic on the railway or canal, including therein tolls for the use of the railway or canal, for the use of carriages or vessels, or for locomotive power, and how much is for loading and unloading, covering, collection, delivery, and other expenses; and the entries in such books shall be made in such form, and contain such particulars as the commissioners may from time to time, and on the application of any person interested, and for the purpose of insuring publicity, direct. Such books are to be open for inspection without the payment of any fee. Penalty for non-compliance with this requirement may be five pounds, and "five pounds per day for every day during which the offence continues." Analysed traffic rates may be possible for a limited selection of stations, but imposing such analysed rates from every station or wharf, to every other station or wharf, is imposing a burden too heavy to be borne.

The Association of Chambers of Commerce is taking action in another direction in relation to railway management, and there have been thrown out for consideration of the Chambers numerous practical suggestions, having regard, mainly, to the prevention of accidents. Not a few serious accidents have occurred through the breaking of coupling chains, and it is suggested that Government should be asked to prescribe a more efficient system of coupling wagons and carriages. Improved fastenings for carriage-doors, such as are in use on many Continental railways, to prevent passengers from falling out, are also recommended; also, to protect the public from fraud, that the fares be printed upon railway tickets; that tickets should be issued for at least ten minutes before the time appointed for the departure of each train; that the habitual crowding of third-class passengers into first and second class carriages should be peremptorily stopped, and that every compartment should contain a prominent notice of the number of persons it is constructed to carry. These and other suggestions will, it is expected, evoke resolutions or expressions of opinion from the conference of the Associated Chambers held in London during the current month.

CAUTION TO HOUSE PAINTERS.

Brown v. *Smith*.—This action, in Westminster County Court, was brought from the Court of Queen's Bench, by order of the Judges, under a recent Act of Parliament, notwithstanding the damages were laid at 500*l.* as compensation, under the following circumstances:—

The plaintiff is a painter, and on the 20th of September his wife, whilst passing the defendant's place of business, in Marsham-street, Westminster, was knocked down and severely injured by a shutter, that had been left standing outside by some house-painters in the employ of Mr. Allen, builder, of Great Smith-street, Westminster, who had the contract to paint the defendant's shop. An important question to builders arose as to whether the painters were the defendant's servants at the time the

shutters were placed by them in the street, or the servants of the contractor Allen; and, as will be seen, Mr. Allen has only escaped being made the defendant by the skin of his teeth.

Mrs. Brown deposed, that at the time in question she was passing the defendant's shop, which was being painted, and the shutters were standing against the wall on the public footway. The wind was very boisterous, and blew one on to her, knocking her down, breaking her collar-bone, and injuring her to the present time.

A surgeon from the Westminster Hospital deposed to the serious injuries sustained by the plaintiff, and considered it would be two months before she could follow her former livelihood.

Mr. Allen, the builder, stated that he was employed by the defendant to paint his shop, but neither he nor any of his men had anything to do with taking down or putting up the shutters, although they had to paint them. On the day of the accident witness's men certainly took them down, but under the direction of the defendant himself, and placed them against the wall.

One of the painters, named Neal, swore that on the day of the accident they were not painting the shutters, nor did they require them to be placed against the wall. They had been taken down and placed on the footway at defendant's request.

The defendant's counsel urged upon the jury that it was the builder, Allen, who ought to have been the defendant, and not his unfortunate client, as it was entirely owing to the job and the painters that the accident occurred. His client deeply regretted this accident to the poor woman, although her husband had tried to ruin the defendant by demanding the exorbitant sum of 500*l.* for compensation. Mrs. Brown was clearly wrong in suing the present defendant, and he trusted the jury would direct her to apply for compensation to the builder, Allen. It could not be said that the painters who caused the mischief were the servants of the defendant, —they were Allen's men, and Allen was alone answerable for his own men's negligence.

Mr. Smith said he entered into a contract with Mr. Allen to paint his shop, and had nothing whatever to do in giving orders to the painters. The shutters were taken down by Mr. Allen without his wish or instruction. He did not witness the accident, and the first he heard of it was, whilst picking up the shutter, a man said, "Ah, you are taking more care of your shutters than the poor woman. The shutters were usually kept in the shop, but they were placed outside the shop by Mr. Allen's men. Another shutter had blown down previously. When the accident occurred, the painters had left off work, and were not present.

James Young, in the employ of the defendant, said Mr. Allen's men directed him to place the shutters against the wall, as he supposed, to paint them.

In cross-examination, this witness said Mr. Allen's men did not tell him to do so on the day in question, but the day before.

The Judge ruled that if the jury believed that the shutters were placed on the footway by order of the defendant, he was liable; but if the painters placed them against the wall for their own convenience to work on, then Mr. Allen would be liable. The damages, laid, however, appeared excessive for a little tradesman to meet.

The jury gave a verdict for 15*l.*, and the Judge awarded costs only on that scale.

THE ART CLASSES.

At a meeting of the joint committee of the architectural art-classes, held at the rooms of the Royal Institute of British Architects, on Thursday, the 13th inst., a resolution, of which the following is an outline, was passed:—

"Looking back upon the efforts which have been made, though it cannot be said that the benefit to the students has been such as was hoped for, yet the results as regards the excess of working expenditure over the receipts from fees of the students have not been worse than our calculations have led us to expect, nor than can be fairly looked for in the future. These efforts have resulted in a loss which falls upon the members of the committee. We are therefore reluctantly obliged to discontinue our efforts to carry on the classes as at present constituted."

Arrangements were made to facilitate the carrying on of classes for the study of the living model and the practice of figure design for architectural purposes, for which a class, properly organised, will probably be formed at no very remote period, in accordance with the rules of the Architectural Association.

For the present, therefore, the profession has nothing to show as a result of all the discussions and loud demands made for the artistic training of the future architect beyond a few stools and easels, and a disused room at the Architectural Museum.

Thomas Henry Watson, Hon. Sec.

ENLARGEMENT OF THE WATERLOO RAILWAY STATION.

The South-Western Railway Company are about to effect a considerable enlargement of their Waterloo Station, with the view of affording additional accommodation at that part of the station which is set apart for the traffic of the Richmond and Windsor section of the company's lines. For this purpose they are taking steps to purchase land and buildings on the north side of the present terminus, the increased area which they are endeavouring to obtain being upwards of an acre in extent. The powers to purchase this land and houses for the purposes stated are amongst those for which the company are applying to Parliament in the present session, and the Lambeth vestry, having had the company's application under their consideration, have consented not to oppose the Bill before the Parliamentary committee, providing that the company will undertake to pay whatever rates may accrue until the proposed new station buildings are brought under rating by the overseers.

THE SCHOOL BOARDS AND TECHNICAL EDUCATION.

The Liverpool School Boards are entitled to the distinction of initiating a movement to combine with the ordinary primary education of the elementary schools that technical education which is so essential to the future artizans of the country. Having appointed a committee to consider certain proposals concerning this subject, the following report has been drawn up and agreed to:—That it is of great importance in a national point of view to impart at least the elements of sound scientific knowledge to the future artizans of this country, in order, as far as possible, to qualify them to compete, on equal ground, with the same classes in Continental nations. In reference to the following further proposals, viz.:—1. That with this object, and considering the large number of elementary schools in the borough, it is expedient to constitute a department of technical education under a competent head, by whom the masters, assistant masters, and pupil teachers should be formed into normal classes, wherein they may be qualified for giving lessons to their pupils. 2. That the head of the department shall give periodical lectures, illustrated by experiments to all the Board schools in succession, so as to bring each school regularly under his instructions. 3. That when special aptitude or taste for scientific knowledge, is manifested by any pupils, either as the result of the lectures or otherwise, such pupils shall be formed into special classes, and further instructed in such subjects as appear most suitable for their intended trades. 4. That in order further to extend elementary scientific knowledge in the borough, the several denominational schools may participate in the benefits of the department in such a manner and on such terms as may be arranged between the School Board and the local managers. It was resolved that the clerk be instructed to forward a copy of these proposals to the Education Department, and to inquire how far, in the opinion of the Department, it is within the power of the Board to carry the same into effect.

LONGFORD CASTLE, NEAR SALISBURY.

This curious building, the seat of the Earl of Radnor, and to which we have before referred as the home of the works by Holbein now exciting interest in Burlington House, is in course of completion under the direction of Mr. Salvin, Mr. Ockley being clerk of the works. The whole of the work has been intrusted to Mr. R. Futcher, contractor, Fisherton Works, Salisbury. The carving has been executed by Mr. Alfred C. Kemm, of Petersfinger, Salisbury.

The county *Mirror* gives some additional particulars:—The south-east tower forms now a part of the new drawing-room, which is 19 ft. high, 27 ft. wide, 56 ft. long, with an apsidal termination. The walls to the height of 4 ft. are panelled in oak and walnut, moulded and polished. The floor is of oak, rubbed and polished. The entrance-door is surmounted with an enriched entablature, supported by columns with carved caps. On the fascia between the caps will be placed, carved in oak, an ornamental shield bearing the monogram of the owner, supported by two Cupids, festooned with fruit and flowers. The ceiling is of Elizabethan design, in plaster work. The room is approached from a corridor with a vaulted and enriched ceiling, supported by polished Devonshire marble columns. On the right of the corridor you enter the dining-room, which is an apartment of some 49 ft. by 21 ft., and 19 ft. high. The ceiling is similar to that of the drawing-room in its character. The walls, to the height of 16 ft., are fitted with oak panelling, surmounted with a cornice, supported at intervals with pilaster columns with carved caps. The faces of the pilasters are covered with carving, representing in masks, hung with fruit and flowers, Pan, Bacchus, and Silenus, with their attendant Satyrs and Fauns, some twenty-one in number; and also a mask of Medusa. The chimney-piece is of carved white stone. We understand that there will be a large picture-gallery.

DWELLINGS FOR THE WORKING CLASSES.

In the course of a lecture on Dwellings for the working classes, mentioned in our last, Dr. Hardwicke said his views were that in a block of buildings with accommodation for about 100 families there should be various scales of residences, and many dormitories for single persons of both sexes, under supervision; shops on the ground-floor; and, what was very essential and never thought of, workshops for various trades on the top floor, airy and well lighted, to render unnecessary the use of living-rooms for the purpose. These residences would be disposed round an internal court, glazed over, like those of the great hotels in Paris. This would form a playground for children. In the basement there would be a common kitchen and baths, and separate spaces for coals, perambulators, &c. At the rear, reached under cover, would be common laundries and drying-rooms, and a hall for meetings, or club-room, with committee-room. Common reading, smoking, eating, and billiard rooms should be provided. The water-closets, he thought, should be in groups for the separate sexes, under care of attendants, as at railway stations, who could keep a barber's shop. The provision of school-rooms and *crèches* for guarding infants under the same roof would also be made, and the comfort and convenience of the inmates so studied as to make their lives happier, as well as healthier, than they could be now, miserably lodged as they were, as a rule.

The covered areas would be found, as those at Guise were, warmer in winter and cooler in summer than the external air, and ventilation was secured by the air rising from the cool spaces in the basement up to and through the glass roof. That this would be the effect Mr. Baldwin Latham corroborated.

The lecture was illustrated by a set of plans, prepared for the purpose by Mr. Seddon, which had been adapted to a site near the Harrow and Edgeware roads, and such as many which could be procured at a moderate cost at the rear of the main new streets in various parts of London.

THE TRADES MOVEMENT.

Sheffield.—An association of the steel and iron manufacturers of Sheffield has been formed for securing mutual support, and co-operation, or unity of action, in resisting combinations of workmen, and for other trade purposes. The subscription for raising a fund has been fixed at 5*s.* for each melting-hole and converting furnace in the possession of the firm, whether in use or otherwise.

Edinburgh.—A mass meeting of Edinburgh joiners has been held in St. Mary's Hall, Lothian-street, for the purpose of considering an overture received from a meeting of employers, requesting a conference with the men in regard to the demand for a rise of wages on 1st of March. Mr. Jas. Wood occupied the chair. The meeting unanimously agreed to send several delegates to confer with the masters, and to report the result of the conference to a future meeting; but in the meantime they resolved "That we do not accept the offer of the employers, but are willing to negotiate with regard to the other ½*d.*"

FRESCO BY PAUL VERONESE.

CARLO RIDOLFI, in his very interesting book, "Maraviglie dell' Arte," published in Venice in 1648, notices very fully the numerous works executed by Paul Veronese. He describes a palace in Murano, near Venice, built for Signor Camillo Trevisano, after the designs of Monsignor Daniel Barbaro, the interior of which was very beautifully decorated by Paul Veronese, assisted by his pupil Battista Zelotti. The palace was afterwards, says Ridolfi, converted into a place of evening entertainment for the gentlemen and ladies of Venice.

About fifty years ago, the building was dismantled, and the frescoes were removed from the walls, and transferred to canvas by what was then a new process. Some of these have found their way to England, and three large works, in a good state of preservation, are now being exhibited by Messrs. Morant, Boyd, & Blanford, in their rooms, at 91, New Bond-street. The figures in these are all larger than life: the smallest fresco represents Minerva as the representative of Wisdom, between two other female figures, Law and Justice, and evidently preferring the latter. The other subjects consist of boldly-treated groups of allegorical figures, amongst which are conspicuous History, Astronomy, Chronology, and Fortune. Notwithstanding certain curious defects in drawing, which may possibly have disappeared in the original position of the works, there is a grandeur about these productions which fixes and holds the attention.

Should any of our readers be led by this paragraph to visit Messrs. Morant & Co.'s premises, they will also find there some noticeable old furniture.

THE CHAPEL AND HALL, WINCHESTER COLLEGE.

SIR,—Permit me, through your columns, to call attention to the state of the chapel and hall of Winchester College. It is with the greatest indifference that the authorities of the College treat all representations made to them on this subject, and the facts really deserve publicity.

In 1681, the old stalls, with their canopies, were removed from their places in the chapel, and dark oak wainscot was erected in their stead in the four eastern bays (the remaining two at that time forming an ante-chapel), and an Ionic altar-piece of the same material took the place of the ancient tabernacle work. Though always somewhat incongruous with the style of the chapel, this woodwork had a handsome appearance in itself. But a more remarkable aspect than this interior now presents, it would be difficult to find. Owing to the necessity of increasing the accommodation, the tribunes appropriated to the warden and sub-warden have been moved back from the rest of the panelling to the very western wall. About six years ago also, the reredos and wainscot were cut away from the eastern bay, and half the next bay. Consequently, proceeding from the east, we have one bay and a half, bare wall; two bays and a half, wainscot; two bays bare wall; and then the tribunes before mentioned, against the west wall. Also on the north side, in the westernmost bay but one; a very dirty old red curtain extends a good way up the wall, whilst the very westernmost bay is all bare wall above the seats. But such patchwork appearance is not confined to alterations in the old work; but even the new stone reredos has an eyesore. One niche was painted to see what the effect of colouring here would be. It was eventually decided to leave the stonework uncoloured, but the colouring has never been removed from this one niche, though the experiment was made several years ago. A credence-niche close by in the north wall, has been at some period stopped with mortar, and in this state it is allowed to remain. The interior of the chapel is also visited by very unpleasant draughts. These come partly from the roof, partly from the windows, which latter require releading in some places. The seats are high, straight-backed, and uncomfortable. There is no regular pulpit, and the consequence of the custom of preaching from one or other of the tribunes against the west wall is, that it is utterly impossible for any one sitting in the seats towards the east end to hear anything like half the sermon, except if the preacher happens to be one whose voice is remarkably clear. There is a paltry stove near the door, which is an extremely deficient warming apparatus.

But the most extraordinary thing in this chapel is the organ. This instrument is coeval with the wainscot, having been built by Harris in 1681. It bears an inscription, stating that it was last repaired and added to in 1780. Owing to its cramped position (in a window-niche on the north side), there is not actually space for proper bellows, and in these bellows a large hole exists. The pipes are in too confined a position to speak properly, and the pitch of the instrument is always too low by a tone; and these are not all the facts about this instrument.

It is needless to add that thorough restoration is necessary to make this chapel what it should be. But more than this is needed in the case of the west wall. There being no west window, there is a great blank wall the whole height of the chapel. Surely something might be done to cover this nakedness. Mr. Walcott thinks that there was formerly a representation of the Day of Judgment here. At any rate, it is absurd to suppose that William of Wykeham, with his well-known magnificent taste, could have left such an eyesore to this elegant chapel as the west wall now is.

About the College Hall there is less to be said. Still, its present state is a perfect scandal. The lower part of the walls is draped in yellow wainscot, set up in 1540, and is innocent of all beauty. For the rest of the way to the roof (a very fine one, restored some years ago) extends a barren waste of whitewash. The floor is of wood, and the tables attached to it are very rough. The college pictures, instead of being hung in this, obviously their most proper, situation, are kept, by a great abuse, where nobody ever sees them.

Besides these, the exterior stonework of the old buildings, the images, &c., require much attention. The rule of those in authority seems to be to let everything go untouched till it falls down, or until actual dilapidation makes repairs necessary; and this supposition is borne out by the fact that a short time ago a mullion out of a small window connected with the chapel fell down from very age into the court below.

Now, if the authorities really cannot afford to carry out these works of restoration, they ought instantly to open a subscription for the purpose. I feel sure that past and present Wykehamists would soon subscribe the necessary amount. The authorities need not be ashamed of showing that they want money for this purpose, for every one who knows Winchester College must see that they have not sufficient funds,—unless, indeed, which I cannot believe, they have obstinately determined, even though they have the money, not to improve the present condition of things.

D.

CORPORATION STABLING AND STORES, BIRMINGHAM.

AT a meeting of the Town Council held last week the tender of Mr. J. Hurtley, contractor, was accepted for the execution of the above works for the sum of 3,000*l.*

The buildings are circular on plan. Accommodation is provided for fifty horses in addition to blacksmiths' and wheelwrights' shopping, cart and stone-breaking sheds, paint and oil stores, &c.

The architect is Mr. W. H. Ward of that town, whose competitive design was accepted by the Public Works Committee last year.

The site is at the corner of Sheepcote-street and St. Vincent-street.

ENCOURAGEMENT TO INDUSTRIOUS WORKMEN.

THE following letter from Sir Joseph Whitworth to the Rev. D. Vawdry, deserves re-production:—

"My dear Sir,—Referring to the conversation on the 31st December, 1872, I now repeat in writing what I stated verbally, that I should have much pleasure in contributing for the next five years such a sum yearly as would give to the inhabitants of North Darley 3 per cent. more interest on their deposits in the savings bank, thus making the total interest 6 per cent. on their savings. Such inhabitants must be the working classes, receiving wages, among whom I class domestic servants and children at school.

I apprehend there will be no difficulty in obtaining a list of the depositors, and the amount of interest they receive. That amount will be my subscription. If the Local Board, of which you are the chairman, will kindly undertake to ascertain the amount, and distribute it, I will remit to you my subscription. I do this to give encouragement to the industrious, good workman. In the course of a long experience I have found how difficult it is to give to the industrious, good, and prudent workman that encouragement which he deserves.

It cannot be done by giving increased wages, at least to a very small extent, because the less industrious and the inferior workmen combine and claim the same, and so prevent the good workman getting his full value.

If this proposal is found to work well in North Darley, I should hope to see it extended to the Bakewell Union, and if successful there, it might extend to the whole county. I think the owners of property and the great employers of labour might thus greatly promote the security of their own possessions, whilst they would stimulate the frugality of the working classes to the great benefit of their morals, health, and happiness.

JOSEPH WHITWORTH."

If the coalowners in Wales had done anything of this nature, they would have had men ready to stand by them to-day, and the unionists would not have had it all their own way.

We may add, that the Local Board at once undertook what was desired.

BUILDERS' ACTION FOR EXTRA WORKS.

HILL, KEDDELL, AND WALDRAM *v.* THE GUARDIANS OF THE POPLAR UNION.

THIS action was tried in the Court of Exchequer, Guildhall, on Monday last, before the Lord Chief Baron and a special jury. Mr. Hawkins, Q.C., and Mr. Gates were for the plaintiffs, and Mr. Prentice, Q.C., and Mr. Harrison for the defendants. Plaintiffs sought to recover the sum of 7,700*l.*, balance of an account under the certificate of the architect, Mr. Morris, employed by the defendants in respect to the enlargement of the Poplar Workhouse. The works were begun in the spring of 1869, and completed in January, 1872. The original contract was for 32,480*l.*, but with extras the cost was 50,005*l.* 1s. 1d. Mr. Morris certified for the 7,000*l.* claimed, and there was a dispute of 5,000*l.* which he would not certify for, and which was to be determined by arbitration.

Mr. Waldram said he carried on the business of a contractor, and in March, 1869, he saw an advertisement inviting tenders for the enlargement of Poplar Workhouse. His firm's tender was accepted, and they at once went on with the building. Mr. Morris was the architect appointed by the guardians, and from time to time that gentleman gave them certificates of the progress of the works done. All the works specified in the contract, as well as extras, had been completed by his firm. On the 5th of January, 1872, with certain extras to be done, the job was completed. After the accounts had been gone through by Mr. Morris and witness's surveyor, Mr. Morris certified that a balance of 7,756*l.* 11s. 1d. was due to their firm. The architect in addition to this would not certify to their other claim, and they had made repeated applications for the balance.

By Mr. Prentice: By the sixth clause of their contract they were to be paid for extra work. Before they could commence extra work they had to obtain the written order of the architect, and then bills of quantities had to be prepared, and those bills were left with the architect. They declined to allow the guardians to inspect them because they were trade secrets. Had heard that the guardians had taken legal proceedings against the architect for the recovery of the bills of quantities. They were, however, given up to their firm six months after the contract. He believed there were one or two instances in which work was done without the written order of the architect. A delay had occurred in completing the works on account of their being unable to get possession of the whole of the building land.

The Lord Chief Baron said he could not have the time of the Court occupied in going into minute details, for such had better be determined by referees.

Mr. Prentice said the guardians could procure no information as to the extras without such inquiry, and they had felt it to be their duty to defend this heavy claim, of which they could get no full or satisfactory particulars. The plaintiffs relied upon a certificate, given under features the legality of which the Court would determine, and he contended that these architect's certificates were not binding. The contractors did not, as usual in cases of this nature, say if they were not entitled to recover under these certificates they could go for the work done. His clients were willing to pay the builders what their work was worth, after that worth had been fairly ascertained. The dispute about the 7,000*l.* might just as well have been referred to arbitration as the 5,000*l.* had been. The architect had only power by the contract to certify in respect of work for which a written order had been given, and that had not been adhered to. The guardians had ascertained that for 3,500*l.* worth of work charged for out of the 7,000*l.* no written orders were given. There was also a claim for 1,000*l.* surveyor's charges for making up accounts, which was wholly unauthorised.

The master of the workhouse was called, and said the orders of Mr. Morris for extras were laid before the guardians, and then remitted to the architect.

Mr. Morris stated that there were eighteen blocks of buildings erected, and there was no unnecessary delay in the prosecution of the works.

The Lord Chief Baron observed they had heard a great portion of this 50,000*l.* was for additions. Did it happen, during the time these works were in progress, that any extra work was done for which a written order was not given to the contractor?

Mr. Morris said he gave written orders for everything contained in the account he sent in to the guardians, and there might be a few items he did not obtain the sanction of the guardians for. He made his weekly report to the guardians as to the state of the works and as to what was required, and they signified their approval or not by resolutions passed at their meetings.

The Lord Chief Baron said he should hold that if the clerk to the guardians had merely communicated with their architect orally, that would have been sufficient authorisation.

Mr. Harrison observed that there was a special sub-committee of the guardians to watch over the works.

Mr. Morris, in cross-examination was asked several

questions about the dinner on laying the foundation-stone, in respect of which he had no definite instruction. He said he could ascertain what work had been executed by measurement. In arriving at the balance, he used the prices of quantities. There were many omissions,—possibly to the extent of 2,000*l*. These omissions had been credited to the guardians, and were allowed for by witness in the balance of 7,000*l*. It was no part of contract with the defendants to measure and value the work effected, and therefore he considered he was entitled to payment for having done this in conjunction with Mr. Scholefield, the plaintiffs' surveyor. They both received from the contractors between 800*l*. and 1,000*l*.

By the Lord Chief Baron.—Did not think the fact of his receiving remuneration for this work was known to the guardians until they received the detailed account. A guardian, an architect, considered witness was entitled to payment for these extra services. It was not usual for architects to measure and value additions. That was generally carried out by surveyors; but in the present instance he undertook the work. He was paid a commission on the work done by the guardians.

Defendants' counsel said no written orders could be found for 4,127*l*.

Mr. Morris said that there were written orders given by him to the contractors for the whole amount. The building committee went round with him every Tuesday to inspect the works, and they then received his written reports, and they were aware of all the work done from week to week, and never disapproved of any of the works. Seventy-five per cent. of the cost had been paid, and the dispute was concerning the remaining twenty-five.

The Lord Chief Baron said, if the jury believed Mr. Morris that the extras had, with a few trifling and incidental exceptions, been incurred by the authority and under the written orders of the defendants' architect, and that he had based his calculations upon the sealed prices of quantities, then the plaintiffs would be clearly entitled to their verdict. If the architect had failed in his duty to his employers, they were at liberty to proceed against him, but that could in nowise affect the plaintiffs as contractors. When the points of law about to be raised were argued, he would take care the defendants should have the benefit of any objections they could urge. He thought, before Mr. Morris sent in his account, it was his duty to have acquainted the guardians that he had received money from the contractors for valuing and measuring the work done.

The jury gave a verdict for the plaintiffs for 7,756*l*. 11s. 1d. Execution to be stayed until next term, to afford time to argue the points of law that will be raised.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

A meeting of engineers and surveyors holding office under sanitary authorities in various parts of the country was held, on Saturday last, at the Institution of Civil Engineers, Westminster, by permission of the council, for the purpose of forming the above association. The following rules, among others, were unanimously adopted:—

"That the society be called 'The Association of Municipal and Sanitary Engineers and Surveyors.'

That the objects of the association be (*a*) the promotion and interchange among its members of that species of knowledge and practice which falls within the department of an engineer and surveyor engaged in the discharge of the duties imposed by the Public Health, Local Government, and other sanitary Acts; (*b*) the promotion of the professional interests of the members; and (*c*) the general promotion of the objects of sanitary science.

That the members of the association consist of civil engineers and surveyors who hold permanent appointments under the various urban and rural sanitary authorities within the control of the Local Government Board."

It is intended that the annual meetings of the association shall be held in various parts of the country, the inaugural meeting to be in London on May 3rd next. Mr. Lewis Angell, C.E., 12, Dartmouth-street, Westminster, and Townhall, Stratford, London, has been appointed chairman *pro tem.*, of whom further information may be obtained.

A GENERAL BUILDING ACT.

The following is from the *Law Magazine*:—

"The desirability of establishing some central authority, —say, the Local Government Board,—which shall have absolute control over the construction of all buildings in the metropolis and elsewhere, is every day being more and more felt. This board should have a sufficient number of inspectors, to see that the details and the regulation as to the construction of buildings, both structural and sanitary, are implicitly carried out in all parts of the country, and that, in the New Public Health Act, provision should be made for the structural requirements, and a schedule attached to the Act, regulating the use of the materials in various districts. However, before such a general measure can be passed, it would be well for a Government commission to be issued, having power to take evidence in various parts of the country as to the requirements necessary to meet particular cases, more especially with regard to the use of local materials. That the power of local boards to make bye-laws for the regulation of buildings should cease, and that the officers appointed under local boards should be competent to supervise the structural and sanitary requirements of buildings is clear. At present the bye-laws of Local Boards are rarely, if ever, put in force where they are most required. Either representatives of those most interested where building operations are prosecuted are sufficient to deter local authorities enforcing the bye-laws, or the bye-laws have been prepared by persons interested in building operations, and consequently they have not sufficient scope to deal with the proper structural and sanitary arrangement of a building. It seems a great anomaly, that just outside the metropolitan building area, where building operations are being prosecuted to a far greater extent than within that area, there are districts in which there are no laws for buildings, the sanitary authorities or vestries having no bye-laws or regulations; and it is an equal anomaly, that within a certain line fees should be taken, and that without that line persons are not called upon to pay fees for supervision that is necessary for the protection of the public."

"HOW FAR IS AN ARCHITECT LIABLE?"

Sir,—Your correspondent "X." has given your readers very important information, viz., that an architect does not, and "needs never pretend to do the duty of a clerk of works." But I would like to ask him, What is the use of an architect's certificate, if a contractor is liable, as in the cases of "M. H." and "A Sufferer"? H.

JURIES AMENDMENT ACT, 1870.

Sir,—Clause 22 states, jurors shall be entitled to the following remuneration for their services, that is to say:—

"Every special juror, when summoned for the purpose of trying special jury cases, at the rate of *l*. 1s. for every day of his attendance."

An attendance at Westminster for a week as special juror has proved this to be a fiction. My payment was simply two guineas, for six days' surrender of time and professional duties.

Can any one of your readers explain this?

A Special Juror.

TIMBER IN OLD FLUES.

Sir,—An article in your impression of the 15th inst. suggests the use of earthenware pipes in chimney flues. As I have lately just escaped having a very old house burnt down, from the quantity of timber discovered in and about the chimneys, I feel most anxious to place myself beyond the chance of a repetition; but I am desirous, at the same time, to go to work with as much economy as possible. Perhaps I may, through your valuable paper, ascertain the best place in which to procure these pipes, and the best mode of fixing them. I am fearful, however, that they may only be suitable to houses in a state of construction, and not applicable when built.

G. F. D.

PRICES QUOTED.

Sir,—If a manufacturing company sends in a tender (without competition) for any commodity made by them and used in the building trade, and if intimation is given to them within six weeks of the date of the tender that it had been accepted, can that company in honour refuse to execute the work at the price, on the ground of the rise in coal and other articles necessary for the production of the commodity?

I should be glad to receive an answer to this question through your columns.

Fair Play.

MINERS' WAGES IN THE NORTH OF ENGLAND.

If colliers and iron miners are obtaining wages bringing their incomes under the notice of the surveyors of taxes, it would seem, from a meeting of the Weardale lead miners, held on Saturday evening last, at St. John's Chapel, Stanhope, Durham, that those men are not so well paid.

Mr. Nathaniel Race, chairman of the Weardale Lead Miners' committee, read from the pay-sheets the following average weekly wages received by the men working in the mines about Weardale, for the last half-year:—"Bolts Burn Mine, 1*l*. 9s. 1d. per week per man; Bustree Pasture, 1*l*. 2s. 3d.; West Pasture, 1*l*. 1s. 3d.; Craig's Level, 1*l*. 1s.; Kilhope, 19s. 1d.; Stanhope Burn, 18s. 7d.; Grove Rake, 17s. 5½d.; Green Laws, 16s. 3d.; Slitt, 12s. 1d.; being a total average of 20s. 2d. per week per man.

These hard-working men are noted for being of sober, well-behaved habits, and their homes and families are widely distinct from those of the majority of coalminers in the same district.

"ACCIDENT" AT THE COLONIAL OFFICE.

Mr. Bedford has held a long inquiry at the workhouse, York-street, Westminster, on the body of James Brodie, aged 19, who was killed under the following circumstances:—

Thomas Dorrington, a bricklayer, said on Thursday before last he was engaged on the works in course of construction for the Colonial Office. He stood on a scaffold and saw the deceased wheeling a barrow of mortar along a plank 75 ft. above the ground. He saw the wheel of the barrow go over the edge of the plank, and the handle of the barrow caught deceased on the side and pitched him off the plank. In falling to the ground, the deceased struck his head against some iron girders. There was nothing to save him, and he fell to the ground with a great crash.

Witness, in answer to questions, said the plank was only 8 in. wide and 23 ft. long. He would not for the world wheel a barrow over it. The run or plank was very carelessly constructed, but a few planks properly placed would have made it quite safe. Witness believed he would be discharged from the works for making this statement.

The Coroner.—I hope not.

James Browning, foreman of the works at the Colonial Office, said the run or plank was properly constructed, and that it was perfectly safe, as it had been used by other men since the accident.

The Coroner said he did not consider a plank 75 ft. above the ground, and 8 in. wide, safe, and the death of this unfortunate man was a proof of it.

Witness stated that he had asked the workmen if the plank required protection, but they told him it was quite safe.

Another witness said the plank was placed over a perfect precipice, but some six planks placed underneath would render it safe.

The jury returned a verdict of accidental death by falling from an improperly-constructed scaffold, and suggested that something should be done to prevent accidents in future.

The Coroner advised the contractors for the building, Messrs. Jackson & Shaw, to attend to the suggestion of the jury.

It was stated that the deceased was the sole support of a widowed mother and three sisters.

PROPOSED NEW LINES TO THE CRYSTAL PALACE.

At present passengers by the main line of the London, Chatham, and Dover Railway from Victoria, Moorgate-street, Ludgate-hill, and intermediate stations, are carried across the high level at a point a short distance to the south-east of the Crystal Palace; and passengers by the Brighton from the West London line, Victoria Station, Clapham Junction, and other stations, have only the comparatively inconvenient low-level station at the Palace available. A Bill is before Parliament for the construction of two short lines, one of two miles and a half from Dulwich, the other of half a mile in length from Lower Norwood. The proposed lines from their respective points of junction with the main line of the Chatham, and the west-end line of the Brighton Company, to approach each other until they form a junction near the high-level station, into which they will run together, making it available for the stations and districts indicated above. The estimated cost for the three miles of double line is 201,000*l*.

SANITARY MATTERS.

In Parliament, Sir C. Adderley asked the president of the Local Government Board whether it was his intention to introduce measures this session amending any of those Sanitary Acts imposing duties on local authorities which the Sanitary Commissioners recommended to be repealed and re-enacted in one Bill. Mr. Stansfeld replied that he should be very glad to introduce a measure of the nature indicated by the question, but whether he should be able to do so or not this session depended entirely upon the progress made with public business.

Mr. Raikes asked the right hon. baronet, the member for North Staffordshire, whether he intended to introduce during the present session any measure relating to public health? Sir C. Adderley said he hoped to be permitted to reintroduce his Bill this year. It would simply be a collection in one Bill of the powers and duties of local authorities throughout the kingdom, which were now scattered through nineteen or twenty Acts of Parliament. He hoped from what fell from the Prime Minister the other day that he might expect the assistance of the Government, and also that if the Government contemplated any amendment of the existing laws, they might see fit to introduce a supplemental measure.

PROPOSED AWARD OF THE ROYAL MEDAL.

Sir,—In spite of the rumours which have been prevalent as to the award of the Royal Gold Medal this year, I must own that I have been amazed at the announcement that the Council recommend its being given to the present president of the Institute. I do not intend to question the merits of the individual, however personally deserving this high distinction. I must regard it on other grounds, quite irrespective of him, as being unconstitutional, irregular, unprecedented, and dangerous.

The president is, of course, the chairman and chief member of the Council, and any act of the Council collectively is presumed to have the individual sanction of the members. How, then, can the president recommend himself to this honour. It is useless to plead that he was not present when the question was mooted in council. That can always be arranged; but who can presume to offer any other name when that of the president himself is put—one occupying so high an office; who to a great degree directs and controls the proceedings; whose influence is necessarily so great and irresistible?

Can the president be present at the special general meeting on the 3rd of March when the approval is to be put, and he would have to submit the question for confirmation?

It used to be the etiquette in communication with Royalty, for the president to submit the name for her Majesty's gracious sanction. Can the president with propriety submit his own?

Can any previous occasion be mentioned upon which the president for the time being has had the medal awarded to him? On the contrary, I believe, when the name of one of the ordinary members of the Council has been proposed, it has been withdrawn upon the inconsistency being pointed out. Besides which, the Council must naturally be deprived of the opinion and advice of the president on an important occasion, when the full weight of his wise counsel is most required as an independent man—jealous for the due and proper course of business.

Thus the opinion has hitherto prevailed that *no* member of Council, it being the recommending body, should be proposed; and that if the president for the time being were the most proper party, as it may be on this occasion, he ought to be out of the chair for at least a year before his name is put up. Otherwise it must necessarily ensue that, hereafter the members can have no liberty of independent selection; but must adopt the president for the gold medal. The precedent once established, it cannot be departed from without a marked personal slight upon the out-going president.

I am influenced by no other feeling than a deep interest in the due and decent transaction of the public business, and by the fear of the Institute being involved in a course of action discreditable and embarrassing to the members.

M. I. B. A.

NEW FISH-MARKETS, MANCHESTER.

LAST week the Mayor of Manchester (Alderman Booth) formally opened the new fish-markets, which have been erected within the last eighteen months, with the view to supersede the wholesale fish-market in Strangeways. The new markets, two in number,—a wholesale market and a retail market,—are situated one at each side of Upper High-street, adjoining the Shudehill market, the entrances of all three being within a few yards of each other. The wholesale market is about twice as large as the retail, and has a main entrance from Upper High-street, consisting of three lofty arched gateways, with sculptured decorations. Its area is about 2,000 square yards, and it has stalls for thirty-two dealers, for whom also convenient offices are provided, both on the market floor, and in an elevated part of the building at the back, approached by stairs. Under the market are a number of cellars, eight of which are constructed to serve as ice stores. It is roofed with two spans. The cost has been 42,000*l*. The retail market on the opposite side of the street has an area of 1,000 square yards, and cost 6,000*l*. The architects were Messrs. Speakman & Son, and the contractors for the large market were Messrs. Wade Brothers, of Miles Platting, and Mr. Southern, Salford; and for the retail market, Mr. Edward Johnson.

CHARGES FOR PLANS.

Brand v. *Harrington*.—This action was brought in the Bloomsbury County Court, before Mr. G. Lake Russell, judge, to recover the sum of four guineas for preparing two plans for alterations to be carried out in a building.

Mr. Brand stated most positively that Sir John Harrington, the defendant, instructed him to prepare two plans, one a ground and the other a basement plan, and that he executed them; and spent some time over the building and in preparing the plans to a scale. That four guineas, his fee, was very moderate, but Sir John Harrington offered him three guineas, which, of course, he refused to accept, and hence the action to recover the proper charges.

Sir John Harrington admitted instructing Mr. Brand to make a plan of the building in question as it stood, and the sum to be paid was three guineas; and one was made showing certain alterations. Upon receiving this he returned it to Mr. Brand, with a letter stating that he required a plan showing the building as it stood. Mr. Brand furnished a second plan showing the building as it stood, and demanded four guineas, which he considered he had no right to pay.

In answer to this, the plaintiff urged that he fulfilled his instructions by the first plan; and it was not to be supposed that architects and surveyors were to be called on for fresh plans in this way at clients' whims without being remunerated for their trouble.

The Judge was of opinion that all the plaintiff was entitled to was three guineas and *no costs*.

The court costs in this case are about one guinea, and added to loss of time and incidental expenses, Mr. Brand has prepared two plans most likely at a loss.

NEW GASWORKS, ASKERN, NEAR DONCASTER.

THE gasworks at Askern have been opened with much rejoicing. The works are situated on the Selby-road. The brickwork, erected by Messrs. Shillitoe & Morgan, of Campsall, consists of a tank, a retort-house, coal-sheds, governor's house, office, purifying-house, meter-house, and lime-store. The work has been done in a substantial manner, and has given general satisfaction. The engineers for the works were Messrs. J. T. B. Porter & Co., of Lincoln. The apparatus consists of five retorts over two valves,—three over one, and two over the other,—with the necessary ascension pipes, hydraulic mains, &c.; an improved annular pipe condenser, scrubber, and two purifiers. All the necessary valves, however, can be worked with or without the scrubber, and with one purifier or both. The valves, too, are so arranged that no person can put them wrong, or cause an explosion. The gasholder measures, 33 ft. in diameter, by 10 ft. deep, and will hold nearly 10,000 ft. of gas. The governor can be worked or bye passed without the four way valves. There is also a stationed meter to indicate the quantity of gas made, and which can be used as a check to the amount of gas supplied.

HEREFORD.

THE able and very interesting account of Hereford in your last number seems hardly complete without some reference to the probable origin of the name.

Hereford is the modern representative of a very important Roman station termed Magna,—a great settlement, or, more fully, Magna Castra, *i. e.* Kyn-chester, or Great Castle. It stood at the junction of two Roman military roads, and was destroyed when the Romans finally evacuated Britain. This township was succeeded by a Saxon settlement, formed to guard the ford over the Wye, and prevent Welsh incursions. Some say "here"=army-ford; but it might be from the allied word *herian*,—"to ravage." Compare our modern word "harry." It was the hen-ffford or old-ford of the ancient Britons.

The Romans did not stop such intercourse, but placed their stronghold at an easy distance, to overlook the traffic, their treatment of Britons being paternal, where not aggravated by opposition; but the Saxons, on the contrary, generally found it necessary to block up the way and master the route.

Besides Sutton-walls, there are Burgh-hill and Credenhill Camp, ancient strongholds in the immediate neighbourhood, all with an eye on this ford.

A. H.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT a popular meeting of this Association, held last week, in the Hall, St. Andrew's-square, Mr. John Paterson, president, in the chair, Mr. James Salmon, architect, Glasgow, read a paper entitled "An Architectural Sketch," in which he defined real architecture from the unreal or imitative. In illustration, he traced the various changes in architectural design, from the ancient remains of Egypt to modern Europe, and showed how genius of design, along with perfection of building, was required for real architectural success. The development, duration, and forms of the various styles were then considered, and the influences from which they arose were reviewed and compared with those of the present. In conclusion, Mr. Salmon, while regretting the mercantile considerations imposed upon modern architecture, specified many circumstances favourable for the architecture of the future. The reading of the paper was warmly applauded.

Mr. John T. Rochead moved a vote of thanks, which was seconded by Mr. Wm. Beattie.

Afterwards, several of the other gentlemen present, amongst them Mr. R. T. Ross, Mr. Thomas Henderson, and Mr. James Ballantine, spoke in favour of the paper.

Mr. Salmon, in returning thanks, impressed upon the Architectural Association the importance of aiming to increase in numbers and influence, so as to become a power to guide and decide in matters of taste.

After a vote of thanks to the chairman, moved by Mr. Kenneth Macleay, R.S.A., the meeting separated.

THE DERBY CENTRAL SCHOOL OF ART.

THE annual distribution of prizes in connexion with this school took place in the Lecture Hall, Wardwick. Mr. T. W. Evans, of Allestree (high sheriff of the county), occupied the chair, and was supported on the platform by the mayor and others. The pupils and their friends also mustered in considerable force, and every part of the hall was well filled.

The report of the head-master, Mr. Thos. C. Simmonds, congratulated the committee on the increase in the number of students attending the school, and that their studies are of a more advanced character than those executed last year. The report again called attention to the lamentably inadequate accommodation afforded by the present school premises. "To attempt [said the master] to compare the school with those in other towns would show such an absurd disproportion that it would be waste of time to put the figures upon paper. I will, therefore, give one or two instances only:—

	Number of Students.	Floor-space in School.
Derby	312	1,760 square feet.
Nottingham	441	3,735 "
Sheffield	277	9,300 "
Gloucester	146	4,400 "
Bursiem	203	5,232 "

Had cubic space been compared the difference would have been much greater. This does not in any way arise from excess of accommodation in other places, but from such a want of it here, that persons competent to judge cannot realise the fact that the drawings are produced under such disadvantages. I would remind you that these sentiments were expressed by Mr. Crowe, the official inspector, on his visit to the school. Finally, I would urge upon the gentlemen of this committee to take steps to provide accommodation before a permanent injury is inflicted upon the school."

OPENINGS OF NEW PUBLIC BUILDINGS IN LANCASHIRE.

GIFT OF A FREE LIBRARY AT WIGAN.

THE three neighbouring manufacturing towns of Bolton, Wigan, and Warrington, in Lancashire, are likely to be the scene of much festivity during the ensuing summer in connexion with the opening of a new town-hall, a new infirmary, and a public park, in the three towns respectively in June next, it being the intention of the several corporations to invite the Prince and Princess of Wales on the occasion. At Bolton a fine town-hall and municipal buildings, which have cost 120,000*l*., are to be inaugurated, and a new infirmary is to be opened at Wigan, whilst at Warrington a new public park, which has just been completed, is also to be opened. The three towns are not more than six miles distant from each other, being situated almost in the centre of the Lancashire manufacturing district, and in view of the Prince of Wales accepting the invitations to be forwarded, it has been arranged to open the buildings at Bolton and Wigan, as well as the park at Warrington, in the same week. We may add that a new free library is about to be erected in what is known as the Mesnes Park in Wigan, which will be a gift to the town, the mayor having given the land, whilst Mr. Taylor, a wealthy local cotton-spinner, has presented to the town 5,000*l*. for the erection of the building. A new free grammar school is also about to be erected in this park.

THE SEWAGE QUESTION.

Stroud.—A report to the Local Board of Health has been sent in by Mr. Burns, the engineer employed by the Board to advise them as to the sewage question. Mr. Burns inspected the sewage works and land in the neighbourhood, and he says he is decidedly of opinion that irrigation is the simplest and best method of defecating sewage, and the most profitable when suitable land is to be obtained at a reasonable price. He is of opinion that Stroud is very fortunately situated for disposing of its sewage by irrigation, more so than the majority of towns in England, and the report enters fully into the subject with reference to the locality.

Norwich.—A short time ago the Norwich Cor-

poration determined to purchase a portion of the Crown Point Estate for sewerage and irrigation purposes, and to endeavour to borrow the purchase-money of the Local Government Board at 3½ per cent. An application was accordingly addressed by the corporation to the Local Government Board, to borrow the sum of 32,500*l.*; and in pursuance of the provisions of the Local Government Act, Mr. R. Morgan, C.E., an inspector appointed for the purpose, has held an inquiry, at the Guildhall, as to the subject matter of the application. No intimation was given by the inspector at the close of the inquiry as to what he would report; but from the tone of his remarks he seemed to be favourable to the application.

SCHOOL-BUILDING NEWS.

Gray's (Essex).—The new elementary schools, erected from the design of Mr. Thos. Rook Maples, architect, are now complete. They are built of stocks and red bricks, in a plain and substantial style, for 350 children (with offices and two residences), for the building committee. The builder's estimate was 1,750*l.*, but this was reduced to 1,550*l.*, which will include the cost of boundary walls. The schools are one story in height, and consist of girls' school, 20 ft. by 44 ft. in centre; boys' school, 48 ft. by 20 ft. (which can be thrown into girls' school by means of folding-doors, when required), at a right angle to the centre of the same; and infants' school, 52 ft. by 21 ft.; class-rooms at back, with residences (which are two stories in height, with cellars), respectively at ends of boys' and infants' schools. The site is square, and half an acre in extent.

Liss (Hants).—New elementary schools for the District School Board here are now completed and opened. They are erected for 170 scholars, consisting of mixed school for boys and girls, 32 ft. by 20 ft.; class-room, 20 ft. by 14 ft.; and infant-school, 18 ft. by 20 ft.; with porch, cloak-room, masters' residences, and complete offices. The entire cost was 1,120*l.*, including boundary walls round about half an acre of ground. They are built of local stone and coloured brick, and are completely fitted up. Mr. S. T. Woodburne, of Liss, was the builder, and Mr. Thos. Rook Maples, of London, the architect.

Books Received.

What am I? a popular Introduction to the Study of Psychology. By EDWARD WILLIAM COX, Serjeant-at-Law. Vol. I. The Mechanism of Man. London: Longmans & Co. 1873.

THIS is a thoughtful and remarkable book, full of original and suggestive ideas, some of them very singular in their nature, and not a few well fitted, we must add, to excite much controversy. Into this we cannot here enter; and all we can do is to give a few outlines of the nature and purpose of the work, and of one or two of its leading ideas. It must be kept in view, however, that we have in this volume only one half of the subject under consideration, and that the more important part is yet to come. The present volume relates, as the title has shown, to "the mechanism of man," and the second will deal with that mechanism in action. But the author's idea of the nature of "the soul" of man comes under the head of the mechanism of man, and is dealt with in the present volume; and as this is the highest principle treated of, we shall give a brief outline of the author's ideas on that subject; premising that he is an opponent of the materialists, ordinarily so called. Yet he is a materialist himself of a new and refined order. He fights the materialists with their own weapons He maintains that man has a "soul," not only apart from his body, but apart from his mind, but that this soul is itself material, and hence occupies space, in the human shape, though composed of highly refined and subtle material; and not only capable of existing apart from the grosser body, which it has built for itself as its temporary dwelling in this world, but "immortal" *per se*; although how he can be sure of that, if it be composed of atoms, or whatever we may call the first elements of matter, however subtle and refined, it is difficult to conceive.

In short, Serjeant Cox appears to regard the soul as consisting of "matter" radiated into a subtle and invisible state resembling, we may say, something like hydrogen, but perhaps even far more subtle, refined, or "spiritual," as he regards it; while matter proper, such as that of the grosser body, is the same subject—that is, "matter,"—concentrated or condensed into a tangible and visible state. And as regards the "spiritual" state, so long as there is and must be infinity in which to radiate forth and subtilise the grosser "matter," the author seems to think that anything more truly and *super*naturally "spiritual," can neither be conceived nor needed.

This "soul" alone, according to the author, is the Ego; and, as for the "mind," he fairly hands that over to the Materialist, as a dependence on the brain, and liable to injury and destruction along with it; but what can the soul—the Ego,—be worth without its own *mind?* The word mind assuredly involves the memory, at least, if not other essential faculties; and if the "soul" leaves its memory behind, may it not just as well be a nonego as an ego? Consciousness without memory, to gather it up as it were into something more than a mere unremembered succession in time of momentary pulsations, as it were, of personal experience, really cannot, with any propriety, be even called consciousness, or the conscious Ego. It must be by *recollecting* and comparing successive moments of consciousness together that the Ego can alone be said to identify itself in these successive moments of time, as one and *the selfsame* being or Ego; and how is it to do that without any mind or memory? Mental analysis is sadly wanted here, we fear, ere such subjects as this of the Serjeant's can be mooted with any benefit, or to any useful purpose; and phrenology, with which he largely deals, however true and important it may be in itself, gives synthetical results much rather than analytical.

To go fully into the book is beyond our province; we can but direct to it the attention of those who find interest in such speculations.

Miscellanea.

Winter Garden and Promenade for Southport.—A company was formed last year to carry out a scheme which will it is believed add much to the popularity of Southport. They bought between seven and eight acres of land in the very heart of the town, and plans were at once obtained showing the capabilities of the site, and the arrangements of the building. The land is situate between Coronation-walk and Duke-street, having extensive frontages to the sea and Lord-street, towards each of which the principal façades of the building, 350 ft. long, extend, as well as one towards Coronation-walk, 145 ft. long. The building, with the exception of the conservatory, will be mostly of brick with stone dressings. The roofs will have cut green slates mingled with the purple. The stairs will all be carried up in outside towers, with slate turrets, to give variety and picturesqueness to the outline. There will be an aquarium, exhibition gallery, &c. The principal or winter entrance to the building is from and on a level with Lord-street. The space outside the building is laid out with terraces and promenades, shrubberies, winding walks, croquet-lawns, summer-houses, ferneries, &c. The lawns and flower-gardens are screened from the winds by raised embankments. Fine gates and offices admit visitors off the promenade, which the corporation is now extending as far as the gardens of the company. Contracts for these works have been entered into for sums amounting, in the whole, to a little under 30,000*l.* The buildings have been designed and the grounds laid out by the architects of the company, Messrs. Maxwell & Tuke, of Bury.

Cost of new Workhouse at Chorley.—At a recent meeting of the local Board of guardians, the chairman said that a certificate had been received from Mr. Bradshaw, of Bolton, the architect for the new workhouse, for 953*l.* 7s. 10d., which would complete the payment on the contract. He congratulated the Board upon its completion. The tender for building the new workhouse amounted to 16,796*l.*, and with deductions for work omitted, amounting to 490*l.*, made the total amount 16,305*l.* 8s., but there were 483*l.* odd for day labour to be added, which again raised the total to 16,788*l.* 12s. 1d. The contract had been fulfilled for an amount less than the contract price. There had been no extras, and the Board ought to be very thankful to Mr. Bradshaw for his earnest care of their interests. The balance of 953*l.* 7s. 10d. was ordered to be paid.

Report on Health of Glasgow. — The annual reports on the health of the city of Glasgow for 1871, by Dr. Gairdner, the medical officer, and Mr. K. M. Macleod, the sanitary inspector, have been presented to the Health Committee, and printed by Robert Anderson, of Ann-street. The death-rate for 1871, which was a year of exceptionally high mortality, was 32·9 (say 33) in 1,000 living, or about 2 per 1,000 more than the average of the preceding ten years. The total number of cases of small-pox reported at the sanitary office during the year 1871 was 1,089, and the number of deaths 205, but it is assumed that the number of cases of small-pox in all was considerably more than those reported. Dr. Gairdner considers it

"certain that the mortality of small-pox in Glasgow has been less than 1 in 5, probably, indeed, not more than 1 in 6 or 7 of the attacks; a fact [he adds] which certainly tends to prove, among others, the considerable protection exerted by vaccination over a community even imperfectly vaccinated, the mortality of small-pox in unprotected persons being probably at least 1 in 3, and in some cases higher than this. On the other hand, it would be uncandid not to admit that 62 deaths below five years of age from small-pox in Glasgow, occurring among 245 deaths from this disease at all ages, is a proportion calculated to raise grave doubts as to the supposed completeness of the protection afforded to the population at those early ages, by the Compulsory Vaccination Act of 1863, in our large towns."

Extraordinary Sewer Accident in Liverpool.—Some workmen in the employ of the Liverpool Corporation were engaged in repairing a sewer, for which purpose a manhole had been left open. Watching the operation was an old man of seventy-two,—a vendor of oranges,—who was knocked into the sewer, and disappeared. The accident happened near the Town-hall, and some sewer-men went down the sewer as far as the pier-head, but could discover no trace of the missing man. It was supposed he struck his head against the side of the opening, and, being stunned, was washed away by the water in the sewer, which was knee-deep, and running with much force. The body was afterwards found, however, and the coroner's jury, after a short deliberation, returned a verdict of "Purely accidental," followed, however, with a recommendation to the corporation to provide some better protection to manholes when open than at present exists. They were also of opinion that sometimes the planks in use around the manholes were allowed to protrude, which were liable to be caught by passing carts.

Proposed Public Buildings, West Hartlepool.—At the usual meeting of the Commissioners last week the leading business before the board was the submission by the surveyor, in obedience to the request of the Commissioners, of a set of plans for a proposed suite of public offices and hall, the scheme embracing a double project, the smaller section of which included a board-room of 39 ft. by 20 ft., situated above a suite of surveyor's and clerks' offices, two stories high, in the Italian style, approached by a main entrance with stone steps, and a 12-feet passage, the cost being 1,300*l.* or 1,400*l.*; but the plans were so constituted as to embrace, at a considerably increased cost, a public hall, 90 ft. by 40 ft., with town clerk's offices, &c., beneath, but the former portion of the plan was capable of being carried out independently of the latter. The works committee recommended that the first portion of the scheme be only entertained for the present, and upon this being put to the meeting a discussion ensued, but on a division the Commissioners' proposition for carrying out the smaller scheme was carried by five votes, with only two opponents.

Artizans', Labourers', and General Dwellings' Company.—The annual meeting of the shareholders of this company has been held at their offices, 1, Great College-street, Westminster. Dr. Baxter Langley presided. The report stated that in order that building operations on the Shaftesbury Park, or Workmen's City, Estate and in other districts may be continued without delay, it is important that additional shares should be subscribed for, and the directors therefore appeal to the wealthier classes of society to support them with additional capital in carrying on a work which, besides giving a fair return for money invested, they state, is calculated to render untold benefits to working men by supplying them with healthy homes and surrounding them with associations of a moral and intellectual kind. No public-houses or beer-shops will be permitted on the estates. The operations of the company, adds the report, are not of a speculative or risky description, but the property gives good security. The report was unanimously adopted.

Rise of Prices in Baltic Wood. — For some weeks past there has been an enormous rise in the price of wood in the north of Europe, recalling that which occurred at the end of the year 1853. Taking for a basis the prices current at the beginning of 1872, the increase already amounts to 30 to 60 per cent. in Sweden, and 20 to 50 per cent. in Norway, varying according to description and qualities, and from all accounts we must expect from day to day still higher prices. That the price of wooden goods would infallibly advance in Sweden and Norway had been for some time expected, in consequence of the continually-increasing distance of the forest districts from the coast, the difficulties always arising in cutting for sale and transporting the wood from the forests to the saw-mills, the enhancement in value of the forests in growth, with the expenses of maintenance and manufacture, and especially from the enormous increase of exportation to various countries; an increase which has now assumed such proportions as to exceed greatly the most favourable anticipations of the growers in the north of Europe.

The Exhibition at Vienna. –The Imperial Commissioners presiding over the Vienna Exhibition have decided upon awarding seven different distinctions, none of which is to possess any intrinsic value in itself. These will not be gold, silver, or bronze medals, as in other exhibitions. The highest distinction will be the "diploma of honour," awarded to the highest merit in science, pure or applied, education and the like. The second is the "medal of progress," due to inventions showing an appreciable progress on the exhibits of the last great exhibition. The third is the "medal of merit," for hand or machine made articles remarkable for workmanship or cheapness. The fourth is the "art medal," for works of art. The fifth, the "medal for good taste," whose name speaks for itself. The sixth is the "co-operator's medal," intended for workmen and assistants contributing to the excellency of any article by their workmanship. The seventh is the "diploma of recognition," which is to constitute a second degree to the medals of progress and merit.

Reservoir for Chelsea Waterworks at Hampton Court.—The Chelsea Waterworks Company have fixed on the bank of the Thames, just opposite Hampton Court Palace and grounds, as the site of a new storage reservoir. The proposal contained in a Bill now before the House of Lords, is to build a wall in the bed of the river for half a mile opposite Hampton Court, and thus to narrow the stream, destroying the view. The water thus to be stored on the river bank is to be taken from the river some two miles farther up. The Bill, which, if passed, would give power to the company to take the whole river bank lying opposite to the gardens of Hampton Court Palace, and to erect thereon this "unsightly and even repulsive" embankment (27 ft. high, and upwards of half a mile in length), being before the House of Lords, a memorial protesting against the scheme has been signed by various members of the Royal Academy of Arts, and addressed to Earl Granville on the subject.

The City of London Library.—At a meeting of the Court of Common Council, Dr. W. Sedgwick Saunders moved, pursuant to notice, that considering the additional accommodation provided for readers in the new library at Guildhall, and fully recognising the paramount obligation of every municipality to afford to its citizens the fullest opportunity of acquiring an intimate knowledge of the literary treasures in its possession, the Court declared that its library should henceforth be devoted to the free use of the public, subject only to such regulations as might from time to time be necessary to ensure the comfort of the readers. It was contended that the change might be fraught with considerable danger, and that to all intents and purposes the library was free to all comers. All opposition to the motion was eventually withdrawn, on a promise being made on behalf of the library committee that proper regulations should be framed with a view to prevent any abuse of the privilege of free admission. The resolution was then carried unanimously.

Thames Embankment.—The Chancellor of the Exchequer has obtained leave to bring in a Bill to authorise the acquisition and appropriation by the Metropolitan Board of Works of certain land reclaimed from the river Thames, in pursuance of the Thames Embankment Act, 1862.

Natural History Museum.—Mr. Sclater-Booth asked the First Commissioner of Works whether a contract had been entered into for the construction of the Natural History Museum at Kensington; and, if so, how many persons were invited to compete, and what was the amount of the tender accepted. Mr. Ayrton said that twenty-one persons had been invited to send in tenders, and only seventeen had complied with the request. All the original tenders sent in were much in excess of the sum intended to be spent on the building. The architect was accordingly asked to reconsider his plans, and a contract was eventually arranged with a firm for 352,000*l*. There were other expenses, however, which would raise the sum above that given in the estimates. It was not intended this session to introduce a Bill for the removal of the Museum. It would not be moved till the new building was completed. Three years was the time allowed for the construction of the building.

Blackburn Sewage Irrigation.—On Saturday last these works were inaugurated by the mayor and the chairman and the members of the committee, in the presence of the engineer, borough surveyor, and other corporate officials. The sewage was turned into the conduit, and the works examined along their whole length. Afterwards the irrigation of the portion of the farm already prepared was commenced. The gentlemen present expressed their satisfaction with the works and the manner of their execution. The outfall conduit includes in its length of about three miles sundry earthenware pipes, of 30 in. diameter, two syphons of 24-in. iron pipes, 2,700 yards in aggregate length, and one tunnel 673 yards in length, with other works. Mr. Thane, of Maryport, is the contractor, and the works have been carried out by him under the superintendence of the engineer, Mr. Joseph Brierley, Blackburn.

The Reservoir, Swansea.—Mr. Rawlinson, from whose plans the Lliw Reservoir was constructed, has reported that it is sound. He says,—

"The muddy water which has been flowing from the outer portion of the bank, and from the drains, has been due to excessive, long-continued rain, which has soaked the bank through, as also the whole mountain side above, and some of this water may have accumulated on the surface beneath the loose material (for the outer and lower portions of this embankment are loose material put for weight). Water sinking through or flowing from the side of the mountain would pass beneath, and come out muddy, but will not in any way endanger the safety of the embankment. This I wish you and the committee to understand and to believe."

He adds that Major Tulloch, Government engineer, fully agrees with him, and he requests them to let the reservoir be filled again as soon as practicable.

Petersen's Steam Life-boat.—It is remarkable that there seems to be no such thing yet as a steam life-boat. An old sailor, Mr. C. W. Petersen, of 25, Brunswick-place, City-road, who appears to have had some engineering and shipbuilding experience, has devoted himself to the realisation of this great desideratum as his one life idea, to which he seems to have sacrificed everything else in the shape of worldly prospect. He has invented a steam life-boat, and has presented his invention to the Chairman of the Shipwrecked Mariners' Society; and it is to be hoped it will be held to be of sufficient practical merit for realization. The object in view is an important one, and should not be any longer lost sight of.

Society of Telegraph Engineers.—At the last meeting of the Society of Telegraph Engineers, Mr. Latimer Clark read a communication from Mr. Willoughby Smith, the electrician of the Telegraph Construction and Maintenance Company, detailing an interesting discovery which he had made of the extreme sensibility of selenium to the influence of light during the passage of an electric current. If a bar of selenium placed in the dark have an electric current passed through it, and it be then exposed to the influence of light, either daylight or that of a lamp or candle, its power of conducting electricity is immediately doubled, and the effect ceases as soon as the light is withdrawn. Mr. Clark pointed out the value this discovery would have in connexion with photometric measurement.

New Graving Dock for Birkenhead.—The Mersey Docks Board have decided to construct a third graving dock at Birkenhead, east of the present dock, and the works committee has been instructed to carry out the plan.

The Proposed Harbour of Refuge at Dover.—At a recent meeting of the Dover Town Council, they unanimously resolved that, "having examined the bills and plans for the improvement of this port introduced into Parliament by the Dover Harbour Board, they highly approve of the course of action adopted by that Board, assisted by the two railway companies, having the object of giving increased accommodation and encouragement to the Contiuental traffic and the commerce of the port"; and the mayor, deputy mayor, Mr. Alderman Clares, and Councillor Dickeson, have been appointed a deputation, with instructions to seek an early interview with the President of the Board of Trade, and represent their views for the consideration of her Majesty's Government.

Royal Horticultural Society.—A very serious disagreement has taken place here. The Council recommended to the Fellows certain arrangements with the Royal Commissioners of 1851, in connexion with the International Exhibition, which a large body of the Fellows construe into a sacrifice of their interests. At an adjourned meeting held on Tuesday last the Council's report was rejected by a large majority, and it was understood that the Council would resign. Without at the moment going into the cause of quarrel, we would remind Fellows of the Horticultural Society that they are under grave obligations to the Commissioners,—but for whom, indeed, at one time, the Society could scarcely have held its own.

New Patent Blast Furnace at Summerlee.—A new patent blast furnace has been put in operation at Summerlee by the Messrs. Neilson. Since the era of the hot-blast, originated by the uncle of the senior partner of the firm at Summerlee, there has not been a more bold contrivance, it is said, introduced into the iron trade of Scotland than that just inaugurated. The flues at the top of the furnace are dispensed with. The furnace has been elevated from 50 ft. to fully 70 ft., with a gradually sloping furnace, from 16½ ft. at the boshes to 12 ft. at the top, the raw material being filled upon equal layers, and the blast modulated according to circumstances.

The Grecian Theatre.—A more artistic production in its way than the form in which Mr. George Conquest appears,—as *Nix*, the Demon Dwarf, in his pantomime so entitled,—namely a huge head, has seldom been seen on the stage. It is the design of the actor himself, and the remarkable manner in which expression is given to it, the opening and turning of the eyes, the act of gaping, putting out the tongue, and so forth, quite remove it from the ordinary run of such productions. The acrobatic feats of the same actor in the latter part of the performance are also very surprising.

Gillingham Pier.—A new pier and landing-place for the parish of Gillingham, near Chatham, has been formally opened. The work has been carried out at an enormous expense by the Admiralty authorities in exchange for the parish pier, the site upon which it stood being required for the dockyard extension works. The work was commenced as far back as 1862, the contract being 34,000*l*.; but that amount was spent in two years owing to the nature of the soil, and it is not at all likely the work will be entirely finished for other two years.

Prize for Steel.—The Council of the Society of Arts have resolved to offer the Gold Medal of the Society to the manufacturer who shall produce and send to the London International Exhibition of 1873 the best collection of specimens of steel suitable for general engineering purposes. All persons using steel for general engineering purposes, who are not manufacturers of such steel, are also invited to exhibit specimens.

Edinburgh Cathedral Competition.—We have received from Mr. H. C. MacAndrew, Sheriff Clerk of Inverness-shire, a copy of an indignant letter addressed by him to a contemporary in reply to the attacks made on Mr. Ross, with a request that we would print it. We are unable to comply, it being contrary to our custom to insert letters addressed to others.

The "Bulletin Monumental."—We are glad to hear that the *Bulletin Monumental* is now recommenced in a new series (4th), vol. xxxix., and it opens with an article, in which Mr. Roach Smith's remarks on M. de Caumont in the *Builder* are given at full length. The editor is M. de Cougny, and the *Bulletin* will be published bimonthly at Tours and at Paris.

Newport.—The erection of national schools, the foundation-stone of which was laid in May last, has now been completed. The schools are erected on a piece of land situated on the Cemetery-road, given by the Marsh trustees, and the style of architecture is Domestic Gothic. The schools have been built to accommodate 250 children, and consist of a boys' schoolroom (41 ft. 6 in. by 19 ft.), a girls' room, at one end adjoining (33 ft. by 18 ft.), infants' room, same dimensions, with two class-rooms (18 ft. by 10 ft. 6 in.), and separate porches and lobbies for boys and girls, with offices, &c., outside. Adjoining the schools is the master's house. The playgrounds are inclosed by wood fencing, and divided for boys and girls.

The Late Mr. Jas. Murray, Architect.—An appeal is made in behalf of the children of the late Mr. James Murray, Fellow of the Royal Institute of British Architects, who now are, by the death of their mother, left homeless and destitute orphans. Mr. J. C. Horsley, R.A., of Willesley, Staplehurst, Kent, will gladly receive subscriptions.

The Town Surveyor of Great Yarmouth. At a meeting of the committee especially appointed for the purpose, the salary of the town surveyor (Mr. H. H. Baker) has been increased from 200*l.* to 300*l.* a year (subject to the confirmation of the council). Mr. Baker will in future have to keep a pony and gig, his duties extending to Gorleston.

Mr. Henry Leslie's Choir.—Mr. Leslie announces his eighteenth season. The concerts will be given on the last Thursday evenings in the months of February, March, April, and May. The artists engaged include Mr. Sims Reeves, Mr. Santley, and Madame Patey; and the programme issued is a very interesting one.

New Buildings, Wellington-street.—The architect of Messrs. Findlater & Co.'s buildings is Mr. V. Grose, not "V. Gore," as printed.

TENDERS

For sundry alterations and fittings at 27, Milk-street, City. Mr. Herbert Ford, architect:—

Henshaw & Co.	£511	0	0
Crabb	493	0	0
Perry, Bros.	485	0	0
Brass	467	0	0

For the Islington sewers works at St. John's-road, Upper Holloway:—

Jackson	£1,160	0	0
Throp	1,150	0	0
Cardia	1,087	0	0
Crocket	1,050	0	0
Pizzey	987	17	0
Williamson	934	0	0
Killingback (accepted)	875	0	0

For roads and sewer at Gipsy-hill:—

	Roads.			Sewers.		
Cockell	£700	0	0	£170	0	0
Jones	449	10	0	220	0	0
Harris	434	0	0	164	0	0
Hubbard	420	14	0	164	14	0
Clark	420	3	0	136	2	6
Pizzey	417	0	0	160	0	0
Finch	395	0	0	145	0	0
Willson & Co.	360	8	0	136	1	6
Jackson	330	0	0	240	0	0

For building St Philip's Schools, Battersea. Quantities by Messrs. Paice, Bros. Mr. J. Knowles, architect:—

Daymond	£2,534	0	0
Brown	2,222	0	0
Sabey & Sons	2,198	0	0
Quennel	2,100	0	0
Mann	2,074	0	0
Tibbitt	2,068	0	0
Cocke & Green	2,036	0	0
McLachlan	1,998	0	0
Vaughan	1,990	0	0
Lacy	1,940	0	0
Gooding	1,930	0	0
Kenst	1,803	10	0
Niblett & Sons	1,890	0	0
Boyce	1,881	0	0
Wright, Bros., & Goodchild	1,873	0	0
Johnson	1,850	0	0
Shurmur	1,844	0	0
Warr	1,715	0	0
Blandford & Jones	1,679	0	0
Johnson	1,569	0	0

For terrace of six houses to be erected in Rowley Park, at Stafford. Mr. H. J. Paull, architect. Quantities supplied by architect's surveyor:—

Pemberton	£6,726	0	0
Whittome	6,667	0	0
Gee & Co.	6,300	0	0

For the erection of a house at Peckham Rye Common, for Mr. J. Drake. Messrs. Henry Jarvis & Son, architects. No quantities:—

Langmead & Way	£1,695	0	0
Thomas	1,260	0	0

For new water-wheel, &c., Molewood Mill, Hertford. Dawnay & Twyman, engineers:—

		Allowed for Old Materials,	
Cook (accepted)	£295 0 0	£15	0 0

For coal-stores, sheds, and mortuary, at Mill Mead, Guildford, for the Urban Sanitary Authority. Mr. Henry Peak, architect:—

Brett	£453	0	0
Swayne & Sons	437	5	0
Mitchell	409	0	0
Pearce & Clark	405	0	0
Garnett	401	13	6
T. & I. Loe	398	0	0
Mason	385	0	0
Strudwick	380	0	0
Pollard & Sons (accepted)	360	0	0

For photographic and art-studio, West Croydon Station-road:—

Mason	£561	0	0
Pollard	560	0	0
Warr	548	0	0
Coles (accepted)	543	0	0

For reseating St. Mary's Church, Seymour-street, Somers-town. Mr. James R. Colling, architect:—

	Quebec Pine.	Pitch Pine.	Wainscot.
Kelly, Bros.	£756	£1,105	£1,480
Axford	677	868	1,115
Mann	652	844	1,082
Kirk	590	960	1,260
Nightingale (too late)	532	618	1,116
Cornish	490	490	595

For alterations, improvements, and repairs to Borough-road Congregational Chapel, for Rev. G. M. Murphy. Messrs. Searle & Son, architects. Quantities not supplied:—

Emery	£1,042	0	0
Dove, Bros.	995	0	0
Staines & Son (accepted)	886	0	0

For new schools, Lower Wandsworth-road, for the School Board for London. Mr. Rickman, architect:—

Faulkner	£8,250	0	0
Morsland & Son	8,150	0	0
Cooper	8,147	0	0
Gammon & Son	7,696	0	0
Nightingale	7,595	0	0
Nixon & Son	7,589	0	0
Newman & Mann	7,578	0	0
Cook	7,565	0	0
Higgs	7,549	0	0

For alterations and additions to premises for public-house, Coventry-street. Messrs. Bird & Walters, architect:—

Henshaw	£1,780	0	0
Newman & Mann	1,766	0	0
Ava & Son	1,730	0	0
Manley & Rogers	1,720	0	0
Brown	1,590	0	0
Williams & Son	1,683	0	0
Nightingale	1,626	0	0
Eanor	1,476	0	0
Marks	1,453	0	0
McLachlan	1,418	0	0

Sir,—In your list of Tenders of February 15th, there is one for alterations to premises, extensions, and new fittings, for the Army and Navy Co-operative Society, Limited, Mr. Thomas Dudley, architect. Quantities supplied by Messrs. J. & A. Bull,—which conveys a wrong impression; and as there is often a great deal to be learned from this portion of your valuable publication, these tenders ought to be given in full. The tenders actually opened were as follow:—

	Bill No. 1.	No. 2.	Total.
Nightingale	£792	£560	£1,352
Bywaters	787	506	1,293
Mann	800	440	1,240
Wagner	589	330	919

A Competitor.

TO CORRESPONDENTS.

Erratum. Smith v. Cook Mr Smith wishes it made clear that the commission he charged was for selling the house, not letting it.

A Very Old Subscriber (our correspondent would have a very good case, but we could not predict the result with certainty or *parte*, Take advice!—H. M. Clapham. (useful advice could be given only on the spot after due investigation. Employ a proper person)—Citizen (it is not our province to save the correspondents the expense of an architect).—J. B.—H.—J. C.—C. R. S.—W. S—A Hawk.—J. K. C.—J. P. S—C—E. W—J. M. L.—Sir G. D—A. H—C. W. P W. C. T.—F. G.—W. S.—G. T. C.—T. B.—R. C.—D. P.—H. J. P.—J. B.—A. V—G. H. & A. B.—Col. C.—S. S.—C. B. A.—V. J. G.—F. G.—E. M.—J. P.—J. S. H.—B. E. N.—J. & A. B.—H. J. L.—A. R.

We are compelled to decline pointing out books and giving addresses

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

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The Builder.

VOL. XXXI.—No. 1569.

The Strength of Building Materials.

SOME very useful information on the strength of materials employed in general building is given, *inter alia*, in Mr. Stoney's valuable book on the Strains in Girders.* The nature of the strains produced in all horizontal beams, —as bressummers, girders, joists, lintels, &c.,—is alike in all. It is compounded of compressive strains in the side immediately loaded and of tensile strains in the opposite side; while the strains produced in pillars, columns, and struts are wholly compressive, and in tie-rods and tie-beams wholly tensile, except that in some forms of structure and mode of loading struts and ties occasionally act in both ways, and in these cases require exceptional consideration.

Having ascertained by experiment the breaking weight of specimens of materials of known dimensions, the general custom is to take some sub-multiple of that weight as the safe load; as, for instance, where a bar of iron 1 in. square is found to break with a weight of 20 tons, it would be loaded with not more than, say, 5 tons, or one-fourth, as the working-load.

The crushing strength of timber varies with its condition of dryness, being not nearly so strong when wet as when dry. The crushing strength in pounds per square inch, when in its ordinary state, and when dry, is as follows, respectively:—Red deal, 5,748 and 6,586; white deal, 6,781 and 7,293; spruce fir, 6,499 and 6,819; mahogany, 8,198 and 8,198; Quebec oak, 4,231 and 5,982; English oak, 6,484 and 10,058; Pitch pine, 6,790 and 6,790; yellow pine, 5,375 and 5,445; red pine, 5,395 and 7,518; willow, 2,898 and 6,128. These experiments, having been made with selected specimens of small size, show results in general much greater than can be reckoned upon in practice with large scantlings, subject to the defects of knots, &c., and probably about half these weights per square inch would represent the real ultimate strength of the respective kinds of timber. The working load should be only a fraction of this strength. At the Landore Viaduct, constructed by the late Mr. Brunel of creosoted American pine, the timber was generally calculated to bear 373 lb. per square inch in compression, though in some parts of the structure the strain was allowed to reach 560 lb. At the Innoshannon lattice timber bridge, erected by Mr. Nixon, on the Cork and Bandon Railway, the ordinary working strain was 484 lb. in compression. In America, General Haupt has not considered it safe to assign more than 800 lb. per square inch as a permanent load; and in a paper read by Mr. Mosse, at the Institution of Civil Engineers, in 1863, it is stated that about 900 lb. per square inch are usually considered by American engineers to be the limit of safe compression for timber framing (pine is the timber here meant). "Navier and Morin, distinguished French authorities, recommend that the working strain of timber should not exceed one-tenth of the breaking strain, and, owing to its liability to decay, this rule seems safe practice for structures which are exposed to the weather; but when timber is under cover, one-eighth of the breaking strain is a safe working load. For merely temporary purposes, a strain of one-fourth of the breaking weight is probably safe, provided there are no shocks." The experiments, the results of which are given above, were made with short pieces, not more in height than twice the diameter. With long pillars, however, the case is different, owing to the liability to bend under loads approaching the safe compressive strain of the wood itself. The square is the strongest form of rectangular timber pillar. It appears from Hodgkinson's experiments, that the strength of long, round, or square timber pillars is nearly as the fourth power of the diameter or side divided by the square of the length. The late Professor Hodgkinson gave the following rules for the strength of timber pillars with both ends flat and well bedded, and whose lengths exceed thirty times the diameter:—

Let W = the breaking weight in tons.
l = the length of the pillar in feet.
d = the breadth in inches.

For long square pillars of dry Dantzic oak,

$$W = 10{\cdot}95\,\frac{d^4}{l^2}$$

For long square pillars of red deal (dry),

$$W = 7{\cdot}8\,\frac{d^4}{l^2}$$

For long square pillars of French oak (dry),

$$W = 6{\cdot}9\,\frac{d^4}{l^2}$$

When timber pillars are less than 30 diameters long, they come under the class of medium pillars, for which Mr. Hodgkinson devised the following formula:—

$$W' = \frac{W\,c}{W + \frac{1}{2}\,c.}$$

where W = the breaking weight in tons derived from the formula for long pillars, on the hypothesis that the pillar yields by flexure alone; c = the crushing weight of a short length of the pillar, *i.e.*, its sectional area multiplied into the crushing unit-strain of the material, in tons; and W' = the real breaking weight of the medium pillar, in tons, from the combined effects of flexure and crushing.

Pillars with flat ends, well bedded, are much stronger than pillars with round ends, or those imperfectly bedded. "In all long pillars of the same dimensions the resistence to fracture by flexure is about three times greater when the ends of the pillars are flat and firmly bedded, than when they are rounded and capable of turning." The strength of pillars with one end flat and the other rounded, is a mean between that of a pillar with both ends round and one with both ends flat.

The crushing strength of granite of various kinds has been found to be as follows:—Aberdeen (blue), 10,914 lb. per square inch; Peterhead, 8,263; Cornish, 6,356; Killiney, 10,780; Kingstown, 10,115; Blessington, 3,630; Ballyknockan, 3,173; Newry, 13,440; Mount Sorrel, 12, 861.

The strength of Arbroath paving stone (sandstone) is 7,884 lb. per square inch; Caithness, 6,493 lb.; Dundee sandstone, 6,630; Craigleith white freestone, 5,487; Bramley Fall, near Leeds, 6,059; Derby grit, 3,142 and 4,345; Yorkshire paving, 5,714. Compact limestone, 7,713 lb. per square inch; black compact Limerick limestone, 8,855; Anglesea limestone, 7,579. Valencia slate, 10,943; Killaloe, on bed of strata, 26,495; the same on edge of strata, 15,225; Glanmore on bed of strata, 21,315; on edge, 12,740.

The ultimate strength of bricks to resist compression is set down as follows:—Pale red, 562 lb. per square inch; Red brick, 808 lb.; yellow-face baked Hammersmith paviors, 1,002 lb.; yellow-face burnt Hammersmith paviors, 1,441 lb.; Stourbridge fire-brick, 1,717 lb.; Buckley mountain brick, North Wales, 2,130 lb.; brickwork set in cement (the bricks not of a hard description), 521 lb. per square inch. For the purpose of comparing the strength of Portland cement bricks with that of common bricks, Mr. Grant made some experiments, which were as follow ("Minutes of Proceedings, Inst. C.E.," vol. xxxii.):—Gault clay brick, $8\frac{3}{4} \times 4\frac{1}{8} \times 2\frac{3}{4}$ bore a weight of 40·04 tons before crushing; a wire-cut brick of the same clay, $\frac{1}{4}$-in. longer than the last-named, 32·70 tons; a perforated gault clay brick, 9 in. long, $4\frac{3}{8}$ in. wide, $2\frac{3}{8}$ in. thick, 46·40 tons; Suffolk brimstones, $9 \times 4\frac{1}{4} \times 2\frac{3}{8}$, 34·94 tons; Stock brick, $9 \times 4\frac{1}{8} \times 2\frac{1}{8}$, 38·74 tons; Fareham red brick, $8\frac{3}{4} \times 4\frac{1}{8} \times 2\frac{3}{8}$, 90·40 tons; Staffordshire blue brick, pressed with frog, $8\frac{3}{4} \times 4\frac{1}{4} \times 2\frac{3}{4}$, 111·04 tons; the same kind of brick without the frog, 117·92 tons.

The late Professor Rankine considered the crushing strength of good coursed rubble masonry to be about four-tenths of that of the stone of which it is built. The resistance of common rubble to crushing is not much greater than that of the mortar which it contains. The following is the crushing strength of lime mortar, according to Rondelet, in pounds per square inch: Lime and river sand, 436 lb.; the same beaten, 596 lb.; lime and pit sand, 578 lb.; the same beaten, 809 lb.; cement and pounded tiles, 677 lb.; the same beaten, 929 lb.; these mortars were eighteen months old. Fifteen years later the experiments were repeated, when mortars of lime and sand were found to have increased in strength about one-eighth, and mortars of cement about one-fourth.

Some examples of the actual pressure sustained by stone and brick of various kinds are given, the greatest of which appears to be in the pillars of the church of All Saints at Angers, of Fourneaux stone, viz., 38·4 tons per square foot. The pillars of the dome of St. Peter's, at Rome, carry a weight equal to 14·9 tons per square foot, and are of calcareous tufa, called Travertin. The pillars of the dome of St. Paul's, London, of the colitic limestone of Portland, carry 17·6 tons per square foot. A pillar in the Chapter-house of Elgin, of red sandstone, carries 17·9 tons per square foot. Red Birmingham bricks, in a viaduct in that town, set in lias-lime mortar, carry 7 tons per square foot. London paviors, set in mortar of 1 of cement to $2\frac{1}{2}$ of sand, in the Charing Cross railway bridge, carry 12 tons per square foot. Staffordshire blue bricks, set in Portland cement, in Clifton Suspension Bridge, 10 tons per square foot. Concrete made of 1 of Portland cement to 7 of Thames gravel, carries 8 tons per square foot in Charing Cross bridge.

Experiments on the crushing weight of cast-iron from sixteen localities showed a mean of 38·519 tons per square inch, the specimens experimented on being one diameter and two diameters high, an equal number of each. The weakest of these was 27·004 tons, and the strongest 49·109 tons. Another set of experiments on twenty-two different sorts of cast-iron showed a mean crushing weight of 37·6 tons per square inch; the weakest being 24·45 tons, and the strongest 51·78 tons. The strongest specimens were mixtures of different sorts of iron. Repeated meltings seem to have the effect of increasing the crushing strength, which may be said to be in general about 42 tons per square inch for mixtures, but for simple cast-iron to be somewhat less than 38 tons. In practice, however, these pressures seem never to be nearly approached. For instance, in the Severn Valley railway-bridge, carrying the Coalbrook-dale railway, 200 ft. span, and 20 ft. rise, the calculated working strain is between $2\frac{1}{2}$ and 3 tons per square inch. In the centre arch of Southwark Bridge, 240 ft. span, it is 2 tons per square inch. In subjecting wrought-iron to a compressive strain, its greater elasticity must be taken into

* The Theory of Strains in Girders and similar Structures. By Bindon B. Stoney, M.A., M. Inst. C.E. New edition. Longmans, Green, & Co. 1873.

account. Ordinary wrought-iron is completely crushed, *i.e.*, bulged, with a pressure of from 16 to 20 tons per square inch, and the point at which compressive set sensibly commences, that is, the limit of compressive elasticity, is about 12 tons per square inch.

The tensile strength, on the other hand, is greater in wrought than in cast iron. The mean tensile strength of twenty-seven sorts of cast-iron was 7 tons, the weakest being 5·667 tons, and the strongest 10·477; whereas Mr. Kirkaldy found the mean tensile strength of 188 rolled bars to be 25¾ tons per square inch; of 72 angle irons and straps, 24¼; of 167 plates lengthwise, 22·65 tons, and of 160 plates crosswise 20·6 tons. Timber is put to better use when so placed as to receive a compressive strain in the direction of its fibre than when employed as a tie; nevertheless, as it is sometimes used for this purpose, a few examples of its tenacity may be quoted. Christiana deal is set down as having a tensile strength of 12,900 lb. per square inch; elm, 14,400 lb.; fir, 12,000 lb.; mahogany, 8,000 lb., according to Barlow, but according to Bevan much more; English oak, 10,000 lb.; pitch pine, 7,650 lb.; Norway pine, 7,287 lb. to 14,300 lb.; Petersburg pine, 13,300 lb.; teak, 15,000 lb. These are lengthwise of the grain, but in tearing the fibres asunder crosswise, the following numbers are given, in pounds per square inch. Memel fir from 540 lb. to 840 lb.; Scotch fir, 562 lb.; larch, 970 lb. to 1,700 lb.; oak, 2,316 lb.

As stone is rarely employed in direct tension there are but few experiments on its tensile strength, but the following are given of some Scotch stones, viz., Arbroath paving, 1,261 lb. per square inch; Caithness, 1,054 lb.; Craigleith, 453 lb.; Hailes, 336 lb.; Humbie, 283 lb.; Binnie, 279 lb.; Redhall, 326 lb.; Whinstone, 1,469 lb. The tensile strength of mortar is more often useful, and is as follows, according to M. Vicat:—Mortar of quartzose sand, and eminently hydraulic lime, well made, 136 lb. per square inch; of quartzose sand and ordinary hydraulic lime, well made, 85 lb.; of quartzose sand and ordinary lime, well made, 51 lb.; mortar, badly made, 21 lb.

When a beam projects from a wall, and is loaded, either at the extremity or uniformly over its length, the upper edge is extended and the lower edge compressed. This projecting beam may be called a semi-girder. The relative strength of beams or girders is proportional to the breadth, to the square of the depth, and inversely proportional to the length; or in other words, it is proportional to the cross-sectional area multiplied into the depth, and divided by the length. The absolute strength varies with the material, and is determined for each kind of material by experiments, from which are deduced from each the co-efficient of rupture, S.

When a semi-girder is loaded at the extremity $W = \frac{a\,d\,S}{l}$, and $S = \frac{l\,W}{a\,d}$, in which W = the breaking weight, a the sectional area, d the depth, and l the length, S being the constant determined for each material, by finding experimentally the breaking weight of a girder of known dimensions, and similar in section to that of which the strength is required. For small rectangular cast-iron bars, not exceeding 1 in. in width, S = 3·40 tons. For large rectangular cast-iron bars, say 3 in. wide, S = 2·25 tons.

For Christiana deal S = 1,562 lb.; English elm, 782 lb.; Canada rock elm, 1,970 lb.; Mar Forest fir, 1,232 lb.; spruce fir, 1,346 lb.; American hickory, 2,129 lb.; Australian iron-bark, 2,288 lb.; Norway spar, 1,474 lb.; African oak, 2,523 lb.; Dantzic oak, 1,518 lb.; English oak, 1,694 lb.; American red pine, 1,527 lb.; pitch pine, 1,727 lb.; American white pine, 1,229 lb.; American yellow pine, 1,185 lb.; Dantzic pine, 1,426 lb.; Memel pine, 1,348 lb.; Riga pine, 1,383 lb.; teak, 2,108 lb.; South African sneezewood, 3,305 lb.

The foregoing values of S for timber are derived from selected samples, of small scantling, perfectly free from knots and other imperfections that cannot be avoided in large timber, and the few experiments recorded on balks of large size indicate that the values of S must be reduced to nearly half (·54 times) those given above.

By mechanical reasoning, as well as by experiment, it is found that beams will carry various weights, the dimensions being the same, according to the manner in which they are loaded, *e.g.*, for a semi-girder, loaded uniformly, $W = \frac{2\,a\,d\,S}{l}$.

For a girder supported at both ends, and loaded at the centre, $W = \frac{4\,a\,d\,S}{l}$.

For a girder supported at both ends, and loaded uniformly, $W = \frac{8\,a\,d\,S}{l}$.

For a girder supported at both ends, and loaded at an intermediate point, the segments of the length being called m and n respectively, and $m+n$ being equal to l, $W = \frac{a\,d\,l\,S}{m\,n}$.

It is often very useful to know the transverse strength of stone. The author gives the following values of S for several kinds. Of granite, the following:—Ballyknocken, co. Wicklow, 109 lb.; Golden Hill, Blessington, 76 lb.; Killiney, co. Dublin, 270 lb.; Kingstown, co. Dublin, 346 lb.; Newry, co. Down, 340 lb.; Taylor's Hill, Galway, 407 lb.

Of sandstones and grits:—Green-moor, Yorkshire, blue stone, 335 lb.; white stone of the same locality, 359 lb.; Caithness stone, 857 lb. Of limestone from Listowel quarry, co. Kerry, 414 lb.; Ballyduff, King's county, 351 lb.; Woodbine quarry, co. Kildare, 283 lb.; Finglass quarry, co. Dublin, 291 lb.

Valencia slate on edge of strata, 1,091 lb.; the same on bed of strata, 951 lb.; Glanmore, co. Wicklow, on bed of strata, 1,097 lb.; Killaloe, Tipperary, on bed of strata, 1,233 lb.; Welsh slate, 1,961 lb.

The strengths of the Irish stones are taken chiefly from Mr. Wilkinson's experiments, which were made on stones 3 in. square and 12 in. clear length of bearing, the pressure being applied on the middle of the length.

The working strain put upon any material, compared with its ultimate strength, must be regarded in connexion with the nature of the material: the more fibrous the material, the nearer may the working load approach the ultimate strength, within the limits of convenience in respect of bending.

THE COAL AND GRATE QUESTION.

A GENERAL satisfaction has been felt at the appointment of a Parliamentary Committee to investigate the causes of the present scarcity and dearness of coal. Although a committee of the House of Commons is far from being the best conceivable tribunal for the prosecution of such an inquiry, it is certainly the best practicable one, in the existing state of things. It is, moreover, a kind of court that possesses advantages peculiar to itself. Its great defect is, that it is destitute of a judge; the chairman having no such pre-eminence over his colleagues as to invest him with the unquestioned dignity of a judicial president. The advantage is, that the members unite the functions of counsel and of jury men. In all important questions it is customary to select the members of a committee, not from disinterested, but from differently-interested parties. The proper balance is thus maintained. Each member, putting questions intended to elicit support for his own views, practically cross-examines every witness other than those whom he invites to come forward. Out of this conflict a considerable degree of light and truth is usually elicited. It is true that if we consider the report of the committee as the out-come of their labours, we shall usually find ourselves disappointed. The inferences in which all the members agree are generally so few as to give but a meagre aspect to the statement. The want of an independent president makes the report a mere matter of compromise. But any such results thus arrived at have the weight of something like admitted and proved truth. And, in any case, the evidence laid before the public is a source of positive information to the student of politics; while the ventilation, from day to day, of opposite views, and the revelation of unsuspected facts, tend to guide both opinion and legislation in the right channel.

We may thus expect from Mr. Mundella's committee a report, or at all events a publication, of a very different value from that of the Royal Commission on Coal. We cannot, in justice, attribute to the optimist and unpractical report of that Commission any of the disturbance which has taken place, as if in ironical comment on their work. But there can be no doubt that that inquiry, if it had been carried out with due ability, might have done much to prepare us for our present distress, and so far, to aid us to meet it. As to that, however, we have said enough. The matter now in hand is, to consider how the inquiries of the present committee may be so guided as to produce the quickest, the surest, and the most exhaustive result.

We must refer (not as matter of literary criticism, but with a view to avoid misleading fallacy) to the mode in which "the great law of supply and demand" is invoked with a kind of religious reverence, not so much by the speakers in the House of Commons, as by the speakers as represented in the newspapers. That the hon. mover should say he had no wish to induce the House to interfere with the usual course of business in this country, is only plain good sense. That "Parliament should in no way interfere with the production of coal," which was the assumption of the Home Secretary, is a very different statement. Parliament has interfered with that subject again and again. No later than the 1st of January, 1873, a measure came into operation which very considerably interferes with that production whether advantageously or disadvantageously. The question of an export duty, which has before this received the warm advocacy of the present Prime Minister, is one that will have to be discussed by the committee; and to assume that Parliament can, should, and will do nothing in the matter, is as helpless a piece of innocence as to assert that Parliament can control prices altogether.

It is of essential importance, in a matter that comes home to the fireside of every one of us, to avoid unmeaning phraseology. Speakers and writers may think it harmless to pay a sort of fetish worship to what they suppose are generally admitted and mysterious "laws." They thus guard themselves, they may think, from having their foundations undermined by people who understand a subject of which they have only a very hazy perception. But they do great harm, nevertheless. By admitting the force of phrases which they do not altogether understand, men help to form such phrases into fetters of the intelligence. The real fact is, that the true laws, or incontestable principles, of economical science, are excessively general and abstract. They are little more than truisms, couched in more or less scientific, or often only pretentious, language. They have practical effect only inasmuch as men are guided by one out of many motives of human conduct. Mr. J. S. Mill, who has laboured more than most men to erect political economy into a science, plainly and honestly states, in the first volume of his "Principles of Political Economy," that it is only on the hypothesis that production and price are *exclusively regulated by competition*, that his favourite theory has *any pretensions to the title of a science*. Where custom rules, instead of competition, he admits that his reasoning is inapplicable. It cannot be too carefully borne in mind that such is the case. Much human action is regulated almost entirely by custom. Into all such action custom, or other moral influence, enters very largely. Competition, on the other hand, is never found to be the sole principle in activity; unless it be at an auction. Whatever truth, then, exists in the dogmas of the political economist, or rather whatever may be the clearness and pointed wisdom with which he applies known principles to the conduct of business,—value, regulated by unchecked competition, is but one out of many causes which have to be regarded. We shall view the labours of the Committee with more hope, the less they say about the "great law of supply and demand," and the more they apply themselves to discover how it is that, in the pinching cold of this late winter, the demand for fuel far outruns the supply.

The first practical lesson, however, which each one of us may draw from an event that has brought discomfort to almost all, alarm to the thoughtful, and disease and death to not a few, is, how to avoid our own daily waste of a mineral now felt to be so precious. Our domestic consumption of coal, in the year 1869, was 18 million tons. Considering that we are now in the midst of the winter half-year, we can hardly estimate the cost to which the consumer (for domestic use) has already been put at less than 4½ millions sterling. If the present price of coal is not materially abated the householders of Great Britain will have paid at least 9 millions sterling more for coals in 1873 than they did in 1872. The average consumption of coal per head of the population, taking the latter approximately at 31½ millions, is 0·57 of a ton (nearly sixth-tenths of a ton) per annum. For the population of the metropolitan district this

gives a consumption hard upon 2 millions of tons of coal for domestic use alone. We suppose that there are few among them who would not rejoice at the idea of being able to buy all their coal for 1873 at an advance of only 20s. per ton on the price they paid in 1872. Here is, in one item, a tax of 2 millions a year on the metropolis. And even this, large as it is, is, as we shall presently show, but a part of the actual increase of expenditure caused to the Londoners by the disturbance in the coal trade.

We have confined our view to the metropolis alone, because it enables us to place before our readers figures which, although only approximate, are sufficiently correct to allow us to form a very distinct idea of the practical bearing of the subject. Now we suppose that no engineer,—we might almost say no cultivated man who has ever travelled in Northern Europe,—can doubt that all the comfort and advantage that have been ministered to the 3½ millions of Londoners by their consumption of 2 millions of tons of coal might have been secured, by an economical method of consumption, by the use of a third of that quantity. Let us consider price to be doubled, and consumption reduced to one-third, and we have a clear gain of two-thirds of the original outlay. Thus, instead of 2 millions of tons London should, say in 1874, consume 666,000 tons, the price having risen from 20s. per ton to 40s. per ton, the cost would be 1⅓ million sterling as against 2 millions in 1872, and 4 millions in 1874.

We are not about to use so magnificent an opportunity for recommending the use of any particular description of stove. We have little doubt that the manufacturers, the retail tradesmen, and the advertisers will rise to the level of the occasion. But we would ask any one who is familiar with the ordinary stoves in use in so many parts of the Continent, whether he will be contented, coal being as it is, to forego the introduction of so manifest an element of economy, as well as of cleanliness and comfort? Will he continue, for the sake of habitual prejudice in favour of the open fire, to pay 60*l.* a year instead of 20*l.*? The iron stoves which are not uncommonly to be met with among us have serious disadvantages, especially in the unpleasant result of bringing the air we have to breathe into direct contact with heated iron. But this does not apply to stoves covered with, or composed of, earthenware. The latter may be made highly ornamental embellishments for a room. In the ceramic gallery of the South Kensington Museum may be seen specimens of the application of the potter's art to what may well be called the focus of domestic life.

One point has to be borne in mind with regard to that introduction of earthenware stoves which can only be a question of time. A struggle will ensue between economy and health. The former will induce us to save heat, at the expense of ventilation. The latter calls on us to ventilate, whatever may be the loss of temperature. The misfortune of the case is, that, hitherto, economy has carried the day. It has done so, not solely by its own force, but because it has afforded the greater amount of *sensible* comfort to most people. Cold is felt by every one, especially when engaged in sedentary occupations. The oppression which air, vitiated by human respiration, exerts on the lungs, is, comparatively speaking, felt by few. But almost every Englishman or Englishwoman is sensible of this oppression on going into many a stove-warmed house. Let us take the bright little miniature of Paris, the city of Brussels, for an example. It is some years since we were there; but we doubt not that the experience of the traveller of to-day is the same as our own. On entering one of the clean and comfortable hotels of Brussels or of Ghent, with its noble and lofty apartments, large and well-glazed windows, and all the stately furniture that befits a palace, we become very sensible of the confined air of the place. The house has been shut up for the winter! Cold is kept out, but, with it, fresh air is excluded. An imperceptible,—no, a perceptible,—presence; a sort of faint, ghostly reminiscence of eaten dinners, and smoked pipes, and emptied bottles, and extinguished matches, and performed household duties of every description, comes to meet us as we enter. We must not let our economy of coal afflict us with such an atmosphere as that.

There is no reason why it should. The actual consumption of fuel will be regulated by the amount of air that passes through the fire-grate. But that quantity, in nine cases out of ten, is utterly inadequate to the due ventilation of the apartment. Now the economy effected, in the case of the closed apartment, is twofold. First, there is the diminished consumption of fuel; secondly, there is the prevention of the escape of radiant heat. It is the latter alone that involves contamination of the atmosphere. Nor is the economy of this part of the system more than a small portion of the total saving. Be it less or more, it is a false economy. Everything that calls on the human organisation to perform a destructive function, which can be avoided by the use of mechanical means, is a thoroughly false economy. But even with our wasteful open fires we are not in a position to be very severe on our more thrifty neighbours in this respect. An open grate, within twelve or fourteen inches of the floor, is but a very imperfect ventilator. If the apartment be lofty, it will never be properly ventilated by such a grate, unless doors or windows are occasionally thrown open, and a thorough ventilation, a storm on a small scale, be from time to time introduced. It is only by special openings for ventilation in the top of the room that due sweetness of air can be otherwise insured. We have often spoken on this subject. Such an arrangement is admitted by all the more thoughtful and conscientious architects to be indispensable. The use of earthenware pipes for the express purpose of ventilation, and never employed as smoke-channels, has been known among us for many years. It has often been recommended in our pages, and is, we believe, slowly making its way into general use.

The introduction of this wise sanitary precaution should be the constant accompaniment of that of the earthenware stove. We must not bottle up de-oxygenised air because it is warm. Means will probably be found, sooner or later, of extracting the saline from deteriorated air, while in the process of removal from our apartments. We cannot afford to wait for that. We have to guard against running from one extreme to another. We shall, we have little doubt, effect a very great saving in our domestic consumption. But do not let us increase the doctor's bill at the expense of the coal merchant, or injure our lungs while we improve our grates.

We have naturally been led to dwell on that part of this great subject which most directly concerns the practice of the architect and of the builder, and which most sharply and constantly comes home to our daily perception. But, economically speaking, we have touched on the smallest element in a great national question. The domestic supply of coal is not a sixth part of the total supply, and a fact of which we are only beginning to find out the pressure has yet to be fully elucidated. The price of coal is not only an element in the cost of all manufactured articles, but it is an element that has to be taken into account over, and over, and over again.

We require coal to work the engine that raises coal from the mine. Then we require it to move the locomotive that takes the coal to the wharf. Again it is required to raise the iron ore, and the lime-stone flux to be used in smelting; to heat the furnace of the smelter, to blow his fans, to raise the proportioned contents of his furnace. We require more coal to run the iron from the cupola; to heat the puddling-furnace; to heat, hammer, or roll the puddled bars into bar or sheet. The engineer, the merchant, the blacksmith, the cutler, the workman in iron in any form, each requires a new heat and a new supply of coal. Fresh locomotive power is needed to send the manufactured article into the market; and what have we then? A tool with which a man may begin to work! How the price of a hammer, a chisel, or a saw may be increased by the action of the one item of costly fuel, over and over again recurring in these various processes, besides acting directly on the cost of labour, in the matter of the daily consumption of the workman, it is not easy to foresee; but it is clear that Mr. Ball does not overstate the matter when he says that the very existence of England as a great nation depends on the price of her coal supply.

There is no doubt that the actual rise in the price of coal is not to be accounted for on economical grounds. Political economy takes no heed of panic, or rather it takes heed of it as it does of death itself, as a stern element in the restriction of what it calls over-production and over-population. Into that we cannot now enter. But it is important to bear in mind that the actual rise must be referred to moral causes alone, not to physical or to mechanical causes. We very much question whether the demonstration which we offered, that the depth of workable coal must be limited by the distance of 2,000 ft. rather than of 4,000 ft., from the surface, if it were present to the mind of every coal-owner and of every collier, would have raised the price of coal a single penny per ton.

But the fact is, in the first place, that the constant yearly augmentation in the demand for coal, which, as we pointed out, would, if maintained, have exhausted all our *certain* supplies within a century, has approached unmanagable proportions. Sir W. Armstrong speaks of the great activity of the iron trade. This, no doubt, is one great element in the case; but all the elements of increased demand are represented in the one figure of constant annual increase of coal produced. This, we repeat, is becoming unmanageable, involving, as it does, the conditions and the demands of so many coal-fed industries.

Entirely distinct in its essence from this case, although taking occasion from its activity, is the labour question. The prime element here has been the disposition which party strife has so unfortunately developed, to treat industrial questions on non-industrial principles. Men have heard so much of political economy that many of them have begun to think that politics (in the vulgar and erroneous sense of the word) is the true economy. The workman has been taught that his best tool, in order to better his condition, is not the hammer or the pick, but the vote. If he has learnt this lesson rather too aptly it is not so much himself as the inculcators of this new gospel that are to be blamed. Taught, by every teacher to whom he can look, the doctrine (false, except in a very abstract sense) that labour is limited by capital, the workman has not unnaturally come to the conclusion that capital is the great enemy of labour. Thus we have found him advised and induced (as in the case of the double shift) to neglect that which was to his own manifest advantage, on the sole ground that it was also to the manifest advantage of the person denounced as the capitalist.

Thirdly, we have the usual influence of panic—an influence causing a rapid and energetic action, and calling into play every degree of motive, from prudence to rascality. For a rise of 8s. per ton at the pit's mouth, to be accompanied by a rise of 30s. per ton at the hall-door, is an anomaly that can only be transitory. It is in this last, and, indeed, most pressing point of the case, that the most advantage is to be expected from the labours of the committee. The honourable mover stated that the very commencement of the motion caused a decline in the price of coals. It is by no means inconsistent with the known facts of financial panic to suppose this to be the case. The knowledge that the subject is about to receive full attention, will tranquillise many minds. In panic, every mind tranquillised is a subtraction from the violence of the disturbing force.

Thus, we can hardly doubt, the committee will render excellent service by bringing into full light many of the elements that will come in to reduce the price of coal. Such are that decrease of waste in use to which we have referred, in one branch alone; the possible effect of export duty; the influx of foreign workmen; the application to collieries of labour disengaged elsewhere; the application of coal-cutting machinery; and the importation of coal from the most accessible portions of the enormous foreign supply, compared to which our own stores of the mineral are only fractional. In presence of these and similar considerations, we hesitate to believe that anything like present prices can be maintained. Should such prove to be the case, it cannot fail to paralyse the manufacturing and commercial activity of the country. Over-dear coal would then right itself with a vengeance; and the "great law of supply and demand" would produce one of those violent and fatal oscillations which it is the duty of the statesman to avert.

The German Gymnastic Society.—The twelfth annual report of this Society notes a satisfactory progress in all its branches during the year 1872. It is proposed to build another story on the top of the present club-room, towards which the following gentlemen have subscribed:—Mr. C. W. Siemens, 400*l.*; Baron H. Schroeder, 100*l.*; Messrs. Fruhling & Goschen, 100*l.*; Messrs. Frederick Huth & Co., 100*l.*; subscribed and promised by members, 300*l.* The object is to get a lecture-room, a reading-room, and some smaller rooms, comfortably and suitably fitted up; cost estimated at about 1,500*l.*

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.

The first thing which strikes the eye upon entering the Academy galleries this year is the effectiveness of the *tout ensemble*. The hanging committee seem to have not only been desirous to place the pictures where they could best be seen, but also to arrange them in such a manner as to produce a good general effect. The first room is entirely occupied by water-colour drawings, the examination of which accustoms the sight to sustain and endure the stronger colouring of the oil paintings. Upon passing the screen which divides this room from the others, a long perspective is seen, terminating in a row of busts, the cold, white gleam of which enhances the warmth of colouring pervading the rest of the apartments. This effect has been obtained by removing a screen which formerly cut off the view of the sculpture-room.

As regards the works exhibited for the first time, we cannot say that much high art,—really intellectual work, which will live and be prized by future ages,—is to be found. Some of those already familiar to the public do possess very high qualities. Faed's "From Dawn to Sunset" is "a thing of beauty, a joy for ever,"—a poem of the artist's own composing as fine in its way as Shakspeare's Seven Ages.

Millais's "Chill October" also adds its attractions to the exhibition. The artist, in this instance, diverges from his former practice of painting figure subjects; and his example has been followed by G. Paul Chalmers, whose "End of the Harvest" hangs opposite; and no two works could form a greater contrast. Millais has made colour a means towards an end, and has produced a veritable transcript of nature. In looking at the painting, the spectator does not think of the painter: the work is entirely devoid of mannerism. Chalmers has made his subject an occasion for the display of colour: that sombre, rich tone which pervades his interiors is here reproduced in the open air. The scene represented is a potato-field, with workers filling bags with the esculent roots. The sun is low down in the west, and a clump of leafless trees throws a dark shadow over the greater part of the foreground,—so dark, indeed, as at first sight to make it difficult to distinguish between the bags of potatoes and the labourers. The picture is a fine one of its kind, but we would have liked a little more light thrown into it. The repetition of the same effect in every kind of subject is sure to degenerate into mannerism.

In Sir George Harvey's "Thrieve Castle" we have much the same open-daylight effect as in "Chill October," but we cannot here disassociate the work from the worker: the means by which the effect is produced are transparent. The result, however, is very pleasing.

The "Interview between Jeannie and Effie Deans" in prison is rendered with truthfulness and simplicity by Mr. Robert Herdman. The characters of the two sisters are nicely discriminated: both in appearance and manner they are such as described by Sir Walter. The action is natural and unaffected, and the colour and composition remarkably good. Sir Noel Paton enters appearance with a Scripture subject,—"Christ and the Sleeping Disciples." The painting is more solid and the colour deeper in tone than is usual with the artist. The drawing and composition are graceful, but we cannot say that any religious feeling was awakened in us by the contemplation of this picture.

Mr. Mactaggart has again been at the sea-side, where he is quite at home. He has a free style of his own, entirely devoid of conventionality, the natural outcome of an independent mind. His best work is, we think, that entitled "Amongst the Bent," where we have a fine breezy stretch of sandy bay, with hillocks topped by tufts of bent, amongst which ruddy, happy children tumble about, free from woe or care.

Mr. Hugh Cameron continues to produce little gems,—gems they are, and pretend to be nothing else,—bits of lovely colour, delightful to look upon, but not all alike. "The Camellia" has the soft, lambent light of the opal; "Going to the Well" the paler lustre of the pearl.

Mr. W. F. Hole represents "Chivalry" in its best aspect. A knight on horseback is crossing a stream, having seated in front of him an old woman with a basket of eggs; to her he pays as much attention as if she were the fairest lady in the land. A princess and her attendant, strolling on the river's bank, look on with wonder, whilst a dwarf minstrel strums his guitar as an accompaniment to a ditty upon the action of the knight.

In "Osteria," by Mr. Keely Halswell, we have pleasantly represented one of those picturesque quadrangles found in Spain, the rich costume of the people, who stand in groups flirting and otherwise amusing themselves, giving animation to the scene.

"The Entrance to Curaig Skye" (Waller H. Paton) is one of the most wonderful scenes in the British Isles. The artist's point of view is from between two almost perpendicular masses of rugged rock, which rise up higher than the canvas; between these stands, clear against the sky, a huge "needle," while in the distance are gleams of water. Here, if anywhere, the artist might have been expected to abandon his usual trappings of purple and gold and array himself in simple gray and brown, but he has not done so,—he must everywhere appear *en règle*. Very different is "The Mountain Torrent," of Peter Graham: down the distant mountain side the gleaming streams tear along from amongst wreaths of mist to meet in one torrent of brown water, which breaks in spray over a rocky channel. This is the true spirit of the land of Ossian. We are not altogether satisfied with the delineation of the mist, however, which in parts appears too solid and immovable.

"The Clausman's Grave," by Mr. John McWhirter, and "Danottar," by Mr. W. E. Lockhart, are each fine renderings of the scenery of Scotland. Mr. James Drummond does not appear to have much of the comic element in his composition, yet he has produced a picture called "Rosinante" which is really comical. The gaunt, raw-boned charger of the redoubtable knight of La Manca, which, like its master, had some breeding in it, is represented as a short-legged, spiritless, pot-bellied brute, and whether the figure in the background is the knight himself or his squire it is difficult to say.

The number of portraits exhibited is unusual, and why most of them were admitted, except to fill up wall-space, it is difficult to say. One remarkably fine portrait, however, is, by G. P. Chalmers, of an aged divine, fine in expression and remarkably good in colour and texture.

A perusal of the great mass of the works exhibited leads to the conclusion that too many pursue the art of painting by striving merely to attain manipulative skill, the cultivation of the mind being entirely neglected, resulting in a paucity of ideas melancholy to contemplate.

The architectural works will be mentioned in our next.

MONEY TO BE SPENT BY THE LONDON AND NORTH-WESTERN RAILWAY COMPANY.

The half-yearly meetings which are now being held by the several railway companies throughout the country disclose, amongst other facts, the remarkable expenditure which the different companies feel themselves compelled to incur in new works and station buildings, for the purpose of providing for their constantly increasing traffic. The outlay in this respect of many of the leading companies is something enormous, if not actually unprecedented. The proceedings at the meeting of the London & North-Western Company, held on Saturday last, show the marvellous expansion and resources of this powerful railway corporation. At the meeting in question the directors asked for, and obtained from the shareholders, a vote of no less than 818,416*l.* for additional rolling stock and new works. The particulars of the expenditure for which this enormous sum of upwards of three-quarters of a million sterling is required, will be interesting. A considerable portion of the amount is to be expended in additional rolling-stock, 295,000*l.* out of the entire sum voted being required for new engines, carriages, and wagons. There is then the sum of 285,297*l.* for extensive new works at several of the principal towns and districts intersected by the line, such works being for the most part now in progress. These works include 25,000*l.* for a coal station at Curtain-road, in the City; 9,000*l.* for the extension of roofing and other improvements at the Euston Station; 50,000*l.* for the extension of the Wapping goods station at Liverpool; 11,000*l.* for machinery for the goods station at London-road, Manchester; 41,000*l.* for the widening of tunnels on the Bettws and Festiniog line in Wales; 12,000*l.* for a double line on the Llandudno branch; 25,000*l.* for increased goods accommodation at Chester; 35,000*l.* for additional block telegraphs; 12,000*l.* for widening the line at Preston; and 64,750*l.* for additional shops and sidings at the Crewe works, where the company's engines, carriages, and wagons are chiefly manufactured. Beyond these amounts, 99,730*l.* have been granted for enlarging and providing additional accommodation at sixty-six of the company's passenger stations in different parts of the country, whilst 138,389*l.* have also been voted for the purchase of additional lands in twenty-eight different localities for still further extensions, bringing the aggregate sum voted for new works alone, irrespective of the intended outlay on new rolling-stock, to 523,416*l.*, or upwards of half a million sterling.

It may further be observed that these several large sums are altogether independent of a heavy outlay now being incurred in other new works along the company's lines, including the widening of the railway between London and Bletchley, which, besides the removal of a large quantity of earthwork, and extension of bridges and viaducts involves the construction of three new tunnels at Watford, Northchurch, and Leighton, containing an aggregate length of 2,632 yards. Simultaneously with the works just named the main line between Stafford and Crewe is being widened by two additional lines, requiring, as the engineer states in his report, the removal of 640,000 cubic yards of earthwork, and the construction of fifty-five bridges. A large new dock, at Garston, near Liverpool, is also in course of construction for the company; together with warehouses at the Canada dock station at Liverpool, and at the Egerton dock at Birkenhead, in addition to other minor works. The above all refer to works in progress; but beyond these it should be stated that the company are applying to Parliament for still further extensive powers, including the enlargement of the Lime-street passenger station at Liverpool, at an estimated cost of between 250,000*l.* and 300,000*l.* It may therefore be safely assumed that the company are now engaged in new works, present and prospective, involving an outlay of not less than 1,500,000*l.*

THE SANITARY MOVEMENT IN DUBLIN.

It is now a well-established fact, that Dublin has at length awakened to the knowledge of her own deficiency in a sanitary point of view. To some extent the public of Dublin were under the belief that the action which caused the removal of numbers of manure-heaps and other nuisances that were somewhat ostentatiously reported, from time to time, was effected by the constituted authorities.

There are, however, good grounds for supposition that such was not the case; and it would appear that the true agent at work has been merely the demands of the market, or in other words, that as Dublin is bounded in some directions by highly valuable tillage lands, it is only at certain seasons that the cleansing processes referred to are carried out.

There would appear to be some grounds also for the comparative impunity with which nuisance-mongering is carried on in many of the city districts, in the delays of the law, in compelling offenders to consider their neighbours as well often as themselves, as well as their unwholesome trade.

Close proximity to the cow-shed, the stable, and the piggery, as well as manure-heap, gleaned from these and other even more objectionable sources, too often tells on the very poor who live near; but our knowledge of such cases enables us to bring to mind very many well-to-do people who sometimes in their own persons, but oftener still in those of their offspring, suffer from illness engendered, as it would appear, by this odorous state of matters.

Epidemical and endemical disease too frequently and too constantly compels attention to the state of Dublin, as seen in the high rate of sickness and of mortality, especially when taken in regard to the proportion of the population per acre in the Dublin registration district.

Another reason why the matter demands imperial inquiry, and as authoritative remedial measures, is the fact, that the birth-rate which sometimes actually falls below the death-rate, has for several years past actually very little exceeded the latter.

Here is an explanation of the fact that Dublin, unlike every large city in the United Kingdom, as we believe, has actually fallen off in population, although embracing within its registration bounds several flourishing seaside and rural townships.

This year another thriving suburban district has been added to the Dublin district. We would remind the executive that inquiry should be had, and then large measures possibly might be considered advisable; for we should never forget that not only is physical decay injurious to the well-being of a town, and even destructive to a nation if general, but a people's moral state may become a national burden as well as disgrace through neglect of their sanitary condition.

It is a matter of great importance to Dublin, that such questions as we have now glanced at have been taken up by several of the citizens, as well as by the Dublin University, and the Royal Dublin Society, and the movement has already met with a response also on the part of the Dublin Municipal authorities.

The Dublin Sanitary Association, now a few months old, numbers in its ranks many lay as well as professional men of standing, energy, and ability. It has already conferred with the corporation, and with the Public Health Committee of that body; and we trust that these conferences will result in improved efficiency and energy, by a competent staff of medical and lay officers, in the carrying out of measures of sanitary relief for the people of Dublin.

In concert, too, with the Royal Dublin Society, whose usefulness dates back to nearly a century and a half—the Dublin Sanitary Association, and the Council of the Dublin Society, have commenced a series of public lectures, in the theatre of Leinster House, on the several departments of Sanitary cure. The first lecture was delivered on Saturday last (22nd February), to a large and influential audience.

NEW RAILWAYS AND TRAMWAYS.

THE railway and canal Bills of the current session for which notices of petitions have been deposited are 190 in number, of which 160 are for the construction of new railways or additional railway works. Of the total number, seventy-seven Bills are promoted by new companies, and 113 by existing companies. The powers asked for are for the construction of 1,812 miles of new lines, and the proposed additional capital to be raised under the Bills amounts to 69,094,778*l.*, two-thirds of that amount being by shares and the remainder by loan. Eighteen tramway Bills have been petitioned for, to lay seventy-eight miles of tramway, capital in shares and loan, 837,800*l.* In addition to the latter, there are twenty-seven applications for provisional orders for the construction of 158 miles of tramway; capital, 837,012*l.* Of the new tramways, seventy miles are proposed to be laid in London and its suburbs, exclusive of the mileage in the four Bills that were suspended last July by order of the House of Commons.

The streets and roads in which it is proposed to lay tramways include:—A Brixton, Streatham, and Croydon line of seven miles and a half; lines from Blackheath-hill to Eltham, with a branch along the Lewisham-road; lines in Dover-road, Kennington-road, and Wandsworth-road; lines in Victoria-street, Westminster, and from the south end of Westminster Bridge, along the bridge, and the Thames Embankment to General Outram's statue; from Somerset House along Waterloo Bridge and Waterloo-road to a junction with tramways at the Borough-road; from London Bridge along Southwark-street, over Blackfriars Bridge along Bridge-street, Farringdon-street, King's Cross-road, and the Caledonian-road to Holloway, with branches in the City by Queen Victoria-street to the Mansion House, and from the Ludgate-circus by the new street to Holborn; an extension from Goswell-road to St. Martin's-le-Grand; a short line in Lothbury and along the west side of the Bank; an extension of the Whitechapel line to the junction of Leadenhall-street with Fenchurch-street, an extension from Old-street-road to Bishopsgate-street, and a short line from Moorgate-street to Broad-street Station. To the west and south-west tramways are proposed from Shepherd's Bush, along the Uxbridge-road, to Acton, Ealing, Hanwell, and Southall, with a branch to Brentford, and from Hammersmith, to Chiswick, Kew, and Richmond. Another line is proposed from Knightsbridge, along the Brompton and New Brompton roads, to Walham Green and Fulham. On the north and north-west, lines are proposed from Stamford-hill to Tottenham and Edmonton; lines in the Victoria Park-road and Grove-street; in the Junction-road, Upper Holloway; and from the Hampstead-road to the Adelaide-road, Haverstock-hill. One of the longest of the new routes is proposed by the London Street Tramways Company, and the Common Road Conveyance Company, being from Goswell-road, along Pentonville-road, Euston-road, Marylebone-road, and Edgware-road, to Edgware, with a branch from Oxford-street, along Tottenham-court-road, to Euston-road. Some of these applications ought certainly not to be granted.

The tramway companies, judging from their estimates, execute their works at excessive cost. One of the new bills, for instance, is for laying 1 mile 41 chains of tramway, for which a capital of 25,000*l.* is required, or at the rate of about 16,000*l.* per mile, with no land to purchase, cuttings, embankments, or other works, beyond laying a light permanent way, that costs for heavy railways less than half the amount.

The Metropolitan Railway District group embraces nine Bills, for the construction of 10½ miles of new lines, that are all suburban, the most extensive being the Metropolitan and St. John's Wood new lines, of 5 miles and 10 chains, for an extension at Finchley-road, a line to the Hampstead Junction Railway, at the Edgware-road, a second to the Midland Railway, and a third by Willesden to Kingsbury. The additional capital to be raised is 400,000*l.*

HOW FAR IS AN ARCHITECT LIABLE?

"H." in your last number (p. 152) wishes to know what is the use of an architect's certificate. I am sure he will pardon me if, in the desire to be explicit, I happen to state anything with which he feels himself already acquainted. The certificate for final payment is, as I take it, immediately in question. The certificate for works in progress does not, however, materially differ in purpose. Both are, I contend, given simply to guide the payments, and are in the nature of somewhat confidential communications between the architect and the client. A certificate for final payment is always indubitable evidence that the works are substantially complete,—that every important matter *is done* that the letter and spirit of the contract stipulated for. If in any instance this was not the case, the architect would be legally liable for neglect. [Of course, as a matter of fact, architects, if at all judiciously-selected practitioners, take pains to make their certificates as final as they can in every way,—withhold them if not satisfied, &c.,—so that, where the surveys have been fairly frequent, and the scrutiny of the works keen, clients usually and justly regard final certificates as pretty good evidence also as to the character of the work and its correspondence throughout with contract drawings and specifications.] If anything farther than the fact of completion was vouched for, the architect would cease to be the overlooker of the works, and become a guarantor of efficiency, a *rôle* that he is never, I think, employed or paid to take. In truth, as your correspondent, "Z.," hints, the scale of the architect's pay should be evidence enough as to this. He is (in the absence, be it always said, of special agreement which might provide for any amount of extra supervision) a designer and constructor, who also undertakes to see that his designs are carried out so as to realise his intentions. It is not by detecting and exposing, as he does at times, the misdeeds (the intentional scamping) of tradesmen that he justifies his existence. His employment would have a poor basis if this was the case, since one soberly believes that, all due allowances being made,—a true tradesman wishes and aims at and takes a pride in doing fairly. No one provably doing otherwise wilfully should stand a chance of being employed by any one. No judicious person, one inclines to think, would, however, dispense with an architect's services in any building matter, even if he could secure right-doing on the part of tradesmen, carried to the length of neglected self-interest. But I must not be led away into general considerations, which would call for more space than you would afford me. It should be a support to what I have said, that contractors show no desire to consider themselves cleared of liability by the architect's final certificate. In the "conditions of Builders' Contract, prepared by the London Builders' Society," clause 11, runs thus:—

"Any defects, shrinkage, and other faults which may appear within ——— months from the completion of the building, and arising out of defective or improper materials or workmanship, are, upon the direction of the architect, to be amended and made good by the contractors at their own cost, unless the architect shall decide that they ought to be paid for the same; and, in case of default, the employer may recover from the contractors the cost of making good the works."

And the last sentence of clause 17 makes it clear as to the continuing liability, notwithstanding the certificates:—

"Provided always that no final or other certificate is to cover or relieve the contractors from their liability under the provisions of Clause No. 11, whether or not the same be notified by the architect at the time or subsequently to granting any such certificate."

Clause 18 makes clear what the framers of this contract consider the certificate,—what it is to do and what it is not:—

"A certificate of the architect, or an award of the referee hereinafter referred to, as the case may be, showing the final balance due or payable to the contractors, is to be conclusive evidence of the works having been duly completed, and that the contractors are entitled to receive payment of the final balance, but without prejudice to the liability of the contractors under the provisions of Clause No. 11."

In discussing this question, time agone, with an intelligent and responsible builder, he justified some such arrangement as this:—"——months" (say six to twenty-four, according to the size and kind of work), not on the ground that he wished to avoid fair responsibilities, but on the principle of Statutes of Limitation,—the evidence being much affected by short lapse of time,—buildings are altered or neglected, architects die, foremen emigrate, &c. Therefore the shortest time, he argued, should be named that will give the building a fair and thorough trial, and after that time no inquiry should be possible. One is bound to confess that a fair-seeming argument can be made in this way,—but not a thoroughly convincing one. I subjoin a clause long in common use which is not unfair, and should not be objected to (in fact, is not objected to) by well-intentioned tradesmen:—

"Should any flaws, cracks, settlement, shrinkings, or defects of any kind whatsoever arise, occur, or become evident during the progress of the works, or within the above-mentioned . . . . weeks [before the final payment] from the completion and delivering up of the same, *or at any time thereafter*, which are fairly attributable to the use of bad materials, workmanship, or negligence, the contractor shall pull down and rebuild or rectify and make good the same at his own expense, to the satisfaction of the architect; and shall not be considered in any manner relieved from liability as to the same by the fact of payments of moneys having been previously made on the certificates of the said architect. And in case of default, the said . . . . [proprietor] may recover from the said contractor for the damage sustained by him in consequence of such defects, or for the cost of pulling down and rebuilding, rectifying and making good, the works, and for damages sustained by the said . . . . [proprietor] in consequence of the same."

"Hard cases make bad law,"—and bad rule and custom also, one may add. While one must acknowledge that "A Sufferer's" architect was obviously very blind and negligent, and "A Sufferer" was very badly served, on looking at the whole question of supervision in building trades, one is not inclined to recommend a revolution by which the architect would become a capitalist underwriter, instead of (what he is now understood to be) a director of works.

X.

SIR,—In reply to this question, I will refer your correspondent "H." to the practice of the medical profession. If "H." should be so unfortunate as to require the services of a medical man, and calls in a physician, that gentleman prescribes, and on subsequent visits watches the progress of the disease; but if "H." sends his prescription to be made up by a vendor of adulterated drugs, instead of a properly-qualified dispenser, and fails to recover, or gets poisoned by the negligence of a shopman, it will scarcely be expected that the physician be liable to blame. The same with an architect: if he furnishes a proper plan and specification, and such general supervision as would be required where a respectable and able tradesman is employed, that is all that should be expected from him; and when the work is finished, the architect certifies that the contractor is entitled to the amount of his contract, and that the work is completed according to specification, so far as can be seen; but this does not screen the dishonest builder, for it is always to be implied that it means "fraud excepted."

Unless the tradesman be well known as a reliable and experienced man, it is absolutely necessary to have a clerk of works to see every portion of material before it is placed in the work; and, even with an honest man, in large works, owing to the ignorance and incapacity of workmen generally, this is desirable and more satisfactory to the contractor. I have frequently protested against the employment of incompetent and fraudulent men, and, in reply, have

been answered somewhat to this effect,—"We consider it necessary to accept the cheapest man, and must look to you to take care that we get our pound of flesh." In the early days of my practice I was, to some extent, compelled to fall in with this; but the result was frequently bankruptcy of contractor, who was insolvent to commence with, and I became branded as a tyrant, whose delight was to ruin every tradesman he had to deal with. I do not wish to appear one-sided in my remarks, but am willing to admit that there are many young architects who would be better fitted for their duties if they followed the good old practice of working at the several branches of the building trade for a few years, either before or just after their pupilage, and there are sometimes instances where failures could be attributed to want of care or experience on their part, and for which a degree of liability would attach; therefore it would be just as unfair to endeavour to make the contractor responsible for this as it would be to expect the architect to make good defects arising from the rascality of the contractor, and put out of sight during his absence. Z.

WAREHOUSE IN VICTORIA-STREET, BRISTOL.

A NEW warehouse has been built in Victoria-street, Bristol, for Mr. Joseph Birtwell, iron-founder. Mr. H. Masters was the architect, and Messrs. Ford & Summers were the contractors. It was designed specially to admit of a good amount of the class of manufactures which Mr. Birtwell produces. Ornamental rain-water pipes border the frontage on each side, and the low parapet forming the gutter is fringed, in the French manner, with high cresting. The windows, which have stone arches carried on ornamental iron columns, pyramidise, so to speak, there being three openings on the ground floor, two on the next, and one at top, producing a somewhat odd effect. The ironwork is from original designs. The iron panels on the door represent the various stages in the process of iron-working, and some small carvings in the stone work show the three degrees of progress of the trade—the top, "mining," and the two lower, "smelting" and "forging" respectively.

CHESTER WORKHOUSE COMPETITION.

THE building committee considered the plans, and selected for the consideration of the Board numbers 1 (Experior), 3 (Fidelis), 4 (Deva), 6 (Ventilation), 8 (We fight to win), 9 (Cestria), 10 (a wheat-sheaf), 13 (Castrium), 16 (Rusticus), 19 (Palmam qui meruit ferat), 25 (Dee Side), 26 (Alpha), 30 (Idoneum).

After a long discussion, it was resolved, on the motion of Mr. Salisbury, that the thirteen plans be referred back to the committee, and that they take steps to see some competent persons upon the matter, and satisfy themselves that the work can be carried out for the money stipulated.

WHOLESALE FISH-MARKET FOR LIVERPOOL.

DURING the past week there has been commenced in Liverpool a new fish-market, somewhat similar in its design to that of Manchester, described in last week's *Builder*, except that the Liverpool structure will be exclusively devoted to the wholesale trade. Hitherto there has been no accommodation for the wholesale fish trade; the dealers have had to be content with two comparatively narrow avenues near the retail market in Great Charlotte-street, which, besides being totally unfit for the purposes of the trade, were not even spacious enough. The consequence has been that for many years, the London and Manchester markets have been better supplied than the Liverpool market, and various inland towns have been in the same position. At the last meeting of the Liverpool town council, a tender of Messrs. R. Wells & Sons, contractors, Commercial-road, Liverpool, for alterations intended to accommodate the wholesale trade, was accepted by the council; so that the complaints that for years have been made by the dealers, will be productive of a substantial local improvement. The cost of the alterations will amount to 1,541*l.*, and the enlarged space will be made by extending the retail market on the west side, across the present open passage near the Amphitheatre. By taking in a portion of the retail market, a wholesale market of 600 square yards will be provided; the retail market possessing under the new arrangement, 1,000 square yards. The present retail market will be entirely re-arranged, but there will be no diminution of counter space, although the area of the market itself will be reduced. At the north end of the market, in Rose-street, space will be provided for the accommodation of the vehicles which will convey the fish from the wharfs and quays. The present frontage to Great Charlotte-street will remain, but it will be extended laterally, the style of the new additions being assimilated to that of the old. These alterations will, it is expected, be finished in about four months.

DWELLINGS OF THE POOR.

THE Special Dwellings Committee of the Charity Organisation Society held its second meeting last week, the Marquis of Westminster in the chair. A sub-committee was appointed, on the motion of Mr. V. J. Kay-Shuttleworth, M.P., to consider various suggestions and advise the committee as to the best mode of dealing with the various branches of the subject. The sub-committee met on the 26th ult., and made some progress in their work.

MEDALS AND PREMIUMS OF THE INSTITUTE OF ARCHITECTS.

A VERY fair assortment of drawings and essays have been submitted this year, including six designs for a public hall in competition for the Soane medallion and 50*l.* For this it is more than likely that the drawings distinguished by the device of a bell within a circle will be recommended, and that medals of merit will be awarded to the authors of the drawings bearing respectively the mottoes, "Frustra?" and "They say! What say they?" The Institute Silver Medal, with five guineas, will probably be awarded to the author of the drawings distinguished by the device of a circle. (Building illustrated—St. Mary's Abbey, Malton, Yorkshire); and a medal of merit to the author of the essay on "Modern Art-Architectural Criticism," bearing the motto of "Unde et Inde?"

We are sorry to learn that an excess of disbursements over receipts, to the amount of 300*l.*, will have to be met at the special meeting on Monday next.

THE "HAWK AND HANDSAW."

IF Mr. Gedge will look over the preceding correspondence, he will see that there is no dispute about the word "hernshaw;" it is *hanser* that we are in trouble about.

At present "hanser" requires authentication. If Mr. Gedge can throw any light upon its use, for the heron, in Norfolk, we shall all be much obliged to him.

As to Mr. Barry Sullivan's reading, it must be conceded that every individual has a right to his own opinion, and any actor may alter an author's words for the sake of stage effect. But I do not find that either of his proposed new words, viz., "hern or heron," and "pshaw," exists any where in Shakspeare's text. Mrs. Cowden Clark's invaluable Concordance has no reference to either.

So far as Shakspeare's text goes, he may never have *seen* a heron; for there is no mention of it save in this doubtful passage. The word "pshaw," I think, is more modern than his day; the word "pish," which might be deemed a synonym, does occur in some editions; but unfortunately it is glossed as equivalent to "push." See "Much Ado," act v., sc. 1.

In sending this "note," I ought to make a reservation as regards Shakspeare's poems, apart from his plays. A. H.

THE CASTLE OF PONTEFRACT

"Our histories," says Swift, "are full of Pomfret Castle;" and although this has long ceased to be the case, and Pomfret be now famous but for cakes and the cultivation of the root employed in the soothing of catarrh and the adulteration of railway coffee, it was once a very famous, and is still a very interesting, place.

Whence came the name of Pontefract, and when and where its bridge was broken down, are questions over which antiquaries have long stumbled, seeing that the Aire, the only stream of the district needing to be traversed by a bridge, is two miles from the town and quite out of its girth.

It appears from Norman charters that the name of the place was Kirkby, a name, no doubt, bestowed upon it when church and hamlet were founded as a Christian settlement, in the old days when King Oswald of Northumbria embraced the new faith, an event probably commemorated by the cross which gave name to the wapentake still known of Oswald's or Osgod's Cross. Kirkby, however, is not named in Domesday, though probably even then a burgh. It is evidently included in the manor of Tateshall, or Tanshelf, which belonged to the king, and appended to which was the soke of Manesthorp, Barnebi, and Silchestone. Tateshall formed, and still forms, a part of the town of Pontefract.

No doubt this is the "Taddenes Scylf," where, in 947, King Eadred received the fealty of Archbishop Wulfstan and the Northumbrian Witan, as recorded, with their speedy breach of it, in the Anglo-Saxon chronicle. The place must even then have been of importance, and there can be but little doubt that the Witan met on the site of the later castle. Also it continued to be an important place, for at the Conquest it was a demesne of the Crown, and is recorded in Domesday as rated at 20*l.*, having three mills, and containing a hospital for the poor. Domesday, no doubt, means Pontefract Castle, when it records that, "*Omnis tornour sedet infra metam castelli Ilberti secundum primam mensuram, et secundum novissimam mensuram sedet extra.*" *Meta* is here clearly the castle garth or boundary of its immediate lands, not the military *enceinte* or curtain about the position, with respect to which no measurement could be in error, nor is it the Castelry, which was a much larger area.

The parish of Pontefract, which is large, is composed of six townships, of which one is Pontefract proper. The parish is one of twenty composing the wapentake or hundred.

Leland, who calls the fortress "Snorre Castle," says that before the Conquest it belonged to Richard Aschenald, and then to Ailric, Sweine, and Adam, his son, grandson, and great-grandson. This last had two daughters, married to Alex. de Crevequer and Adam de Montbegon. Dodsworth calls Aschenald, Aske, still a great Yorkshire name, and points out, what indeed is still very evident, that the Norman works stood in part on an artificial hill, on which no doubt stood the house of the English lord, dispossessed by the Conqueror.

Ailric is a real person, and a Domesday landowner, and before the Conquest held many manors. Sweine was his son, and inherited, and gave a church and chapel to the monks of St. John's Church at Pontefract. Ailric held his lands, much reduced, under the Norman grantee, as did Sweine, and Adam Fitz Sweine, who founded Bretton Priory, and died about 1158, having been a very considerable person. Charters by both Sweine and Adam are found in the Pontefract cartulary.

William I. was at Castleford on the Aire in the winter of 1069, and as he stayed there three weeks he probably found the means of inspecting so strong a place as the English House at Kirkby, and when he granted the district to Ilbert de Lacy it may reasonably be supposed that he followed his usual practice of directing a castle to be built.

Mr. Freeman suggests that the name of Pontefract may have arisen from some incident connected with this passage of the Aire; others have thought that, like Richmond and Montgomery, it was an imported name. Ordericus, however, as Mr. Freeman remarks, refers to it as *Fractus-Pons*, not *Pons-Fractus*, "*Rex . . propere ditur ad fracti pontis vada*," as though the words were in a state of transition from a description to a proper name. The change of name certainly was adopted slowly, for while an early charter by Robert de Lacy, the second lord, has the passage, "de dominio suo de Kirkbi," a later one has "Deo et Sti Johanni et Monachis meis de Pontefract," while Hugh de Lanval, the intrusive lord, at least as late as 1120, employs the older name. Robert of Castleford, a good local authority, writing about a century after the event, says the name commemorates the escape of a multitude of people from drowning, when a bridge broke down beneath them. There is, however, no river within two miles of Pontefract capable of drowning a multitude.

Camden derives the name from the breaking down of a bridge or causeway that traversed the

marshy valley still called the Wash, the springs of which rise close N.W. of the castle and cross its approach from Knottingley, at Bubwith Houses, where, in the time of Edward II., John Bubwith held lands *jurta veterem pontem de Pontefract*, about a quarter of a mile from the castle, which, indeed, proves the existence of a bridge, though not of a broken one. How water came to be here collected will be explained when the defences of the castle are treated of. Perhaps the real truth of the matter may lie in the suggestion of Hopkinson, that the castle was called after a place of that name belonging to De Lacy in Normandy.

A few marks of Roman occupation have been discovered here, and but few. Legeolium, the station of the district, seems to have been at Castleford, three miles distant.

But whatever may have been the origin of the fortress, or of its evidently pre-Norman earthworks, its recorded history commences with Ilbert de Lacy, to whom William granted Knottingley, a large portion of the wapentake, and other lands, including about 150 manors, chiefly in the West Riding,—where they fill seven pages of Domesday-book,—Nottingham, and Lincoln, of which those in Yorkshire were erected into an Honour, of which Pontefract, the strongest and most important place, became naturally the chief seat. Ilbert, though no doubt of near kin to the Herefordshire Lord of Ewyas and Holm-Lacy, was a different person. He is thought to have built Pontefract Castle before 1080, commencing it probably in consequence of the visit of the Conqueror, in 1069. If Sir H. Ellis be right, and it be alluded to by the Domesday entry, "*Omnis tornour sedet infra metam castelli Ilberti*," it was speedily completed. Ilbert also endowed the chapel of St. Clement within the castle, which, in some form or other, long survived. He lived into the reign of Rufus, from whom he had a confirmation of his grants. By his wife, Hawise, he left Robert and Hugh.

Robert de Lacy, called, from his birthplace, "of Pontefract," claims to have built Clitheroe, which has, indeed, been attributed to his second son. He also had a confirmation from Rufus. By Maud, his wife, he had Ilbert, who, with his father, on the death of Rufus, joined Curthose against Henry I., and fought at Tenchbrai. Both were banished, and Robert was disseized of Pontefract in favour of William Transversus, and then of Hugh de la Val, or Lanval, who held it to the reign of Stephen. Robert finally regained the honour, but King Henry claimed 2,000 marcs, and De la Val had 150*l.* for the demesne lands, and 20 knights' fees, which are entered in the Liber Niger in 1165 as held "de veteri feodo Pontisfracti." Robert confirmed some of De la Val's grants to Nostel, and founded the Cluniac Priory of Pontefract.

Ilbert de Lacy, next Lord of the Honour, fought at Northallerton, and was a zealous supporter of Stephen, on whose death he adhered to Henry II. He married Alice, daughter of Gilbert de Gant, but died childless.

Henry de Lacy, next brother, succeeded. To him is attributed the later Norman work in the castle. He appears in the Liber Niger as holding 60 fees. Henry II. confirmed him in the Honour of Pontefract, and the other English and the Norman possessions of his family. 12 Hen. II. he was assessed upon 79¼ fees. He was a considerable church benefactor, and gave St. John's Church and St. Nicholas's Hospital, both in Pontefract, to the priory there. He founded Kirkstall.

Robert de Lacy, his son, and successor to the Honour, was present at the coronation of Richard I. He died childless in 1193.

The heir, according to Dugdale, and in violation of an accepted rule of inheritance, was Albreda de Lizures, Robert's uterine sister. Mr. Hunter, however, in his preface to the Pipe-roll of 31 Hen. I. has shown that in all probability Albreda was the daughter of Robert de Lizures by a sister of Ilbert de Lacy, second of this name, and therefore Robert's cousin, and heir of the full blood. This point is important as setting aside what has been regarded as a singular exception to an accepted law. Albreda married Richard FitzEustace, Constable of Chester.

John, their son, who died before his mother, Lord of Pontefract and Constable of Chester, abandoned his House of Halton, took the name and arms of De Lacy, and died 1179, having married Alice de Vere.

Roger de Lacy, son and heir. 5 Richard I. he received from his grandmother the Lacy lands. He visited the Holy Land with his father in King Richard's train. 7 Richard I. he paid 2,000 marcs to have livery of the Honour of Pontefract, excepting the castle, which the king retained in his own hands, and to which he paid at least ten visits between 1205 and 1216. 1 John, he reopened the question of the De la Val 20 fees, for livery of which he paid 500 marcs; and 4 John, 1203, the king addressed a letter to the tenants directing them to acknowledge Roger de Lacy as their lord. Though John continued to hold the Castle, he employed Roger in various important offices, and made him governor of the strong fortress of Château Gaillard, on the Seine, in which he stood a very famous siege, only giving way when short of food, and deserted by the king. 13 John he paid scutage upon 47⅔ fees of his own land, besides others which he held in wardship. He seems to have been the baron who, in the absence of regular soldiers, led the Chester minstrels to the relief of Earl Ranulph, when surrounded by the Welsh. He was a great soldier, and an openhanded benefactor to the church, and deserved the line with which the monks of Hanlan began his epitaph:—

"Hic sepelitur Heros generosus in orbe Rogerus."

Earl Roger died a young man in 1211. In December, 14 John, 1212, the Honour was in the king's hands, and he seems to have made free with its revenues; for in 1213 he directed 300 marcs from its issues to be spent on the works at Corf Castle. He married Maud de Clare, and was succeeded by his son.

John de Lacy had seizin 20 September, 1213, and paid John 7,000 marcs for livery of the Honour, less the castles of Pontefract and Durrington, which the king kept, and for the expenses of keeping which Peter FitzHerbert had an order on the Exchequer. John, who is styled in the writ John de Chester, joined the Barons against King John, and was duly excommunicated by the Pope. The mother of his children was Margaret, co-heir of Saer de Quincy, Earl of Winchester, by Hawise, Countess of Lincoln and co-heir of Ranulph, Earl of Chester and Lincoln. Early in the reign of Henry III., 1232, on the death of Earl Ranulph, Hawise seems to have made over her earldom to her daughter's husband, who bore the title till his death, in 1240.

Edmund de Lacy, their son, was, by the contrivance of Henry III., married to one of his foreign kinsfolk, Alice, daughter of the Marquis de Saluces. He inherited Pontefract, but did not assume the title of Lincoln, as he did not outlive his mother. He died 42 Henry III., 1258, having built the House of the White Friars, near the Barbican, at Pontefract.

Henry de Lacy, Earl of Lincoln, his son, was the greatest of his race. He married the heiress of Longspee, and in her right became Earl of Salisbury. He was in ward to the king, and in 1272 was knighted and made Governor of Knaresborough Castle. He walled the town, and commenced the Castle of Denbigh, which he is said to have left unfinished because his only surviving son was drowned in a draw-well in the Red Tower there. His other son had been killed by a fall from a tower at Pontefract.

Having thus no son, Earl Henry surrendered his estates to the king, who regranted them, 28th December, 21 Edward I., to him for life, with remainder to Edmund, Earl of Lancaster, and the heirs of his body. 28 Edward I., Queen Margaret was a visitor at Pontefract Castle, and during a short hunting excursion to Brotherton, was there brought to bed suddenly of Thomas, called from his birth-place. It is said that the house in which she took refuge, with 20 acres of land, was enclosed in a wall and ditched, and granted by the tenure of keeping the wall in repair. Earl Henry died at Lincoln's Inn, 1310, leaving a daughter, Alice, who married Thomas, Earl of Leicester.

Thomas Plantagenet, Earl of Lancaster, and, by his wife, Alice, of Lincoln, and Lord of Pontefract, succeeded. He was much at the castle, and probably refaced the lower part of the keep, built Swillington Tower, and no doubt some of the structures the bases of which remain in the main ward. He also in 1315 built Dunstanborough, and added Lancaster's Buildings to Kenilworth. Earl Thomas's history is well known. From Boroughbridge Field he was taken to Pontefract Castle, then occupied by the weak and vindictive king. He was imprisoned in Swillington Tower, tried and condemned in the great hall, and, in 1322, executed on the hill which still bears his canonised name, a mile to the north-east. He was buried in the Priory. The patent creating Harcla, one of his captors, Earl of Carlisle, was dated from the castle, three days after the earl's execution.

Countess Alice, whose character was unhappily not so impregnable as her castle, married secondly Eubolo L'Estrange, who died 9 Edw. III. Her third husband was Hugh de Fresnes, called Earl of Lincoln. There was a fourth, earlier in the list, whose claims are doubtful. Alice died 1348, but Pontefract and the other possessions had already passed, under the re-grant, to her husband's brother.

Henry Plantagenet, Earl of Lancaster, succeeded to his brother's honour in 1324 and died 1345. Edward III. probably retained the castle. He was here in 1328. By Maud Chaworth Earl Henry had another Henry.

Henry Plantagenet (Tort-col, or of Grismond), Earl of Derby, &c., and, in 1351, Duke of Lancaster. He died 1361. Blanch, his second daughter by Isabel Beaumont, and co-heir, inherited Pontefract Castle and Honour.

John Plantagenet, of Gaunt, Duke of Lancaster, married the heiress and became Lord of Pontefract. He much resided at Pontefract, and restored the works. When threatened by Richard II. he victualled and put the castle into a state of defence. 12 Rich. II. he obtained by charter "jura regalia" within the honour. Parts of the half-covered basements in the main ward appear of his time. He died 1399.

Henry Plantagenet, of Bolinbroke, Duke of Hereford, afterwards Henry IV., son and heir, succeeded, being then in exile. Richard II., by confiscating the estates, provoked reprisals, which led to his own deposition. Pontefract Castle became his first prison, and the scene of his supposed murder. Since that event the castle has been vested in the Crown. Richard Scrope, Archbishop of York, was here condemned to death in 1405, and at that time Henry IV. was much here, putting down the Northern insurrections. Many of his instruments are hence dated between 1405 and 1408.

Henry V., much occupied with foreign wars, and having peace at home, had no occasion to make use of Pontefract, which seems to have been neglected in its military capacity; but here Charles, Duke of Orleans, taken at Agincourt, and James I. of Scotland, were long confined, both accomplished men and given to literature.

With the civil dissensions that came under Henry VI., the castle became again of importance. The Duke of Exeter, taken from sanctuary after St. Alban's, was here imprisoned: and in 1460, after the battle of Wakefield, Edward here took part, with his army encamped around. It was under the walls of the castle that Warwick killed his horse before the soldiers, saying, "Let him flee that flee will; I stay by him who stays by me." It was in accordance with this declaration that the king advanced from Pontefract next day, and defeated the Lancastrians at Towton. Edward's father, Richard, Duke of York, and his brother, the Earl of Rutland, slain at Wakefield, had been buried at Pontefract. He now added his father's head to his body, and removed the whole from St. John's Church to Fotheringay. During Edward's reverses and absence in Holland, the Lancastrians used Pontefract as a military prison.

In 1463, Edward was again at Pontefract, and in 1478, when he was escorted thither in great state, and remained a week.

The bloody celebrity of Pontefract was increased during the ascendancy of Richard, Duke of Gloucester, who sent hither Rivers, Grey, Vaughan, and Hawte to be executed without form of trial. Soon after his accession, he erected the town into a municipal borough.

The castle rose again briefly into notice in 1536, when Aske and the insurgents of the Pilgrimage of Grace appeared before it, and forced its surrender by Lord Darcy and the Archbishop of York, with more than a presumption of treachery. Henry VIII. was here in 1540. Two years later, Sir Henry Savile, as governor, had charge of several Scottish prisoners taken at Solway Moss.

Elizabeth, towards the close of her reign, repaired the castle, and rebuilt the chapel of St. Clement within it. King James was here in 1603, and made the castle and honour a part of the dower of his queen. He repeated his visit in 1616, and viewed the newly-established college of St. Clement, within the castle. King Charles was here in 1625, soon after his accession.

Pontefract was once more to become a place of military importance. Once the centre of the baronage of the north, it was now to appear as the rallying-place of the great aristocracy of Yorkshire, and of the Royal party. In 1642, when

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Charles lifted his standard at York, Pontefract Castle was garrisoned by a very strong force of local gentry and volunteers, with the gallant Sir William Lowther, of Swillington, as governor. Their courage was soon to be tried. After Marston Moor and the surrender of York, Sir T. Fairfax appeared before the castle, and in December, 1644, commenced its siege. The main attack seems to have been directed upon the north-west angle, where the Pix tower was battered, and fell, bringing down part of the adjacent curtain with it. The enemy, however, did not storm, and the breach was made good with earth. Mines were then tried, and one was sprung near the King's tower, at the south-east angle. These were met by counter mines, for which the ground, a soft rock, was very favourable. Very many shafts were sunk near the walls in the main ward, and no doubt are still in existence. Both attack and defence were carried on with great spirit, but at last stores began to fail, and matters looked ill for the garrison. They were reduced to extremity when, on the 1st of March, Sir M. Langdale arrived with 2,000 men from Oxford, and forced Lambert to raise the siege, while he victualled and reinforced the garrison.

The Parliament, however, was now in the ascendant, and in a few days their forces were recruited, and again appeared before the place.

This time regular trenches were opened, batteries thrown up, and a complete line of circumvallation laid out. This was of an oval figure, completely inclosing the castle and its outworks. The contained area, from the head of Micklegate by Knollys's Hospital on the west, to Monk-hill near New Hall on the east, was 900 yards; and from Baghill on the south, to the middle of the Abbot's Closes on the north, 700 yards, and about 3,000 yards in girth. Upon this line, which in parts commanded the castle, were thrown up twelve regular places of arms, redans, or batteries, besides flèches and lighter works on the intermediate curtains to beat off the frequent sallies of the garrison. General Sands commanded, and General Overton was governor of the town. New Hall, a large mansion of the Talbots, to the east of the castle and outside the lines, was entrenched, and occupied by Sir John Savile. The garrison held Swillington tower, the tower of the great church, and Neville's mount, a cavalier thrown up by them within the barbican, and carrying a large iron gun. These advanced works were of great service, as they both retarded the siege works and protected the repeated sallies from the garrison.

The trenches were opened in March, but it was the 24th of May before a battery was opened upon the keep. General Poyntz then took the command of the attack. It was, however, late in May before the church-tower was battered down, and the post therefore abandoned. Notwithstanding the disastrous news of Naseby, Lowther continued to hold out, and it was not until July 20th, after four months of siege, without further supply of stores or ammunition, and without a chance of relief, that he surrendered upon excellent terms. The fall of Pontefract was followed in three days by that of Sandal Castle, within signal of its towers.

The Parliament spared Pontefract on account of its strength, and put in General Cotterell, with a garrison. The Royalists, however, were still strong in the district, and June 6, 1648, it was recovered by the treason of Morrice, a renegade, but a man of courage. A garrison was quickly collected, and the castle became once more a Royalist centre.

A third siege thus became necessary, and such was the strength of the place that, discouraged as the Royalists were, it promised to be a troublesome one. General Rainsborough, who was appointed, met his death before taking the command, which fell at first to Sir H. Cholmley. Cromwell himself was present for a time, and a work on the north fort bore his name. He, however, left Lambert in command. Meantime, the King's death had broken up the party; and ultimate success being impossible, the governor, Morrice, listened to terms. He himself and some others were excepted by name. The difficulty thus created was ingeniously evaded. The excepted persons being reduced to three, they were walled up in one of the subterranean chambers, well provided with food and air, and Lambert was made to believe that they had escaped. The place was then surrendered, Lambert entered March 24, 1649, and as he did not retain the place, the three culprits got away safely. Parliament now ordered the castle to be demolished, and the only record of the details of its parts is that preserved in the schedule of its destruction. The materials—timber, lead, glass, and iron, sold for 1,779*l.* 17s. 4d., of which 777*l.* 4s. 6d. was the cost of demolition, 1,000*l.* was paid to the town, and the balance of 2*l.* 12s. 10d. went to the Commonwealth. This last creditor, however, received afterwards some arrears amounting to 145*l.* 11s. 7d., and so, in an account of profit and loss, was wound up the history of one of the strongest and greatest fortresses in the North. A description of it will follow. G. T. C.

SIR EDWARD LOVET PEARCE, ARCHITECT.

("EDWARD PEARCE.")*

On several occasions the query has been put, through the pages of the *Builder*, as to "who was Edward Pearce?" as all that has been known of him to our English architects was, that he was author of a work on Friezes, "Sculd by John Overton, att ye White Horse, Without Newgate, neare the Fountaine Tavern." Now, if the present writer mistakes not, he has succeeded in identifying and "fixing" the entity of this Edward Pearce, who has been for a long time an *ignis fatuus*, whom, though seemingly within our reach, we have failed to secure. We have strong reasons for believing that Captain Edward Lovet Pearce, Surveyor-General of his Majesty's Works in Ireland, and the official acknowledged architect of the Irish Houses of Parliament, commenced in 1728-9, was no other than the missing "Edward Pearce." If we fail in the following particulars to prove that both are identical, we shall succeed at the same time in bringing into more prominent notice a second Edward Pearce, who by his work deserves a fitting niche in the "Dictionary of Architecture." Owing to the decay of Chichester House, where the Parliament in Dublin used to meet, a committee was appointed to report on the condition of the edifice, and to estimate for the construction of a new Parliament House. Matters hung on until 1727, when it was found impracticable to retain the old building. A report was then made, advising that a new building should be erected. In 1728, a sum of 6,000*l.* was voted towards the providing of the materials and construction, and Thomas Burgh,* the predecessor of Pearce as Surveyor-General, was ordered to prepare a plan of the building. On the 3rd of February, 1728-9, the first stone of the new building was laid, at which ceremony attended the Lords Justices, several peers, the King-at-Arms, and *Captain Edward Lovet Pearce.*

Passing over the particulars attending the foundation and ceremonial, we may note that Thomas Burgh, who was instructed by the House of Commons to prepare the plans, held the office of director-general and overseer of fortifications and buildings from the year 1700 to 1730. In all the official documents of the time, Mr. Gilbert says, in his "History of Dublin," Sir Edward Lovet Pearce appears as the designer and director of the new Houses of Parliament.

A committee was appointed in 1729 to report on the progress of the buildings, and reported most favourably of the works. They could not, they said, "help observing with the greatest pleasure an uncommon beauty, order, and contrivance in the building, and that the same had been carried on with unusual expedition and diligence; that the money expended thereupon had been laid out with the greatest frugality, and the accounts thereof kept in the most regular and orderly manner." It is further observed that "the director appointed by the Government had attended the said work from the beginning with the utmost application, and had thereby saved a large sum to the public, which in the course of such work by the ordinary method must necessarily have been expended, and at the same time had charged nothing for his own great expenses, skill, and pains." The same day that this report was brought before the Commons, the sum of 1,000*l.* was unanimously voted to the director (or architect) for his great success. The first session of Parliament in the new building was opened in October, 1731, by the Duke of Dorset, the then Lord Lieutenant of Ireland; and in the December of the same year the Commons agreed to a resolution, and an address was presented to the Viceroy, asking that an additional sum of 1,000*l.* might be voted to Edward Lovet Pearce, "in consideration of the care and pains he had taken in carrying on the building of the Parliament House, and shall take in finishing the same." The House of Lords also unanimously resolved that the director had shown ability, skill, and workmanship, in the erection of the new building. It would be wrong of us here at this stage of our account to suppress the statements made shortly afterwards in public to the injury of Pearce. It was pretty openly stated that Pearce had obtained the plans and other assistance from Richard Castle, otherwise Cassels, a noted architect at the same period in Dublin. Some account of Castle we have already given in a previous volume of the *Builder*.* It was even stated that Pearce cheated Castle in the transaction, by not paying the amounts agreed upon between both. These statements received first currency through the medium of an anonymous work printed for private circulation in 1736. The writer, however, admitted that Pearce opposed him in a family lawsuit, and hence his enmity. Previously to the publication of Mr. Gilbert's work, the name of Richard Castle appeared in all the publications we have met with as the architect of the Irish Houses of Parliament.

Pearce is described by our anonymous writer in 1736 in unenviable terms.

In contrast to the above we have some lines written by a Henry Nelson, entitled, "The Speech of the first Stone laid in the Parliament House to the Government. February 3rd, 1728-9."

> "Next let my gratitude and due respect
> Be humbly paid to the great architect,
> And as his merit, let his praises ring
> Who did me first to this great honour bring;
> Let every tongue in softest notes rehearse,
> Time after time, the worth of Captain Pearce.
> All hail to thee! who only is the man
> That by your art has form'd the noble plan;
> And as the structures on my shoulders rise
> So shall your praise, exalted to the skies,
> The pile majestic shall its beauty show,
> And all its beauty to your judgment owe.
> To future ages celebrate the name
> Of its projector, and record your fame."

One of the friends and companions of Dean Swift, Dr. Delaney, in his poem entitled "The Pheasant and the Lark," alludes in a complimentary way to the architectural abilities of Captain Pearce.

It further appears that this Edward Lovet Pearce was a captain in Nevill's regiment of dragoons, and sat for awhile in the Irish Parliament as a member for Ratoath. Sir Edward Pearce died at his country-house in Stillorgan, county Dublin, in the year 1733, and lies interred in the village church of Donnybrook. He had a brother, a Lieutenant-General Thomas Pearce, who is reported to have served with great courage in the campaigns of Spain and Portugal. He was elected a privy councillor, and served as a member of Parliament, and also as a governor of Limerick. The brother, Thomas, was buried subsequently in the same graveyard with his brother, Edward Pearce.

Arthur Dobbs succeeded Pearce as surveyor-general in Ireland in superintending the finishing of the works at the Parliament House in Dublin, and it was said also of him, as it was previously said of Pearce, that he was greatly assisted in the work by Richard Castle. The works were completed in 1739, and in 1741 the Commons voted Arthur Dobbs 250*l.*, "for his care and pains in finishing the Parliament House."

In Mr. Gilbert's work already quoted, and whose statements may be relied upon as he quotes official documents, we find the expenditure for the Parliament House in December, 1735, including 2,000*l.* to Pearce, and 490*l.* paid in pursuance of an Act of Parliament to the proprietors of the several buildings which had to be removed, amounted to 28,471*l.* 10s. 5½d.

A Parliamentary committee, appointed in the same year to inquire into the state and condition of the building, resolved, "that Sir Edward Lovet Pearce, late engineer and surveyor-general, and his executrix, Anne, Lady Pearce, had faithfully and honestly accounted for the several sums by him received for building the Parliament House." Of the subsequent additions to the Irish Parliament House, it is unnecessary to write in detail. The names of Thomas Cooley and James Gandon, two English architects, are associated with other additions to the Irish Parliament House towards the close of the last century. Gandon, the greater architect of the two, designed the Corinthian portico which was added as an entrance to the House of Lords on the eastern side. Flaxman, the English sculptor, designed

* Thomas Burgh was author of a work entitled "A Method to Determine the Areas of Right-lined Figures Universally: very useful for ascertaining the Contents of any Survey." Published in 1724.

* Castle was the author of "An Essay toward Supplying the City of Dublin with Water." He was the architect of many important buildings in that city. He died in 1751.

the three figures on the southern front of the building; but Edward Smyth, a native sculptor, executed them. These figures were added after the Union of Great Britain with Ireland. When the Parliament House was purchased, and altered to suit the requirements of its new tenants, the directors of the Bank of Ireland, Francis Johnston, the Irish architect, designed the new alterations and works that were commenced in 1804. It will be seen from our sketch that several architects had a hand in the building, designing, and subsequent alterations of the Irish Senate from the days of Thomas Burgh and Edward Pearce. English, Irish, and German (Castle was a native of Germany), each has his name associated with the building. Each adopted Ireland as the scene of their practice, and each and all rose to distinction and left works behind them by which they will be remembered.

Little remains now to say except that if our Edward Lovet Pearce is not *the* Edward Pearce of the "Friezes," let somebody give us as much authenticated proof that he is not the man as we have produced in favour of his being the man, or the nearest resemblance to him. Whether Capt. Pearce came to Ireland with the Prince of Orange, or in the reign of Anne, or the first George, we have yet to learn. He was in Dublin, however, at the commencement of George II.'s reign. We know the date of his death, and if there exists a tombstone still about his grave, his age may possibly be found stated thereon; and if not there, in the church register.

The name as spelt is not an Irish, but an English one. In the absence of knowledge of Pearce's precise age at death,—if we suppose him to be thirty years of age in 1688, this would make him of the age of seventy-five in 1733 at his demise. This would afford us sufficient room to prove that the style and typography of the work on "Friezes" (which bears no date) was in consonance with the period through which he lived, still supposing our subject to be the long-sought Edward Pearce.

NEW POST-OFFICE, ST. MARTIN'S-LE-GRAND, LONDON.

WE add to the illustrations already given in our pages of the New Post-office,* now nearly completed, the plan of the one-pair floor. The building has been erected, as our readers will remember, from the designs of Mr. James Williams, Mr. William Brass being the contractor.

PROPOSED CATHEDRAL CHURCH OF ST. MARY, EDINBURGH.

THE accompanying view represents Sir Gilbert Scott's design for the interior of the proposed cathedral for Edinburgh, looking towards the north-east. We have already given a view of the exterior, and the architect's own description of the design,† and we now append the Referee's comments on the design when it was submitted under the motto,

"Auld Lang Syne."

"The architect's report in this case refers to three designs; two carefully worked out, and one indicated only by a sketch plan in the body of the report.

The design B appears to have been withdrawn; the following observations will apply therefore only to that marked A, though a word or two may perhaps without impropriety be given to the third, or sketch plan, shown in the report.

As regards Agreement with Instructions:—1. The area provided is very ample, there being sufficient space for 1,500 persons westward of the preacher, and exclusive of the choir and its aisles; and although, from the description, either of the alternative designs would seem to have provided a better area for preaching purposes, yet, notwithstanding the block interposed by the north-west pier of the tower, the clear area capable of being commanded by a preacher is considerable. As regards the daily services, the author says,—'I have carefully considered, but do not see any necessity (but the contrary) for providing a distinct position. It would seem to me a great pity that the services on minor, though the most frequent, occasions should be in a less dignified place than at other times. It is an arrangement not known in this country, excepting for early services, nor do I think it desirable. The question, whether at ordinary week-day services any part of the congregation should be admitted within the choir, seems one which should be left to the decision of the bishop and clergy. It is not essential to the arrangement to decide it while planning the cathedral, as, if not so admitted, they would simply occupy the space in front of the choir-screen according to their numbers.'

2. As to the organ, he says,—'I have provided for the organ in this manner. The lighter parts, especially the choir organ, with the keys and the organist's seat, I have placed close to the first bay on the north of the choir; but the larger and more cumbrous parts I have placed in the eastern aisle of the north transept, immediately behind a place where the sound would spread itself freely through both choir, transepts, crossing, and nave.'

3. The central tower being closed in at the level of the vaulting of the choir, there is ample space within it above that level for both bells and clock.

4. The chapter-house is of sufficient area, but can only be approached from the interior of the cathedral, and through a vestry,—a seeming defect, which is, however, capable of easy remedy.

5. The central axis of the cathedral is proposed to coincide with that of Melville-street and Grosvenor-crescent respectively.

As regards 'Coates House,' the author says,—'He should unquestionably retain it'; and adds, 'In a part of Edinburgh so essentially new, it is a most happy circumstance to possess upon the cathedral site a veritable old Scottish building. It is very picturesque in design, and will become more so by careful restoration. The internal accommodation is open to improvement, and I have no doubt that by judicious treatment it may be made a comfortable residence, while its presence will add much to the picturesque grouping of the ecclesiastical buildings.'

9. As regards cost, the author says,—'I have made a calculation as to the cost, which gives a result as favourable as I could anticipate; but as such works as this are rarely erected in our day, I will not pledge myself to meet your views with minute accuracy, but content myself with carefully aiming at the prescribed sum; and I believe that with care and reasonable economy, and possibly with the aid of some safety-valves, it may be realised, though it would not be wise in a matter proverbially so much of a lottery as the cost of a large building, to pledge oneself too minutely. My object has been to give the best and noblest church which your conditions appear to admit. I have made this my anxious aim, but beyond this I will not bind myself further than to say that I believe I have realised my aim with very reasonable accuracy. Some of the more decorative fittings, such as the reredos, may be looked for as individual offerings, and the painted decorations would not be included.'

In respect of Arrangement.—The plan of the cathedral is a broad and simple one. The building consists of nave and north and south aisles, central tower, north and south transepts, each with east and west aisles, choir and aisles, and square chapter-house connected with the north aisle of choir by a cloistral passage. The vestries are provided for in bays of the choir and transept aisles, screened off from the general area. The entrances are from the west end in the centre of the nave, and from the south side through the transept, neither of them screened internally.

In respect of Construction.—All the provisions are amply sufficient. The nave is roofed in wood, and groined internally in the same material; but the remainder of the church is groined in stone.

As regards Architectural Character. — The author says,—'He has met with some difficulty in selecting the variety of architecture on which to found his design, but he desired that it should not at the least be discordant with the finest Scottish examples,' and that 'he has been most impressed with the earlier phase of the Early Pointed, which especially unites the architecture of Scotland with that of the North of England; and is capable of the greatest possible degree of dignity united with simplicity and beauty.'

The design is consequently, throughout, bold and simple in its character externally; but internally decoration is more freely introduced. The most striking feature is undoubtedly the central tower, the massiveness and noble proportions of which would be of the greatest possible value on a site like that on which it is proposed to build, in giving a general dignity of effect to the whole structure. The tower for this purpose is designed with very considerable power. Other portions of the exterior, and notably the western front, are much less happy and forcible; but the eastern end of the choir is a fine and dignified composition. As regards the interior, it would, I think, gain in dignity, as it certainly would in simplicity, by the omission of the surface ornament in the clearstory windows, which tends to give prettiness to what would otherwise be vigorous and strong; but in the main it must be said, that if it has not much originality, it has at least as a whole a thoroughly church-like and dignified character much in accordance with ancient examples.

As regards Cost.—The architect appears to be disinclined to give any positive opinion; but, excepting in the tower, which on account of its bulk must necessarily be costly, the general character of the building is not likely to be excessive on this point. The comparison with other designs will be seen on the table of cubical areas."

We print this table, together with one as to cost, based upon it, in conjunction with the superficial areas measured within the walls:—

"Comparative approximate Table of Cubical Contents.

Cubical Contents measured internally between Ceiling and Floor.

	Design marked	Church and Vestries.
A	Fidelitas	859,453
B	Essayez-moi	989,895
C	Auld Lang Syne	793,993
D	⊕	736,910
E	Non ignotæ civitatis Municeps	646,994
F	✠ In hoc Signo	620,860

Cubical Contents measured externally from Floor upwards.

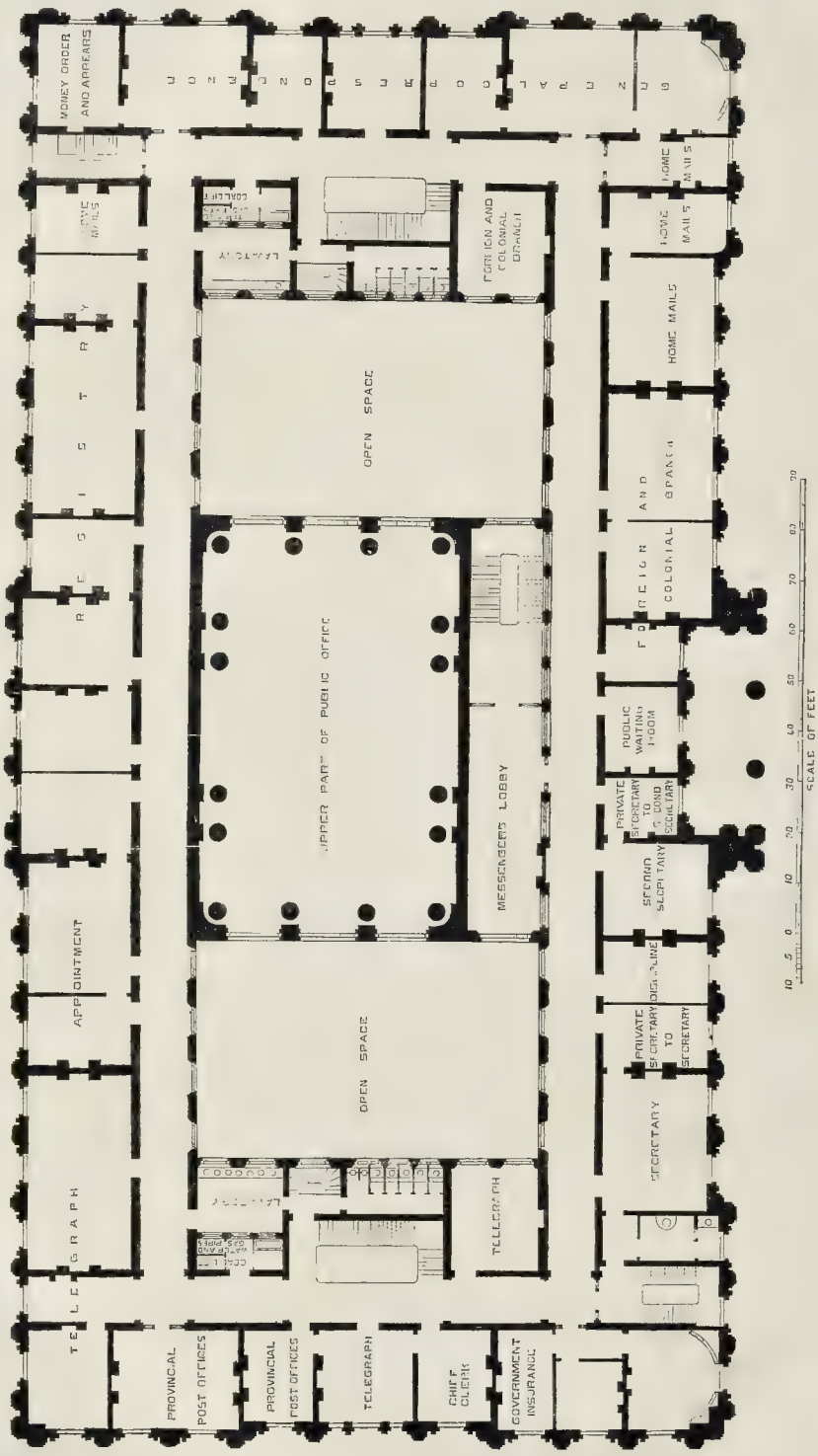
	Church and Vestries.	Chapter-House.	Total.
A	1,445,513	96,624	1,542,137
B	1,329,913	43,860	1,373,773
C	1,034,088	94,121	1,128,212
D	1,225,113	80,541	1,305,654
E	1,081,875	24,640	1,106,515
F	1,062,507	39,104	1,101,611

"Comparison of Cost based as to Quantities on the preceding Tables.

Design marked	Cost at 1d. per foot cube of Church and Accessories exclusive of Towers and Spires.	Comparative Cost per foot cube founded on detailed valuation.	Cost of Church and Accessories at rate given in preceding column.	Add on account of Towers and Spires and other extra features.	Approximate comparative Cost exclusive of foundations, internal fittings, &c.
Fidelitas	£6,426	12·9	£82,895	£20,500	£103,395
Essayez-moi	5,724	8·1	46,364	21,900	68,264
Auld Lang Syne	4,701	8·7	40,898	23,800	64,698
⊕	5,440	7·3	39,712	19,400	59,112
Non ignotæ civitatis Municeps	4,610	8·6	39,646	13,900	53,546
✠ In hoc Signo	4,590	7·5	34,425	16,000	50,425

The comparative cost of *ordinary* foundations may be taken as from 4,000*l.* to 7,000*l.*, varying according to superficial areas and thicknesses of walls, &c. The cost of fittings, heating, and lighting would probably in each case be more nearly equal, but would vary according to material and design; probably 4,600*l.* would fairly represent an average estimate."

* See pp. 84, 86, 87, *ante*.
† See pp. 97, 106.



THE NEW POST-OFFICE, ST. MARTIN'S-LE-GRAND.



PROPOSED CATHEDRAL CHURCH OF ST. MARY, EDINBURGH: INTERIOR VIEW, LOOKING NORTH-EAST.
Sir G. Gilbert Scott, R.A., Architect.

IMPEDIMENTS TO THE CIRCULATION OF LABOUR, AND THEIR REMOVAL.

AT a recent meeting of the Social Science Association, Mr. Alsager H. Hill read a paper on this subject, containing matters of interest to many of our readers. We have condensed the pith of it:—

I shall submit, on the threshold, that the present circulation of labour in this country, as exhibited by the industrial and social condition of large masses of the people, is far from satisfactory. It may be observed that, notwithstanding the acknowledged prosperity and commercial progress of the country, there is still an immense mass of registered pauperism in our midst, which is certainly strangely inconsistent with the idea of our rapidly advancing civilisation; and it is further a remarkable fact that this pauperism is in many instances more than proportioned to the industrial activity of the district in which it is so registered. I find, for instance, that at the end of November, 1872, the number of persons in receipt of relief was returned as 820,919, and that out of that aggregate a very large proportion, amounting to more than 100,000, belonged to the metropolitan parishes and unions. I shall have occasion later on in this paper to call attention to the more special phenomena of industrial life, or rather stagnation, exhibited by the metropolis. For the moment, therefore, I simply point to the significant pauper-roll of the London district. It may, however, be still more instructive to look at the condition of things in South Wales, as illustrated by a recent circular letter, addressed by Mr. Andrew Doyle, one of the Poor-law inspectors, to the clerks of guardians, and in this letter, speaking of four Breconshire unions, Mr. Doyle says,—"Of superfluous labour it is needless to say that during the last year at least no such thing existed. The difficulty experienced by employers of every description of labour was to find hands to do the indispensable work of the district"; and yet, side by side with this statement, we find Mr. Doyle very properly remarking that "it appears to be most unreasonable that employers who are compelled to pay very high, if not exorbitant, wages, should at the same time be compelled to pay exorbitant poor-rates." And yet such is undoubtedly the case, be it reasonable or not. If, again, we turn to the Midlands, we shall find a heavy poor-rate, co-existent with an abundance of employment in almost every branch of our great industries. Looking to the Western counties, more especially Somersetshire and Devonshire, we still find a large registered pauperism; but a standard of wages, chiefly for agricultural services, infinitely below that of either the metropolis or the Midlands. It is, however, highly instructive to learn, from a recent Parliamentary paper, that, as far as official returns can be relied upon, a very small number of persons only in proportion to the aggregate number of registered paupers, are relieved on the ground of being out of employment and unable to obtain work; and, what is more significant still, of that small number, showing a total, if I remember rightly, of about 2,100, a very large proportion is returned from the metropolitan district, whilst from more than five counties, no cases of able-bodied persons relieved on the ground of being out of work, as shown in the books.

With these facts before us, it is therefore reasonable to suppose that no very large number of persons are, as some are apt to assume, continuously, and for long periods of time, out of employment; and yet, admitting this to be the case, there is still calling for explanation the important fact alluded to at the commencement of this paper, of an immense population dependent almost entirely on the better fortune or benevolence of their neighbours, conveyed to them either through the rates or private charity. This pauper population must clearly be the result of some imperfect organisation in our social system; and as labour constitutes the industrial life of the body politic, so this stagnation, taking the shape of direct or indirect dependence on others, must represent some congestion or other imperfection in the elements that go to the making of the true life.

From Phillips's "Million of Facts," I learn that the population of London, in 1836, was returned at 1,400,000; in the present year it stands at a figure rapidly approaching 4 millions. As the metropolis, and apart from its industrial capacities, it has for centuries past been gathering into its capacious maw all the ambitious and enterprising elements of the country population, and for almost as long a period other influences than those of ambition or of enterprise, of which I shall speak further hereafter, have tended to convert London into such a *colluvies gentium* as no writer, ancient or modern, could ever have contemplated in his most opprobrious mood. Assuming the industries of the metropolis to have kept pace with the influx of its rapidly-increasing population, a time must have come, when from its very physical and geological position, it must have given place to some of its more northernly sisters in the race for supremacy, and as it now is, with its multiplicity of industries, London must be considered rather as a commercial than an industrial centre.

In London, in consequence of the congestion to which I have just directed attention, labour of a certain sort, under the pressure of either hunger or tyranny, may be secured at almost any price that a master chooses to name. This fact, as I before remarked, is too often overlooked. It is, however, perhaps the best starting-point that I can take for my more practical observations on the impediments to circulation of labour and the best means for their removal. I may, I think, assume that London, if no other part of England, is over-stocked at the present time; and if corporeal illustration of this statement be required, I would ask some of those who hear me to pay an early visit to our dock sides and builders' yards at taking-on time, and judge for themselves.

How far some of the deteriorated labour which forms a peculiar feature in the London market may be found on close analysis to be the natural *detritus* of great industrial activities, it may be difficult, if not, indeed, impossible, to determine. But it is surely more consistent with the higher teachings of social science to believe that much which is waste now might, if more equably distributed, become the marrow and muscle of our national life. Inactivity and stagnation, in the present condition of things, must surely, to parody Lord Palmerston's celebrated aphorism on dirt, simply denote labour "in the wrong place." Assuming, therefore, much of this congested metropolitan labour to be in the wrong place, let us consider the causes which have mainly brought it here. It is almost unnecessary to point out that the first and most general cause of this, as of most other social diseases, is ignorance, and in this case, probably ignorance of many kinds. Ignorance of physical geography and the lessons which it carries with it can be made to account for the blind and infatuated impulse which leads generation after generation of the dwellers in the country to seek their fortune in our cities and great towns, rather than in other districts where their native energies might soon be adapted to the work which lies ready to their hands. I need hardly detail the condition in which most of our rustic population are left with respect to the resources of their own country on leaving the village schools; and I am not going far wrong when I say that in nine children out of ten the mountains of Palestine are better known than the hills of Cleveland or the busy valleys of South Wales. On technical and industrial matters their minds are generally a still denser blank; and when the young man sets forth from home in search of work, in all probability his face is turned north or south, according to the last intelligence of his village inn, or in pursuance of some capricious fancy, such as a desire to see London, or find out a cousin in some distant town, rather than in obedience to any ascertained necessity for the man's services outside the limits of his own hamlet or county.

Passing from ignorance as a primary cause of imperfect circulation of labour, I would touch in a few sentences on the resultant want of organisation for facilitating the processes of supply and demand in the adjustment of the labour market; for it is not necessary for me to point out that the mere economic law of supply and demand, without a well-regulated social system, can no more insure the industrial life of a country, than can the elements which make up the blood insure a healthy circulation without proper exercise and temperance in the organism it pervades. With respect to organisation I shall probably be told that this has in a great measure been met by the institution of trade-unions; but even at its highest reckoning the nominally organised labour of the United Kingdom cannot be set at much above 800,000 persons, whilst the available working population may be set down at an aggregate of at least 6,000,000 of persons. Moreover, as I know from careful examination, much of this organisation, apart from that provided in such bodies as the Amalgamated Engineers, carpenters and joiners, stonemasons, and a few others, is of the most imperfect kind, and utterly unable to grapple with the complex difficulties of a constantly changing labour market. Hitherto the best of these organisations have been elaborated, as might have been expected from the superior intelligence of their members, by the higher skilled trades; but within the last year the elements of organisation have made themselves apparent, and in a very active form, amongst the most numerous and ignorant classes of our labourers, namely, the agricultural. And according to some reports, the number of actually enrolled members in these latter organisations is now over 300,000, being more than a third of the aggregate estimated by Mr. Lloyd Jones a few years since, as included in the ranks of English trade-unionists.

In one or two cases, whilst factories are languishing for hands, new homes for orphan girls are being built, and columns of the newspaper filled with sensational appeals and repeated lists of ignorant subscribers, when a few pounds expended in adjusting the laws of supply and demand in certain branches of the national labour-market, by bringing employers and employed together, would have removed the necessity of the huge homes and subscriptions altogether. With respect to certain emigration charities, I can speak in even stronger terms, as these have to do with adult workers, whilst the other class is chiefly concerned with children; and one of the most common and natural consequences of these emigration charities is to send adrift a large number of men, either already earning or able to earn reasonable wages in their own country, to beg from door to door, or according to the more approved fashion, from selected benevolent persons, to enable them to leave the country at a time when coal is rising daily from the scarcity of the getters, and miles of railway are waiting for completion, because the labourers are not to be had. Much more might be said on the influence of charity in its bearing upon my subject this evening, but I pass on to notice another existing impediment to the circulation of labour, namely, *the influence of misdirected trade-unionism*. I say purposely misdirected trade-unionism, as I have before expressed my general belief in the advantages of the best managed societies in the direction of organisation, and it may perhaps seem strange that trade-unionism, the very basis of which is assumed to be a healthy distribution of labour, should in any way interfere with the currents of circulation. What, however, I conceive to be a mistaken policy with respect to the standard of wages sought to be regulated by the action of trade societies, not unfrequently results in large numbers of men, and as frequently non-union as union men, declining to quit crowded centres in which work is slack, though work may be indicated to them elsewhere at wages which they are not willing to accept. The natural consequence is that large numbers of men beginning with an assertion of dignity in not accepting anything under their own estimate of their value, end by joining that great army of the partially unemployed, who lower London wages and increase our poor-rates.

Under existing circumstances a personal search for work is in many cases almost essential; and, except where the railway system is very complete, travelling by train would be almost impossible. Nevertheless, with better information at starting, an immense amount of unnecessary travel and toil might even now be saved. When, however, the workman is obliged to take the train, even a Parliamentary fare is a very heavy tax, except upon high prospective wages; and when the family accompanies the workman, the burden becomes one which only a very long job seems to justify.

Following on the want of cheap and effective locomotion, may be mentioned the want of cheap and suitable accommodation for workmen at many of our industrial centres, and the providing of cheap and good animal food. To any one who carefully studies this question, it will soon be apparent that the adaptability of labour to different conditions of life from that to which it is accustomed, is largely a question of food; and the experience of the late Mr. Brassey, as recorded in the very interesting memoir by his son, goes to show that with care even raw agricultural labour may soon, under good conditions of diet, be converted into a quality vailable for the heaviest railway or dock work.

The only other impediment to the circulation

of labour which I can now touch upon is the pernicious and wide-spread system of dealing on credit which prevails among our working population. In the recent extensive migrations of labour which have taken place since the formation of the various agricultural labourers' unions, it has been a constant complaint with the local secretaries that the debts at the village shops have prevented the men getting away; and the same difficulty, though perhaps in a minor degree, will be found to arise amongst our town population. The remedy for this state of things is obviously a system of ready-money payments; or, better still, in my opinion, in the spread of true co-operation, as understood in the North, under which, in addition to the avoidance of debt, a small, and in many cases a considerable, sum accumulates to the credit of the customer, which can, of course, be rendered available for migration or any other purpose.

METROPOLITAN FREE BRIDGES.

THE opening of Kew Bridge, free from toll, was an event sufficiently important to be well worth the ceremonial bestowed upon it. The Joint Bridges Committee are hastening, although their motto might seem to be *Festina lente*, still they *are* hastening, or at least, prosecuting steadily and perseveringly the great object they have set before them, by sweeping away the obstructions by tolls to the free passage across the river between the north and south banks of the Thames. Considering the opposition the committee has had to encounter, and the magnitude of the interests that have to be conciliated and satisfied, it is not wonderful that the committee have not done more, but that they have done so much. Already, within the last five years, the bridges at Walton, Staines, Kingston, and now at Kew, have been opened to the public free from toll, the last at a cost of 57,300*l.*, in payment of all claims for proprietary rights.

The opening of the bridges named are, however, only a good beginning with a good work, and it is much to be desired that the "Metropolitan Bridges Bill," now before Parliament, may have an unopposed and rapid course. It is promoted by the Metropolitan Board of Works, and is a Bill to facilitate the traffic of the metropolis, and to improve the communications across the river Thames, by providing for the opening of the present toll bridges for the free use of the public. The means by which the bridges are to be freed from toll is, the application to that object of the London coal and wine duties, which, are continued by the Act of 1868 to the 5th of July, 1889. The bridges that it is proposed by the Bill to free from toll embrace the following goodly list:—Hammersmith Suspension, Fulham, Wandsworth, Battersea, Albert, Chelsea Suspension, Vauxhall, Lambeth, Waterloo, and Deptford Creek Bridges. The Board also takes power by the Bill for the extinction of toll upon the respective foot-bridges over the Charing-cross and Cannon-street railways. The Board will do well if they are able to carry out even half of their large-minded programme.

That most important public advantages would result from the adoption of this Bill, must be readily apparent. One of these advantages would be the better distribution of street traffic, and the relief of congested thoroughfares. This is evident in the contrast that the traffic by Southwark Bridge, as a free bridge, presents with what it was before the tolls were abolished, and by the contrast it now presents with the dreary quietude of Waterloo Bridge, which from the heart of Southwark debouches upon the middle of the Strand, but that, notwithstanding, may occasionally be seen at the busiest hours of the day, clear of vehicles between one tollgate and another, and the whole of the splendid structure in the occupation of the toll-takers at each end, and of a few straggling foot passengers between them. The effect that the freeing of the bridges from toll would have upon the value of house property and building land in many localities, would be immediate and important, but that is an element that concerns owners and occupiers more than the general public.

Another important benefit that would be conferred upon large masses of population in various localities, would be by extinguishing the tolls, to deliver them from a really grievous and oppressive impost. The Deptford Creek Bridge is a notable illustration of this fact. Between the most populous parts of Deptford, the Royal Victualling-yard, the Foreign Cattle Market, and Greenwich, the direct route is by the Creek Bridge, at which heavy tolls are charged for vehicles, and as much as one penny per head for men, women, and children, on foot. There is another, the Railway Bridge, available for foot passengers higher up the Ravensbourne, at which the same toll is charged, the distance by the Railway Bridge, about half a mile, being about half the distance that it is by the public streets and roads. The inhabitants of Deptford have long persistently pressed their toll-bridge grievance upon the attention of the authorities, and are naturally elated, as the inhabitants of other districts similarly situated may be, by the hope of early deliverance.

FROM SCOTLAND.

Edinburgh.—A new iron lattice girder bridge, erected by the North British Railway Company, at a cost of over 20,000*l.* has been formally opened by the Lord Provost. This bridge crosses the valley which separates the old and new towns, and connects Cockburn-street with Princes-street, besides affording access to the new passenger station of the North British Railway.

Paisley.—A public meeting of the ratepayers of the burgh parishes of Paisley has been held to consider a resolution of the Burgh Parochial Board to erect a new parochial asylum. There was a large attendance. The meeting disapproved of the resolution come to by the Burgh Parochial Board, because Mr. Cranfurd, M.P., has again brought before Parliament a Bill to amend the present Poor-law Act which, if carried, would combine the burgh and abbey parishes, and thus have one establishment for the management of the poor, and also disapprove of the procedure of the majority at that Board in making contracts for the erection of this expensive asylum with such precipitate haste.

Fauldhouse.—A new Roman Catholic church is now rapidly approaching completion, and, when finished, it will afford accommodation for 500 sitters. The building is in the Early English Gothic style, and consists of nave and sanctuary, with vestry and choir gallery. The main entrance is in an end gable, and looks towards the public road. Over the doorway is a traceried circular window, and on each side of the door there is a double lancet window. It is proposed to erect a belfry and spirelet over the apex of this gable, but this part of the work will be a question of time and funds. The side elevations have buttresses and lancet windows, and the roof is open to the ridge. A chapel-house adjoining the church is in contemplation. The plans are by Messrs. W. & R. Ingram, Glasgow.

BELLS AND BELL-CAGES.

IN your recent article on "Belfries and Bells," you deplore the fact "that in the art of hanging and ringing bells we have hitherto gained but little from the advance of mechanical knowledge." Now as regards the hanging, the manner in which that should be done of course depends chiefly upon whether the bells are to be raised and rung or merely chimed. In the latter case, the hanging is a simple affair; but in the former, great care should be exercised in the design and construction of the bell-cage, so that it may be able to bear with safety the variety of strains and shocks to which it must be subjected by the reciprocating motion of the bells in ever-varying order, and to convey the resultant force of those strains downwards, and not laterally against the walls of the tower.

Eminent authorities tell us that it is of the greatest consequence that the timbers should take their bearing independent of the masonry; they should be laid on wooden plates, the whole resting either on stone corbels or on a set-off formed in the wall. The sides of the cage should not touch the wall at any point, but a clear space should be left the whole way round between the timbers and the stonework.

Many of our most celebrated church towers were built long before the present mode of ringing bells came into practice, and in some towers the bell-cage has been either built directly into the walls or wedged against them to steady it. I do not think, therefore, that it is fair to lay the blame of the mischief which has been done on the mode of ringing, but rather on the ignorance of bellhangers and those who have put heavy peals into towers which were never intended to bear the strains resulting from the present mode of ringing. It is well known that in many towers where the bells are properly hung heavy peals have been rung for a great number of years, and still continue to be rung, without doing the slightest injury to the structure. The tower of the cathedral of my own diocese, which was mostly rebuilt in the fourteenth century, is perfectly free from any vibration, the bells being hung as described above, all of it being absorbed by the loft on which the cage rests.

It is generally admitted that bell-ringing is an art, and, like many others, has been carried to a high degree of perfection. If in painting and other arts we cannot excel, or even come up to, the old masters, why should we be dissatisfied because the same effect which is produced by the bell-ringer's art cannot be produced by mechanical means? Is a barrel-organ, no matter how well constructed, to be considered an improvement on the manual organ, because the latter can only be played by learning the art, and not merely by turning a handle? And what is a carillon-machine but a gigantic barrel-organ, with only one stop, so placed that everybody in the neighbourhood must hear it and endure it, without being able to get the policeman on duty to make it "move on"? How inexpressibly wearying to delicate and sensitive ears will the same tune, repeated many times in the day, become, and that, in most cases, only the bare subject of a tune, without any of its mellowing harmonies. A bell, no doubt, produces some of the harmonies to its consonant, when struck, though in a subdued manner, and rather after than along with it, but not in a way that makes up for the absence of the full chord struck simultaneously. There is, no doubt, also, as you have remarked, that "a bell struck when at rest by a hammer produces, a dull, heavy, odious sound, as compared with the tone of the same bell when struck by its clapper as it swings round." The motion of the bell itself must therefore, I think, have a good deal to do with the quality and penetrating power of the sound produced, and that is also the opinion of the Rev. H. T. Ellacombe, than whom, I believe, there is no greater authority on the subject. As to the production of the other notes of the chord by striking the bell in different places, there is this one great difficulty to be got over, that if you strike the bell sufficiently hard to bring out its tone anywhere but on the sound-bow, it will most assuredly crack, sooner or later.

As a practical bell-ringer, I hope that it will be a long time before the present reviving interest in bell-ringing, as an art, and as a means of producing a most delightful species of music, which all may enjoy, is superseded by a desire to erect carillon-machines, however clever they may be as pieces of mechanism.

To defend their art from the charge of being barbarous I leave in the able hands of the Ancient Society of College Youths.

AN IRISH DIOCESAN ARCHITECT.

SCHOOL BOARDS.

High Wycombe.—The School Board for this borough are about to erect new buildings, to accommodate in all 600 children. The site is three roods in extent, on a commanding position. Public tenders will, it is believed, be solicited. The architect appointed is Mr. Arthur Vernon.

Kingston-upon-Hull.—The foundation stone of the first new Board School was laid here by Sir Henry Cooper, Knt., M.D., chairman of the Board, with appropriate ceremonies, on Monday last, the 24th of February. This school, situate in Daltry-street, is designed to accommodate 250 boys, 250 girls, and 260 infants, all on the ground floor. The boys' school-room is to be 75 ft. long and 20 ft. wide, having three class-rooms adjoining. The girls' department will be similar in size. The Infants' School will be 54 ft. long by 27 ft. 8 in. wide, with two class-rooms contiguous. There are three private rooms for the principal teachers, and all necessary offices. The cubical contents of the whole building, exclusive of earth-closets and boundary walls, are 250,510 ft. Mr. W. Barritt, of Hull, has contracted to execute the whole of the works for 4,407*l.* 18*s.* Messrs. Rundle & Parker, of Leeds, will supply the hot-water heating apparatus. The works are under the superintendence of Mr. Augustus W. Tanner, architect to the Board.

Derby.—A letter was read from Mr. Coulthurst, thanking the Board for appointing him architect to the new schools; and the Clerk said

that he had not received any reply to his letter to the Educational Department in reference to the extension of the Nun-street site. He had received a letter from Mr. Coulthurst in reference to the plans for the new schools.

Leicester.—The architects' committee reported that they had received tenders for the erection of the school in Oxford-street, a list whereof was presented with their report. The committee recommended that the tender of Mr. Sackree be accepted by the Board, subject to its receiving the sanction of the Education Department. The clerk then read the list of tenders:—

	Allowance on old material.	Tenders.
H. F. Allen	£6,465 ..... £150	£6,315
F. Major	6,479 165	6,314
J. R. Ratcliffe	6,446 160	6,286
T. Bland	6,255 155	6,100
Osborne, Bros.	6,355 250	6,105
Neal & Sons	6,200 150	6,050
T. W. Herbert	6,180 170	6,020
T. Forster	5,720 150	5,570
J. Fern	5,640 110	5,530
J. J. Sackree	5,635 150	5,485
W. H. Kellett*	5,615 200	5,395*
Butler & Marshall	5,484 170	5,314

The Rev. Canon Fry moved that the report of the committee be adopted. Some discussion ensued, in the course of which Mr. Merrick moved as an amendment that the tender of Messrs. Butler & Marshall be accepted. The amendment was carried.

Llanelly.—At a meeting of this Board, held a short time since, drawings prepared by Messrs. Alexander & Henman, architects, of Stockton and Middlesbrough, and Mr. E. Sugden, of Bristol, were chosen from a number sent in in competition for their proposed schools at Brynmawr.

Aberdare (South Wales).—On the 20th ult., this Board met to finally decide respecting the plans sent in in competition for their schools. The designs prepared by Messrs. Alexander & Henman, architects, of Stockton and Middlesbrough, and Mr. E. Sugden, of Bristol, were selected, and those gentlemen have received instructions to proceed at once with the working drawings.

ACCIDENTS.

Destruction of Gildersome Church by Fire.—The parish church of Gildersome, a village about five miles from Leeds, has been entirely destroyed by fire. The outbreak was first seen about four o'clock on Saturday morning, when the flames had already taken too great a hold upon the chancel and the body of the church to be subdued. Even otherwise, there were no means, within easy reach, of extinguishing a large fire. It was several hours before the fire had spent itself. The church was therefore reduced to a complete wreck. The roof fell in, and nothing remains but the four bare walls and a damaged portion of the tower. The church had been reopened only in August last, after improvements which cost about 1,100*l.* This sum had been almost entirely raised, although with some difficulty, among the parishioners. The church itself, which was not insured, is about a century old. The chancel was new, and there was a stained-glass memorial window, the gift of Mrs. Stephenson and family. To the erection of a new church W. J. Armitage, of Farnley, has already promised a contribution of 250*l.* The cause of the fire is not known; but the supposition seems to be that it originated with a gas-stove used to prevent the new organ from becoming damp.

Fall of New Houses in Manchester.—Two new houses which were in course of erection in Dawson-street, Emden-street, Hulme, have fallen to the ground, and buried two men in the ruins. The person who was building the houses was a Mr. Powiss, bricksetter, Mona-street, Vine-street, Hulme. The erection of the cottages commenced three weeks before, and owing to a little favourable weather, the work progressed without interruption. At the time of the accident, the only portion of the builder's contract remaining unfinished was the laying of the roof, and this was being proceeded with when the buildings collapsed. There were eight men employed in finishing the houses, but four of them had refused to resume work on account of the appearance of the houses, the back walls having bulged outwardly. The other four considered that there was no danger, and continued their labours. The back walls first gave way, and the whole fabric fell to the ground, only one of the gable ends remaining standing. At this time two men were working on the roofs of the houses. They both fell with the buildings, and were buried in the *débris*. They were rescued, but were both badly cut and bruised. A third man, who also fell with the buildings, sustained contused wounds on the scalp and cheek. The main walls of the houses were 4½ in. thick, and the "mortar" used is said to have consisted almost exclusively of sand. We decline to call this disaster an accident.

Accident at an Auction.—An alarming accident occurred during a sale of furniture and other property at an old farmhouse near Dore, four or five miles from Sheffield. The auctioneer was disposing of some bedsteads in one of the upper apartments when the floor suddenly gave way, and the company, nearly thirty in number, found themselves struggling in the room below amidst a mass of broken timber and furniture. Fortunately no lives were lost, but several persons were seriously injured. The house has been built many years, the late occupants and their ancestors having resided there for nearly two centuries. The immediate cause of the accident was the giving way of a beam at a point where an iron rivet had been inserted to strengthen it.

Fall of a Factory at Wolverhampton.—The roof and front wall of a lock factory in Wolverhampton, have suddenly fallen to the ground. Fourteen men, women, and children at work in the building escaped almost without injury.

Accident at the London Docks.—The East London Railway Company, for their extension line, lately commenced constructing a tunnel under the eastern dock, at the London Docks, and, in order to facilitate the works, erected a timber platform in the dock, upon which was placed a dredging machine. About twenty men were engaged upon the platform, when it suddenly gave way, throwing the men into the water. Several of them were rescued without injury, but three men, including the foreman, were badly hurt. Three others are missing, and it is feared that they have been drowned.

Fall of a Café into the Sea at Smyrna.—The Smyrna correspondent of the *Levant Herald*, writing under date of the 11th of February, gives some account of a melancholy accident in that town, which had before been briefly noticed. The Café Kivoto, built upon piles over the sea, broke down suddenly during a performance given by a company of acrobats. The proprietor of the *café* says he only sold 108 tickets, but the people saved declare there were 200 persons present. Most of them were of the poorer class, and there were not many Turks there, or young men of respectable families. At ten o'clock a loud cracking was heard, and within five minutes the entire *café* had disappeared under water. The total number of bodies found up to the 11th was eighty, and it was supposed that there were still fifty more in the water. An English captain, two Turkish merchants, a young man of good connexions, an Italian captain, a telegraph clerk, and some commercial clerks, were among the victims.

THE PEABODY DONATION FUND.

THE trustees of this fund have published a report for the year ending the 31st day of December, 1872. In addition to the five groups of buildings already erected and fully reported upon in previous statements, the trustees have now in course of erection on a small site at Bermondsey six blocks of dwellings of concrete to accommodate 72 families. These will cost much less than if built in the ordinary way, but until this mode of construction has been more fully tested, the trustees do not feel justified in spending any large amount of money upon this description of building.

From the statement of accounts, it appears that to the original or first gift of 150,000*l.*, there has been added by interest and rents the sum of 36,733*l.* 4*s.* 11*d.*, so that the total amount of the property of this first trust is now upwards of 186,700*l.* The net income for the year has been 3,810*l.* 6*s.* 8*d.* The properties belonging to the second trust mentioned in the last report, were a site at Chelsea and the Magdalen Hospital Estate, Blackfriars-road. The trustees have since acquired a site of about two acres in Roupell-street, near to Blackfriars and Waterloo bridges, and another of more than an acre and a half in Southwark-street, in close proximity to Southwark Bridge, and within easy access of London and Blackfriars bridges.

It is only on the south side of the Thames that the trustees have lately been able to find suitable plots of ground at a reasonable cost. The experience gained at Blackfriars has shown that buildings in this neighbourhood not only accommodate the labourers engaged in the manufactories on the south side, but from their position are available for those who are so much inconvenienced on the north side of the river, in Westminster and its neighbourhood. Contracts are about being entered into for covering the two new sites with dwellings, and it is estimated that accommodation will thus be afforded for more than 500 families.

The late Mr. Peabody conveyed to the trustees several acres of land at Stockwell. It has been let on long building leases.

The applications for rooms at Blackfriars-road continue to be so numerous, that the trustees have resolved to build three more blocks on this site. Although the dwellings at Blackfriars are greatly superior to those erected at an earlier period, the trustees will be able to give still better accommodation in the proposed new buildings, without increasing the rents. This trust now represents a total of 228,000*l.* The net income during the past year was 7,637*l.* 8*s.* 3*d.* Before the close of the present year the sum of 150,000*l.* will be added to this second trust, in accordance with the terms of the bequest contained in the will of the late Mr. Peabody.

The trustees give the following details:—In May, 1872, there were 847 families, consisting of 3,407 persons, occupying 3,328 rooms, which is approximately a room for each individual. The average weekly earnings of the 847 heads of families were about 1*l.* 2*s.* 4*d.*, and the average charge per room about 1*s.* 10*d.* per week.

THE PUGIN TRAVELLING STUDENTSHIP.

AT the last meeting of the Royal Institute of Architects, the chairman announced that of the nine candidates who had submitted drawings and testimonials in competition for the Pugin Travelling Studentship of 1873, the council had elected Mr. Aston Webb, of Duke-street, Adelphi, subject to the conditions prescribed in the Pugin deed of trust, and that the council desired to call particular attention to the skilful execution and number of his sketches.

The chairman, Mr. Horace Jones, added, that the council had determined to mark the unusual excellence of other drawings submitted this year for the Pugin Studentship, by awarding medals of merit to two other candidates, viz:—Mr. P. J. Marvin and Mr. R. C. Page, and by distinguishing with Honourable Mention the drawings of Mr. Thomas Garratt and Mr. Walter L. Spiers.

The drawings and sketches made by Mr. John Sulman, Pugin Travelling Student for 1872, were exhibited in accordance with the conditions of the Pugin Deed of Trust.

THE IRON AND COAL TRADES.

AN illustration of the unprecedented condition of the trade of Wolverhampton is furnished by a circular issued by one of the leading houses, in which the following passage occurs:—

"In consequence of the enormous advance of all raw materials we are reluctantly compelled to withdraw all late quotations of iron for the present, but we shall be glad to quote you specially if you will be good enough to favour us with your inquiries."

At a banquet given by the Sheffield Typographical Society, Mr. Philip Casey, secretary to the South Yorkshire Miners' Association, made some revelations as to the cause of the high price of coal. He said that in 1863 only 11½*d.* per ton was paid to the miners for coal produced, and since that time they had received 1*s.* 6*d.* per ton, which was an advance of 50 per cent. It was reported that the miners were making 10*s.* a day. Some of them were; but others were making a deal less, and when coals had been advanced from 4*s.* 6*d.* per ton to 19*s.* and 1*l.* per ton at the pit's mouth, the coal-owners must be getting the lion's share. The supply of coal was not equal to the demand, and in consequence the owners were able to push it up to its present price, and the demand had been so great that vendors had offered 4*s.* per ton over the published prices if the coal-owners would supply it. The colliers of this district had received an advance of about 50 per cent. on 1*s.* per ton; but that was very different from the case of the owners, who were getting 150 per cent. upon 4*s.* or 5*s.* per ton. They must not be

* Mr. Kellett wishes to add 62*l.* to his tender, in consequence of a mistake in his ironfounder's tender, which will make it 5,457*l.*

surprised if the colliers went in for another rise in a week or two. They believed they were entitled to it fairly, and it was not their increased wages which caused the present high prices. It was a fearful and monstrous thing that coal should be sold for 50s. a ton in London, when it cost 1*l.* at the pit's mouth and 8s. carriage; thus the coal-merchants of London realised a profit of 1*l.* per ton upon all they sold.

The Clay Cross miners have passed the following resolution:—

"That this meeting, seeing the serious state of things resulting from the scarcity of coal, pledges itself to attend work regularly."

Since the recent large advance of wages, many of the pitsmen have spent the greater part of their time in drinking, racing, and dog-fighting.

Compressed Irish peat, possessing the density of coal, and well suited for household purposes, as well as manufacturing uses, may be shortly expected in large quantities in the market. New and improved compressing-machines have been perfected, and are expected to be set at work in March, under the auspices of a company established for the purpose of supplying peat for all general purposes.

The men on strike in South Wales have accepted the mediation of Sir Rowland Stephenson, who by this time has doubtless communicated the result of his interview with the masters. It is earnestly to be prayed that work may be speedily resumed.

TECHNICAL EDUCATION IN SCOTLAND.

A COMMITTEE appointed by the Town Council of Edinburgh have recommended to the governors of Heriot's Hospital a scheme for a complete system of theoretical and technical education, which consists of a school for boys between twelve and fifteen, and an evening technical college for adults and apprentices. Meetings have recently been held at Dunse, Kelso, Lauder, and other places, where resolutions have been carried recommending the School Boards of Scotland now in course of election to consider how the elements of science and drawing can be introduced into Board schools. The Rev. J. Macleod, the Rev. J. Bell Middleton Nisbett, and other ministers of the Established Church, have taken a warm interest in the meetings.

At the last meeting of the governors of Heriot's Hospital, a letter was read from Miss Blyth, secretary to the Society for the Employment of Women, urging that, should the governors agree to establish a technical school in Edinburgh, provision should be made for imparting technical education of certain kinds to women. For some time past technical instruction of a useful kind, and especially in the use of the sewing-machine, has been imparted to girls in at least two of the Heriot out-door schools, and with gratifying results, and Councillor Mitchell is, we understand, moving to have the whole of the out-door schools supplied with sewing-machines. Should this be accomplished, a large number of girls in the families of the working classes of Edinburgh will soon be put in the position of being able to earn a livelihood so soon as they leave school.

"THE EFFECT OF CHARCOAL ON PLASTERING."

SIR,—Your correspondent, "John Davidson," in answer to "L. L.," would be a very clever man if he could set an *old* ceiling with *pure* coarse plaster of Paris and *pure water*, and would be deserving of a medal made of the same material, and would be the only member of the large family of plasterers (if he is one) that could accomplish such a feat, as good pure coarse or fine plaster sets, when gauged with *pure water*, in about two minutes; in fact, would get as hard as a brick before he could spread one trowelful, and the suction in an old ceiling would be so great as to prevent the spreading; also, even if it could be done, the old ceiling, being highly impregnated with the sulphuric acid, would soon bleach through, and the plaster being porous, it would soon absorb a large amount of the gas, so that the remedy he suggests would be as bad as the disease.

Having condemned his suggestion, allow me to make one. If, as "L. L." states, the ceiling is in a bad condition, remove it, laths also, if unsound; re-lath it, painting the heads of the nails to prevent corrosion; then render it in one coat in Keene's or Parian coarse quality; two of and, washed *free* of organic matter, to one of cement, with about the same amount of clean sow-hair as is put into lime and hair; then, when hardened, set it with pure white Keene's or Parian cement gauged with *pure* water, and as this does *not* set quickly it gives time for trowelling, and with plenty of elbow-grease introduced into that operation the surface becomes a polished one: therefore the gas would not attach to it as to a rougher surface; and, being a pure white, it would require neither painting nor whitening, as the sulphuric acid gas soon turns them a brownish yellow. *If* at any time it should discolour, it can easily be removed by the application of clean hot water and American potash, applied with a soft brush or house-flannel. At the same time, I would recommend the introduction of one or two perforated zinc ventilators, according to the size of the ceiling.

WILLIAM PULHAM.

SIR,—As Mr. Davidson has mentioned, in his letter under the above heading in your last issue, that Martin's cement might be used for the ceiling in question, "or a coating of the same, from ¼ in. to ½ in. thick on the surface of the ordinary plaster-work," allow me, as the manufacturer of this cement, to say that to use it in the manner described is not at all to be desired. The under coat, formed of common lime (carbonate) and sand, would not assimilate with the finishing coat; consequently the latter would shell off, to the annoyance of all concerned.

I would suggest that for the particular purpose now required, slabs of equal parts of Martin's cement and clean sand be formed, about 1 in. thick, with copper wire or wire-gauze embedded in the middle. When sufficiently dry, these might be screwed up to the timber of the roof, and then finished with pure cement, forming a strong fire-proof ceiling, which would not be likely to crack. Plaster would not stand for any length of time.

J. C. PART.

SOCIETY OF ARTS' GRATE COMPETITION.

SIR, Now the Society of Arts have offered prizes for newly-constructed grates for the "economical use of coal for domestic purposes," I beg you will kindly insert the following questions, which, I have no doubt, have presented themselves to other intending competitors as well as myself.

Is it requisite for a competitor to take out a "patent" or get his grate "registered" before he can be absolutely protected from infringement? If not, who is responsible for the protection of all the grates sent in for competition, and preventing other people from taking out a "patent" for any one of them before the prizes are awarded?

I trust that among the numerous readers of your journal some one will be good enough to reply to the above questions for the benefit of competitors.

J. M. GRIFFITH.

THE BRIGHTON AQUARIUM.

SIR,—Being at Brighton on Saturday last, of course I visited the Aquarium, and need hardly say, it being my first visit, that I was much interested with what I saw; however, not being a *student* of the inhabitants of the "vasty deep," my attention was soon directed to other objects of interest, which were not a few. That claiming my preference, and which led me to write you, was the very attractive reading-room. When away from home, one feels very forcibly the value of the "press;" and no place is I think of more value to the adult population than a public reading-room. Its tendency is to widen thought, and to bring opposite parties to see that oftimes they are not so different in spirit as in method. Who can calculate the amount of force lost to progress from prejudice, and ignorance of the true spirit animating those differing as to means? This reading-room at the Aquarium was the only one I had an opportunity of visiting while at Brighton; and being desirous of seeing my *Builder*, I asked the attendant for it, not seeing it on the tables. Fancy my surprise at learning "it was not taken in"! A public reading-room, "liberally supplied with magazines and newspapers," and yet to be minus the *Builder*, seemed to me an anomaly.

I should like to note with satisfaction the course taken by the directors in opening the institution on Sundays; the good behaviour and pleased faces of many, evidently come from the surrounding country districts, struck me as calculated to allay any fears that many might have entertained as to the result of the Sunday opening.

Worcester Park, Surrey. MARK H. JUDGE.

DEFECTIVE SLATE CISTERNS.

HILL & CO. *v.* GREEN AND ASHTON.

IN the Lord Mayor's Court, on Tuesday, a muster seldom seen there of architects, surveyors, and builders, were present as witnesses in the case of Messrs. Hill, Keddell, & Waldram, who sued Messrs. Green & Ashton, slate merchants, for breach of contract, and for 24*l.* 9*s.* 8*d.* damages.

Mr. Willis was counsel for the plaintiffs, and Mr. Talfourd Salter and Mr. Kempe, barristers, appeared for the defendants.

In answer to the questions put by the counsel, Mr. John Waldram stated, that in the early part of 1872 he contracted with Ashton & Green's firm to erect a large slate cistern for a manufactory in Farringdon-street, City, and the contract price was to be about 28*l.* After the cistern was erected their firm received several complaints that the cistern would not hold the water, and they referred these complaints to Messrs. Ashton & Green, and applied to them to make good the defect, and properly carry out the contract they had entered into. Upon this Messrs. Ashton & Green sent one of their men, who made some patching alterations, but which did not effectually prevent the leakage; and upon being applied to again to make a good job of the cistern, they paid no further attention to the matter; and as the escape of water was causing damage and inconvenience, they (plaintiffs) were compelled to have the cistern made good, at an expense of 24*l.* 9*s.* 8*d.* Extra expense was incurred consequent upon being compelled to remove the roof of the building, a difficulty the slaters had not to meet when the cistern was first erected.

It being intimated that the defence to the action would rest as to whether the fault did not lie with the builders in not preparing sufficient underneath support for the cistern, the evidence upon this point was the chief contention on both sides.

Mr. Gunning, architect, said he remembered seeing the cistern put up by the defendants' men, and the bearers were, in his opinion, strong enough to hold twice the weight of water the cistern held. He considered that the leakage arose from the sides of the cistern not being properly grooved into the bottom, so that when three tons of water were in the cistern, the pressure forced the bottom to give way, and being only supported by the bearers instead of its own strength, which should have been the case, the leakage would arise at sides and bottom.

Mr Gunning's views were backed up by several practical men, and Mr. Hayward, who made a good job of the cistern, stated that he found the grooves and joints in the slate filled with cement instead of being properly hollowed out, as such a strong job required. He considered the bearers sufficiently strong and close enough to hold twice the size of the cistern.

A witness also deposed that the cistern leaked the first day water ran in, and at the depth only of 1½ ft.

Counsel for the defendants, and several architects, builders, workmen, and slate masons, on the other hand, stoutly urged that the job was performed in a workmanlike and tradesmanly way; that the beams did not sufficiently support the cistern which had been fixed on two bars of iron which were too far apart, and the weight of water had strained the middle and caused the leakage; that when Mr. Hayward was called in, he noticed this defect, and had another bar placed in the centre, and when this was done the leakage ceased. The defendants further contended that it was no part of their contract or duty to look after the supports of a cistern. All they engaged to do was to erect the cistern, and if the whole building fell down when the water filled the cistern, they would not be liable for the damage, and that it was the place of the party who ordered the cistern, to see that the beams were placed in correct position.

In answer to this view of the matter, Mr. Willis urged that the contract was to supply a cistern fit for the use it was intended for, and to hold water, and this had clearly not been done; and the defendants not having carried out this agreement, they were liable to the costs incurred by the plaintiffs in making good the defects.

The Deputy Recorder, Sir T. Chambers, M.P., was stopped in his summing up by the jury returning a verdict for the plaintiffs for the full amount.

A WRINKLE FOR HOUSE DECORATORS.

Dunn v. *Burke.*—This action was brought, in the Westminster County Court, by a builder and house decorator, of Brewer-street, Westminster, against Lord Burke, of the Albany, Piccadilly; and the sum sought to be recovered was 15*l.* 7*s.* 3*d.* for work done under contract, and for extras.

From Mr. Dunn's statement, and his witnesses, it appeared that last October Mrs. Hanson, housekeeper to the defendant, had given an estimate for whitening the ceilings of the chambers in the Albany, and for some repairs of the bath-room.

Previously to supplying the estimate, the plaintiff's foreman acquainted the housekeeper that, before the work could proceed with, it was necessary that the rooms should be cleared of pictures, furniture, &c.; and she was asked if the making of these preparations were to be included in the estimate, and Mrs. Hanson said it was not.

After the estimate had been forwarded, the housekeeper informed the plaintiff that Lord Burke had agreed to it, and that the work was to be proceeded with directly. Upon the foreman taking the men to the job, he found nothing had been removed to make way for the workmen, and he again told the housekeeper it was necessary that the pictures, clocks, and furniture must be taken out of their way; when the housekeeper said she was unable to remove the things, and that the workmen must do it. The foreman told Mrs. Hanson that this labour was not provided for in the contract, and that if the workmen did it extras would have to be charged; and the housekeeper said Lord Burke must pay for it, of course. The work contracted for took up 116 hours. Upon the bill being sent in Lord Burke refused to pay more than the estimate, and offered 11*l.* 10*s.*, which Mr. Dunn refused to take.

Several decorators were called to speak to the custom of the trade charging for dismantling, when not set down in the contract, and that the charges were fair and reasonable.

Lord Burke said he was the eldest son of the Marquis of Clanricarde, and occupied chambers in the Albany. By his direction his housekeeper applied to Mr. Dunn for an estimate for whitewashing a sitting-room, bedroom, dressing-room, and bath-room, and to make good a broken ceiling.

The estimate provided that the walls should be covered, to prevent damage to the pictures, looking-glasses, and book-cases, and this was provided for in the first item of the contract. He afterwards directed that two carpets should be taken up and beaten, and a door eased. Upon the delivery of the account he objected to the extra charge of 5*l.* 15*s.* 6*d.*, as he contended that these were included in the contract, but offered to pay for beating the carpets and altering the door, and upon asking the plaintiff's foreman what it was worth, he said 30*s.* would simply cover it. He desired the foreman to take the bill back, and get the items he disputed struck out, but he refused to do so. He then sent it back, stating that he would not pay for the dismantling. The articles in the rooms were not so numerous as to require 137 hours to do it, even if each were removed. He had tested the time by removing one picture from one room to another in five minutes; and as only about forty articles were removed, it would only occupy three hours altogether.

Mr. Reed, house decorator and upholsterer, said he had gone over the chambers and the contract, and he should have thought the sum of 6*l.* 13*s.* would have amply repaid the plaintiff for the whole of the work done. He should have been glad to do it for that payment. There was no need to remove the things. They could have been covered up.

Mr. Atkinson, for the plaintiff, said his client had

received a letter from Lord Burke, of a threatening nature, and Mr. Dunn had no choice but to bring this action, to show that he had in no wise imposed upon the defendant. He urged that the orders of the housekeeper to the foreman were binding upon Lord Burke, and that the plaintiff was clearly entitled to the whole amount.

The learned judge, Mr. F. Bayley, said he did not concur with the learned counsel; for, from the evidence of Mr. Reed, there was no necessity to remove the furniture, but simply to cover it over, to prevent the whiting spoiling it, and that was clearly provided for in the contract. He thought the sum paid into Court, being the contract sum and for beating the carpet, was all the defendant was entitled to pay, and his verdict would be for the defendant, with full costs of counsel, attorney, and witnesses.

THE TEMPLE OF DIANA, EPHESUS.

FOLLOWING up the information already made public through our pages and elsewhere, Mr. J. T. Wood has forwarded particulars of his recent discoveries on the site of the Temple at Ephesus:—

"The first two stones found this season were from the ante of the Pronaos, and represent two male figures in combat, the muscles of the chest of the most antique figure being highly developed; both figures are in very high relief, and perfectly nude. One or two less important fragments of sculptured drums of columns have also been found, and recently one very large fragment of a drum with the upper halves of two nude male figures in high relief. The figures are those of a bearded man leaning on a staff, and regarding with interest some object held in the hands of a younger, beardless man.

In respect to the probable height to which the sculpture on the columns was continued, I am of opinion that they were sculptured to the height of one-third of the shaft, and I believe one of the stones now in the British Museum, which certainly was not one of the lowest stones of the column, proves that there must have been at least two; the proportion, however, shown on coins representing the front of the Temple is about one-third sculptured, as nearly as I can remember. The extra width of the intercolumniations where the sculptured columns occur also goes far to prove that the sculpture was continued for a considerable height up the columns.

The masonry which supported the ten steps has been found comparatively undisturbed on the north side, and the entire width of the whole, measured on the lowest step, was 238 ft. 4 in., the Temple itself measuring 163 ft. 9 in. by 309 ft. 4 in.

The two columns *in situ*, the portions of walling of the 'cella' remaining, and the impression of other portions which have been removed on the rubble masonry, the masonry supporting the steps, from which buttresses were built opposite the foundation-piers of the columns, have enabled me to complete the plan of the Temple, which is now found to have been octostyle,—that is, having eight columns in front, and adorned externally with 100 columns nearly 6 ft. in diameter. The interior of the 'cella' must have been enriched with two tiers of columns of smaller diameter, as fragments of these were found near the walls.

The thirty-six sculptured columns (*columnæ caelatæ*) were, doubtless, placed at the western and eastern extremities of the Temple, as proved by the wider intercolumniations, thus allowing for the high relief of the sculpture, as found in the examples recently discovered.

Since writing I have discovered a large drum of a sculptured column at the extreme eastern extremity, with remains of six human figures, life size. It is thus proved that I was correct in supposing that there were sculptured columns in the rear as well as in the front of the Temple.

Another question is also settled by this last discovery, viz., the fact of the columns having been sculptured to a greater height than 6 ft., or one drum only. I have supposed that the sculpture was continued for at least one-third the height of the column. The diameter of the drum now found is 5 ft. 7½ in.; that of one of the others is 5 ft. 9½ in. This diminution in the diameter of the drums proves that the last found was not the lowest drum of the column, nor even the one directly above the lowest."

PRE-HISTORIC FORTIFICATIONS.

IN a lecture delivered a short time back at St. George's Hall, Langham-place, on "Pre-historic Fortifications and the Military Engineering of our Ancestors during the Stone Age," Mr. Lawson Tait said, everywhere we find traces of that rude life long anterior to the existence of civilisation. There may be distinctly traced the stages of the stone, the bronze, and the iron ages, as points of development in man's history; while other countries, not having made such advances, and having flourished as long, are only still in the stone age—all their implements being of stone. The state of a nation's warfare was a sign of its advancement, and this was exemplified in the construction of forts.

The earliest instance of armoury that we know of, was that of a chip-flint pebble, which was used either by being attached to a stick, or else clutched in the hand. The natural positions of defences used by our ancestors were those of an elevated character, and so in the construction of forts, the earliest and rudest of which were hill-forts. They were first constructed simply as places of refuge, and were made upon little table-lands. Afterwards we find that in the erection of these forts the masonry improves, and small oval chambers are introduced; then they become regular places of residence. In the county of Sutherland many of these forts were built entirely of stone, though earth-forts preceded them, and so were constructed on positions which were naturally strong. A remarkable feature in the construction of forts is that they were invariably built in sight of one another, and, by a system of telegraphy, the men in occupation could be on the alert in case of foreign invasion. One of these forts, situated in the Orkney Islands, stood a siege for nearly six months. Its shape resembled that of a dice-box, and it was built entirely of dry stone, no cement whatever being used. In some instances, the stones of which these forts were built must have been carried some miles' distance, and the industry displayed by the builders must have been enormous. Many of these forts are preserved to us now in consequence of the difficulty there is in destroying them, they being so substantially built. At Inglebury, in Yorkshire, there exist the remains of one of these forts, built on the top of a hill, which covered an area of thirty-one acres, scientifically inclosed by means of ramparts. In different parts of the Yorkshire hills, too, trenches have been cut some thirteen and fourteen miles in length. These and other defences evince in our ancestors not only an amount of engineering skill, but an enormous amount of patience; and considering the inefficiency of the implements they employed, these works must have involved a considerable amount of labour.

THE TRADES MOVEMENT.

Bradford.—In November last the masons of Bradford gave their employers six months' notice that at the expiration of that time they would require an advance of 3s. per week. Negotiations since carried on have terminated in a mutual arrangement between employers and employed. The masters agree to give their men an advance of 2s. per week upon their present rate of wages. The advance will come into operation in May next.

South Shields.—The joiners employed at the shipbuilding yards of Messrs. Redhead & Co. and Messrs. Softley & Co., have struck work for an advance of 3s. per week.

Airdrie.—At an adjourned conference of painters held between employers and employed it has been unanimously agreed by the employers to advance the present rate of wages from 6½d. to 7d. per hour, and the country wages from 3s. to 4s. per week.

Dunfermline.—The operative joiners and cabinetmakers have applied for a rise of wages to the extent of ½d. per hour, and intimated to their employers that they will come out on strike, after giving a fortnight's warning, if it be not granted on the 1st of March. The non-society men have given their consent to this resolution. Two of the masters have given a favourable reception to the demand. Certain by-laws for the regulation of all disputes connected with the trade have been submitted for consideration to the masters.

SANITARY MATTERS.

Nantwich.—The rural sanitary authority have appointed a sanitary inspector, with a salary of 300*l.* per annum, but who is expected to act as surveyor for the sewerage works. There were about 120 candidates, which number was first reduced to seven, among whom were Mr. J. S. Hodgson, Mr. Crees, Mr. Parry, and Mr. Maylo, to all of whose testimonials the chairman made special reference, and who, he said, were all men acquainted with sewerage. Mr. J. A. Davenport, of Over, said by Mr. Bailey Denton to be a good surveyor, was elected.

Berkshire.—An adjourned conference of the various sanitary authorities in Berkshire on the New Public Health Act, respecting the appointment of an officer of health under that Act, has been held at the Assize Courts, Reading. Mr. R. Benyon, M.P., presided. Mr. Henley, the Poor-Law Inspector, was also present. The delegates from the following sanitary authorities within the county of Berks signified the assent of the authorities they represented to the principle of combination in the appointment of the medical officer of health:—Abingdon (rural and urban), Bradfield, Cookham, Speenhamland, and Newbury rural, Newbury urban, Hungerford, and Wallingford, both rural and urban. The sanitary authorities for Windsor, both rural and urban, have not yet met, and the remaining sanitary authorities in Berks either positively declined or only assented to combination to a very limited extent. Resolutions were passed by the delegates of the assenting sanitary authorities, agreeing to appoint one officer of health for the whole of these districts, at a maximum salary of 800*l.*, the payment to be apportioned according to the rateable value of property in each district. A committee was appointed to carry out the details, consisting of the delegates from the assenting districts.

Newark.—A meeting of the sanitary authorities of the town of Newark and the county, convened at the instigation of the Inspector of the Local Government Board (Mr. Baldwin Fleming), has been held in the Drill-hall, Newark. Mr. Neville, of Sturton, was elected chairman, and there were present representatives from the following bodies:—Borough of Newark Improvement Commissioners, Mansfield Improvement Commissioners, Grantham Union, Radford Board of Guardians, Newark Union, Southwell Union, Worksop Union, Sutton-in-Ashfield Local Board, Mansfield Woodhouse Local Board, Basford Union, Hucknall-under-Huthwaite Local Board, Bingham Union, Hucknall Torkard Local Board, &c. Mr. Fleming addressed the conference at some length. In the course of his observations, he said the Government consented to repay one-half the salaries, in order that the burden might be lessened to the ratepayers; but they said if we repay this money,—

"We must have some guarantee that the officer is an efficient and independent officer. For that reason we must keep in our hands the power of saying we shall not approve an appointment unless we have evidence that the person proposed is fit to hold the office, and we must also keep in our hands the power of refusing to allow the dismissal of an officer, unless there are very good grounds for it."

These were the only conditions made by Government, and he believed there was no idea of centralisation, or any desire to obtain undue power to interfere with local authority. It ought to be distinctly understood that, according to the provisions of the Act, the officers of health would of themselves have no power to prosecute. They could only act on the instructions of the authorities by whom they were appointed, and those authorities took action on the reports that were made to them. There was no intention on the part of the Legislature of adding materially to the burdens of the ratepayers by compelling the local authorities to make the appointments in question. What they hoped was to reduce the preventible diseases to a minimum, and thereby greatly to lessen the burden which now fell upon the rates. It was not desired that the inspectors of nuisances should unnecessarily intrude themselves anywhere. After a lengthened discussion, Mr. W. Beevor proposed,—

"That in the opinion of this meeting it is desirable that a medical officer of health should be appointed for a large area, that he should be required to devote his entire services to the office, and that such a salary should be given as would command the services of an able, efficient, and independent man."

Mr. B. Walker, of Lenton, said that he should like to have an expression of opinion as to whether it was desirable to unite into large districts or not. He therefore moved as an amendment,—"That each district act according to its own judgment on the subject." Mr. Godber, of Balderton, inquired whether the Local Government Board would so far disapprove as not to allow each separate sanitary authority to appoint a medical man acting and practising in the district. Mr. Fleming: You have the power to appoint whom you like, providing he is properly qualified. The question was then put to the vote, and the original motion was carried by a majority of nineteen to fifteen.

THE CHAPEL AND HALL, WINCHESTER COLLEGE.

SIR,—Your correspondent, "D," in your last week's impression, concludes his letter,—"Now if the authorities really cannot afford these works of restoration, they ought instantly to open a subscription for the purpose." And "every one who knows Winchester College, must see that they have not sufficient funds, &c." It may interest "D," and others who may not know the facts, to be informed that Winchester College is one of the richest corporations in the kingdom; that their present income is 20,000*l.* a year, or more, and is increasing every day. At the present moment the college is said to be under commissioners, who are responsible, but who certainly do not take any active measures for the improvement of the college buildings, or their landed estates, dotted as they are over nine counties. Nor are the college funds much entrenched on by liberal contributions to schools, or public

charities in the parishes where the property is situate, the annual subscriptions seldom exceeding a *very few* pounds.

There can now be no reason, as formerly existed, for colleges and such like institutions to hold landed estates. And when it is known what a bar to improvement these properties frequently are—never managed as other estates,—the sooner the commissioners have power to sell their estates (without being obliged to re-invest in land), the better it will be for the colleges, their lessees, and the public generally.

The funded property of this college, I am told, is nearly 100,000*l.** So want of money cannot be urged as a reason why everything connected with this property should not be well done, and done at once.

NORTH HANTS.

FRESCO AND MURAL DECORATION.

THE Committee of the Council of Education have announced their intention of awarding a number of prizes for the best copies of any good examples of fresco or other wall-painting existing in the United Kingdom in connexion with ecclesiastical and other buildings. Information is also desired as to the former practice of mural paintings in these countries, and the artists who were engaged in the pursuit. Those supplying the information are required to state the name of the church or other old buildings on the walls of which the painting exists, the name of the town and county, whether in tempora, fresco, or oil; the size, the name of the artist if known or probable name, date of the work or probable date, name of any printed work [or manuscript] containing a description of the above.

The head-master of the schools of art in connexion with South Kensington will send circulars through the country detailing the particulars of the competition, and with a view of obtaining all possible information upon the subject. Some of our readers may help.

THE EMBANKMENT FROM CHARING CROSS.

SIR,—Should Northumberland House be removed, and should an opening be made through its site to the Embankment, I will presume that (especially if the trees at the two sides of the avenue so laid open be retained) a magnificent opportunity will arise for looking down such avenue. But must not the expense of destroying the house be supplemented by the further expense of providing an object to be looked at as the termination of the vista? The river Thames will, in perspective, be reduced to insignificance, if not hidden altogether behind parapets. Are the Metropolitan Board prepared to lay out a few thousands in the erection of something like an Albert Memorial on the Surrey shore?

G. M.

THE ROYAL GOLD MEDAL.

SIR,—Your correspondent "M. I. B. A." drew attention in your last issue to the proposed award of the Royal Gold Medal to Mr. T. H. Wyatt, and in a temperate and forcible manner pointed out the impropriety of the proposal, and indicated some of the ill results which will ensue if the ecommendation of the Council be confirmed by the Institute.

I fully anticipated when the announcement was first made that it would elicit some remarks from the professional journals, but as far as I have seen the letter of your correspondent is the first public notice that has been taken of the matter. This reticence in all probability arises from a desire to avoid any apparent disparagement of Mr. Thos. Henry Wyatt, who is universally esteemed both as an architect and a gentleman.† It is not, however, in any sense a personal question, but entirely a question of policy, and may, to divest it of all appearance of personal feeling, be put in this form: "Is it right for a public body, intrusted with the duty of advising her Majesty as to the bestowal of a mark of distinction, to nominate their own president for the time being for the honour?" The answer to that proposition must be in the negative. What would be thought of a Cabinet which advised the sovereign to confer a vacant Garter upon the Minister at the head of the Government? Such a course would be naturally considered improper and unbecoming, and yet it is precisely similar to the action of the Institute. Should architects have any less standard of honour than statesmen, or is there one code of honour among politicians and another for professional men?

The Royal Gold Medal is one of the few distinctions which fall to the lot of our profession, and it is important that this distinction should be distributed impartially, and that it should not be confined to a clique, nor be used as a reward for services to the Institute. The Council of the Institute are merely trustees of the Royal favour, and it is an abuse of that trust if they restrict their recommendation to Her Majesty among their own members, or allow any personal feeling or favour to influence their decision. Some of the later awards of the medal have been certainly open to question; but we have not had hitherto such a flagrant instance of official nepotism as the present proposal, and I trust that the profession will show its feeling with sufficient distinctness to induce the Council to withdraw their recommendation.

As I before remarked, the president of the Institute is in every sense an architect and a gentleman; and I can scarcely credit that he approves the action of the Council. I cannot believe that a man of his sensibility could accept the highest distinction awarded to his profession from the hands of his sovereign with any satisfaction to himself under the present circumstances.

CIVIS.

LEAD PIPES AND FROST.

SIR,—As a subscriber of more than twenty years, I have not read your pages without seeing many suggestions for preventing the bursting of water-pipes by frost; but none of them appear to find much favour, as the evil still wants a remedy.

I will venture to affirm that the suggestion mentioned in your last issue as finding favour in a discussion at the Inventors' Institute will not be much used, although there cannot be a doubt of its practical efficiency. A small india-rubber tube inside the ordinary lead-pipe need not be very costly; but it would puzzle many a workman how to finish off the end near the tap, or how to make a junction if the pipe branches.

If you think the following suggestion worth inserting, it is at your service. I would have made it some years ago, but should have preferred to know how it succeeded in practice.

Let an ordinary lead pipe be passed through a pair of rollers so as to flatten it slightly; the expansion of water within it during frost will only tend to bring it to a circular shape, and probably it will require many severe frosts to accomplish that, for even in lead there is some elasticity. An iron (wrought iron) or zinc pipe would probably always resume its flattened shape, after the frost is over. Other sections besides the elliptic might of course be applied—as half-round and three-quarter round, with a flat side to the wall. These sections for water or gas pipes would be far neater in appearance than the circular shape now universal.

F. H. M'LAUCHLAN.

CHURCH-BUILDING NEWS.

East Stoke.—The chancel of East Stoke Church (near Newark) has been restored, at the expense of Sir Henry Bromley, bart. It had a level plastered ceiling, high pews, and rough stone paving, the extreme end only of the chancel being raised one step above the floor of the nave. The improvements consist of new plinth and facing to a portion of the exterior, with eaves, gutters, and rain-pipes, a chancel archway with moulded jambs and bases, and carved capitals; a stone screen, with moulded quatrefoil perforations and coping, two ornamental panels inserted in the western spandrels of the arch, and an oak door and frame with moulded and carved stone dressings on the north side. There are now five steps, including the altar, of red Mansfield stone, with inlaid encaustic tile risings and rounded nosings. The floors are laid with Minton's tiles; those of the Sacrarium being the gift of Captain Bromley, R.N. The plastering has been removed from the interior, the wall-stones pointed, the tie-beams and king-posts cut away, the principals cross-braced and secured with iron tie-rods. A polygonal moulded and panelled ceiling is formed of pitch-pine. There are an oak altar-table and pitch-pine open sittings. The book-rests to front seats are supported on iron standards. These improvements bring out the fine proportions of this chancel, and show the tracery in the east window, previously hidden by the plastered ceiling. The gallery is removed to the west end of the nave, and the tower archway opened out and restored. The works were carried out under the direction of Messrs. Hine & Son, of Nottingham, by Mr. R. Young, of Lincoln, builder; the carving was by Mr. J. M. Thompson, of Nottingham.

Lightcliffe.—The parishioners of Lightcliffe have had a liberal offer made to them, at a meeting, by Major Foster, of Cliffe Hill. There being obstacles in the way of building on or near the site of the present church, the major offered a site for a new church on a portion of his own park, more conveniently situated for the parishioners at large, and to build the church at a cost of at least 5,000*l.*, capable of accommodating from 400 to 600 persons (a third of the sittings to be free), trusting to the parishioners to provide a clock, peal of eight bells, and an organ. The offer was most heartily received by all present, and they promised to do their part in the work.

VARIORUM.

"THE Newspaper Press Directory and Advertisers' Guide. 1873. Mitchell & Co., contractors for advertising, Red Lion-court, Fleet-street."—This is the twenty-eighth annual issue of a very useful periodical. Besides containing full particulars relative to each journal published in the three kingdoms, it contains a directory of newspaper proprietors and a newspaper map of the United Kingdom, with a directory of magazines, reviews, and periodicals; and many newspaper advertisements.——"Dulwich College and the Endowed Schools Commissioners. A tract for the times. By John R. Adams. London: Davidson, High Holborn." This tract enters pretty fully into the affairs of Dulwich College, and treats of the merits or demerits of the authorities. The author thus sums up his conclusions:—"The noble foundation of God's Gift College at Dulwich ought to be for ever applied to the uses for which the founder designed it, and which, in framing the scheme which was sanctioned in 1857, the Charity Commissioners respected. We do not mean to say that the scheme of 1857 needs no amendment; on the contrary, we think that in many points it could and ought to be much improved; and in conclusion we will here indicate the points alluded to.

"1. The governing body should be remodelled, and its powers for evil checked, as to leases and management of property, and as to the exaction of high fees for education.

2. Such an organisation of the schools, by means of departments and otherwise, should be enforced as will spread the benefits of the endowment over the widest possible area, and in the best possible way, in conformity with the light of modern times, and not in slavish obedience to ancient notions.

3. In particular, by means of a school or college devoted to the subject, technical instruction of the most ample kind and character should be afforded.

4. The tuition fees should be fixed as low as possible,—the rates named by Canon Robinson and Mr. Latham are ample, and the endowment used to supply what the fees do not pay.

5. Local schools should be established in the parishes now entitled to the benefits of the endowment, according to their several needs, having regard to existing means of education in the respective localities.

6. Girls' schools of every grade should be established as soon as possible, at the low scale of fees mentioned by Mr. Fearon.

Generally, the endowment should be so used as to carry out substantially the presumed object of all endowments, namely, to help those who need help, and not those who boastfully disclaim all desire or intention of participating in charity."

——"Light Railways and Tram-roads,—their Advantages, &c. By Arthur C. Pain, Assoc. Inst. C.E. The *Field* Office, Strand." The author of this tractate treats of the advantages of light railways to landowners, the cost, mode of construction, and working, with remarks on the raising of the necessary capital. This is an important subject, to which we have already given repeated attention.——"An Essay on Astro-Meteorological and Political Sciences, entitled Coal-Mine Explosions, and their Cure; including a Warning to Rulers. By W. Carr Ash. London: W. C. Ash, 8, Eton-road, Eton Park, Haverstock-hill." This author is of opinion that,—

"Coal-mine explosions are caused by two opposing elements, hot and cold air, coming in contact, or in collision, the result being an explosion, and, consequently, a flame,—or lightning, for, by a wrong system of ventilation, the coal-mine becomes a species of volcano."

* I know this as a *fact* from private sources.

† Quite right, so far as we are concerned. We feel strongly the force of the objection taken, but are not willing to say one word in disparagement of Mr. Wyatt's claims.

Though these catastrophes may be prevented, he adds, and coal-mines rendered as safe to work in as stone-quarries, yet the men must be taught the truth, that all the science in the world will not prevent accidents that may be caused by folly, carelessness, or indifference, to prevent which rigid rules are necessary. The author has special ideas as to the aurora borealis, which he insists on treating as plural in the singular number, and he also deals with a variety of subjects, such as pauperism, politics, and political economy; predicts events such as that the Prince of Wales is "destined to reign," &c.; and seems certain that Britons are descended from the lost tribes of Israel, and have a grand destiny to accomplish.——"Report to the City Sewers Commission on Railway and Tramway Projects. By W. Haywood, Engineer and Surveyor to the Commission. January 17th, 1873." In this Report to the Finance and Improvement Committee of the City Sewers Commission, Mr. Haywood treats of the railway and tramway projects before Parliament in the present session, as they affect the City of London. The following is a list of them:—City and West End Railway, Metropolitan Railway, Midland Railway (Additional Powers), East and West Metropolitan Junction and Cannon-street Railway, North Metropolitan Tramways, and New Mint Building Site. The railway projects will interfere with the sewerage, he states, and ought to be dissented from in order that the interests of the public and the City authorities may be secured. The New Mint site is the same as before, on the Thames Embankment, near Temple-street and the Gas Light and Coke Company's premises.

Miscellanea.

A New Safety Lamp.—A patent has been taken out by Mr. William Yates, of Westminster, modifying the old lamp in the following way:—He has removed the wire gauze from that part of it which surrounded the flame, and replaced it by a strong lens or bull's-eye glass on one side, and a silver reflector on the other. The result of this arrangement is that his lamp gives "a cheerful light, estimated at twenty times that of the old Davy, and sufficient for all necessary purposes." The lamp is easily opened, but this cannot be done without at the same time withdrawing the wick and extinguishing the flame, and it thus becomes impossible to obtain a light by opening the lamp. There are other improvements obviating objections to the old lamps. Mr. W. Galloway, we may here remark, has found that a sound-wave is capable of causing the flame within the wire-gauze cage of a safety-lamp to be transmitted to the external explosive atmosphere. This tends to show that the firing of a shot in a colliery may determine an explosion, not by actual communication of flame from the gunpowder, but solely by transmission of the sound to a safety-lamp placed in a dangerous part of the workings.

The Fever from Infected Milk at Leeds.—Dr. Robinson, the medical officer of health for Leeds, has just presented his sanitary report to the Town Council, and in this document he gives full particulars of this peculiar dissemination of the epidemic, which he traced to milk used in common among those attacked; and on tracing the milk to the dairy, he there found typhoid fever very prevalent and fatal in the farmhouse, part of which, open to the sick apartment, formed the dairy, under circumstances which showed clearly how the contamination of the milk arose. He says, no fewer than eighty persons who had obtained this milk, which was of "superior quality," as evidence proved, were attacked by fever, and of this number fourteen died. At Armley, near Leeds, there has also been an outbreak of typhoid fever, and into this epidemic a special investigation has been made by Dr. Ballard (one of the medical officers of the Local Government Board, and who has had previous experience in milk poisoning at Islington), and from whom a report is shortly expected.

Rateable Property.—For all England and Wales the amount of the gross estimated rental, under the valuation-list in force at Lady-day, 1871, was 126,473,924*l.*, and under the list in force at Lady-day, 1872, 129,038,976*l.* The amount of the rateable value, under the valuation-list in force at Lady-day, 1871, was 107,398,242*l.*, and under the list in force at Lady-day, 1872, 109,447,111*l.*

Obstruction of Light.—An arbitration has taken place in the New Music-hall, Sheffield, before Mr. M. E. Hadfield. The parties to the arbitration were Mr. William Horridge, horn, stag, and scale merchant, Barker-pool, and the Music-hall Company, Limited. The arbitration was for the purpose of ascertaining the amount of loss which had been, and would be, sustained by Mr. Horridge in consequence of air and light to his works being obstructed by the erection of the New Music Hall. The company, by the order of reference, had admitted their liability to pay damages, and the only question to be settled was the amount which they were to pay. Several witnesses gave their evidence; among whom were Mr. Abbott, of Flockton & Abbott, architects for the music-hall, and Mr. Jenkinson and Mr. Fowler, architects. Mr. Jenkinson estimated the depreciation to the factory at 288*l.* and Mr. Fowler at 158*l.* The arbitrator promised to give his decision on a future day.

Science in Liverpool.—A private meeting held last week in the townhall, Liverpool, under the presidency of the mayor, is interesting, as showing that there is really a scientific feeling in that great commercial emporium. The meeting, though very unpretentious, is expected to result in considerable benefit to the town, where science has too long been almost ignored. The object is to induce visits from the greatest scientific lecturers; and a guarantee fund has been established to secure the managing committee against loss. The presidents of all the local learned societies have given in their adherence to the scheme, and attached their names to the list of guarantors. Altogether the Liverpool Science Lecture Association wears an appearance of reality that promises well for its success. The mayor evinced much interest in the subject, and the guarantors are nearly all gentlemen who may be relied upon for active aid.

Windsor Literary Institution.—Last week a lecture was delivered to the members of the above Institution by the Rev. H. F. Limpus, one of the minor canons of St. George's Chapel, the subject being "Architects and Architecture." The lecturer, in commencing, said he hoped they would not think he was sailing under false colours in announcing that he was going to address them on architecture and architects, and so leading them to expect that he was going to treat of the various styles of architecture,—such as the Ionic, the Italian, Gothic, Early English, and so on,—and on men who were eminent in that profession, for that was not his intention; but he was going to tell them of various animals, insects, and birds, who were not only the architects, but the constructors and builders of their own habitations. Misleading titles such as this should always be avoided.

The Reclaimed Land on the Thames Embankment.—The question as to the ownership of the reclaimed land on the Embankment claimed by the Crown, but disputed by the Metropolitan Board of Works, is likely, it would seem, to be amicably settled. After demanding 40,000*l.* for the ground which the Board required to be preserved as an open space, the Government are now, through the Commissioners of Woods and Forests, willing to accept 3,000*l.*, subject to the Metropolitan Board (in the event of their obtaining an Act to enable them to acquire Northumberlannd House), permitting the Crown to build upon a portion of the estate so acquired, as well as upon a part of the Embankment their legal right to which is hardly disputed.

Metropolitan District Railway.—The report of the directors read at the half-yearly meeting of shareholders gave the total receipts at 99,642*l.*, being an increase of 21,799*l.* over the corresponding half of the previous year. The net profit on the half-year's working was 49,071*l.*, which enabled the Board to pay all liabilities, interest, &c., and carry a small balance to current revenue account. The number of passengers carried had been about one million and a half in excess of the previous half-year, and the receipts therefrom had been:—1st class, 2,000*l.*; 2nd class, 2,500*l.*; and 3rd class, 12,600*l.* An increased receipt of 21,700*l.* had been earned by an increase of only 7,360*l.* in the expenses.

Society of Lady Artists.—The exhibition (9, Conduit-street) will be opened to the public on Monday next. The private view will take place on (this) Saturday.

Mortality of Preston.—Mr. Radcliffe, of the medical department of the Local Government Board, has just given a statement from inquiries he has made into the increased mortality of Preston. During one particular period of the past year the death-rate in Preston was higher than in any other part of the kingdom. He has inspected the different localities in the town where the greatest number of deaths have occurred, and the result is that the unusual degree of mortality is owing to defective sewerage and vitiated air. But the principal cause he ascribed to an imperfect system of cleansing the ashpits, and intimated that the local board of health should take the scavenging into their own hands, and have the middens systematically emptied.

Archæological Discovery in South Wales.—A few days ago, Mr. Howel Pugh, of Tyddynbach Farm, Llanfachreth, near Dolgelly, discovered a vault containing human remains in a field which he was preparing to plough. The field rises abruptly in the centre, like several other fields in the locality, and on this eminence stood a huge stone, which interfered with ploughing operations. Mr. Pugh therefore determined to remove it, and eventually the stone was dragged away by a team of horses. A deep hole was then found, and at the bottom of it very dark earth mixed with stones. It was also discovered that there was probably a cavity lower down, and a little excavation revealed a stone vault, containing human remains, a brass dagger, and a gold ring.

Earthquakes.—The attention of men of science is beginning at last to be drawn to the remarkable frequency of the occurrence of earthquakes in divers places throughout the earth's crust. Mr. R. Mallet, F.R.S., in his introduction to a translation of Professor Palmieri's account of the eruption of Vesuvius last year, says that "if we were possessed of a sufficient report from all parts of our globe, we should probably find scarcely a day pass without a very sensible earthquake occurring somewhere; whilst, as regards still smaller tremors, it might almost be said that our globe, as a whole, is scarcely ever free from them." Moreover, "we may expect at present one great earthquake about every eight months."

Serious Explosion of Gas.—A gas explosion recently took place on the premises of Mr. Jay, Stafford-street, Walsall, by which parts of the partition walls were blown into the next house; six doors smashed, some of them being carried away bodily; shop windows and other windows blown out, and the property generally shattered, besides much furniture being destroyed. The accident was occasioned by a gasfitter having left the supply-pipe in a room insecure or unplugged. The gas found its way into the room above; and a gasman, who had been sent for, applied a lighted candle to the hole through which the pipe passed up.

The Tramway-Scavenge System.—It is proposed that our tramway service should be utilised during the small hours of the morning, or immediately after the passenger traffic ceases, for the purpose of conveying the scavenge and other rubbish of the City to suitable depôts or "shoots" outside the metropolis, and in several places where the tramway service exists the Local Boards are making their arrangements for availing themselves of this expeditious service. It is reported that all the chief towns and cities in Great Britain, through their public boards, will immediately follow suit, believing the system to be a simple, expeditious, and economical one. The idea is a good one.

Architects on the Stage.—Friday evening, the 21st of February, at the Architectural Association, was occupied with the members' *soirée*, with amateurs in farces, divers kinds of music, and a good muster of sociable members. The dramas were voted successful when the audience could not help laughing, and the end of "The Goose with the Golden Eggs" brought all the performers before the curtain. The programme, with the usual enigmas, looked, perhaps, a little late in the day; most of the vagarious architectural doings being by this time where are the *neiges d'antan*; but of course with dry filling old printed matter will make good new squibs.

Cleansing Carriage-ways.—Mr. William Haywood has made a valuable report to the City Commissioners of Sewers upon the results of experiments in cleansing the carriage-ways of main streets. We will give the pith of it on another occasion.

Another Bridge broken down by a Traction-engine.—A fatal accident has occurred at the hamlet of Broom, in the parish of Southill, near Biggleswade, according to the *Bedfordshire Times*, which states that a traction-engine of 10 or 12 tons weight, broke down a bridge of five skeleton iron girders, erected about fifty years since over a bye stream of the river Ivel, 2 ft. deep. One man, whose leg was caught under the machinery, but not broken, died of exposure to cold, as he could not be extricated for some time, and declined to have his leg amputated. Another traction-engine had passed safely on a previous occasion.

Stone in Yorkshire.—The stone trade in Yorkshire is still increasing, and the quarrymen are again agitating for a further advance in wages. Mr. Stephen Seal, of the Darfield quarries, conceded a further rise on the 20th ult. The price of stone, though higher, has not been advanced, we understand, in proportion to the increased rate of wages; and considering the enormous advance in coal, iron, and steel, the position of quarry proprietors is not an enviable one. An advance in price and the stoppage of some saw-mills are predicted.

The Late Mr. George Shalders.—A committee of artists has been formed for the purpose of making some provision for the family of the late Mr. George Shalders, member of the Institute of Painters in Water-colours. In addition to subscriptions, the committee are now forming a collection of drawings and sketches in oil and water-colours, to be afterwards disposed of for the fund. Mr. J. H. Mole, of 7, Guildford-place, Russell-square, W.C., is the treasurer; and the Bloomsbury branch of the London and Westminster Bank receives subscriptions.

The Age of Wood.—A discovery was made by Mr. John Glasbrook, in an old adit level, at Pwllycwm Colliery, near Landore. The men are sinking a new pit there, and in an old adit level, filled with rubbish, came across two old wooden shovels, evidently used by the miners hundreds of years ago. The handles of these shovels are of ash, the blades of oak (still as hard as steel). There is not a particle of iron even in the fastenings, and those implements of trade must have been left where now found at least 200 years ago.

Science in Daily Life.—The last but one of the present series of lectures on the application of science to the requirements of daily life, organised by Mr. Thomas Twining, in connexion with the late Economic Museum at Twickenham, and lately delivered on alternate Tuesday evenings, at the Lambeth Baths, was given on Tuesday last, when the subject was the important but much neglected one of "the human body."—*South London Chronicle.*

Heating Buildings.—An invention of Mr. W. G. Lankester has been tried in the New Guildhall, Winchester. It consists of cast-iron rectangular hollow chambers forming the skirting of the room. The heated water passes through these, as it does through ordinary pipes. The patent hot-water skirtings, however, appear just like wood skirting, and are therefore practically invisible, and they afford an opportunity for the introduction and warming of pure air at the back.

Design for a Desk.—At the last meeting of the Metropolitan School Board, on the motion of Mr. McGregor, chairman of the School Management Committee, it was agreed to empower that committee to offer a prize of 10*l.* for the best design for a desk and bench of the description recommended in the report.

Literary Dinners.—The Right Hon. W. E. Gladstone has accepted an invitation to preside at the anniversary dinnner of the Royal Literary Fund on Wednesday, the 28th of May next. The annual festival in aid of the Newspaper Press Fund will be presided over by Mr. Froude.

Oxford Architectural and Historical Society.—The Saturday walks and excursions will be continued, commencing March 1, at 2.15 p.m. (Oriel College and St. Mary Hall); and on March 8, a visit will be paid to Lincoln College and All Saints' Church.

Oil for the Lighthouses.—The Honourable Corporation of Trinity House have accepted the tender of Sir W. A. Rose & Co., of London, for no less than 75,000 gallons of colza oil for the English and colonial lighthouses.

Pictures and Sketches.—We would remind our readers that a sale of the late Mr. Thomas Allom's pictures, drawings, and sketches will take place at the rooms of Messrs. Christie, Manson, & Woods, on March 14th.

Mr. Cole, C.B.—It is said that Mr. H. Cole, C.B., of the South Kensington Museum, has accepted the presidency of the Birmingham School of Art.

TENDERS

For six houses, with shops, on the Torrington Gardens estate, Finchley. Mr. M. C. W. Horne, architect:—

Walton	£5,229 0 0
Gilmour	4,980 0 0
Carter	4,920 0 0
Thompson & Smith	4,877 0 0
Wagner	4,784 0 0
Cooper	4,775 0 0
Niblett & Son	4,580 0 0

For rebuilding the premises, Nos. 13 and 15, Kingstreet, Hammersmith, for Mr. Charles Bown. Quantities supplied by Messrs. Welsh & Atkinson. Mr. E. Woodthorpe, architect:—

Macey	£3,537 0 0
Braithwaite	3,450 0 0
Hill & Sons (too late)	3,370 0 0
Perry, Brothers	3,300 0 0
Colls & Sons	3,214 0 0
Turners & Sons	3,163 0 0
Downs & Co.	3,160 0 0
Pritchard	3,147 0 0
Chamberlen, Brothers	3,047 0 0
Adamson & Sons (accepted)	2,994 0 0

For Messrs. Mabey's offices, Throgmorton-street. Mr. John J. Cole, architect. Quantities supplied by Mr. James Barnett:—

Hill & Sons	£13,640 0 0
Ashby & Sons	12,150 0 0
Henshaw & Co.	11,900 0 0
Parry & Co.	11,500 0 0
Kilby	11,189 0 0

For warehouse, Bishop-street, Stockton-on-Tees, for Messrs. W. Bennington & Son. Messrs. Alexander & Henman, architects:—

Craggs	£550 0 0
Cook	479 0 0
Hey & Sons (accepted)	440 0 0

For schools (to accommodate 1,000 children), master's and mistress's houses, boundary-walls, &c., in Denmark-street, Middlesborough, for the Middlesborough School Board. Messrs. Alexander & Henman, architects:—

Adamson	£8,785 0 0
Bellerby	6,160 0 0
Oliver	5,854 12 1
Johnson	5,623 0 0
Shaftoe & Barry	5,432 0 0
Stainsby	5,338 0 0
I. Johnson (accepted)	5,216 0 0
Bulmer & Co.	3,884 0 0

For a new bank at Dover, for the London and County Banking Company. Mr. Fred. Chancellor, architect. Quantities by Mr. Sydney Young:—

Rider & Son	£4,704 0 0
Dove, Brothers	4,135 0 0
Stiff	4,124 0 0
Hill & Son	4,048 0 0
Denne	3,898 0 0
Adcock & Rees	3,853 10 0
Cooke & Greene	3,783 0 0
Wilson	3,732 0 0

For building a new bank, in Clement's-lane, City, for the Bank of British North America. Mr. Fred. Chancellor, architect. Quantities by Messrs. Hovenden, Heath, & Berridge:—

Brass	£11,530 0 0
Brown & Robinson	10,060 0 0
Conder	9,950 0 0
Hill & Sons	9,820 0 0
Perry & Co.	8,965 0 0

For building new schools, at Great Baddow, Essex. Mr. Fred. Chancellor, architect. No quantities supplied:—

Gardner	£1,433 0 0
Brown	1,415 0 0
Saunders	1,415 0 0
Gozzett	1,365 0 0

For building a chapel, in Heaton-road, Peckham-rye. Messrs. W. Berryman & Son, architects:—

Ray	£2,349 0 0
Tarrant	1,449 0 0
Sawyer	1,394 0 0
Niblett & Son	1,390 0 0
Dewell	1,347 0 0
Brindley	1,298 0 0
Cook	1,258 0 0
Faulkner	1,248 0 0
Cooper	1,240 0 0
Marsland & Sons	1,229 0 0
G. & S. Fisher	1,197 0 0
Crowhurst	1,175 0 0
Shapley	1,135 0 0
Munday	1,080 0 0

For building new schools, at Mayland, Essex. Mr Fred. Chancellor, architect. No quantities supplied:—

Stammers	£975 0 0
Saunders	965 0 0
Gozzest	825 0 0

For the erection of a cottage residence, at Caple-le-Ferne, near Folkestone, Kent. Mr. S. Slingsby-Stallwood, architect:—

Holdom	£610 0 0
Prebble	594 0 0
Brooks & Slade	564 0 0
Gore	520 0 0
Pain	499 10 0
Webster (accepted)	486 0 0

For roads and sewers, on Great Medgbury, close to New Swindon, Wilts. Mr. W. Read, surveyor:—
Contract No. 1.

Barnes	£356 0 0
Wiltshire	343 8 0
Phillips (accepted)	338 0 0

For the erection of a dwelling-house, at Portmadoc, for Capt. Hugh Jones. Messrs. Roberts & Morrow, architects:—

Humphreys	£300 0 0
R. Griffith	282 0 0
Lloyd	280 0 0
Roberts	279 0 0
Hughes	275 0 0
O. Griffith	274 0 0
Pritchard	273 0 0
Davies (accepted)	270 0 0
Williams	261 0 0

For the erection of a dwelling-house, at Portmadoc, for Mr. Ellis Williams. Messrs. Roberts & Morrow, architects:—

Humphreys	£210 0 0
Roberts	191 0 0
O. Griffith (accepted)	184 0 0
R. Griffith	183 0 0
Pritchard	168 0 0
Davies	161 0 0
Williams	154 0 0

For the erection of a mansion (irrespective of decorations), at Oldway, near Torquay, Devon, for Mr. J. M. Singer. Mr. Geo. Soudon Bridgman, architect. Quantities supplied:—

Goss	£16,300 0 0
Evans, Brothers	15,900 0 0
Lethbridge	15,484 0 0
Pethic	15,290 0 0
Finch	14,974 0 0
Hubbard	13,685 0 0
Matcham (accepted)	13,586 0 0

For new schools, Eagle-court, Clerkenwell, for the London School Board. Mr. E. R. Robson, architect:—

Wood	£6,607 0 0
Conder	6,050 0 0
Hill & Sons	6,000 0 0
Dove, Brothers	5,955 0 0
Scrivener & White	5,900 0 0
Tarrant	5,891 0 0
Grover	5,875 0 0
Niblett & Son	5,762 0 0
High	5,495 0 0
Wigmore	4,825 0 0

For the erection of two warehouses, in Queen Victoria-street, E.C. Mr. John Wimble, architect:—

Patrick & Son	£1,799 0 0
Scrivener & White	1,762 0 0
Kilby	1,683 0 0
Ashby & Sons	1,668 0 0
Newman & Mann	1,646 0 0
Mortar	1,633 0 0
Falkner	1,527 0 0
W. & F. Croaker	1,497 0 0

For making and forming roads, and laying in pipe sewer to same, on Clapham Park Estate. Mr. W. R. Lacey, surveyor:—

Neal	£1,695 19 2
Chappell	1,400 0 0
Elsdon	1,315 0 0
Wigmore	1,250 0 0

For the erection of schools, at Sutton, Surrey. Messrs. Henry Jarvis & Son, architects:—

Kent	£1,698 0 0
Thompson	1,634 0 0
Richardson	1,630 0 0
Henshaw & Co.	1,592 0 0
Potter & Ferridge	1,576 0 0
Marsland & Sons	1,559 0 0
Shepherd	1,476 0 0

Accepted for road and sewer, Gipsy-hill:—

Bysh	£475 0 0

For the erection of two warehouses, in Queen Victoria-street, City. Mr. Alexander Peebles, architect. Quantities supplied:—

	Add, if Portland stone is used.
Blaud	£10,168	£669
Morsman	9,610	670
Fish	9,200	630
Moreland & Co.	9,077	775
Myers	9,010	579
Nightingale	8,940	595
Longmire & Burge	8,900	573
Wicks, Bangs, & Co.	8,873	580
Woodward	8,822	763
Scrivener & White	8,820	590
Ennor	8,775	686
Ramsay	8,743	569
Morter *	8,668	545

* Accepted, including stone.

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The Builder.

VOL. XXXI.—No. 1570.



The Real, the Conventional, and the Ideal.

IT rarely happens that a man who, to the possession of an observant eye, and of a taste for natural beauty, adds even the faintest spark of the artist's fire, can take a country stroll without having his imagination impressed by graceful forms which he will desire to perpetuate or to reproduce. Painter, sculptor, or architect, in whatever province of art his sympathies may lie, they will respond to the whisper of nature. If the landscape be unimpressive in its features, the clouds in the sky, the fleeting shadows which they throw on the earth, the purple and gold of the sunrise, the grayer and evanescent tints of the sunset, clothe it with fresh life in almost each successive day of our changeful climate. If form be appreciated by the observer more highly than colour, every copse and hedge-row will yield spoils to his note-book; or, at all events, to his memory. A waving spray of eglantine, the massy, clustered foliage of the lime, the taper form and silver veining of some specially graceful ivy-leaf, the bold knotted contortions of the stem of that glossy creeper—which forms the tapestry of the ruin, and is often the murderer of the pine,—each will be instinct with a lesson from the very fountain of life and of beauty.

But if, while seeking communion with nature, the path of the student be hemmed in by the hand of man,—if it lies through those untidy outskirts of civilisation, more depressing to the spirits than even the interior of town or city,—where clay is steaming itself into brick, and where the hideous abodes of cheap suburban life are replacing the trees once occupied by no builders but the birds; how often may he look in vain for such a message? If the free wild growth of the field be replaced by the straight walks and trim beds of the nursery-man's garden, the contrast is not much less striking. The laden branches of the espalier, full of commercial hope and promise to the owner, present to the artist a sad caricature of the clouded masses of the wild cherry; the pyramidal azalea, the pride of the grower, looks to the lover of nature like a Chinese manufacture; the largest new rose, with its card-board ruff, is not to be compared to the fine shell-like petals of the eglantine.

If we ascend from landscape and from vegetation to animal forms, the same rule holds good. Escape from the beaten path. Fly, when you can, beyond the sound of the steam-whistle. Take some road, once busy with traffic, but now three-parts overgrown with grass—some country lane on which busy traffic has never yet set foot; or a drive through a park or road, sacred to the English *cults* of the fox and the pheasant,—wherever you come within the domain of animal life, unbrutalised by human interference, you find artistic food for the mind. The swoop of the swift over a hill crest, the steady poise of the kite, the adroit hop of the rook, the scuttle of the squirrel, the dignified prowl of the fox, the martial evolutions of the curlew, and the sudden change of the aërial squadron into flecks of brilliant golden light—these tell another tale to the artist from the sullen shamble of the caged lion, or the mournful grimace of the organ-dwelling monkey.

Nature, uncabined, unconfined, unspoiled by man, supplies that milk upon which the artist lives. Art can no more be brought up by hand, with any chance of attaining a vigorous maturity, than can the human infant, in a physical sense. And if this be true with regard to the painter of landscape, or of vegetation, and to the sculptor and painter of animal forms, no less is it the case with the artist who deals with the highest class of subjects, the representation of human forms, of human passion, grace, and beauty.

In whatever way we approach this part of the subject, we shall find the same lesson repeated. If we look either to the historic, or to the geographical, distribution of art, we shall find that nothing has ever replaced the direct teaching of nature. In climates where human forms, in the sultry season, betake themselves to the water, or to the shade of the forest, for shelter or for enjoyment, the painter has the advantage of Actæon, without his fate. The artist who sees man in a state of free natural activity, can draw or can sculpture as he never can do who has worked only upon models. Thus the supreme excellence of the art of the sculptor is closely connected with the institutions of the Greek games, where not only every description of pose and of play of limb, in the best proportioned forms, was unconsciously presented by the combatants; but where also every emotion of hope and of fear, of sympathy and of anger, of surprise and of delight, was reflected from the faces of the spectators. The foot-race, or the wrestling match, afforded a lesson not less instructive in pathognomy than in anatomy.

The contrast between the sensuous, instinctive, unregarding enjoyment of life which the summer months develop on the shores of the Mediterranean, and the rigid, self-observant, self-controlled physiognomy of modern life and of northern civilisation, is as marked as is that between nature and convention, or nature ruined by man, in any other department of pictorial study. But civilisation has its own features, as well as savage life, and to seize and depict the passions of civilised man is no less a theme worthy of the artist than to draw Diana in her bath. The language has, however, become more complicated. It has lost its monosyllabic form. The artist has painfully to learn both spelling and grammar, and to advance by slow degrees to laboured composition. It is in the study of these elementary portions of his art that the artist of modern times is often so far compelled to linger that he loses the very idea that his path lies to something beyond.

An instance of the attainment of great perfection of what we may call grammatical detail, may be found in the Dutch school. The preliminary portions of the artist's toil have been mastered by some of these painters with rare power and felicity. The actual manipulation of the draughtsman, though an essential element in the craft of the painter, must be regarded as one of the lowest elements. There have been artists without this power,—authors of a sort of song without words in art,—men who could see what was beautiful, and who could imagine what was beautiful; but who could neither copy what they saw, nor embody what they dreamed. They lacked the mechanical power,—the lowest,—but none the less the essential element of artistic success.

In this mechanical power the painters of the school to which we refer are eminent. Perhaps no artist ever possessed this gift in greater vigour than did Brenghel. Among ourselves it characterises Holman Hunt and Noel Paton. What they see, either in nature or in dreams, they can aid other men to see on their canvas.

But the Dutch painters have attained a higher step than that of mere faithful representation, or the fidelity to nature spoken of as Realism. They have acquired a great amount of physiognomical and pathognomical knowledge; and they have preserved and handed down this knowledge to posterity in their works. They have done on canvas what Theophrastus did in language; and have produced a number of faithful, photographic representations of certain types of human life and certain phases of human passion, which, although far from being high art, are elements of high art. They are studies of great value for the student,—grammatical exercises, as it were, which he cannot study without profit. To speak of them as beautiful, or as possessing anything approaching to immortality, would be abuse of language. They have much of the value of a collection of photographs, and while they are less reliable as to absolute truth of delineation of form, they shun the grim distortion which photography has not yet been able to avoid in its treatment of certain lines of shadow, such, for instance, as the most characteristic of all physiognomical lines—that of the meeting of the lips.

We may look at Rembrandt as the most signal and noble instance of the limited range of the realistic school. We do not forget that, in his power of dealing with light and shade, Rembrandt has a magic peculiar to himself. Objects fell on his eye wrapt in a glory or shrouded in a gloom, unperceived by less subtle vision until he threw them on his canvas. But look at Rembrandt as a portrait-painter. His likeness of himself, his grey rabbins, his sturdy burgo-masters, are not only life, but life subtly appreciated, and represented with that grasp of the main salient characteristics which is the secret of the highest art either in language or in graphic representation.

But take Rembrandt a step further. In his idea of those grand subjects which were the favourite themes of the Italian masters (the great themes of art since the era of Diocletian), and how profound is his failure. What can be more miserably undignified than the proportions of the central figure of the groups of the women brought before Christ in the Temple, in spite of the imaginative lighting of the scene, and the pathognomical force of many of the heads? What can be more paltry and undignified than the last so-called Rembrandt added to the National Gallery? Rembrandt, mastering the grammar of his art as few painters have done, limited in his studies to a certain type of form and of physiognomy, becomes a mere dauber when he attempts the ideal, however he may conceal his failure beneath his unrivalled wealth of illuminative power, which, like the rays of the sun himself, clothes with lustre both the lofty and the mean.

In the endeavour to attain a mastery of what we have called the etymology and the grammar of the art of the painter and of the sculptor, the artist must remember that exact reproduction is not a natural phenomenon. A lake, or a mirror, not only alters the tint and tone of the objects reflected from its surface, but also reverses every feature of the scene. Photography not only is as yet absolutely achromatic, but has to contend with such difficulties of distorted perspective and exaggerated shadow as seem likely long to confine sun-pictures to that humble rank, when compared with human handiwork, that chronicle bears with reference to history, or the brief holds when compared to the oration. No plant, no animal, no cloud, within definite human experience, was ever the *fac-simile* of another. And yet, within

certain limits, nothing is more definite than species. No two plants of groundsel in a garden, to take the humblest illustration, could be considered as exactly alike. But no gardener would ever mistake either of them for an individual of the most closely-neighbouring species. The artist cannot be more exact than the mirror, nor can he approach the fidelity of optical reflexion by attempting to limn each detail with absolute precision. Take such an example as a flowing beard. A keen eyesight will distinguish the individual hairs, to some of which even a distinct and important physiognomical value, or a sort of personality, may attach. But what the painter has to represent is the combination of form, of outline, of colour, and of opacity, which the vision of the actual waving mass presents to the mind. The task of the sculptor is still more difficult, as he has to effect the same object by his skilful entrapping of shadow. If either artist thought that he could produce what some people call a realistic effect by portraying hair by hair, what a wretched failure would be the result! Even photography often breaks down before the beard, representing lights as shadows, and *vice versâ*.

Actual fidelity to nature, then, does not consist in servile reproduction of detail. To say in what it does consist is less easy,—for here we cross the broad limit which separates talent from that of *genius*. The hand, and even the eye, can be educated to a certain extent,—the glance of the artist must be instinctive. That promethean fire is struck from no earthly flint.

But the direction in which the true artist will seek for the gift of true representation of nature can only be indicated by nature herself. He must seek to unveil the goddess. He must think of the law by which the Great Artificer works, if he would seek to portray his creatures, and that law is widely removed from the idea of imitation or of reprinting a definite type. It may not, as yet, or perhaps ever, be definitely apprehended by human wit; but we are yet far from being left in total darkness as to its mode of operation.

We trace, in every natural object, either a history or a promise. More correctly speaking, we ought to trace both. We see the operation of fixed law, under varying conditions. From the fixity of the law results the identity of species; from the constant change of condition results the endless variety of individuals. Thus in every living form, of either kingdom (apart from all physiological, psychological, or theological considerations), there is that which we call, in default of more accurate knowledge, a vital principle. In the grain of wheat there is a *something* which tends, under appropriate circumstances, to produce a wheat plant. The chemical relations of water and of ammonia are distributed or altered by the action of this unknown *something*, and organic chemistry elaborates the brute elements into the living tissue. We may suppose (not for the sake of assertion but of intelligibility), that that unknown *something*, in each case, is indistinguishable. So that any individual grain of wheat would develope in exactly the same manner as any other grain, every condition being exactly the same; or we may imagine that there is such a slight difference between the unknown elements as to constitute an original individuality, considering this term as inappropriate to mark the distinction of perfectly homogeneous units. The idea of the wheat plant is thus one,—specifically one,—and the presence of that idea, modified in its external expression by the conditions of growth, constitutes the specific unity of wheat. So with animal species. The idea of a fox, the definite purport in the hierarchy of life of that honoured beast of prey, is present in the poor draggled captive chained to the kennel, and in the wary ranger of the wood. But the artist who would draw a fox must grasp the idea of the animal, and then clothe the idea as nature teaches him to do. If he draws the *clothes alone*, he will only attain to the rank of an illustrator fit for Madame Tussaud. If he endeavour to develope the idea from internal consciousness, he will attempt a task which, in the first place, is beyond human capacity to perform; and, in the second, even were it preferred, would be beyond human capacity to admire or to comprehend. But more or less imperfectly developed, these two elements must be present in all work of real genius,—the appreciation of the idea, essence, or spirit, and the study of the mode in which this idea is clothed by nature with visible form. The mechanical mode of reproducing that form is an entirely separate matter.

The step may seem a long one, in the first instance, from the art of the sculptor and of the painter to that of the architect. But in the latter, no less than in the former, are the three elements of reality, conventional treatment, and imagination, to be distinctly traced. It is the latter that makes a great architect, as distinguished from a mere builder. With a memory stored with the best examples of the past, with a constructive power based, on the one hand on mathematical law, and on the other hand on a profound knowledge of the structural peculiarities of various materials, with that appreciation of the demands of the civilisation of his day which gives a conventional propriety to his work; it is the imagination that gives life and soul to the design, and makes a noble building the embodiment of a grand idea.

A great portion of what we may call the realistic part of the work of the architect lies in the fit adoption of the materials furnished by the locality. While economical, and thus truly architectural, reasons make this ordinarily desirable, there results, if proper taste is present, a picturesque effect which is truly harmonious and charming. Thus for the Swiss châlet the pine log is the natural unit of structure. For warmth and dryness, for resistance to the furious mountain blasts, and for thorough harmony with the masses of living pine-wood in which it nestles, nothing can be either more architecturally well adapted to the site or picturesquely more appropriate. Take the châlet bodily, as did the late Earl of Essex, and transport it to the thickly-planted banks of a Hertfordshire trout-stream. The Swiss cottage in Cashiobury Park is a gem of its kind. For a pic-nic it is perfection! Yet the idea that it is a toy is never wholly lost. The fisherman who loves the red-spotted trout that bask in the rapid Gade; the sportsman who has a chance of blazing at the pheasants that throng the covers; the farmer who watches the kine and sheep that pasture in the noble park; the lover of nature, who has a non-professional interest in all these,—each has a sort of dim idea that the châlet is only a very charming "folly." But when we find a somewhat similar structure perched at what, not many years ago, was the extreme limit of London to the north-east,—when we add stabling for the neighbouring cab-stand, and fill the dark-timbered gables with prosaic fountains of Bass or of Alsop,—the Swiss cottage has sunk to a Cockney vulgarity.

Another instance in which the local use of the materials natural to any locality is attended with the happiest architectural results, and where the abandonment of the elements of structure afforded by nature is for the most part attended by a vile adaptation of what has been called the "churchwarden order" of architecture, is to be found in the chalk districts of England. Chalk, which in many of its physical, though not of its chemical, qualities very closely resembles the ordinary building stone of Italy, the volcanic tufa, has one peculiarity which unfits it for the ordinary use of the builder. It freely absorbs water, and, when frost supervenes, is subject to destruction of the surface, the depth to which the frost penetrates shelling off on the succeeding thaw.

For interior purposes, however, the lightness of the material, the ease with which it may be cut, its perfect homogeneity, and its beautiful colour, are highly to be prized. In the groined arches of many of our cathedrals, chalk forms a portion of the roof, relieved for the most part by ribs of some darker stone. But the material for the external walls which is native to the chalk districts is the flint. For a country church, a cottage, or for almost every building that does not challenge a palatial dignity, a wall of flints, chipped and fitted as the builders of the chalk district well know how to work that material, and as their ancestors knew perhaps better, is an appropriate and often admissible resource; and if the exterior is thus cased with an indestructible face (the mortar or cement employed being suitable), the interior walls may be well and cheaply made of chalk. If to the work thus effected we compare that of bricklayers imported into the district, or that of buildings, of whatever material, rough cast, cemented, or falsified in any manner to the eye, no person of any taste can hesitate which to prefer.

Into the fuller investigation of these realistic, conventional, and ideal elements, by the happy and harmonious combination of which excellence of the first order, whether in painting, sculpture, or architecture, is alone to be attained, we hope to enter at a future opportunity.

PROPOSED DESTRUCTION OF NORTHUMBERLAND HOUSE.

WE do not willingly oppose the Metropolitan Board of Works. We believe that they act conscientiously and desire to do their duty. We must, nevertheless, express our great regret that the House of Commons did not carry Lord Elcho's motion to refer the Charing-cross and Victoria Embankment Approach Bill to a mixed committee of nine members. We agree with the mover that this is no mere private but rather an imperial question. All who are interested in the welfare of the metropolis should look narrowly into the question, and be properly jealous of the alterations which are proposed to be carried out. It is too important a question to be dealt with by any private incorporation, however popular or powerful, and an important question as to the beauty of the metropolis, as far as its street architecture is concerned, is bound up in this Bill. Lord Elcho warned the House against placing too much faith in the good taste and discretion of the Board of Works, and urged that, so far from being infallible, that Board had made more than one mistake which had been loudly condemned. He declared that many of the so-called improvements in the metropolis were carried out in rather "a God-forsaken way," and he besought the House not to give its sanction to any scheme which proposed further to proceed in that direction. He protested against an old palace like Northumberland House, so rich in historic associations, and so well fitted to adorn the locality in which it was situated, being treated by Parliament as it would treat a mere railway in the wilds of Ireland. Mr. Beresford Hope and others supported his views, but the motion was lost.

New roads must be formed, fresh means of access must be obtained, improvements must and will be made; but there are two ways of carrying these on. If we continue in our present course, there will be nothing left in London dating from an earlier period than that of the establishment of the Metropolitan Board of Works,—a loss the magnitude of which could not be estimated. The memorials of the various epochs through which London has passed are priceless, and should be most jealously guarded.

If there were no other way of getting from Charing-cross to the Embankment than by the destruction of Northumberland House, with its associations, its art-collections, and most interesting Jacobean façade, we should feel that resistance would be useless, although we will not admit that even then it should not be attempted. We believe that an association, a touch of sentiment, a reminder of the past, may under circumstances be of more value in the education of a nation than a short cut. But we are strongly of opinion, with all respect for the professional advisers of the Board, that an equally good approach might be obtained without this costly sacrifice. We are not alone in this opinion. The late Sir James Pennethorne took the same view after long and anxious consideration,—of itself sufficient argument in favour of reconsideration of the scheme. We do most earnestly hope that the House of Lords may yet come to the rescue.

AT the last meeting of the Metropolitan Board of Works, the Works and General Purposes Committee submitted the proposed contracts with the Duke of Northumberland for the purchase of Northumberland House and property required for the formation of the approach from Charing-cross to the Victoria Embankment, and recommended that the same should be approved and the seal of the Board affixed thereto.

Mr. Newton, in moving the adoption of the Committee's report, referred at some length to the opposition in the House against the motion of Lord Elcho. 500,000*l.*, it had been said, was a very large sum to pay for Northumberland House, but he wished to explain that that amount covered much more. In addition to the house, stables, and gardens, there were four large shops fronting the Strand, four houses and warehouses in Northumberland Court, and 24 houses in Northumberland Street, all of which were included in the amount. The purchase included an area of at least five acres.

Mr. Savage hoped that a considerable portion of the amount paid would be recouped.

Mr. Turner called attention to the fact that 75,000*l.* per acre having been paid for the site of old St. Thomas's Hospital, 100,000*l.* per acre could scarcely be considered an extravagant price for such a site as that of Northumberland House.

Mr. Taylor thought that this would be one of the grandest improvements of the metropolis, and that the public would have no reason to be dissatisfied. He also expressed an opinion that the thanks of the Board were due to the duke for having made terms without driving them to unnecessary expense.

Several other members addressed the meeting, congratulating the chairman upon his successful opposition in the House, and expressing an opinion that the price paid for the property was fair and just.

The report was then adopted.

RAILWAY EXPENDITURE ON NEW WORKS.

THE GREAT WESTERN AND THE GREAT NORTHERN.

IN last week's *Builder* we drew attention to the large expenditure about to be incurred in the construction of new works by several of the leading railway companies, particularly specifying the heavy outlay of the London and North-Western Company. The proceedings of the Great Western Company, at their meeting held on Friday last (the 28th ult.), show that that company, like the London and North-Western, are also about to embark in a heavy expenditure in additional rolling stock and new works, amounting to nearly half a million sterling. The shareholders sanctioned an outlay of 467,690*l.*, of which 167,000*l.* will be expended in new engines, carriages, and wagons; doubling the Bristol and South Wales Union line, 19,500*l.*; additional station accommodation at Swansea and Neath, 30,000*l.*; new station at Reading, 10,000*l.*; new engine-shed at New Milford, 8,000*l.*; new boiler-shop at Swindon, 9,000*l.*; machinery and siding accommodation for workshops, 10,790*l.*; narrow-gauge arrangements and goods sidings at Bristol, 19,800*l.*; new warehouse at Manchester Dock, Liverpool, 5,300*l.*; new basin at Swan Village, 7,420*l.*; increased sidings and goods accommodation at Llanelly, 11,600*l.*; sidings between Acton and Maidenhead, 14,300*l.*; increased station accommodation at Chipping Norton, Hockley, Wrexham, and Waterford, 13,180*l.*; additional sidings and other accommodation at Briton Ferry, Gloucester, Birkenhead, Great Bridge, Wootton Bassett, and Llantrissant, 60,200*l.*; block telegraph, for signalling and locking apparatus on the line generally, 41,000*l.*; and 40,000*l.* for the Bristol Port and Pier Extension Railway. In addition to these items of expenditure, the shareholders are about to incur an outlay of about 10,000*l.* in new church and chapel buildings, a special expenditure which is peculiar to the Great Western Company. The population of New Swindon consists almost entirely of the servants of the company, and for some years past the shareholders, by their individual subscriptions, have been enabled to erect churches, chapels, and schools in the district. The present half-yearly report states that the population of the district now exceeds 12,000, having more than doubled itself since 1860; whilst the church accommodation is scarcely sufficient for 1,200, and 10,000*l.* at least are now required to provide the new church and chapel buildings needed. At the meeting on Friday, the chairman invited the contributions of the shareholders towards this object, and a large amount was subscribed in the room, which will enable the company shortly to commence the erection of the buildings required.

At the meeting of the Great Northern Company, a vote of 186,671*l.* was granted by the shareholders for new works to be constructed, in order to meet a largely-increasing traffic. About 45,000*l.* of this sum is to be laid out at King's-cross, for increased accommodation of metropolitan traffic at this station, in improving the platforms, and various other matters in connexion with the working of the local passenger-trains. The next large item of this intended expenditure is for the enlargement of the Doncaster Station, which is now used by the Midland, South Yorkshire, North-Eastern, and Lancashire and Yorkshire Companies, as well as by the Great Northern Company itself. The chairman stated at the meeting that the company were at present paying interest upon nearly a million of unproductive capital, but that before the year was out a great deal of that would be productive. The new line to Liverpool would be opened in June, whilst the line to the Alexandra Park was to be opened in May next. As respects the intended opening of the Alexandra Park in May, the chairman expressed a confident opinion that it would turn out to be a considerable source of profit to the Great Northern Company. He added that on the very best authority he might state that the promoters of the Alexandra Park enterprise were at this moment laying out a very large sum of money to complete the palace and grounds, in anticipation of the opening during the ensuing summer.

The directors of the East London line are looking forward to the prospect of highly-favourable results on the completion of the extended line under the London Docks, now in progress, and the junction with the Great Eastern line in the City, and the London and Brighton and South-Eastern lines at New-cross. The report, speaking of the line as completed, says, "It will be the means of direct communication between the City and the Commercial Docks, and afford great facilities for the carriage of the vast quantity of timber which passes from those docks to the north and east of the metropolis, and to the surrounding counties. It will have a branch into the new Foreign Cattle Market at Deptford. By means of the junction with the South London Railway at the Old Kent-road, it will afford the best line of communication from extreme west to the City, and to the northern and eastern districts of the metropolis. The exchange station with the Blackwall Railway at Shadwell will afford to the graziers and cattle dealers from the eastern counties improved communication with the Foreign Cattle Market, and the railway will give to a large section of the inhabitants cheaper and quicker access to the attractions of the Crystal Palace, and to the residences in the picturesque and healthful counties of Kent, Surrey, and Sussex.

SOME DETAILS OF THE CENSUS.

THE population tables, of which instalments have begun to be delivered, contain, as may be supposed, elaborate as they are, some curious particulars. Division I. consists of London, including parts of the counties of Middlesex, Surrey, and Kent, the points on its boundary embracing Crossness, Plumstead, Sydenham, Lower Norwood, Tooting, Wimbledon Common, Hammersmith, Wormwood Scrubbs, Kensal Green, Hampstead, Highgate, Stoke Newington, Hackney, Bow, Bromley, and Poplar, but not Stratford, or any locality in Essex, excepting a small patch of land at Barking Creek.

The number of persons in public institutions when the census was taken was 77,516, in 445 institutions. Of these there were 26,313 paupers, including pauper children in workhouses and workhouse schools; 7,521 patients in hospitals, 3,340 lunatics, 6,344 prisoners, 913 inmates of reformatory schools, 8,301 military men and their families in barracks, 121 in training in H.M.'s ships, and 15,531 in orphan asylums and other institutions not enumerated above. Of the total inmates, 9,127 were officers and their families. In the above return schools for the blind, the deaf and dumb, and for orphans, are included, but not colleges, training colleges, private schools, model lodging-houses, or police-stations. The institutions having the largest number of inmates among the above are,—Paddington Workhouse, 452; Kensington Workhouse, 570; Chelsea Barracks, 1,289; Millbank Prison, 1,280; Wellington Barracks, 1,184; Marylebone Workhouse, 1,844; Metropolitan Asylums District Small-pox Hospital, 465; Albany-street Barracks, 431; St. Pancras Workhouse, 1,541; St. Bartholomew's Hospital, 747; Christ's Hospital, 827; Middlesex House of Correction, 1,644; Bethnal-green Workhouse, 1,080; Bethlehem Hospital for Lunatics, 321; St. Luke's, 191; Surrey County Lunatic Asylum, 878; Royal Artillery Barracks, Woolwich, 2,000; Infantry Barracks, 1,045; Army Service Corps, 595; and Royal Engineers, 143.

The number of persons on board sea-going vessels in the River and docks, on the night of April 2nd, 1871, was 5,739, and, in addition, 989 in boats and barges. Within London Division there were on board vessels of all kinds, 6,317 males and 411 females on the night in question, of whom 1,064 were in Poplar.

In the London Division there appears from the returns to be 74,455 acres of land, 907 acres of water, and 2,718 acres of tidal water and foreshore,—total, 78,080 acres. Stoke Newington has 49 acres of water; Hackney sub-district, 35 acres; St. John (St. George's in the East), 30 acres; Limehouse, 29 acres; Bow, 37 acres; Poplar, 160 acres; St. Mary, Rotherhithe, 175 acres; and Wandsworth, 28 acres. East Plumstead has 333 acres of tidal water and foreshore; Woolwich Arsenal, 287 acres; East Greenwich, 281 acres; Battersea sub-district, 159 acres; Poplar, 300 acres; St. Mary, Rotherhithe, 152 acres; and Fulham, 174 acres.

The population of London in 1631 was, according to Captain John Graunt, F.R.S.,—wards within the walls, 71,029; without, 40,579; old borough of Southwark, Bridge Without, 18,660; or total,—

1631	population	130,268
1801	,,	958,863
1811	,,	1,138,815
1821	,,	1,378,947
1831	,,	1,654,994
1841	,,	1,948,417
1851	,,	2,362,236
1861	,,	2,803,989
1871	,,	3,254,260

The population stated above is of London within the new Tables of Mortality, 1871.

ARCHITECTURE IN THE ROYAL SCOTTISH ACADEMY.

ECCLESIOLOGICAL revivalism has produced many extravagances in design, especially where originality has been aimed at. Eccentricity is often amusing, but seldom deserving of admiration. "Piling up the agony" and caricaturing detail is not the way to produce original works, yet such seems to be the prevailing idea of many of the younger members of the profession. We do not advocate a dull reiteration of copied detail, but that the old forms be frankly accepted and a new expression given to them; that the relation between construction and ornament be carefully studied; that where dignity is aimed at, massiveness and simplicity be combined with richness of parts, so as to produce a feeling of harmony and repose; that where usefulness and comfort are requisite, they should not be sacrificed to whim and caprice. In short, we may say the most original design, as a rule, is that in which most thought is displayed.

The entire absence of thought in many of the designs exhibited is patent, the sole object of the design being apparently to produce something striking. Mr. J. B. Pirie, for example, gives us "An Architectural Idea," a church bristling with points like "quills upon the fretful porcupine": 5 per cent. of the detail lavishly scattered about, if judiciously concentrated, would produce a richer effect than is here attained. Mr. C. W. Somerville is also striving after novelty in his "Adaptation of the Dome to Mediæval Ecclesiastical Architecture." The Dome, "the grandest product of the Renaissance," is here deprived of all its grandeur. The designer seems to think it requisite that the whole roof should be formed of domes, so that we have one large and several small ones, like a hen followed by her chickens. Mr. Somerville also gives us his idea of a "Villa Residence," the chief peculiarity of which consists in the introduction of a number of columns (?), the diameter of which exceeds their height. Mr. Patrick Auld exhibits a "Design for a Public Hall," the whole wall-surface of which is crowded with ornament, the general effect being weak in the extreme. We are far from wishing to discourage our younger brethren, but they must "learn to creep before they can walk"; let them make the attempt, and they will find it more difficult to produce a simple well-proportioned elevation, almost devoid of detail, than the florid absurdities in which they delight. For example, look at the "Competitive Design for the Established Church at Oban," by Mr. J. W. Small,—a mountain church very suitable for the locality, with pure and fresh detail, not a single feature too much, and rich withal in elegant simplicity. We should not be surprised, however, to learn that a more florid but less beautiful design was selected by the local committee. Your local committee is apt to expect too much; having, with great exertion, collected 2,000*l.* or 3,000*l.*, competitive designs are called for, and none of those submitted, however grand, exceed their expectations. A spire, of course, the church must have; and when carried out the result is the production of an architectural toy. The successful design for the "Free Church at Morningside," by Messrs. Macgibbon & Ross, is an example of this sort of thing. The tower and spire are in themselves well composed, but the effect of the whole is pert and assuming: if more bulk were given to the body of the church,

and a simple belfry added, the result would be much more satisfactory.

That such is not always the outcome of a competition, is evidenced by the design of the interior of the "Proposed Holy Apostolic Church in Edinburgh," by Mr. R. Anderson. The instructions to the competitors were to the effect that the church was to be Norman in style, but Mr. Anderson seems to have persuaded the building committee to accept a Gothic version of that submitted by him in competition. The style is Early French; the plan provides apsidal choir, transepts, and nave, all without aisles The windows are placed as high up in the walls as if in a clearstory, and the wall space below is used as a field for pictorial decoration. From the ground spring slender shafts to support the roof principals, and in the choir the upper part of the shaft carries a niche, with statue. The choir windows are single lights, those in the nave double, with large uncusped circular openings in the heading. Simplicity and elegance are the characteristics of this interior, which is a very satisfactory rendering of a church without aisles, —an accessory which could not be attained in this instance, owing to the peculiarity of the site. Mr. R. Thornton Shiells exhibits the interior of "A Private R.C. Chapel," which depends chiefly for effect upon the rich colouring of the wall surfaces, and the introduction of statues, which in the drawing are made to appear like plaster casts, as probably they are. Mr. Anderson exhibits the designs for two altar tombs, both carefully studied. The "Memorial to the late Earl of Kellie, to be erected in St. John's Church, Alloa," is especially worthy of commendation.

The "Odd Fellows' Hall, Forrest-road, Edinburgh," in course of erection, designed by Mr. J. C. Hay, is a welcome addition to the architecture of what is developing into one of the most picturesque portions of the south side of the city. The style of the buildings is Scottish Domestic, and Mr. Hay, while adhering to the general characteristics of the style, has not scrupled to blend with it new features. Although the façade is a narrow one, it produces a good effect, Mr. Hay having made it the central and culminating point of the block of buildings of which he is the architect.

Opposite this block is another designed by Mr. R. T. Shiells, of which he sends a perspective: a series of gables, oriels, and chimney-shafts, treated in a bold and effective manner, give variety and contrast to the composition.

The "Addition to the Mansion House of Abercairney, Perthshire," by the same architect, is not so satisfactory. The style of the building is of the sort of Gothic which prevailed at the beginning of the century, and the additions are carried out in exactly the same style, so that it is impossible to tell the new from the old. Advantage might surely have been taken of the advance of knowledge in this matter, without detriment to the general effect of the mansion.

The Mansion-house of "Cairn-dhu," designed by Mr. Wm. Leiper, is a rich and effective composition, with much freshness of detail. It has all the picturesqueness, without the sternness of the Scottish baronial residence. Mr. Leiper exhibits designs of one or two other residences of less importance, which all display the hand of an artist.

Mr. Charles G. H. Kinnear shows us the "North Front of Auchmore House" as altered and enlarged. From a *vignette*, it appears that the original mansion was a strange jumble, without dignity or picturesqueness. This the architect has combined into a stately château.

"Hill Wood, Corstorphine Hill," Messrs. McGibbon & Ross, is spoilt by having a massive embattled tower as its chief feature, a feature more suited to an ancient citadel than to a modern mansion. More satisfactory is their design of the "New Lecture-hall of George Watson's College School," in the "New Grec-French style. It will contrast, but not be out of keeping, with the building to which it is an adjunct.

The "Telling-room of the Royal Bank, Glasgow," designed by Mr. J. Dick Peddie, is a severe, business-like, and appropriate apartment, sufficiently rich in detail to be in keeping with its purpose.

The "Lady Flora's School, Newmilns," is designed by Mr. F. T. Pilkington, in a style suggestive of its designation; the carved projecting barge-work calling up visions of a sunny, sheltered nook where children delight to play and wild flowers to grow.

Could we in this country of ours house all our workmen as Mr. James Gowans does at "Drumbowie, Linlithgowshire," who can tell what the result would be? Beneficial, surely; for if comfort and elegance combined do not produce a beneficial result in this direction we are greatly mistaken.

NEW SOUTH WALES.

NEW SOUTH WALES is the oldest and longest settled of the group of Australian Colonies. It ranges from about the 28th to the 37th degree of south latitude, which enables it to yield in profusion produce varying from that of tropical countries to that of Great Britain; while its pure atmosphere and mild climate are free from the drawbacks of either.

Alone amongst the Australian group, it possesses a coal supply which is practically unlimited, and its metallic mines are now being developed with a vigour and activity which will render it the greatest centre of mineral industry in the southern hemisphere. Its railway system is in course of rapid development. The capital city, Sydney, is situated on the finest harbour in the world, and is unsurpassed either for the natural beauty of its site or for the splendour of its buildings.

An interesting paper, reviewing the progress of the colony during the last ten years, has been recently read before the Royal Society at Sydney, by the Auditor-General, Mr. Rolleston. It is based on the official statistics laid before the Colonial Parliament in 1872; and the following abstract of the information it affords will be acceptable to the numerous class of persons who are interested, either actively or prospectively, in this flourishing colony.

Population.—The population in 1861 was 350,860; and, in 1871, 503,981; showing an increase of 43 per cent. The proportion of males to females is about 11 to 9. It is remarked on these figures, that if the land of the colony were parcelled out equally amongst this population, there would more than 400 acres fall to the lot of each person; and as the soil, independently of its natural productiveness, is teeming with mineral wealth, and capable of sustaining perhaps twenty millions of souls, it is impossible not to hail with pleasure the prospects of accession to the population which the funds for assisted emigration, now appearing on the colonial estimates, hold out to the people of Great Britain.

Live Stock.—This is shown in the following figures:—

	Horses.	Cattle.	Sheep.
In 1861 ...	273,389	2,230,383	6,145,651
In 1871 ...	304,100	2,014,898	16,278,697

Thus it appears that for every 100 of the population there are 400 head of cattle and 3,200 sheep; so that there exists there at least no apprehension of a famine of butchers' meat.

Wool, &c.—The seaward export of wool was as follows:—

	lb.	Value.	Average Value per lb. s. d.
In 1863	20,988,393	£1,801,186	1 9
In 1866	36,980,685	2,830,348	1 6
In 1871	65,611,953	4,748,160	1 5

The total value of the exports in 1871 produced from the flocks and herds of the colony was as follows:—

Wool exported seawards	£4,748,160
Live stock, preserved meats, raw hides, tallow, &c., exported seawards	468,606
Exports overland for shipment at the ports of the adjoining Colonies	3,391,867
Total	£8,598,633

Being about 17*l.* per head of the population from pastoral productions alone.

Grain.—The average yield of the wheat tillage in 1862 to 1867 was about 10 bushels per acre; and the average yield in 1868 to 1872 was 12 bushels per acre; the average prices at Sydney being 8s. in the former period, and 6s. in the latter.

Wheat. Acres.	Maize. Acres.	Other Crops. Acres.	Total. Acres.
Average Five Years, 1862 to 1867.			
124,666	101,225	125,614	351,505
Average Five Years, 1868 to 1872.			
160,965	118,301	155,738	435,004

The annual value of the imports of wheat and flour, deducting exports, has averaged in the decade, 472,560*l.*

Maize maintains a steady average yield of 30 bushels per acre. There is a large export trade in this grain, and it is valued for export about 3s. per bushel.

Sugar.—In the statistics of 1864, two acres are returned as having been first planted with sugar-canes, producing 280 lb. of sugar; but in 1872 no less than 4,393 acres were under cultivation. The yield appears to be about one ton of sugar per acre, and the future of this industry will probably be a brilliant one in the northern districts of the colony, where the climate is suited for it.

Wine. From 1,159 acres under vine culture in 1863, there is an advance to 4,152 acres in 1872, producing 413,321 gallons of wine, or nearly 100 gallons per acre.

Gold.—The average annual value of the gold obtained in the decade has been 1,159,173*l.* The total value of the gold raised in the colony since the first discovery of the gold mines in 1851 has been upwards of 25 millions sterling.

Coal.—New South Wales is here without a rival, and may calculate on a production limited only by the demand for ages to come. The average amounts raised in the decade has been,—

In the five years	Average tons per annum.	Average annual value.	Average value per ton.
1862 to 1866	563,835	£281,998	10s.
1867 to 1872	882,372	347,957	8s.

Trade and Commerce.—The exported produce and manufactures for the decade have reached 52,043,742*l.* in value. This is at the rate of 12*l.* 3s. 6d. annual value per head of the population; while the exports of Great Britain for the same period were at the rate of 5*l.* 16s. only. Relatively, therefore, the wealth of this community has been increasing in a ratio more than double that of the mother country.

The value of the imports seawards in the decade was 84,832,363*l.*; averaging nearly 8½ millions sterling for a population of less than half a million.

For the last year of the decade, 1871, the following figures are given:—

Total imports by land and sea	£9,600,508
Total exports „ „	11,245,032

These figures exhibit an import trade at the rate of 19*l.* 1s. 3d., and an export trade at the rate of 22*l.* 6s. 2d. per head of the colonial population; being relatively more than double the import trade and nearly treble the export trade of Great Britain per head of the population, according to the values respectively given in the Customs' returns of the two countries.

With cheap meat, cheap coals, cheap bread, a splendid climate, and a practically unlimited demand for labour, few countries offer such inducements to intending emigrants as this prosperous colony.

ARCHITECTURAL ART IN INDIA.

LAST Friday evening, the 28th ult., Mr. T. Roger Smith read a paper at the Rooms of the Society of Arts, Adelphi, on "Architectural Art in India." Mr. James Fergusson, D.C.L., took the chair, and there was a good attendance.

In the course of Mr. Smith's remarks, he said that the style native to England the English Gothic,—was not fitted to be transferred to India without large modifications. All its forms were designed to be seen by a faint light. It was essentially fitted to a cold, damp climate; and while, on the one hand, its characteristics would require many alterations in order to cope with the glare of Indian sunshine, on the other hand its provisions for carrying off the gentle showers, or even the steady downpour of an English wet day, would prove quite inadequate to cope with the torrential rains of a tropical storm. In many instances the adoption for India of Renaissance architecture, as practised in England, would be less impracticable than the adoption of English Gothic. The style took its rise in a sunshiny country, and though all the changes we have made in it have been introduced with a view to fit it for use in a colder climate than that of the land of its birth, still those changes have not been many nor great. The circumstance that the heat and the light were so intense in India would always occasion many variations in the buildings, either Gothic or Classic, which were put up.

Most of our building work in the East had not been hitherto creditable to our taste, though it bore witness to our energy and vigour. The time had come when it ought to be held imperative, both for the Government and for private individuals, to render their buildings models of good taste. In order to do this their design, and the design of such decoration as they receive, ought to be intrusted to men of cultivated architectural taste; and the style adopted for them ought to be, not a direct imitation of any Asiatic

type, but an adaptation of those European styles which have grown up in sunshiny regions. Such styles were ancient Roman, or even Greek (when good enough materials and workmanship were procurable), or the Romanesque, Gothic, and Renaissance of Southern Italy, Southern France, and perhaps Spain. In treating any of these styles certain features of the architecture native to tropical countries would have to be incorporated.

There was but one limit to the degree to which these features of Eastern art may be appropriated: they must not be so freely used as to cause the edifice to lose its European style. Had we a distinctive English style, we ought, unquestionably, to use it in our colonies, as Rome did in hers, with such changes as local circumstances made necessary. But though this was, unhappily, not possible to us, there were in existence familiar European styles, well suited to the purpose; and it appeared only reasonable that as our administration exhibited European justice, order, law, energy, and honour, so our buildings ought to be held up as a high standard of European art. They ought to be European both as a rallying-point for ourselves and as raising a distinctive symbol of our presence, to be beheld with respect, and even with admiration, by the natives of the country.

The Chairman said that it was only within the last twenty years that architects had gone to India; and they had been principally employed by the Government and the railways. The question of what style of architecture to employ in India was a serious one. As regarded churches, he thought that the Gothic style should be used. A pointed arch, he said, was very difficult for India. The only good Gothic building he knew in India was one erected by Captain Kitto at Benares, which had a short Tudor arch that kept out the sun very well. He recommended the adoption of the Italian style of architecture, with some modifications. The natives, he said, used stone as we do iron; their style could be copied in iron, and thus we could get many native styles which would suit the climate of the country. This would be European, but still sufficiently native; but the question was one which could only be worked out in England. He thought that we should soon have buildings in India which would be examples of great beauty and elegance. We owed, he said in conclusion, a debt of gratitude to Mr. Smith for having brought forward the whole question so prominently; and if the people of India could read his paper it would influence their style of architecture materially.

BUILDING OPERATIONS IN BRADFORD.

AT the present time an extraordinary number of town improvements are in progress in Bradford. Among these may be enumerated new sewage works, defecation of sewage, new Townhall, new covered market, new wholesale market and abattoir, extension of gas-works and water-works, new main artery from Sun Bridge to Thornton-road, the purchase of parks, proposed new fire-brigade station, the widening of old thoroughfares, and a more thorough and efficient system of paving, in addition to the costly new arterial lines proposed in the local Improvement Bill.

Thanks to the public spirit of the owners, some of the improvements are being effected at a comparatively moderate expense. Of these are the widening of Towler-lane and Duckworth-lane, in Manningham, and other thoroughfares in that neighbourhood, now in progress. A portion of Silsbridge-lane has been widened, but the completion of this improvement has been delayed by the price asked by an owner of land at the outlet of Thornton-road. The corporation, however, has the opportunity, by the removal of a few old houses and the purchase of some land unbuilt upon, to extend the lane into Thornton-road opposite to Longside-lane. Wigan-street is being opened out into Longlands-street. Considerable progress has been made with Canal-road, and this portion of the borough is beginning to assume quite a new aspect. The widening of Manningham-lane to 20 yards is gradually being effected, but Christ Church still blocks up one of the best entrances to the town in this direction. The owners, however, are willing to dispose of the church and site for 10*l.* a yard, and this purchase will require to be made before Darby-street can be considered a satisfactory thoroughfare. So far as the street improvements have gone, the cost has not been so heavy as might have been expected, the corporation having recouped a large part of the outlay by the sale of land not required for the thoroughfares. This plan will be followed out in the other undertakings that will be gone on with. The corporation, actuated by a desire to meet the requirements of the town, has boldly launched out into schemes that will tend to improve the communication between one part of the town and the other, and to increase the healthfulness and prosperity of the borough.

PROVERBS FOR GENERAL CIRCULATION

THE characters of giants have often to be written by dwarfs, who, though tip-toed and confident, are quite unequal to the task.

The scoundrel who, *mal prepense*, injures or robs a man, will defame him in order to justify his crime.

Talents, like riches, excite the cupidity of those who are in want.

It is better to be dull, with an ardent desire to learn, than clever with no disposition to improve.

When the powerful conspire to hustle a man, he will be fortunate, indeed, if he escape without a scar.

A prophet is without honour in his own country, and especially in his own family.

Men are pre-Raffaellite in hypocrisy. They imitate the real thing so closely, that it is difficult to tell which is which.

The pleasures of anticipation, imagination, and hope are the sunshine of life; but the rough weather of disappointment often does a man the most good.

Meanness is always prying into, and harping upon, antecedents; charity, with more wisdom and generosity, looks to sequents.

Far more labour and talent have been sacrificed to error than to truth.

Everybody who sifts doesn't find the jewel.

Truths lie scattered broad-cast, through the ages, waiting eyes to see them.

Nations which encourage spying will ere long be enslaved.

Espionage is an antidote which, in the end, is found to be worse than the disease.

Treachery is the unpardonable of crimes; it saps all the foundations of society.

Religion on the tongue, and self in the heart, is the way of the world.

Keep in the temperate zone if you would wish to travel pleasantly and safely.

THE BAD CONDITION OF DUBLIN.

EVERY day justifies statements made by us long ago, and from time to time, and usually denied. In the last weekly return of births and deaths, issued by the Registrar-General for Ireland, we read that the deaths registered in Dublin for the week represented an annual mortality of forty in every 1,000 of the population, while in London the rate was twenty-six. In Dublin the births were 149, and the deaths 245. Moreover, for the corresponding week of the years 1864 to 1872 inclusive, the average births were 183, and the average deaths 192.

Surely such a state of things demands immediate Government inquiry, for unfortunately the local powers have been invoked in vain, as would appear from the proceedings of the chief sanitary authority of Dublin.

For several years past the sanitary work of Dublin has been entrusted to the corporation of that city, and the machinery employed for the purpose consists of a Public Health Committee of its own body, a medical officer of health, a city analyst, a secretary, and eight acting sergeants of police, as nuisance inspectors, with two full sergeants as chief nuisance inspectors.

At times, especially at times of epidemic disease of great severity, the medical officers of the several dispensary districts have been asked by the Public Health Committee to send in reports of cases of infectious sickness, and especially those appearing to arise in connexion with sanitary defects. Such reports have been more or less frequently made by those gentlemen, some of whom have received official letters of thanks from the Public Health Committee for their important services to the public.

So important is it thought to have the services of a body of professional men conversant with the people and their wants, in a sanitary point of view, as well as with the several localities haunted by successive epidemics, that public functionaries and public lecturers in Dublin have strongly recommended their regular employment in connexion with the sanitary machinery of the Dublin corporation, and this view has been also strongly advocated by the Dublin Sanitary Association.

Great complaints have been from time to time made of the inadequacy of the scavenging system of Dublin, which consists of imperfect cleansing of the streets, the refuse matter being, at times more or less infrequent, removed from the streets, and thrown into large yards, situated generally in some of the most densely-peopled parts of the town, inhabited by the poorer working classes, such localities being but too often, as might be expected, the scenes of outbreaks of disease.

No provision whatever exists for the cleansing of middens, ashpits, or latrines by the Corporation, while, owing to various circumstances, it is found either impossible to get this necessary duty performed by persons who used to earn a livelihood in this way, or their charge is so extremely high as to prevent any except the rich indulging in the luxury of cleanliness.

It is hardly necessary to add that this want has led, in the opinion of very competent judges, both lay and medical, to much illness, but too often of a spreading or contagious nature.

This matter has also been brought under the notice of the Corporation repeatedly by the public, who express a willingness to pay a reasonable charge for such cleansing if the Corporation would establish a regular service, such as exists in many English and Continental towns, frequently without charge to the public; but epidemics may come and epidemics may go, as well as men, and still nothing is done by the Dublin civic dignitaries in this needful matter.

Our space does not now permit us to enter into the full details of the recommendations of the Sanitary Association of Dublin, and of the reply returned by the Public Health Committee of the Dublin Corporation, which has excited much discontent. We recommend that body, interested as they doubtless must be in doing what is best for the health of Dublin, to adopt the request of the Dublin Sanitary Association that they will reconsider the suggestions already made to them.

It is indeed a matter of serious import to reflect that Dublin, with only 33 persons to the acre, as stated by Dr. Stokes, Regius Professor of Medicine, in his recent public lecture, should contrast so unfavourably as to birth-rate, mortality, and sickness with Edinburgh and London, with their population of 40 persons per acre, and Glasgow, with 89 persons per acre.

Raise the moral and the physical condition of the Dublin humbler classes, and there will be less need for police supervision, and the chronic discontent and smouldering disaffection, or treason, if the word must be used, as well as endemic and epidemic sickness and a heavy mortality, will cease to sap the vitals of the people of Dublin, and so to curtail the power and hinder the welfare of our common nationality.

MEDALS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT a special general meeting of this Institute, held on Monday last, Mr. Horace Jones, V.P., in the chair, it was unanimously resolved that, subject to her Majesty's gracious sanction, the Royal Gold Medal (annually bestowed on some eminent architect, or author of works on architecture) should this year be awarded to Mr. Thomas H. Wyatt, president of the Institute.

At the same meeting, the Soane Medallion (with 50*l.*, under certain conditions of Continental study) was awarded to Mr. William Frame, for his design for a Public Hall; while medals of merit were voted to Mr. Frederick C. Deshon, and to Mr. J. H. Eastwood, for their designs.

Mr. A. H. Kersey gained the Institute Silver Medal and five guineas for a large set of drawings illustrating St. Mary's Abbey, Malton, Yorkshire; and, in the same competition, medals of merit were awarded to Mr. Arthur Hill for his drawings of Cormack's Chapel, Cashel, and to Mr. Thomas Garratt for his drawings of St. Mary's Abbey, Lilleshall, Shropshire.

A medal of merit was awarded to Mr. Alfred Jowers for his essay on "Architectural Criticism."

The next meeting of the Institute will be held on Monday, the 17th inst., when Mr. Alan S. Cole, of the South Kensington Museum, will read a paper on the art of "Sgrafito Decoration."

AWARD OF ROYAL GOLD MEDAL, R.I.B.A.

SIR,—Favour me with a brief space in your next impression, to say that my own experience, derived from a *long tenure* of office as member of council, in various capacities, of the R.I.B.A. does not agree with certain statements contained in the letters of your correspondents "M.I.B.A." and "Civis," in the two last numbers of the *Builder*.

The circumstances connected with the proceedings of the council when considering their recommendation as to the recipient of the Royal Medal, annually laid before the members of the Institute, were well known to me for many successive years, commencing with the first award to Mr. Cockerell, R.A., in 1848.

So far was a seat at the Council Board from being held a bar to the claim of a worthy recipient, that, in fact, the fourth award of the Royal Medal was the result of the recommendation made and advocated at the Council Board by one of the Vice-Presidents, who himself drew up the highly but well-merited complimentary resolution by which that award of the medal to *another member of the then existing Council* was submitted to the consideration, decision, and final approval of the subsequent general meeting.

That the vice-president in question, subsequently president, Mr. Cockerell, R.A., would have infringed, either in spirit or in deed, any honourable rule or understood punctilio in a matter which he had taken on himself the responsibility of initiating and heartily supporting, is as probable as that the honoured, well-known recipient of the medal would have availed himself of any such a palpable infraction of any known or implied regulation, and accepted the irregularly proffered mark of professional distinction! Nor, we may be sure, would the Council have sanctioned any such proceeding in which they themselves were implicated.

I have never been aware, nor do I believe, that the duty of the President, whether professional or *non*-professional, requires him to submit any suggestions to the royal donor of the medal (I have served under both classes of Presidents). The general meeting having accepted the recommendation of the council (or otherwise), the duty of the President, or of his representative, is to submit the final award for the royal sanction. This being graciously granted, instructions for striking the medal are formally given to the Government medallist.

N.

A JOINERS' FESTIVAL.

THE WAGE QUESTION.

LAST week the annual festival of the Greenock joiners, under the auspices of the Greenock and Greenock East Branches of Associated Carpenters and Joiners of Scotland, took place in the Town-hall, the area of which was filled, about 700 being present. Mr. James Aitken occupied the chair, and made an address on various topics of pressing interest. Towards the close of it he said,—Thirty-five years ago joiners' wages ranged from 15s. to 17s. per week. You are all aware that they are now nearly double, and the wages in other occupations have increased in nearly the same proportion. This state of matters very naturally gives rise to a question that is worth our consideration. Have workmen benefited in the proportion that wages have risen, or are the comforts they enjoy much greater on account of the increase of wages? It will be pretty generally admitted that they have not. My own impression is, that workmen would have possessed all the advantages they now do had wages remained the same as they were thirty-five years ago. In short, I go the length of saying, that practically wages have not risen at all; for as wages advanced everything else advanced in price,—your food, clothing, house-rents, ay, and your social entertainment too,—and in the very nature of things it cannot be otherwise, if you deal fairly and honestly towards your brother tradesmen. If you apply for and get an advance of 10 per cent. on your wages, you must admit that the mason, slater, plumber, the unskilled labourer, and every other branch connected with the building trade, have as good a claim to an advance of 10 per cent. as you have, and will get it, too; and when got all round it is just equivalent to 10 per cent. on the cost of the building, 10 per cent. on the house-rent; so that the house that formerly cost 1,000*l.* will now cost 1,100*l.*, and the rent that was formerly 10*l.* will now be 11*l.* Then come in their turn the tailor, the shoemaker, and the baker, who inhabit the houses you have erected. These having to pay 10 per cent. more for the commodity you have furnished to them, very naturally look for 10 per cent. more on the commodity which they furnish to you. An agitation is set afloat, and, if need be, you aid them by your contributions until they attain their end. The same thing goes on until every occupation in the community has got its 10 per cent. advance. Then you are where you were when you began, and ready to start afresh. You are now getting 10 per cent. more wages and paying 10 per cent. more for everything you require, so that practically wages have not risen at all. I have no doubt that some of you will be concluding that is a false view of the question, that the advance affects only the labour, not the material part of the building. This reminds me of a discussion that took place between a trade-unionist and an employer when wages were being raised from 18s. to 20s. per week. The employer was cautioning the trade-unionist against raising wages to the injury of trade. "No, Sir," replied the unionist, "you will never injuriously affect trade by raising wages so long as you give us cheap materials, the labour being a small sum compared to the materials of a building." Now, this is a question that is very imperfectly understood, because few give it any consideration. I have sometimes heard asked what would be the value of the materials apart from the labour of a building that costs 1,000*l.*? I have heard various answers to the question, some as high as 800*l.*, and some as low as 500*l.*; but I can assure you that if the question be thoroughly investigated, it will be found that the raw material of such a building apart from the labour is not worth 30*l.* While on the wage question, let us take a retrospective glance at what you have accomplished during the last thirty-five years. You have succeeded in nearly doubling your wages, and in the cause have spent large sums of money. You have fought many a noble battle, and gained many a glorious victory; but against whom have you fought, over whom have you gained these victories? If you take a broad and comprehensive view of the question, you will come to see that in almost every instance you have fought against your own shadows, and gained the victory over yourselves. What would it matter to your employers though your wages were double to-morrow? It would only affect them so far as they had contracts taken for the present. Beyond that, they would recoup themselves from the proprietors for whom they erect the houses, and the proprietors in turn would recoup themselves from those of you who inhabit the houses, and the result would be, as it has been in the past, that in about two years almost every occupation would be as highly paid as yourselves. This is neither the time, nor is this the place, to dwell on the injurious effect such a result would have on the country. Suffice it to say for the present, that if those of you who are taking an active part in the trade movements of the day were impartially to investigate and thoroughly understand such questions, and assist your fellow-workmen to understand them, you would not only expel from your minds that phantom breach between capital and labour that only exists in the imagination, but you would do much to maintain the prosperity of the country, to establish good feeling between employers and employed, and hasten on that good time coming, when

> "Man to man, the world o'er,
> Shall brithers be, for a' that."

COAL AND ITS COLLATERALS.

THE price and scarcity of coal are not only causing much suffering to the poor and inconvenience to every one, but are also interfering with business, and destroying the prestige of the country as the work-house of the world; and there are strong feelings on the subject generally abroad. The large steamship companies are laying up their vessels, mills are stopped, and contracts are seriously interfered with. And yet there is not only an abundance of coal in the earth throughout the country, but there are enormous supplies already "won."

The quantity of coal at present stored in Liverpool is far larger than was anticipated. The great depôts in Crown-street are full to overflowing, and the stocks are gradually increasing. The amount of steam-coal stored in bulk and in wagons on both sides of the Mersey is enormous, the quantity at Birkenhead being estimated at about 100,000 tons; whilst that in Liverpool is probably 100,000 more. This is apart from the stores for domestic use. The output of coal from many of the collieries situate between Wigan, Rainford, Skelmersdale, and Liverpool is quite as large as heretofore; there is no diminution whatever in the "cuttings"; and the quantities at the pits' mouths are so large that extensive wooden structures have been erected for storing the surplus coal! It is becoming a very serious question whether many manufacturers will not be compelled to close their establishments, the present cost of coal making it impossible to work them at a profit. North Wales and Lancashire coals are difficult to obtain in any qualities. The price of the former is 24s. at Birkenhead, and the latter 24s. 8d. in Liverpool. A rise of 2s. to 3s. per ton is expected in the course of a few days. The exports of coal during the month of January were:—From the northern ports, 347,913 tons; Yorkshire ports, 42,183 tons; London, 2,686 tons; Liverpool, 48,031 tons; Severn ports, 277,034 tons; and Scotch ports, 28,923 tons; making a total of 749,034 tons; and which shows a decrease, when compared with the corresponding month of last year, of 28,190 tons.

It is said that the price of coal, like the price of any other commodity, is regulated and governed, not so much by the cost of production as by the inexorable law of supply and demand; but that law does not apply to coal in respect of supply, because the stock is for the present inexhaustible. The scarcity is not by the visitation of God, nor is it the act of Providence: there is coal enough in the mines; the idleness of the men is part of the reason of scarcity, but high wages would soon overcome that difficulty. Co-operation of an underhand and impolitic kind amongst coal-masters and merchants is a far more formidable cause of the high price.

When coal-owners resolve to tax the nation by millions, purely for their own benefit, it compels every one to ask why should they be allowed to levy this black-mail? Property exists for the common good, and when property becomes a public evil, and the welfare and existence of the many are painfully affected by the conduct of the owners, it cannot be expected that the people will quietly submit to be ruined or killed, while gigantic fortunes are being made by a few selfish proprietors.

The prices of iron are still rising, and the dearness of coal affords the iron-masters too good an excuse for almost any price, or for putting out their furnaces altogether. The iron-workers at Merthyr, in turn, determine not to return to work on the 10 per cent. reduction. Everything, in short, is "out of joint." Sir Rowland Stephenson tells the men that there is no chance of their obtaining better terms from the masters than those offered.

WILD ESTIMATING.

TERRIBLE differences in the price named by different contractors for the same work are still constantly observable, notwithstanding all that has been said on the subject. Confining ourselves to our last and present numbers, several extraordinary examples present themselves. Thus, for a chapel in Peckham Rye, while Mr. Ray proposes to execute it for 2,249*l.*, Mr. Munday will be glad to do the job for 1,080*l.*; and for the erection of schools for the Middlesbrough School Board, Mr. Adamson tenders at the sum of 8,785*l.*, and Messrs. Bulmer & Co. at 3,884*l.* For sewerage works at Barrow-in-Furness, Messrs. Bulmer ask 14,000*l.*, and Mr. Ritson offers to execute the same works for 6,698*l.*; while, more striking than all, in the case of roads and paths required at West-hill, Hastings, Mr. Kempling names as his price, 1,693*l.*, though Mr. T. Gardner will be delighted to form them, in just the same manner and under precisely the same conditions, for 673*l.* Truly trade is still a mystery.

Henley-on-Thames Bridge.—On Saturday last, the 1st inst., at noon, the toll-gate and barriers on the bridge at Henley-on-Thames were cleared away. It is now free from toll. The bridge is now the property of the Corporation of Henley, who will in future keep it in repair from funds in their hands for that purpose.

OLD HOUSE PLANNING.

IN these days of feverish architecture and hurry, and of so much that is inartistic, it is not a little soothing to turn to those old ways of work which produced, however slowly and unscientifically, the ingenious works which nowadays all alike strive to copy and compete with. If the birth of a style is a something curious to think upon and to try to explain, then is the death of one not the less so. Why should a good and expressive style of architecture die out? And then again, after a style is dead, as the Gothic, there would seem always to be such an unwillingness in the minds of men to give it up, and abandon it, and to take to the new and the untried. Who can imagine old London? A complete street, not a single house, here and there in a mile's walk, but a whole street of gable-ends, and projecting windows, and odd out-of-the-way bits of detail, and quaint carving, and doorways under which one could stand out of the wet for half an hour, with a something to look at all the time on the opposite side of the way! Who, we say, can imagine this? Not the keenest lover of Gothic forms and ornaments. And then once more when you got inside the house, how full of queer-looking and out-of-the-way "curiosities of architecture," quaint rooms, and large cupboards, and staircases not to be designed on paper at all; for to think them out you must construct them in reality, and in material, and almost put them together yourself, as in model-making. But these things are of the past, perhaps never in any way, certainly not in the same way, to return. They are for the most part unfortunately nearly all destroyed, and even the few, the very few, that are left wait only for a little notice and improvement to disappear too,—like ghosts of houses. But still, there are a few yet left, and, what is perhaps stranger, there are houses in parts of London wherein the old spirit has been at work up to more recent times. We refer to those houses which were built in the last century, and even in the commencement of this. One might almost call them Christopher Wren houses, and their architecture Wren architecture. We happen to know of a number of them in out of-the-way parts of London,—in the East-end of it and in the Borough. A glance at them may not come amiss, and may interest an architectural thinker here and there.

It is noticeable how much contrivance and ingenuity may be introduced even into a common house; and how it is possible to create an interest in the mere planning of stairs, and the disposal of rooms on different levels, and in unexpected places.

In ordinary house-planning of to-day you know all about it before entering, and after seeing one house, you know that the next door must be just like it; but here it is not so. This house is curious to go over, but so is the next door to it, for it is differently arranged. May not the great secret of a new architecture in the future spring after all out of common house building, and from the fact of differences in each individual house? Not in all being alike, but all different; each house showing individuality of treatment, and consequent expression in some sort human. Indeed, one cannot but see what a field there is here for architectural thought, architectural quaintnesses, and "architecturesque" curiosities. In the most recent of modern street building, the whole row of houses, at times a quarter of a mile long, the whole row, as in Portland Town, Palmerston Town, and in the new outskirts of the metropolis, are simply like long boxes divided internally into separate sections: their very merit seeming to consist in their absolute uniformity, and utter sameness. Surely this cannot be thought "progress," still less architectural progress; and yet is this that to which the mechanical architecture or building of the day is perpetually tending. Square blocks of buildings, straight streets, uniformly level houses, all of the same size and pattern and materials, and ornament! May we not here ask whether or no such a system of house architecture has the best possible effect on the popular mind of a country? A very curious and instructive subject here opens upon us. Is the house a man lives in entirely inoperate upon him as a mental lesson. Day after day, year after year, he sees the same nothingness—the work not of the thinking architect, but the dull production of the toolmaker, and the stupid forms of the common house-builder. These have supplied him with all that he sees, and can know personally of architecture. We have many a time thought of this, and the problem has presented itself to us in several ways. Going down one of those modern "improved" streets,—two long, straight, brick boxes opposite each other, with long holes for windows and doors, without variety or interest of any possible kind,—why the mind must of necessity be utterly vacant and empty as far as art is concerned. No memories, no associations, no inspirations, no thoughts of any kind—a true "lack-lustre landscape,"—a mere prospect of utter stupidity!

But now take an ancient street from almost anywhere,—a street out of old London will do,—and say, in spite of all shortcomings, whether interest in such, of an artistic kind, is not to be found. Such a street as those yet to be seen in Continental towns,—Rouen, or Nuremberg,—presents a constant succession of quaint ideas, and architectural thoughts. There is evidence in each successive house of the mind, if not the hand, of a thoughtful artist.

You know that the house you are looking at is not like the one you have left, nor the one you are coming to. There is something new to be seen at every turn—a fresh object for the eye and mind. Is this nothing, therefore, to the general public who live in the streets? An inhabitant in the old days, whatever his shortcomings and prejudices, must have found "education" in the open streets. He must have learnt a something of architecture and fine art even in spite of himself! Can we do this in improved London?

THE NEW WANDSWORTH AND FULHAM BRIDGE.

THE new bridge across the Thames between Wandsworth and Fulham, which was commenced about two years ago, is now on the eve of completion, the girders for the fourth span having been raised to their places on the river piers last week, leaving only the girders for the fifth span, connecting the bridge with the Middlesex shore at Fulham, to be fixed, and it is expected that this will be effected in the course of about a fortnight. The extreme length of the bridge from its commencement on the Surrey side of the river, between the old Wandsworth Pier and Messrs. Watney's distillery, to the Middlesex shore, is about 1,500 ft., including the approaches from the Surrey and Middlesex sides respectively. The approaches on the Surrey side consist of five brick arches of 20 ft. span each, and another span of 20 ft. carried by girders over the roadway to Messrs. Watney's distillery; and in addition to these arches, the approach is carried for a distance of 280 ft. by a solid bank. On the Middlesex side the approach is by an embankment 420 ft. in length, and a brick arch of 30 ft. span adjoining the bridge itself. This portion of the works, on both sides of the river, is already almost entirely finished. The approaches on the Surrey side are connected with York-road, Battersea, by an easy gradient, whilst on the Fulham side the approaches communicate with the King's-road, near Broomhouse-lane, and when completed and opened the new bridge will directly connect the Wandsworth and Battersea districts with those of Fulham, Chelsea, and Kensington, on the opposite shore. The bridge stretches across the river by five spans, supported by four river piers formed of wrought-iron cylinders, and shore abutment piers on each side of the river of massive red brickwork and masonry. The shore spans are each 113 ft. 6 in. in length, whilst the three spans in the stream are 133 ft. in length each. The cylinder piers in the river are 7 ft. 6 in. in diameter, each pier consisting of two cylinders connected transversely under the platform of the bridge. The cylinders are sunk to a depth of 14 ft. into the clay, and rest upon a thick bed of concrete placed under them, the cylinders themselves being also filled in with that material. The centre of the bridge has a clear headway of 20 ft. above high-water level, whilst the height at the shore abutments is 14 ft. The main girders on each side of the bridge, which are of the lattice pattern, are 12 ft. in height, and continuous throughout by being connected at the ends, the main girders being again connected by cross girders placed 4 ft. apart throughout the entire length of the bridge, and riveted to the upper side of the bottom flanges of the main girders. The roadway over the bridge is formed by timbers laid diagonally upon the surface of the cross girders, a longitudinal decking being again laid over these, upon which is macadamised paving. The entire width of the bridge between the main side girders is 30 ft., 18 ft. of which forms the carriage-way, with footways on either side 6 ft. in width.

In the erection of the bridge no particular attempt has been made to produce architectural effect, the structure being substantial rather than ornamental; but a pedestal over each pier carries a cluster of three lamps, and there is a foliated capital at the head of each column, or cylinder, on the underside of the main girders. The process of constructing the main girders is interesting. They have all been built up on a timber platform on the Surrey side of the river, parallel with the line of the bridge, and when finished a portion of the platform at each end is removed, and two barges, each fitted with raised stagings, are floated under the ends of the girder. As the tide rises, the girder is thus lifted, and then floated into position and placed on its bearings upon the piers. The two remaining girders for the fifth span on the Middlesex shore are now in course of erection on the timber platform described, and, as we have already stated, will be raised and fixed in position in the course of about a fortnight, when the connexion between the two sides of the river will have been effected. The new bridge is about a mile to the eastward of the Putney and Fulham bridge. It has been erected from the designs of Mr. J. H. Tolme; Messrs. de Bergue & Co. were the contractors, the works being superintended by their engineer, Mr. Mallalieu. Mr. Bull, of Southampton, is the contractor for the approaches, and Mr. Nichols has acted as resident engineer during the progress of the works. It is expected that the bridge, including the laying and paving of the roadway, will be finally completed and opened for traffic about the end of April or early in May, and that one of its immediate results will be the laying out of the several acres of land in the locality, on the Fulham side of the river, for building purposes, the new bridge affording more direct access to Fulham from Wandsworth, Battersea, Clapham, and other neighbouring districts intersected by the several railways on the Surrey side than now exists.

MARIENBURG CASTLE.

GOTHIC *v.* CLASSIC.

IT is not with the purpose of reviving a controversy which, if not dead, is slumbering, that we have given the above title to these notes; but the interest attaching to that ancient and unique remain, Marienburg Castle, has such a remarkable bearing upon many of the aspects of the controversy between Gothic and Classic architecture, that, should the old antagonism be again aroused,—as is not unlikely to be the case in the event of a general and open competition for an important public work,—a reference to these may not be without interest and service. It is probable that so long as the architectural art of England speaks only in dead languages,—which since the decadence of Gothic to Elizabethan or Renaissance forms of art, it has chiefly done,—as again in the revivals of Classic and Gothic art within the present century, such controversies will arise. They are not without their value, giving a zest to art-matters which prevents stagnation; but they are open to great objection when pushed to extremes, which range the advocates of different styles into hostile camps, begetting a sort of bigotry in art similar to that in religion, which can see no merit but in its own cherished mode. It is greatly to be regretted that when, by the fresh attention to and study of ancient Classic remains, a feeling for Classic art in its purest forms, and not as interpreted through the Renaissance, had so largely revived, that our architects did not carry it on, first by careful reproduction mastering its detail, till, becoming imbued with its spirit, its principles of proportion and beauty had again sprung to light and become plastic in their hands for adjustment to modern requirements. But ere the promise of such hopeful fruit was brought to perfection a Gothic revival set in, which has followed much the same course, without having very satisfactorily established superior claims in its modern adaptation as a style more suitable to the spirit and requirements of the age. Had there been a parallel development of each,—for which, in the *penchant* of our architects, there seemed abundant scope, it being very remarkable how, within the lines of each style, a special *forte* has often manifested

itself,—settled and dignified results might have accrued, for which, for the most part, we look in vain. Each style has now long had to contend with novelties introduced from all quarters, treated in the most bizarre manner, till our architecture has shown "all things by turns and nothing long," and in these heterogeneous changes, pure, noble art has had a very poor chance indeed. If it should be, as the history of modern art seems to indicate, that architecture *culminated* in its two chief forms of Grecian and Gothic, and their congeners, then architects would be worthily engaged in seeking to wring from them the secrets of their proportion and beauty, certainly not yet grasped by us, as principles for unfailing guidance and satisfying results, and their genius would be best seen in comprehensive and varied applications of these styles, rather than in efforts after originality and attractive novelty. Both styles can reach all the purposes of our present civilisation; neither need supplant the other; for no dispassionate mind, unwarped by a special bias, can doubt that both Grecian and Gothic forms of art are capable, in great fulness, of all the expression which sacred, secular, and domestic art requires, from the grandest impress of religious and public buildings down to the grace and homeliness of the villa and the cottage.

It is just in its exhibition of the most flexible adaptation to these varied ends that the architecture of Marienburg Castle forms such an interesting study for architects, challenging, as it does, upon almost all points, the allegations of the opposite school, that Gothic architecture, being a birth of the ecclesiastical and monkish spirit of the Middle Ages, is little in accord with the modern spirit, or subservient to present uses. A modicum of fact, however, is worth a large amount of argument, and we shall, therefore, so far briefly and generally describe the castle as to bring out the points in which it affords a vindication of Gothic architecture, not as *against* Classic, but as having claims to adaptability to all modern purposes.

Marienburg Castle owes its existence to the German knights, in the period of their sway during the thirteenth, fourteenth, and fifteenth centuries, it being their great stronghold and residence. It is by no means a single building, but a collection of buildings of the most varied character, including defences, palaces, churches, chapels, courts, offices, and private residences. Its architecture is somewhat of a Norman type; but if *this* more rigid, massive style than the later Gothic can hold its own in elastic adaptation for such varied purposes, then, *à fortiori*, the case of Gothic is the more strengthened as to its capability of meeting, by skilful treatment, all those problems as to light and arrangement in which, in its modern dress, it is alleged so conspicuously to fail. We need not dwell upon the *external* architecture of the castle otherwise than to say that it is of imposing character, showing great skill in its diversified aspects throughout the immense areas occupied by its various buildings, which make up an *ensemble* perhaps unsurpassed by any similar collection of edifices. It is with the *interior* that we have most to do, as remarkably suggesting the capabilities of Gothic. And here it may be said that the pointed arch and vaulted roof enter into endless combinations not only in the construction of buildings which may be called public, such as halls, chambers, &c., but by the easiest and most graceful transition from these to galleries, cabinets, offices, and apartments devoted to all the secular purposes of daily life, be it living, working, or sleeping; all yielding satisfaction in the perception of their appropriate character. Nowhere throughout do arch and pillar, vaulted roof, and mullioned window seem out of place. If it really merits the descriptions given of it, a monogram by a competent architect on this unique and remarkable remain,—still almost entire and little hurt by the ravages of time,—illustrated by drawings or photographs, would be a service done to English art, which could not but have its effect in moderating unaccountably prejudiced controversies as to opposite styles of art-development, which should be each in its mode hailed as but another form of beauty's dress, which man, as by an innate bent at certain stages of his history and culture, seeks to throw over his works, to educe in their way that sense of delight, thought, and emotion, which in its *abiding* impress is the test of every true work of art. All true art ever strikes these chords of a present and unwearied delight. In an eminent sense in architecture Grecian and Gothic forms have done this. They are not then antagonistic, but proofs of the contrasted working of the same innate principles of beauty, and as such should be revered and cultivated. J. H. B.

SAVERNAKE COTTAGE HOSPITAL, WILTSHIRE.

ADVOCATING, as we earliest did, in the face of some opposition, the establishment of Cottage Hospitals, we have chronicled the progress of the movement and described the buildings erected in consequence with particular satisfaction. In our present number we add to the list illustrations of the new structure which has been erected, from the designs of Sir G. G. Scott, R.A., for one of the most successful of these institutions,—that of Savernake. It was established, about six years ago, by the Rev. J. O. Stephens, vicar of Savernake, for the use and benefit of the surrounding neighbourhood, including Marlborough, Ramsbury, Burbage, Great and Little Bedwyn, &c. The building used for the hospital was that known as the "Institution," on the borders of Savernake Forest, near the London-hill gate, the use of which was granted by Lord Ailesbury, and it was furnished by Lady Ailesbury. In 1870, however, it was found too small to meet the constant applications for admittance, and endeavours were made which have resulted in the building we have illustrated. Lord Ailesbury gave a site near the original building and the sum of 1,000*l.*, and Lady Ailesbury gave 300*l.*

The gardens are rather extensive, and are tastefully laid out. At the entrance-gate is a one-storied porter's lodge, erected at a cost of 300*l.* from a portion of the profits of a fancy fair. The style of the hospital is domestic Gothic, the timbers over the entrance being picked out and painted oak; the exterior walls are of red brick, built hollow, and the gabled roof covered with ornamental tiles. A brass plate will be placed in the lobby with the words, "This Hospital, built by public subscription, was opened on the 22nd day of May, 1872. The foundation-stone was laid by the Marchioness of Ailesbury, April 12th, 1871." The entrance and staircase hall lead on the one side to the men's, on the other to the women's, ward; each of these apartments is 32 ft. by 20 ft., and lofty in height, the building being at the wing but one story. They are lighted by two large bay windows, placed sufficiently low to enable patients to see out of them as they lie in bed. The gabled end has also a six-light transomed window. The floors are laid with oak parquetrie, and the walls plastered with Parian cement. Sheringham's patent ventilators have been adopted, communicating by a shaft with the flue. Attached to each ward are bath-rooms and lavatories, with hot and cold water laid on. Moule's patent earth-closets are adopted throughout the building. Between the wards are two convalescent rooms, the expense of erecting and furnishing which was exclusively borne by Lady Ailesbury; the lower (for the male patients) is to be used as a board-room on Monday mornings. The "Operating-room" is lighted by a skylight above, and situate behind the men's ward. From the women's we pass to the matron's room, and then to two fever wards for isolating special cases. These are built and furnished by Mrs. Baverstock Merriman, in memory of her late husband, as the following inscription on a brass plate between the two will testify:—

"In Memoriam
Thomæ Baverstock Merriman
Duo Hos. Cubicula
Adjuncta Curavit
Vidua Mœrens.
S.E.M.
1872."

These wards in walls, floor, and ventilation, are similar to the others, and contain two beds each. The kitchen, scullery, laundry, and wash-house are kept distinct, but on the same level. A close range in the former apartment supplies hot water by means of pipes throughout the building; the laundry is provided with a drying apparatus heated by a circulating stove, and the wash-house with permanent troughs. The outbuildings include a mortuary and stabling. The walls are coloured with neutral tints, those other than the wards being painted and varnished to the height of 4 ft., and then distempered a pale green. All the external woodwork is stained and varnished.

The cost, including furnishing, laying out the grounds, sinking a very deep well (250 ft.), and building a porter's lodge, has been nearly 5,000*l.*, all raised by public subscription and at a fancy fair held at Savernake last year.

It will accommodate twenty beds, and is intended for the use of nearly sixty parishes situated in North Wilts and South Berks. It is maintained by public subscription at a cost of 550*l.* per annum.

The contractors were Messrs. Roberts, of Islington. Mr. Wheeler was the clerk of the works.

LONDON STREET ARCHITECTURE: Nos. 36 & 37, PICCADILLY.

IN a former number * we noticed at some length the picturesque and original building that was then being erected at the corner of Swallow-street, Piccadilly, for Mr. Sotheran, from the designs of Messrs. George & Vaughan. We give a view of the premises which have since been completed, the work having been carried out in a thorough manner, even to the shop-fittings. In the place of the usual mezzanine is a gallery round the shop, supported on oak posts, to which the revolving bookcases are hung. The whole of the fittings through the two stories are of oak, as is also the double staircase to the gallery, with its handsome carved newels. We have before noticed the arrangement of mural glass panels in the elevation representing the history of book-making, also the effective recess forming a loggia to the drawing-room on the upper story.

The elevation is of Portland stone. Within the arches of the loggia are carved life-size busts of Shakspeare, Newton, and Michelangelo, as representing Literature, Science, and Art. The series of pictures in Powell's mosaic glass comprises:—

1. Egyptians inscribing hieroglyphics on a sarcophagus.
2. King Alfred being presented by his mother with a manuscript.
3. Monks copying manuscripts.
4. The dream of Guttenberg.
5. Caxton reading the first proof of the Canterbury Tales.

The long panel under the loggia is divided into three pictures, representing etching, lithography, and wood-engraving. The figures are about 2 ft. high. These cartoons were drawn by Mr. Henry Burrow.

The building, including fittings, has cost about 10,000*l.* It was erected out by Messrs. Hollands & Hannen; Mr. Ville acting as foreman.

The adjoining house, No. 37, was also reviewed in our previous article. This building has been erected for the former proprietor, Mr. Addley Bourne, by Messrs. John Perry & Co., builders, of Tredegar Works, Bow, from the plans and under the superintendence of Mr. Edgar Leuchars, architect. The building consists of basement, shop, and show-room, with four stories over the former, the latter being in the rear, and having a carved ceiling and skylights. The narrowness of the frontage rendered it inadvisable to sacrifice any of the show-window for a private entrance while the shop was open. An ingenious arrangement has therefore been adopted by which the front portion of the partition which separates the shop from the stairs is hinged, and turns on a tram-plate, so as to form, in conjunction with the shop-door, also opening back, an entrance-lobby, when the shop is closed. The street-door then, in two folds, is fitted into the shifting pilasters of the revolving shutters of the shop-front.

The shop is separated from the show-room by an ornamental polished brass screen, about 7 ft. high, with curtains and *portières* attached to it. Both shop and show-room are heated by hot-water pipes, and are fitted with Pott's ventilating cornice.

The basement, except kitchen and sitting-room, is paved with Val de Travers asphalte. The upper part of the building, being required as a residence for Mr. Bourne, and also for his assistants, a separate back staircase has been provided from the basement up to the third floor.

The front is faced with gauged white Suffolk bricks, with dressings of Portland stone. The pilasters of the shop-front are of polished Irish black marble, lightly incised and gilt. The total cost was about 4,000*l.*

Norwich.—Mr. Christopher Thwaites, C.E., son of the late Chairman of the Metropolitan Board of Works, has been elected to the office of city engineer and surveyor for Norwich.

* Vol. XXX., p. 498.





SAVERNAKE COTTAGE HOSPITAL, WILTSHIRE.—SIR G. G. SCOTT, R.A., ARCHITECT.



No. 37. Mr. Edgar Leuchars, Architect. A PIECE OF PICCADILLY. No. 36. Messrs. George & Vaughan, Architects.

CAMBERWELL NEW VESTRY-HALL.

The new buildings at the corner of High-street, Peckham-road, for the Camberwell vestry, which have been in course of erection since the spring of last year (and of which we gave an illustration and a short notice in April last), are now so far completed that a portion of them will be opened for business about Lady-day, or in the course of a month from the present time. The building externally is already finished, and the interior is also far advanced towards completion.

The Peckham-road elevation is entirely of Bath stone, with the exception of a number of sculptured figures and vases, which materially heighten the architectural appearance of the building. This elevation is 77 ft. in width, and 37 ft. in height to the cornice, above which is an ornamental balustrade, making the entire height of the elevation about 40 ft.

The interior of the building, now in progress, contains several suites of apartments for its intended purpose, in addition to a spacious and commodious Board-room, which is being decorated. The building is approached by a flight of nine steps through the principal entrance, leading into a vestibule and hall, 20 ft. in width by 34 ft. in length.

It is expected that the whole of the ground-floor of the new building will be occupied by the several departments for whom they are intended in the course of next month, but the Board-room will not be finished and ready for the vestry to hold their meetings there before the ensuing summer.

Although the cost of the building was originally estimated at 8,000*l.*, several extras have since been decided upon, and it is now understood that the structure, when finished, will involve an expenditure of not less than 10,000*l.* to 11,000*l.* Messrs. D. King & Sons are the contractors, and Mr. Goodwin is the clerk of works.

THE REPRODUCTION OF DRAWINGS BY THE REDUCTION OF SILVER SALTS.

It is well known that all salts of the oxide of silver, when impregnating paper, calico, linen, &c., are reduced by copper, hydrogen, and phosphorus vapour; while the haloidal salts, such as the chloride, cyanide, &c., are not so reduced at ordinary temperatures. Acting on this, M. Renault has devised a process which *Iron* thus describes:—

"If, then, a drawing or an engraving is placed on a sheet of pasteboard which has for some time previously been exposed to hydrochloric acid vapours, and above the design a leaf of sensitised paper is laid, the acid vapours filtering through the drawing transform the salt of the oxide of silver in the sensitive paper into chloride, except in those places where the passage of the gas is stopped by the carbon lines of the design. The sensitised leaf, if then laid on a sheet of copper, reproduces the original drawing or engraving, the salt of the oxide of silver being reduced where it has escaped the acid vapours. Each stroke of the design is ineffaceable, being not only on the surface of the paper, but carried through its entire thickness, even reappearing on the other side, when the sensitive paper is allowed to remain a sufficient length of time in contact with the copper plate. In place of using a sheet of copper to develope the image, hydrogen, or phosphorus vapour mingled with carbolic acid, may be used; in this case the image appears immediately the paper comes in contact with the gas. The sensitive paper, after development of the drawing, is washed with a dilute solution of binoxalate of potassa, the design being subsequently fixed by immersion in a solution of hyposulphite of soda and salt. Facsimiles of all kinds of manuscripts, drawings, and prints can be made by this process."

NEW NORTH-EASTERN STATION, MIDDLESBROUGH.

The plans—prepared by Mr. Cudworth, the Engineer of the company, and Mr. Peachey, of Darlington, their architect for the Darlington Section,—have been to a certain extent completed. The site selected for the new station is to the west of the present one—that is, towards the Exchange. Architecturally, the station will be constructed on Gothic principles, with a spacious porch in front. It will have platforms on each side. Each of the main platforms will be 720 ft. in length. There will also be a spacious excursion platform a little further west, of about the same length; and there will be separate offices for booking and accommodating excursionists. There will be two entrances to the station—one approaching from Zetland-road, a little to the east of the present entrance, and the other leading off Bridge-street West, on the other side. A subway, to be constructed beneath the station, will give direct communication between the two platforms. Access to this subway will be gained from the Zetland-road side of the station by a flight of steps abutting on the platform, while on the other side passengers can either pass through the subway to the other platform or to the street. The offices and waiting-rooms will be lofty, spacious, and well ventilated. The entire width of the station within the walls will be 120 ft., and the roof will be constructed, chiefly of glass, in three bays. Between the platforms there will be three lines of rails.

Several collateral improvements of considerable importance are embraced in the new scheme.

The cost of carrying out these alterations, including the building of the new station, is approximately stated at from 100,000*l.* to 150,000*l.* This large expenditure will be about doubled by the North-Eastern Company's outlay of a somewhat similar sum towards the extension of the docks.

ON CORPORATION LANDS.

A paper "On Lands held by Corporations, and on the Policy either of their Alienation, or of Providing for their Management, with regard to Public Utility," by Mr. Thomas Hare, has been read before the Social Science Association. In the course of his address Mr. Hare said,—

"I suppose we shall not know, until the completion of the new Domesday Book, suggested by Lord Derby, how large a portion of England and Wales is vested in corporate and other trustees for public uses, or permanent uses adopted and sanctioned as for the public benefit. I look upon the collection of statistics which shall enable all this portion of the surface of the kingdom to be distinguished on our county maps from that which is private property, as a measure of the utmost importance. As to the extent of the public portion, there are extensive estates under the control of the Woods and Forests, and dedicated to religious, municipal, educational, and charitable uses of every kind. For example, five London charities alone have 43,000 acres of land, and some thousands of houses. There are lands in nearly every county in England under the control of the Ecclesiastical Commissioners, and in most counties other lands belonging to the colleges of Oxford and Cambridge. With regard to all these lands, the subject before us is whether, having regard as well to the furtherance of the objects for which the State has permitted them to be devoted, as to the benefit of the nation at large, it is better that they should be sold, or retained? And, supposing them to be retained, whether they may not be subjected to a system of management and publicity by which they might become of incalculable public value?"

Mr. Hare assumed it to be a matter of the most unquestionable policy, that, without disturbing any existing rights, every facility should be afforded for enabling as many of the people as the nature of their various industries and employments, and the circumstances of society, will allow, to acquire some interest in the soil or surface of the country in which they dwell. How this can be most effectually done, he considered, is worthy of the study of our legislators.

"Assuming that the creation of derivate interests for life, or for a term of years, be sufficient for economical development of the productive results of all the capital and labour that can beneficially be employed upon the land, and that, so far as relates to these estates, the claims of industry will be satisfied, it is at once seen that all the land of which we are speaking, -the real estates, the produce of which is dedicated to permanent uses,—form the basis of a system of land administration which would go far to fulfil all the political and economical objects which are to be desired, accomplishing at the same time every purpose of the endowment; the income, whether municipal, charitable, educational, or ecclesiastical, being made as great as it can be made by an enlightened, and even competitive, tenancy. This has been proposed to be effected by consolidating in every district in the country the stewardship or agency of these estates within the district. Thus, for a district of say two or three square miles, in the metropolis, or other places covered with habitations, and of 200 or 300 square miles in the country, on either of which districts perhaps fifty or a hundred different agents are employed by as many bodies of governors or trustees, let there be one agent, with a central office. In this office every applicant might ascertain what public lands exist in the district, under what leases or terms they are occupied and on what conditions, and of what and when any new letting is to take place. We should then establish in every district a market, as it might be called, in which the marketable value of the occupation of all the public lands would be ascertained."

He could not see how we could have better security than this would give for the fulfilment of the economical objects of such possession.

A discussion followed the reading of the paper, in which Mr. Hare's views were very favourably regarded.

Brompton Hospital for Consumption.—A further step has been taken towards increasing the hospital accommodation. Six more houses opposite have been purchased, and two of them have been fitted up and furnished as a "South Branch." This auxiliary accommodates seventeen additional male patients, and is now full.

ARCHITECTS' ASSISTANTS.

Sir,—I quite agree with "Provincial Architect" that leading architects ought to make higher charges than those struggling into practice, and it would throw a vast amount of work on other hands, to the pecuniary benefit of the profession generally; but I do not think we shall ever benefit our position until pupils are *taught*, and not left to pick up what they can by doing the office work, and as soon as they become a little useful, the assistant is informed that "after that day week or month (as the case may be), his services will not be required," making him a migratory subject, wandering about from office to office, so that the little he does earn becomes very small indeed when brought to an average;—25*s.* to 2*l.* per week (and sometimes less) is decidedly not enough in these times for a man who has perhaps served five years under articles, and been assistant for some time as well, and yet one must really be a genius to get more. We are *not* all genii! and many of us have not the remotest chance of a practice; but we surely ought to be paid enough to live on, without (unless having private property) being obliged to take a vow of celibacy (*vide* advertisement weekly in your paper).

Another great evil is that architecture is not a *recognised* profession, and anybody without the slightest idea on the subject may set up as an architect, thereby lowering us all socially and professionally. I can give you an instance. In a large provincial town, among several architects, one had been a carpenter, who, having nothing to do, set up as an architect and surveyor; another was a *journeyman* bricklayer; and I could mention other similar instances.

Heaven forbid we should lower ourselves to unions, unless it be for the purpose of not going in for those scandalous 5*l.* competitions.

Some of my remarks are borne out by "Prodigious" in your Number of March 19th, 1870.

Assistant.

PRIVATE AGRICULTURAL RAILWAYS.

Under this title Mr. Richard B. Grantham read a paper at the ordinary general meeting of the Institution of Surveyors, on February 24th, in which he considered the subject under the following heads:—

I. The purposes for and extent to which railways can be made useful in promoting the interests of agriculture.

II. The probability of their making a profitable return for the outlay.

III. The best mode of constructing and working them.

IV. The nature of the country to which they are applicable.

V. The present state of the law relating to their adoption.

In conclusion, he laid before the meeting a description of the agricultural railway which the Duke of Buckingham and Chandos has constructed through his estate at Wotton, near Aylesbury.

The line passes through the estate of the Duke at Wotton, which is about eleven miles on the west side of Aylesbury, and about the same distance south-east from Bicester, those being the two nearest market towns by the roads. The line, which is of the same gauge, 4 ft. 8½ in., as the main line, commences on the Aylesbury and Buckingham Railway at Quainton Station, about five miles from Aylesbury, and twelve miles from Buckingham. The line is altogether 8 miles in length; of this 6¾ miles are direct line, and 1¼ mile a branch to a farm, whence it is capable of being extended further into the estate. In this distance the line crosses three public roads, and one turnpike-road on the level, for which formal permission was given.

The main line was commenced in September, 1870, was opened to Wotton in April, 1871, and was completed for use in November of that year. The branch was completed in August, 1872.

The cost of the Wotton Railways has been under 1,800*l.* per mile, exclusive of land, or 11,200*l.* in all, but including goods and engine sheds; but only some 6,600*l.* of the sum was borrowed: the remainder was paid by the duke himself. The working expenses have been estimated at 650*l.* per annum, and the annual interest and repayment of loan of the 6,600*l.* is about 460*l.*, making 1,110*l.* as the annual charge, to which should be added the interest on the outlay on the difference between the total cost and the loan.

His Grace places a percentage rate, as the probable value of the improvement, which in the whole amounts to 350*l.*; and he also estimates that coal, road stone, and timber would produce 200*l.* a year more, making 550*l.*, which more than covers the repayment of the loan and interest. Since the line has been opened, other sources of traffic have sprung up, which have doubled the agricultural value of the estate, and there is no doubt whatever that the traffic will be developed in the course of a short time to a much larger extent than I have shown.

The Duke has frequently expressed to me his expectation that this line will afford an example of the benefit estates will derive from railways of this and similar kinds where they can be introduced; and he quoted an instance in the sale of bark, in which he was limited in his market to the neighbouring towns; but since the railway was opened, he could send to any distance, as buyers came and gave him a large increase on his former prices. A corresponding increase may be expected in the sale of timber, and so forth.

The engines at present in use are two of Aveling & Porter's, which are similar to those employed as road-rollers, with chain couplings; but I should prefer the ordinary locomotive light pattern, with four wheels coupled.

My connexion with this railway was as inspector under the Inclosure Commissioners. I had to decide upon the lines which should be adopted, and I had frequent opportunities of seeing the work. His Grace employed Messrs. Lawford & Haughton to take the surveys and levels, and procure the rails and timber, but the Duke himself personally superintended the execution of the works.

A PIECE OF CHALK.

IN a recent lecture on this subject, Dr. Carpenter, after considering the position of chalk in the series of stratified deposits, said, what is chalk? and thus answered the question:—It was long ago shown by the celebrated microscopist, Professor Ehrenburg, to be chiefly composed of an aggregation, either of very minute shells, or of the fragmentary remains of very minute shells, belonging to the group now called Foraminifera; by far the greatest proportion being of the one type which we call Globigerina. Hundreds of them would only weigh a grain. What is the nature of the animal? It is a little lump, or rather a series of lumps of jelly, with no mouth, no stomach, no anything, except that it can send out long threads, the minuteness of which is hardly conceivable to you. These threads, which are not the ten-thousandth of an inch in diameter, go out in clusters; they diffuse themselves through the water, lay hold of particles still minuter than themselves, and then draw these particles back. I have sometimes described them as a sort of animated spider's web. The central mass is always sending out some of these threads, while other threads are being drawn back into it; and in this manner, without any distinct mouth or stomach, the nutrient particles are constantly being drawn in, and the animal is thus supplied with food. Now, when I tell you that there probably is a far greater quantity of this life at present existing than of all other kinds of life put together, you will see what an important part these humble animals perform in the economy of nature. The whole bottom of the Atlantic, except where cold currents come down, is covered with these animals, and with masses of their decayed and broken shells. I cannot pretend to form an estimate of how much there can be; but you may form some idea of it when I tell you that, in dredging the Atlantic, at one mile in depth, we brought up nearly half a ton at one time; and from nearly three miles depth we brought up one hundred weight and a half, besides our three miles line and a heavy dredge. Speaking of limestones, he said geologists have come to the general conclusion that all the lime of which they are composed has at one time or another formed parts of the skeletons of animals; for we are not acquainted with any other natural agency which can withdraw lime from its solution in sea-water, and convert it into solid rock masses. I have shown you how Foraminiferal life does this, by producing that immense aggregation of minute shells which we call chalk; and corals also are doing the same thing on an enormous scale: whilst Eclimoderms and Mollusks also contribute, their shells forming enormous beds in particular localities.

GARDEN DRAINAGE AND OTHER IMPROVEMENTS.

IN the Vice-Chancellors' Courts, Lincoln's Inn, on February 20th, before Vice-Chancellor Sir R. Malins, the case of Broad *v.* Huxley was tried.

The plaintiff in this suit is a retired tradesman, residing at No. 12A, Blenheim-terrace, St. John's Wood, and letting a portion of his house in lodgings; and the defendant, Professor Huxley, is the owner of a house and garden to the rear of and adjoining on the south the plaintiff's house. Professor Huxley's premises are at a higher level than the plaintiff's house. The plaintiff's case was that certain improvements which the defendant commenced in November last, and which consisted in raising the general level of his garden so as to form a croquet-lawn, making an embankment at the rear of the plaintiff's house and planting it with trees, and draining the surface-water from his garden into a cess-pool, 22 ft. from the plaintiff's house, had had the effect of rendering the basement of his house so damp as to be uninhabitable, and of darkening the premises. The plaintiff's bill prayed for an injunction to restrain the defendant from draining his premises so as to cause injury to the plaintiff's house, from permitting the embankment to damage the plaintiff's party-wall, and from allowing the trees thereon to darken his premises. The case, which occupied the whole day, was, by consent, of the parties, heard as a motion for decree.

The Vice-Chancellor delivered an elaborate judgment, in which, after remarking upon the conciliatory disposition shown throughout by the defendant, he said that the onus of proving his case lay upon the plaintiff, and that he had entirely failed in so doing. The evidence satisfied his Honour that the plaintiff's house had for years been damp, and that the defendant had not made it damper; that the case as to the trees was preposterous, and as to the wall had no foundation. In dismissing the bill with costs, his Honour remarked that the plaintiff, the value of whose house was about 700*l.*, had persisted in a litigation which would probably cost him 500*l.*

EDUCATION IN MELBOURNE.

SIR,—The new Education Act comes into force this day (January 1st). Its clauses render education in the colony compulsory, secular, and free.

For the proper carrying out of the intentions of the Legislature, a new department has been established, under the control of a Minister of Education, who is directly responsible to Parliament.

It has been decided that the colony is to be divided into school districts, in each of which the ratepayers can elect a Board of advice; to direct what use shall be made of the school buildings after school hours; to suspend any teacher for misconduct; to report on the condition and management of the schools, and to visit them from time to time; to use every endeavour to induce parents to send their children regularly to school, and to report the names of those who neglect to do so; and to recommend the grant of a scholarship to any child displaying unusual ability.

The compulsory clause of the Act is not of a very stringent character, as only sixty days in each half-year are provided for; and it is questionable whether so short a time will prove of any benefit to the neglected children of the colony. Parents neglecting to send their children for a period of sixty days in each half-year (unless they are being educated elsewhere, or are incapacitated from some valid cause) are to be punished by fine, or imprisonment for one week.

Secular instruction only is to be imparted in the State schools.

Free instruction is to be given to all children attending the State schools in reading, writing, arithmetic, grammar, geography, drill, and gymnastics, with the addition of sewing and needlework for girls; a certificate being given to each child educated in these subjects up to the standard required.

Teachers are to be paid by salary for teaching the branches specified, but fees are to be charged for extra subjects.

The Act also provides for the establishment of night schools.

The regulations under which the Act is to be administered are not yet made public, but as they are framed by the Minister of Education (the Hon. J. W. Stephen), who has the public confidence for his earnestness and ability in furthering the cause of education, it is certain that the regulations will be framed and carried out in a liberal and enlightened way, both as regards the teacher and the children taught.

Melbourne. S. H. R.

DOCTORS DIFFER, SO DO MATHEMATICIANS.

REQUIRED the weight that would break a rectangular beam of Riga fir when applied at the middle of its length, the beam being supported at both ends. The length of the beam between the supports is 21 ft., its depth 14 in., and breadth 12 in.

Tredgold says, "Multiply the breadth in inches by the square of the depth in inches, divide the product by the length in feet, and the quotient multiplied by the tabular value of the constant C = 530

$$\text{and } \frac{12 \times 14 \times 14 \times 530}{21} = 59{,}360 \text{ lb.}$$

is the breaking weight."

Barlow says, "Multiply the tabular constant 1,108 by 4 times the depth in inches, and by the area of the section in inches, and divide the product by the distance between the supports in inches, and the quotient will be the breaking weight.

$$\frac{1108 \times 4 \times 14 \times 168}{252} = 41{,}365 \text{ lb.}"$$

It will be seen there is a difference in the two methods of calculation amounting to 17,995 lb., or 8 tons.

If there are these differences between the formulæ of authors on whom we ordinary mortals are taught to look as authorities, and to depend upon in our ordinary calculations, can it be surprising that "surveyors differ" also when giving evidence in our courts of law?

Probably some of your readers will be able to explain the above discrepancy; but it appears to me that if the experiments on the strength of timbers were made with larger pieces than from 1 in. to 3 in. thick, the results would be more reliable. T. T. G.

THE PAVING OF SOUTH LONDON AND THE VESTRIES.

CONFERENCE OF HOUSE OWNERS.

THE builders and house-owners of South London are complaining of the inconsistent and expensive character of the paving in the locality, by which they allege that they are put to an unfair cost in respect of the property which they hold. At a conference held last week to memorialise the Lambeth Vestry on the subject, it was stated that whilst some neighbourhoods were most extravagantly paved with materials quite unsuitable, others were altogether neglected. It was also stated that builders and owners of property, when required to make up and pave roads, had not the option of doing the work themselves, which they could in most instances do more cheaply; and that there was no opportunity for making suggestions of a local character in regard to the kind of pavement to be used, the consequence being that very often poor neighbourhoods were required to pay for the most expensive kinds of pavement, and *vice versâ*. It was suggested that streets should be classified, and pavements also, so that the owners of property in any particular locality would know at once for what kind of pavement they would be expected to pay. Prompt action in the matter was urged on the ground that the Lambeth Vestry have it in contemplation to borrow 10,000*l.* for the purpose of carrying out a scheme of uniformity in the outlying districts by the general adoption of tar paving. The owners of property in Camberwell also complain of the same grievance, alleging that some districts are over-paved whilst others are neglected, and recently they presented a memorial to the Camberwell Vestry against the proposal to pave Croxted-road and Acacia-road (a rural district in Dulwich) with stone in square sets. So strong is the feeling against this proposal in Dulwich, that Mr. Green, the largest owner of houses in the neighbourhood, has offered to incur the expense of keeping the paths in order rather than that the character of the neighbourhood should be destroyed; and the College authorities have also interposed in the matter, with a view of preventing the picturesque character of the neighbourhood from being affected by the kind of paving proposed.

A BLIND BUILDER.

The old village of Hampsthwaite, in Yorkshire, has recently lost one of its most interesting and worthy inhabitants, Peter Barker (Blind Peter), who died on Tuesday, in the sixty-fifth year of his age. Becoming blind through an attack of fever, when three years old, his prospects in life were not very hopeful; but through his energy of character and his natural abilities, he maintained himself in a respectable position. He was skilful in music, and, being possessed of a fine bass voice, he was very efficient in the psalmody of the parish church. With marvellous readiness, he, in his early days, embraced the business of a carpenter and cabinet-maker, undertaking many small building jobs, and executing them satisfactorily. His knowledge was acquired without serving as an apprentice or having any other instructions, but through his remarkable natural endowments. A lady who came to Hampsthwaite when he was fifty-three years old taught him to read the Bible by means of Moon's system of raised letters. With this "lamp to his feet," he traversed the Valley of the Shadow of Death, and so found peace.

COTTAGE HOSPITALS.

Ventnor (Isle of Wight).—The report read at the annual meeting was a satisfactory one. The committee still plead for another benevolent person to build an adjoining house, when the hospital will consist of six complete pairs or blocks, containing in all over seventy patients, each of whom will have a separate sleeping-chamber. During the past year, and under the presidency of the Bishop of Winchester, the committee held a public dinner, and the contributions then received amounted to 2,300*l.* They are now endeavouring to obtain 2,500*l.* for furnishing and maintaining the houses now building, and which will accommodate thirty additional patients. The medical report, read by Dr. Arthur Hill Hassall, states that the improvement in the health of the patients at the hospital was very great.

Longton.—The cottage hospital here in October last became the property of the town, and a meeting of the governors has been held to elect the yearly committee. The Mayor of Longton (Mr. T. W. Barlow) presided. It was stated at the meeting that there were eighteen patients in bed, and there had been twenty, so that there had been a great strain upon the funds, and there was a debt of 62*l.* 9s. They were in debt 70*l.*, and their expenses were heavier now than in the summer. He believed the whole population benefited by the hospital, persons of all grades being liable to accident. A committee and officers were appointed.

Tetbury.—The general annual meeting of the subscribers to this institution has been held. Among those present were the Duchess of Beaufort and various other ladies, the Right Hon. T. Otheron Estcourt, the president, and several clergymen and other gentlemen. The report for 1872 was adopted. It stated that the hospital, which was begun in 1866, in a small rented cottage, has been put on a more permanent footing in the course of the last twelve months by the completion of a commodious building erected on a very favourable site, at the expense of the president. . . . . "We are happy to say that our financial position presents a satisfactory aspect. We have paid off the balance of last year, we have been able to meet the expenses of the first year in a new building, and we have a balance in hand at the bank." The number of patients from the list prepared by Mr. Wickham appears to be 41.

Ledbury. — The committee have formally opened the institution for the reception of patients. Mr. Ricardo, in taking the chair, spoke of the usefulness of cottage hospitals in general, and eulogised the exertions of the sub-committee in establishing a hospital for Ledbury. Many were present at the ceremony. The hospital, which is a well-built house, situate in Dymend-street, in the town of Ledbury, consists of two large rooms suitable for a day-room and board-room, a kitchen and back-kitchen on the ground-floor, two large wards—one for men and other for women—a room for the matron, and an operating-room, on the first floor; and several rooms on the upper story, which could be made serviceable should occasion require, but which at present the committee do not propose to use. The hospital is designed for the reception of accidents and diseases requiring active medical and surgical treatment, and is suitably furnished. All the medical gentlemen in the town and neighbourhood have consented to give their gratuitous services. The patron is Earl Somers, and the president is Dr. Henry. Mr. G. E. Masefield is the hon. sec. We understand the committee have received many articles of use, such as linen, books, and furniture.

Ashford.—There are fifteen cases in the hospital at the present time; indeed, the calls upon the funds are so great that there is a considerable sum due to the treasurer. Great service is rendered by ladies gratuitously. An amateur concert has been given at Charing on behalf of the hospital. There was a large gathering of gentry present at the concert. The ladies and gentlemen who carried out the programme all belonged to the upper class of society, and the whole affair was very successful. A sum of 8*l.* 10s. was realized on behalf of the hospital.

Wisbeach. — The North Cambridge Cottage Hospital at Wisbeach is making progress at the expense of Miss Trafford-Southwell, of Grantham. Miss Southwell proposes to endow it with 3,000*l.* for its future maintenance. She has also undertaken to provide it with surgical library and instruments. Mr. William Peckover, of Wisbeach, gives 2,000*l.* to the endowment, and Mr. Algernon Peckover, 500*l.*

EXTRAORDINARY CASE IN THE BUILDING TRADE.

Under this heading a lengthened report of part of a local case in progress is given in the *Sussex Express* of last week. It began in the Queen's Bench, before Mr. Justice Mellor and a common jury, but has been handed over by mutual consent of the parties to Mr. J. Smith, a barrister, as arbitrator, under whom it has been progressing. The parties in the case are Mr. F Isaacs, a builder at Reigate, plaintiff, who claims 514*l.* 13s. 10d. for work done and materials supplied, 100*l.* for detention of business books, &c., detained by defendant, and 200*l.* damages. Defendant is Mr. John Fuller, by whom plaintiff was employed in building a house at Reigate. Plaintiff instructed his counsel to state that while at defendant's house, with his books and documents, trying to get a settlement with defendant, he was detained while four men were called in and an attempt made to get him to admit that certain scaffolding, &c., belonged to defendant, and that defendant ultimately detained his documents.

WIRING THE WORK.

Mr. Humphrey Turner, of the Cardigan Steel and Wire Mills, has patented an invention of his for applying wire to building and other purposes. The invention consists in the application of wire, steel cut in strips, or iron rolled to particular patterns, for walls, ceilings, roofs, and floors of buildings; it is also applicable for large cisterns, water-tanks, brewers' squares, and other vessels. In the erection of a house it is thus applied. The foundation is laid and brought up 12 in. or 18 in. above the ground. Iron, cast metal standards, and straining posts are fixed at certain distances. To these wire is attached from ½ in. to 2 in. apart, and is strained from the posts through holes in the standards. Panels and proper stay posts are then fixed inside the wire at proper distances, according to the thickness of the walls required. The walls are formed by means of a concrete, and while this is being laid on inside, the plasterer may carry on his work on the outside, by laying on a better material consisting of cement and sharp sand. The walls being brought up to the height required for the first floor, iron plates are laid upon them with holes for the wire to pass through. An iron or cast metal beam is then thrown across the centre of the rooms from wall to wall, and when the walls are complete, the wire is strained upon them through the plates; and in this way the whole of the building is securely tied. Mr. Turner claims that the wires will supersede the use of floor joists of wood, and will form beds for concrete floors. They will also answer on the under side as laths for the plastered ceilings, and the plastering may be carried on at the same time as the laying of the floors in concrete. The next floor is completed in a similar manner. When the required height is reached, the plates and beams are laid so as to give a proper fall for the water, and a wall is carried on the top of the plates for 3 ft. or 4 ft. The wires are then strained across the whole of the top, and on these concrete is laid, thus doing away with rafters and slates. Mr. Turner contends that the only wood required in the construction of a dwelling-house will be for doors, cupboards, window sashes, and panes. The stairs may be of concrete or wood. Houses thus built would be almost fire-proof, and no vermin could get a lodgment in the floor and skirting boards, because they would be made of solid concrete.

WINCHESTER COLLEGE CHAPEL.

Sir,—I have not the slightest intention of entering upon a long public correspondence with persons who are afraid to give their real names, but shall be obliged if, as a mere matter of justice, you will be good enough to insert this one letter by way of reply to your correspondents, "D." and "North Hants." "D." complains that the Winchester authorities treat all representations with indifference. This is a curious charge, inasmuch as no representations have been made. He is, however, perfectly correct in saying that the work of restoration is at a stand-still, owing to want of funds. As to "North Hants," I beg leave to inform him, that his letter is a tissue of falsehoods, and that, with all his boasted information, he knows nothing about the matter. The accumulated fund which he speaks of exists only in the imagination of himself or his private informant. If "D." and "North Hants" have the manliness to write to me privately, I will answer their letters, but shall take no further notice whatever of anonymous communications.

The Warden of Winchester College.
Winchester.

THE FATE OF THE CHELSEA WATER BILL.

It is gratifying to be able to record that the audacious Bill for the formation of an unsightly wall and reservoir to replace the trees and general landscape on the Thames, right opposite to the famous holiday resort of the Londoners at Hampton Court Palace, has been thrown out of the House of Lords without even the usual formality of a second reading. The action taken on the part of the Royal Academy, in which Mr. Marks did his work well, has brought about this very satisfactory result. Corporations or companies have the assurance to try to do things so impudent and unwise that no individual connected with them would dare to propose himself to do the like.

ARCHITECTURAL PUBLICATION SOCIETY.

It is now several years since the subscribers to this Society have received any instalment of the Dictionary, either text or illustration; no reports have been issued, and no annual meetings held. I think it would be well if the secretaries would, through your columns, make known to the subscribers the exact state of progress of the Dictionary. The local secretaries obtained many subscriptions on the understanding that the work would be completed forthwith, and it is due to them to explain why there is no sign of completion.

L. H. S.

GAS ESCAPE AND THE SAFETY LAMP.

Sir,—I beg to thank you for the favourable notice which you published in your issue of last week of my safety-lamp. Curiously enough, on the same page, and in a line with this article, is the account of "a serious explosion of gas" at Walsall.

The necessity for adopting safety-lamps in gas works and other places where explosive materials are stored or used is obvious. Had one of my lamps, instead of a naked light, been in the hands of the gasfitter when inspecting the spot from which gas was escaping, no explosion could have taken place. Under ordinary circumstances, gas cannot penetrate the wire gauze column of my lamp; under very extraordinary pressure, it is possible to drive the gas through the outer casing, but only in such a small quantity that nothing more alarming than an innocent puff goes off, which merely puts out the light, without even any damage to the lamp itself.

William Yates.

WINCHESTER NEW TOWN-HALL.

At the last meeting of the Winchester Town Council, the Guildhall Committee reported that, in consequence of a defect having appeared in the west wall of the great room, they thought it desirable to have the opinion of Mr. G. Legg, architect, who recommended that, in order to strengthen the wall, six buttresses should be erected on the west side, and piers added to the walls under the room; likewise that a parapet should be erected on each side of the roof. The committee recommended that the report of Mr. Legg be adopted, at an estimated cost of 225*l.* The reports and plans proposed by Mr. Legg, and a correspondence with the architects, Messrs. Jeffery & Skiller, on the subject, might be perused at the town clerk's office.

After a long discussion, and some hard words, the report was adopted. The appearance of the four statues in canopies on the front is strongly objected to: and not without reason.

SEWAGE AND ITS VENTILATION.

IN a paper "On the Relative Value of Clarified and Unclarified Sewage," by Mr. William Paul, F.R.H.S., Waltham Cross, the author says:—

"I have looked long and earnestly at this question, both from the theoretical and practical point of view, and from numerous experiments have arrived at the conclusion that sewage, when 'clarified,' is a most valuable manure for porous or well-drained soils, even when cultivated according to the recognised systems. On the other hand, I have no faith in the value of sewage of any kind, or for any land, if used in an 'unclarified' or sludgy state, unless accompanied with a laborious and costly system of cultivation. . . . . Many years ago I used 'unclarified' sewage extensively, and for a lengthened period. The results were not satisfactory until I adopted the practice of stirring the surface of the soil after every application of the sewage. The results then exceeded my expectations, but when estimated were not found equivalent to the largely increased cost of labour. Afterwards the sewage was clarified by the use of quick lime, and used for a lengthened period in this state: this was judged better than the use of unclarified sewage without labour, but not equal to its use with frequent hoeings. At present I have two large cesspools into which the sewage is diverted and allowed to settle, becoming almost clear by subsidence, in which state it is freely used and found most valuable.* In conclusion, I would say that I am of opinion that the sludge in sewage is valuable as a manure; but I object to its application to the surface of the soil in a semi-liquid state. If so applied the surface of the soil should be constantly stirred and broken, which, of course, involves considerable expense. It then becomes a question whether it is not more economical to separate the sludge, employing it as a solid manure or for other purposes, leaving a clarified liquid behind for irrigation."

A report by a committee on the ventilation of the sewers of the Halifax union-house was last week read before the local board of guardians. We give an abstract of this report:—

"Of the many difficult and important works your committee have had to encounter, not the least was, which could be the best mode of re-sewering the poor-house, in a sanitary point of view, so as to make the house as healthy as possible. Your Board will remember it was decided to make new and improved sewers of earthenware pipes. Mr. Barber, the architect, devised a plan, in which he was assisted by Mr. Dutton, the governor. The next problem was, and the most difficult to answer, how are we to ventilate the sewers of their poisonous gases? when Mr. Henry Stott, of West Vale, came forward of his own accord, and proffered the use of his patent for ventilating sewers, together with his services, which were most gladly and willingly accepted. It is now nearly nine months since the Board, through the recommendation of your committee, adopted Mr. Stott's system. . . . . The main sewers are removed to the east, west, and north sides of the house, into which the whole of the lesser drains empty themselves; and no single drain runs under any inhabitable building. The two sewers running into Gibbel-lane are provided at their farthest extremity with very large syphons, 18 in. in diameter by 12 ft. long, and also a ventilating-shaft of 18 in. in diameter, to admit of fresh air. The sewer running into Hanson-lane is also provided with a large syphon and ventilating-shaft, to admit of fresh air. These main sewers are connected by dry earthenware pipes, 12 in. in diameter, to the ashes-hole of the boiler fires. The ashes-hole of each of the boilers is provided with a sheet-iron door, by which they can be made air-tight. Thus the fires draw the air from the sewers, which is passed through the fires and purified, and taken up the chimney stack. The fires are supplied exclusively with air from the drains, and the gases being continually removed vacuums are created, and the poisonous gases are continually being drawn from even the most remote drains, and thus ventilated of their noxious gases. To prove that this is so, two fans have been inserted in each of the main sewers, and so long as the doors to the draught-holes of the boiler fires are closed, these fans will revolve with great rapidity; but open the doors, and the fans soon cease to revolve, clearly demonstrating without doubt that the sewage air is continually ventilated and changed. There is no denying the fact that the poor-house is now safely free from noxious drain smells; and since Mr. Stott's system has been applied, the health of the house has greatly improved. . . . . At Oldham, where this system has been applied in certain parts, such localities have improved in a sanitary point of view. And at West Vale, where the patent was first applied, the health of the inhabitants has much improved, and the mortality decreased."

* "From experiments not completed when this paper was read," adds the author, "I found a marked difference in geraniums watered with sewage clarified by simple subsidence, and with sewage clarified by lime, in every case in favour of the former."

CASES UNDER THE METROPOLITAN BUILDING ACT.

WOODEN BUILDINGS.

District Surveyor for Penge and Norwood v. *Richard Winnifrith.*—This case, at the Lambeth Police Court, was for not giving notice (under the 38th section) of the erection of a wooden carriage-shed. The hearing was on January 23rd, 1873. The district surveyor (Mr. Edwin Nash) described the structure as being 28 ft. 6 in. long by 23 ft. 6 in. wide, one story high, enclosed on three sides and open on the other side, and roofed with wood and felt.

Upon this the magistrate stated that, *being open on one side*, he doubted its being a building within the meaning of the Act, whereupon the district surveyor stated that many structures of a similar kind had been deemed to be buildings. The magistrate then asked for cases, and adjourned this one for a fortnight, for the district surveyor to bring precedents.

On the 6th of February, the district surveyor argued that this was a case of much importance, because it would affect the mode of erecting buildings, not only in his own district, but also in all the districts throughout the metropolis, and therefore he wished to make a fuller statement than is customary with him at this Court. He observed that the Building Act has, unfortunately, no preamble; but, if it had one, it would unquestionably have contained the phrase, that it is expedient to check the spread of fire in the metropolis, inasmuch as all its provisions are framed most conspicuously with that object. Neither does the Act contain any definition of a building, and consequently the presumption seems natural that all structures which are not movable chattels are buildings, and must be erected in the manner prescribed by the Act; and there is an indication of this meaning in section xii., which states that the term "External wall shall apply to every vertical enclosure of *any* building." Again, the first clause of the first schedule states that *every* building shall be enclosed with walls constructed in a certain manner. He alluded to all this, because it is evidently intended that structures should be enclosed with walls, and not with wood, and he felt sure that if the structure in question were to take fire, other structures near it would also be burnt. Moreover, the Metropolitan Board of Works, being now the controller of the fire-brigade, the interests of that body would suffer.

But he further urged that the main question had yet to be considered, namely, as to whether a structure *open on one side* is a building or not, within the meaning of the Act, and in doing so it was necessary to understand what was meant by a side, and what number of sides a structure may have without its rising to the dignity of a building. Many buildings are irregular in shape, and have a great many sides, and a building might be a decagon, or a duodecagon; and then if 1-10th or 1-12th of its outside were open, it would not be admitted into the category of buildings, if the being open on one side gave it exemption; or it might be circular, having only an inside and an outside; and then (the district surveyor said) he should want to know how much of the periphery must remain unenclosed. The exemption derived from being *open on one side* would apply not only to the flimsy structure in question, but to others, however large or substantial: so that, if as strong as a castle or a warehouse, they would be exempted, which, he thought, could not have been intended; and he felt sure that if the idea of openness on one side were to prevail, he should be unable to conduct the business of his district; and he asked the magistrate to permit him to make the remark that the Building Act appoints the magistrate quite as much as it does the district surveyor—as an officer to assist in carrying out the operations of the Act.

The district surveyor produced five precedents of structures open on one side, and which had been condemned by police magistrates, three of which were decided in the Lambeth Police-court, and he stated that he could produce numerous analogous cases, but he thought it best to confine himself exactly to structures *open on one side*.

The magistrate ordered the payment of a fine of ten shillings and costs.

On the 30th February the same builder was summoned by the district surveyor for noncompliance with his notice of irregularity in respect of the same building, when the magistrate ordered that it be altered so as to bring it into conformity with the Act.

BUILDERS AND THEIR WORKMEN.

MR. THOMAS PRETTY, a builder, of Lee, was summoned at the Greenwich police-court, by Edgar Austin, for wages.

The complainant was called, and said he went to work, in the first instance, for a Mr. Roberts. This was up to the 25th of January last. On the Monday, January 27th, defendant came and asked him for Mr. Roberts, saying that if he (complainant) saw four or six plasterers he was to put them on. Mr. Roberts was master, and would see that the men had their money. On the Saturday he (defendant) would not pay witness and the others, and declined to give any reason.

Cross-examined: I knew that there was a contract with Roberts, and that the time for the completion of the contract had expired. He told me to put on the plasterers, but he did not say he (defendant) would pay us. I rest my claim on the words used.

Charles Hooper confirmed the evidence of the complainant, and said he saw Roberts and told him he considered he (witness) was working for Pretty, and not for him (Roberts).

Samuel Roberts, of No. 8, St. John's-place, Blackheath, said he had, in the first instance, made a contract.

Cross-examined: I stopped on the 1st of February—a week after I had received the last money. I went on the Tuesday, after Monday, the 27th of January, and saw Mr. Pretty, and said I would finish the work if he would advance me the money for wages, but this was declined.

Wm. Weden said he was present when Mr. Pretty told Hooper to put on two more men. Mr. Roberts was present on that day.

The defendant was sworn, and said he had contracted with Mr. Roberts for the plastering, whom he had paid 20*l.* too much. On the Monday in question he did tell the complainant to set on plasterers, but he did not promise to see them paid.

Mr. Patteson said no doubt there was a fresh contract entered into by Mr. Pretty, and an order was made for the claims, with 5*s.* costs in each case.

THE "HAWK AND HANDSAW."

SIR,—In the *Penny Magazine* of March 21st, 1840, page 112, are these words:—

"*Herons in Westmoreland.*—Formerly, indeed, they were more commonly and wantonly shot than they are now, when the use of firearms is more restricted than was once the case; not that they were considered of any value, for the lower orders of the inhabitants of those parts would far sooner think of eating an old tough rook than a heron, provincially called a *heron-sew*."

JOHN WHISTLER.

SIR,—With reference to the common name of the heron, I may mention that I heard it pronounced "harnsher" on the Orwell; and when I showed that I did not understand what was meant, the speaker added, "hernshaw," "hern." Moreover, a friend who lived for many years close to a heronry near Brandon, in Norfolk, assures me that the people there always called the bird the "hanser," with the "a" broad.

Pray, sir, forgive me if, in conclusion, I say to "A. H." "Neow yew've gott'n yewr 'hanser.'"

C. J. GEDGE.

*** With this the correspondence may end. The grounds on which we opened it will be remembered. The interest excited by questions concerning the text of Shakspeare is shown by the circumstance that we have received more than forty letters in the present case.

MICROSCOPICAL SOCIETIES AND FREE FORUMS.

SIR,—The amalgamation of these societies, with some alterations to meet contingencies, would add much to the well-being of amateurs, and energy of scientific persons, when conducted by a well-chosen chairman and other officers, and would be great help-mates to free public libraries, which are now well conducted, without the nuisance of the ballot-box, as now used in Microscopical Societies. It should be asked, wherefore is this abomination employed, where peaceful and sober persons assemble for the purpose of mutual information only, apart from politics? Furthermore, the exclusion of many thoughtful persons of the lower class from enjoying research into hidden nature, is now upheld by persons who have not shown their aptitude and progressive power in microscopical science during the last fourteen or fifteen years' action of their societies, which have not even produced "a ridiculous mouse," and exclude suggestions from an outsider in your pages by silence. However, it is hoped that the press may kindly make some impression on these close societies, whilst their annual assemblies are like levees of the Queen, where admiration of beauty chiefly is talked of, not of usefulness; bearing in mind that external beauty of microscopical objects is no guide to excellence in quality, and gems may be found in the most unsuspected corner of nature, as in the buckwheat. Conversation with many members has revealed (what is commonly called humbug) no benefit to real science; and public experience of microscopal display proves fully such to be the case for outsiders to give opinion thereon. Much more can be said to show that fresh blood and system are requisite to effect some good in the science. In these days of boasted science, every avenue should be available to keep pace with our neighbours on the Continent, and in America; therefore the following propositions are set forth:—

1. That the manufacture of microscopes, in various forms, at moderate price, should be effected.

2. That amateurs and artists may occupy their leisure hours in examining dame Nature.

3. That confirmation of doubtful questions might be easily solved.

4. That artistic works may be more generally founded in nature's laws of mechanical forms.

5. That principles of the microscope might be better understood than they are at present displayed by authors, and by witnesses in courts of law, bearing in mind that the greatest magnifi

ing powers are not the most needed to be known for practical purposes in daily occupations of life.

6. That the ten specimens of microscopical drawings supplied to the Vice-President of Education, for the purpose of superseding present patterns of nothing in our Schools of Art, are fair examples of benefit from the study of the microscope by Leeuwenhoek, which can be seen at the author's house.

The history, progress, and present state of microscopical science, and proposed future study of the subject, have been suggested for a lecture, if sufficient interest thereon can be collected within four walls, by yours obliged,

William Parker, M.R.C.S.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

At the council meeting, February 26th, Mr. J. R. Planché, Somerset Herald, in the chair, it was announced that the congress for the present year would be held at Sheffield during August or the early part of September next, the Duke of Norfolk having accepted the office of president for the occasion.

At the evening meeting on the same day, Mr. Gordon M. Hills, treasurer, presiding, several papers were read and exhibitions made by Messrs. Roberts, J. W. Baily, Dr. Kendrick, and others, and amongst them was a broken portion of a Roman bronze eagle, presumed to belong to a standard-bearer, and lately found in Victoria-street, City. Mr. J. W. Grover further illustrated this interesting object by a drawing of a Roman eagle, about the same size, found at Silchester, by the Rev. Mr. Joyce, who, it was intimated, will read a paper on the subject at the Society of Antiquaries very shortly.

A paper was read by Mr. H. Syer-Cuming on Roman Conduit or Water Pipes, and illustrated by some sections of Roman leaden pipes found lately in the City and in Beaulieu Abbey, Hants; the section of the one found in the City was unusually large, being 6 in. in diameter, and was exhibited at a previous meeting by Mr. Edward Roberts.

Mr. Blashill then read a paper, communicated by Mr. J. T. Irvine, on Roman Temples in Bath, specially referring to those of Apollo and Minerva, which Mr. J. W. Grover commented on, pointing out, amongst other interesting matters, that there was evidence of coal having been used in these temples by the Romans, for the purpose of keeping up perpetual or sacred fires.

The treasurer exhibited a fine specimen of the Reg tankard, said to have belonged to Sir Francis Drake; it was of silver, and weighed 9½ oz. avoirdupois; and then the meeting stood adjourned to the 12th March next.

TECHNICAL EDUCATION IN EDINBURGH.

In reference to the scheme described in last week's *Builder* for the establishment of a technical school in Edinburgh, to be maintained out of available funds connected with the Heriot Endowment, it is much to be regretted that the Trades Council, and a large section of the industrial classes have resolved to oppose the movement most strenuously.

A special meeting of the Trades Council was held for the purpose of receiving a deputation from the Committee on Technical Education. Mr. Cousin, architect, in introducing the deputation, said that with the view of eliciting the opinions of the working classes on the scheme for technical schools for Edinburgh they had requested this meeting with the Trades Council. He said that they were desirous of promoting at least one large and well-appointed school in which the children of their skilled artisans who had gone through the course of training of the primary schools should have an opportunity of acquiring a knowledge of geometry and of architectural and mechanical drawing in its practical departments. He referred to the advantages to be derived from these schools, and said that in alluding to skilled artizans, more especially of those connected with architectural operations, he had no hesitation in asserting that he could point to buildings in and around Edinburgh in which the masonry, carpentry, and joiners' work are unsurpassed, if equalled, in any part of Great Britain. Having workmen of such a kind of hand, the desire of the committee was that these and others of like mould should have an opportunity of cultivating their minds with energy and zeal.

A few days subsequently the Trades Council met to give the subject further consideration, when it was resolved "to oppose by every legitimate means the appropriation of the Heriot funds for such a purpose." It appears that the surplus funds of Heriot's Hospital now amount to about 20,000*l.* per annum, and Parliament having already afforded ample means of educating the poorest children up to the level of the out-door Heriot Schools, it was thought that the munificence of the founder would be best applied in supplying a higher and more practical education than is furnished by the Government system of education.

LEAD PIPES AND FROST.

Sir,—I observe a suggestion in your paper for the prevention of the bursting of water-pipes by frost, that india-rubber tubes should be inserted inside the lead pipes. Now, I cannot express approval of the idea, from a fear that a bad effect would be produced upon the water. I also consider that when in process of time the india-rubber became cracked and worn,—which in hot-water pipes might not be long,—it would become a great nuisance. Seeing also that this india-rubber tube would encroach considerably upon the interior area of the lead pipe, a larger lead pipe would require to be used than if there were no india-rubber tube inside of it. If the india-rubber tubes were to be used at all, I would be inclined to prefer their being put outside the lead pipes in place of inside. If, however, it were more the general practice to wrap up our lead pipes in felt, and protect them from cold draughts, there would be fewer burst pipes during frost.

As to Mr. M'Lauchlan's idea, at page 174, that an oval or flattened water-pipe would on account of its shape not burst, that, I fear, is a mistake. The cause of a water-pipe bursting is because the ice takes up more room than the water, and if there be no room for expansion longitudinally within the pipe, then the ice, or the water in the act of becoming ice, simply forces out the side of the pipe, and so makes room for itself.

The shape of pipe necessary to carry out Mr. M'Lauchlan's idea would be a square-shaped one, say flat on top and bottom, and concave on its two sides) (: this shape, however, I fear would be more troublesome and expensive in the fitting up, and I would not like to guarantee its being entirely frost-proof either.

W. P. Buchan.

Sir,—During the ten years that I have been a reader of the *Builder*, I have often wondered at the complaints about frost-burst pipes that have from time to time appeared in its pages, and at the apparent difficulty of finding an easily-applied remedy. During a fair practice of a considerable number of years now, I have never had a single case of pipes being burst by frost; and the method of preventing it is very simple. In the first place, I take some trouble so to arrange my pipes somewhere *well* within the house, if possible, and away from external walls. But if they must be against external walls, as is often enough the case, then I have a ⅝-in. or ¾-in. wood lath fixed against the wall, and fix the pipes on *that*; and they never freeze, even during the rigours of a Scotch winter on the East coast.

In fact, two things only are to be guarded against,—first, pipes touching a cold external wall; second, allowing a current of frosty air to play over them at any part. The means of preventing these *almost sole* causes of frost-burst pipes will readily enough suggest themselves to any person of intelligence, in any circumstances.

D. H.

Chart of Manufactures, Trade, and Agriculture.—A sheet, titled "The 'Popular Educator' Chart of the Progress of Manufactures, Trade, and Agriculture," has been issued by Messrs. Cassell, Petter, & Galpin, with Cassell's new "Popular Educator." It gives a condensed list of leading inventions and inventors' names, discoveries, materials, names of discoverers and travellers, chronological list of events, &c., and therefore contains a mass of useful information, well arranged for ready reference, and in small compass.

MONUMENTAL.

A subscription having been set on foot for the purpose of presenting Dr. Pierce, ex-mayor of Denbigh, and coroner for the county, with a testimonial, the committee resolved that as Dr. Pierce would not accept plate, the money subscribed, amounting already to the sum of nearly 500*l.*, should be devoted to the purpose of erecting a testimonial to him, and that Mr. Underwood, architect, should be asked to prepare a design for the same. The testimonial took its rise upon Dr. Pierce giving up the mayoralty after occupying the civic chair for five years in succession. During his years of office many and great improvements were made in the town: from being ill paved it is now one of the best paved in the principality; a thorough system of drainage was commenced, designed by a competent engineer; a fountain and two public clocks put up for the benefit of the town at the sole cost of Dr. Pierce; besides which the town was honoured by being made the capital of North Wales. In reference to the heroic exertions of Dr. Pierce at the time of the cholera in Denbigh, the subscribers wished the testimonial to take a shape which should commemorate his services then as well as his subsequent actions in connexion with his profession and his public duties. A suggestion has been made, which has met with much approbation, that a monument should be erected in the town, consisting of a square base, surmounted by an obelisk or column. Upon the four faces of the base four bas-reliefs are designed,—one a bust of Dr. Pierce, one "Visiting the Sick," one "Clothing the Naked," and the other "Feeding the Hungry."

THE TRADES MOVEMENT.

Edinburgh.—The joiners resolved "to use every lawful effort to carry out the resolution adopted at the meeting of the four branches of the association held in St. Mary's Hall, Lothian-street, namely, 'That we come out on strike on Friday, 28th February.'" The employers have had a meeting on the subject, and have resolved to adhere to their offer of 7d. per hour, or ½d. in advance, the workmen wanting another half-penny. It is said that of 1,400 joiners in Edinburgh only 300 or 400 had shown a disposition to strike.

Leith.—A strike of joiners here, too, is said to be imminent, the masters having refused to grant the demand of 1d. increase by the men.

Ayr.—The operative joiners of Ayr met to receive a reply from the employers to the demand made for an advance of ½d. per hour on and after 3rd March, and that hours be reduced from 54 to 51 per week. The masters' reply was that they would grant an advance of ½d. per hour on and after 3rd March, but no reduction in the hours. This the men refused.

German Workmen in England.—According to a telegram from Berlin, the *Voss Gazette* says that a great number of workers in the metal trade, who, in consequence of the strikes in the north of England had been enticed by speculators to go thither, had been badly treated, and were forced to obtain pecuniary assistance from the German consuls in order to return to their homes. The money thus advanced has now been demanded by the German Government from the workmen, and in consequence diplomatic intervention has by them been invoked in order that the speculators who induced the men to come may be made to fulfil their engagements.

SANITARY MATTERS.

Oxford.—The proposal to appoint one medical officer of health for the whole of the county, under the provisions of the Public Health Act of last session, has met with considerable but not with complete success. At an adjourned meeting of the representatives of the urban and rural sanitary authorities held in Oxford, it was determined to appoint a central officer of health for the whole county, or rather for the area comprised within the limits of the following sanitary authorities, namely:—Rural: Banbury, Bicester, Chipping-Norton, Henley, Thame, Witney, and Woodstock. Urban: Bicester Market-end, Chipping-Norton, Henley, Thame, Wheatley, and Witney. Oxford and Banbury urban districts and Headington rural are excluded from the scheme, preferring to retain the sanitary supervision of the several districts in their own hands. The proposed medical officer is to receive a salary of 760*l.* per annum. The area

under his jurisdiction will be very large, comprising, in fact, nearly the whole of the county, fifty miles in length and from seven to twenty-eight miles wide.

At *Evesham*, the alarming reports from the county analyst as to the polluted state of the public wells of the borough have led the sanitary committee of the town council to hold a special meeting to consider the matter. It was ordered that all the wells be examined and thoroughly cleansed out; and as a preliminary step, it was resolved that the well at the corner of Oat-street be at once opened, excavated for 9 ft. around, then filled with puddled clay, and cemented. It is thought that this will prevent the percolation of sewage matter into the water. A discussion took place as to Mr. Barry's and other schemes for the sewerage of the town, but as they all involved a water supply to flush the sewers, the dry system (house-to-house collection daily) as employed at Rochdale and Manchester, was considered by the committee to have the greatest advantage. A deputation from this borough will probably visit the sanitary works at these towns.

Wales.—The state of some Welsh habitations has been shown by the newly-appointed inspector of nuisances for the rural district of Aberystwith, who has made two reports which reveal an almost inconceivable state of degradation and immorality amongst the people. A large number of the houses are altogether unfit for habitation, and these hovels are terribly overcrowded, adults of both sexes sleeping together in the same bed. In one case sixteen men sleep in eight beds in two small rooms, and in another instance four men occupy the beds during the night, and four during the day, the day occupants often having to wait until the night men get up.

NEW TIMBER DOCK AT BARROW.

LAST week a large new dock at Barrow-in-Furness was formally opened. It contains an area of 33 acres, and is called the Buccleuch Dock, out of compliment to the Duke of Buccleuch, who, with the Duke of Devonshire, is deeply interested in Barrow. It is intended mainly for the timber trade, which, along with other branches of shipping, is rapidly increasing at Barrow. There is wharfage accommodation alongside the dock sufficient to admit of 100 vessels discharging at the same time, together with spacious quays and timber-yards adjoining. Another new dock, containing the enormous area of 200 acres, is now in course of construction, and will shortly be opened.

THE UTILISATION OF COAL-DUST.

PROFESSOR GARDNER, F.E.S., lectured last Saturday evening, at the Royal Polytechnic Institution, on "Fuel,—What shall we Burn?" In the course of his remarks, he said that the question of fuel was most important at the present day. Coal had never before attained the high price of 54s. a ton, nor had it before continued to keep the enormous price it now commands. Coal was the most important fuel we possessed, but, of course, it was not the only fuel. By chemical action various substances, such as lead, cast iron, &c., were made combustible, and, indeed, the oxidation of any substance would bring about combustion. It had been calculated that the amount of coal raised in this country yearly was 144 millions of tons. When raised from the mine it underwent many processes, and by this means we have "screen," "nuts," and "smudge" coal. This latter, which we call coal-dust, had never been properly utilised, though it amounts to a very large quantity indeed. This coal-dust did not in any respect differ from the larger kinds of coal, but owing to its physical character and peculiar size it was unfit for burning in ordinary fireplaces. Out of the 144 millions of tons of coal raised yearly, 24 or 25 millions of this "smudge" or dust coal, which was of the best kind, was perfectly useless. By submitting it to a certain process it could be formed into a solid lump, having all the qualities of ordinary coal. The agent employed for the agglomeration of the dust coal was a fluid invented by Mr. Barker, called "the diamond fuel cement," which had the power of making the small particles resist water and retain the solid form. The lecturer then proceeded to verify his statements by transforming coal which was literally in a state of powder, into a solid lump. In a few minutes the experiment was performed, and fragments of the coal were distributed amongst the audience. The cost of conversion was estimated at 3s. per ton.

"THE EFFECT OF CHARCOAL ON PLASTERING."

SIR,—In the first paragraph of "William Pulham's" letter last week, I can see very little sense. Passing on, he says, "having condemned his (my) suggestions." Not my suggestions, however, but his own; only holding them as mine in his own imagination. He combats these, which is, of course, as attributed to me, a very nonsensical proceeding.

He then goes on to state what every person of skill and experience ought already to know, viz., how to do work in Keene's cement. A careful reader would notice I did not suggest the covering over of old highly-impregnated plaster. Any suggestion I made was totally opposed to that idea.

I merely mentioned the cements in their order as I considered them to be most suitable. I know Keene's cement has been worked as I described it, with an ordinary coating of common plaster on the bottom: this should be quite dry before putting on a straighting coat. The straighting coat, or especially a coating on the surface of it mixed with a moderate proportion of coarse or fine Keene's cement, before the finishing coat, is put on pure. The whole done thus will combine with the ordinary plaster, and make a beautiful solid job. I have seen it done in this way and stand well. I know this is often done in Scotland; and when well done, where the work is not exposed to knocks, I see no objection to it. Manufacturers may not approve of this; but I see no reason why they should object to it. I consider such cements to be very useful, and capable of considerable modification, in their being applied for different purposes; and I question, notwithstanding "J. C. Part's" disclaimer as the manufacturer of Martin's cement, if it would not succeed used like Keene's, as I have described it, by a skilful man. Has Mr. Part seen it tried?

Where expense is no matter of consideration, it might be done wholly with Keene's cement; and this is necessary where it has to stand knocking of any kind; especially, it must be made strong.

Though the method Mr. Part describes may be very good, it is somewhat expensive, and he must remember that Martin's or any of the cements are liable to *crack*, excepting when used in large masses, and in a great measure, independent of woodwork; as however well bound or seasoned, it is the nature of wood to swell and shrink in some degree, changes in the atmosphere, as well as other causes, leading to this movement: and as the cements would not yield, small cracks would inevitably appear.

"L. L." wished *cheapness* to be taken into consideration, and as he was an old subscriber to your journal, requiring information, I thought him entitled to what I might be able to afford.

Let me say I have reason to believe common plaster, and plaster of Paris for the finishing coat would suit his purpose. Perhaps your correspondents are not aware of the fact, that sulphuric acid is in a very large proportion a constituent in plaster of Paris, as well as in Keene's cement. Some use plaster of Paris as a non-conductor of heat. It is very unlikely that the gas in "L. L.'s" kitchen would affect it to any degree, as sulphuric acid gas combines with it, and it does not continue active after it is set and dry.

To put on a coating of pure plaster of Paris is certainly more difficult than ordinary work; but this, if the coating below it is not too dry, is not insuperable; only a small space could be covered and finished off at once, say only a trowelful or two. This I know a skilful workman could accomplish.

It must be remembered it is only for a kitchen, but a little cold milk of lime could be used in gauging the plaster, and this would allow a little more space to be covered, and I do not think it would prove detrimental in such small proportion. Or pure washed sand could be used with plaster of Paris, and finished off with a skimming of pure plaster of Paris. The kitchen could be whitewashed with plaster of Paris instead of ordinary whiting.

JOHN DAVIDSON.

CHURCH-BUILDING NEWS.

Newark.—The new church of St. Leonard has been consecrated by the Bishop of Lincoln. The contracts were entered into by Messrs. Hodgson & Facon, under the direction and superintendence of Messrs. Evans & Jolly, architects, for the building of the church, with accommodation for 600 persons. Land was purchased of the trustees of the Duke of Newcastle in North-gate, and the building is now complete. The style of the edifice is Early Decorated, and it consists of a nave, 72 ft. by 25 ft.; chancel, 30 ft. by 25 ft., with chancel aisles for organ and children; and north and south aisles, 72 ft. by 11 ft. On the south side at the east end of the nave arcade there is a bell-turret. Provision is made for ingress and egress by a western doorway, and by a south porch and south door at the east end of the south aisle. The height of the nave and clearstory is such as to give proportions of more than ordinary elevation, and the chancel is similar in this respect, and, having a large east window, the hope is naturally entertained that some one will undertake the filling of the window with painted glass worthy of the position. It should be mentioned that the side arches of the chancel have screens of traceried woodwork. Staffordshire tiles have been used to lay the floors in the chancel and sacrarium. The tiles are of a slightly ornamental character, from R. Minton Taylor. Immediately over the sacrarium the portion of the roof ceiling is divided into panels, each having a decoration of an angel, or other conventional form suitable to the position. This decoration is also of a temporary character, and it is hoped that ere long paintings of a more costly character will be provided. The pulpit is as yet in an unfinished state, and, according to the design of the architects, is capable of being made a feature of the church. The benches are executed in red deal, stained and varnished, and both them and the seats are all open and free. The church is built of Ancaster stone, except the pillars to arcades, which are of Little Eaton stone, from Thompson & Fryer's quarry, and the roof covered with brindled Staffordshire tiles. The warming of the edifice is effected by means of hot water circulating through a series of cellular cylinders, and so arranged as to supply fresh air through them. The apparatus was fitted up by Messrs. W. N. Nicholson & Sons, of the Trent Ironworks, Newark. The gas-fittings were made by Mr. Rhodes, of Nottingham. The woodwork was executed by Mr. Henderson, of Newark, a sub-contractor, under Messrs. Hodson and Facon. The total cost, including site, will be about 4,000*l*. The cross on the super-altar, the candlesticks, the altar desk, and the pulpit desk have been presented to the church through the new incumbent. They are from Messrs. Thomason & Co., of Birmingham. During the progress of the work it was thought that some provision ought to be made for the education of the children of the district, and subscriptions were liberally offered for the erection of school accommodation. The schools are used on Sundays as church schools. The foundation stone of these schools was laid by Mr. W. Gilstrap, then Sheriff of Suffolk, and the building was erected by Messrs. W. Fretwell & Henderson, and is now completed.

Seaton.—A new reredos has just been erected in St. Mary's Church, from the designs of Mr. R. Medley Fulford, architect, of Exeter. The reredos is built principally of Beer stone—a material largely used during Mediæval times. The ancient and extensive quarries from which this stone is procured are scarcely three miles from the site of the church. The re-table, which forms a shelf or slab, projecting some 6 in. from the face of the work immediately over the table, is of veined and polished Devonshire marble; and western marbles are also introduced in other parts of the structure. The reredos proper consists of three compartments, the central one being the highest and largest, though each is surmounted and terminated by an embattled and carved cornice. A large cross stands detached from the middle panel, which is enriched by carved diaper, and upon the arched head above is carved a representation of the fruitful vine, emblematic of the Holy Sacrament. In sunk panels, on either side of the central compartment, are sculptured angels, in the attitude of adoration, each of them swinging a censer. The capitals, cornices, splays, finials, &c., are all carved, the foliage being of an early type. The carved and sculptured work has been carried out by Mr. Harry Hems, sculptor, Exeter. The entire height of the whole is 7 ft. 9 in., and this measurement is just the extreme width of the structure without the wings. These latter are kept subordinate to all the rest; they extend the full width of the chancel, and are plain ashlar of Beer stone, surmounted by a cornice in keeping with the cornice of the reredos-proper.

Darlington.—The foundation-stone of a new church, to be designated the Church of St. John, has been laid on a plot of ground near to Bishopton-lane, which has been presented for that purpose. The church is to be a brick building in the Basilican style of architecture, having nave, aisles, transepts, chancel, and campanile tower. The church is to accommodate 720 persons, the seats to be free. Already 2,100*l* have been promised by subscriptions, which is about half the sum required to complete the building.

The Trades Movement and the Social Science Association.—The Labour and Capital Committee of the Social Science Association have prepared the way for an arrangement between the Barnsley power-loom weavers and their employers, who have agreed, under the committee's influence, to settle their difference and their strike and lock-out by arbitration. Mr. Edwin Pears and Mr. Applegarth, for this service, have received the thanks of both parties

SCHOOL-BUILDING NEWS.

Kettering.—A new Church school has been opened here. The school erected is for boys exclusively, to accommodate nearly 300. The Duke of Buccleuch gave the site as his contribution to the school. The total cost, exclusive of the value of the ground, and inclusive of the master's house, which is a part of the building, has been over 1,500*l.* The school is built in the Horsemarket. It is easy of access, is built on one of the most elevated parts of the town, and commands a healthy position. In form or design it resembles the letter T, the base of the letter being the master's house, and the stem and cross the schoolroom proper. The extreme length of what may be called the body of the school is 64 ft., and the width 18 ft.; the top cross being 51 ft. by 18 ft. It is lighted with windows of a Gothic character. The roof is open, is supported by polished beams, which rest on carved corbels, and to the ridge is 26 ft. high. It is built in red brick, and has stone window-frames. It is suitably fitted up throughout; class-rooms, a lavatory, and every requisite convenience are supplied for a large school. A good playground is attached. Mr. R. W. Johnston, of Melton Mowbray, was the architect, and Mr. Charles Sharman, of Kettering, the builder.

Skelton (near York).—New National schools have been opened here. The site, at the east end of the village, has been given by Messrs. Hepworth, the lords of the manor of Skelton, on which has been erected a building, plain in character, the roof being high-pitched and open-timbered. The school is capable of accommodating 120 boys and girls. The sittings and desks are reversible, being arranged so as to form seats and tables. The architect was Mr. J. A. Davies, Leeds; and Mr. Bellerby, Clifton, was the sole contractor. In addition to the school, a house for the master has been erected immediately adjoining.

Middlesbrough.—The Roman Catholic schools just erected at Middlesbrough have been opened by the R.C. bishop of Beverley. The schools are built on a site close to the Newport ironworks. The plan of the building resembles the letter H, the north and south wings being for boys and girls, and the central parts for infants, each school having a separate class-room and gallery. The entire cost is about 2,000*l.*

Heworth.—New schools have been opened here. The school premises are situated adjoining Heworth-terrace, near the post-office and North Riding police-station, a short distance from the church. They are of red brick, in modernised Gothic style, and have been built, not with a view to external effect, but for practical school purposes. The building, which consists of two school-rooms and a class-room, with offices and playgrounds, is inclosed within a brick and stone wall, with iron fence. The rooms are lofty, well ventilated and lighted, boarded round the lower parts, and fitted up in accordance with modern school requirements. The desks are reversible. The schools are erected merely for girls and infants, being a "mixed" girls' and infants' school, provision having previously existed in connexion with the parish for the education of 100 boys at the Bilton-street school, Layerthorpe. The additional accommodation now provided is to the extent of 150 scholars. The schools will be in connexion with the National Society. The total cost of the schools has been about 1,000*l.*, towards which Lady Wheler gave 250*l.*, and the Rev. H. Newton the site and a liberal subscription. Mr. G. F. Jones was the architect, and, from his plans and under his supervision, the works have been carried out by the following firms:—Mr. Keswick, bricklayers' and masons' work; Mr. Bellerby, carpenters'; Mr. Croft, plasterers'; Mr. Hartley, the plumbing and glazing; Mr. Baines, slaters' work; Mr. Gowland, painting; and Mr. Fryer, smiths' work.

A New Industry in Derby.—We learn from the local *Advertiser* that Mr. J. A. Lee, of the Devern Engineering Works, near Lydney, Gloucestershire, has purchased the new and extensive works recently erected by Mr. Alpheus Smith at Little Chester, known as "The Derby Wagon Works," and that it is Mr. Lee's intention to remove to it his business, which consists of the construction of Mr. Lee's patent machinery for the manufacture of wood-pulp, and paper-mill machinery. This will bring a large business to the town, as Mr. Lee will employ, it is stated, from 500 to 1,000 hands.

Books Received.

Educational Comparisons; or, Remarks on Industrial Schools in England, Germany, and Switzerland. By SWIRE SMITH, Hon. Sec. to Trade School Council and Mechanics' Institute, Keighley. London: Simpkin, Marshall, & Co.

THE statements regarding education in Germany and Switzerland contained in this pamphlet are important and interesting. They are mainly based upon facts collected during two visits to the Continent in 1872. The substance of them was delivered at a lecture at Keighley in January last. The circulation of the book will be useful.

VARIORUM.

THE value of "a hobby" is thus dwelt on in the new number of the *Art-Journal*:—"The man who keeps his thoughts and labours in one unvaried groove is like the mechanician who never oils his machine. But the man who has the happy facility of closing the door of his office or work-room on his toil, takes the surest method of keeping his own powers in the best working order. This is the great use of what we call a hobby. And here is a very special advantage in some knowledge of art. We do not speak now of any general art-education. What we mean is rather the intelligent cultivation of taste, by the study of some particular detail or branch of art. One man may take a special interest in pottery. From the long range of fictile art he may select some one shelf, so to speak, which he may have special facilities for filling. He may be an admirer of Wedgwood ware; a collector of old Worcester or old Chelsea; a purchaser of eggshell porcelain, or of Japanese lacquered ware. He may carve a little wood. He may collect carvings in ivory. He may group together photographs illustrating a particular style of sculpture. What the study may be matters little. It will depend partly on taste, and partly on opportunity. But the great point is to have a pursuit agreeable to the mind, to which it will revert with pleasure as a relaxation from bread-winning anxieties. In fact, a new education is thus commenced. But it is the education of a faculty that would otherwise be dormant, and is pursued, not only without undue labour, but with delight."——The *People's Magazine* for March includes, with many interesting stories and papers, a continuation of Mr. Beavington Atkinson's observations on the French School of Painting. Mr. Atkinson defends Claude Lorrain as against Mr. Ruskin's objections.

Miscellanea.

Report on Second Autumn Exhibition of Pictures at Liverpool.—The local Fine Arts Committee report the results of the late autumn exhibition of pictures at the Liverpool Free Library and Museum. The exhibition was opened from September 2nd to November 30th, during the day, at 1*s.*; and from December 2nd to December 14th, at 6*d.*; and in the evening from October 21st to November 30th, at 6*d.*; and from December 2nd to December 14th, at 3*d.* The number of admissions by payments at the door amounted to 22,894, besides 332 season tickets, and about 10,000 pupils of educational establishments admitted gratuitously. The number of works exhibited consisted of 430 oil colours, 501 water colours, twenty-nine pieces of sculpture and other works of art, forming a total of 960. Of these, 898 were for sale, and 242 were sold for sums amounting to 6,214*l.* 4*s.* 6*d.*, of which pictures to the extent of 2,149*l.* 17*s.* were purchased by members of the Town Council, exclusive of 600*l.* expended by the Corporation in pictures for the permanent gallery of art now in formation. The total receipts amounted to 1,368*l.* 8*s.* 3*d.*, leaving a profit of 309*l.* 18*s.* 5*d.* The committee report that the average quality of the pictures exhibited attained a decidedly higher level than at the previous exhibition.

Oxford Main Drainage.—The line of outfall sewer, site for pumping station, and land for irrigation, are now determined upon. Tenders for the first contract are advertised for, and the works will be commenced with as little delay as possible. They will be carried out under the superintendence of Mr. W. H. White, engineer to the Oxford Local Board.

Edinburgh Architectural Association.—A meeting of this association was held in the rooms last week, Mr. John Paterson, president, in the chair. Mr. J. D. Marshall read a paper on "Art, its Compass and Limits." Mr. Marshall argued that the function of art is purely æsthetical, in so far as it is through the perception of the beautiful that it addresses sympathies already existent. It is a source of intellectual delight, and ministers to culture, and is not, in its proper and higher sense, a medium of instruction. It is also distinct from the moral perceptions; its appeal is to the æsthetical perceptions, and through them to human sympathy and feeling. The natural love we have towards what is lovely induced its use in the service of religion; but the argument for the necessarily moral bearing of the materially beautiful is weak, because it is evident that a morally good picture may be bad art, and *vice versâ*. Considerable discussion followed, in which several of the members joined. A practical paper was then read by Mr. T. B. M'Fadzen on the subject of modern building construction, in which the construction of drains, foundations, and floors was considered.

Artists' General Benevolent Institution. The annual general meeting of this institution has been held at the Arundel Rooms, Old Bond-street, Mr. J. Jennings in the chair. There were present Messrs. J. E. Millais, R.A., hon. sec. of the institution; and many other well-known artists. The assistant secretary, Mr. F. W. Maynard, having read the minutes of the previous meeting, the report and balance-sheet for the past year were submitted, from which it appeared that the year 1872 was not less prosperous for the institution than any of its predecessors. The income from all sources amounted to 3,577*l.*, the greater part of which sum was subscribed at the annual dinner presided over by the Marquis of Lorne. The council had to acknowledge the receipt of some large donations, amongst which was one of 500*l.* from Mr. J. Heugh; the report further stating that 86 applicants were relieved during the year; and concluding with the announcement that the Right Hon. Sir R. P. Collier had consented to preside at the next annual dinner, which would take place at Willis's Rooms on the 10th of May, when it was hoped that a strong list of stewards would be obtained.

Trades Guild of Learning.—At a small preliminary meeting of skilled workmen, convened by the Rev. H. Solly, at the Working Men's Club and Institute Union Offices, it has been resolved,—

"That in the opinion of this meeting it is desirable to form a Trades Guild of Learning, with the view of promoting the delivery of lectures, and the formation of classes, to assist members of trade societies and other skilled workmen in acquiring a knowledge of history, political economy, and technical education, as well as literature, science, and art generally. That the various trade societies in the United Kingdom be invited to connect themselves with this Guild by a small annual payment which should give all their members admission to certain courses of lectures and to classes, either without payment or on reduced terms; also to libraries, reading-rooms, discussions and social meetings, where these can be provided by the Guild; and that if the requisite funds can be obtained, an agent commanding the confidence of trade societies be engaged to visit their lodge meetings, by permission, and invite their support for the foregoing objects."

It was further resolved,—

"That it is important to obtain the co-operation of the authorities of the Universities and other governing bodies at present administering such endowments."

Opening of New Record-room at Lewes. The record-room, the construction of which has recently been completed, has been formally opened for the use of the town. The new record-room occupies the site of the old provision market, the dilapidated state of which had for many years been an eyesore. The plans were furnished by Mr. Card, architect, and about twelve months ago the tender of Mr. Berry, builder, was accepted. The work was at once commenced, and the building is now completed. Of the exterior little can be seen, owing to the front presented by the old market-tower, which is left almost untouched. On the ground-floor space is still left for the provision-market, should it be revived, and a broad flight of steps leads to the spacious record-room. The timbers of the roof are supported by six quoins of stone, which are at present plain, but will be decorated with carving. One has been reserved for each of the present high constables, one for the clerk to the commissioners, and another for the architect, Mr. Card. The mantelpiece has been decorated in majolica, and bears the names of the late high constables.

Gaol Occupation.—Mr. Tallack, the secretary to the Howard Association, draws attention to the want of proper economisation in the gaol accommodation of the country, whereby gaol establishments are kept up without necessity, and might be considerably reduced,—a work for some energetic Home Secretary to see to. The governor of Ripon gaol writes on a kindred subject to the Howard Association, namely, on the absurdity of keeping criminals for years in prison without teaching them some useful trade, so that each time they are sent out just as ignorant and useless as before, to be again shut up and kept over again at the cost of the country, instead of being made useful to themselves and able and often willing to relieve their fellow countrymen from the perpetual burden of providing for them. It is wonderful with how much absurdity and how little sense a country may be governed in the midst of all the Parliamentary palaver that is perpetually going on.

Serious Kitchen Boiler Explosion.—An explosion which has done damage to property and injured two servants, has taken place at Quarry-hill, Accrington. The boiler was a small one, situated in the washhouse, and was used to supply hot-water pipes to a small conservatory above the washhouse. The fire had been out a few days, and the water-pipes became frozen. A brick wall was blown entirely down and across the place, and several persons knocked down, two sustaining severe cuts and shock to the nervous system. The door of the washhouse was blown off, the windows were blown out, frames and altogether, and one of the door-jambs partially dislodged. A passage communicates from the washhouse to a cellar, and the concussion was so great as to break several panes out of a window thirty yards distant. Several stones, &c., were sent through the ceiling into the room above.

Freemantle Church Spire.—A meeting of the seatholders in Freemantle Church was convened by the rector to consider the completion of the church spire. The rector said that Mr. Bassett, entirely unsolicited, had promised 100*l.* towards the object, and he hoped they would be enabled to begin this work unencumbered. The cost of the spire, according to the estimate of the architect (Mr. White), would be 850*l.*, and if, afterwards, a peal of six bells were added, it would be about 600*l.* more. Mr. Bassett called attention to the fact that there was no peal of bells nearer than Southampton on the one side, and Eling on the other, and said a peal in that district was much to be desired. Mr. Bassett proposed that a committee be formed, with power to add to their number, to take the necessary steps, which was carried unanimously. The rector was appointed chairman of the committee.

New Catholic and Apostolic Church at Birkenhead.—This new church is erected upon a site at the junction of Park-roads South and East, and forms a prominent feature in the locality. The tower, with slated spire, which rises to the height of 75 ft., is brought forward to the edge of the site, and is detached with an open bell-stage. The building is constructed wholly of brick. The style is that of the first half of the thirteenth century. The interior, which is also lined with brick, is lofty, and the chancel is unusually large. The roof of the chancel is broken into panels, and ceiled with pitch-pine, to give a distinctive treatment from the nave, which is open-timbered, and plastered between the spars. The chancel fittings are of pitch-pine, the nave being seated with rush-bottomed chairs, and will accommodate about 250. The cost of the edifice complete, without land, will be about 1,300*l.* The contract has been carried out by Mr. W. H. Forde, of Birkenhead, builder; Mr. David Walker, Liverpool, being the architect.

Venetian Blinds of Coloured Glass.—A good idea has been put into form in an invention patented by Mr. Peattie, of Rankeillor-street, Edinburgh. It is simply the substitution, with several little improvements, of coloured and ground glass instead of wood in the ordinary Venetian long and short blinds for windows. The glass is bound round with brass, to preserve it; and heavy blinds are simply wound up and down with something like a clock-key. The play of colours, it is easy to see, may thus be managed so as to give beautiful effects. Outside at night and inside by day windows will look as if they were illuminated; and a city seen from the streets, of an evening, under such circumstances, would have quite a gay and novel effect.

Southwark and City Subway.—"A Description of the Southwark and City Double Line of Subway or Tunnel, showing the important effect it will have in relieving the Traffic of London Bridge; by P. W. Barlow, C.E., &c.," has been printed for circulation. The object of the promoters, who have already obtained an Act of Parliament and agreed for the principal part of the land required, is to construct a double line of tunnel from St. George's Church, in the borough, and across the Thames, in a line with London Bridge, to Arthur-street, City, close to King William-street and the bridge approaches. Trains will be run every five minutes by rope traction, at a charge of one halfpenny second class, with lifts at a similar charge at each end. The estimated cost is 130,000*l.*, or 100,000*l.* for a single line. A return of nearly 17 per cent. is calculated on.

South Kensington Museum.—The Marquis of Ripon, K.G., presided at a recent meeting of officers employed at the South Kensington Museum, to inaugurate among them the establishment of various provident institutions in connexion with the Post-office. The general plan was explained by Mr. Bartley, hon. secretary of the Provident Knowledge Society, after which his Lordship,—who stated that, as he took great interest in such matters, he had much pleasure in presiding in his private capacity as a friend to the movement,—dwelt on the excellent arrangements provided by Parliament to stimulate thrift, which are administered by the Post-office, and particularly on the importance of commencing to make provision for the future when young, and of continuing it regularly. A collector of savings under the Post-office regulations is to be appointed, and a branch of the Instalment Club and Middlesex Penny Bank has been opened.

A New City Thoroughfare.—A communication has been opened between Charterhouse-street and Saffron-hill, which latter thoroughfare had been rendered a *cul de sac* by the Holborn Valley Improvement Works and the formation of Charterhouse-street; it consists of a flight of steps 20 ft. in width, between the level of Charterhouse-street and that of Saffron-hill. This will give convenient access to the valuable property belonging to the corporation which lies between Saffron-hill and the property in Ely-place, and will also benefit the property on Saffron-hill. The works are, in fact, part of the large scheme of improvements carried out by the corporation in this neighbourhood under the Holborn Valley Improvement Act, and of which Mr. Haywood is the engineer, and Messrs. Hill, Keddell, & Waldram have been for the most part contractors.—*City Press.*

The Proposed Harbour at Dungeness.—The Bills for this harbour are now before Parliament, and will, it is to be hoped, receive careful attention. A correspondent rightly says,—It is now a good roadstead, formed by nature; why not try and improve nature by making a breakwater, leaving an opening at the point? Ships could then lie in safety from the point to Hythe. Then there is another important matter. The material for doing this is on the spot,—hundreds of acres of shingle which could be made into blocks. Ships of all sizes, and at any time of tide, could ride here in safety. It would be a great boon to the Royal Navy, as well as to the Mercantile Marine, and to the new Channel traffic, being right opposite Boulogne, only twenty-four miles across.

Steam Boiler Explosion.—A shocking catastrophe has occurred at Hartishead, according to the *Halifax Guardian*, in the bursting of a boiler that had neither safety-valve, steam-gauge, nor anything to indicate the pressure of steam! There was a severe frost on the previous night, causing the feed-pipe, return-pipe, and steam-pipe to be frozen. The consequence was that, when the boiler fire was lighted, there was no vent, and an explosion ensued, causing the almost instant death of a son of the proprietor of the works, and injury to two others, the wonder being that the disaster was not more fatal. It transpired at the inquest that there are a considerable number of boilers worked on a similar "principle" of neglect, and hence the jury in their verdict gave a seasonable piece of advice on the subject.

Royal Academy of Music.—Arrangements are on foot with a view to the removal of the Academy from Hanover-square to premises in the Royal Albert Hall.

An Eleanor Cross for Halifax.—A cross is shortly to be erected in the recreation-ground at Akroydon, at the sole expense of Col. Akroyd, M.P., the object being solely that of building a pleasing object with the hope of raising public taste in Halifax. The cross for Akroydon is designed by Mr. S. Barber, of this town, the details being suggested from the crosses at Northampton and Geddington. It will be in four stages, hexagonal in form, 50 ft. in height, standing upon a base of eight steps, and surmounted by a low stone wall with wrought-iron railings. One niche in the second stage will be occupied by the figure of her Majesty the Queen in coronation robes, to be carved by Mr. J. Birnie Philip, of London. The work is to be commenced at an early date.

Hotel de Ville, Paris.—At this moment upwards of sixty plans for the reconstruction of the Hôtel de Ville are on exhibition at the Palais d'Industrie. According to the terms of the competition, the architects were to preserve as much as possible the original façade of Boccadore, which formed the great beauty of the building. Out of the whole number, however, only fourteen have sufficiently preserved the façade to be entitled to consideration. The popular choice seems to have awarded the palm to M. Magne, the architect of the Vaudeville. Those by M. Ballu, M. Crepinet, M. Bénard, M. Escalier, M. Vaudremer, and others, are worthy of examination.

The Flooring of Worcester Cathedral.—A correspondent of the local *Herald* says, "Now that the generous gift of Lord Dudley to our cathedral, of a costly paving, is occupying the thoughts of many . . . . permit me to ask whether it would be possible to adopt for the purpose a flooring of wood? I contend that many advantages would ensue from the use of wood. A pattern formed in oak and other woods of various colours would have a rich and handsome effect. The chief advantage in my plan would be *warmth*. We know how difficult a thing it is to get heat enough to counteract the chill engendered by such a large assemblage of stone. Another advantage would be *sound*. The effect of music is highly increased by wood."

Society of Engineers.—At a meeting of the Society held on Monday evening last, Mr. Jabez Church, president, in the chair, Mr. W. H. Fox read a paper "On Continuous Railway Brakes." The author considered generally the conditions which a continuous brake should fulfil, and gave the results of his investigations as to the retarding force required to stop a train within a given distance. The author stated that the electric brake, although at present in a somewhat experimental stage, nevertheless complied with most of the conditions he had named. It was, however, being further developed, and by the light of his present experience, he considered it would ultimately prove a success.

Improvement at Leadenhall Market.—At a meeting of the Court of Common Council, at Guildhall, last week, the Lord Mayor presiding, Mr. Rudkin, the chairman of the Markets Committee, presented a report from the committee, submitting plans and a model for the construction of a poultry-market on the site of Leadenhall meat-market, at the estimated cost of 25,000*l.* The project was vigorously canvassed by various members of the Court, and ultimately the motion of Mr. Rudkin was negatived by a majority of five, and it was referred back to the Markets Committee to reconsider the whole question, particularly as to the value of the Corporation property in Leadenhall Market.

Defying a Corporation.—Some time ago the officials of the London and North-Western Railway Company submitted to the General Purposes Committee of the Preston Local Board plans of stables proposed to be erected at the bottom of Charles-street in that town. As they were not in conformity with the requirements of the bye-laws of the borough, the plans were at once rejected. Notwithstanding this, the stables have been erected upon the site named, and according to the very plans rejected by the committee. The town clerk has received instructions to proceed against the company in such a manner as he may think most expedient.

Generous.—Professor Tyndall has appropriated the profits of his lectures in the United States to the establishment of a fund to assist the scientific studies of young Americans in Europe.

The Builder.

VOL. XXXI.—No. 1571.

Early French Goldsmiths' Work, Trinkets, Vestments, and Weapons.

SINCE the terrible siege of Paris, M. Viollet-le-Duc has issued four more parts of his voluminous *Dictionnaire Raisonnée du Mobilier Français, de l'Époque Carlovingienne à la Renaissance.*

It is now about fifteen years since the first volume of this important French work was published. The first instalment, as we informed our readers at the time, was apportioned to furniture. The old French châteaux, museums, sacristies, and manuscripts were ransacked and scrutinised to show us the ancient household furniture of the old kings, nobles, and burgesses of France in the eleventh, twelfth, thirteenth, and fourteenth centuries, successively; and a most interesting array of facts was grouped together, which, bearing in mind the close association of France and England in those old times, is of as much consequence to the English antiquary as to his Continental neighbour. After an interval of ten years, the first *fascicule* of a second volume appeared, in which ancient French utensils were illustrated and described. We gave our readers some account of the contents of this part of the work also. The crystal and silver and gold vessels that stood upon the dressoirs, and formed the treasures of princes, figured in this collection, among other costly objects. Miniature ships, equipped with sails and crew complete, that stood upon the banquet-tables, and contained spices and condiments; the candelabra; the drageoirs to hold sweetmeats; lamps that swung down over the centres of beds to keep away evil spirits at night; lanterns; queer snuffers, like birds, that opened their beaks to snuff off the wick that required removal; mirrors, when they were so small they might have been carried in the pocket; plates, when they were so rare as to be given as love-gifts; squirts, when they were used to extinguish fires; fans; spoons, before any one thought of placing the twelve apostles on the handles; and about 160 varieties of objects of a similar class, gave page after page nearly equal interest.

After two more years, the second volume was completed by two more *fascicules*, containing treatises on goldsmiths' wares, musical instruments, games, pastimes, and tools. The specimens of goldsmiths' work begin with what is left of the famous golden retable said to have belonged to the oratory of Charlemagne. This is the ornament which formed the summit of it, consisting of an *aigue-marine* intaglio, representing Julia, the daughter of Titus, surrounded by nine large sapphires, framed in gold, seven of which are surmounted by large pearls, fixed in their places by golden cups affixed to the gold mounting of the sapphires. The golden chalice of St. Remi, which from Rheims passed to the treasury of St. Denis, and was thence transferred, in 1796, to the National Library, and since then deposited in the treasury of Rheims Cathedral, is the next object upon which the peculiarities of early workmanship are pointed out. Some antiquaries suppose that all early goldwork of worth is of Byzantine origin; but M. Le Duc thinks that even before the time of Charlemagne there were goldsmiths in the Western world who were acquainted with the art of soldering as well as of casting, and whose work was of a high order. The end of a belt found in an old battle-field, near Poictiers, and supposed to have belonged to one of the chiefs beaten by Charles Martel; the reliquary of St. Sixte and St. Sinice, in the treasury at Rheims; a ciboire, or cup and cover, from Sens Cathedral; a twelfth-century Pascal candlestick, are further selections of early work shown us. M. Le Duc points out the prevalence of granulated threads of gold soldered to a foundation by means of filigranes of solder in twelfth-century work; and the gradual enrichment which took place in the thirteenth century, when the goldsmiths, trying to give more lightness and brilliancy to their work, raised their coils of granulated threads from the foundation and soldered several of them together to form spiral designs. Our British Museum, we may remark, is rich in early work of these times. The ancient process of enamelling upon metals, translucid and opaque, is well described. It is illustrated by a Merovingian buckle and clasp, a Byzantine box, the Rheims chalice, and the superb enamel of Geoffrey Plantagenet, now in the museum at Mans. This last work is one of the largest known. It represents Geoffrey standing up, holding a sword in his right hand, and a large shield, charged with four leopards, in his left. On his head is a pointed cap showing a lion *passant d'or* on azure; and he is robed in a long vestment, like that which nobles wore in the middle of the twelfth century. The figure stands out of a background divided into parts by a green open pattern, in every compartment of which are blue and white flowerets upon a gold ground. Green, blue, and white are so managed as to give a very harmonious richness to this work; and M. Le Duc contends that a performance of this extent and perfection could not be the result of an industry then in its infancy. Another specimen of enamel-work is from the tomb of Prince John, the son of St. Louis. The workmanship of the Limoges enamellers is represented by the *ciboire d'Alpais*, now in the Louvre, round the lip of which runs the legend,—"*Magister: G: Alpais: me fecit: Lemovicarum.*" Another beautiful object shown us in its full colours is a crozier of copper, gilded and enamelled, belonging to Sens. Dwelling upon the beauty of these works, M. Le Duc remarks,—"All cannot possess silver plate, bijoux of gold, ornamented with precious stones, furnitures of precious woods, and vestments of velvet; but all, however modest their fortune, can possess objects invested with distinguished forms; for art is independent of luxury, and as free of it as a master is of his slave; and an earthen pot by its aid may be made more precious than an ugly vase of rock crystal, mounted in gold."

We may look upon the archæology of tools as almost a new shoot from the great tree of antiquarian knowledge; for although pre-historic studies have brought stone, flint, and bone tools into prominent notice, those of the Middle Ages have been but little mentioned. For information concerning them our author has been obliged to turn to ancient MSS., stained glass, tapestry, carved woodwork, and sculptured stonework. We have collectors of many kinds of "unconsidered trifles" nowadays, but collectors of tools, otherwise than pre-historic, are rare. M. Le Duc has a few examples in his own possession. He begins his list with the *auge*, or receptable to hold mortar and plaster. The most ancient monuments show that the masons of yore carried this upon their heads, and that they formed it out of a length of the trunk of a tree, halved and hollowed out: it was used even down to the fifteenth century. The accompanying trowel does not differ in shape from that in use. The auge is not to be confused with the hod, which is to be seen, also, on early basreliefs, furnished with two short handles, instead of one long one. *Bâtons*, clubs, or sticks, for which there are twenty-one different names in old French, have as many forms and purposes as they have designations. Brooms were always as we have them now. Spades, *bêches*, shown in the tapestry of St. Médard de Paris, are made of wood, with the shovel protected with iron on both sides from the shoulder downwards in one case, and from halfway down the side in another. Those in use in the thirteenth century were constructed on such a clever principle that M. Le Duc cannot see why that particular make was ever abandoned. A figure from this same tapestry shows a carpenter with his tools. A hatchet rests on his shoulder, a coil of rope is wound round and round his neck, and from his leathern belt hangs a hatchet, a pair of compasses, a large purse, an axe, and a twy-bill. If it were not for his trunk-hose and the shape of the axe, we should see no great difference between him and any carpenter busy with his work in the present day. Shakspeare opens his play of Julius Cæsar with a remark from Flavius to the rabble of citizens present, to the effect that being mechanical they ought not to walk upon a labouring day without the signs of their professions, and turning to one he asks, "Speak, what trade art thou?" When the man replies he is a carpenter, Marcellus chimes in with, "Where is thy leathern apron and thy rule?" Neither of these signs of profession appears in the carpenter here delineated. One of the stalls in the church of Montréale (Yonne), of fifteenth-century workmanship, shows another member of the same craft at work. He has a piece of wood before him on his bench, held by a hold-fast (*valet*), into which he is inserting a long-handled gouge. Behind him are several chisels suspended to the walls, an auger, and a hatchet, none of which are very different from those in present use. M. Le Duc, however, shows us a pair of callipers in which there is a very material difference in the form. The legs first cross each other and then bow out in reversed curves. These are to be seen in basreliefs on the stalls in Poictiers Cathedral, in Chartres Cathedral, and in vignettes of the thirteenth and fourteenth centuries. We are also shown two smiths at work. Both wear leathern aprons, and on the head of one is a felt cap, which projects over his face and depends over his ears, so as to protect them from sparks and the intense heat of the furnace. Smiths' work was in every-day requisition in the Middle Ages, either in the armoury or workshop, and great facility was arrived at in the management of iron. Anvils were made of various forms, some flat and square, some with inclined faces, and some had one or two horizontal cones projecting from them suitable for rounding pieces of iron. Passing on to the plane (*rabot*), M. Le Duc has not found any examples of this tool figured before the middle of the fifteenth century, although, from the evidence of work, it must have been in use at a much earlier date. The *rabot* of the fifteenth century is furnished with a vertical handle as a prow, which facilitates the pushing, or moving of it. It has not, like ours of to-day, its two sides parallel, but bowed, so as to sit better on the wood to be planed. The planes were made of pear-tree wood, of elm, of maple, and fashioned with great care. The long plane (*varlope*) employed to dress very long and slender mouldings does not appear figured on monuments before the sixteenth century.

The long leisure, the long winters, the distances,

the bad seasons, and bad roads made many a dull hour in the old châteaux. When there was no warfare going on, there remained but the chase, fêtes, jousts, tournaments, and assemblies to pass away the time; and it often happened that a nobleman or gentleman would live in the midst of his family without receiving news of the world without for a long period. When a troubadour, or a pilgrim, or a messenger arrived it was an event; he was entertained in the best manner, and if he amused the chatelain ever so little he was loaded with presents to induce him to remain or to return. A few remarks showing the unlettered baron of the Middle Ages thus isolated for at least six months in the year serves M. Le Duc as a prelude to the diversions of old times. His account of tournaments, plan of the lists, illustrations of knightly armour and weapons, the caparisons of horses, presentation of prizes, are as interesting as those relating to the chase with its dogs and hawks, or the dance with its flowers, summersaults, sword-dances, bell-dances, and other dances of which our country-dances are but traditions. But we pass over these to subjects coming more directly within our scope.

The third volume, which is appropriated to jewelry, garments, and articles of the toilet, commences with the clasp, *agrafe*, or fastening, by means of which the two sides of a garment could be united on the wearer. At least a hundred different forms of these articles have been found. The tombs of the German chiefs, who invaded Gaul in the fifth century, have furnished several, both in silver and gold. A round silver clasp, composed of two plates riveted together with an intervening border an inch wide, and ornamented with coloured glass, arranged in a pattern, discovered at Odratzheim, near Strasbourg, in a tomb, is shown. An agrafe, with the name of Christ engraved upon it, found in a Merovingian cemetery, is the subject of another illustration. And there are ten other examples figured. These clasps were always worn upon the right shoulder, to allow the right arm to be free between the two borders of the mantle. As we turn over the pages of the three *fascicules* forming this volume, object after object arrests the hand. But as we cannot enumerate them all, we will pass on till we come to the bags or reticules, that were once almost universally worn slung from the belt. In the first place there was the *aumonière*, which was a small bag, fastened with knots and clasps, and slung from the waist, to contain small objects in constant use, and money. From the twelth century to the fourteenth, this was an indispensable article of the daily raiment of both sexes, either at home or abroad. The earliest form is that of a small square bag, with two cords to close it with, and another to open it and suspend it with. There are three ancient *aumonières* in the treasury of Troyes Cathedral. The earliest, which appears to date from the end of the twelfth century, is embroidered by hand, upon canvass, in bright colours and gold, with a lively design divided into octagons, in the centre of each of which is a bird, animal, or conventional flower. It is bell-shaped. It opens in the centre of one side, where the aperture is strengthened by an iron ring. All round are small balls and tassels of gold thread. This is illustrated. The second *aumonière* is supposed to have belonged to Henri le Libéral; the third is attributed to Comte Thibaut IV.; both are embroidered by hand, with something like valentine subjects. The last has the additional interest of being associated with the sentiments Count Thibaut entertained for Queen Blanche. On the upper part of this *aumonière* there is embroidered a lady sleeping on a bank of green turf, under the branches of an oak, whilst a winged youth is admiring her. On the lower part two ladies are dividing a heart that is on an altar before them, while a hand, armed with a hatchet, issues from a cloud, and takes aim at the saw with which they are conducting their operation. The allegory is of doubtful taste, M. Le Duc admits, but quite in keeping with the tastes and pranks of the age; and the execution of the figures is most admirable. Many had clasps, like the bags in use by excursionists and others at the present day. Then there were purses for coins and relics, which, instead of being slung from the belt, were passed under it, and kept safely in that position by straps or cords. This custom of suspending purses by the neck, as it were, and in sight, explains the mode of operations of thieves, which led to the employment of the term "cut-purses" for them. There was still another kind of bag, which was, however, in use only among persons of rank or fortune. This was destined to contain the book of devotions, for the purpose of carrying it to church. It was furnished with a loop, and slung from the arm, or from the waist. Sometimes these satchels were made longer than was required for a book only, or of a scabbard shape, when they were folded round the arm, or tied to it by a knot. They were also embroidered and enriched with pearls and precious stones. The practice of carrying *les livres d'heures* in suspended receptacles ceased at the end of the fifteenth century. After that date, a page carried the required book to church. In the seventeenth century gentlefolks began to carry their books in their hands, or in their pockets. These *livres d'heures* were considered indispensable as an accessory to the toilet of ladies of good families in the fourteenth century. They are mentioned as necessary expenses by the poet Eustache Deschamps, in *Le Miroir de Mariage*. Another kind of bag, called an *escarcelle*, was reserved for messengers and pilgrims. This was furnished with a knife or dagger in a scabbard, which was slipped through a strap or slit made to receive it. A large *escarcelle*, without a knife, called a *gibecière*, was carried by travellers, whether nobles or peasants, suspended by their sides. These were as richly decorated as the rest, occasionally. One is thus entered in the inventory of Charles V.:—"*Une gibecière à perles sur champ vermeil à treffles, à troys fleur de lys.*" After our eyes have feasted upon the charming illustrations of other objects of the toilette, upon fragments of the alb and chasuble of Thomas à Becket, a sample of the stuff found in the tomb of Charlemagne, and a dozen other specimens of the "precious stuffs" made of silk and gold in old times, given in chromolithographs, we come to the close of the third volume, having only arrived, alphabetically, at the letter H.

The fourth volume, accordingly, proceeds with the *jarretière*, with the devices and mottoes embroidered upon it, including that upon the garter of the order created by our Edward III.,—*Honi soit qui mal y pense*. The fine gentlemen of the reigns of Charles VI. and Charles VII. wore, embroidered upon their garters, a device or cipher of some lady intermingled with pearls and jewels. M. Le Duc shows that whether trunk-hose or short-stockings were worn, these articles were used from a very early time. They are shown as worn in the Bayeux tapestry. Passing on to *joyaux*, we have a careful account of the treatment of jewels.

The populations of Gaul, he says, have always manifested a pronounced taste for ornaments in gold and silver, and for gaudy colours. The invasions of the barbarians from the north-east, instead of stifling this love of jewels in the West, served, on the contrary, to develope it, and under the Merovingians, civil vestments, and military vestments and arms, were ornamented with golden *bijoux*, which, although barbarian in point of fabrication, were not less of a great intrinsic value. Under the Carlovingians, the frequent intercourse of the West with Byzance spread over Italy and Gaul numbers of *bijoux*, the fabrication of which, together with those made in the West, acquired a degree of remarkable perfection. With the thirteenth century came reaction; though whence this came, or wherefore, it is difficult to explain; but, as in thirteenth-century architecture, simplicity, sobriety, if not austerity, became the order of the day. Only the high clergy continued to wear jewels on their vestments. St. Louis did not encourage the gentlemen of his court to appear in jewels likely to excite the covetous; and he affected the greatest simplicity in his own raiment. But in the fourteenth century, notwithstanding sumptuary edicts, the nobility returned to their passion for jewelry, and, under Charles V. and Charles VI., indulged their luxurious taste to a scandalous extent. The misfortunes of the commencement of the fifteenth century repressed the exaggerations of the fashion for a time; but this form of luxury reigned brilliantly again under Charles VII., Louis XI., Charles VIII., and Louis XII. "Precious stuffs" were, in very ancient times, produced in the East, and the crusades and the traffic of the Venetians ultimately caused their production in the West. These rich materials were literally precious, being gold and silk tissues with pearls and precious stones interwoven with them. There are several specimens extant of these tissues mingled with pearls of Oriental fabrication, which date from the eleventh and twelfth centuries; and the monuments of this period also tell of their extensive use by the French nobility. Borderings with pearls, clasps of large dimensions and of extreme richness, buckles, cinctures, coronets, earrings, and *cassolettes*, were further vehicles of rich ornamentation, all of which partook of an Oriental character until the middle of the twelfth century. After this time the imitation of Eastern art ceased, and a Western character was given to fabrics and *bijoux*, which was not displaced till the Renaissance. Venice continued to produce jewelled work through all this time, and in the sixteenth century, when Nuremburg *bijoux* were in vogue in France as in England and Germany, the Venetians made numbers of brooches, pendants, ear-rings, *châtelaines*, cinctures, in the new "tudesque" taste, thus realising great riches by their power of adapting themselves to fluctuations of fashion. Their talent for assimilation, and perfection of execution, quite excuses, in M. Le Duc's eyes, the drawback of counterfeiting. Their power of imitation, he adds, has been inherited by the Venetians of the present day; for, just as amateurs of antiquities can always find plenty to purchase at Rome and Naples, so in Venice, collectors of ancient jewelry can be suited with Nuremburg *bijoux* of equal beauty to those made in the days of yore, and at a much less cost.

Some of the modes of using jewels once in vogue are no longer employed. Before the change that occurred in the latter part of the twelfth century, pendants were worn to circlets and coronets that hung down upon the hair and descended to the shoulders. Under the reign of King Jean, gentlemen began to carry jewels of great value upon their vestments. They wore jewelled belts upon their hips which were worth fabulous prices. About the commencement of the reign of Charles V., they lowered these jewelled cinctures till they were even with the edge of their upper garment, or *cotte-hardie*, to which they were attached by *agrafes*. Their richly-embroidered capes with hoods to them were made to open upon the right shoulder, where they were fastened with jewels, much in the same manner as that with which the old Merovingian chiefs clasped their cloaks, only with a different form of ornament. They wore enormous collars of jewels, thick and cumbrous chains, and the coiffures of nobles, as well as dames, were covered with bijoux. Noble dames also wore pectoral ornaments descending from their throats almost to their knees. When the passion and fashion for jewels was at its height, many of the most ancient shrines which were rich in antique cameos and intaglios were stripped. Abbots and bishops bought the good graces of the neighbouring seigneurs with these acceptable presents. So many and minute were the fluctuations in taste, however, that we must not attempt to follow M. Le Duc through his ample survey of them on this occasion.

We will turn over the pages describing and illustrating the numerous articles of raiment, till we come to the mantle. This is a garment that held a high place among vestments in the Middle Ages. It belonged particularly to the nobility, and under the Merovingians was only worn by the dominant race. It must not be confounded with the cape, *gone*, or *tabar*, which were worn by all classes. The mantle, and the manner in which it was worn, was a mark of nobility which was not effaced till the end of the fourteenth century. The Greek manuscripts show square and semicircular mantles, both fastened on the right shoulder, as worn by the Eastern emperors and great persons of both sexes. The square form appears to have been worn on ceremonial occasions by the Merovingian and Carlovingian kings in imitation of the Eastern emperors; but an ancient mosaic of *Sainte-Suzanne*, in Rome, shows Charlemagne habited in a short tunic with a semicircular blue mantle, fastened upon the right shoulder, and covered by a sort of *pèlerine*. The semicircular form is also seen upon the shoulders of kings and queens in the western *portail* of Chartres Cathedral, and upon those of Notre Dame de Châlons-sur-Marne (1140). These early mantles were excessively rich, covered with embroidery and pearls, and bordered with jewels, and down the left side near the slope made for the neck was a parallelogram of a still richer material. Illustrations of many of them are given, both spread out, that we may see the exact figure of them, and falling from the portly and knightly shoulders of princes and nobles. One of Charlemagne's nobles leads this superb procession of mantles. He is followed by a personage wearing a circular mantle, not semicircular, which is fastened on his breast. This

figure is taken from a tenth-century manuscript. Then we have early statues from Toulouse and St. Denis, and more figures from manuscript, till we have counted twenty-one personages all wearing this noble article of dress in various ways. The mantle of one "grande dame" is lined with ermine, and prevented from trailing upon the ground by a female attendant, who walks behind (sheepskin capes worn by the peasantry); mirrors to sling from the cincture or carry in the pocket; mitres (illustrated in gold and colours); pocket-handkerchiefs; mufflers; knots (worn to indicate vows), including that worn by the chevaliers of the order of *Saint-Esprit au droit Désir*, or *du Nœud*, which was composed of a loop of gold and another of pearls; gold embroidery, called *orfrois*, when made in belts or bands to be used as baudrics, of which upwards of twenty ancient examples are shown, follow each other in rapid succession, and conclude the *premier fascicule* of the fourth volume.

We are reminded early in the next portion of the work that pattens, *patins*, formed one of the items invented in the Middle Ages, to meet the wintry difficulty of the bad state of the roads. They were worn by gentlemen in the fourteenth and fifteenth centuries below their pointed boots. It seems it was always considered bad manners to make a noise with them upon the flagstones in walking; and Martial d'Auvergne, in his "Arrêts d'Amour," interdicts a lover from clattering his pattens when he walks in the church to find his mistress. They were formed of wooden soles, more or less thick, kept in their place by two sandals crossed upon the instep. M. Le Duc has, we note, as much to tell of the peliçon, or pelisse, as of the mantle, and quite as many and various illustrations of it to show. But we must pass these, with perukes, perfumed, tinted, and covered with gold-dust though they be; toilet-cases, with all their Mediæval toilet secrets; plumes; *poulaines*, or pointed shoes; *pourpoints*, or jackets; rochets, or starting-point of the blouse; the sachets, or little bags hung round the neck in which people carried scent or relics about with them; *scapulaires*; seals, sceptres, and other interesting items, including a long and scrutinising treatise, or *résumé*, on robes, to leave space for a brief indication of the contents of the part that is issued of the fifth volume.

We should not look with antiquarian interest only upon the arms and defences in use in the Middle Ages, urges M. Le Duc, because they are the result of the contrivances always in course of consideration to meet the requirements of war, by people who were not sitting safely in comfortable offices, discussing the question; but were actually always in the field, or in the lists, or in strongholds they were bound to defend. We saw in the Sebastopol days how the troops altered their equipments to suit their altered circumstances with a swift ingenuity, and we should remember that this process of adaptation was formerly always going on. After a few further prefatory remarks, redolent of Crécy, Poitiers, and Agincourt, the alphabetical arrangement commences with the *aiguillette*, which is shown as worn in different modes on three knights. These are the leathern laces tipped with metal required to fasten one part of a warrior's costume to another, or to the place it was to protect. The *ailette* was a piece of armour worn on the shoulder generally in France, but very rarely in England. Many a blow or cut aimed at a head fell upon the shoulder instead, and this was a contrivance tied on with *aiguillettes* to meet that slip of the lance or axe. It was sometimes painted with the arms of the wearer. There are seven illustrations of this piece of armour taken from MSS. entitled "Tristan," "li Roumans d'Alixandre," "Godefroy de Bouillon," "Lancelot du Lac," "Histoire du Roi Artus," now in the French national library, whereof six are of a square form, and one circular; and we are referred to other examples on statues in Bâle Cathedral, the Church of St. Denis de Coulommiers, and Lyons Cathedral. Crossbows are next minutely described and delineated. Bows, with snatches of the *Roman du Rou*, telling of the battle of Hastings; and figures from the Bayeux tapestry, to illustrate them, follow. Armets, which is a term corrupted from "hiaumet," or "helmet," are described very fully, as is the subject of armour generally from the days of Charlemagne down to the sixteenth century. Such is the power of tradition, M. Le Duc observes, that, despite the change produced by the use of artillery, it was long before gentlemen believed in war carried on without this accoutrement; and to this day, he asks, have not most of the European armies retained their cuirassiers, notwithstanding that their cuirasses are not proof against conical balls? Sixty-two full-length figures illustrate the word *armure*. Returning to details, *arrière-bras* and *avant-bras*, arm-guards, present themselves as next in succession. It will be remembered that among pre-historic finds have been noticed arm-guards pierced with four holes to admit of them being fastened on. We are not taken back so far as this by M. Le Duc, who mentions the second half of the thirteenth century as the date of this invention. In the first place the warriors of that date thought of the ailette to guard their shoulders; then *les cubitières coniques* for their elbows; then a back-guard for the arm; and lastly a fore-arm guard. The *brassard*, or articulated piece held together by rivets, was a further development of the same idea. Only foot soldiers wore the separate pieces, whereas the *brassard* was adopted by any armed men regularly equipped. With the *bacinet* this first instalment of the fifth volume closes; and the companionship of the French knights, who were so much to our Plantagenets, ceases for the present. M. Le Duc is making a memorable addition to French literature.

THE NEW "WELLINGTON MILLS," IN LAMBETH.

AN extensive block of buildings, to which the above name has been given, is in course of erection in Westminster-road, Lambeth, and within the last few days the structure has been externally completed. The new building, which has been erected as a factory for Messrs. Oakey & Sons, emery and blacklead manufacturers, is a striking object amongst the surrounding buildings. It is situated at the angle of Westminster and Kennington roads, immediately adjoining the site upon which the new Surrey Chapel, for the Rev. Newman Hall, is about to be built. The principal elevation is in the Westminster-road, but the block may be said to have four frontages, namely, the main elevation in Westminster-road, another at the angle of the last-named road and the Kennington-road, and a third frontage to Kennington-road, whilst the rear of the building faces Mead's-row, and extends the entire length of that thoroughfare from Kennington-road to Westminster-road.

The position of the site has necessitated the building being somewhat irregularly shaped; but notwithstanding the difficulties with which the architects have had to contend in this respect, the different elevations are more or less effective. The extreme length of the structure is about 320 ft. by 160 ft. in width, the entire premises covering an area of upwards of an acre in extent. The main frontage in Westminster-road, which contains the warehouse portion of the building, is 90 ft. long by 50 ft. in depth, and is very lofty, being 70 ft. in height from the street-level. In addition to a deep and spacious basement, it contains the ground-floor and three stories above. The elevation of this part of the building, to the top of the ground-floor windows, is of Portland stone, and there is a portico in the centre as the principal entrance. The facings of the upper portions of the elevation are of yellow patent brick, with Portland stone dressings, and carved trusses, between which are festoons, surmounted by a massive cornice in terra-cotta. This portion of the building contains a residence for the superintendent of the premises.

The frontages at the angle of Kennington and Westminster roads, as well as those in Kennington-road and Mead's-row, are not so lofty as that already described. These parts of the structure will in part be devoted to the manufacturing purposes of the establishment, the ground-floor being used as packing-rooms, and also for stores. These last-named elevations have a distinctive and novel appearance, not only in point of construction, but as regards the materials used. They consist mainly of spacious windows from the ground-level to the cornice of the building, divided by piers, and at the heads and sills of the windows; the entire length of the several frontages is faced with hexagonal tubes, formed of a combination of concrete and granite, on the system of Messrs. Parr & Strong, of College-hill, in the City, the architects of the building: and which we have before now illustrated.

The several elevations and sides of the building thus described, inclose a spacious area within them. In the centre of this area, with a roadway entirely round it for the receipt and delivery of goods, a separate and distinct building, one story in height, has also been erected, for the machinery and steam-power required in the manufacturing business of the establishment. In connexion with this part of the building is a lofty chimney-shaft, which is a striking feature in the structure. The chimney, which is octagonal in form, is 12 ft. in diameter at the base, and is carried to a height of 100 ft. It is chiefly of yellow brick, uniform with the rest of the building, ornamented with red, white, and blue brick bands, and diamond work of the same material, with a cast-iron cap and ornamental brass foliage at the top, between 7 ft. and 8 ft. in depth. The water required for the works will be obtained from an artesian well, which has been sunk on the premises.

The whole of the works have been carried out by Messrs. Oakey & Sons themselves, under the immediate superintendence of Messrs. Parr & Strong, the architects, Mr. Eastman acting as clerk of works. Independently of the value of the land, the building will involve an outlay estimated at from 12,000*l.* to 15,000*l.*

THE NEW EXTENSION WORKS AT THE BLACKFRIARS GOODS STATION.

THE heavy works which have for some time been in progress at the Blackfriars station of the London, Chatham, and Dover Railway Company, in connexion with the enlargement of their goods area, are now considerably advanced towards completion. The new warehouses which the Chatham and Dover Company are erecting, but which will be rented and chiefly used by the Midland and Great Northern Companies, have been carried up to their intended height, and will be covered in within the next month. These warehouses are spacious and substantial, the main walls being 3 ft. in thickness, and the several floors from the basement to the uppermost stories are carried on iron pillars. Messrs. Hill, Keddell, & Waldram are the contractors for this portion of the works, and the amount of the contract for the warehouses alone is upwards of 40,000*l.*

In addition to the warehouses, which are being erected in Southwark-street, some distance to the eastward of the present station, the intervening space between the last-named and the warehouses is being added to the existing railway level, and connected with the upper portion of the warehouses. The area of this added merchandise space and sidings, irrespective of that furnished by the warehouses, is between one and two acres. This increased area is about 600 ft. in length, from its commencement, by a junction with the main line near Southwark-street to the margin of the river, and upwards of 50 ft. in width. Immediately to the eastward of the present boundary-wall of the station, the widened line is being carried forward partly on arches, and partly by a girder bridge over Holland-street, and the space, again eastward, between these arches and the warehouses, is being connected with the latter by thirty-four massive iron girders, thrown across, one end resting on the newly-formed arches already referred to, and the other end embedded in the wall of the warehouses, 25 ft. above their ground level. On the extended space thus obtained, four additional sets of rails and sidings for merchandise purposes will be laid, and the railway wagons will be raised and lowered to and from the railway level into the ground floor, and the several other floors of the warehouses by hydraulic power. The contractors for these works are Messrs. Ball & Gammon.

Simultaneously with the extension works at the station for increased accommodation for the goods traffic, the company are also about to effect an important improvement in reference to passenger traffic. At present, although there are four lines of rails between Ludgate Station and Blackfriars over the company's viaduct, there are only three lines from the entrance into the Blackfriars station, to a point near the Borough-road station, the result being that both the incoming and outgoing trains are constantly impeded and delayed between the two stations. A fourth line is about to be laid down through the Blackfriars station to the point named, near the Borough-road, which will complete two distinct sets of rails, and obviate the constant stoppages of the trains which are now necessary.

COLOURED DECORATION.*

In asking you to discuss the question of "Coloured Decoration," I must request you to pardon me if I appear to detain you unnecessarily with a recital of those natural laws on which its successful practice must ever be founded. We have to deal with a subject which is not dependent on individual taste alone, but which, like every other branch of professional practice, is governed by inflexible rules. It is true that these laws may be unconsciously recognised, and their teachings followed,—as in the other departments,—without a clear apprehension of the matter; still, I submit that much will be gained if we start with a common groundwork for discussion.

We must all desire to see the architect the real director of his works. We are every day urging that not only the building itself, but its decoration and furnishing, should be confided to his care. We are constantly protesting against a work which has been carefully planned and rendered externally pleasing, being spoiled internally when its completion is confided to other hands, and this from want of accordance, even although the decoration may be intrinsically good. The sculptor and carver willingly come to the architect's aid, and he is often wisely content to direct and define, generally leaving minor details to their taste and skill. The painter,—beset as he has been by chemical and mechanical difficulties,—offers his best services. Why should not the decorator and upholsterer also act more frequently with the architect in giving unity to his work; and this not only in great undertakings, where the necessity for unity is acknowledged, but in smaller and apparently unimportant commissions? A client, too, will be more willing to listen to the suggestions of his architect, when he finds that they are based on the theory that good taste is not dependent on cost, and that successful decoration and furnishing do not necessarily mean a large additional expenditure.

I have said that successful decoration in colour must be based on the right apprehension of what appear to be inflexible natural laws. Let us see how these laws are ordinarily defined, and then proceed to apply them to the subject in hand:—A beam of light falling on a glass prism in a darkened room is found to be split up into seven coloured rays (or rather bundles of rays), which arrange themselves in the following order,—red, orange, yellow, green, blue, indigo, violet. This is further confirmed by the same prism held before the electric lamp, and (more faintly) by the colours in the rainbow. We also learn that these seven colours are capable of being reduced to three,—red, yellow, blue,—which we designate primary colours, as we have failed to reduce them further. I am aware that much discussion has lately been caused by an effort to class green as one of the primaries; but I prefer, for many reasons, to follow the accepted arrangement.

I need scarcely remind you that red and yellow produce orange; blue and yellow, green; and red and blue, violet (or purple). These, then, are termed secondary or composite colours; and, with the primaries and the addition of the colour indigo forming the solar spectrum, you perceive they arrange themselves between the colours through whose combination they arise. All further derived colours (tertiary) may be regarded as coloured greys, as more or less broken colours in which a primary or secondary predominates. Still further we are taught that, as yellow and blue produce the colour green, that colour is to be spoken of as the complement of red; the red and the two forming green completing the primary trio, and so with blue and orange and with yellow and violet. These colours, as I have just quoted them, also form our first harmonies, as complete harmony depends on the presence of the three primaries in a composition. On the foregoing simple statement the whole science of colour rests. I have placed on the wall a few diagrams which will make this still clearer, and which are also meant to illustrate the deductions which I now propose to draw.

If we place red and green side by side, we perceive that they mutually purify each other: this is the result of the law of contrast. It is so with black and white, and with the coloured complementaries, when so placed. If we look upon a bright red wafer for some time, we perceive that the white paper on which it lies seems to be faintly tinted, where it touches the wafer with the complementary green. If, after gazing on it, we remove the wafer, we find the space it occupied appears to be also tinted with the complementary green. Similar effects will, of course, be observed, if we use wafers the colour of the other primaries. We accept it short as an axiom that the primaries have a tendency to produce in their surroundings complementary to themselves—red inducing, even in black, a greenish tint.

Again, it is found (as was to be expected) that colours mutually react on each other. Taking, even, my first example red and green, should one red have a decided orange tinge, the green will look bluer; should the green be bluish, the red will appear orange-tinted; orange, the complementary of blue, will appear to have been added to it. Take a different example: if I have several pieces of scarlet cloth, and look at them in succession, although they be of exactly the same colour, cut from the same piece, they will seem after a time to have lost brilliancy; the fatigued eye has developed the complementary green, and the scarlet has been tarnished, all mixtures of the primaries being broken, dulled, or tarnished colours,—we look for some on a green colour, and find the scarlet has been restored. It is an intuitive appreciation of these laws which causes the blonde to select blue and green to enhance hair or complexion, and the brunette to prefer red or orange tints. You will perceive at once how a red head-dress will bronze the negro, or an orange enhance the natural blue-black of some races. These considerations will also suggest to you how all colours will gain in purity and distinctness by being separated by black or white, as thereby we neutralise this tendency to tarnish. The colours of the spectrum may be deepened or dulled by black, or lightened by the addition of white, or they may be altered by admixture with each other in varying proportions; thus we get tones and hues—terms often confounded. The tertiary colours illustrate this; they are olive, russet, and citrine:—

Olive...	Blue + Yellow = Green Blue + Red = Purple...	Blue predominates.
Russet	Blue + Red = Purple... Red and Yellow = Orange	Red predominates.
Citrine	Red + Yellow = Orange Blue + Yellow = Green	Yellow predominates.

As the pigments which we use are never pure, each primary colour being more or less tinged by its fellow primary, and so with the rest, no combination of them will return to white, or the absence of colour, as in the case of the colours of the spectrum obtained from the solar beam, or by the electric lamp. In theory, the colours red, yellow, blue, should produce white, if combined in the proportion—yellow, 3; red, 5; blue, 8; but painted on a disc and caused to revolve rapidly, the grey produced is tinted most frequently by the red and blue, and the resultant colour is generally a violet grey. Indeed, as I have said, all combinations of the primaries produced by pigments are dulled and broken, as you must have often perceived when red has accidentally been present in the mixing of green, and the tendency is towards black rather than white. The tertiary colours, then, as they contain the three primaries, consist of greys produced by this admixture, coloured by the primary in excess; and these can, of course, be further combined so as to be distinctly dominated by a secondary. It is owing to this difficulty of admixture, and to save time in preparation, that the palette of the artist is being constantly added to by new pigments ready to his hand.

I would ask your attention to another peculiarity of the primaries and their combinations. The yellow is the most brilliant and obtruding colour; the red warm, and occupies a middle place; the blue cold and receding: hence the yellow is suited for projecting surfaces, the red for hollows and middle distances, and the blue for the mass. In the figures I have quoted, you perceive the blue has an area equal to the two others combined. You see the effect of this brilliancy of yellow in the secondary orange, and its tinge in scarlet; the warm of red in purple, and its tinge towards blue in crimson; the coldness of blue in some greens; and the brilliancy of yellow in the new aniline colour, where we have the luminous leaning towards yellow. In preparing colours it is, therefore, desirable that pigments to be combined should lean towards each other;—in orange, for instance, that red should tend towards orange, and the yellow should be free from a greenish tint; in green, that the blue should be greenish rather than purple; and so on; the tendency to broken or impure colour being favoured by traces of the absent primary in the pigment as already stated.

I said that colours were purified by being separated from each other by white or black. Let us see the effect of a ground of white or white will be to exalt colours by contrast of tone; of black, to lower them, for the same reason: and yet there are changes respecting individual colours worth noticing. Yellow, for instance, will appear much lighter with black than white, in the former case having acquired a greenish tinge; light blue will contrast most favourably with white, as will light green; red will be subdued by black by contrast of tone; while violet, for the same reason, will be improved. Contrasts of this kind are well seen in some of the national flags,—the red, white, and blue of France; the red, gold, and black of United Germany; the white and green of Saxony. Perhaps grey harmonises best with the majority of colours, and, if slightly tinted with the complementary of the colour, has a most pleasing effect: indeed, by the law of simultaneous contrast, this will occur in many cases without the actual addition of the tint. It is further to be noticed that the substitution of gold for yellow in decoration produces a marked change. Gold with black is lowered, whitened by contrast of tone; while with blue it is reddened, enriched by the development of the complementary orange. I shall have occasion to pursue this further in speaking of room-decoration.

Let me now say something on the subject of modes of decoration generally as applied to architectural works, and on the application of these laws which I have hastily sketched,—first, as to public buildings, and then as to private dwellings. We have to travel over a large field, and within the limits of a single paper our review must be a cursory one. The grandest modes of coloured decoration are—mosaics, frescoes, stained glass, paintings proper, marble inlays; in private dwellings, colour prevails in painting, hangings, carpets, upholstered furniture. The buildings most susceptible of decoration, of the costly class, are—churches, picture-galleries and museums, theatres and public halls, palaces and the residences of the wealthy.

There can be no question that mosaic decoration is the most durable and suitable for works on the large scale, combined with coloured marble in great masses: as at Venice and Rome, it leaves nothing to be desired. St. Mark's, at Venice, which may be regarded as a museum of this class of decoration, is admittedly unrivalled. In recent times, through the efforts of Dr. Salviati and others, the ancient schools of mosaicists have been revived; and it is even possible to transport the finished work, and place it on the wall in the most distant places. We have a specimen of Dr. Salviati's work in this room, and at the Houses of Parliament, the Wolsey Chapel at Windsor, at St. Paul's, and the Prince Consort Memorial in Hyde Park, as well as in the artist portraits at South Kensington Museum, we have admirable instances of its revival. In the case of the portraits in the niches of South Kensington you have also an opportunity of comparing the mosaic picture with the original drawing. The great merits of this mode of decoration are: the enamels employed are practically indestructible as regards material and colour, the only possible weak point being the attachment of the component tesserae to their places in the composition. They are capable of the finest or coarsest mode of production, are suited for all points of view, and, by the addition of gold and silver, at what may be regarded as nominal cost, they can be of a richness with which no other decoration can compete. Recently the number of colours capable of being used has been largely increased. It has been objected that they are not capable of as flexible treatment as the various forms of fresco; that their peculiar glitter is unfavourable to distinct view; and that they are costly, and require to be surrounded by accessories as rich as themselves.

Now it must be remembered (taking the last objection first) that all decoration, carved or coloured, is open to this. I admit, when we decorate at all, it is hard to keep the balance—to know where to stop. Witness the panelling and panelled vaulting of the Perpendicular period: this unrest in art-work which has made the Sainte Chapelle a blaze of colour, and will

* By Mr. C. H. Brien. Read at meeting of Architectural Association of Ireland, February 27, 1873.

leave no blank spaces externally or internally in Westminster or (internally) in the restored crypt of St. Stephen. A difficult problem is about to be solved in the proposed completion of St. Paul's. But the principle of decoration in mosaic does not necessitate gorgeousness. The band surrounding the Albert Hall is in principle a mosaic. Its most effective works can be done by inferior hands; whereas, in fresco, the preparer of the original drawing must also do the completed painting, if great excellence is to be reached. Its durability—as I have more than once said, its natural accordance with marble and stone, as terra-cotta ornament with brick—must make us all long for its extension, and hail every effort to place it more within our reach. I do not think its glitter is a disadvantage, as it is peculiarly suited to dimly-lighted positions; on carved surfaces this gives the colour a peculiar charm; and a system of concentration of ornament is equally necessary in stained glass and frescoes. Except in the cases of practically unlimited expenditure I have named, this objection need not have place. Generally, it may be stated the figure-subjects in mosaic are best placed above the line of vision; that the subjects should be simply treated, the scale large. I think the objection that Dr. Salviati's mosaic of the "Last Supper" at Westminster is to too small a scale, has considerable force. There is much in common between mosaics and painted glass in these respects.

FEMALE ART.

"*Society of Lady Artists.*"—The ladies have brought together, in the Conduit-street Gallery, 469 works of art,—drawings, paintings, and copies,—which form an interesting collection above the average in merit of those of the last two or three years. Mrs. Marrable, Miss Marian Croft, Mrs. Backhouse, Miss Thornycroft, Miss Partridge, Miss S. S. Warren, Miss Eva M. Ward, Miss Lane, Mrs. Rayner, Miss M. Rayner, Mrs. W. J. Brown, Mrs. Brownlow King, Miss Elizabeth Thompson, Madame Bischop, and Miss Georgiana Swift, have most distinguished themselves.

The Duke and Duchess of Teck visited the collection before it was opened, and a number of the pictures have been purchased.

Female School of Art.—Her Royal Highness the Princess of Wales has consented to preside at the distribution of medals gained by the students of the Female School of Arts, Queen-square, Bloomsbury, on Wednesday, the 26th inst., in the theatre of the University of London, Burlington-gardens.

A Statuette.—We are glad to hear that the Council of the Art Union of London determined at their last meeting (Lord Houghton in the chair) to produce in bronze a revised version of the statuette of Cimabue, for which the National Medal was awarded last year to Miss Emily Selous (now Mrs. Fennessy), in connexion with the Female School of Art.

THE BUILDING TRADE IN LONDON.

WE are threatened with another disastrous strike and all its evils and losses. The masons have given notice to the masters that they require 9d. an hour instead of 8½d. as at present, on the ground that the purchasing power of money is less than it was; and the masters, after much consideration, have declined to concede it, but have informed the applicants that they are perfectly willing the men should make longer time at the present prices, during the summer months, and so earn more money. The masters consider, as we understand, that the limit has been reached, and that further increase in prices would have the effect of checking work. It remains to be seen what determination the men will arrive at. What is to be the end of the constant move onward in the rate of wages and the consequent rise of prices, we are unable to divine. "With pig-iron at 9*l.* 10s. a ton," a well-known builder said in our hearing yesterday, "and timber *twenty-five per cent.* higher than I have ever known it, even with the duty on, how am I to make my bills satisfactory to employers?" How far may the patience of the public be trusted? If there were no other country than England the general rise in prices would be of less consequence, excepting to annuitants and other thousands with fixed incomes heretofore equal to their maintenance; but this is not the case, and it may be feared that many branches of manufacture will leave the country. One fact is worth a dozen suppositions. The inventor of what is known as the Universal Tooth and Nail Brush Rack, a useful little article for the wash-stand, had arranged for their manufacture in white wood at 3s. 6d. a dozen, and the makers supplied him and were well satisfied. The union men interfered, and said the racks must not be made for less than 4s. 6d. a dozen. The inventor found this would stop the sale, sent to Nuremburg, and now receives all he wants from that city at 2s. 6d. a dozen. We mention this little story, the truth of which is vouched for to us, as serving to show what is going on in much larger ways all over the country. This is surely matter for serious reflection, and should "give us pause." What seems best for us individually at the moment is not always so in the long run.

TRADES MOVEMENT.

Manchester. — A general meeting of the members of the Operative Society of House Painters in connexion with the Manchester Alliance, has been held to consider the desirability of requesting an advance on the present rate of wages received from local master painters. After some discussion a resolution was unanimously passed to the effect that a notice should be forwarded to the employers respectfully requesting an advance of ½d. per hour on all classes of work. It was stated at the meeting that several of the employers in the town had already conceded the advance.

Glasgow.—The house joiners have laid before their employers a request for a rise of wages from 7d. to 7½d. per hour. The employers have declined to accede to the request, and the men are to consider whether or not they shall resort to a strike, with the view, if possible, of enforcing the desired rise.

Edinburgh.—At a meeting of the joiners on strike, it has been resolved, after a somewhat stormy discussion, to accept the terms offered by the masters, viz., 7d. per hour, being an advance of ½d. on former wages. A number of the men who had struck work, of whom there were about 300 in all, accordingly applied for employment on the masters' terms, but, so far as we have learned, about the half of them only have been successful in their applications. Some of the men left town in order to seek work elsewhere, a number of the vacancies having been filled up during the 24 hours' strike. The strike committee, however, have denied the correctness of this statement. In Leith a similar result is thought not improbable, as the number of men on strike does not now, we are told, exceed 30, out of about 160, which is the total number of hands in Leith.

Greenock.—The master joiners having acceded to the demand of the men for an increase of wages, the new arrangement has come into force. The increase was ½d. per hour, the wages being now 7d. per hour.

THE PROPOSED BUILDING ON THE THAMES EMBANKMENT.

THE St. James's vestry, Westminster, have had under their consideration the proposals of the Government to build upon that part of the Thames Embankment near Charing Cross, which is to be retained by the Government under the arrangement into which they have just entered with the Metropolitan Board of Works for the land west of Charing Cross, which has been so long in dispute.

At the meeting of the vestry, Mr. Bradshaw brought forward a motion to the effect that it was undesirable to appropriate any portion of the space reclaimed from the river to building purposes, on the ground that the buildings would destroy the beauty and convenience of the great avenue which the embankment roadway affords through London, and, by covering a space hitherto unenclosed, would impair the healthiness and convenience of the district. He urged that the space on the foreshore to be retained by the Crown should be devoted to the same purposes as the rest of the space,—public recreation and amusement; and he hoped that the Metropolitan Board of Works would not consent to any Government proposals which would have the effect of advancing the line of buildings beyond the line of houses in Whitehall-gardens.

The discussion which followed showed that there was a considerable difference of opinion on the subject amongst the members of the vestry present, several of whom appeared to think that the proposal of the Government to build on the spot in question would be an advantage rather than otherwise; Mr. Bidgood, one of the members, remarking that the proposed new buildings would shut out from sight the hideous railway shed of the South-Eastern Railway Company.

The result of the discussion was that the vestry refused to take action in support of Mr. Bradshaw's suggestions, thereby practically expressing their approval of the proposal of the Government to build upon this portion of the land.

THE ASYLUM FOR IMBECILES, AT CATERHAM.

EXTENSIVE additions are now being made to the Metropolitan Asylum for Imbeciles at Caterham. The committee accepted the tender of Messrs. Henshaw for the new recreation-hall and additional block, and the works are being rapidly proceeded with.

The recreation-hall is about 120 ft. by 45 ft. (including stage), and about 22 ft. high, divided on plan into nave and aisles by iron columns supporting brick arches. Above the nave is a dormitory for male patients, with all necessary lavatories, &c.

The necessity for this hall was strongly urged by the Commissioners in Lunacy at their last visit, and at Leavesden Asylum a ward has been set apart for the purpose of recreation, but no hall has yet been erected in the position originally fixed by the architects, and shown on the plan illustrated in the *Builder* some years ago.

In addition to the hall mentioned, the Caterham committee are erecting an additional block for 160 female patients, which will when completed bring up their entire accommodation to nearly 2,000 patients.

The architects of these additions are Messrs. John Giles & Gough, who were also the architects of the original structures.

STATE OF VICTORIA PARK CEMETERY.

ON more than one occasion we have described the unsanitary state of Victoria Park Cemetery, and objected to the course pursued there. A writer in the *Evening Standard*, after quoting some passages from our columns, adds:—"Is there any necessity for carrying the indictment farther. If there be, I can confirm and supplement the above by other facts. The last coffins placed in graves ought to be 7 ft., or at least 5 ft., below the surface of the soil. I have been witness of interments in reopened (old) graves where the coffins were scarcely an arm's length from the surface of the soil. The staff of grave-diggers in this cemetery is barely sufficient to open and close the newly-made graves; so order and neatness, or even decency, are not dreamt of. The owners or directory of this cemetery feel the exigencies of their position so much that they have begun actually to manufacture space. An offset of the graveyard, which existed for years as a sand-pit, is now being filled in, to be utilised for interments as soon as the small patch immediately within the gates is used up. Siderally the graves are advanced nearly to the gates, and the central carriage-way, which only extends for a short distance, will be eaten up if an ukase does not go forth from the Secretary of State. I think I have now made out a case for inquiry, but if instituted it must be an exhaustive one, into the past history, management, and surroundings of the Victoria Park Cemetery."

SCHOOL BOARDS.

London.—Mr. Reed, M.P., brought up a report from the works committee, stating that the following tenders had been received for the erection of a school in Lower Wandsworth-road, for 1,078 children, viz.:—J. W. Falkner, 8,250*l.*; Marsland & Sons, 8,150*l.*; James Cooper, 8,147*l.*; Gammon & Sons, 7,696*l.*; B. E. Nightingale, 7,595*l.*; Nixon & Son, 7,589*l.*; Newman & Mann, 7,578*l.*; J. Cook, 7,565*l.*; and W. Higgs, 7,549*l.* The tender of Mr. W. Higgs, of Crown Works, South Lambeth-road, S.E., was accepted. The area of the site is 23,000 square feet. The cost was 2,500*l.* The schools have been designed by the Board's architect, and will cost 7*l.* per head. The Board has also resolved "That the

amended tender of Messrs. L. H. & R. Roberts, of 34, Rheidol-terrace, Islington, N., amounting to 6,861*l.*, for the erection of the schools to be built upon the site in Harper-street, New Kent-road, in accordance with the revised plans, be accepted; and that the tender of Mr. W. Wigmore, of Bradfield House, Fulham, amounting to 4,825*l.*, for the erect on of a school to provide accommodation for 818 children, on the site in Eagle-court, St. John's-lane, Clerkenwell, be accepted."

Leicester.—A letter was read from the Education Department, approving of the plans of the Oxford-street schools, and also recommending the Public Works Loan Commissioners to lend the requisite amount.

Halifax.—The clerk read the report of the sites and buildings committee, which stated that having examined the several set of plans and designs (numbering eight), for a school at Booth Town, received in competition, they gave the preference to that under the motto, "We live to learn," considering its arrangement of ground-plan to be the best, and they recommended the Board to accept it on condition that the architect would produce a revised elevation more in accordance with the views of the committee, and make such other alterations as may be suggested. The chairman observed that some of the other plans had various degrees of merit, still the committee did not find one which so perfectly came up to the idea of the Board, and therefore they could confidently submit it to the approbation of the Board. The ground-plan was the best of any in its arrangements; but the elevation was not quite approved. The report was unanimously carried, after which, the successful plan having been opened, the chairman stated that, with one exception, the committee were entirely ignorant of the quarter from which any of the plans came. The successful design was then stated to be by Messrs. Leeming & Leeming, architects, George-street, Westminster.

Northampton.—The Board have consulted Mr. T. Roger Smith upon the designs submitted to them in competition for two schools which they are about to erect.

METROPOLITAN CONVALESCENT INSTITUTION.

The committee having purchased a site upon Kingston-hill, determined to erect a building for the reception of the children convalescents now provided for in two old-fashioned houses, situated at Mitcham and Hendon. Accordingly they invited four architects to send plans in competition for the proposed building, but upon reconsideration, as we are informed, they withdrew their invitation, and called upon Mr. H. Saxon Snell to prepare a design. The working drawings and estimates are being prepared, and tenders will be invited so soon as the legal transfer of the ground has been completed. The building will accommodate 200 children, and the estimated cost is about 17,000*l.*

ART AND SCIENCE.

A "Fine Arts Financial Association" (rather an odd idea, it strikes us), is announced, with a capital of 150,000*l.*, in 30,000 shares of 5*l.* each, the principal object being to advance money to artists and others on works of art, and to effect the sale of such works on conditions mutually advantageous to the borrower and the company. The prospectus states that artists wishing to obtain advances upon their works do so at a considerable disadvantage, as they only get a nominal amount of the value at a large rate of interest, whilst the works are stored away, thus preventing their exhibition for sale. It is therefore believed that this company will supply an existing want of making advances to artists at 10 per cent. per annum, or such terms as may be agreed upon, the company finding a proper place for the exhibition of the works for sale, on which, when effected, a moderate commission will be charged, and the balance between the amounts obtained and the advance handed to the owner. Depositors may clear their deposits at any time, on paying the advance and interest, without any charge for exhibition. Works of art on which deposits are made, and which are not intended for sale, will not be exhibited, unless desired. Depositors may, upon special terms, have their deposits exhibited at any picture exhibition in the kingdom, and periodical sales will take place of unclaimed deposits. The company will also buy and sell works of art, on its own account or on commission. The project is stated to have been favourably received by artists and others, and negotiations are already in progress for advances on valuable collections of high-class pictures.

Lectures on Greek Art.—The Darlington Church of England Institute have had Mr. T. H. Thomas, of London, engaged at the Central Hall, delivering a series of lectures on Greek Art. The attendances were not so large as the interest of the subject deserved. The lectures were illustrated.

Gloucester County Museum and Schools of Science and Art.—The formal inauguration of the building in Brunswick-road, Gloucester, recently erected for the accommodation of these combined institutions, will take place on Easter Tuesday, the 15th of April, according to the local *Chronicle*. Earl Ducie, lord-lieutenant of the county, has undertaken to preside at the ceremonial to be observed on the occasion.

ARCHITECTURAL ASSOCIATION.

On Saturday afternoon, March 1st, a visit was paid by about sixty of the members to "The Criterion," the building now being erected in Piccadilly for Messrs. Spiers & Pond. The roofs are nearly completed, and some portion of the interior finishings is in position. At the last ordinary meeting of the Association on the 7th inst., thanks were voted to Mr. Verity, the architect, for personally accompanying the members over this building. The thanks of the general body of the Association were also voted to Mr. T. Roger Smith for the course of lectures on "Professional Practice," recently brought to a close.

A paper was read by Mr. E. C. Robins, on "Middle-class Schools for Girls," calling attention to the general question of secondary education for girls, and the provision for it in different countries; noting also the views of the advocates for large schools, and such steps as have been taken to provide them. These advocates for boarding and day schools, each to contain a considerable number of children, consider that their propositions will now and hereafter be largely acted upon. Their requirements are now sufficiently definite for the work of the architect, in the provision of suitable buildings for the children of the middle classes,—not widely differing from those provided for the poorer classes, *e.g.*, the best schools for primary instruction of school Boards,—but with increase of comfort and of appliances for a somewhat wider range of study. We shall return to the subject.

ARCHITECTURAL ART IN ENGLAND.

On the 6th inst., Professor Kerr lectured, at the rooms of the Society for the Encouragement of the Fine Arts, Conduit-street, on "Architectural Art in England"; Mr. James Edmeston in the chair.

In the course of his remarks, the lecturer said that the fine art of architecture was at the present moment the subject of extremely bitter controversy; and it was certainly remarkable that criticism, without which no art could flourish, should be, as regarded architecture, a dead letter. The main reason of this was owing to what was called the "battle of the styles,"—Gothic *versus* Classic,—the two causes being continually pleaded together. Architects have been told to ignore this controversy, and to turn their attention to their real duties; but in vain. The two styles of Gothic and Classic represented two different schools of thought; and all other styles were either subsidiary to these or were out of the category by reason of their being barbarous. We had been asked to invent a new style; but that was utterly impossible; for a style of architecture was a thing that could not be invented suddenly, or on demand: it could not be introduced into any country except by means of the development of ages. From the commencement of human history, temples were, and always would be, the great standard works of architecture. Amongst the Greeks and Egyptians this was so; and in the present day our churches fully testified to this. There were two great schools of architecture in Europe, the French Classic and the English Gothic; the former representing the tendency of modern Europe, whilst the latter represented the reaction in favour of the Middle Ages. With regard to the revival of Romanticism, amongst that school there was displayed at this moment an unexampled amount of energy and enthusiasm. Their ideas were very high as regarded art, but yet their platform was very narrow. Gothic architecture was extremely attractive to young minds; the youngest architects were Gothic architects, and Classic architecture with them was entirely out of fashion. In France, however, it was entirely the other way. Classic design, too, had almost disappeared in England. Our monumental art and our ordinary art were entirely different. The Gothic architecture of the present day was extremely ambitious, and therefore eccentric and *bizarre*. The leaning of the leaders of the Gothic school had been towards thirteenth-century architecture and the French Gothic, but a new school has now sprung up. We are driven back upon the adoption of a crude, rough, and rude mode of design in order to escape the imputation of weakness. The public of late years have become both alarmed and astonished at our position; and the profession is becoming very unpopular, there being every evidence of a general distrust. But the fashion in architecture must change; it never had stood still, and it was vain to think that it would. In conclusion, he thought that the reaction would be towards the adoption of the French Classic style, because that was the modern European manner, from which we had gone away and to which we must ultimately come.

Mr. Browning agreed entirely with the substance of the lecture, and believed that the fashion in architecture would change, and that there would be a fine future before the young architects of the present day.

The Chairman, in proposing a vote of thanks to the lecturer, said that different styles of architecture were governed by tradition, and that in the presence of criticism not founded upon real canons of taste, it was impossible for any art to flourish and occupy that position which it ought to occupy.

THE DUBLIN PORT AND DOCK IMPROVEMENTS.

From a report just issued of the Dublin Port and Dock Board, detailing a variety of statistical and useful information, we learn under the head of "Improvements" that the eastern extension of Sir John Rogerson's Quay is finished, and the deepening of Great Britain Quay is making a satisfactory progress. About 250 ft. of the wall are complete, and during last year the sum of 26,001*l.* was paid on account of these works, making a total payment already of 65,379*l.* 1s. 9d. Of the north-wall extension of the quay-wall, 300 ft. are complete, and blocks laid to the further length of 120 ft. About 600 ft. of quay-wall have been built on the works for deepening the steam berths. New steam-dredges have been at work for some months past. The wharf for the coal trade is finished, and the contractor has been paid his balance of 3,577*l.* 19s. The wharf adjoining the Bristol and Glasgow Company's berth will be extended 90 ft. to give accommodation to sailing vessels. Further, a range of vaults for storing whisky, extending from the Dublin and Drogheda Railway terminus to the main entrance to the docks in Amiens-street will be constructed at a cost of 4,985*l.* A piece of ground has been sold by the board to the railway company to enable them to construct an inclined roadway adjoining the terminus. The amount due on mortgage bonds towards the expenditure incurred in the improvement of the port was 94,000*l.*

In Dublin, also, in connexion with the Holyhead traffic and the Irish inland traffic, the Midland and Great Western Railway Company have been for several months prosecuting some important engineering works for the better development of their goods traffic *viâ* the Liffey branch of their line. These improvements will give that line great facilities by placing it directly in communication (alongside of the Royal Canal) with the Liffey. The canal was purchased several years ago by the Midland Railway Company.

New British Institution Gallery, Bond-street.—An interesting collection of cabinet pictures will be found here just now on sale. It includes a number of oil pictures and water-colour drawings by artists who have worked with Fortuny at Rome, and there established a rising school for colour and character.

ON THE PRESERVATION OF WOOD BY MEANS OF TAR.*

IN a previous number, says the *Moniteur Scientifique*, we published a memoir on the preservation of timber for purposes of construction. All the methods of preserving wood hitherto in use were therein noticed; but whilst some were treated at considerable length, others were touched upon very slightly. In the latter category was the preservation of wood by means of tar. We believe it may be of service to our readers to treat the subject more fully, and we have, accordingly availed ourselves of the writings of M. Melsenns, member of the Académie Royale de Belgique, of the Philomathic Society of France, &c.

In August, 1848, M. Melsenns directed attention to certain facts connected with the conservation of wood with the aid of substances insoluble in water and unalterable under the ordinary influences of atmospheric air and moisture. The type of these substances chosen by M. Melsenns was resin, pitch, and tarry products generally, such as we find unchanged after a long succession of centuries in Egyptian mummies.

In a subsequent number of the *Bulletin* of the Belgian Academy of Sciences, the same learned writer gave an account of some experiments instituted by him and of the results thence obtained. These we propose to review briefly.

In the winter of 1840-41, M. Melsenns prepared some blocks of wood 40 centimetres (14·9 in.) long, and 25 centimetres (9·2 in.) in thickness, which were thoroughly impregnated with gas-tar, by a repeated process of heating and cooling. These prepared blocks were then buried in the corner of a garden, where the soil was saturated with the drainage from a urinal; there they remained for a couple of years. When taken up and split open, they were found to be perfectly sound.

In the cross-sections white bands or streaks were observed showing the places into which the tar had not penetrated; it was observed that the latter had followed the sinuosities of the woody fibres. The split-blocks were separated in halves —one set of halves was retained, and the other buried for some time in ordinary soil. The first set of halves was kept from exposure for eighteen months; the pieces were then plunged into a steam-bath at a temperature of 100° Cent. (212° Fahr.); suddenly cooled by plunging them into cold water, and set out in the frost; they were then laid out for some time uncovered on the damp surface of a lawn; then placed on the parapet of an isolated building; lastly, they were buried in a mixture of sand and mortar under a butt holding rainwater. It would be difficult to suggest or imagine a concatenation of circumstances more favourable to decay, than the alternations of dryness and humidity to which they were thus continuously exposed. But, according to the reports of all who inspected them, they were perfectly sound and uninjured after *twenty years'* trial.

M. Melsenns also gave portions of the same blocks to M. Rottier, who placed them in his rotting-vats. He reported to M. Melsenns as follows:—"Small portions of your blocks were destroyed in my vats at the expiration of 240 days or thereabouts; but it should be observed that blocks of a precisely similar description, and not so prepared, lasted 120 days at furthest.

These facts deserve the attention of railway directors, who still not unfrequently neglect this department of their service. With M. Melsenns, we regret that experience acquired in this matter on lines of railway is not always made public. The Belgian Government, for example, tried a dozen different methods of preserving wood; but a special Commission appointed to investigate the subject was directed to devote its attention to the following matters:—1. The durability of oaken sleepers in their natural state, and impregnated with creosotic oils by Bethell's process. 2. Ditto, of blocks of beech and red deal prepared in a like manner. M. Melsenns also observes that it is to be regretted that the reasons which led to the abandonment of the "Boucherie" process on Belgian lines of railway since the year 1859 have not been given in the reports of the railway administration, as such reasons would have afforded reliable data for future experimentalists to go upon.

Useful information might be obtained in another way. We know that the renewal of the material is most frequent with certain woods and upon certain lines of railway, and we are disposed to agree with the observation made by M. Melsenns in 1848, that "an exhaustive study of all the circumstances that contribute to render the wood unserviceable under such cases would infallibly lead to the solution of this great question; at any rate, careful researches into the more immediate causes could not fail to be of infinite value."

In a pecuniary point of view the subject is of no small importance. During the three years, 1861, 1862 and 1863, over 140,000 sleepers were put *hors de service* on Belgian lines; in 1860-62 the number was 150,000; so that there is no exaggeration in assuming that the future expenditure may be reckoned at 150,000, which, at 5 francs a piece, represents a sum of 750,000 francs (31,250*l.*). It must be understood, that up to 1864 not more than one-third of the sleepers on the Belgian lines were prepared in any way. Of course the estimate above given must be reduced as the proportion of the prepared sleepers becomes greater. However this may be, the total number renewed between 1839 and 1862 was 1,849,781. Of these, 1,081,000, at 5 francs each = 5,405,000 francs; 761,000 at 3½ francs each = 2,885,000 francs; making a total value of 8,290,000 francs (331,600*l.*). But the question is by no means as simple as it appears here; neither would it be all unalloyed gain if the sleepers lasted for an indefinite period.

M. H. Maus published an interesting paper upon the subject in the *Annales des Travaux publiques*, vol. iv., 1846. Without going minutely into the details, we may observe that, according to M. Maus, the annual cost of a sleeper is made up of two separate elements,—1, interest on the prime cost; 2, an annual reserve, which at interest should reproduce the sum required to purchase a new sleeper when the time comes. On this point the reader may consult M. Maus's paper, and the accompanying table, based upon a formula prepared by M. Emery. The formula, however, needs completion. As it now stands, no account is taken of the money-value of the discarded sleepers. The sound portions of oaken sleepers, for example, may often be turned to account for other purposes along the line,—fences, barriers, posts, and such like, and for fuel. Sometimes a discarded sleeper purchased in a good year will fetch as much as the price of a new one; but, as a rule, they are not worth much. As fuel, a sleeper prepared with gas-tar will be valuable in proportion to the tar contained in it. Hence, the data in M. Maus's table are not altogether exact, and must be taken as representing the *maxima* of result. In every case, however, the cost will be less in proportion as the durability of the sleepers individually is greater.

A correct formula could only be prepared with the aid of long experience in the working of lines of railway, due regard being paid to all the conditions involved, such as the cost of labour in laying and replacing, the choice of the wood, the prime cost and the durability of each sort, the nature of the soil in each case, &c. The cost of preparation should be as much less in proportion as the wood in its natural state is more durable. The hesitation of the railway authorities and the need of experience are explanation sufficient of how it came to pass that in 1864 only 37·77 per cent. of the sleepers on Belgian lines of railway were prepared in any way.

A section of a piece of timber impregnated with tar presents some curious and very distinctive characteristics, according to the duration of the process of injection and the amount of tar injected. In every case the injected tar follows the lines and sinuosities of the longitudinal fibres. When injected in sufficient quantity it fills the pores altogether; when, on the contrary, the process has been incompletely performed, which, however, is generally sufficient, the tar accumulates in the transverse sections, and plugs the channels that give access to deleterious agents.

In the large blocks of beech and other soft woods, bands were observable marking where the tar had not penetrated. Still, despite the severe test to which they were exposed, these blocks kept sound at a very slight depth below the surface of the ground.

It should be remarked that it is always best that the wood should be put in shape, and in sleepers, that the mortises for receiving the chairs, and the holes for the dowels, wherewith the latter are fixed, should be made before injection.

The experiments made by M. Melsenns on oaken blocks, exposed to the fumes of liquid ammonia, show that the conservating fluids follow the precise course that would be taken by decay. To our great regret, want of space forbids us to follow the author into the details of the experiments executed by him, or to reproduce the figures given in the original memoir. Suffice it to say, that in wood thus treated, the tar acts on the very parts first exposed to injury, and on the course that would be taken by decay, which is thus rendered impossible. We may add, that a working engineer, with whose assistance M. Melsenns attempted to split the blocks thus prepared, considered the resistance equal to, if not greater than, that of ordinary oak. Several small nails, in the substance of the wood were found entire, and not at all rusted—a peculiarly favourable circumstance that deserves to be specially noted.

Whatever the nature of the wood, rot, wet or dry, spreads rapidly in the direction of the *length*; its transverse progress, in the direction of the medullary rays, is less rapid. Sleepers are thus often thoroughly rotten, although the outside shell may appear sound and uninjured. We frequently find them decayed in the lines of prolongation of the dowel-holes, and yet sound everywhere else. When sleepers are not dressed, the process of decay is observed to be delayed in all ordinary woods. In oak, where the fibres run in the direction of the dowel-holes, the portions of the wood below the latter are often stained black with a sort of ink formed by the rust of the iron dowels acting on the tannin in the substance of the wood. These blackened lines do not run straight, but in each case follow the line of the first series of longitudinal vessels reached.

Saw and hatchet cuts, and all other injuries causing a solution of continuity in these longitudinal vessels, tend to expedite decay. In 1843-44, when the wooden pavement in the Rue Croix des Petits Champs, in Paris, was taken up, all the blocks left exposed on the ground were decayed at top and bottom: an injection of tar, however incomplete, would have prevented this injury to the wood.

In his "Memoir on the Conservation of Wood" (*Bulletin de l'Académie Royale de Belgique*), M. Rottier has endeavoured to determine by which of the numerous substances contained in coal-tar, this special action is exerted; but, whichever it may be, the experiments of M. Milsenns sufficiently testify to its practical utility. Neither need we lay too great stress on the substance with which the wood is to be impregnated, so long as it will not volatilise except at a high temperature.

M. F. Kohlmann (*Comptes Rendus*, June, 1863) has directed attention to the employment of tar in the conservation of every description of building material. He shows that tar, or, better still, pitch, stearic acid, and the like, might be substituted for water in mixing plaster, and that the admixture, although mechanical, is so intimate that the benzine, and other substances in the pitch, are often found imperfectly crystallised in the plaster. The process of impregnation with gas-tar above described, must have a somewhat analogous effect, as M. Rottier found that chips thus treated would not bleach under the action of ether. They remained of a deep brown colour, and under the microscope, the woody fibre of the cells was found to be stained with the tar.

However this may be, M. Kohlmann ascribes the practicability of employing these substances in plaster, in place of water, to the property they possess of intermixing intimately therewith. The experiments of M. Melsenns show that neither mercury nor sulphur possesses this property. In the specimens of injected woods exhibited in 1848 were pieces impregnated with mercury, with sulphur, and with "Darcet's metal." It would be interesting to ascertain to what extent timber thus prepared might be employed in shipbuilding and in mines. As regards woods impregnated with fusible alloys, their economic value is very small, being limited to marqueterie-work and the like.

Everything tends to show that the conservation of wood deserves a place in the foremost rank of questions affecting public economy, and that up to the present time the subject is very far from having received a satisfactory solution. A sleeper should last as long as a mummy.

The methods of injection suggested by M. Melsenns in 1845 did not answer equally well with every kind of wood. After trying wooden blocks in every sort of condition,—dressed and in the rough, green and dry, sound and decayed,

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* *Moniteur Scientifique*, January, 1873.

M. Melsenns found that alder, birch, hornbeam, beech, and willow were easily and completely impregnated; deal sometimes resisted the process, the innermost layers remaining white; poplar and oak offered a very great resistance,—indeed, with poplar it was found necessary to repeat the process.

In oak it often happens that the sap-wood, or its outermost layers, are impregnated, whilst the tar has penetrated a few millimètres only into the rest of the wood. A very large block of oak, very imperfectly injected, in spite of a twenty-four hours' sojourn in a boiler, at a temperature of 120° to 140° Cent. (248° to 282° Fahr.), was left out through the winter. The workman called upon to examine it afterwards reported that he had never seen harder or drier oak. It had then been eight months in the open air. It was examined in the April following the severe winter of 1847.

It often happens that considerable portions of the wood will resist the passage of the tarry matters, but the interstices being stopped through certain parts of their length are thus rendered inaccessible to decay.

According to the nature of the wood and the manner in which the injecting process has been performed, the wood will absorb from 30 to 50 per cent. by weight of tar, when perfectly dried in *vacuo* at a temperature of 140° Cent. (284° Fahr.). This would no doubt involve considerable expense; but in most cases, as with sleepers, a thorough injection is not requisite, and the process may be repeated when signs of decay begin to show themselves.

The Belgian railway regulations require that a sleeper impregnated with tar should retain 9·25 kilog. of it. It is difficult to see why a dozen kilog. of tar, deprived of all its volatile ingredients at a temperature of 150° Cent. (302° Fahr.), should not do as well as ordinary coal-tar. In the experiments with creosoted fir sleepers, it was found that 30 to 40 kilog. of wood absorbed 22·5 k. of tar.

The experiments on which M. Melsenns has based his assumption of the sufficiency of a *superficial* injection of hot tar, were executed with fifty pieces of board 0·30 m. long by 0·07 m. broad by 0·05 m. in thickness. The period of immersion in the hot tar varied from fifteen to twenty minutes. The matters employed were ordinary gas-tar, and gas-tar deprived of its volatile ingredients; sometimes resin was added. On coming out of the hot tar, the boards were plunged in cold liquid tar; afterwards they were dried in a hot bath. Oak, fir, beach, hornbeam, and poplar were used.

Wood in its natural state, from the Veterinary School, where it was more damp than in an ordinary store, was prepared, dried, weighed, placed in boiling water for twelve hours; then left exposed; and weighed from time to time. The results were as below :—

First Series of Experiments.

Average weight of the prepared wood (mean of 20 experiments)	100
Ditto, after immersion in boiling water	120
Ditto, after fifteen days' exposure	107
Ditto, after two months' exposure	94
Ditto, after three months and a half exposure	89
Ditto, after nine months and a half exposure	91

The weights of similar blocks, not prepared, under like treatment, were,—100, 136, 99, 86, 84, 85. A mean of five experiments.

Second Series of Experiments.

Average weight of the prepared wood (mean of 20 experiments)	100
Ditto, after a month in sandy soil, always damp, and sometimes saturated	111
Ditto, after two months' exposure at noon-day in the months of July and August	97
Ditto, after six months under cover in the laboratory of the Veterinary School	98·5

The weights of similar blocks, not prepared, and treated in like manner (a mean of five experiments), were,—100, 127, 89·5, and 91.

These data show that wood hastily prepared and very imperfectly impregnated lost and gained *less* moisture than ordinary wood in its natural state, in like times, and under like conditions.

As regards the sort of wood, it was found that oak absorbs and loses least; fir ranks second; beach and other soft woods come third; and hornbeam fourth.

Further experiments in regard of this point would be useful.

Superficial injections with hot tar appear to differ essentially in their effects from ordinary tarring with the brush. Under the microscope, the difference is very strongly marked.

In conclusion, we give M. Melsenns' deductions from the experiments above referred to :—

"We may inject the whole or any part or parts of the wood, green or dry, dressed or in the rough, by preparing it either by chemical agents, or the natural process of seasoning, employing the pressure of steam, or of the atmosphere, as the mechanical power, and heat as a solvent or liquefier of the preserving substance.

The latter will always take the course that would be followed spontaneously by decay.

The superficial carbonisation of the wood is always more effective when produced with the aid of tarry matters than by the simple action of heat (charring), which decomposes a portion of the wood.

When the injection is superficial, the wood should always be put into shape first.

A railway sleeper thus prepared should have a long, if not indeed an indefinite existence, if exposed to the inroads of decay alone; but, in practice, we have to take account of mechanical causes of injury as well."

DRINKING FOUNTAIN FOR ALNWICK.

IN 1871, the Alnwick Local Board of Health desiring to remove an unsightly octagonal stone erection, 10 ft. in diameter, of the date of 1780, called "Pottergate Pant," which stood on a conspicuous spot in the town, at the junction of Narrowgate-street, the main street leading to Alnwick Castle, with a picturesque and steep street called Pottergate, that body obtained a design for a new "pant." It was then discovered that, at the establishment of the Board of Health, twenty-five years or so ago, this and all the "pants" in the town were given up by the Corporation of the town to the Board for "use and maintenance" only, and the Corporation now claimed to have a voice in the selection of the design for the new erection, although they were not to pay for it. The Board objecting, the design was withdrawn, and nothing was then done. The question cropped up again last year, when, on the proposition of the Corporation, the Board reluctantly consented to a design submitted by the former, and the unsightly erection was removed. The design of the Corporation, however, being of no artistic merit, and merely for a cast-iron erection apparently taken from a trade-book, considerable dissatisfaction was expressed at the opportunity likely to be lost for the erection of a fountain that should be a credit to the town. A project was then mooted to erect by subscription a handsome granite fountain, which met with decided success, when at this stage Mr. Wm. Dickson, F.S.A., the clerk of the peace for the county and the chairman of the Local Board, volunteered to provide a granite fountain at his sole cost. In order to satisfy both the Corporation and the Board on the question of the design for his fountain, Mr. Dickson issued advertisements, offering a premium of 5*l.* for the best design based upon a printed specification of particulars which were to be obtained from him. These particulars were, in the main, that the accepted design was to become his property, and the author was to be employed to carry it out; that it was to be in red polished granite or a mixture, and 11 ft. high to the base of a catoptric lamp, which he would provide for the summit of it; that it was to be about 4 ft. square at the base, with troughs and drinking-cups; that it was to be plain and substantial, of the Edwardian character; that the cost was not to exceed 100*l.*; and that the design was to be fixed upon by a joint committee of members of the Board of Health and the Corporation.

In response, fourteen designs, illustrated by twenty-five handsome drawings, by eleven competitors, hailing from London, Glasgow, Inverness, Newcastle, and Alnwick, were received at the appointed time. Mr. Dickson, having obliterated all signatures and everything that would give a clue to the authors of any of the designs, handed them over to the joint committee, composed of five members of the Local Board, one of whom was Mr. F. R. Wilson, architect, and who was not a competitor, and five members of the Corporation, giving to them absolute powers to select a design and to carry out the work.

The joint committee, after appointing Mr. G. Cockburn chairman, and Mr. James Heatley secretary, and devoting considerable time and care at three several meetings, have, after eliminating from the competition all those designs that were not in accordance with the specification, finally adopted a design of considerable artistic merit, whose author is Mr. D. Macmillan, a local sculptor, and which came under the motto, "We live to learn." It is about 4 ft. square, two-thirds up, with lancet-headed cusped panels in the centre, whence are suspended the drinking-cups. The upper part rises out of the square into an octagon, with a quatrefoil in the front face, and a plain octagonal pyramidal roof, terminated with a finial, which carries the lamp-pillar. The lower parts of this design, including the trough for "skeels," and niches for dogs and cattle to drink from, are to be red polished granite, and the upper part of axed granite. The finial termination is to be of carved hard stone. It is to be erected for 100*l.* This, the selected design, is one in the competition which strictly conforms to the specification, and has thus fairly won the premium and the honour of carrying out the design.

One matter yet remains to be settled by the joint committee, viz., the inscription. It was the wish of the donor that it should stand simply thus,—"The gift of William Dickson to the town of Alnwick, 1873." The corporation would like the word "corporation" in lieu of "town." As a middle course, "Erected at the cost of William Dickson, esq., in place of the old pant, 1873," with his monogram on a shield on the front, and the arms of the corporation (St. Michael) on a shield in the rear, would perhaps answer the purpose.

COUNTRY HOUSES: MILNER FIELD, YORKSHIRE.

THIS house, the residence of Mr. Titus Salt, is situated in the parish of Bingley, and near to the village of Gilstead. It occupies a prominent position, overlooking the valley of the Aire, and commands extensive views of the surrounding country. The house stands in a newly-formed park, and is approached by a new road, communicating with Saltaire on one side, and with Gilstead and Bingley on the other. A small Domestic building, of about the seventeenth century, which had been altered and modernised from time to time, and possessed but little interest, stood near the site. This has been pulled down, but its name, "Milner Field," retained.

The new building is placed almost due north and south, the entrance being on the north side, through a massive gateway into an enclosed courtyard. The principal rooms face the south, and open on to a wide terrace, with flights of steps leading down to the park. The house is built of local stone, with brick linings, forming hollow walls. The roofs are covered with Whitland Abbey green slating. Some of the rooms have moulded open ceilings of oak, and the woodwork of the principal rooms is either wainscot oak or chestnut. Burt & Potts's casements are fitted to the opening windows. The entrance-hall and corridor are faced with stone in party colour. The Old English type of plan adapted to the present requirements has been adopted, and the whole treatment of the work has been kept in harmony with this, all the fittings and much of the furniture having been made from special designs. The internal decorations are now in progress.

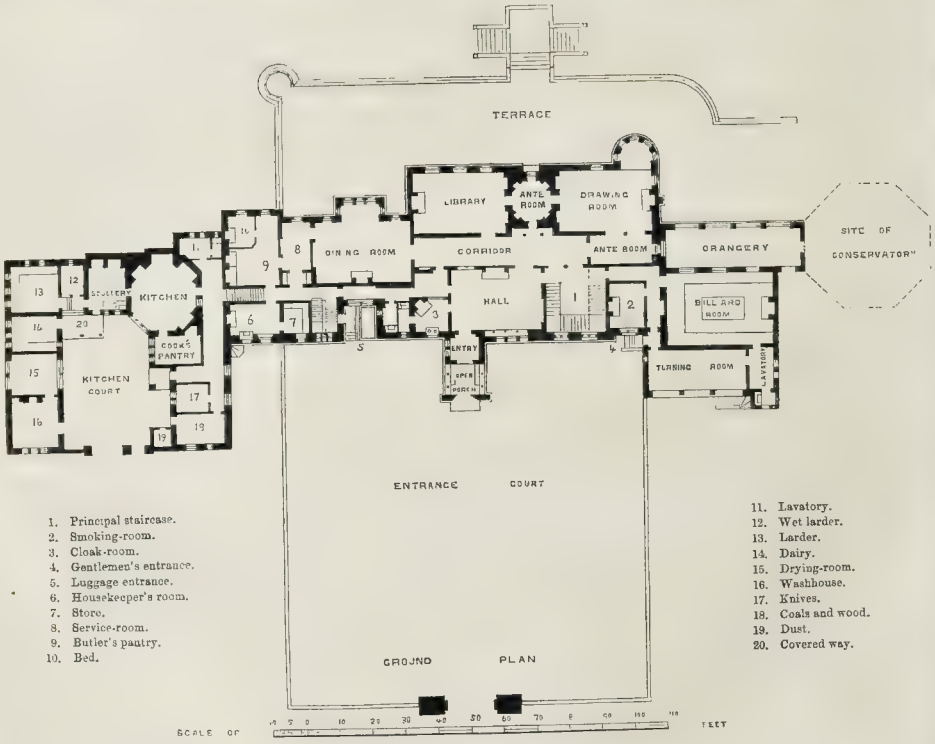
Near to the house, and adjoining the Gilstead Lodge, extensive stabling has been erected, and at the lower end of the park are model farm buildings. The kitchen-garden, with an extensive range of houses (to which we referred recently), is placed at the upper end of the ground, opposite the principal entrance, with the carriage-road between. Messrs. Shaftoe & Barry, of York, were the general contractors. The wrought metal-work was manufactured by Messrs. Richardson, Slade, & Co., of London. Messrs. Burke & Co., of London, supplied the chimney-pieces and marblework. Mr. T. Nicholls, of Hercules-buildings, London, executed the carving; Messrs. Marsh, Jones, & Cribb, of Leeds, manufactured the furniture. Mr. T. Harris, of Gray's-inn-chambers, London, was the architect; and Mr. A. Thorne acted as his clerk of works.

Machine Labour in Mines. There is in the *Bulletin de la Société de l'Industrie Minérale*, a memoir, "On Compressed Air Borers for sinking Shafts," by M. Chanselle, especially as applied to the mines at Sarrebrück. All the results are carefully compared with those obtained by manual labour, and they deserve especial attention at this time, when the substitution of machine labour in mines is exciting much attention.

MILNER FIELD, YORKSHIRE.



PARK FRONT.



1. Principal staircase.
2. Smoking-room.
3. Cloak-room.
4. Gentlemen's entrance.
5. Luggage entrance.
6. Housekeeper's room.
7. Store.
8. Service-room.
9. Butler's pantry.
10. Bed.
11. Lavatory.
12. Wet larder.
13. Larder.
14. Dairy.
15. Drying-room.
16. Washhouse.
17. Knives.
18. Coals and wood.
19. Dust.
20. Covered way.



MILNER FIELD, YORKSHIRE: THE RESIDENCE OF MR. TITUS SALT.—MR. T. HARRIS, ARCHITECT.

THE CASTLE OF PONTEFRACT.*

DESCRIPTION.

THE position and dimensions of the castle were worthy of the great barons by whom it was constructed, and far too noble for the events with which its name is associated. North-east of, and one-third of a mile from, the market-cross of Pontefract, there is seen a very remarkable table of rock, oval in form, the sides of which are in part a steep slope and in part a cliff of from 30 ft. to 40 ft. high, rising out of a talus, which, on the north, south, and eastern faces, descends into two deep natural valleys, which unite on the north-eastern front. At the south-west end is also a natural depression dividing the rock from the town, and which has been deepened somewhat by art, as has the cliff been scarped and, where necessary, revetted, so that the general result was the production of an almost impregnable stronghold. This description, however, requires, as regards the east front, some little modification. Here, immediately beyond the wall, is a ditch nearly all artificial, and beyond it a nearly level area, beyond which, again, is the natural valley. As it was necessary to cover the ground, it was walled and converted into what was called the barbican, but was really a double ward outside the castle, covering its main entrance. The castle was thus composed of the main ward, occupying the table-rock, and the outer and inner barbicans covering its south-east front and entrance.

The main ward occupies the whole summit of the rock. It is in plan an irregular oval, 150 yards north-east and south-west, and 103 yards in its cross diameter. Of this area a segment at the south-west end, 37 yards deep, or on the "sagitta," is occupied by a raised platform containing the keep and remains of various buildings, and a smaller segment at the north-east end is occupied by the bases of other buildings, including the chapel. If the arrangement be likened to the deck of a ship, the keep end will be the poop, &c., the other end the forecastle, and the large intermediate space the waist.

The present appearance of the north-eastern platform is a bank of earth, irregular, and about 20 ft. above the area level. In plan it is rather semilunar, and is evidently composed of the basements and ruins of buildings, the soft red sandstone of which readily becomes converted into soil. The face towards the ward, standing from 2 ft. to 6 ft. high, shows the base mouldings and plinth of a range of buildings that rose from the main ward level, and seem to have included a polygonal tower or turret. All that is visible is of excellent ashlar, with stones of large size, and the workmanship is mainly in the Perpendicular style. In the rear, along the edge of a cliff, is the curtain-wall, part of which is a revetment filling up the irregularities of the rock. This platform is returned a few yards along the east front against the curtain, and there is seen the basement of St. Clement's Chapel, more than once rebuilt since its first Norman foundation.

The curtain along the crest, where the cliff is high, seems to have been a mere parapet. On the north-east point, where there is only a slope, the curtain is very lofty, and of prodigious thickness; much is broken away, but what remains shows it to have been 15 ft. thick at its base and 11 ft. at 24 ft. high. The main gate was in this curtain near the south end. It seems, from the drawings, to have been covered by a small square tower, the exterior and interior portals not being opposite.

The main interest of the castle attaches to its south-western platform. This is about 20 ft. above the main ward, and at its southern angle there is raised upon it a conical mound, flat-topped, and rising about as high again.

Towards the main ward this platform is supported by a revetment wall from 12 ft. to 14 ft. high, of good rough ashlar, of large stones, having a base of 4 ft., and above this a plinth of about 4 ft. more, the two offsets being plain chamfers. This, no doubt, carried a curtain-wall. In the wall, near its centre, is a broad-arched recess, called "the King's Seat," probably from a tradition that Richard II. sat there, which is probable enough. At the north end the platform is returned about 25 yards along the west curtain. Various indications show that this platform was covered with buildings, most of which, like the retaining wall, were of Norman date, and of which the basements remain, though much covered up. Of the *enceinte* or curtain-wall that supports the outer face of this platform only the lower 30 ft., or revetment, remains. This commences some way down the slope, and is prodigiously strong, and built against the rock. At the south-west angle was the Treasurer's or Pix Tower, the ruins of which still encumber the slope. Passing southward, the wall rises and becomes more perfect. In its exterior base, about 30 ft. below the rampart, is a Norman postern, very perfect, and which probably is in the base of the old Red Tower. Then, behind, and on the level with the top of the wall, are remains of early buildings. One presents the end of a round-headed vault of about 16 ft. span, of rude rubble, but springing from good ashlar walls, and having a later-inserted window. This is called "King Richard's Prison." Near this is a rectangular shaft, 8 ft. by 4 ft., but which, a few feet down is increased to 8 ft. square, a round-headed arch supporting the upper half. It is now about 40 ft. deep, and dry. It is called a well, but is more probably the shaft of a garderobe.

Beyond this rises the mound, the top of which is circular, and about 20 yards across, and 40 ft. to 50 ft. above the main ward, and much more above the exterior base of the *enceinte* of which it forms a part. Those who formed the mound no doubt gave it a natural slope all round, and placed their structure on its top, and, making it a part of their line of defence, carried the general palisade to its summit from either side. The Normans, on taking possession, proceeded in a different way. They cut the soft rock, forming the core of the mound, on the outer sides, into the figure of a three-quarter round mural tower, and then faced it with a very solid wall, so that though really a solid bastion, it had all the appearance of a magnificient round tower, 70 ft. diameter. When this segmental bastion had been carried to a height of 50 ft. or 60 ft., that is to the level of the top of the mound, the wall was continued round, and the cylinder completed, so that the mound was crowned by a regular shell keep of 60 ft. diameter, and probably 25 ft. high, which was really, what its substructure only seemed to be,—a tower of masonry. As the rock was of irregular figure, this process was repeated, and a second smaller bastion was formed to the north, and probably a third. Leland speaks of the donjon as composed of three large and three small roundels. However, only two now remain. These grand bastions still form the finest part of the castle, standing as they do high above the road from the railway station into the town, upon the crest of a steep slope. They are faced with large blocks of sandstone, of excellent open jointed ashlar work, with a bold set-off at the base. Advantage was taken of the soft character of the rock to excavate the interior into cells and staircases, some of which are still open. In the large bastion, at its exterior base, near a covering angle, a shoulder-headed doorway, a postern, opens into a round-headed passage, partly cut in the rock, and partly vaulted. From this one way leads into a mural chamber; another up a steep flight of steps, cut in the rock, but having a series of shoulder-headed hanging arches to support the roof. At a height of 30 ft. this stair leads to an open gallery above, commanding the postern, and from this again ascends, covered, to the base of the keep proper. Boothroyd gives three other excavations, one of which contained the well mentioned by Leland. Besides these the remaining fragments of the keep proper contained the base of a well-stair, probably ascending to the battlements, and a shaft, probably from a garderobe about that level.

The main entrance to the castle was a few yards east of the keep in the south curtain. From the gate a narrow stair ran up the curtain into the keep, and is still seen. Another, on the other side, still descends from the keep towards King Richard's prison.

From the keep a spur wall descends the slope, and was intended to cover the approach, as at Hawarden and Coningsborough. It evidently crossed the ditch, and formed part of the barbican. Thus the keep could be reached rapidly and directly by three ways, all narrow and well defended, one from the outside by a postern, another from the main gate, and a third from the west ramparts. In substance the masonry and arrangement of this keep is clearly Norman, but the whole has been refitted, and no doubt refaced in the Perpendicular period.

Mention must be made of a very curious and early excavation in the main ward. On the surface, a few feet from the king's seat, a flight of rock-cut steps descends nearly north-west, and at 70 ft. distance is the mouth of a square shaft, lighting a passage below. Descending, thirty-three steps lead steeply down a passage, 4 ft. broad, with a hanging roof. A little way down, on the right, are traces of a cylindrical staircase, no doubt the original way in, but now, with the tower, in the base of which it no doubt was, destroyed. At the foot of the stairs is a plain round-headed door-case, apparently of Late Norman date. Beyond this the stairs recommence, and ten steps lower the descent ceases and the passage forks, a short branch running north, and another, a trifle longer, east. Before the fork, part of the passage is vaulted in fine-jointed ashlar, with two plain round-headed ribs. In the wall, on the right, is a round-headed recess for a lamp, and the commencement of another passage, also round-headed, but left as a mere recess. Above the fork opens the shaft, here seen to be a truncated pyramid, about 6 ft. by 12 ft., and 30 ft. deep. At the fork the salient is occupied by two small oblong cells, with pointed roofs. They communicate with each other and the passages by narrow lancet doorways. The excavation is now called the magazine, and no doubt was so used at the siege; but it is of Norman and Early English date, and probably was intended for a cellar. The arrangements of the cells are scarcely suitable for a prison. The present entrance is clearly an addition.

There remain some exterior points to be noticed. Leaving the keep by its postern, and going north-west along the foot of the west face, the wall is seen evidently to be Norman, and near the centre of this front is the original Norman postern. There are upon the face of the wall two broad shallow pilaster strips, 8 ft. broad by 6 in. projection, between which is a plain round-headed relieving arch, and below it a segmental-headed doorway, of 4 ft. opening, without portcullis, but with a rebate for a door, and holes for two stout bars. This opens into a straight vaulted passage, about 5 ft. broad, lofty, also round-headed, of excellent ashlar, and clearly Norman. It runs about 15 ft., and is then choked up. It no doubt ends in a well-stair, which might readily be excavated. In later, probably Perpendicular times, this postern has been disused, and the door converted into a loop, and blocked with the usual window-steps within.

Following the base of the cliff along the north front, it is seen to have been carefully made good with masonry; and at the north-west angle, under what was Queen's Tower, a large rift in the rock has been lined with ashlar, and spanned by a round-headed arch in good masonry. It looks like a large cavalry postern, but is merely a recess. At the foot of the talus on the west front, and about 180 yards outside the wall, are the remains of Swillington Tower, an outwork built by Thomas Earl of Lancaster, and in which he is said to have been imprisoned. About half of the basement remains. The tower was 46 ft. square, with walls 10 ft. 6 in. thick. It was intended to command the approach from the north, and was of great use during the siege as a flanking defence. Doubtless a double wall connected it with the main ward; but of this there is no trace.

It would seem that at Pontefract, as at many inland castles, a dam was thrown across a valley below the place, and thus provision made for defence and for the working of a mill. This seems to have been the case here below the northern front. The valley was converted into a lake, employed to feed two mills, of one of which traces remained in 1806, and the other, the lower mill, was removed in 1766, when the dam was levelled, and the pool converted into a meadow. Bubwith Bridge, no doubt, crossed this pool, at what is still called "the Wash."

Nearly all traces of the Barbican are gone, but its memory and site are preserved in Barbican House, Row, and Garden, and there remains a fragment, probably of the lower gate, between Ass Hill and the Castle chain. There were two approaches, one from the town and one from the great church, which met in the outer ward of the Barbican. In front of the north entrance there still remains a good but late Tudor House, into the front of which has been inserted a grand old stone heater shield, bearing the three lions of England and a label of three points, carved in bold relief, a relic probably of the royal occupation of the castle. The style of the shield is Early, and the blazon points to the eldest son of a king of England before Edward III. introduced the lilies of France.

* See p. 162, *ante*.

Boothroyd's bird's-eye view gives a general notion of the castle before it was destroyed. There were eight mural towers,—the Keep, the Red Tower, the Treasurer's or Pix Tower, Swillington Tower in advance of the wall, the Queen's Tower, the King's Tower, Constable's Tower, and the Gate-house. All, save the keep, were rectangular, perhaps Norman. Of these only the keep and the ruins of Pix Tower are traceable: the rest, with the great hall, kitchens, and lodgings, were carefully removed by the Parliamentary contractor, though probably a few pounds spent in excavation would still show the basements, and establish a general plan.

Looking to the general evidence afforded by the remains of this castle, it is clear that it was a strong place in pre-Norman times; those who fortified it placing the mound at what was naturally its weakest point.

The greater part of the remaining masonry is Norman, and not improbably early. The *enceinte* wall, the buildings connected with it on the west platform, the rear wall of the platform, the old postern, the interior of the keep, and the magazine, all seem to be in substance Norman. Of the Early English and Decorated periods very slight traces are left visible; but it is clear that under the House of Lancaster, in the Perpendicular period, much was added. Probably, the buildings on the north-east platform were constructed. St. Clement's Chapel was rebuilt, Swillington Tower added, the keep refaced, and much done in repairing the chambers and staircases within.

Boothroyd, whose history, with all its imperfections, should be mentioned with respect, gives a copy of the account rendered for the destruction of the works, a plan of the siege operations, and a bird's-eye view of the castle.

Ruined as is the place, and reduced to be a mere garden of liquorice, enough remains to interest very deeply those who are conversant with our ancient military structures, and especially such of them as are of Saxon or English foundation, and have been recast to suit the Norman fashions of defence. G. T. C.

PROVERBS FOR GENERAL CIRCULATION.

There are always plenty of persons ready to assist those who are not in need.

If giving away what you do not want be charity, there is plenty of it.

Weep through life and you'll not have many mourners.

Laugh if you are hurt, lest kind souls kill you with pity.

If young men and women were courageous enough to confess to one another as much as they mask under valentines, what a deal of trouble they would save the Post-office.

"You rogue!" is often on the lips of one.

The turbid pool reflects the heavens better than the brook.

How satisfied people must be with themselves: they are always recommending others to do as they do.

"Hats off to Folly! kick Wisdom!" has long been a command.

If people were to attend to everybody's kind advice, they would never get on in the world.

Many say, "Get from behind me, Satan," when he is right in front of them.

If you profess sanctity, there will be holes bored in your cell.

Small wits, like sparrows, make great chirping.

Men magnify trifles till they are frightened at them.

Let the kingdom of Self be well governed before you talk about a republic.

It is perhaps quite as well that our glass does not reflect as other people see us.

Many a man who is only dreaming fancies himself wide awake.

The sound does not cease directly the bell is struck.

Many a man's mind is darker than his cellars.

We hear an immense deal about beauty, but seldom see it.

For God's sake, do not cry, "Stop thief!" if you mean the order to be strictly enforced.

To be a master builder, your materials must be good, the foundations securely laid, and the superstructure duly proportioned; then the future will affirm your knowledge to have been accurate, and your judgment sound.

"Moderation in all things," as the scholar said to the professor who expected too much of him.

If men would take more pains to proportion themselves, their work would be more symmetrical.

Who would desire to rule slaves, but a slave-driver?

To be at the head of a nation of free men is something to be proud of.

Who mounts upon another's neck shall never rest.

The murdered are not silenced.

The interests of truth are paramount; let him who reveals it pass unchallenged.

Holloa! you who are so loud about justice! What if you had your deserts?

Forgive quickly, and you'll have the more rest.

If a sensible man, you will not do as the world does, though it look sakance.

A timid rogue will get behind an impudent one, and push him more to the front.

If everybody had his own in England, there would be a great reversal of positions.

POWERS OF BOARDS OF HEALTH.

Milward v. *Redditch Board of Health.*—In this case, condensed in *Law Journal*, the plaintiff was a needle manufacturer. The Local Board, in exercise of their statutory powers, altered the road in front of his house, raising the footpath some few inches. The plaintiff objected that this was injurious to him, and offered to make the necessary alterations to remove the inconvenience; but the Board insisted that, as the alteration was generally an improvement, he could not complain.

The plaintiff filed his bill, complaining generally of injury, and praying to restrain the Board of Health from keeping the road in a state less convenient to the plaintiff than before; and giving evidence of the specific injury, that the raised footpath dammed up the water a few inches deep in front of the house, and made the basement damp, and liable to injure his needles. It was proved that a few pipes, at a small expense, and without injuring the footpath, would prevent the water being dammed up.

Mr. Southgate and Mr. W. P. Beale for the plaintiff.

Sir R. Baggallay and Mr. Methold for the defendants.

The Master of the Rolls held that the Board were bound to exercise their statutory powers so as not to cause more inconvenience to private individuals than necessary, and granted a mandatory injunction to restrain them from permitting the water flowing from the plaintiff's premises to be dammed back by the footpath.

PREVENTION OF FIRES.

Sir,—Since I first had the honour of corresponding in your journal, in the autumn of 1860, then with respect to the great fire in Tooley-street, and since upon that and other matters, I have always taken the greatest interest in any means for either preventing or stopping the spread of fire, the real and extensive loss from which is seldom now considered, our system of insurance alleviating its more painful effects. Yet the loss of such at immense amount of property going on at all times in some part of the country can be no other than a misfortune; frequently, indeed, bringing distress upon those thus suddenly thrown out of work.

Some ten or thirteen years ago I proposed an arrangement in building warehouses, &c., by which a sheet of water could at any time be caused to exist between floor and floor upon the occasion of a fire breaking out. My object is now to give a practical suggestion, by which that can be attained when required in any manufactory or warehouse in a minute or two by self-action, and at a very trifling expense. We will suppose an ordinary good wooden floor. An edging of wood or iron should be fixed round such floor and across the entrance leading to the stairs, &c., of 1 in. or 2 in. high; a water-valve, with a well-weighted lever upon the floor above, held up by cords of hemp or guttapercha, which would be carried along under the ceiling, and so arranged that upon any part commencing to burn, the cord being burnt or melted, the weighted lever would open this valve, and in one or two minutes the floor where the fire commenced and the floor above would be covered by a sheet of water of 1 in. or more in depth. Supposing the floors to be fairly sound, this cuts off all communication towards above or below, and with proper waste-pipes laid to prevent it rising higher on each floor than the height named very little damage would be done by the water, whilst any extensive progress of the fire on the one floor would bring the water through from above upon itself, just at the very point only where the fire existed.

In its application to hotels and dwellings, or warehouses and works where watchmen are kept, of course the self-action arrangement would not be adopted, but simply a pipe to flush each floor, the valve being situate outside the building, or in any convenient place, as I have before proposed in your journal. For hotels, &c., having stairs of wood, each step should have a strip fastened on above the nosing, say but ½ in. in thickness: this would not interfere with walking, but would allow, upon the occurrence of a fire, of the stairs and landings being flushed from the top downwards, and thus each step kept covered with a thin sheet of water, besides the floors where the fire would be commencing. In the case of workshops where shavings or grease is upon the floor, thus flushing the floor would prevent its rapid progress.

It is well known, that wherever good fire-proof floors are, the spread of fires is more or less prevented. Now the question is,—Will my proposal render floors and stairs fireproof for the time being? R. F. Duval Campbell.

PUBLIC HEALTH INSPECTORS' DUTIES.

THE MADELEY UNION.

The inspector lately appointed to make a sanitary survey of this union has presented the following statement to the Board of Guardians. The union consists of twelve parishes, and contains an area of 27,951 acres, and a population of 30,365—the most populous union in the county of Salop:—

"To the Sanitary Authority of the Madeley Union.

Gentlemen,—I have to report to you that I have commenced my duties as sanitary inspector. I have gone over the ground generally, to begin with, to enable me to make a preliminary report to you to-day [21st ult.].

Seeing how the ground lies, I propose to divide the union, for the purpose of a sanitary survey, into districts, and I submit the following districts for your approval, viz.: 1, Much Wenlock; 2, Barrow, Willey, and Linley; 3, Broseley, including Benthall; 4, Madeley, including Coalport; 5, Coalbrook Dale, including Ironbridge; 6, Dawley, including Stirchley; 7, Little Wenlock; 8, Buildwas. These seem to me to be divisions of the union dictated by the manner in which the ground lies. I propose to inspect and report to you upon each of these districts in turn, and I shall ask to be allowed to complete the inspection of each district before reporting upon any part of it, unless there should occur some urgent reason for a more partial report, which I do not foresee.

In beginning a work of this kind, under a new Act of Parliament, it may possibly be satisfactory to you if I make a short statement of the principles which will guide me in carrying out my duties as sanitary inspector.

I take it that the intention of the Public Health Act is to make it possible for all persons to live healthily whilst they do live, of whatever class they may be.

The sanitary question seems to me to be summed up in this formula,—that whatever people consume or use shall be wholesome, and that the refuse products shall be dealt with in such a manner as not to be a nuisance or injurious to health.

To this end I interpret my duties to be as follow:—

To see for myself and to report to you the source from which the inhabitants of every house procure their supply of water.

To take samples of such water as may be necessary, and to submit them to your analyst for examination as to their fitness for human consumption.

To see in what manner the refuse water and sewage of every house are disposed of, and to report to you accordingly.

To see what necessary accommodation is provided on the premises of the respective houses.

To see that houses are not overcrowded, or, if so, to suggest to the owners such structural remedies as may seem to be justifiable.

I shall wish to inquire as little as possible into the circumstances of any household, but, seeing that it is the great object of all sanitary measures to prevent sickness and disease, I shall hope to be willingly informed, when I make my survey, and from time to time, whether there have been recent cases of sickness in the house.

Generally, to prevent the commission of nuisances, or, if committed, to require their removal.

Each one of these heads requires amplification in detail in order to set forth the minor duties: but I willingly believe that on this occasion you do not require them to be stated."

When it is said that the *sanitary* question is summed up in the short formula given above, it may be strictly true that it is so, but we have been accustomed to associate with the strictly sanitary question others bearing upon it; as, for instance, the economic question, in respect of the disposal of the sewage in that manner which shall enable the authorities to derive the utmost possible value from it, as when it is applied to the irrigation of land; or, as irrigation may not be economically possible in all places, in some manner of mixing the sewage with dry earth, to make it portable, and to prevent exhalation of noxious effluvia, the house slops being drained separately away from the houses and purified before being discharged into rivers or streams. The economical disposal of the sewage is an important adjunct to the sanitary question.

THE MEASUREMENT OF TIMBER IN LIVERPOOL.

AN influential meeting of builders and timber merchants was held in the Clarence Hotel, Spring Gardens, Manchester, on Friday, the 7th inst., when the following resolutions were passed unanimously: –

"1. That this meeting has learned with surprise and regret that an attempt is being made in Liverpool to abandon the long-established custom of measuring timber by string, with a view to substitute measurement by calliper, thereby compelling the purchaser to pay for more than he receives, both in respect of timber and the carriage of same.

2. That this meeting pledges itself to oppose by every means in its power any attempt to change the old legitimate mode of measuring so long practised in the port of Liverpool.

3. That all parties who are in the habit of purchasing timber in Liverpool be requested to communicate the foregoing resolutions to the merchants with whom they do business, and protest against the introduction of a system so unfair and uncalled for; requesting that before any steps are taken in the matter, an opportunity be given to the consumers to state their reasons for disagreeing with the proposal."

Signed, on behalf of the meeting,

ROBERT NEILL, Chairman.

WINCHESTER COLLEGE HALL.

SIR,—I had no intention of saying or insinuating anything untrue, and would be the first to apologise for anything said inadvertently, or based on erroneous information.

In order to show you I believed what was written, I intend to forward you the data on which such information was based, so that you may see I had grounds for so believing. NORTH HANTS.

IMPORTANT DECISION UPON BUILDING DANGEROUS HOUSES.

Mr. JUSTICE POLLOCK last week, on the Northern Circuit, had before him a case that singularly opened up the most important points of the liabilities of builders in regard to the construction of buildings, and the leading counsel on the Northern Circuit further enlightened the building profession by their arguments and opinions on the laws of building.

The action that introduced the subject was not brought against any members of the building profession, although it may yet reach some one of them; but it was brought against a livery-stable keeper of Sunderland, one Laverick, to recover compensation for the destruction of two carriages by the fall of a coach-house during a gale of wind, and which building was alleged to have been unsafely built.

Mr. Russell, Q.C., and Mr. Lewers appeared for the plaintiff; and Mr. Holker, Q.C., and Mr. Shield were for the defendant.

It is unnecessary to enter into the particulars of the accident further than above alluded to, but confine the report to the building interest.

Mr. Russell, Q.C., said it might have been sufficient for the purpose of the plaintiff's case, simply to prove that the damage had been done to the plaintiff's property while under the charge of the defendant; but it would be shown that the building in which the defendant placed the carriages was not properly built, and therefore unsafe. The building was erected upon a piece of ground which until covered with rubbish had been under the level of the street, and in founding the building the architect and builder did not go beneath the rubbish and into the soil beneath. The building, which was 40 ft. by 30 ft., had not been built according to the plans lodged at the office of the borough surveyor. The gable was not tied into the gable of the adjoining house; the west wall was partly old, the upper half only of the east wall was made with brick, and is 9 in. instead of 1 ft. 6 in. thick; the supports were insufficient, and the windows on the west side were left unglazed, thus exposing the interior of the building to the full force of the west wind. He contended that it was the legal duty of a livery stable keeper who requested the public to stable horses and carriages under his care for profit to provide a proper and substantial building, and that if he failed to do so he was liable for any damage done to the property under his care in consequence.

The counsel were about to adduce evidence to show that the building was not secure, when his Lordship said that the question which he proposed to leave to the jury was, whether the defendant had exercised proper care, skill, and diligence, apart from the question of the *de facto* construction of the building. The case was one of bailee for hire.

Mr. Russell, Q.C., asked if his Lordship would add to that—that if the builder did his work negligently for the purposes of this case, the defendant was negligent?

His Lordship said that was what he did not intend to do; he was going to rule the other way. If the defendant had employed a veterinary surgeon to erect his building, he would have been held guilty of negligence; but if he went to an architect, surveyor, or builder, he had done all that the law required.

Mr. Holker, Q.C., said he had a number of professional witnesses who could prove that the building was perfectly secure and good.

His Lordship said he would direct the jury that they would have nothing to do with the foundation of the building, if they were satisfied the defendant took care to secure a good builder.

Mr. Russell supposed then, that although the plaintiff could prove that the building was insecure, unless they could bring the insecurity to the knowledge of the defendant, he would not be held liable.

His lordship said if the structure were improperly built, the defendant could sue the builder of it; but the duty of a man who lets a building for the accommodation of horses and carriages was quite different from that of a builder. He ruled that the defendant's liability was that of an ordinary bailee for hire, and all that he was bound to do was to use due care in keeping the plaintiff's carriages; and if in the erection of a shed he did all he could to employ a competent builder, he would be exempt from liability for an event which was caused by careless or improper conduct of which the defendant had no notice.

Mr. Russell.–We can have no action against the builder of this insecure and dangerous structure, my lord?

His Lordship.—That is quite clear.

Mr. Russell.–We have some evidence that the defendant's attention was called to the insecurity of the building in several parts.

His Lordship said that if the surveyor of the district had informed the defendant that the building was one which could not be passed, he would be liable.

Mr. Russell said, after what his lordship had intimated, he did not think he had better trouble the jury with his evidence; but in accepting a non-suit, he asked the Court to stay execution for defendant's costs, in order to afford opportunity, with leave to move in term for a new trial.

The Judge assented.

It was understood that the motion will be to add the builder of the structure to the present defendant, when evidence will be adduced that each was aware of the dangerous state of the shed, and also to alter the nature of the pleadings.

CHESTER UNION COMPETITION.

SIR,—As one of the thirteen competitors selected by the Chester Board of Guardians for further consideration, may I be allowed to call your attention, should you not otherwise have heard it, to the present state of affairs, as gleaned from the local papers, from which it seems that, unless great impartiality is shown by the arbitrators, there is very little chance for any one who has not local friends.

In reviewing the designs, one of the Chester papers says of one design, having its motto round the Birmingham arms,—"It is no secret that this is by an architect who has designed one of the best workhouses in the kingdom." Now, sir, I beg humbly to submit that, in a competition which is naturally supposed to be under the veil of secrecy, by reason of the mottoes, this criticism is manifestly unfair, and tends to prejudice the chances which other competitors may have in the eyes of the guardians, and is surely a reason for rejecting a design the author of which has acted so unprofessionally in disclosing his name, however good his design may otherwise have been.

VERITAS.

THE PROFESSOR OF ARCHITECTURE, ROYAL ACADEMY.

SIR G. GILBERT SCOTT is about to resign the professorship at the Royal Academy, and intends to deliver his final lecture on Thursday, the 20th inst., at Burlington House. We mention this specially, so that such of our readers as desire to show their respect for the esteemed and eminent Professor may have the opportunity of doing so.

WATER-POWER ON THE RHINE.

SIR,—In his address at the British Association, Mr. Bramwell referred to the water-power at Schaffausen, on the Rhine. This, he says, "has been accomplished by erecting turbines, which are worked by the river, and deliver their power to endless ropes carried over pullies, the rope extending from nearly one end of the town to the other. This rope gives off power at the end of each street abutting on the river-bank." I understand there are other powers of a like description further down the Rhine: I shall feel obliged if any of your subscribers can tell me where. C. E.

THE PUBLIC HEALTH ACT *versus* LOCAL BOARD LAWS.

GREATOREX *v.* WEEKS.

IN this case, heard at the Portsmouth Petty Sessions, before Messrs. John Baker and George Curtis, Charles Weeks, a builder, was summoned for an infringement of one of the bye-laws relating to new buildings made some time back by the Local Board of Health, acting in and for the borough of Portsmouth.

Mr. S. J. Elliott, solicitor, appeared in support of the information; and Mr. H. Ford, solicitor, appeared for the defendant.

Mr. Ford took a preliminary objection that the bye-laws under which the information was laid had been abrogated by "The Public Health Act, 1872." He contended that the bye-laws were made by the Local Board, which had ceased and that the "Urban Sanitary Authority" had been substituted for the Local Board; that at common law bye-laws were only operative during the existence of the body by whom they were made; and that by the Public Health Act, 1872, various powers, rights, &c., were transferred to the new authority, but no mention was made of bye-laws.

Mr. Elliott, on the other hand, contended that the bye-laws were made by the Town Council of the borough of Portsmouth, acting as the Local Board, and that this body continued to exist, notwithstanding the "Public Health Act, 1872," excepting that the new appellation of "Urban Sanitary Authority," together with additional powers, had been conferred, and that as the Act of 1872 did not repeal the bye-laws, they were still in force.

The justices having considered the matter, the following decision was read by Mr. Thomas Cousins, the justices' clerk:—

This information charges one Charles Weeks with an infringement of one of the bye laws relating to new buildings, &c., made some time back by the Local Board of Health of this borough acting under the Public Health Act, 1848, the Local Government Act, 1858, and the Local Government Supplemental Act, 1861, No. 2.

Mr. Henry Ford has taken a preliminary objection that, in consequence of and since the passing of the Public Health Act, 1872, such bye-laws have ceased to be of any force or validity. Mr. Elliott, the clerk to the Urban Sanitary Authority of this borough, contends, on the contrary, that such bye-laws are still in force.

The question raised was very ably and fully argued on both sides, and the importance of the point, rather than any difficulty attending it, induced us to adjourn the case to consider the matter.

The by-laws in question were made by the Town Council acting as the local Board, and ever since and now the identical corporate body has continued to exist. The Public Health Act of 1872, however, gives them the new title of "Urban Sanitary Authority," and confers additional powers.

By the 7th section of the Statute of 1872, it is provided that, subject to the provisions of that Act, the Local Government Acts (under some or one of which the bye-laws in question were made) shall be deemed to be in force within the district of every Urban Sanitary Authority. The enabling enactments, therefore, remain in force. The same section transfers to an Urban Sanitary Authority "all powers, rights, duties, capacities, liabilities, and obligations" within the district, exercisable or attaching by or to a Local Board under the Local Government Acts.

By section 53 it is provided that, subject to the Act, every sanitary authority shall, as respects (*inter alia*) all matters and things to be done in pursuance of the Sanitary Acts, by such authority, stand in the same position in all respects in which, previously to the passing of the Act, any authority stood whose powers, rights, duties, capacities, liabilities, and obligations, are transferred to such authority. And by section 59 it is enacted that all powers given by the Act shall be deemed to be in addition to, and not in derogation of, any other powers conferred by Act of Parliament, law, or custom; and such other powers may be exercised in the same manner as if the Act had not passed.

There may be some doubt as to the application to the present case of the clauses in the new statute relating to the transfer of powers, rights, &c. It is, however, unnecessary to consider this point, because if such clauses do apply, then the powers, rights, &c., exercisable by the Local Board under the bye laws in question have been duly transferred to the urban sanitary authority. If, however, such clauses *do not* apply, the bye-laws remain in force as the Act does not repeal them.

Bye-laws duly made in pursuance of a statute have practically (when not *ultra vires*) the force of an Act of Parliament, and we think that the Act of last session is intended to supplement and not (excepting as therein expressed) to abrogate the then existing sanitary laws and regulations.

We are, therefore, clearly of opinion that the bye laws in question are now in force within the borough, and we overrule Mr. Ford's preliminary objection. The case will, therefore, proceed on its merits.

THE HOLBORN VIADUCT.

AT the last meeting of the Court of Common Council, Mr. J. T. Bedford, pursuant to notice, moved:—

"That the parish of St. Sepulchre, London, having purchased of the City a freehold site on the Holborn Viaduct, at a cost of 4,200*l.*, for the purpose of throwing the same into the public way, and proposing to expend a further sum of nearly 6,000*l.* in restoring and decorating the fine tower and interior of their church, this Court, being desirous to mark its recognition of the public spirit thus displayed, do contribute five hundred guineas towards such restoration, believing it will constitute a magnificent architectural feature in one of the greatest improvements in modern times."

The hon. member said that about a month ago they passed a rather singular resolution,—namely, to give 300 guineas to provide a pulpit for the chapel that was being erected on the Viaduct. He opposed that motion. He was defeated on that occasion; but he found that it was intended to repudiate the gift. In the case of the vote of 300 guineas for the erection of a pulpit in the chapel, it was urged that there were some special grounds for that grant. He (Mr. Bedford) said the same special circumstances existed with regard to his proposal, and very much stronger. The hon. member then alluded to the public spirit which had been shown by the parish of St. Sepulchre in throwing a piece of ground into the public way at an expense of over 4,000*l.*, as stated in the resolution, and he asked the Court to come forward, on the same principle on which they came forward a month ago, and pass this motion.

Mr. Stewart moved the "previous question."

Mr. Deputy Horn remarked that, if this motion were carried, he would come and ask for a vote of 1,000*l.* for the restoration of Aldgate Church.

Mr. Shaw remarked that the hon. member had brought forward the motion as a joke.

This Mr. Bedford denied.

On a division, the numbers were equal, thirty voting for and thirty against the motion.

The Lord Mayor said he understood it was his duty to give his casting vote. He should have been glad if the amount had been rather less, but he was in favour of the principle, and he, therefore, gave his casting vote in favour of the motion.

Mr. Rudkin gave notice to move at the next Court that the motion be rescinded.

THIS IS NO JOKE: I AM IN EARNEST!

SIR,—Long and anxiously have I studied the Competition question. Day by day and night by night have I pondered the subject and viewed it by every light known to science and logic, and until the present moment not a ray could I get to penetrate the Cimmerian blackness. Poor young architects, energetic assistants, ambitious pupils, rejoice! I can crush the many-headed monster at a blow. Your own weight added to mine is all I want to make a pancake of the head of this howling abuse. Will you lend it? Yes! Then, Bumbledom and ignorance shall be for ever severed from art. Here is my nostrum. I will subscribe 5*l.* 5*s.* to a fund for awarding premiums for competition drawings. I set myself down as "Nobody." Hence,—

Nobody	£5	5	0
Rest of Profession, "Some-bodies"	2,000	0	0
Total.....	£2,005	5	0

The corporation of "Squeeze-'em-Hard-and-Tight" offers 2*l.* 2*s.* for drawings for a "work-*us*" to cost 20,000*l.* Our committee offer 3*l.* 3*s.* for the same, and after selecting the best, sell it to Squeeze'-em-Hard-and-Tight for a just and fair sum.* As our committee can always outbid Squeeze-'em-Hard-and-Tight, consequently Squeeze-em-Hard-and-Tight must knuckle under eventually. According to the present rate of premiums offered, the 2,005*l.* 5*s.* should last ten years.

M. U.

NORTHUMBERLAND HOUSE.

SIR,—Surely it is not impossible to elicit an expression of public feeling in favour of retaining Northumberland House. We cannot afford in London to lose so unique an example of its times.

If the following alternative scheme were carried out, it would greatly improve the neighbourhood, and effect the objects in view.

When all the property at the east end of St. James's Park is acquired for the purpose of extending the Government Offices, let that part at the end of the Mall be thrown open to Charing-cross, and remove the Marble Arch from its present somewhat undignified position at Tyburn, re-erect it at the end of the Mall; it would then become the principal entrance to the palace it was intended by its Royal author to adorn, be in close proximity to his equestrian statue, and to the terrace which bears the name of his house; and our dear Queen could then drive *direct* from her palace to *Chère Reine* Cross, to her people to the City, Embankment, &c. Let the entrance to the Embankment be made just opposite, and it will lead by the south-west side of the House, instead of over its site. If necessary, another entrance might be made from the Strand on the other side of the house: it would thus spare an historical monument, and save the finest site in Europe from destruction. A triumphal arcade of three arches could fitly adorn the entrance to the Embankment; and what more appropriate name could be inscribed thereon than that of "Victoria."

A proposal has been made to form a thoroughfare along the inner side of the garden on Embankment, commencing at its east end, terminating at Villiers-street, that would relieve the Strand much if each, street leading to one were opened to the other. Another grand improvement might one day be made which it would assist; viz., a grand street in a straight line; in fact, a continuation of Tottenham-court-road through Seven Dials (where an improved street would join it for Trafalgar-square) to the Embankment, which it would reach somewhere about Cecil-street; so there would then be a noble street, leading direct from the river to the extreme north, namely, to Hampstead.

AGNUS.

* Giving proceeds to successful competitor.

THE FALL OF BUILDINGS IN HULME, MANCHESTER.

AN inquest has been held by the City coroner in this case. The alleged circumstances of the accident have already appeared in the *Builder* of the 1st inst., under the head of "Accidents." The houses were being erected for Mr. Best.

Margaret Best, wife of Samuel Best, of 69, Vine-grove, was one of the witnesses called. She deposed to having noticed that the building was in an unsafe condition two hours before the accident. She cautioned deceased and the other men who were working on the roof of their danger, and begged them to come down. They, however, refused.

J. Taylor, foreman to the contractor, said it was about three weeks from laying the first brick to the time of the fall of the building. The mortar was in every respect as good as that used for cottage property.

J. G. Lynde, city surveyor, said he went round the ruins of the building the morning after the accident. Inspecting some of the mortar, he found it to be well tempered, but apparently crumbly, as if the frost had acted upon it. The thickness of the walls was in accordance with the bye-laws. Some of the bricks used were old ones, and they appeared to have been badly cleaned. Three weeks were too short a time to "run up" the wall in such weather; and, as a practical bricklayer, Powis (the builder) ought to have known this. Witness attributed the fall of the building to the walls having been run up in so short a time in frosty and wet weather, and to the use of old bricks in one of the walls.

The jury returned a verdict of "Accidental death."

CHURCH-BUILDING NEWS.

Rotherfield.—Considerable alterations and improvements have recently been made in the chancel of the church. The whole of the ancient stone pavement has been removed, and tile paving substituted, the alternate tiles of which resemble the typical pelican of the wilderness feeding her young with her own blood. A reredos, carved, in alabaster and marbles, has been erected. This work has been executed by Messrs. Field, Poole, & Sons, of Westminster. The paving and the remainder of the works have been executed by Mr. Aaron Moon, of this town, builder. The whole of the works have been executed from the designs and under the superintendence of Mr. Ralph Neville, architect, Godalming. The walls of the chancel have also been greatly improved in appearance, and brass altar-rails have been added. The expense has been defrayed, we hear, by the rector, the Rev. Alfred Child. Coloured glass in the chancel is much wanted.

Thrapston.—A restoration of the fabric and interior of the Church of St. Peter's, Raunds, will shortly be commenced. Sir Gilbert Scott has undertaken the supervision of the work, which, in consequence of the unsafe state of the whole erection, now becomes an imperative necessity. The estimated cost of the restoration is between 5,000*l.* and 6,000*l.*; and of this, from various sources, about 1,700*l.* have already been promised by the rector and parishioners, and a public subscription-list has also been opened.

Eaton Hastings.—The church of the village of Eaton Hastings, near Faringdon, has been re-opened. The rector, the Rev. F. J. Walker, about a year and a half ago, set an example by restoring and beautifying the chancel at a cost of nearly 200*l.* Since then the people of the parish have taken the matter up with much interest, and the restoration of the whole church has been completed, under the supervision of Mr. Champion, of London, who is the architect employed; Mr. Wheeler, of Faringdon, being the contractor. During the progress of the works an Early English arcade was found blocked up with plaster on the south side; this has been opened out, and the windows reinserted in the wall. The late fourteenth-century doorway on the south side of the nave has been restored, and a new oak door supplies the place of the old one. The works carried out in the restoration scheme consist in opening out the old roof, reseating the nave, the centre passage of which is laid with Godwin's plain tiles; and new glazing, with dark green borders to the windows. The Jacobian pulpit has been lowered, and furnished with new steps and hand-rail. A heating apparatus has been placed in the church. The chief works on the exterior are a new bell-cot of stone, new gable cross, and copings with stone ridge.

Middleton.—The Church of St. Andrew, Middleton-on-the-Wolds, which has undergone a restoration, has been formally opened for divine service. The tower, west front, north wall of nave, and the south porch have been rebuilt; the chancel arch has been widened and heightened; and, by the insertion of windows in the east and west ends, the church presents an open appearance. Beginning with the chancel, the door on the south side has been removed, and the Decorated window close to the chancel arch on this side has been superseded by two lancet windows, to correspond with the others by which the chancel is lighted. There are now four lancet windows on each side, filled with cathedral glass, while in the east end a stained glass window has been inserted, as the gift of Mrs. Blanchard, the mother of the rector, in memory of the Rev. John Blanchard, her husband, and the Rev. John Blanchard, her son. The window, which is of three compartments, contains a great number of subjects, representative of Scriptural types and antitypes, all of which have been executed by Messrs. Lavers, Barraud, & Westlake, of Bloomsbury, at a cost of about 160*l.* The subjects represent types of our Lord and his history, and their fulfilment in the New Testament. In the lower centre is the Lord's Supper, on the north side of which stand Abel and Noah, and on the south side Abraham and Melchizedek. Above these, in a narrow compartment, is a representation of Isaac bearing the wood, surmounted by a figure of our Lord bearing the Cross; the Serpent lifted up in the Wilderness, surmounted by the Crucifixion; Daniel in the Lions' Den; and our Lord being taken down from the Cross. In another narrow compartment are the representations of Joseph being taken up out of the pit surmounted by our Lord's resurrection; Elijah translated to heaven, and the Ascension of Jesus; Moses near the flaming bush; and the Descent of the Holy Ghost at Pentecost. In the upper compartments is represented our Lord in glory surrounded by adoring saints. Above is a small quatrefoil window, also filled with stained glass. The floor of the chancel, which was formerly paved with brick, is now laid with Minton's encaustic tiles, and there are two steps, with a footpace, ascending from the nave to the altar. On the south side, within the altar-rails, is a sedilia, divided by a triple arcade, and beside it is a credence of early date; while in the opposite wall is an old aumbry, where the vessels of the church were formerly kept. It is noticed that the eastern division of the sedilia is wider than the other two, and is probably the seat formerly appropriated by the chief minister of the church. The walls of the edifice are built of Pickering stone, with Ancaster stone dressings, and have been faced on the inside with chalk. The old pews, with high backs, have been superseded by open benches of stained deal, and the floors of the nave, tower, porch, and passages have been paved with Yorkshire flags, in which are inserted iron gratings, in connexion with Haden's patent heating-apparatus. The choir-stalls in the chancel are open in the front, with moulded uprights and cornice. The nave is divided from the aisles by four bays, the pointed arches of which spring from circular pillars, except one near the south entrance, which is octagonal. The aisles are lighted by four double windows on each side, and these also are filled with cathedral glass. The roofs of the nave and chancel, which were formerly underdrawn or plastered, are now of open woodwork, and are constructed of Baltic red wood, stained lightly where exposed. The trusses of the main roofs have arched and moulded ribs, resting on stone corbels, those in the chancel being foliated. The tower, like the rest of the new work, is in the Early Decorated style of architecture, and is about 25 ft. square at the base, and 76 ft. high to the top of the wrought-iron vane. It is built in three stages, with turret stairs in the south-east angle leading to the ringing-loft. Formerly the space underneath the tower was rendered dingy-looking by the lowness of the arch, and the small square window by which it was lighted; but now the arch is lofty, to correspond with that in the chancel, and in the west end a three-light window has been inserted, with coloured border-

ing, the heads of which are filled with enriched tracery. The south porch has been entirely rebuilt, and has stone seats on either side, the gable apex being surmounted by an ornamental stone cross. Outside, the roofs are covered with Welsh Countess slates, and have been raised to what may be considered the original pitch. There are ornamental crosses at the gable ends of both nave and chancel, and the exterior of the tower has been designed after the English village style. The work of restoration, which carried out about sixteen months, J. M. Teale, of Don- under the direc- Mr. Slater, of York, was the caster, Rector, and Mr. Swallowell was the foreman of the work. The total cost of renovating the building was about 2,600*l.*

Eaton Hastings.—The church of this little village has been reopened. It is situated on the banks of the Thames, and is of Early Norman foundation, containing examples of each style up to the fourteenth century. The restoration of the whole church has been completed under the supervision of Mr. Champion, of London, as the architect, Mr. Wheeler, of Farringdon, being the contractor. During the progress of the works an Early English arcade was found blocked up with plaster on the south side; this has been opened out, and the windows re-inserted in the wall. The Late Fourteenth-century doorway, on the south side of the nave, has been restored, and a new oak door supplies the place of the old one. The works carried out in the restoration-scheme consist in opening out the old roof; re-seating the nave, the centre passage of which is laid with Godwin's plain tiles; and new glazing, with dark green borders to the windows. The Jacobian pulpit has been lowered, and furnished with new steps and handrail, and also with a new brass sermon-desk and lights, the gift of a lady. A heating apparatus has been placed in the church. The chief works on the exterior are a new bell-cot of stone, new gable cross, and copings with stone ridge. The work was started with a donation of 100*l.* by the Messrs. Kinch and relatives, and the sum of nearly 150*l.* has been obtained by donations from various sources by the energy of those ladies, who undertook to get together a certain sum.

SCHOOL-BUILDING NEWS.

Godalming.—The low-pitched unsightly brick structure, which composed the old British Schools, has been radically altered and largely added to. The old building has had two stone wings attached to it, and the brick of the old centre has been hidden by a long stone lobby. In the centre of the lobby is the porch, which is carried up in the shape of a round tower, which is ornamented with some decorations in carved freestone. In the tower a bell will be hung. The grey stone of the building is relieved by light-coloured freestone, which is again varied by the window-frames being painted a dark red. The old building, although not actually rebuilt, has been raised. While one wing was being erected, school was held in the old building, and when work was proceeded with on this part, the wing was ready for occupation. The design was by Mr. S. Welman, a local architect, and Mr. Bonner was the cottractor. The tower is not yet completed.

Forest of Dean.—The new national school building committee have decided to build a school for 170 children,—boys, girls, and infants. Grants and promises, amounting to 860*l.*, have been made. Among the subscribers are,—Mr. Crawshay, 100*l.*; Mrs. Crawshay, 50*l.*; Mrs. Wait, 100*l.*; Woods and Forests, 125*l.*; Charity Trustees, 100*l.*

Sheffield.—The second school erected by the Sheffield School Board has been opened. It is situated in Beech Hill-road, Brombill, and although the smallest school, the Board at present contemplates erecting it as an elementary educational establishment, complete. The building is of Dunford-hill stone, with Grenoside ashlar dressings, and the roofs are covered with blue Welsh slates, capped with red ridge Berkshire tiles, with finials on the angles, according to the special designs of the architects, Messrs. Innocent & Brown. It is erected in the geometric style of Gothic architecture. In front are two lofty gables with triplet windows, with trefoil heads, and segment-headed windows on the ground floor. Over the angle of the building, which is made circular, is a small bell-turret. The school is divided into three departments for boys, girls, and infants. The school for the latter, which is on the ground-floor, is L shaped, and is by twenty by 20 ft. wide. In this room there is a large gallery. Over the infants' school, and extending over the play-sheds behind, are the boys' and girls' schools, each of which is 36 ft. by 20 ft. Each has a class-room 20 ft. by 20 ft., with cloak-rooms and lavatories. Each school is approached by a flight of stone stairs; the entrance to the boys' school being from Beech Hill-road, and the entrance to the girls' and infants' school being on the other side of the building, and approached from the playground. The schools are fitted up with patent desks, and will be warmed by hot water on the high-pressure system, by Messrs. Bacon, of London. They will be lighted with gas. Attention has been paid to the ventilation; plans that have proved successful elsewhere having been adopted. The rooms will accommodate about 300 children. The contract for the building was about 2,300*l.*; but with the fittings and so forth, the cost will probably be 2,500*l.* The contractors were Messrs. Sharp & Son. The mason's work has been done under them by Mr. Butler; the slating and plastering by Harrison & Chadwick; the plumbing by Mr. Thickett; and the painting by Mr. Hunter.

Bridgwater.—The newly-erected Board schools, in the eastern portion of the town of Bridgwater, consisting of three departments—one for boys, another for girls, and a third for infants,—capable of accommodating 600 children, have been formally opened. The cost of the schools, which are built in the vicinity of the railway station, together with their furnishing, amounts to something like 2,800*l.*, which amount has been advanced as a loan by the Public Works Commissioners, the repayment extending over fifty years. The architect was Mr. John Mountford Hay; and the builders were Messrs. Harvey & Sons, of Torquay.

Ringley.—New Church of England schools at Ringley have been opened. The style of the new building is Gothic. The materials of the construction are bricks, with stock brick facings and stone dressings. The walls of the rooms internally are tinted in two colours with stencil ornaments. The timbers of the large room are of pitch pine, varnished, as is all the joiners' work throughout. The site occupied for the schools and playgrounds comprises half an acre, and has been given by Lord Derby. The masonry and brickwork have been done by Messrs. J. & S. Hall, of Bury; the joiners' work is by Mr. J. Allen, of Radcliffe; the slating by Mr. F. Murphy, of Bury; and the plumbing, gasfitting, plastering, &c., were executed by Messrs. Leach & Son, of Bury. The architects are Messrs. Maxwell & Tuke, of Bury.

VARIORUM.

THE "Agricultural Returns of Great Britain, with abstract Returns for the United Kingdom, British Possessions, and Foreign Countries, 1872," just now published, show that the total extent of land returned in 1872 as being under all kinds of crops, bare fallow, and grass was 31,004,173 acres in Great Britain, 15,746,547 acres in Ireland, 88,573 acres in the Isle of Man, 18,026 acres in the island of Jersey, and 12,007 acres in the islands of Guernsey, Alderney, &c., making a total for the United Kingdom of 46,869,326 acres. Although exact figures cannot at present be given, the results exhibited in the Returns indicate that an addition is annually made to the land under cultivation in Great Britain. The reclamation of waste land is mentioned by the collecting officers in many parts of the country, as one of the causes of the increase of the acreage returned in their districts. "How many of the population were directly employed in agriculture in 1871 is not as yet known, but, when ascertained, the number will probably not differ materially from that shown by the census of 1861. At that time (including farmers, graziers, farm bailiffs, indoor farm servants, shepherds, and agricultural labourers) about 1,590,000 persons of both sexes were employed in agriculture in Great Britain, or 6 per cent. of the total population in 1871. This number, in proportion to 31,000,000 acres, the total quantity of land returned as under cultivation in 1872, would show that a little more than five persons, on an average, were employed upon every 100 acres of land. It would, therefore, require a large quantity of additional land to afford employment, at this rate, to any considerable portion of the numbers yearly added to the resident population of Great Britain." We should prefer to see a different deduction from this. How many more persons might profitably be employed on an acre.——A writer in *Iron* gives these particulars as to the *measurement of the velocity of light*:—"The velocity of the transmission or propagation of light, as now generally accepted (192,000 miles per second), was originally determined by astronomical observation, based on the solar parallax, namely, 8·58", augmented by more recent calculation to 8·75" or 8·92". M. Fizeau has recently introduced a mechanical method of exact determination by direct observation of the duration of a double journey indicated by reflection; the principle being that of a toothed wheel, caused to rotate with great velocity (700 or 800 revolutions per second), and effecting records electrically by means of a cam and suitable mechanism. A brake for regulating the speed and reversing gear are also accessories of the apparatus. M. A. Cornu, in a communication to the French Academy, gives the results of more than a thousand observations, of which two-thirds at least were made under satisfactory and trustworthy conditions. The distance between the stations of observation was carefully and accurately measured and determined by triangulation, and found to be 10,310 mètres, with a possible error of 10 mètres, or the one-thousandth part. The resulting mean gave 298,500 kilomètres (185,483 miles) per second, as the velocity of light *in vacuo*; closely, according with the values assigned by MM. Foucault and Le Verrier, and corresponding to the solar parallax, 8·86". M. Cornu estimates the possible error at 1-300th, and considers that with stations 20 to 30 kilomètres apart (12 to 20 miles), an approximation to within less than the thousandth part may be obtained; for the realisation whereof he urges the active co-operation of the Academy, so that this grand work, "commenced by Rœmer at the Paris Observatory, simplified and continued by French *savants*," may be perfected with precision by France."

Miscellanea.

Oxford Architectural and Historical Society.—The members of this society held their first meeting for the Lent Term in the hall of Oriel College, where they were received by the Rev. the Provost. The Provost first drew attention to the pictures, and referred to the peculiar construction of the hall, which had, from the height of the screens, the appearance of having been a small room under a large one. The name of the college he said came from an oriel window over a doorway which was in the building purchased by Dr. Broome, and that they knew from documents in the possession of the college actually referring to it. The first meeting of the society during the present term was held in the lower room of the Taylor Building. Several gentlemen were elected members of the society, and the names of others were submitted to be balloted for at the next meeting. Mr. Trevor Fielder, of St. John's, read a long paper on Lanthony, in the vale of Ewyas, Monmouthshire. A chronicler living in the twelfth century, who described himself as a monk of Lanthony, when writing of the chapel which St. David erected on the spot which was afterwards occupied by the Abbey, described it as "a poor building surrounded with moss and ivy, covered with thickets, scarcely habitable for man or for beast." The lecturer gave some architectural descriptions of the ruins, and after tracing the possession of the property from 1809, he stated that about four miles north of the Abbey stood the building a short time back erected by "Father Ignatius," who destined it, when the funds were sufficient, to become a large monastery in exact imitation of those which flourished under the rule of St. Benedict, in the tenth and eleventh centuries, but at present the establishment was very small. Mr. W. Scott Champion, of London, architect, then read a paper on North Stoke Church, Oxfordshire, and illustrated it by numerous drawings and plans. On Thursday, March 20th, a communication will be made on the Utrecht Psalter, with especial reference to the recent controversy, by Professor Westwood; and a report will be read on Archæological Discoveries, &c., in the neighbourhood of Oxford during the past year.

Protection of Passengers.—A builder has been fined 3*l.* and costs at the Westminster Police-court for neglecting and refusing to put up a fan to his hoarding at the corner of two streets in South Belgravia.

Opening of a New Saw-Mill in Hereford.—A new saw-mill has been erected within the precincts of the city of Hereford, according to the local *Journal*. The building is at the Canal Wharf, and has been erected by the executor of the late Mr. E. George (Mr. W. A. Hill). The erection, which is 50 ft. in length by 40 ft. in width, was designed by Mr. Henry Lee, C.E., of Birmingham, and has been built by Mr. Hudson, of Hereford, builder. The engine, which was made by Messrs. Davey & Paxman, of Colchester, is of 10-horse power (nominal). It is of the type known as vertical, with boiler combined, the boiler being on the makers' new principle of bent taper tubes through the fire-box, with mushroom deflectors, by means of which rapid circulation of water and generation of steam are produced at a very small cost for fuel. The engine was exhibited at the International Exhibition last year, and used for driving a portion of the machinery in motion. The sawing machinery was supplied by Messrs. Robinson & Son, of Rochdale, and consists of a deal frame for sawing by vertical action; one large circular saw-bench, with self-acting motion for bringing the timber forward; and a smaller bench for cross-cutting, grooving, tongueing, rebating, boring, &c. Mr. Hill arranged and superintended the fixing of the whole of the machinery. A supper was held to celebrate the accomplishment of the work: Mr. W. A. Hill took the chair, and Mr. E. George officiated as vice-chairman. The party included Mr. Tudor (clerk), the sawyers and labourers employed by the firm, Mr. Wham (representative of Messrs. Davey & Paxman), Mr. Hudson (the builder), and his workmen, together with a few visitors and friends.

The New Library at Guildhall.—The new library and museum at Guildhall, erected by the Corporation of London, have been opened for the free use of the public, and during the first day between 400 and 500 people visited them. The library itself contains accommodation for between fifty and sixty readers at a time, and one of the twelve bays into which it is divided is set apart for ladies. There are between 30,000 and 40,000 volumes on the shelves, and the library abounds especially with works referring to the history and the traditions of the City. There is also a public reading-room, where dictionaries, directories, guide-books, maps, atlases, and commercial and legal works are kept for quick reference. The building will be open daily from ten until five throughout the year, except on holidays. Each reader is required to give his or her name and address on entering the room, and the way in which books are obtained and returned is exactly similar to that at the British Museum. Children under fourteen years of age, and intoxicated and disorderly persons, are inadmissible. A new catalogue has not yet been compiled, but Mr. Overall, the librarian, has for the present re-arranged and re-numbered the old one. This is the first experiment of a free library ever made in the City. The committee are considering whether to open the building during the evening, and also to form a circulating branch of the library. We hope both objects will be achieved.

Fatal Sewer Accident near Brighton.—An inquest has been held on the body of John Pinch, aged eighteen, whose death had resulted from his falling down a shaft (96 ft. deep) at Ballard's Bottom, in the parish of Telscombe, where deceased and others were engaged in carrying out works connected with the Brighton intercepting sewer. Deceased, it appears, was oiling some portion of the machinery, when, in turning round, his foot slipped on some planks that covered a portion of the shaft, and he fell down an opening between them. He caught at the skip for supplying the engine with water, but this gave way, or he might possibly have saved himself. He went down feet first, striking against some woodwork twice in his descent. When drawn up and taken to the hospital he was conscious, but died in a few hours. Deceased was perfectly sober; and it was shown that the opening through which he fell could not be protected, the space being left for the skip to pass through. The jury returned a verdict of "Accidental death."

Burlington House.—The temporary entrance in Piccadilly to the house of the Royal Academy has been removed, and carriages will now drive through the archway in the new building for the learned societies, and set down at the steps of Burlington House.

Proposed Graving Dock and Jetties on the Tees.—The Commissioners of the Tees Conservancy are about to construct a new graving-dock between the works of Jones, Dunning & Co. and Normanby Jetty. This will be the first and only dock of its kind on the River Tees. The statutory notices have been given for the occupation of the land, and building operations are to be commenced in the course of next summer. The estimated cost of the new dock is about 30,000*l*. It is also intended to construct two new jetties on the river below Cargo Fleet. One projected by Mr. Vaughan will be the largest on the river. Its length will be about 700 yards, and it will have a frontage to the Tees of 360 ft. One result of their erection will be to diminish the value of the trade of the docks at Middlesbrough and Lackenby. At the present time the North-Eastern Railway Company charge a duty of 1s. per ton for conveying iron to the docks from either the Eston or the Cargo Fleet works; and there are dock-dues to be provided for over and above this sum. By the use of their own jetties ironmasters avoid these payments altogether. Another effect of the new jetties will be the partial discontinuance of the Normanby Jetty, belonging to the North-Eastern Railway Company, from which the owners of the proposed new jetties have hitherto been accustomed to ship a considerable part of their iron. Other new works are being promoted below Eston.

New Buildings at Elland.—On the north side of the Elland and Brighouse-road, near to "Woodlands," the residence of Mr. Dewhirst, is about to be erected one of the largest mills in the district, to be worked as a worsted manufactory. The building will be 75 yards long by 20 yards wide, and four stories high, and at each end will be a campanile clock tower with a dome roof. At one end will be a separate building to hold four boilers, and the machinery will be turned by a powerful 60-horse compound engine, now being made at the works of Messrs. Pollitt & Wigzell, of Sowerby Bridge. The whole building will be made fire-proof. The building will be erected for Mr. Dewhirst from plans drawn by Mr. T. W. Helliwell, of Brighouse, architect. The tenders have been let, and operations have already commenced, the stonework being let to Mr. Geo. Hanson, of Elland; the joiners' work to Messrs. Hirst & Wilson; the cast-iron work and shafting to Messrs. Berry & Son, of Halifax; and the slaters' work to Mr. J. Bancroft, of Halifax. The chimney will be square and ornamental, and 45 yards high. The two largest malt-kilns in the district are also being built from plans by Mr. Helliwell.

The Site of Troy.—At a meeting of the Society of Antiquaries, under the presidency of Lord Stanhope, a paper on "The Troad" has been read by Sir John Lubbock, M.P. He stated that he had spent his holiday last year in paying a visit to Constantinople, and from Constantinople he had sailed to the plains of Troy, landing close to the tumulus of Ajax. The balance of opinion as to the true site of the city of Troy, he thought, was clearly divided between Bunarbashi and Hissarlik. The rival claims rested principally in the distance of these places from the sea and the courses of the rivers, but all theories suggested on these points were open to grave objections. No site could be said to accord thoroughly with the account given by Homer, and the examination of the tumuli threw little light upon the matter. Admiral Spratt said he had made the visit to the Troad thirty years ago, with Homer in his hand. With regard to the distance from the sea, Pliny and Strabo had both placed Troy at the distance of 12 stadii (about an English mile). Though it was now nine miles, there was nothing incompatible in this, as the sea had been retiring ever since the Trojan war, and placing more and more land between the city and the sea.

Increase of Salary to the Town Surveyor of Great Yarmouth.—Mr. H. H. Baker, the Yarmouth town surveyor, having applied for an increase of salary, the committee appointed to consider the subject recommended that his salary should be advanced from 200*l*. to 310*l*. per annum; namely, as surveyor to the sanitary authority, 120*l*.; town council, 180*l*.; and inspector of gas-meters, 10*l*.; the surveyor to keep a pony and gig at his own expense. Objection was taken to the necessity of the surveyor keeping a pony and gig; but it was finally resolved that the salary should be 310*l*., and that it should be obligatory on the surveyor to keep a pony and gig.

Medical Officers of Health and the Public Health Bill.—At the annual meeting of the Poor-law Medical Officers' Association, Dr. Rogers presiding, Dr. Lush, M.P., was unanimously appointed president of the association for the ensuing year. The following resolutions were passed:—"That the opinion of this meeting is adverse to the amalgamation of large sanitary districts, and considers that the Public Health Act would be best carried out by appointing medical officers for their own districts, where possible, as heads of the sanitary organization entertains a strong dislike." "That this association of public dispensaries, and that the establishment of the recommendation of the Sanitary Commission and the Poor-law inspectors' special report, is necessary and desirable, and earnestly hopes that the Government, notwithstanding their avowed intention of introducing no measure in the present session of Parliament affecting the sanitary requirements of the country, may be advised, in view of the great distress among all classes of the poor, in a time of exceptional severity, to pass some measure having for its object the prompt and efficacious relief of sickness."

Carlisle Public Hall.—The local journal says that of the various plans sent in for the proposed new public hall for this city, those of "St. Swithin" (Mr. D. Birkett, Carlisle), and "May Carlisle Flourish" (Messrs. Habershon & Brock, London), are those approved of most by the committee. The two sets have been submitted to the inspection of Mr. Cory, the county surveyor, who has reported in favour of Mr. Birkett's plans. At the same time, he has informed the committee that, in the present state of the labour market, and with the current rates of materials, he does not think either of the two competing plans could be executed for less than 10,000*l*. The expenditure contemplated by the committee upon the building is 4,500*l*., and we believe that both sets will be referred back to the architects for reconsideration of estimates, and future action must depend upon their replies; but it seems probable that part of the design will have to be abandoned, and the scope of the project restricted to the building of a large hall with suitable approaches and conveniences.

Newcastle Society of Antiquaries.—The usual monthly meeting of the Newcastle Society of Antiquaries was held in the old Castle, Mr. R. Carr-Ellison in the chair. The chairman presented to the society a very old axe-head, which he had received in a peculiar manner. He remarked that Mr. Crisp, of Pendwick, in the parish of Alnham, observed one day recently his blacksmith holding the axe-head in the fire. He saw that there were some cross figures upon it, and requested the blacksmith to take it out again. It then appeared that it had been bought amongst a quantity of scrap from a travelling dealer. There was the figure of a crown on the axe, which was worn, but left the impression that it had once been a headsman's axe used under the authority of the Crown. The secretary, (Mr. Longstaffe), had a copy of Sir John Lubbock's Bill for the preservation of antiquities, and on the motion of Dr. Bruce, seconded by the Rev. Mr. Adamson, it was agreed to petition in its favour.

The Late Mr. A. S. Newman.—We have to announce the death of Mr. A. S. Newman, surveyor to the Board of Works for the St. Olave District, Southwark. The *Metropolitan* says the Commissioners of Paving for the East Division of Southwark were superseded by the St. Olave's Board, on the passing of the Metropolis Local Management Act, 1855. The late Mr. A. S. Newman had assisted his father, who was the surveyor to the Commissioners. The St. Olave Board, however, appointed the late Mr. A. S. Newman their surveyor, and superannuated the father. Mr. Newman held the appointment until his death. We may add that the members of the St. Olave Board always had the greatest confidence in their late surveyor, and much regret his early death.

The New Infirmary for Chelsea.—In consequence of an interview with Mr. Langley, of the Local Government Board, the guardians of the parish of Chelsea have decided to increase the accommodation of their new infirmary, from 200 to 300 patients. Plans have been submitted by their architects, Messrs. John Giles & Gough, of Craven-street. These additional patients can be provided for at a cost of about 22*l*. per patient, so far as the buildings are concerned.

New Method of Forecasting Storms.—A letter by Mr. G. Wenley, of Chelmsford, on a "New Method of Forecasting Storms," has been reprinted from the *Chelmsford Chronicle* of March 7, 1873. We have not sufficient space to explain the drift of this letter, which must itself be read by those interested in the subject, but we may give a brief quotation :—

"The plan I have adopted for learning the form of aërial wave which is passing over any given place is to take a sheet of paper ruled with perpendicular lines (a sheet of ordinary foolscap ruled with horizontal lines only, and turned on its edge so that the lines are upright, answers admirably for a monthly register); now draw a strong black line across the middle of such a sheet to represent the average or mean line of the barometer, and fifteen finer lines above and below at intervals of about one-sixth of an inch (each interval is to represent one-tenth of an inch rise or fall); then, having dated the lines at the top, to correspond with the days of the month, begin by noticing how many tenths of an inch the mercury may stand (say at eight a.m.) above or below the average, or 29½ in.; make a dot in the line corresponding to the date at the required height, do the same thing the next day at same hour, drawing a pen across from dot to dot; continuing this daily will give the wave-form. In practice I find it far better to mark it twice a day,—viz., at eight p.m., halfway between the daily lines: a sailor might mark it every watch."

"The aërial wave," adds the writer, "follows the same law as the watery one: that if a great height be suddenly reached, it will be as suddenly left; if slowly reached, as slowly quitted. It will also be seen that our most dangerous gales are in many cases preceded by periods of exceptionally fine weather, but too apt to throw the sailor off his guard, and of this no one has yet warned him, so far as I know and believe."

Extension of Dundee Harbour.—In accordance with the request of the Dundee Harbour trustees, Mr. Harrison, C.E., has prepared a report and plan of a large scheme of harbour extension, in order to make the accommodation ample, and to prevent the large annual expense of dredging to keep the accesses to the present docks clear. With this view, Mr. Harrison proposes to construct a wall from the outer bend of the esplanade to the Beacon Rocks, and from thence to the Stannergate. This wall, he proposes should be built of concrete, and founded at a great depth, and, when finished, it would be about two miles in length. Within this wall 250 acres of space would be enclosed, which would be allocated to new basins, docks, timber ponds, quays, sites for warehouses, &c. The structural cost of the new works is estimated at 450,000*l.*, exclusive of filling up ground by the dredger for the next ninety years.

Method of Cleaning Glassware, by Dr. I. Walz.—The cleaning of beakers and other chemical glassware that have contained oils, fats, and similar organic matters, by means of potassium bichromate and concentrated sulphuric acid, is often inconvenient on account of the shape of the vessels, or because sometimes requiring the application of considerable heat, and thus causing breakage. The following method has given me uniformly satisfactory results:—The vessel to be cleaned is filled, or, if large, rinsed with a moderately dilute solution of potassium permanganate, the contact of the liquid being prolonged till a film of hydrated manganic oxide has been deposited; the solution is then poured away, and the glass vessel rinsed with some strong hydrochloric acid. Chlorine is then formed, but not enough to cause inconvenience; and acting *in the nascent state* on the organic matter, it speedily converts them into substitution products, that are soluble in the slight excess of acid or water.

A New Household Fuel Economiser.—Mr. Mark Shepherd, of Bradford, has invented a simple and effective improvement by which an ordinary open kitchen-range may be converted into an approximation to an American cooking stove. His arrangement consists of a cast-iron plate covering in the top of the fireplace, another plate closing up the mouth of the chimney, and a connecting-pipe passing through both plates for a chimney. The plate over the fire is provided with holes for cooking utensils after the manner of the American stoves, and the chimney-pipe has a valve in it to act as a damper. The inventor claims for his stove all the advantages of the American stove, together with cheapness and adaptability to ordinary ranges.

Mr. and Mrs. German Reed's Entertainment.—A new entertainment, written by Mr. F. C. Burnand, with music by Mr. J. L. Molloy, is in preparation, and will be produced at an early date, we presume in the place of "Happy Arcadia," which has now reached its 140th representation.

Search for Coal in the North of Europe. Seams of coal, according to a Copenhagen correspondent, have been discovered in the south of Sweden, and several companies have been, or are being, formed to work them. One of the companies commenced operations on the 21st of January, under the direction of an English engineer. A circular has been issued by Stockholm capitalists for the formation of a company to work the mines, which are near Engelholm, to the south-west of Scania. The capital is fixed at nine millions of Swedish crowns, mostly subscribed. An Anglo-Swedish society has been formed in London, to purchase, for 190,000*l.*, 7,000 acres of coal country in Scania. Borings for coal have been also made in Denmark, but without success. In the island of Bernholm it has been found, but the quality is inferior. There are coal-beds in Jutland, and the search for new mines is being prosecuted in the Island of Forse.

The Iron and Coal Trades.—Circulars from makers of the best sheet-iron have been issued in South Staffordshire, announcing a new rise of 2*l.* a ton. Wilden B singles are now 21*l.*, and B charcoal 28*l.* Cookley bars are advanced to 15*l.* 10s. These makers have to give unprecedented prices for their raw material. Charcoal has advanced 100 per cent. Those japanners who advanced their prices after the recent excitement are now advancing them again, owing to the dearness of the fuel.——The *Glasgow Herald* learns that short time is to be adopted by one or two mills in the city this week, owing to the high price of coal. Our contemporary further states that from nearly all the manufacturing districts both north and south of the Tweed come reports of a gradual curtailment of production, and, as contracts run out, of large portions of machinery being thrown idle.

Society of Biblical Archæology.—At the last meeting a paper "On the Synchronous History of Assyria and Babylonia, translated from the Cuneiform Inscriptions," by the Rev. A. H. Sayce, M.A., was read. This most ancient historical document, which unfortunately exists in a very fragmentary condition, is a chronological history of the two kingdoms of Assyria and Babylonia from the fifteenth to the seventh centuries B.C.; from the time of Karaindas to that of Shalmanaser, with whose invasion of Babylonia the record ends, and whose famous black marble obelisk is now in the British Museum. Mr. Sayce accompanied his translation with numerous historical and philological comments, and promised to translate some further historical tablets on another occasion. A discussion ensued, in which M. Lenormant, Dr. Birch, Professor Donaldson, and Mr. R. Cull, F.S.A., took part.

Proposed County College at Cambridge.—A meeting of gentlemen interested in the establishment of a County College, at Cambridge, has been held at the Guildhall. In the unavoidable absence of the mayor, Professor Liveing took the chair. A memorandum of association was read and approved. One of the articles of the memorandum states the object of the association to be :—

"To combine and assist certain efforts that are being made in the various counties of England to extend and raise the standard of middle-class education, and for that purpose to purchase and hold and occupy requisite buildings at Cambridge or elsewhere, and to erect thereon one or more college or colleges upon a proprietary basis."

The company will be registered under the Limited Liability Acts, and its capital is to be 30,000*l.*, in three thousand shares of 10*l.* each. A number of shares were at once taken up.

Overcrowding in Lambeth.—A report, prepared by a special committee of the vestry of Lambeth, in relation to "proposed regulations for houses sub-let in lodgings, or occupied by members of more than one family," was brought up to the vestry on the 13th of February, 1872. It was then ordered to be printed and taken into consideration in a twelvemonth. The twelvemonth having expired, the report was considered at the meeting of the vestry on Thursday. There are a series of fifteen proposed regulations, as to cubic space, whitewashing walls, cleansing, water, sleeping arrangements, &c. The consideration of the subject was deferred. There is much difference of opinion in the vestry on the subject.

Architects' Benevolent Society.—The annual meeting of the society was held on Wednesday, the 12th instant, the president, Mr. S. Smirke, R.A., in the chair. We will give particulars in our next.

The Durham Architectural and Archæological Society of Northumberland and Durham.—The annual meeting of this society was held in Bishop Cosin's Library, Durham, the Rev. W. Greenwell presiding. The financial statement was read by Mr. R. J. Johnson, and showed a balance in hand of 56*l.* 10s. 3d. The chairman then gave a *resumé* of the proceedings of the society during the past year. It was then agreed that the places to be visited by the society during the forthcoming year be as follows:—1. Norton, Redmarshal, and Bishopton; 2. Ryton and Newcastle; 3. Dinsdale, Sockburn, and Eryholme; 4. Rothbury, Eglingham, and Castle. A fifth visit of two days was projected to Selby, Howden, and Beverley, in Yorkshire.

Clerkenwell Workhouse.—The Guardians of the Holborn Union requested their architect, Mr. H. Saxon Snell, to prepare a design for rebuilding this workhouse, in consequence of the present building being in so decayed a state that a large quantity of timber shoring is necessary for its support. Plans for the accommodation of 500 inmates were accordingly submitted for the approval of the Local Government Board, at an estimated cost of 20,000*l.*; but they have requested the Guardians to refrain from building here until the St. Luke's Workhouse, also belonging to the Union, has been rebuilt.

Vapour Stove.—A new article from America is being sold in Liverpool, for use either in cooking or in heating apartments. It seems better suited for summer use in cooking, however, on a small scale, than for warming in cold weather, unless it be for bed-rooms. It is called a gas-stove, but the gas is produced in the stove itself, and seems to be a modification of mineral oil into vapour: hence the name of "Vapour-stove." It is the subject of a patent. The cost of the fuel is said to be not more than one halfpenny an hour, and the stove is quite portable even while burning.

Consulting Engineer at Yarmouth.—In consequence of the death of Mr. J. Cubitt, C.E., the office of consulting engineer to the Great Yarmouth Port and Harbour Commissioners became vacant, and Sir John Coode has been appointed consulting engineer to the Commission. The clerk has been instructed to forward the resolution of the Board to Sir John Coode, and to request him, in the event of his acceptance of the appointment, to attend at Yarmouth, and inspect the injury done to the harbour works to the north and south of the pier.

Baptist Church and Schools, Prince's-end, Tipton.—This church and schools have just been completed and opened. The buildings are of red brick, with Hollington stone dressings and traceried windows, and have been carried out by Mr. George Haffner, builder, of Tipton, from the designs and under the superintendence of Messrs. Weller & Proud, architects, of Wolverhampton. The church will seat 700; and the schools will accommodate 500 children.

New Townhall for Paisley.—The late Mr G. A. Clark, a partner of the firm of Messrs. J. & J. Clark & Co., thread manufacturers, Paisley, who died at Newark, New Jersey, United States, on the 13th of February, has left 20,000*l.* for the erection of a new townhall in Paisley. The hall is to have combined with it a reading-room for working men, where they can sit in comfort and enjoy smoking, and is to be open from five o'clock in the morning till twelve at night.

Frome Market Competitions.—At a meeting of the committee of the Frome District Agricultural Society last week, Mr. H. P. Jones presiding, it was decided to award the first premium of 20*l.*, for the best set of plans for the new market at Frome, to Mr. W. J. Stent, architect, of Warminster; and the second, of 5*l.*, to Messrs. Wilson, Willcox, & Wilson, architects, of Bath. The proposed cost of the works is 4,000*l.*

Artists' Benevolent Fund.—The annual general meeting of this fund will be held at the Freemasons' Tavern on the 20th instant, at two o'clock. The Dean of Westminster will take the chair at the anniversary dinner of this fund on or about the 24th of May.

Royal Architectural Museum. — The Council announce that Mr. Thomas Peard has promised Two Addresses in the Museum, on the "Art of Producing Artistic Ironwork," on the following Saturdays, at 3·15 p.m.:—March 15 and March 22. Admission free (without ticket), on entering names in the visitors' book in the Museum.

TENDERS

For the erection of a house at Totteridge, for Mr. J. Robertson. Mr. Thomas W. Willis, architect:—

Carter	£1,257 0 0
Rist & Brown	1,252 0 0
Willett	1,115 0 0
Gilmour	1,110 0 0
McGowan	1,035 0 0
Woodhall	987 0 0

For additions to Morton House, Kingsworthy, and new stables and lodge, for Mr. Aitcheson Gray. Mr. John Colson, architect:—

Yokes & Son	£3,180 0 0
Brinton & Bone	3,120 0 0
Quick	3,076 0 0
Sickley & Co.	2,974 10 0
Newman & Son	2,969 0 0
Birch	2,920 0 0
Dugay	2,840 0 0
Carter	2,797 0 0
Ripley & Son	2,790 0 0
Crook	2,710 0 0
Maklin	2,700 0 0
Bull & Sons	2,699 0 0

For new school, out-buildings, fence walling, and master's house, for the trustees of the Mirfield Endowed School. Mr. John Banks, architect:—

	Contract No. 1. School.	Contract No. 2. Outbuildings and Fence Walling.	Contract No. 3. Master's House.
	Mason.		
Furniss	£263 0 0	£131 0 0	£349 6 0
	Joiner.		
Smith	178 5 0	17 5 0	200 16 0
	Slater.		
Denton	55 15 6		35 15 0
	Plumber.		
McKinnell	39 5 0		53 12 0
	Plasterer.		
Shaw	10 13 6	2 16 6	67 19 0
	Painter.		
Whiteley	9 5 0	0 15 0	15 0 0

Tenders for Contracts Nos. 1 and 2 only accepted.

For warehouse and shopping, Freeman-street, Birmingham, for Messrs. Hassall & Singleton, Ironfounders and Engineers. Quantities supplied. Mr. W. Hale, architect:—

Charley	£1,290 0 0
Parker & Son	1,235 0 0
Parton	1,235 0 0
Barnsley & Sons	1,228 0 0
Jefferey & Pritchard	1,200 0 0
Partridge	1,200 0 0
Matthews	1,197 0 0
Bennett	1,195 0 0
Wilson & Son	1,193 0 0
Moffat	1,193 15 0
Swiman & Son	1,190 0 0
Barker & Son	1,155 0 0
Ravenscroft & Son	1,155 0 0
Davies, Brothers	1,125 0 0
Preece	1,079 0 0
Horsley, Brothers (accepted)	1,075 0 0

For alterations and additions to Gloucester House, Finchley, for Mr. Crawley. Mr. F. Chamberlain, architect.

Scrivener	£370 0 0
Morris	334 14 0
Walton	319 0 0
Gilmour	300 0 0
Donno	260 0 0

For new illuminating dials to parish church clock, Lumehouse. Messrs. A. & C. Harston, architects:—

Blundell & Sons (accepted)	£750 0 0

For the erection of malthouse at Farndon Field, near Newark-upon-Trent, in the county of Nottingham, for Mr. Joseph Richardson. Mr. Charles Baily, architect:—

Fretwell (accepted)	£7,700 0 0

For new tramp cells, receiving-wards, and porter's lodge, at the workhouse, Bletchingley, Godstone. Mr Alex. R. Stenning, architect. Quantities by Mr. R. W. Grutten:—

Anscombe	£1,678 0 0
Cook	1,673 16 0
Coles	1,645 0 0
Crossley	1,635 0 0
Smethurst	1,567 0 0
Wallis & Son	1,518 6 6
Woodward	1,500 0 0
Jarrett	1,480 0 0
Sutton	1,450 0 0
Hickmbotham	1,449 0 0
Lacy	1,401 0 0
Worsell	1,375 0 0
Galyer	1,350 0 0
Morris	1,332 0 0
Wright, Brothers, & Goodchild	1,325 0 0
Engineer's Work.	
May	201 13 0
Rosser & Russel	197 5 0
Clark (too late)	193 7 0
Fraser, Brothers (hot water only)	170 0 0
Dye	147 1 3

For rebuilding 39, Foster-lane, Cheapside, for Messrs. M. & N. Sainman. Mr. B. Tabberer, architect. Quantities by Messrs. Franklin & Andrews:—

Perry, Brothers	£2,010 0 0
Brown & Robinson	1,995 0 0
Heushaw	1,945 0 0
Downs	1,926 0 0
Turner & Sons	1,915 0 0
Merritt & Ashby	1,892 0 0
Pritchard	1,883 0 0
Mark	1,817 0 0

For alteration and repairs to No. 4, Montague-square, for Major-General Moore:—

Mark (accepted)	£440 0 0

For alterations and additions to 83, Bishop's-road, Paddington, for Mr. J. Isaacs. Messrs. New & Cummings, architects:—

Meuderson	£177 0 0
Hardy	359 0 0
Harris & Sons	327 0 0
Mark	319 0 0
Thompson & Smith	296 0 0

For alterations to the Red Lion Tavern, Edgware-road, for Mr. Thomas Potter. Mr. E. L. Parnire, architect:—

Chapman	£1,141 0 0
Scrivener & White	1,104 0 0
Ennor	1,055 0 0
Mark	896 0 0

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VOL. XXXI.—No. 1572.

*Sir G. G. Scott's Lectures at the Royal Academy.**

ON THE DOME.

I HAS been my lot to deliver my lectures from this chair in groups so very detached from one another as to render it impossible for my hearers to follow them as a continuous series. In spite, however, of this disadvantage, I purpose to make my present lecture form a natural sequence to the last which I had the pleasure of delivering, though this was read three years ago.

My last course was on "Arched Construction," and my last *lectures* were on "Vaulting." My present one will carry on the same subject into its culminating development, "The Dome."

Strongly as my tendencies towards our own Mediæval architecture draw me towards the modes of vaulting which prevail in our own ancient buildings, and which formed the subject of my later lectures, I am bound to admit that the noblest of all forms by which a space can be covered is the dome; and, much more than this, that of all architectural forms it is the most sublime and the most poetic, and is susceptible of and demands the highest artistic treatment. I deplore, therefore, its non-existence in our old English architecture.

This regret, however, is diminished by the abundant evidence we possess that the dome, though absent from English buildings, was by no means held to be alien from the contemporary architecture of neighbouring countries, inasmuch as we possess it in highly-developed forms over a large part of France, in Germany, and in Italy, erected at the same periods with many of our great Mediæval edifices.

If, then, I am departing from the line I had been taking in tracing out the history of old English architecture, I am not only supplying a *hiātus* in that history, but I trust that I may be able to offer suggestions for a more practical object,—the supplying of that *hiātus* in our revived and redeveloped neo-Mediæval style.

In a former lecture, after defining a vault as the covering of a rectilinear space produced by the motion of an arch parallel to itself, I defined a dome as the covering of a *circular* space, produced by the revolution of an arch round its central vertical axis. It follows that if the arch so revolving is semicircular, the resulting dome is a hemisphere.

The revolving arch may, however, be of any form which an arch can assume. It may be elliptical, parabolic, hyperbolic, cycloidal; or it may be a pointed, a horseshoe, or an ogee arch. Any one of these, or other forms, of arch revolving on its centre will generate a dome of its own sectional form. The *plan*, too, in spite of my definition, need not be a circle. It may be an ellipse, or of other forms.

I will not at this stage admit of square-planned, polygonal, or other straight-sided domes, because it may be doubted whether they are genuine domes at all, or whether they are not figures resulting from the intersection of a certain number of ordinary vaults. Anyhow, these are not generated by the revolution of an arch; so that if they are domes, my definition is at fault.

Simple, however, as is the hemispherical dome, it does not appear to have been historically the primæval type; for, strange to say, the earliest known domes assume in section the form of a lofty pointed arch. I refer especially to that of the supposed tomb of Agamemnon at Mycenæ, and also to some portrayed on the Assyrian sculptures.

These would hardly come within the range of this lecture, were it not so curious a fact that the earliest form of the dome foreshadows the very use to which I would now especially desire to accommodate it.

It is easy to perceive why the pointed arch was adopted in these primæval domes. They were not built with radiating joints, but in overhanging courses; and it will readily be seen, on comparing their sections, that, for this mode of construction, the pointed arch is much more favourable than the circular, while, as soon as ever the radiating system was adopted, the semicircle at once became the simplest and most obvious section.

It is, however, strange to observe how little has come down to us of the history of domes. From the tomb of Agamemnon,—some eleven centuries before the Christian æra,—we have scarcely any certain evidences of their history till we arrive at the Pantheon, erected in the reign of Augustus,—or, as Mr. Fergusson thinks, considerably later. Yet, as that dome is still the widest built of solid materials which exists, and as, both in its construction and its architecture, it is in a high degree artificial, and evinces a period of advanced development, it follows that it must be the representative of a long series of antecedent domes, progressing from the crude idea onwards to this, the very highest developed form of the simple dome, for we shall presently see that there are other forms scarcely foreshadowed by even this magnificent structure.

I may here remark that the dome, like the arch and the vault, having great outward pressure, requires either a vast amount of sustaining wall carried up considerably above the springing level, or, in the absence of this, a tie of metal at, or somewhat above, its springing, or perhaps several of such ties at different heights. Unlike, however, the arch and the vault, it is independent of a keystone, each circular course of its structure forming a horizontal arch and keying itself. It may consequently be erected without the aid of centering, and may be discontinued at any level, leaving a central opening or *eye*.

The Pantheon is the great type of Roman domes. It is a simple rotunda of 142 ft. internal diameter; the wall being some 20 ft. thick. The wall is about 72 ft. high to the springing of the dome, and continues above that level about 28 ft. more.

The dome is a semicircle, but has an open eye at its apex of nearly 30 ft. in diameter. The dome, as viewed externally, is buried by the wall, which rises above its springing to fully a third of its height, and above this rises a sort of attic, crowned by six *gradini*, burying nearly an equal height; so that the dome, as an external feature, is far from conspicuous, appearing as a mere flattened disk. Internally, however, it forms a covering of the noblest character. Its internal surface is deeply coffered by panels of four orders in depth, dividing the circumference into twenty-eight parts, and its height up to about two-thirds of the distance from the springing to the crown into five parts, the upper portion being plain. These vast panels or coffers, the larger range of which exceed 12 ft. in diameter, are curiously arranged as to their sectional recessing, so as to appear perfectly symmetrical to the eye of a spectator standing beneath the centre of the dome.

The wall up to the springing of the dome is beautifully decorated with rich architecture in marbling of varied colour; and it cannot be doubted that the cupola,—the very soul of the design,—was embellished in a manner fully proportioned to the beauty of its sustaining wall—indeed, it is thought to have been coated with gilded bronze. When thus perfect, it must have formed an interior of surprising beauty; lighted as it was solely through the central eye, and the light tempered by the linen veil stretched across its rich bronze cornice, which still remains round the opening, and retains vestiges of gilding.

The Pantheon can scarcely be called a *daring* effort of construction, because its vast solidity seems to defy all doubts as to its duration. It would be, however, absurd to suppose it to have been an *early* effort, for it is, as I have already said, so artificial in its construction, as clearly to prove it to be the result of long-continued practice.

The walls which I have described as being 20 ft. thick, are so only in theory; for, practically, they are hollowed into innumerable cells, some of them forming beautiful architectural recesses, and others merely constructional hollows.

The dome itself is constructed in a manner evincing long-continued practice; for it differs *toto cœlo* from the normal mode of construction. It is shown differently by different authors; in fact, it has probably never been sufficiently exposed to obtain complete information as to its curiously-complicated construction. As far, however, as I can ascertain, it seems to be in two thicknesses. The inner thickness consists of the framework of the coffers, which is of brick, and the filling in of the coffers, which is of rubble or concrete. This would form the centreing on which the outer shell was built, which is a curious tissue of arches, each rising from the crowns of those below it, and so disposed as to concentrate the pressure upon points in the wall which intervene between the cells. The spaces between these arches are filled in (so far as I can gather) with rubble or concrete. The whole was probably covered externally with plates of bronze, or of marble.

The next antique Roman dome which I shall notice is that of the so-called Temple of Minerva Medica, so named from the discovery of a statue of that deity among its ruins, but now supposed by some to have been the great hall of public baths.

This building greatly resembles the Pantheon in its general idea, but differs in this essential particular,—that its surrounding wall is not circular, but decagonal.

At a later date, as we shall presently see, this peculiarity would have been seized upon as the suggestion of another type of dome of which I shall have subsequently to treat. As a matter of fact, the transition from the polygonal prism below to the nearly hemispherical dome above, is got over by "rule of thumb," rather than on any true system. The vertical sides of the wall do intersect the dome in arched forms; but neither are these forms the true sections of a plane with a sphere, nor have they been used as architectural features, as in later times; but have been afterwards, so far as I can judge, obliterated by the incrustation of the dome with plaster, so as to slur over a union of forms which the architect had fallen into accidentally without appreciating its true results. The dome is surrounded by *gradini*, much as in the Pantheon. It is not lighted by an eye, but by ten windows, surrounding what we should call the clearstory. Beneath these are ten arches piercing the sur-

* We have displaced some articles in order that we may publish Sir G. G. Scott's concluding course of Lectures in full. All the previous lectures delivered by the Professor will be found in our columns.

rounding wall; indeed, reducing it to small angle piers. One of these is devoted to the entrance, the other nine to semicircular recesses, of which five seem to have contained basins for water, and four to have opened by means of colonnades into exedræ, or surrounding buildings. It may be mentioned that this form was, in after-times, extensively imitated. The span of this dome is about 80 ft. Its date is not known. Not unlike this is the Temple of Venus near Baiæ, though here the dome is cut into cells like a conch,—a still near approach in effect to the pendentive dome.

There are other domes not differing materially from those already described, but which it would extend my lecture unduly to dwell upon. One called the Torre dei Schiavi, in the Via Prænestina, is like the Pantheon on a very small scale, though lighted by round clearstory windows, instead of a central eye.

The Temples of Vesta, both at Rome and at Tivoli, consist of circular walls surrounded externally by a peristyle. The cell of each is supposed to have been covered by a dome, though roofed over. A parallel case, though in a more complex form, exists in what is called the Temple of Jupiter in Diocletian's Palace at Spalatro. In this case, the exterior of the cell with its peristyle is octagonal, but the interior, with the dome, *round*. The latter has a complicated construction of fan-shaped arches throughout, scarcely any part being constructed of horizontal courses.

Next, perhaps, in date, yet at once displaying similarity of idea with a significant change in the carrying out, is the tomb of St. Constantia, the daughter of Constantine.

A Christian church, in its early form, has been familiarly described as the Pagan Temple turned inside out. To convert the ideal temple into the ideal church the wall and the colonnade must change places. So completely is this the case that some of the earlier commentators on Vitruvius were completely puzzled between the wall of the temple and the peristyle. They assumed that the latter *must* be *within* the wall, as in their own churches, and based their remarks on this supposition.

The comparison between these almost contemporary works,—the Temple of Diocletian at Spalatro and the Tomb of St. Constantia at Rome,—exactly illustrates this change. In the one, the solid wall forms the circle and carries the dome, and the colonnade is external; in the other, the colonnade forms the inner circle and carries the dome, while the wall becomes external,—an *aisle* taking the place of the peristyle. The colonnade is *doubled* to support the massive clearstory whence the dome springs, and the whole assumes the type of one form of Christian church, which henceforth became of frequent occurrence. The dome in this instance ceases to be an external feature, being covered over by a conical roof. I may add that the peristyle is repeated in the old manner as an additional feature beyond the wall of the aisle.

The Baptistery at Nocera is similar in distribution to the tomb of St. Constantia, and may be of similar date. It is wider, however, and loses much beauty by the omission of the clearstory and the admission of light through the haunches of the dome.

Among the innumerable remains of domes of the older type, I will only mention one more before proceeding to the second branch of this subject, to which it, in fact, properly belongs. That to which I allude is the Baptistery at Ravenna, erected, as it is supposed, about the year 150.

This is a very charming building, octagonal in form, yet covered over by a hemispherical dome. Though having no surrounding aisle, the design of its sides seems derived from the aisle and clearstory; indeed, it has a clearstory, though the arcade below is rather rudimentary than real.

The dome, like that last alluded to, is covered externally by a sloping roof.

The special feature, however, in this dome is that it rests upon an octagonal wall or rather upon eight arches.

We shall presently see how this was effected in subsequent times, and I will not anticipate that subject, but will content myself with mentioning that this seems to anticipate the Byzantine domes of the succeeding century, as had been the case in two instances to which I shall have to refer, and as had been nearly the case in the Temple of Minerva Medica.

The domes which we have hitherto considered are exclusively and of necessity carried by circular or other continuous walls. They are consequently supported uniformly throughout their entire circumference, and their use is necessarily limited to the coverings of circular, *quasi*-circular, or polygonal buildings. Had no further development been attained, it would ever have been felt to be a sad deficiency in the scope of architectural facilities, that the noblest form of covering should be limited to the least usual and, for most purposes, the least convenient form of apartment. We are happily *as far as possible* from being left in this dilemma. A very simple application of geometrical thought opened a way by which almost *any* reasonable form of building may be covered by a dome or by a series or group of domes.

I will endeavour, as simply as I am able, to explain this important development.

It is a property of the sphere that every possible plane section of it is a *circle*. It follows that every vertical section of a hemispherical or segmental dome assumes the form of a semicircular or segmental arch. If, therefore, a square be inscribed in the base of a dome, and walls be built on that square and continued up till they meet the dome, they will intersect with it in four semicircles. If, instead of *walls*, you build *arches* on the sides of that square, these arches will coincide with the curve of the dome where they meet it; and, if strong enough, will carry the portion of the dome remaining between them. If, again, instead of arches, you suppose the dome intersected on the lines of the inscribed square by *vaults* at right angles to those sides, the result will be the same.

In the first case we have a dome, or a portion of one, covering a square apartment; in the second we have the same covering standing on arches open towards the exterior; in the third we have a dome covering the intersection of two barrel vaults just as is more usually done by groining. The process, however, is not limited to a *square:* it is equally applicable to the octagon or any other polygon,—indeed, to any figure which can be inscribed in a circle. Nor is it necessary that the inscribed figure should be *complete;* for remnants of the circle may equally well be left between the arches or walls.

Thus, a circular space may be intersected by four vaults of less width than the sides of a square, leaving portions of the circular walls remaining between them.

The dome, again, may as well be *segmental* in section as *semicircular;* in which case the arches supporting it will also be segmental.

Again, the figure inscribed need not be *equilateral;* so that *oblong* compartments, such as those customary in the nave of a church, may be domically vaulted.

In all the cases which I have enumerated, I have supposed the result to be literally a *portion of the original dome.* As it happens, however, we have but few ancient examples of so strict an adherence to principle, though in modern works they are more frequent. The purest specimen I know of (if I judge rightly from drawings) is the dome of the little Church of St. Nasario and Celso, at Ravenna,—the mausoleum of Galla Placidia and of her two husbands, the emperors Honorius and Valentinian II. This is a dome such as I described as standing between four walls which intersect it in the form of arches.

The next step beyond this was a very important one, as to beauty of effect. I refer to the practice of drawing a circle by means of a moulding on the surface of the dome,—touching the crowns of the arches: this is not only ornamental, but it has the effect of emphasizing the first completed course of stones, and perhaps even of strengthening it; and it has the farther effect of defining the spherical triangles between the arches, which, when thus gifted with a separate existence, receive the name of "*pendentives*"; whence this entire class of domes are called "*pendentive* domes."

The earliest specimen of this is probably the little tomb in the Via Nomentana, at Rome, which, though probably of earlier date than the Church of St. Nasario and Celso, carries out the pendentive principle to its full development, just as we see it treated at a later period in the double gate and the Golden Gate of the Temple area at Jerusalem, most probably erected under Justinian. All these domes are segmental in section.

The pure form, however of a pendentive dome,—that is to say, the form in which the pendentives and the upper portion are really veritable parts of one and the same original dome in the plan or base of which the rectilinear figure is inscribed,—was not long adhered to. It was soon felt that the disk enclosed by the circular moulding looked *flat* and *ineffective;* and the idea early suggested itself of converting the circular moulding into a massive cornice; raising upon it a new dome of such proportions as should approve themselves to the eye; and allowing nought but the pendentives to remain of the original dome.

No bolder idea was ever introduced in constructive architecture; for now the dome, instead of being, as at the Pantheon, supported firmly by a solid wall throughout *every* portion of its circumference, finds its conditions *absolutely reversed;* for in *no* portion of its circumference has it now a solid support, but all floats upon vacuity, suggesting the poetical similitude to Procopius, that the dome of St. Sophia appeared, as if suspended, by a chain from heaven.

Pendentive domes, in neither of their typical forms, seem to have been frequently or customarily made use of in the more genuine classic ages, though in modern times they have both been very wisely adopted into the revived classic styles. They were, in fact, the special characteristic and the great glory of the Byzantine style.

Mr. Freeman, on this subject, remarks:—"The offspring of the arch is the vault; of the vault, the cupola; and this majestic ornament is the very life and soul of Byzantine architecture, to which every other feature is subordinate. Its use had hitherto been mainly confined to circular buildings. To make it the central point of a Christian temple was a grand and bold idea, and one which involved a complete revolution in the existing principles of architecture. . . . . And not only did the grand cupola crown the whole pile; but the smaller portions are often covered with smaller domes and semi-domes. . . . . The eye habituated to the long naves . . . . of our own great churches, is totally bewildered with so huge a pile, with apses and semidomes 'sprouting out,' to use the expression of Mr. Hope, in every direction, and all circling round the vast central cupola, like tributary rulers encircling an imperial throne."

It is thought by some that the Byzantines borrowed the pendentive dome from Persia; but this seems insusceptible of proof; indeed, it exists of earlier age in Italy. It is more certain that, having once discovered its wonderful utility it was communicated by them to every region to which their influence extended; and that, having been learned from them by the Mahomedans, it became the conspicuous feature of the architecture, which extended continuously from the Bay of Bengal to the Atlantic.

The next development I will mention is the raising of the dome proper upon a drum or circular wall, elevated upon the pendentives or corbels, so as to convert it into a species of tower. This seems to have been the first step by which, in later times the dome came to be made a conspicuous external feature, though rather at the sacrifice of internal beauty.

It is, in fact, the weakest point in the dome, æsthetically considered, that the same dome cannot be made artistically perfect both within and without. If its height be limited to what looks thoroughly well from within, it is so low in its external aspect as to have little artistic value; while, if raised so high as to be an important external feature, it is only seen by a painful effort from within. This is manifest even in the rotunda, where the dome rises from a circular wall, as in the Pantheon and the Temple of Minerva Medica; but it becomes much more so in a pendentive dome, where the angles are externally incumbered with large masses of masonry. In the earlier Byzantine buildings, we accordingly find the dome to have been viewed almost solely as an internal feature, and its exterior very much neglected; and in the case of St. Sophia itself, no one would be prepared by its low, heavy external aspect for the unrivalled glories of its interior. Many of the old architects, in fact, gave up the external form altogether, covering over the dome, as at Parma, &c., by an ordinary sloping roof.

The change I have last chronicled, the interposition of a circular wall between the pendentive and the dome, though by no means in all cases leading to the result I am referring to, was unquestionably the origin of the treatment of the dome as an important external feature. It was, in fact, the elevation of the rotunda upon the top of the pendentives. Unhappily, however, it had at once the effect of lifting up the dome above the level favourable to its internal effect; while, if erected on four arches only, the weight became so serious as usually to limit its use to domes of very moderate size.

A large number of domes thus raised high above their pendentives or corbellings, are really of a class whose claims to the name of dome are somewhat ambiguous. I refer to those whose horizontal section is not circular, but polygonal. Strictly speaking, this is a variety of groined-vault: it is generated by the intersection of several barrel-vaults, springing from the horizontal tops from the surrounding walls. Now, my definition of a dome was a vault generated by the revolution of an arch on its vertical axis. If this were an exhaustive definition, it would follow that the vaults under consideration are no domes at all; yet they look so much like them, and as the number of the sides of the polygon increases, actually approach so closely to the genuine dome, that it would be affectation to deny them the name. They may form the covering of any rectilinear figure at all approaching to regularity of form, as the triangle, the square, the canted square, polygons either regular or elongated, oblongs or parallelograms of any kind; but the usual form is the octagon or other polygon; and for our general purpose it may be best to limit them to figures capable of being inscribed in a circle or an ellipse.

I have introduced this variety of dome as occurring in those which are raised high above their pendentives or corbels. They occur, however, in numerous positions. The greatest I know of is that of the cathedral at Florence, of which I shall have to speak more in detail in my next lecture.

But to return to the pendentive dome. The pendentive dome, though occasionally used at an earlier period, established itself as the leading feature of a style about the time of the Emperor Justinian, and its central seat was Constantinople. The earliest, or *about* the earliest, church now remaining in that city seems to be that of SS. Sergius and Bacchus. Its dome is supported by an octagon. It appears itself to be concoidal in its horizontal section, and to be supported on sixteen small pendentives. It bears considerable resemblance to the Temple of Minerva Medica, but is really less developed than the Baptistery at Ravenna, which dates fully half a century earlier.

Contemporary with this was the Church of the Apostles, also erected by Justinian, but now destroyed. It showed, however, according to the description of it by Procopius, an immense advance upon that last named; for, while in one the dome was carried by an octagonal wall, thus showing no practical advance upon the antique form of dome, in the latter, a vast cruciform building was covered by five domes, which is just the advantage which the pendentive system affords; for, when the base of a dome is cut into a square by four arches, those arches may aid in the support of other domes beyond, and thus any space may be covered over by a series or a group of domes. This last church, then, was the true type of advanced domical structure.

The great glory, however, of this age and of domical structure of this class (for it has never again been equalled) is the Church of St. Sophia, or of Sacred Wisdom, erected by the same Emperor as the Metropolitan or Patriarchal Cathedral of the Eastern Church.

The plan of this church differs in ideal, and yet more in fact, from the contemporary church last referred to.

The ideal of each is a cross with a central dome. The difference is that in the Church of the Apostles the limbs of the cross were each covered by a complete dome,—of equal dimensions with the central one; those of St. Sophia are covered each by a *semi*-dome only,—of equal diameter with the arches carrying the central dome; so that if we consider the latter to spring from the top of its pendentives, which it in effect does, its springing is on a level with the crown of its surrounding semi-domes.

In reality, however, this ideal is not carried out to completion, as only two of the semi-domes have been erected. This incompleteness, however, is greatly more than compensated; first, by the vastness of the scale,—the central dome, if measured on the diagonal, being 150 ft. in diameter,—and, secondly, by other semi-domical projections branching out from the walls which support the great semi-domes, three from each, excepting that on the western side one is devoted to the entrance, and is not domed. Even these secondary projections are mostly arcaded, so as to allow the eye to pass onward into a yet inner chamber: so that, simple as is the primary ideal, the actual effect is one of great intricacy and of continuous gradation of parts, from the arcades last alluded to up to the stupendous dome which hangs with little apparent support, like a vast bubble, over the centre; or, as Procopius, who witnessed its erection, described it,—as if suspended by a chain from heaven.

The dome is lighted by forty small windows which pierce it immediately above the cornice which crowns its pendentives, and which, by subdividing its lower part into narrow piers, increases the feeling of its being supported by its own buoyancy.

The interior thus generated,—covered almost wholly by domes or portions of them, each rising in succession higher and higher towards this floating hemisphere in the centre,—and so arranged that one shall open out the view towards the others, and that nearly the entire system of vaulting may be viewed at a single glance, appears to me to be, in some respects, the noblest which has ever been designed, as it was certainly the most daring which, up to that time at least, if not absolutely, had ever been constructed.

Its beauties are of a contrary kind to those of that noblest interior of antiquity, the Great Hall of Karnack, or to those of later ages, the Gothic cathedrals. Both of those gain beauty of effect and an increase of apparent extent through the endless intricacies of their perspective, and the changes of aspect at every step, arising from the multitude of their columns, and from no possible view showing the whole interior at once. This, on the contrary, trusts to the very reverse of all this,—the absence of all interruptions, and the studious distribution of parts, so that no one conceals another, but that the entire building shall be grasped at once by the eye.

I have not seen St. Sophia's, though I long to do so, if only to view a form of artistic treatment so different from what I delight in in our own cathedrals. The internal effect does not, however, trust *exclusively* to this panoptical theory. The contrary theory was too well known from the Christian basilica to be lost sight of in this the greatest of Christian temples. It was, in point of fact, *added* to the other by means of arcades, both in the sides of the nave and in its apsidal projections, opening out mysterious perspectives into the inner recesses of the temple. This union of the more palpable with the more mysterious; of the vast unbroken expanse with the intricately broken perspective, must, as it appears to me, and as I judge from representations, produce an impression more astounding than that of almost any other building; but, when we consider the whole as clothed with the richest beauties of surface; the piers encrusted with inlaid marbles of every hue; its arcades of marble gorgeously carved; its domes and vaultings resplendent with gold mosaic, interspersed with solemn figures; and its wide-spreading floors rich with marble tesselation, over which the buoyant dome floats self-supported, and seems to sail over you as you move, I cannot conceive of anything more astonishing, more solemn, or more magnificent. Well might its Imperial founder exclaim, when, with pardonable exultation, he viewed the result of his costly aspirations,—"Glory be to God, who hath thought me worthy to accomplish so great a work,—*I have vanquished thee, O Solomon!*"

I have dwelt longer on my description of this wonderful building because it is *facile princeps* among structures as the pendentive domical principle, just as the Pantheon had been among those with the simple dome; and as, in after ages, was St. Peter's among those whose domes soared upwards as lofty towers.

I must here close my lecture, leaving the continuation of my descriptive sketch of the history of the cupola, and such remarks as I may have to offer on its uses, its practical application, and its future development, to be followed up in my next.

THE WORKS AT THE ALEXANDRA PARK AND PALACE.

AFTER the unsuccessful efforts made to obtain possession of the Alexandra Palace and the extensive park and grounds connected with it, first by an attempt to form a tontine, and subsequently by the late Lord Mayor and the gentlemen known as the Mansion House Committee, it now appears that it has at length been determined to open the building and grounds upon the same principle as that which has for several years past characterised the Sydenham establishment; and for the purpose of carrying out this object some hundreds of artizans have for several months past been employed in extensive alterations in the interior of the building, and also in the grounds.

As the Palace is announced to be opened in May next, a notice of the works now in progress will perhaps be interesting. Amongst the constructive works going forward in the interior of the structure, a number of plant and flower beds are in course of formation along each side of the main central avenue or nave, from one extremity of the building to the other. These beds, which are oblong in form, are inclosed in walls of Portland cement, whilst at the ends of each bed, running the entire length of the avenue, are pedestals of the same material, on which statuary will be placed, the beds themselves being ornamented with choice trees, plants, and flowers. Fountains, also inclosed in Portland cement, are likewise in course of construction at different points along the avenue. The large pedestals at the several angles of the central transept and dome, and other portions of the interior, supporting colossal statuary, have been artistically decorated, while the statues themselves have also been renovated. The large and powerful organ in the north side of the centre transept has also been elaborately decorated, the capacious and towering pipes on each side having been illuminated and gilt on a mauve ground, whilst the pipes in the centre have a full gilt ground, with enrichments in varied colours. The already spacious orchestra in front of the organ has been considerably enlarged, and now extends the entire width of the transept, its capacity being sufficiently large to accommodate upwards of 1,000 performers.

The space underneath the galleries on each side of the centre avenue is intended to be filled with figures, clothed in the costumes of various countries. These several figures will be placed on an elevation about 3 ft. above the ground-level, and staging for their reception is now in course of erection.

The north-east and north-west transepts respectively are both being converted to different purposes from those for which they were intended when the building was first erected, and the works going forward in these portions of the interior are perhaps the heaviest of the whole. The north-east transept is being entirely converted into an immense theatrical stage, with spacious dressing-rooms, wardrobes, and other apartments, for dramatic and operatic performances. This portion of the reconstructed interior has been designed by Messrs. Grieve & Son, and is being erected under their immediate personal superintendence. The large dimensions of the stage and the apartments in connexion with it will be seen when it is stated that they occupy the entire area of the transept. The proscenium opening of the stage is 36 ft. in width by 37 ft. in height, whilst its extreme width is 85 ft., and 60 ft. in depth from the front of the proscenium. There is a depth of 22 ft. beneath the stage for the working of the requisite machinery, and in connexion with the machinery it may be noticed that for its safe working and in order to prevent accidents by persons falling through the stage when the traps are opening, what is called a "lock-iron," the invention of Mr. Grieve, has for the first time been introduced. The height from the stage-level to the gridiron floor above is 77 ft., and the extreme height to roof, 100 ft. The dressing-rooms, wardrobes, retiring-rooms, offices, lavatories, and other conveniences are at the rear of the stage, from which they are divided by a partition-wall and corridors extending across the entire width. They consist of the ground-floor and story above, approached by spacious staircases, the number and size of the apartments on each floor being uniform. The front of the stage on each side of the proscenium will be handsomely decorated. Ornamental pilasters and mouldings in Portland cement, with carved capitals, will be carried up to a considerable height above the proscenium, and archway springing from the capitals. The space in front, between the proscenium and the archway over it, will be filled in by a large fresco, executed by Mr. J. Absolon, of the Society of Painters in Water Colours. The auditorium space in connexion with the theatre will be that portion of the main avenue immediately in front, with the south-east transept opposite, together with the galleries immediately adjoining, and on theatrical performances taking place that portion of the interior of the palace set apart for the audience will be screened off from the rest of the building.

The concert-room, in course of construction in the north-west transept, will be entirely cut off from the adjoining centre avenue and the south-

west transept, by a main wall or partition carried up to the top of the building, which is now being erected, and which will enclose the area within the north-west transept. The orchestra will be at the south side of the transept, resting upon main walls and columns, now being built, and at the rear of the orchestra, in the centre, and placed slightly above it, an organ will be erected. Retiring-rooms and other apartments connected with the orchestra are also being constructed on each side. The rest of the space in front of the orchestra northwards, on the ground-floor, as well as the gallery round the transept, will form the auditorium. The circular roof of the transept will be shut out from the concert-room by a new and handsomely-decorated ceiling.

The large and prominent building near the summit of the hill, to the eastward of the palace, which was originally erected for the purposes of a gymnasium, is not to be so utilised. Extensive alterations have been made in the interior, with the intention of converting it into dining and refreshment rooms for visitors to the palace, and it is now well adapted for this purpose. There is a large dining-room, which, it is stated, will seat upwards of 1,000 persons, besides numerous smaller rooms for private parties and general refreshment purposes.

Not the least important in the arrangements for opening the palace is the new branch railway from the Great Northern line direct to the building, which is now almost finished, and which will be entirely completed in the course of a few weeks, before the time appointed for the actual opening of the palace. The route to the palace from King's Cross will be by the Edgware and Highgate branch of the Great Northern, which leaves the main line a short distance beyond Finsbury Park. The palace branch, which is about two miles in length, joins the Edgware and Highgate branch not far from the last-named place, and proceeding round to the northwards of Muswell-hill through the valley, by a gradual but continuous gradient, terminates in the park immediately on the north side of the palace, the terrace of the palace forming the roof of the station. The line passes partly through excavations and partly over embankment, and is carried across the valley skirting Muswell-hill by a handsome viaduct consisting of thirteen arches, the entire length of the viaduct being about 500 ft. The viaduct is built of white brick with stone piers, with a blue brick coping. In addition to the viaduct there are also five other bridges. There is an intermediate station between the junction with the Edgware and Highgate line and the palace, a short distance to the west of Muswell-hill. It is a neat and commodious building, containing ladies' and gentlemen's waiting-rooms in addition to the booking-offices. The new branch to the palace has been constructed jointly by the Great Northern Company and the Alexandra Park and Palace proprietors. Access to the palace and park is obtained from the Wood Green station of the Great Northern Company's main line, as well as by the direct branch now being completed; but by the Wood Green route a considerable ascent has to be made through the park before the palace is reached.

The contractors for the works at the palace are Messrs. Kelk & Lucas, Mr. Clemence being the manager in charge; and the contractors for the railway are Messrs. Lucas, Brothers.

ON THE ART OF "SGRAFFITO" DECORATION.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A PAPER "On the Art of 'Sgraffito' Decoration," by Mr. Allen S. Cole, was read at the ordinary general meeting, held on Monday, the 17th, Mr. Thomas H. Wyatt, president, in the chair. We print the pith of it:—

Whilst London contains some of the finest buildings in the world, its miles of shabby brick houses give it a dull air. Coal smoke and fog do not brighten it up, but make what is dull duller. In these times of individuality, cheapness has an uninterrupted sway of its own. The Londoner is free to build the cheapest of houses with bad stock bricks and mortar made chiefly of mud. Perhaps the worst period of cheapness is over; and although London will continue to have acres of little brick streets in the working parts of London, there are signs that Baker-street and Sloane-street in their dull monotony are going out of fashion.

Houses of a rental of 300*l.* a year and upwards have usually a stucco face, and affect some architectural mouldings in cement. At best it is very mean and tasteless. But whilst cheapness must and will prevail as an influential consideration in the erection of houses, I venture to think that the experience of past times shows that there are processes by which even the cheapest brick architecture may be elevated by a little decoration produced at a low price; and I am going to prove this on the present occasion. As an illustration of my precise meaning, I have had a diagram prepared, showing a house front of brick without the vestige of decoration about it. Mr. Moody has prepared a second diagram showing the same house front as it might appear by applying to it a facing of ornamental plaster work, at a cost of say fifty guineas. It is needless for me to say that this method of decoration leaves the style considered to be preferable entirely at the option of the builder, the decorator, or the purchaser, though one dogma should be perhaps laid down in respect to this, namely, that the surface under treatment should be panelled, and the arabesques or ornament placed within the panels. The panels will necessarily follow the prominent constructional lines of the façade, and so will not weaken the appearance of them.

It will no doubt be said that this plaster decoration will become as dirty as the common plaster work which covers modern houses, and that it will require to be protected by paint. This may be so. It should, however, be remembered that at first starting the ground of the sgraffito is of a dark tone, while the upper layer of plaster is white, or light in colour. Therefore the two may become dirty together, but the two colours will remain for a long time in contrast. When they are entirely obliterated the incised ornamentation will always be apparent, and be of service as a decoration in spite of the toning of soot and fogs. It has occurred to me that some modification of the artificial stone manufacture might be usefully adopted in strengthening the plaster, and in perhaps giving it an invisible vitreous coating after the work has been executed, so that from time to time the dirt which would accumulate might be removed from this coating. I have no authority for speaking about such an application, beyond that of my surmises, which go for nothing, since I am no chemist.

At South Kensington various methods of using cement for decorative purposes have been tried by Mr. Moody and the students in training. The practice ground has been the extensive wall surface of the inner side of the new Science Schools, whose façade is in Exhibition-road, opposite to the site of the proposed Natural History Museum.

Sgraffito is the scratching of an ornament upon an intonaco layer applied to a black ground, leaving the white of the intonaco to represent the white forms of the design and the black to represent the black. To fix this preparation of plasters to a wall it is necessary that the wall should be well wetted; in fact, as Cennini has said, "You cannot wet the wall too much." An ordinary "floating" coat of plaster ¾ in. thick is first laid; when this is sufficiently dry,—say in three or four days,—a layer of black plaster not more than ¼ in. thick is then applied; when this latter has settled and is still damp the finishing coat of light-coloured plaster ⅛ in. or less is then laid, according to the delicacy of the work to be executed or the distance at which the sgraffito may be ultimately placed from the eye. This last-named is the "intonaco" or "upper layer" spoken of by Bossi, who, in his "Dictionary of Art Terms and Work," &c., describes "sgraffito" under "sgraffio."

The surface is now prepared for being worked upon, and before the plaster hardens the sgraffito or hatching should be executed. In this respect it will be observed that this method resembles fresco painting, since no more of the surface should be prepared than the artist is able to finish in one day.

Quoting verbatim from Mr. Moody's report on this art, the following is his experience as to the transfer of a design and its subsequent execution on the plaster:—

"Having made a full-sized drawing of the proposed ornament, it can be transferred to the wall by tracing the lines through the paper on to the wet and yielding plaster, or if the drawing is executed in charcoal, it may be printed on the wall by turning its face towards the plaster and rubbing it firmly at the back; then with an ordinary desk penknife, which was found to be the best tool, the artist firmly incises the outline, cutting through the upper layer into but not through the black layer below; he then scrapes away the upper layer and exposes the black wherever black is wanted, leaving the upper layer wherever white is wanted, and in this way any design in two tints can be executed with rapidity and effect. Where large spaces of black occur it is as well to use a broad tool with a square end, which not only removes the upper layer easily and quickly, but gives a tolerably even surface to the layer below. Although designs are very generally executed in black and white, any colours which are permanent when mixed with plaster can of course be used.

Shading by lines can easily be done provided they are not too near together, otherwise the projecting white might be apt to chip off."

As regards the experiment at South Kensington, Mr. Moody says:—

"For the top part of the building (and this also refers to the work down to the first-floor), the first, or floating coat, was composed of 1 part ground selenitic lime to 4 parts of rough sand, and a little plaster of Paris; this coat was three-quarters of an inch thick.

The next, or black layer was composed of 1 part lime, 1½ black oxide of manganese, 2 of Barra shale or clay, and in the upper parts of the building this was three-eighths of an inch thick,—a thickness which was found necessary, at a subsequent stage, to reduce to less than a quarter of an inch.

The third, or finishing coat, was composed of silver sand, lime, and whitening, in equal proportions. This coat was hardly more than 1-16th of an inch thick.

The upper frieze was composed of purple, brown, and a little manganese; the colouring matter being somewhat less in proportion than in the black.

In the second floor, the space above the windows has been divided into panels by a series of styles. These were made in ordinary Portland cement: as the effect was not considered satisfactory, they were afterwards painted maroon with common oil colours.

As the work proceeded, it was discovered that the adherence to the wall in the previous work was in some parts defective, for, on cutting into the plaster in these places, it was seen that the failure was in the first layer. It was first supposed that this arose from the wall not having been sufficiently wetted, or the mortar scraped sufficiently out of the joints, to give a good key to the plaster; and it is not improbable that in the long interval that elapsed between the erection of the carcass and the completion of the building, the walls may have become so dry that they required much more wetting than would have been the case with walls just built.

However, be that as it may,* an experiment with the second, or black layer, proved its expansive powers when setting to be so great, that it may possibly have bowed out with sufficient force to have dragged up the first coat with it. Accordingly, in future work it was determined to reduce its thickness to a minimum. Soap lime was also substituted for selenitic lime in the composition of the black layer.

A change was also made in the first or floating layer, which in future consisted of 1 part selenitic, 2 parts Barra clay, 5 parts coarse sand, but without complete success, as testing the work with a hammer will betray parts that are evidently hollow.

The adherence between the three coats was invariably found to be complete, it was impossible to separate them; indeed, the strength and solidity of the whole slabs or panels were so obvious, that it was thought quite unnecessary to cut them away, although their adherence to the wall was in some places imperfect.

The small panels in the upper part of the decoration above the windows of the first-floor are painted in fresco. Some of the more delicate shadows of the ornament were also painted with a little manganese and water on the coat of plaster, and in some parts, more especially in one of the spaces between the arches on the ground-floor, a whole bay was entirely painted instead of cut. In the centre plaques of the decoration, between the windows, are figures in relief. There are five of these, beginning on the left. The first is modelled entirely in selenitic, sand and whitening in equal proportions. The ground was mixed with yellow ochre; but as this was found to be too soft, the grounds of the other figures were painted with raw sienna in fresco; the second and third figures were mo-

* The selenitic mortar was made by hand, which is stated to be an inferior mode to preparing it in a mill.

delled in the same material as the first; the fourth was roughed out with Beasley's cement, and coated with ¼-inch selenitic; the fifth, the same as No. 4. The above figures are roughly modelled by Mr. Gibbons; their execution did not occupy more than two hours each. The pilasters, with volute capitals, were made of Beasley's cement.

The great mass of the ornament on the ground floor was throughout executed in the way I have already described. There was, however, a slight modification in the figure-subjects which fill the principal panels.

Of these panels (if we count the half-panels at each end) there are seven. The two half panels and the centre panel are modelled; that to the left is entirely in Portland cement. The panels next to the centre are executed in sgraffito, with shadows in lines, similar to the rest of the work; but in the two panels next to the end ones, three instead of two layers have been laid,—namely, first the ordinary black layer, then a gray layer, and last the ordinary finishing coat. To obtain the shadow we cut through the upper coat only; but when we want to come to the background, we cut through both that and the shadow coat. In this way we have produced the appearance of a drawing with tinted shadows, and in this way no doubt still great variety and refinement could, without much difficulty, be produced in sgraffito; for this work, however, it is necessary to devote very considerable care to the preparation of the design, the exact form of the shadow must be clearly defined, and for this reason the preparation of such designs is a most useful and instructive study, but necessarily adds to the expense of the work.

This latter piece of work closely resembles the chiaro-scuro which was frequently adopted in the sixteenth century in Italy, for decoration of façades, &c.

In concluding this description of the South Kensington experiment, I must mention particularly a successful modification of sgraffito which Mr. Moody has tried.

"Having prepared a maroon ground instead of a finishing coat, scarcely more than 1-16th of an inch thick, a layer was laid of light cement half an inch thick, and having traced the drawing, the outline of the figure was cut straight down to the ground; and, clearing away the waste, a projecting slab of the exact figure wished remained. The face was then carved after the manner of cameo-cutting; and in this way a relief, in some respects better perhaps than if it had been modelled; for the degree of relief is more uniform and sculpturesque, while the figures come more satisfactorily off the ground than they would if it were painted."

I think it is apparent, therefore, that Mr. Moody has more or less availed himself of precedents which exist for the various uses of stucco supplied by Italian artists of the sixteenth and seventeenth centuries, and by the Tuscan architects and decorators especially.

Of the origin of sgraffito I believe it is difficult to speak with anything like accuracy. The Italian artists employed stucco considerably in the decoration of the Vatican, both for modelling and for painting upon. Hence, from this latter use of plaster were revived the various methods, more or less similar, which went by the names of "painting in fresco," "intonaco," "terrata," &c., which, as the earliest examples of wall-decoration indicate—the wall paintings of Pompeii, for instance—were known to artists practising thousands of years ago. It is not unlikely that sgraffito is an offspring of cameo-cutting. They both are arts having limits analogous one to the other. The artist who designed and executed a cameo limited himself in materials and colours. He depended solely upon the variations of layer which a stone possessed. In the same way the sgraffito worker, relieved certainly of the trouble of finding a suitable combination of layers, since each combination is under his control, limits himself to the variations he can obtain from the two layers of oppositely coloured plasters. But Vasari and Bossi, who both describe the working of sgraffito, throw no light upon its antecedents.

In the South Kensington Museum there are specimens of stucco ornamental panels which date from 200 B.C. These panels came from Pozzuoli, near Naples, a village known in centuries past for its abundant examples of stucco work. Some of these panels are unmistakable bits of sgraffito, the marks of the hatcher being quite apparent.

And here I may interpose that sgraffito, as an art applied to other materials, is well known in India. Metal sgraffito is, I believe, of ancient origin. I have not, however, pursued my inquiries as to the archæology of this particular work. It is interesting to note that from Moradabad we have specimens of a leaden ornamentation upon a ground of copper, which are executed precisely after the manner of sgraffito in stucco. Then, again, from Kachmir come silver-gilt works, in which the gilding is scratched away to reveal the background of pure silver, while the gilt ornament remains on its surface. In like manner, a ground of lac applied to pottery is scratched into ornamental forms, of which the pottery *in puris naturalis* is the ground. At South Kensington Museum there is a case entirely occupied by specimens of sgraffito pottery, Italian in origin and of the fifteenth century. From this ware the Italian artist of the fifteenth and sixteenth centuries possibly obtained the suggestion for the revival of sgraffito as a means of decorating façades of houses.

In the course of my researches, which I regret are so slight and hardly worthy of your attention, I have been reminded of the plaster-work to be found in Northern Germany. The examples I particularly allude to are those at Hildesheim and Halberstadt, and date from the eleventh century. These works are not sgraffito; they are low-relief stucco figures. I mention their existence here as an evidence of the lasting powers of the material when fairly protected, and also as a species of connecting-link between the stucco of Pozzuoli and the revived use of it by the Italians in the fifteenth and sixteenth centuries.

During this period great quantities of decoration were executed in plaster. Perino del Vaga, Domenico Beccafumi, and Giovanni da Udine produced works of this kind. But none of these appear to have executed sgraffito decorations. The artist who turned his attention, and, from the works I have consulted, seems to me to have really instigated a revival of sgraffito, is Morto da Feltri. The especial bent of his art was the invention of arabesques and "grotesche." He was a recluse, and apparently embued with strong conservative principles. He devoted himself to discovering examples of the style of art he affected, and his devotion caused him to spend a good deal of his time in the subterraneous passages at Rome, in which he gratified his fancy by the study of the arabesques and such like, which were painted on the walls.

In closely following the footsteps of the Italian masters, Mr. Moody has allowed himself to be tempted into painting the arabesques upon the plaster, instead of hatching them. The result of this is in effect as good at first sight as the real work. But in a short time the accumulation of blacks, soot soaked into the flat surface by rain, reveals the disadvantages arising from such a method of decoration, which cannot, I think, compete with the real work. I humbly submit that sgraffito should be sgraffito, and an imitation of it not be encouraged. I may add that the painted work at South Kensington will shortly give place to the real art.

SPECIAL DWELLINGS COMMITTEE.

THIS committee appointed by the Charity Organization Society held its third meeting on Wednesday, the 12th inst., at the Central Office, the Right. Hon. W. F. Cowper-Temple, M.P., in the chair.

The sub-committee brought up a report, containing a summary of the suggestions which they have had before them:—

"1. Chart indicating the dwellings more or less unfit for habitation in the central parts of London, and showing, as far as practicable, the tenure of the houses and land.

2. Information: (*a*) As to the nature of the dwellings now occupied by the poorer classes in the several districts of London, number of families occupying single rooms, rents, &c. (*b*) As to associations and individuals known to be engaged in improving the dwellings of the poor in London. (*c*) As to the operations of private builders.

QUESTIONS OF PRINCIPLE.

3. The extent (if any) to which principles other than commercial should intervene in the provision of improved dwellings for the poorer classes.

4. The influence of unremunerative rents on the movement for improving dwellings.

5. Bearing of City and other Charities on Metropolitan dwellings for the poorer classes."

And various questions of detail.

The committee then proceeded to consider Clause 3.

Mr. A. H. Hill was of opinion that it was impossible to benefit the people at large by charitable interposition; that indeed any such interposition, if not absolutely necessary, tended only to demoralise. He proposed a resolution, but withdrew it in favour of the following resolution suggested by the Rev. R. J. Simpson, "That in providing improved dwellings for the poorer classes in the metropolis, while by no means discouraging the combination of a judicious philanthropy with business enterprise, this committee considers that a reasonable profit on the outlay must be obtained in all such efforts in order to insure extensive improvement and permanent success."

The Chairman thought that charity and the commercial principle should be made to co-operate, by investors contenting themselves with a regular but moderate dividend.

Mr. Liddle urged the importance of keeping in view the gigantic scale of what was required. He considered that at least two millions of capital would be wanted. But no scheme could succeed unless compulsory powers of purchase were obtained from Government.

Dr. Ross said the question was too complicated and vast to be settled offhand: they could only work away. In his own district of St. Giles's, about one-third of the deaths took place under the care of the Poor-law Medical Officer. How did these people live? In dwellings unfit for any human being. Charity could not deal with so vast a work. There were at present 2,000 tramps and people of bad repute in St. Giles's, with whom nothing could be done until their dwellings were reformed.

Mr. Gilbert said that there were some properties which it would be no charity but a mere act of justice to sell upon easy terms for this purpose. He referred to the property of the corporation, the Ecclesiastical Commissioners, and the Metropolitan Board of Works. Few people had any idea of the injustice done to the poor of late years by wholesale ejectments.

Mr. Gatliff thought it was desirable that companies like the Industrial Dwellings Company, which could do so, should declare a large dividend of 6, 7, or 8 per cent., both to stir up ordinary builders and to encourage others.

Mr. Bosanquet thought it was desirable to come to a resolution, to clear the way for future discussions on details. It seemed to him that there were three ways of improving London,—the enterprise of ordinary builders, the enterprise of building companies, and Improvement Commissioners with compulsory powers. It was an important question how far encouragement given to the two last would check the action of the first.

Dr. Greenhill referred to the statement that two millions of capital would be required. He had made a rough calculation many years ago, and had come to the conclusion that some twelve millions would be required to improve the dwellings of the poor throughout London. He would not despair of getting this on a good scheme likely to pay from 4½ to 5½ per cent.

Adjourned to Wednesday, 26th inst.

VIENNA EXHIBITION.

RAPID progress is being made with the works, and the marvels of the building are becoming more and more apparent. The chief difficulty that looms in the way of visitors is the possible want of sufficient apartments. To lessen this, and prevent imposition, the Austrian Minister has decided that official register bureaux are to be established in each district, appointed by the municipal authorities, to keep a list of disposable lodgings, and refer arriving strangers to such as are vacant.

Bookbinding.—Here, there, and everywhere handsome things have been prepared for the Exhibition. We have inspected with much gratification a number of fine specimens of bookbinding which are about to be sent off by Mr. Joseph Zaehnsdorf, of Catherine-street, Strand. These include a copy of the Doré Bible, in two volumes, bound at a cost of more than 300*l.* The patterns are produced by inlays of different coloured leather, in one case separated throughout by a gold line, in the other not so: the change on the colours produced by the gold line (well understood by those who have studied the subject) is very interesting: it is difficult to believe that the colours are the same. The design of the exterior is a little over florid: we prefer that of the inside, as being more severe. In both, however, the forms are beautifully kept, and the execution is excellent. Mr. Pfander has assisted as designer. Some of the smaller books show beautiful specimens of tool-

ing, and the whole makes a most creditable exhibit on the part of Mr. Zaehnsdorf. The demand for high-class bookbinding is much less than it used to be: cheapness is the object chiefly aimed at now; and the result, unfortunately, is that the number of workmen capable of executing first-rate work in this line is small.

Tiles and Slabs.—Mr. R. Minton Taylor, of Fenton, will show a fine collection of plain, encaustic, and majolica tiles, majolica slabs, and other similar objects. At each end of the wall-space will be shown a complete piece of wall-tiling, including dado, wall-space, and cornice. Both compositions are Classic: that on the left hand is characterised by simplicity of design, while that on the right, composed mainly of majolica tiles in relief, is rich and ornate. Between the two are shown the principal members of a tile reredos, with large pictorial representations of the "Agnus Dei" and "The Pelican in her piety." Several sections are to be shown of an exceedingly rich and elaborate floor which Mr. Taylor is laying at Biddulph Grange for Mr. Robert Heath, and there is also a specimen of a reproduction of a tiled floor of the thirteenth century. The exhibits have been produced under the art-superintendence of Mr. G. Eyre.

DESIGNS FOR THE HÔTEL DE VILLE, PARIS.

FROM the 66 designs submitted, the jury selected 20, the estimates of which ranged from 7,088,761 francs to 19,500,000 francs. The authors of these will all be rewarded. The author of the design standing first will have the direction of the works in carrying it out; the authors of the 2nd, 3rd, 4th, 5th, and 6th will receive respectively 600*l.*, 480*l.*, 400*l.*, 320*l.*, 200*l.* The remaining 14 will receive 100*l.* each, all the premiated designs becoming the property of the Administration.

Ultimately the design of Messrs. Ballu & Deperthes, architects, was selected for execution. The estimated cost of this is put at 13,884,839 francs.

THE NEW TRINITY COLLEGE CHURCH, EDINBURGH.

THIS church is the first edifice erected in one of the new streets opened up by the City Improvement Trust, to be called Jeffrey-street. It is the substitute for an ancient church founded by Mary of Guelders, the consort of James II. of Scotland, in 1462, which was removed several years ago by the operations of the North British Railway Company. This building was, next to Holyrood Chapel, the best example of Mediæval architecture in the city, and consisted of choir, transepts, and aisles. Before taking it down, correct drawings were made, and the stones numbered and carefully removed to a vacant space of ground, with the view of their being reconstructed in the original form.

A lawsuit ensued between the ecclesiastical and municipal authorities as to the disposal of the compensation received from the railway company, which caused many years' delay, and the idea of re-erecting the original church in its entirety was ultimately abandoned, the funds set apart for a new church being insufficient for that purpose. It was resolved, however, to preserve a portion of the original work, and this has been done by making out of the old stones a hall at the rear of a modern church, designed by Mr. Lessels.

The principal elevation is to the north, and consists of a gable, having a tower and spire to the west rising to a height of 115 ft., and to the east a turret roofed in with stone. In the side elevations all attempt at architecture seems to have been abandoned. They consist of a double row of shallow lancet windows, without mouldings or detail. You are supposed not to look round the corner, and yet it is only by so doing that you can see the restored portion, which is decidedly the best worth looking at; and, so far as it goes, the restoration has been carried out in a conservative manner, no attempt having been made to blend old and new masonry. The contrast between the massive boldness of the fifteenth-century work and the flimsy, shallow, characterless work of the nineteenth century is very observable. Why the fine old work should have been thus pushed out of sight, we cannot say. Had it been placed in front, and made as a nave to the preaching-hall, the effect would have been more satisfactory. In the front elevation an attempt has been made to follow out the style of the original, but the attempt has not been a successful one. The best feature is the spire, which has a certain sturdy character about it such as is found in several ancient Scottish examples.

The interior is fitted up with galleries on three sides, supported on iron columns, which are carried up to support a lath-and-plaster arched ceiling, as to which the less said the better. The pulpit occupies the centre of the south side, and on either side of it appears an arch of the ancient aisles, through which a view of the restored part, with its groined ceiling and traceried windows, is obtained. Here again the contrast between the new and the restored old part is very remarkable. One cannot help feeling that if left to the hand of time, the fifteenth-century work would stand hale and sure when that of the nineteenth has crumbled into dust.

THE PAINTERS' COMPANY AND TECHNICAL EDUCATION.

THE Painters' Company was one of the first of the City guilds to move in the direction of technical education, as earlier volumes of the *Builder* would serve to prove. Our advertising columns last week contained fresh offers of premiums from the company for the best specimens of decorative painting, freehand drawing, and so on, not very large, but sufficient to show the company is aware of its duties, and is trying to perform them. We invite such of our readers as these offers concern to obtain the conditions from Painters' Hall, and to compete for the premiums offered. We shall hope to find some really good works sent in.

The company is also arranging for the delivery of lectures, likely to be of advantage in the education of the trade. Mr. John Gregory Crace, now Renter Warden of the company, and who has always shown himself ready to communicate his knowledge and the results of his large experience, will commence the series, on the 15th of May, with a lecture "On Colour, addressed to Operative Painters." Any one who desires to learn can go: there is nothing to pay. Let our young men wake up and look about them. But they must remember it is of no use *merely* looking about: they must go to work resolutely and continuously. The efforts of others in their behalf will be of no avail unless they make efforts for themselves.

THE HOUSES ON THE WALWORTH COMMON ESTATE AND THE BUILDERS.

THE Newington governors and guardians, who have the management of the Walworth Common Estate, are making serious complaints against certain builders of houses on the estate, for violating the terms of their agreements as to the materials used in the buildings, and the conduct of the builders has been the subject of severe animadversion at the last two or three meetings of the Board. The builders are charged, amongst other things, with building on surface-soil foundations, contrary to the agreements into which they have entered. At the meeting of the Board last week, Mr. Malthouse, one of the members, stated that the manner in which some of the houses were run up was simply shameful. Instead of concrete being used as a foundation, they were built on soft clay, and in the case of some of those which he had examined, he was able to pass his stick through it to the extent of between 2 ft. and 3 ft. It having been stated that an explanation on the matter was due from Mr. Jarvis, the surveyor to the estate, Mr. Jarvis said that, as their surveyor, he had purposely attended the meeting to confer with the Board on the subject. He then made a statement which reflected much discredit on the builders. He observed that he was in a great difficulty in the matter. He had done all he possibly could to prevent the use of inferior materials in the construction of the buildings. He had written no less than 800 letters, the whole of which contained complaints as to using bad materials. What Mr. Malthouse had stated was perfectly true. But as matters stood at present he was almost powerless. He had time after time threatened to withhold the certificates of the builders, and in one or two instances he had actually done so. When he had seen bad mortar on the ground he had ordered it to be removed, and yet two hours after he had found that it had been brought back again. There was also a difference of opinion between himself and the estate committee. What he had condemned as bad material they had considered to be fair.

After some discussion, it was resolved to take practical action against the offending builders, and a resolution was passed to the effect that when the surveyor considered there was sufficient reason for withholding the certificate he should do so.

Another resolution was also passed affecting persons who have taken plots of land, but who have not built upon them. This resolution was to the effect that instruction be given to the clerks to serve notices upon those takers of land who as yet had failed to commence building, requiring them immediately to commence operations, upon pain of incurring the forfeiture of the money deposited by them at the time of letting, and their interest in the plots of land taken by them.

PROCEEDINGS UNDER THE NEW SANITARY ACT.

Rotherham.—The joint committee, consisting of representatives from the urban sanitary authority and rural sanitary authority of the union, and the Rawmarsh Local Board have met for the purpose of appointing a medical officer of health for the whole union (excepting Wath), at a salary of 600*l.* a year. The voting was conducted on the ballot principle. There were six names before the committee (Mr. A. W. Babbington, London; Dr. Cobham, Wath; Dr. S. Drew, Chapeltown; Mr. J. N. Fox, London; Mr. W. H. Pearce, Rotherham; and Dr. Edmond Syson, Salford), and out of these Dr. Syson was selected.

Malton.—A joint meeting of the Boards of Guardians and of Health has been held to elect a medical officer at 300*l.* a year for three years. There were five candidates, but the voting was between two local applicants, and resulted as follows:—Dr. Young, 14 votes; Dr. Jones, 13. For the office of nuisance inspector there were eight applicants, salary 150*l.* a year. The voting again was between two local men, Mr. C. Marshall, 16; Mr. J. Marshall, 12. The officers are to enter on their duties (which are not necessarily to claim their whole time), on the 29th of March.

Howden.—A meeting of the guardians of the Howden Union has been held for the election of an inspector of nuisances. There were upwards of twenty applicants for the office, but only three candidates were proposed:—Mr. Alfred Hind, of Rowland Hall, Howden; Mr. Thomas Shaw, of Newport; and Mr. Millan, of Bradford. Mr. Alfred Hind was elected. The salary is to be 156*l.* per annum; the inspector will be expected to devote the whole of his time to the duties of the office, and the appointment was made for one year only. A communication was read from the Goole guardians suggesting the desirableness of a Medical Officer of Health being appointed for a district to consist of the Howden, Goole, Thorne, and Selby unions; but the opinion of the guardians seemed to be decidedly against any such amalgamation. A deputation was appointed to attend a meeting to be held at Beverley, to consider the best means of appointing medical officers for the various unions in the East Riding.

Southport.—For some time past the question of electing a Medical Officer of Health for the borough of Southport has been provocative of much discussion and considerable excitement. The town was divided into two parties, one going for a medical officer of health, part of whose salary (300*l.* a year) should be paid by Government, and the other insisting that the remuneration should not exceed 100*l.* a year, that sum to be paid by the council, ignoring Government assistance altogether. The question culminated at the last monthly meeting of the borough council. The town clerk read the recommendation of the committee that the salary of the medical officer should be 100*l.* a year. An animated discussion ensued, in which the later decision of the general purposes committee was severely criticised. It was eventually resolved that a medical officer should be appointed at 100*l.* a year salary. Had the 300*l.* been voted, a town's meeting would have been held, protesting against the action of the council.

Institution of Surveyors.—The next meeting will be held on Monday evening, March 24th, when a paper will be read by Mr. W. Brown, entitled "Beech Woods and Larch Plantations."

ARCHITECTURAL SKETCHING.*

HAVING arranged your materials for, say a day's sketching (a sketch-book, Winsor & Newton's B pencil, pair of calipers, a foot-rule, and a plummet will be sufficient), start on your journey with a determination to learn as much as you possibly can. You should carefully observe every building you pass, endeavour to pick out its defects if it have any, and endeavour to avoid them in your own designs.

If, in walking along a country road, it is lined on the sides with various kinds of trees, secure a specimen of each leaf, with its name, and sketch it in your note-book at your leisure,—with flowers do the same,—and, in fact, lose no opportunity of adding to your stock of knowledge. Nothing will ever come amiss to you as an architect. If you pass a farmstead, ask permission to look over it. If the byre or stable seem suitable and convenient, measure them. Look into the piggeries. If a carriage or cart be lying about, get width, length, and height of ceiling necessary in a shed when the shafts are up; the width and height of a cart of hay; the size of the mill in the barn, and other matters which will suggest themselves on the spot,—all these bits of information enter in a note-book kept for the purpose. Wherever you are keep this in practice, and in a year or two, by constant attention to it, you will find that you have amassed an amount of information which will be almost invaluable to you in your daily professional duties. Sir Walter Scott is said to have been able to increase his store of knowledge from the humblest and most ignorant. Keep this in mind; and even if you pass a hedge-trimmer, you may learn from him what kind of a hedge he is trimming, the best age and the best way to plant it, and how long it takes to grow a certain height. This information will enable you to write a concise specification of it in your note-book for future guidance if you should ever use one as a boundary for a property.

An ancient philosopher was asked how he had gathered such immense stores of knowledge as he possessed, and his answer architectural students should constantly keep before them. "I was not ashamed," he said, "to ask questions wherever I was ignorant." But through all this miscellaneous observation you must never forget the principal object of your journey, namely, to sketch Mediæval architecture. When you have arrived at your destination,—let us suppose it to be a parish church,—look carefully at every part of it, both inside and outside. Endeavour, according to your ability, if it contain both early and late work, to fix the various dates in your own mind, which you can compare with some reliable authority at your leisure (not sextons, who are sure to talk about this church having been built in the ninth or tenth century, although it may have been the fifteenth really, but some architectural authority if possible). Having done this, proceed at once to measure and sketch all the early work you can find. Suppose you commence at a doorway: remember all details first, general dimensions next, and ornament last. Take a section of the jamb, with all the measurements and joints, where they occur, carefully marked; get, in fact, the construction of it, then of the arch-mould and dripstone, the caps and bases of pillars, an elevation with all general dimensions, the jointing of arch, of the base of the building, and of the wall in which the door occurs; then sketch the caps and ornament to a large scale, and endeavour to make a regular study of the ornament. Through all this do not hurry. It is not rapidity in sketching and measuring you ought to wish at first to possess, but accuracy, thorough command of and acquaintance with early features, the mouldings, the ornaments, and all detail generally connected with early work.

After you have measured as much detail as time will permit, proceed to write concise notes of the church, which, by-the-by, is almost as important an accomplishment to architects as anything else, and conclude your study of it with a general sketch, with your notes, dates, and modern features, if any, marked on. Never omit to do this, as it is as particular a part of the day's proceedings as any details you may measure.

If you have a will, your progress will be rapid and sure. It is not to be expected that at first you will be able to hit the exact character of the mouldings, that your measurements will be neatly taken, or your perspective sketch precisely accurate, but if you persevere and constantly practise, you will soon train your eye to precision, and rapidly become an expert in sketching and measuring old work.

If you go on a regular sketching tour, never fail to add to your stock of materials the following:—A camp-stool; a drawing-board, about 12 in. by 9 in., would suit very well; a suitable T square; a bottle of ink; and an etching pen. Then set your measurements up on the spot; in fact, always do this where time permits: it insures accuracy, and prevents the odious system of "cooking" your sketches afterwards.

Take your perspective sketches with ink, and, above all, do not hurry. When you draw a line, endeavour to draw it correctly at once; for it is not by dashing in a line and pasting it over with line after line, until you hit upon the correct slope or curve by accident, that you will attain anything like good or satisfactory sketches.

What to sketch is almost as important as how to sketch. If you have a tendency towards church architecture, sketch little if anything but church architecture; if to domestic architecture, sketch little if anything but domestic architecture; because so much energy is lost in endeavouring to master a number of different styles, that it generally results in learning none.

We cannot attain eminence in every style, and the only way to make ourselves eminent at all is by concentrating our whole energies on one particular style, and, I hold, one particular branch of that style. If Mr. Street had studied a variety of styles, or even the miscellaneous application of one style, I do not think he would have occupied at the present day the high position he holds as a designer of ecclesiastical work. We do not hear of men attaining eminence in a variety of accomplishments, but generally one in particular upon which they have bestowed all their attention, and lavished all their resources.

I would therefore encourage architectural students to centre all their attention on one style and one particular application of it, although in a pecuniary point of view (in some cases) it may be disadvantageous. Bad points exist in early work as well as in late; but bigotry prevents a large class of draughtsmen from acknowledging it. These bad points practice and experience only will enable them to discern and avoid.

The benefits of architectural sketching are numerous and important. It trains the eye to a thorough knowledge of perspective; in fact, it is the only proper method of studying perspective; it educates it almost insensibly to an improved idea of form and proportion, and to that subtlety of beauty in old work so difficult to successfully originate; it gives the hand a facility in representing original ideas on paper, and often of an artistic manner of handling them, often tedious otherwise to learn. By measuring them, it acquaints you with the size and appearance of mouldings of particular dimensions, and both this and the material in which it is executed has an important bearing on its character and manner of introduction into modern work which mere sketches without measurements would be totally insufficient for.

By sketching and measuring old work you preserve for your own future reference, or perhaps for publication, details and characteristics of buildings which will soon be in so dilapidated a condition as the character of the mouldings to be undistinguishable,—buildings which are, in the words of Viollet le Duc, "fast disappearing like the leaves in autumn."

Students will some day become architects. Architects' qualifications are onerous and almost without limit. A recently published letter puts this forward well. It says "that of course it is to be expected that an architect shall be able to design buildings which, in a general way, shall combine beauty with soundness of construction, but such a general description does not agree with the views of the present age, and we find him required so to understand the various uses to which buildings are put that he may be able to arrange a plan which shall completely answer its purpose, whether it be for a church, school, town-hall, or warehouse: then he must be a complete master of the various styles of architecture; able to design in any of them, and adapt his building to every peculiarity of any particular style; he must also so understand the various methods of construction that he can give minute directions for executing the several works, whether in brick, stone, wood, iron, glass, or any other material, to their smallest details; he must have the law of contracts at his fingers' ends; understand all about valuations, dilapidations; be able to take out quantities; have a thorough knowledge of the prices of materials and labour in all parts of the kingdom, and to say at a glance how much a building will cost,—to be, in fact, a complete surveyor and lawyer; to say nothing of understanding statics, dynamics, resolution of forces, and all the usual requirements of a civil engineer. As if this were not enough to try one man's brain, we are now contir.ually told that an architect should design the furniture; be able to give models for the carving, designs for stained glass, paperhangings, decorations, carpets, curtains, &c., in addition to the more mechanical portions, as kitchen-fittings, heating apparatus, water and gas supplies, bellhanging, &c. But even this is not sufficient! He is encouraged to spend a good portion of his time in study of high art, figure-drawing, water-colour painting, &c. Then he is to have Nature herself so completely under his control that he shall be able to mould her forms, and as a landscape gardener bring out the varied beauties of the country around his building to their greatest advantage."

Now, as will be seen from this long list of duties, it is essential that all young men during their pupilage should prepare diligently for the work of the future. Sketching is an admirable thing, but it must (like everything else) be done in moderation; there are some who cultivate it too strenuously,—every spare moment is spent in endeavouring to forward themselves in this particular branch. This is a proceeding I strongly deprecate, because, as I have shown, there are responsibilities resting upon them requiring thorough knowledge, skill, judgment, and integrity; and if they do not, as assiduously as in sketching, bestow a proportionate amount of their spare time on the study of the other branches of their profession, according to their importance, how is it to be expected that, when called upon, they will be able to discharge the responsibilities incumbent on them satisfactorily?

These, as some think, subsidiary studies, I consider very important; and although progress in them is slower and less evident, still it will be found in the end that the earnest study of them will more materially contribute than sketching to real intellectual enjoyment and social position.

* From a paper read by Mr. Thomas P. Marwick before the Edinburgh Architectural Association.

DESIGNERS FOR MANCHESTER.

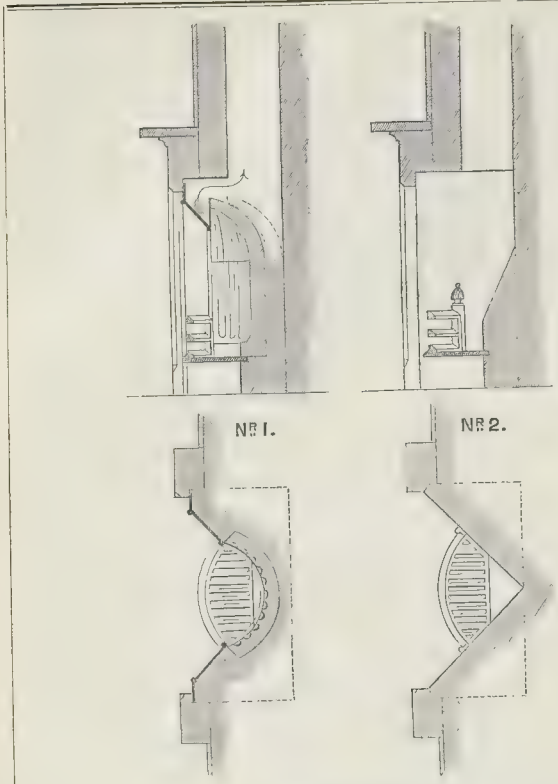
THE report of the head master of the Manchester School of Art, Mr. Muckley, has been printed. We give the concluding portion of it:—

"It has been thought by a few that the chief business of this school is to supply designs for calico printing, and that it ought to educate youths for the immediate purpose of this department of manufacture. Last year, in my report, I just touched on this question, as to what I considered our main function here, and I wish now to go a step further in my views on this head than I did at that time, by stating to you that it is my conviction that we have nothing to do with technical teaching of any kind, nor the special preparation of students for any calling whatever. Our duty, pre-eminently, is to educate the public, and to spread art-education in its simplest and best form, independent of its bearing on any particular manufacture, taking whatever material may be placed in our hands—no matter whether it be that of the artizan class, or that of the wealthier classes of this neighbourhood,—and dealing with it from the broadest possible basis as to the distinguishing characteristics of art-knowledge.

You well know the peculiar demands of different markets at the present moment, and how small a proportion of the designs supplied would bear the criticism of the cultivated ornamentist; and from a business point of view we are conscious that this must necessarily be so, but I am sure you will also see how false would be our position if in this school we attempted to meddle with their requirements; indeed, we should sometimes be found administering to the caprice of the lowest taste, and I should not be surprised if the Bushman himself were to make demands at our hands.

Now with respect to designing for textile fabrics generally, I am very anxious that this institution should do its utmost to help it forward, and I will state to you my views as to what course might be taken to this end in the future.

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Economical Fireplaces.

Repeatedly have I tried to arouse attention to the matter, being sure the day was near at hand when a demand on our native talent would be made, and I have twice before stated in my former reports, that which I now desire again to bring before you.

I am of opinion, then, that manufacturers should make arrangements with their apprentices, at the commencement of their engagement, to attend the school, in order that they might obtain an art-training up to a certain point, which should be as follows:—To be able to draw fairly, whether from the cast or otherwise, afterwards to draw and paint from natural flowers and foliage. This would form the most important department of their study; and then a close intercourse with ornamental works, through the medium of books and photographs, independent of any particular relation to textile fabric, or other material, with as much drawing of the human figure from the cast as possible.

This training would take about four years to pass through if a student attended the school four nights a week, and after an education of this kind, he would probably be ready to commence his future occupation as a designer, but not before.

When this has been accomplished,—I do not say that some arrangement might not be made for the pupil to receive special instruction suited to the technical requirements of his profession, from some one having superior acquaintance with ornamental design, and with the peculiar requirements of the different markets; but, certainly this school is not the place for that.

One vital point, however, I have not yet put before you; indeed, it is the motive power of the whole affair,—it is the question of emolument.

In Manchester there are ready occupations for youths about fourteen years of age, nearly all of which yield higher wages than those obtained by young designers; consequently, the best students in this school are wishing to avoid designing as a profession, and I therefore strongly feel, that if their services are to be secured, a higher rate of payment should be held out to them, as an inducement to begin their term.

The thoughtful young men of this money-getting city must be made to see clearly that they are likely to do better, or at least as well, at the profession of a designer as they will in all probability do by attaching themselves to any other calling; and, until they have this assurance, they will reasonably seek other employment for their life's work, and the demand for good designers from our own people will be made in vain."

ECONOMICAL FIREPLACES.

THE drawings appended show two forms of fireplace that have been proved to be excellent for the three essentials of heat-giving, non-smoking, and thorough combustion. No. 1 was introduced in Leeds, by whom I do not know, about twenty years ago, and proved an almost certain cure for smoky chimneys. In combination with a half-register grate (*i.e.*, the front portion only of a register grate), the opening of which must be circular in form, is used a back of fire-clay in two pieces,—a half-drum and a half-dome,—the former backed up solid with ordinary brickwork, and the latter resting loose upon the top of it, to allow of the opening for smoke being adjusted and the draught regulated by moving the dome backwards or forwards, and to allow of the chimney being swept, for which purpose the dome is tilted back. The heat thrown out is intense; and until I had made trial of No. 2 I considered it to be the best form of grate for obtaining the full effect of the coal, and for securing freedom from smoke. In the latter respect, there is, probably, no better.

No. 2 form has been long used, I believe, in the Midland district; but my first knowledge of it was derived from Mr. Ewan Christian, who had seen it in York, noticed the good qualities, and adopted it in his practice with great satisfaction. First trying it in my own offices, I have since used it frequently, and always with more satisfaction. The draught is good, without being too quick; the consumption of coal is perfect; and the heat thrown out when the fire is in full glow is like that of a furnace.

To secure the best results, however, there are some points to be attended to:—the angle must be exactly 45°, so that the two sides form a right angle when they meet; the front bars of the grate should *bevel inwards* to the fire,—this is especially necessary with the bottom bar and the top bar; the bottom grid must be below the level of the bottom bar from ¼ in. to ½ in. In *any* grate this is most important, to prevent the fuel falling out whenever it is disturbed, and it is a point regarding which makers of grates are very careless, if not ignorant.

The sides may be built with firebrick, or fire-lumps entirely; but I have used glazed white brick, and glazed tiles, sometimes for the front portion of the jambs, and occasionally for the whole depth, according to the importance of the room.

If a fire be *made up* in a grate of this description,—small coal freely used on the top, and left untouched,—it will burn for four hours, the firebrick becoming red-hot, and the coal slowly consuming, leaving nothing but small ash. After burning some time, the glow will diminish; and if it be desired to renew it, with the poker clear away the ash from the bottom grid, and the current of air thereby allowed will effect this without disturbing the upper portion of the fire. I have said four hours, but the fire beside me just now was made up five hours ago, and it would last another hour. W. R. CORSON.

THE DURABILITY OF IRON ROOFS.

SIR,—Last Saturday (3 p.m.) I was at Cannon-street Railway Station waiting for a train. There were no trains in motion in the station at the time. I was standing immediately under some part of the ironwork of the roof, when something fell upon my hat, which, on inspection, proved to be a piece of paint and rust half an inch long and as much broad, and in thickness the paint, I should say, was about two coats, and the other part, which was red rust, might have been as thick as a florin. If rust is forming in such flakes on the supports of *that* roof, so it must be elsewhere; and what will be the ultimate result of such corrosion? The sample of rust that fell into my hands showed that paint had been used; but the growing rust had lifted it up and thrown it off, so that spot is now bare, and oxidation going on; and it is a natural conjecture if we say that the process of decay is actively at work. I do not wish the railway authorities to suppose that I am finding any fault with them, but, nevertheless, they ought to know it, and if the *Builder* will kindly tell them what I say, they may by prompt action conserve their property and save money otherwise.

While I am "on the line," allow me to suggest that some precautions against loss of life be taken at the Spa-road Station, where the platform and its approaches are not commodious enough. The platform is only a few paces wide, and trains come up at each side of it. Some of them pass it at full speed; and it is terrible to stand and look on, and even more so to be in the train itself, and feel like another Juggernaut.

EDGAR REDMOND.

CASES UNDER METROPOLITAN BUILDING ACT.

Wooden Projections.—Mr. Preedy, builder, was summoned by the district surveyor of South Islington, under the 26th section of the Building Act, for having put up an outside flight of wooden steps leading to an upper workshop, at premises Kingsland-green, such steps, with landing (at first of wood, but altered to stone), projecting 3 ft. from the face of the wall of the workshop.

The defendant contended that it was not a projection, that the district surveyor had said he would not object to portable steps, and that these were portable.

The surveyor answered that these could not be carried by one man, if by two; and were such a substantial projection of wood as he had no power to permit.

The magistrate, Mr. Barker, ruled that it was a wooden projection, and ought to be removed. Ordered to be amended within fourteen days, and defendant to pay 23s. costs.

Defendant asked for a case for the Queen's Bench, but took the advice of the magistrate not to press his request, and agreed to amend.

FINANCES OF THE INSTITUTE OF BRITISH ARCHITECTS.

AT the general meeting, already referred to, a financial statement, giving an estimate of the annual receipts and disbursements of the Institute, as approved by the Council, and enumerating the investments made and the exceptional expenses incurred within the last four years, having been laid before the meeting, the following proposition of the Council was submitted for approval:—"That in order to meet the xcesse of disbursements over receipts in 1872-3, occasioned by exceptional expenses during the last four years, the sum of 300*l.* sterling, being accumulated surplus income invested in 1869, be sold out of Consols, and applied as the Council may direct."

After some discussion, during which it was pointed out that the sum of 300*l.*, would probably be insufficient to clear off all liabilities within the present year, the following amendment, having been duly proposed and seconded, was put to the vote and carried:—"That in order to meet the accumulated liabilities at the close of 1872 (shown in the printed statement now before the meeting) the Council be empowered to sell out stock to the amount of 500*l.*"

The amendment was then put as a motion, and carried.

CORPORATE POLITICS *versus* PUBLIC HEALTH.

IT is a fundamental rule in that most excellent and successful system of Poor-law relief, now known as "the Elberfeld system," that all selections and appointments are to be made without reference to politics or religion, or to any consideration save fitness for the office.

The admirable results of the working of this method of proceeding testifies to the correctness of the judgment of Daniel Von der Heydt, the eminent and able founder of the system pursued at Elberfeld. Great would be that gentleman's surprise if he had before him a full report of the proceedings of the Dublin Corporation, on a recent occasion, when that body met, not for the purpose of discussing matters which pertained to itself peculiarly as the sanitary authority of Dublin, but for the consideration of the *Government University Bill*.

We have before us a report of the proceedings in question, and we must not omit to state that there could be no excuse for the proceedings, on the score of inexperience or want of knowledge of the proper functions of a corporation; for the chairman of the Public Health Committee endeavoured to bring the members present to appreciate the objects which should occupy the attention of the civic mind at a time when the people of Dublin were expecting prompt measures for the amelioration of great and pressing evils.

The Dublin Corporation consists of some sixty members, of whom thirty-six were present on the occasion in question; and we read that when an alderman asked for the consideration of the Government scheme of University Education then before Parliament, the chairman of the Health Committee immediately proposed a resolution, to the effect, that it is most objectionable and foreign to the purposes for which the corporation was established to introduce political or religious subjects at any of its meetings, public or private. This was, however, over-ruled, and the discussion of the now celebrated University scheme was proceeded with, and condemned by all present, as well as the other late measures of Church and Land legislation now so well known.

We do not wonder that Mr. Maclean (the chairman of the Public Health Committee) left the council-room without entering into the long political proceedings that ensued, nor are we surprised that the citizens of eminence in Dublin, as a rule, refuse to enter the corporation.

The sad commentary on the above is, that the deaths registered in Dublin during the first ten weeks of the present year exceeded the births by no less than 299, in a population of 314,000.

MIDDLE-CLASS SCHOOLS FOR GIRLS.

MR. E. C. ROBINS, in his paper, read recently before the Architectural Association,* quoted, as follows, from Miss Wolstenholme ("Essay on Education of Girls"):—"The experiment of large schools for girls has been successfully tried, and the results are conclusive as to the superiority of the system (so far as concerns day-schools) from whatever point of view we regard it. Their superior economy is obvious. Morally, we believe the gain to be also great. We want in every considerable town in England a high-school for girls, which should offer the best possible education on moderate terms, one which should serve as a model to all those private establishments for which, in future, as at present, there will no doubt be abundant room. To such a school as this it would be very easy to attach all manner of appliances and apparatus for lectures or special classes, which might be attended by pupils from private families, or smaller schools."

As an illustration of the kind of building that would be required, Mr. Robins showed a design for a new building, prepared expressly for this lecture. The North London Collegiate School, Camden-town, conducted by Miss Buss, the present principal for the last twenty years, has been recently handed over to trustees. Dr. Storrar and the Rev. Prebendary Thorold, two of these trustees, were members of the Secondary Schools Inquiry Commission. In these schools and the Camden Schools (included in the same trust), 700 girls receive the best education, for from 1*l.* 1s. to 4*l.* 4s. per quarter. Seventy pupils are waiting for admission. Considerable enlargement, or a reconstruction of the present buildings, is contemplated, to provide, in the North London Collegiate Schools, a day-school for 400 pupils,—the sort of high-school with full appliances to which Miss Wolstenholme refers in the extract given above. The following is Mr. Robins's description of his design, shown in the accompanying ground and basement plans. The two upper floors to be similar in arrangement to the ground-floor, though variously employed. The attic to contain servants' dormitories, &c.

The ground-floor provides entrance-hall and general waiting-room, on one side of which are the head mistress's room, and the office.

A general hall and staircase (chiefly lighted from above through the open well-hole) are in the centre opposite the entrance. From the mid-landings of this staircase, lavatories and conveniences are entered through a cross ventilated corridor.

On the right-hand side are class-rooms (for thirty-five and thirty), with small withdrawing class-rooms to each. The upper part of the wall dividing these rooms to be fitted with casements hung on pivots, so that between school hours, or at any time desired, cross ventilation may be obtained by the opposite windows.

On the left-hand side are similar class-rooms, for thirty pupils each. Between these and the staircase are two rooms,—to be music-rooms on upper floors, and teacher's room and library on this story.

The seats and benches in the class-rooms are all designed for a left light. On the first-floor over the hexagon entrance-hall, is another class-room, for twenty-five. Above this, on the two-pair floor, would be two more class-rooms, one for music classes and one for drawing. The total accommodation would thus be

$$\{35 + 30 + (30 \times 2)\} \times 3 + 25 = 400.$$

Over the head-mistress's room and office,—a masters' retiring-room, school apparatus store, and class-rooms would be placed.

A lecture-hall, for 600 on the ground-floor and 200 in an end gallery, is provided. An enclosed gymnasium would be underneath this in the basement, level with the Botanical Garden behind.

The girls could enter the hall from the school building through the class-rooms for lectures, prize-givings, and representations, &c.

In the basement: underneath the paved court, in front of the lecture-hall, are the kitchen, scullery, larder, &c. The space under the class-rooms, &c., on the left side of the central staircase, forms a general dining-room for about 160 girls. A housekeeper's room is provided. From the entrance in front the girls pass through the cloak-rooms, on their way to the class-rooms above. These bonnet and cloak rooms occupy the rest of the basement. Each class would have its own cloak-room, locked up by its mistress. Warm-water pipes for drying the clothes to be carried round under each side of the partitions. The building throughout to be heated by warm-water pipes.

* Mr. Robins gave some particulars as to the provision for girls' education in Russia (ahead of most countries in this matter), in Sweden, Germany, Switzerland, &c. A practical and economical arrangement in Danish schools, observed in a recent visit made by Miss Buss, was given from her private notes. In a school building for 1,000 children, 1,000 are taught from eight (morning) to one; a second 1,000 from one to six. Both schools work to one time-table, under one superintendent, who teaches three hours a day, and has assistants, who teach six hours a day each; the rest of the time is occupied by the visiting teachers of the district. By permanent teachers and the visiting teachers, four schools could be taught (in two buildings) by three sets of teachers. The pupils in these schools have their daily work, as well as this attendance at school.

DESIGN FOR ST. MARY'S CATHEDRAL, EDINBURGH.

THE accompanying engraving represents an interior view, looking east, of Mr. William Burges's design for St. Mary's Cathedral, Edinburgh, concerning which we have more than once spoken. As in the case of the selected design, already illustrated in our pages, we append the remarks of the referee, Mr. Ewan Christian, on Mr. Burges's work:—

"*Non Ignotæ Civitatis Municeps.*—The whole of the drawings are worked out with remarkable skill and conscientious carefulness.

With regard to compliance with Instructions:—1. The area of the whole church, including the choir and its aisles, is sufficient to provide accommodation for more than 1,500 persons; but the number in the transept westward of the choir, in the nave and aisles, would not exceed 1,300. For small congregations the architect makes no special provision, but says, that 'space might be enclosed by temporary wooden barriers, as in Continental churches.'

2. It is proposed to place a large organ, divided into two parts, in the western gallery over the central entrance; and 'a smaller instrument to lead the choir' on the floor near the stalls. As regards suitability for preaching, there is no special provision beyond what is usual in similar large churches; but as a considerable proportion of the 1,500 persons for whom space is required must of necessity be put in the choir aisles, and elsewhere behind the preacher, it is hardly probable that all would hear satisfactorily.

3. Ample space is provided for clock and bells in the western towers, and the architect, in this case, shows a bold skeleton dial in front of one of the upper stages of the north-west tower.

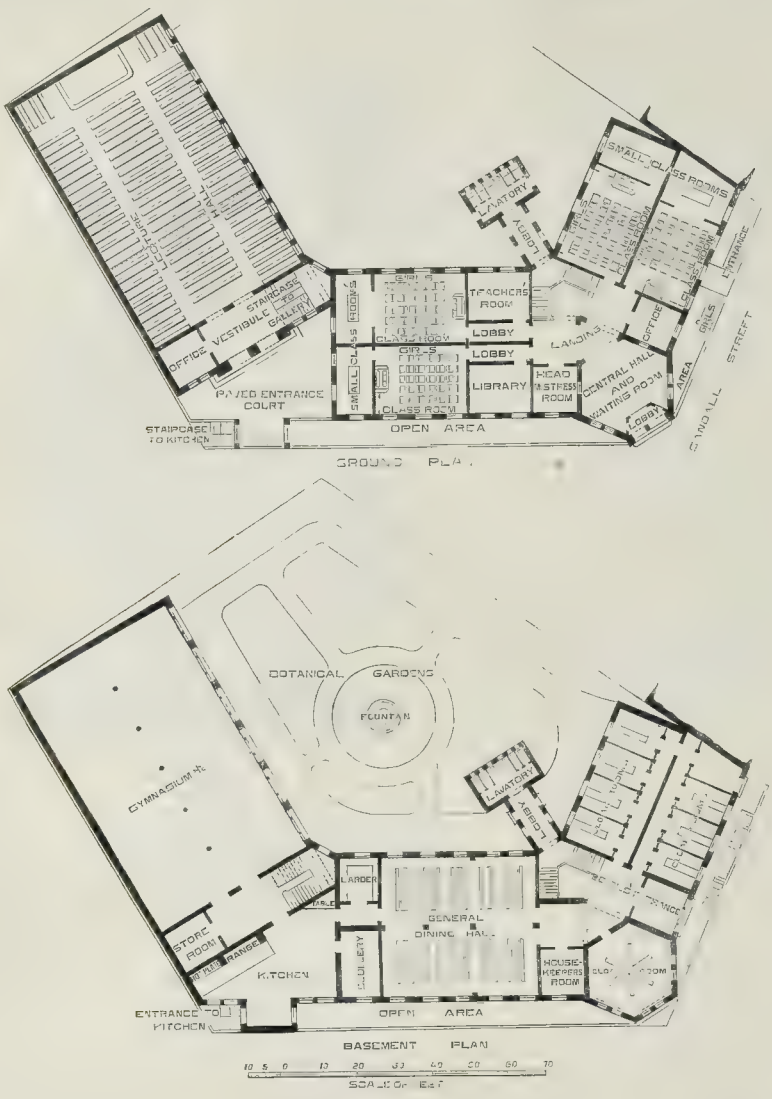
4. The dimensions of the Chapter-house, and of the staircase of approach, are both too limited for the accommodation required; and in every respect this is the least satisfactory feature of the whole design.

5. As regards Coates House, the author says that he 'would strongly recommend the retention of Coates House, not only on account of its interest as a specimen of old Scottish architecture, but as affording the means of grouping the cathedral with the other buildings round and about.' He adds that 'the architects of our ancient cathedrals were most careful to surround their works with other edifices, and no greater mistake can be committed than that so frequently made, of destroying these surrounding buildings.'

Neither heating nor lighting is particularly described. In respect of cost, the architect says but little; but it may be implied from his general observations that he has proposed to himself to work within the limits given by the trustees; and it must be here remarked, that not only is the cubical area much less, but, by careful comparison of the two, it would appear that the relative cost, as compared with the design of 'Fidelitas,' is also proportionately much lower.

In respect of general Arrangement:—The building is considerably shorter than the length of the site from south-west to north-east, consequently the western front might be advantageously viewed from Palmerston-place. The plan consists of nave, with north and south aisles, the latter terminated by two western towers, the space within and between which forms an unenclosed vestibule to the church; north and south transepts surmounted at the cross by a flèche; choir terminating in an apse; and choir aisles following round; and canons and choir vestries, with chapter-room over, approached by a circular staircase, of somewhat limited dimensions. The entrances are ample in number and area, there being, in addition to the western doorways, one to each of the transepts. None of them are protected, though there is every facility, especially at the western end, for properly effecting this. The font, though near an entrance, is not rightly placed, as it would be hidden by a pier from the congregation.

The construction of the church is solid and good throughout. All the aisles are intended to be vaulted in stone, but the architect has not ventured, on account of cost, to vault either the nave, transepts, or choir, each of which he proposes to surmount by timber roofs, with boarded



NORTH LONDON COLLEGIATE SCHOOL: SANDALL ROAD.—*Proposed New Buildings.*

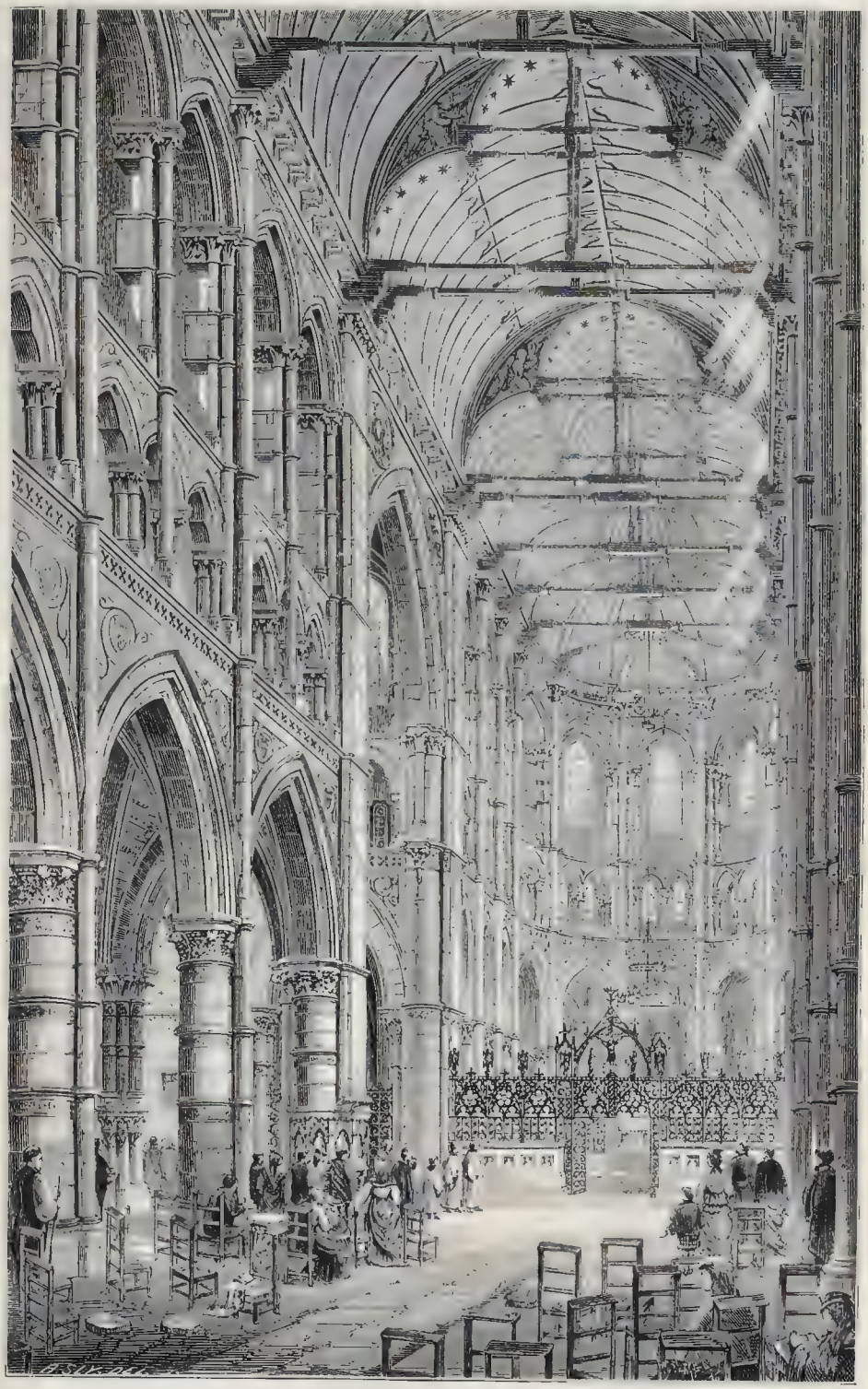
and arched ceilings within, which he states would 'preclude any difficulty as to the preacher's voice being distinctly heard.'

In respect of general Design:—The architect in this case states, that 'the sum of money to be spent utterly precludes any central tower, and the author has consequently elected to put two towers at the west end, where they not only help the western façade, but perform the useful office of masking the western ends of the aisles.'

The spires will be of wood, covered with lead, and the flèche at the intersection of the nave and transepts will also be of the same materials.

He makes no remark as to the style of art in which he has worked; but the design is founded upon a French type, and from materials of which he evidently possesses a masterly knowledge the author has composed a very beautiful design.

In the general scheme and architectural character there is considerable similarity between this design and that of 'Fidelitas'; but in the working out of details they differ more widely. There is less of broad contrast, but equal, if not greater, boldness, in the character of this work. The treatment of the windows is markedly different: while 'Fidelitas' trusts almost entirely to his clearstory windows, the author of this design has much larger windows in the aisles, but his clearstory windows, though smaller in area, are very numerous. The church by either system would be thoroughly lighted. The north-eastern end, next Melville-street, excepting the Chapter-house, which undoubtedly requires to be enlarged and improved, would be rich in effect; and although the flèche would seem to require greater elevation in the base, it would not be an unsatisfactory feature in grouping with the western towers. Considering the limit of cost, the author was probably wise in not attempting a central tower. The interior of the cathedral would be bold and simple, and yet rich in effect, but it would undoubtedly lose both in dignity and solidity by the use of timber roofing, instead of vaulting, for the nave and choir. Taking, however, into account the necessities of the estimate, this design should not suffer by comparison with others on this account. There is, however, one defect which must not be passed over, namely, the method proposed of roofing the aisle of the apse. It is not, as usual, a lean-to, but a span roof, with a gutter inside, next the wall of the main building. The trap for snow that would thus be formed is very objectionable; and as regards external effect also this roof is the least happy part of the whole design, and should, and might easily, be differently treated to avoid this difficulty."



A DESIGN SUBMITTED FOR SAINT MARY'S CATHEDRAL, EDINBURGH: INTERIOR VIEW.
By Mr. W. Burges, Architect.

PROVERBS FOR GENERAL CIRCULATION.

THE successful will tell you that "success is the unfailing reward of merit." The world too readily believes the platitude. (What of the noble army of martyrs?)

The guilty are ever on the alert to take up and cast the first stone.

The ambitious without talent are the monkeys fondest of climbing.

We have seen princes bow to lacqueys, and lacqueys turn their backs upon princes.

Sweet things have a wonderful knack of turning sour.

We are very earnest in our prayers for the enlightenment of others.

The scholar who is taught the most will not think the deepest.

We too frequently build up the characters of other men out of the rotten materials of our own imaginations.

If you continue to look at and abuse an eccentric, who insists upon lying in a pig-sty, he will keep there. Take no notice, and he will soon come out.

Never laugh at a hurt man, or ten to one he will hurt you.

When men are alive to their own defects do not show that you are keen-sighted.

Virtue produces beauty, vice deformity.

Virtue prolongs life, vice hastens death.

It is moral cleanliness which is next to godliness, not washed and perfumed skins.

If you spit upon a heated iron, it will hiss.

When fiends gibber round you,—not a word! look straight forward, and march on.

Keep clear of the man who has missed his little game.

Any pre-eminent virtue or talent in a man inevitably has its just equinox.

What duration do you expect for the immortal fame you would win,—one, two, three, or four thousand years? How many fames have survived the latter date?

A man often hits his enemy harder by not striking.

There are talking and writing enough, in all conscience, but they want consistency.

Books should be regarded as storehouses, not as substitutes for thinking.

Vague speculations which can never be authenticated demoralise the mind, and divert it from true science.

Englishmen want to plant a little England everywhere.

Britons are surprised to find that there are heathens unacquainted with Christianity and English law, and immediately punish them for their ignorance.

The nation which has the acumen to adopt the proportionate or symmetrical system of education will inevitably be great. Disproportion is the cause of crime and the fall of nations.

A vicious people will soon be an enslaved people.

WASHING THE STREETS.

We now give a condensation of the valuable statements made to the City Sewers Commission, on experiments in washing and cleansing the granite and asphalte carriage-ways of many streets with jet and hose. The reports, the last of which is dated 22 Nov. 1872, were made by their engineer and surveyor, Mr. William Haywood:—

"In my report addressed to the committee on the 20th of May, 1867, on the results of some experiments made to determine the value of the system of street-cleansing by jet and hose, and the expense of performing the work, the advantages and disadvantages of the system were entered into by me in considerable detail.

Upon reconsideration, I see no reason to alter the opinions expressed, and it will be necessary therefore here simply to give the experience gained since 1867, and to refer only to the former experiments as far as needful to make comparison between the estimates then framed and those now submitted.

The experiments in 1867 were made solely upon the carriage-way pavements of Cheapside, the Poultry, and Mansion House-street, which were then paved with granite; the total length was 2,700 ft., the superficial area 9,792 yards, the number of hydrants used was 16, with a mean distance of 133 yards between them.

The number of men employed in 1867 was six,—four of whom were employed in playing the jets, and two of them in moving the hose from place to place, and with brooms, keeping the channels clear, and sweeping up the straw and refuse of a larger sort, which would not go down the gratings; they also gave general assistance to the other men.

The experiments were continued for a fortnight, and the average quantity of water daily consumed was 1·99 gallon to each square yard of surface.

The cost for each day's washing averaged—for labour, 9s. 10½d., and for water, 9s. 9d., making a total of 19s. 7½d., or at the rate of 0·024ld. per square yard, and 2·59l. per mile of street per diem, which is at the rate of 7·51d. per square yard of surface, or 808l. per mile of street per annum.

In 1870 the granite pavement in these streets was replaced by asphalte, and in 1871 the carriage-ways of Old and New Broad-streets were also paved with that material, and at the same time hydrants were fixed in the last-named thoroughfares.

These hydrants were of a simpler character, and cost less than those in Cheapside, the Poultry, and Mansion House-street, and at their rate of cost hydrants could be fixed at about 40l. per mile.

Having recently received your directions to make some additional experiments by washing with jet and hose the surfaces of streets paved with asphalte, I selected for that purpose the carriage-ways of Cheapside, the Poultry, and Mansion House-street, and of Old and New Broad-streets.

The experiment in Cheapside, the Poultry, and Mansion House-street was commenced on Thursday, the 17th of October, and continued until Wednesday, the 23rd of October, or a period of one week.

The length of the line of thoroughfare is 2,000 ft.; its superficial area, as now paved with asphalte, about 10,353 yards.

The time occupied in each washing averaged two hours and four minutes, and the quantity of water daily consumed was 19,726 gallons, or at the rate of 1·90 gallon per square yard of surface.

The quantity used on the first morning in the experiments was largely in excess of the average.

The total daily cost averaged—for labour 9s., for water 9s. 10½d., making a total of 18s. 10½d., or 0·0218d. per square yard, or 2·48l. per mile of street, which is at the rate of 6·823d. per square yard, or 779l. per mile of street per annum.

If to these amounts, however, 20 per cent. be added, as was done in the previous estimates, for the cost of supervision, sweeping up large refuse, and the wear and tear of the apparatus, it makes the total cost per square yard, 8·20d., or per mile of street 934·68l. per annum.

In Old and New Broad-street the total length is 1,436 ft., the superficial area 3,671 yards, the number of hydrants fixed is 9, being at a mean distance of 140 ft. apart.

The average time employed at each washing was one hour and three minutes, the quantity of water consumed was 9,786 gallons, which gives 2·66 gallons to each square yard of surface. The quantity (as in Cheapside, Poultry, &c.) was found to vary but little, whatever the condition of surface, but it was larger on the first morning's washing than upon the average of the week.

The total daily cost of each washing averaged 4s. 9d. for water, 4s. 10½d. for labour, making a total of 9s. 7½d., or 0·0315d. per square yard, or 1 77l. per mile of street. This is at the rate of 9·859d. per square yard of surface, or 551·94l. per mile of street per annum, and adding to this the cost of supervision and other charges, the total cost would be about 11·831d. per square yard, or 686l. per mile of street per annum.

As both thoroughfares were left as nearly as possible in the same state of cleanliness, the difference in cost per square yard is not easy to account for.

The work was usually done between 2 a.m. and 4.30 a.m.; ten men were employed in the work; four men were employed in playing the jets, two in moving the hose from place to place, and four with brooms in sweeping the surface of the asphalte and keeping the channels free from straw and larger refuse; they also used 'squeegees' to dry the surface of the asphalte, it being thought desirable that it should be left as dry as possible, and the number of men was for this reason increased over those employed upon the granite pavements.

The following table shows the results obtained in washing Cheapside and the Poultry in 1867, when paved with granite, and more recently, when paved with asphalte.

Washing Cheapside, the Poultry, and Mansion House-street.

	Granite in 1867.	Asphalte in 1872.
Time occupied in washing	2h. 19m.	2h. 4m.
Consumption of water in gallons per square yard per day	1·99	1 90
Total cost, including supervision, wear and tear of hose, &c., per square yard per annum	Pence 9·61	Pence 8·20
Total cost per mile of main street per annum..	£969	£934

The cost of washing asphalte, therefore, seems to be but about 3 or 4 per cent. less than that of granite, but a higher state of cleanliness is obtained than upon granite.

The main lines of City streets are about seven miles in length, and they comprise about one-half of the entire carriage-way of the City, and the experience now gained in washing Cheapside and the Poultry, and Old and New Broad-streets, indicates that the first cost of fixing hydrants, and the subsequent cost of washing daily the thoroughfares of the City, would be as follows:—

	Total Cost.	
	Per Mile.	For seven miles of main thoroughfares.
	£	£
Cost of fixing hydrants	650	4,550
Cost of washing granite pavement per annum	969	6,783
Cost of washing asphalte pavement per annum	934	6,538

The cost must, however, necessarily vary in almost every street, and it will be safer to take the cost per mile of fitting up streets with hydrants at 700l., and the cost of washing annually at 1,000l. per mile per annum."

THE CURE OF ECHO.

SIR,—I think I have seen it stated in your paper that wires stretched from side to side will cure an echo. Will one of your correspondents say what sized wire and kind, how many, and what distance apart; what distance from end wall and ceiling? Room, 24 ft. wide, 20 ft. high, and 24 ft. long. B. LINDFIELD.

EMIGRATION FIELDS COMPARED.

SIR,—Your short review of the progress of the colony of New South Wales cannot but prove welcome to the emigrating section of the community. It is very painful to see such splendid emigration fields neglected in favour of the United States, and solely because the colonies do not trumpet their charms as the States do.

The statistics you give speak volumes in favour of New South Wales, as I will attempt to show. I have before me the agricultural statistics of the United States for 1872, and I find the average yield per acre there was:—

Wheat, 11½ bushels, at 5s. 5d.	£3	2	3½
Maize, 25 ,, ,, 2s. 9d.	3	8	9

In New South Wales the same year it stands thus:—

Wheat, 12 bushels at 6s.	£3	12	0
Maize, 30 ,, ,, 3s.	4	10	0

The mean value of an acre in each is therefore:—

The United States	£3	5	6
New South Wales	4	1	0
Balance in favour of the latter	15	6	

The cost of a passage to each is:—Nebraska, 10l.; New South Wales, 14l. The extra value of a ten-acre crop will cover the extra cost of passage in one year.

But let us look at the attractions of Queensland, to which colony a passage costs but 4l., the Government paying the balance of 12l.

This colony, if we exclude York Peninsula, extends 6 degrees each side of the Tropic of Capricorn, and there is more difference in its climate from east to west than there is from north to south, and it is nowhere disagreeable but upon the low coast-lands. Wheat is not much cultivated, but the yield averages 30 bushels per acre, and maize 45 bushels. Sugar is extensively cultivated, and by white labour. The yield in the south was 1½ ton per acre, and in the north 1½ ton, but in the middle district, *i.e.*, on the Tropic of Capricorn, it was 1 ton only. Taking the whole colony, there were last year (1872) obtained 3,762 tons from about 3,000 acres, being at the rate of 1¼ ton per acre. The labour to produce a ton of sugar will cost about 10l., and as the sugar is worth at least 27l., this is the most profitable investment there can possibly be. Of course it requires united labour, as one man by himself cannot produce it, but ten can produce 150 tons per annum with the aid of 500l. worth of machinery and four horses.

Now, sir, if we compare the income of ten men in Queensland with ten in the United States, we have the following results:—

Queensland.

120 acres of land producing 150 tons of sugar, at 27l. £4,050

United States.

120 acres of land producing 1,380 bushels of wheat, at 5s. 5d. £351

In other words:—

120 acres of land in Queensland will yield	£4,050
1,200 acres of land in the United States will yield	£4,050

Thus we see that to obtain the same results in each of the rival emigration fields, 120 acres must be cleared in Queensland, and 1,290 acres in Nebraska. The summer of the latter is much hotter than that of the former, but the winter is not warm enough for the cultivation of the sugar-cane, and that fact makes the former superior.

It is worthy of attention to note also the difference in the death-rate. This is in Queensland, 15·2 per 1,000 per annum; United States, 30 per 1,000 per annum.

As regards the rate of wages there is no difference, but the cost of living is 25 per cent. less in Queensland than in any of the Western States. F. J. S.

TUMBLE-DOWN BUILDINGS, MANCHESTER.

SIR,—The township of Hulme has proved itself to be not one whit behind that of Lower Broughton in the character of its buildings; on the contrary, by the recent fall of houses in Embden-street, Hulme has *killed* its man, whereas Lower Broughton only lamed a few. If that man had been a bishop (*vide* railways) instead of being only a bricklayer, the whole city would have been set by the ears, and denunciations loud and deep of the "jerry" work which caused his death would have been

heard on all sides. But, as it is, the local papers simply notice his death, and give a short report of the inquest, with the verdict of "Accidental death," and pass on to consider other matters.

Now, a bricklayer's life (aged 37) may not be worth much (I forget what they used to fetch apiece by auction when I was in the Southern United States); but, much or little, it is worth something to the community, apart from its value to his family, and it does appear to me that proper precautions ought to be taken to preserve it, which, as far as I can gather, were not done in this instance. Like yourself, sir, I decline to call this event an accident. In this case a certain number of houses such as working people are here condemned to live in, for want of better, were contracted for, labour only, by a certain bricklayer, the bricks and mortar being supplied by the customer, whose *wife*, according to her own statement, gave a general supervision to the building, in the course of which it appears that she observed a very ominous bulge in the 4½ in. party-wall, which was built of old bricks entirely, and to a height of some 28 ft.; that she then called out to the men above to come down and shore it up, which they then did, one of them remarking that he thought nothing of the bulge, for the foreman had seen it before, and he was of opinion that the wall would stand *for ever*. They afterwards returned to their work on the top, and very shortly afterwards the wall gave way, and down came the whole bag of tricks, men and all, one of whom has since died in the infirmary, of the injuries he then received. Nothing at all is reported about the other victims, who must get over their injuries as best they can.

Of course, as is always the case, the coroner and jury were assured by those interested, that everything previous to the fall was quite as it should be: good bricks, good mortar, and good workmanship; and, that nothing might be wanting, they were told by the city surveyor, Mr. Lynde, that he observed nothing wrong with the brickwork, although the bricks, being old, were not so absorbent as new ones would be, and that, as far as he could see, *the mortar appeared to be well tempered with lime*. The latter observation is so unique and ambiguous, that I should like to ask Mr. Lynde if he is correctly reported; and if so, what does he mean? Mortar is usually composed of three things, in variable quantities: sand, lime, and water; in the absence of any one of which mortar cannot be made. Speculative builders are not in the habit of "tempering" their mortar with too much lime, because, as they say, sand and water can be got on the spot, and lime has to be fetched from a great distance, which makes it valuable; and, to make matters worse, they run their lime in pits here, in the same way as plasterers do, which takes out its virtue, as the phrase has it, and causes it to be slow setting; so that when used with old bricks, which have no "suction," the wall will be wet for a long time. But bricklayers would be very much offended if they were charged with not knowing this; and yet, as we see in the present instance, they work on to their death. They know, as every one else knows, that a 4½-in. party-wall between two houses, 28 ft. high, built of old bricks in ordinary mortar, is very unsafe at the best times. We had a very little rain or frost here for several weeks previously to this catastrophe, and although the witnesses told the jury that they attributed it to the frost, yet, as other brickwork near, which has been carried up during the same period, is uninjured, the public will have grave doubts about its accuracy. The real cause of the "accident" was the thinness of the walls. As at Lower Broughton, so now at Hulme, I ask, when are builders to be compelled to build houses which shall at once be safe to their makers, and warm and comfortable to their occupants? E. G.

BERKELEY CHAPEL, JOHN STREET, MAYFAIR, W.

Since its erection, this church has not undergone much alteration in the arrangement of the interior until recently, when, upon the appointment of the Rev. T. Teignmouth Shore to the incumbency, some improvements have been made, including the removal of the cumbrous high-backed pews, which have been replaced by more fitting accommodation.

The old reading-desk has been banished; the floor of the sanctuary has been raised and enlarged; and the organ and choir have been removed from the east gallery to the north side, the choir-stalls having been arranged *decani* and *cantoris*.

Among the decorative improvements may be mentioned the re-colouring of the chancel in such manner as to show up the pilasters, panels, and mouldings; the pendentives of the ceiling are tinted in two shades of grey, with brown and red mouldings; and the panels are painted in encaustic, warm grey and reddish brown, with slightly floriated diapers. In the centre panel over the table is the figure of our Lord ascending to Heaven; the side subjects are respectively SS. Peter and John. The capitals and bases of the pilasters are brown and gold, the shafts in Etruscan red, with broad bands of ivory colour at the top and bottom, ornamented with bronze-green, maroon, and gold.

It is the intention of the incumbent to take down the east-end gallery, and to place a rose-window in the wall behind it, to alter the side windows for the purpose of obtaining a better light, and to complete the decoration of the ceiling and pillars; and, in fact, the whole of the interior of the church, as soon as the necessary funds, about 500*l.*, have been raised.

The altar cloth was supplied by Messrs. Jones & Willis. The works described were executed under the direction of Mr. Pitman, of the firm of Pitman & Cuthbertson.

NEC SINE LABORE.

If ev'ry cave with gold were fill'd,
And ev'ry shell contain'd a pearl,
Who would then strong treasuries build,
Or wear the gem now decks the earl?

The costly gold so finely wrought,
From stubborn rock must first be torn;
The pearl deep down in ocean sought,
By divers bold, before 'tis worn.

By toil men win whate'er they prize,
What lightly comes may lightly go;
Before they reap they early rise,
They weary plough, and broad-cast sow.

By studious day and restless night,
By ceaseless thought, work never done,
They pluck the treasures Truth and Right,
The brightest jewels 'neath the sun.

They gain the guerdon due to fame,
The crowns and laurels heroes wear,
That rarely earn'd immortal name,
Because so few the labour dare.

Oft studious day and restless night,
But win some grain of truth at last;
'Gainst so much toil the gold seems light,
When in the balance countercast.

But who can tell what wealth may rise
From that pure grain in days to come,
When other men of enterprise
Shall strike the lode and trace it home?

Work on, work on, and ne'er repine,
Though treasure found may not be great;
To earnest workers gods incline,
Who mete by will, and not by weight.

W. Cave Thomas.

ROOF COVERINGS FOR FARM BUILDINGS.

In the construction of some kinds of farm buildings, a cheap form of roof-covering is a desideratum; this more especially in the case of temporary buildings, as sheds and the like. Zinc plates, or galvanised iron, plain or corrugated, are often recommended in such cases; but these are rather expensive, and require workmen more or less skilled to fit them up. A writer in the *Field* says, — Where rough boards can be had, a very good, and indeed a lasting, though cheap, roof-covering may be obtained by using them. Slabs will answer if of uniform breadth. This is necessary that their juncture lines when placed on the roof should run in as straight lines as possible, so that the half-round rolls or slats which cover the joints may be laid evenly on. To save labour, if neatness is not important, the covering slats may be made flat on both sides, although the rounding of the upper side adds much to the appearance of the roof. To prevent the covering slats or rolls from being split by the "giving and taking" of the boards of the roof, the joints of which the slats or rolls cover, these must be nailed to the boards on one side only. A roof boarded and rolled may be made to last well for years without slates, tiles, zinc, or asphalted felt, by simply covering its surface with a composition of ordinary coal-tar, in two or three coats.

The cement known as "Portland" is now being used in a variety of ways in construction, and with marked and most economical advantages; perhaps its most recent application is to the formation of cheap and durable roofing in conjunction with coal-tar and strong brown paper, such as is used for laying under carpets. The paper is laid upon the boarding of the roof, the sheets overlapping not less than 3 in., but better if 4 in.; the sheets are then tacked down, and the surface covered with the composition, which is made as follows:—Take 180 lb. of Portland cement (this should weigh, to be good, 100 lb. to 110 lb. to the bushel), and mix it well in a cauldron heated by a furnace. Care must be taken to heat the tar gently at first, so as to prevent it boiling over: and the cement must be mixed gradually in small quantities, so as to insure its thorough mixture with the tar. The mixture, when completed, is to be spread over the surface of the paper with a brush, and in as hot a condition as possible. The surface is then to be rolled over with a light roller, to make it as even as possible, and when partially dried is then to be covered with another layer of brown paper, care being taken to make the second layer to "break joint" with the first-laid layer. In some cases a layer of sand is laid all over the surface of the boards before the first layer of paper is laid down.

Of a similar process we have already given some particulars.

THE SANITARY STATE OF ROTHERHAM.

The report of Dr. Ballard "upon enteric fever in Rotherham, and generally upon the sanitary condition of the borough," has been laid before the local council. This gentleman was sent down by the Local Government Board some time ago to inquire into the sanitary condition of the borough. The report states that he had visited the town on November 21st and following days, and found that the statement as to the prevalence and fatality of enteric fever in the townships of Rotherham and Kimberworth, including Masborough, and outlying places—all of which were within the jurisdiction of the corporation of Rotherham—was correct. The report dwells upon the utter and complete sanitary neglect throughout the town. He condemns the system of ashpit privies. The corporation, he thought, neither systematically cleansed them itself nor did it systematically require the occupiers of premises to cleanse them.

"The corporation [continues the report], has neglected its duty as the authorised guardians of the pubic health within the borough. The disgusting condition of the poorer neighbourhoods, of the courts and of the privies and ash-pits, and the unwholesome condition of most of the cottages, could not have been made the subject of the unfavourable comments I have been compelled to make, had the local authority exercised, even in the matter of the most obvious and flagrant nuisances, the powers which it has possessed ever since the year 1855. Since 1866 it has also been its positive duty not only to see that nuisances, the subject of complaint, are removed or abated, but, under the 20th section of the Sanitary Act, to make systematic inspections, with a view to discover nuisances dangerous to health and to obtain their removal. This duty has not been performed: it has not even been attempted to be performed. Again, since 1868 it has been its especial duty to see that drains, privies, and ashpits within its jurisdiction do not become nuisances, and it has neglected its duties in this matter to such an extent that they have become the media of spreading enteric fever throughout the district under its control."

The report concludes by suggestions as to the measures which the corporation may at once take for the arrest of the spread of the fever, and as to the future general administration of the borough.

A letter was forwarded with this report from the Local Government Board, requesting that as soon as it had been considered by the council, they would inform the Board as to what steps they proposed to take in the matter.

Waste Pipes and Sewer Gas.—The same thing has to be said again and again. The medical officer of health for St. George's, Hanover-square (Dr. Corfield), has called the attention of the committee of works to the fact that, in a house where he found a case of typhoid fever, the waste-pipe of the drinking water cistern went into the drain. He had traced several cases of typhoid fever and one or two deaths to this cause. He asked if he should give notice in such a case to make the waste-pipe drain elsewhere, and, in case of non-compliance, summon the offender. Dr. Corfield was directed to serve a notice in the case.

THE TRADES MOVEMENT.

Sheffield.—The wood-turners of Sheffield have struck for an advance of 12½ per cent. They will receive 3s. or 4s. a week more than the regular strike allowance, their union being very strong.

Huddersfield.—The master painters have refused to give an advance of wages to the men, but have offered to reduce the length of the day's work by allowing the men to commence work in the morning half an hour later than hitherto. This the men have decided not to accept.

Birmingham.—The carpenters, joiners, and bricklayers have agreed to settle their demand for an advance of wages and alterations in the time rules by arbitration.

Exeter.—The carpenters and joiners have given their employers notice that unless the nine-hours movement is conceded to them, and their wages increased, they will strike next month. The masters have declined to submit to the demands of the men. Negotiations have been in progress twelve months.

Wolverhampton.—At a meeting of the Wolverhampton Brickmakers' Association, it was unanimously resolved to demand an advance of 1s. per 1,000 on the present rate, which is 5s. The masters agreed twelve months ago to give sixpence, as a start, for one year, and the makers assented. It is the determination of the men to strike unless the demand be conceded.——A meeting of masters and men representing the Iron Trade Conciliation Board has met at Wolverhampton, and the masters have resolved that it is impracticable now to adopt a permanent scale for regulating wages, and that the condition of the trade does not warrant any advance upon existing rates. The delegates intimated that these terms would not be accepted by the men.

Edinburgh.—At a meeting of the joiners of Edinburgh held in St. Mary's Hall, it has been agreed to accept of the offer of the employers, viz., 7d. per hour, being an advance of one halfpenny per hour.

Essays on the Labour Question.—Mr. Arthur Steains has offered prizes of 50*l.*, and 30*l.* for the best essays on the Labour Question. He proposes the 1st of September next as the latest time for sending in the essays, and to leave it to the Associated Chambers of Commerce to decide as to whether any and which of the essays come up to the required standard. He does not confine the composition of the essays to any class of writers, and the chief objects he seeks to obtain from them are:—

"1. The elucidation of the anomaly among the working classes of not permitting the intelligent, steady family man, having an ambition to better his position by working hard, to advance beyond the level of the unsteady, indolent, and simple-minded men, the main object in the life of most of whom appears to be to consume their earnings in strong drink and other debasing habits. 2. The true principle upon which capital and labour can be harmonised. 3. The best means for elevating the skilled labour of the country into a better social position than it has hitherto attained. 4. A sound principle upon which Trades Unions or Guilds can be carried on with real advantage to the working classes. 5. The application of scientific aid in manufacturing establishments in order to maintain for this country the pre-eminent position it has hitherto held in this department."

Mr. Roebuck on Strikes and Demagogues.—Mr. J. A. Roebuck was present at a banquet given at the Cutlers' Hall, Sheffield, and in proposing a toast, said,—

"In the English workmen there are great virtues, but there are great weaknesses. I have never flattered the working man. I have never told him he is the man that the world ought to look up to—that he is the one who presents to mankind an instance of great magnificence and virtue; but I will say this of him, that he has got forbearance, that he has got forethought, but at the same time he has got simplicity. His simplicity, feeling his own virtues, makes him believe in the virtue of others. The demagogue who comes to him is but a man of his own class, and perhaps he is not a very good workman, but he has the gift of the gab, and he talks to him, persuades him, and tells him a vast number of wondrous things that he is about to do for him, and so he works upon his simplicity, and his simplicity leads him into great mischief. Now, the working man does not make the wealth that he talks about more than the man of capital. Combined with the man of capital, he, the man of labour, makes England what it is. He is not the sole man; he depends upon capital and capital depends upon him; and between them both England may be great; but separate them, and England will fall. Now the demagogue who comes down and preaches to the workman that capital is his enemy, is the working man's enemy. Capital is the friend; capital ought to be made his friend; and the man of capital who knows what he has to do will conciliate the working man, and will make him his friend. I have before my mind's eye what is now going on in South Wales, and I know what are the terrible results. That strike is not for the purpose of the working man; that strike is for the purpose of the demagogues who impose upon his simplicity."

National Association for the Prevention of Strikes.—A meeting of the supporters of this association met recently at Chippenham, for the purpose of hearing an exposition from Mr. James Phillips, the secretary, of the objects of the association. Mr. Phillips said the association had been called into existence at the instance of some of the leading farmers and tradesmen of the county, who felt the necessity of raising a powerful organisation, having for its object the prevention and repression of strikes, and the advancement of arbitration in trade disputes. The association was one entitled to the support of the nation, and to the nation they would appeal. It was unsectarian in character, and represented in its constitution all shades of political opinion other than those who favoured revolutionary, republican, and dangerous changes; and its objects were to counteract the deplorable effects caused by strikes, and the danger with which all classes of the community were threatened as the result of the tactics of the republican agitators, now prowling about the country, setting class against class. The project, as explained by Mr. Phillips, was received with favour, and at the close of his address the following resolution was unanimously carried:—

"That this meeting having heard Mr. Phillips's explanation of the objects and working of the National Association for the prevention and repression of strikes, and the advancement of arbitration in trade disputes, considers it eminently entitled to the support of all classes in the country, and this meeting pledges itself to do the utmost in its power to make the influence of the Association felt throughout the country by establishing branches in every town of the United Kingdom."

Mr. Phillips said public meetings would be announced to take place in London and the chief centres of commercial interest.

"WIRING THE WORK."

SIR,—The pretended invention of Mr. H. Turner, of which some account appeared in your journal, constitutes an essential feature of my monolithic patent, which has not only been a long time before the public, but has long since developed the astounding powers of fibrous and rolled metal, and other fibrous materials in combination with cementitious substances for all kinds of buildings, fittings, and fixtures in buildings. Instead of the awkward and tentative operations described in the paragraph in question, under my patent an entire structure is not only formed with the aid of any available cements, but actually without the use of the smallest fragments of wood, lead, or other substance capable of injury by fire. Thus the surface of all parts of every wall, ceiling, floor, door, shelf, closet, &c., is enabled to be finished in one operation, and ornamented in any manner desired.

I have only to add, as the advertisement in relation to this subject announces, that any person using wire in the manner described without my licence will be amenable to the law.

PHILIP BRANNON.

SCHOOL BOARDS.

Northampton.—Mr. T. Roger Smith, architect, London, was, at the instance of the chairman, fixed upon to make a selection from the various plans sent to the Board for the erection of schools on the Spring-land and Vernon-terrace sites. Mr. Smith reported that there were in all 54 designs, of which 29 were for the Spring-lane site, and 25 for the Vernon-terrace site. He reduced them until he was able to recommend for the site in Spring-lane the designs named below, as being, in his opinion, the three first in order of merit:—The first, "Experientia," 3,150*l.*; the second, "Spes," 4,000*l.*; the third, "Convenience, Economy, and Stability," 2,940*l.* For the school to be built in Vernon-terrace, he recommended:—The first, "Spes," 3,000*l.*; the second, "Education," 2,585*l.* and 2,995*l.*; the third, "Convenience, Economy, and Stability," 2,350*l.* The report went on to make some observations with respect to the designs selected, and a long conversation ensued respecting the conditions under which the plans were sent in. Mr. Phipps said it was a question for the Board whether it would take the two sites together; but while he should take the opinion of Mr. Smith upon the Spring-lane site, and accept "Experientia," because there was comparatively little difference between that and the lowest; with regard to the other he should pause, and prefer to take "Convenience, Economy, and Stability," because there was a difference of 650*l.* on 3,000*l.* outlay. He moved that the plan with the motto "Experientia" be selected for the site in Spring-lane. Mr. Rush moved that the site bearing the motto "Convenience, Economy, and Stability" be accepted. Mr. Mason proposed that "May success be equal to labour," which did not appear in the list selected, be adopted as the plan for the Spring-lane site. Neither the motion of Mr. Rush nor Mr. Mason was seconded, and Mr. Phipps's proposition was voted for by all the members except the chairman, who preferred to remain neutral. Mr. Adkins proposed that the Board select the one which stood first on the list for the Vernon-terrace site, because the architect had thought it deserved the first place, considering economy with the general requirements. Mr. Rush again proposed "Convenience, Economy, and Stability," but failed in getting a seconder; and the original motion was carried, all voting in its favour except Mr. Rush and the chairman. The authors of the plans chosen are:—"Experientia," Mr. Robert Walker, 10, King's Arms-yard, Moorgate-street, London, now engaged in building Rochdale Schools at under 12. per child; "Spes," Mr. J. G. Bland, architect, Unity-buildings, Temple-street, Birmingham.

ACCIDENTS.

Fire in a Timber-yard at Liverpool.—An alarming fire recently broke out in the timber-yard belonging to Mr. John Westmoreland, joiner and builder, 115, Islington. The fire originated in the saw-dust pit, underneath the steam circular saws. In the upper rooms there were working about twenty men and four boys, who, immediately they saw the fire, made an effort to save their tools, but they only partially succeeded in doing so. Notwithstanding every effort on the part of the firemen, the building in which it originated was completely gutted. The stock and property are insured in the Queen's to the extent of 2,600*l.*, but the damage is estimated at 3,500*l.*

Fall of a Scaffold with Five Men at Southport. While three workmen, in the employ of Mr. John Luke Highton, bricklayer, were at work on a new house which is being erected in Upper King-street, Southport, one end of the scaffold on which they were standing gave way, precipitating to the ground two of the bricklayers and three labourers, who were on the gangway underneath, and strewing the basement with the *débris* of a wall 16 ft. high. The workmen are all more or less injured by the fall.

THE SEWAGE QUESTION.

Failure of the Great Crossness Sewage Experiments.—It is disagreeable, although not surprising, to learn that at the end of a year's elaborate investigation, the Metropolitan Board of Works have decided that the results of the trial of the "A B C" process on the London sewage are unsatisfactory and unprofitable. According to Mr. Bazalgette, the chief engineer to the Board, the manure obtained costs 6*l.* 6s. 4d. per ton, without reckoning rent, interest on capital, or depreciation of plant; according to Mr. Keates, the consulting chemist, the chemical value of the manure is 20s. per ton; according to the books of the company, only a few shillings have been received for sales. This is a process in which, as we repeatedly showed, we never had any confidence.

The Windsor Drainage Question.—The Local Board, at a full meeting, have discussed the question whether a system of irrigation or that of deodorisation and precipitation should be adopted, and a majority of eighteen against two decided in favour of the latter system. It was then left for the committee to consider the various plans, including those of the Native Guano Company and General Sewage Company, and recommended one for adoption by the Board. The Board afterwards discussed, in private, the defence which should be made to the summons taken out by the Thames Conservators against them.

The Utilisation of Sewage in Leeds.—A deputation of the Streets and Sewerage Committee of the Leeds Town Council, with the chairman of the Sanitary Committee, and Mr. Morant, the newly-appointed borough engineer and surveyor, have visited Bolton to inquire respecting the sewage utilisation works, and a report has been given in to the general committee. It seems that in Leeds the residuum of the process does not prove to be so valuable as was hoped, and the question of mixing night-soil with it is under discussion. This plan has been partially

adopted at Bolton. There the soil is mainly purchased from the mills, but in Leeds it is suggested that it should be purchased from the night-soil department. To this department the soil is valuable, and by its sale to farmers and others the expenses of the collection of soil and ashes are materially reduced. Were the soil taken away, the ashes could not, it is thought, be so readily disposed of as at present, and this, together with the price to be paid for the soil required to mix with the sewage residuum, seems to be a difficulty in the way of the suggestion being fully carried out.

LOWESTOFT: BELLE VUE PARK COMPETITION.

IN reply to their advertisement, the Commissioners received twenty-seven sets of designs for laying out the proposed new park. The Commissioners, having inspected the drawings, unanimously agreed that the design bearing the motto "Merlin" was entitled to the first premium, and the one called "Floreat Lowestoft" to the second. The names of the successful architects are as follow:—"Merlin," Mr. W. Clement Williams, Cavendish-terrace, Halifax; "Floreat Lowestoft," Mr. Geo. W. Usill, Assoc. Inst. C.E., and Mr. J. Wattall Peggs, Assoc. Inst. C.E., Great Queen-street, Westminster.

Owing to the peculiar outline of the site, no little difficulty would have to be overcome to produce satisfactory results.

CHESTER UNION COMPETITION.

SIR,—When beaten in a competition, as a rule I think it best to say nothing; but one does like to be *fairly* beaten, and the injustice in the present case is so glaring that I shall be glad if you will insert the following remarks.

On the whole, I agree with the letter from "Veritas," in last week's *Builder*, but I would also ask,—How is it that the Guardians (who have now called in the aid of an architect, to be appointed by the Local Government Board, to assist them in selecting the best design) felt themselves qualified to decide upon and *reject* seventeen out of the original thirty designs?

Also, how can these gentlemen know that the designs they have selected can be *executed* for the sum named in the conditions, viz., 30,000*l.*? Are they aware that *cost* is the essence of the present competition (the sum fixed being unquestionably *low* for the requirements), and that the question in justice ought to be, *not* only "which is the best design," but "*which is the best design that, it may reasonably be supposed, can be executed for the stipulated sum*"?

On this question the Guardians are as fit to judge as so many children,—even without taking the "local friends" into consideration. (Note.—I should like to learn the *real* cost when finished, for their requirements are enormous!)

I will only add that my drawings were returned without even thanks for the trouble and expense, though, as sent in, they were worth little under 100*l.*!

The thirty architects engaged would have done well had they each put in 60*l.*, and then had a raffle for the prize; really, they would have spared themselves much hard work and annoyance, and the lucky man would have had the commission without having even carried out the work.

Well, architects have only themselves to thank for a state of things that can render such a competition as this possible.

PRO BONO PATRIÆ.

METROPOLITAN CONVALESCENT INSTITUTION COMPETITION.

SIR,—It should be known that three out of the four architects invited by the Board declined to compete under the circumstances for the New Children's Asylum, at Kingston-hill.

ONE OF THE ARCHITECTS.

PAINTERS' THREATENED STRIKE.

SIR,—In Liverpool the painters are again agitating for a further advance in wages as the season for painting comes on. They may or may not in this instance be able to obtain all they want from the employer, but what is the consequence? The master painter has to charge exorbitantly to the public; the latter will submit only to a certain point. The evil works its own cure. At the present time there are acres of painting being done in Liverpool and the neighbourhood, *but not by journeymen painters*. Large owners of warehouses, houses, offices, and other property, are now purchasing the paints themselves, employing old sailors (and many of them are splendid hands with the brush), others get the work done by their warehousemen, or by ordinary labourers, at 3*s.* to 3*s.* 6*d.* per day (a day, too, of eleven to twelve hours), and I will tell you the result in one instance. A friend of mine wanted the outside ironwork of a large block of buildings, scraping and painting, and got an estimate in for doing it, which was 20*l.* He bought his own paint, employed ordinary working men, and the building was as well painted as any practical painter could do it, at a cost of 7*l.*!

Why should skilled labour be employed in scraping and painting the outsides of office blocks, warehouses, ironwork, and such like? It does not require an artist to do this description of painting. When a working painter would come and do a fair day's work for a fair day's pay (before he was the slave of a paid agitator), he was always sent for. The public are always willing to give a fair and reasonable advanced price for work when the working man has to pay more for the necessaries of life, but kick against imposition; and now owners of property are fast following the examples set by one or two, and never send for the *working painter* but when skilled labour is a necessity, such as for gilding, plating, &c.

Why should not London follow the example of Liverpool in this respect?

AN ESTATE AGENT.

PARTNERSHIP DANGERS.

Harding v. *Banks*.—This was an equity suit brought to dissolve a partnership and appoint a receiver in the Westminster County Court.

Mr. Harding stated that having noticed an advertisement requiring a partner for a flourishing manufacturing business, he replied to a firm of solicitors, who referred him to Mr. Banks, the defendant, who gave a glowing description of the business, saying the takings were 60*l.* per week, which might be increased, and the profits were 10*l.* a week. The profession was that of lithographers and draughtsmen, and was carried on in Drury-lane. Believing all this, he agreed to become a partner, and a provisional deed of partnership was drawn up between himself and the defendant. He had paid altogether 133*l.* into the concern, and the deed arranged that at the expiration of three months if he did not approve of the business his money should be returned and the partnership dissolved. It was not very long before he found that architects, engineers, and other customers, did not patronise their firm to an extent of profit, and his partner further executed a bill of sale without his consent, signing it in the name of the firm conjointly. He now, although the three months had expired, prayed the Court to grant his application, as it would entitle him to a lien on the goods.

The Judge (Mr. F. Bayley) said, supposing there were a large estate involved the proceedings now taken would be advisable; but from what had been stated he should say it would be policy for the plaintiff to take what he could get without further litigation or expense. He should suggest a compromise.

The counsel and solicitors, with their clients, took the hint, and it was agreed that the defaulting partner should give all the goods and stock-in-trade to the plaintiff; the partnership to be dissolved; each party to pay his own costs, and all litigation to cease.

THE FALL OF A BUILDING AT WALKLEY.

AN action,—Burton *v.* Powell, has been tried at the Sheffield County Court, to recover 6*l.* 14*s.* 6*d.*, damage done to the property of the plaintiff, under the following circumstances: On the 26th of January, the gable end of a house in course of erection, in Industry-street, Walkley, fell in, and bulged in the gable end of the house situated a few feet distant, and occupied by the plaintiff. A large aperture was made in the wall, and about half a ton of bricks and timber fell into the bedroom and destroyed furniture to the above amount. It was alleged that the newly-erected property had been built without proper supports, and that the mortar used in construction was little better than mud. The plaintiff, who had entertained fears as to the insecurity of the house, had removed his wife and children the day before the occurrence.

For the defendant, it was shown that the defendant was not the contractor for the property, and the plaintiff was non-suited.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the members took place on Wednesday, the 12th inst., at the Rooms of the Royal Institute of British Architects, the president of the Society, Mr. Sidney Smirke, R.A., occupying the chair.

The report showed that favourable progress had been made by the Society during the past twelve months.

"The gross receipts during the past year have amounted to 824*l.* 12*s.*, as compared with 838*l.* 8*s.* 4*d.* during the year 1871, and there remains now a balance in hand of 132*l.* 10*s.* 11*d.*, as compared with 70*l.* 18*s.* at the same period last year, and again a somewhat larger sum was distributed during the year 1872 than in 1871.

The council regret to state that the deaths of members during the year have nearly equalled the number of new subscribers; but it is earnestly hoped that great efforts will be made by all who are interested in the welfare of the society to enlist a greater number of members."

The report then alluded to the fact that though much work was being carried out by the profession at large, "old age and sickness have still their numerous victims; and, above all, the cries of the widows and children are still unceasingly heard."

The report concluded with a recognition of the gratuitous use of their rooms which the Royal Institute allowed the Society for holding their meetings, and of the prominent notice into which their president, Mr. T. H. Wyatt, had brought the Society.

The meeting then considered the auditors' balance-sheet, which showed the receipts during the past year, from all sources, to have been 428*l.* 12*s.*, and the expenditure 296*l.* 1*s.* 1*d.*, of which 190*l.* had been in gifts to applicants, and 31*l.* 18*s.* had been invested.

A discussion ensued, headed by Mr. D. Mocatta, upon the plans to be adopted to extend the Society's capacity for usefulness, which was still considerably curtailed through lack of funds; and upon the subject spoke Messrs. Boulnois, Cockerell, Kerr, and Nash.

In addition to those already cited as present, were Messrs. W. Moseley, Geo. J. J. Mair, T. M. Rickman, G. Wales, John Turner, the hon. sec., and J. Goldicutt Turner. Messrs. Horace Jones, C. C. Nelson, J. H. Hakewill, and John S. Phené all wrote regretting the probability of their being unable to attend the meeting.

At the close of the proceedings, the president stated that since the council meeting of the 27th ult., the following donations had been received:—

		£.	s.	d.
J. MacIvar Anderson (further donation)	...	5	5	0
Horace Jones	,, ...	5	5	0
D. Mocatta	,, ...	5	0	0
J. S. Phené	,, ...	5	0	0
John Turner, hon. sec.	,, ...	5	0	0
C. J. Knight	...	5	5	0
Arthur Blomfield.....	...	5	5	0
C. N. Clifton	...	10	10	0
Wm. Moseley	...	5	5	0
Robert Edis	...	1	1	0

And that Mrs. Edward Hakewill continued her late husband's subscription; also that Messrs. John Noyes and C. Dowling had promised to become annual subscribers each of one guinea.

ST. SEPULCHRE'S CHURCH, LONDON.

THE restoration of the fine old tower, west front, and porch of this church has been placed in the hands of Mr. W. P. Griffith, F.S.A., whose drawings, having been approved by the sub-committee and the Estates Committee, were unanimously confirmed by the Vestry at their last meeting, and Mr. Griffith was appointed to carry out the same.

The perspective view exhibits the perfect church, with nave, aisles, and chancel, but these latter are not contemplated at present.

The new octagonal angle-turrets are to be embattled and panelled, and surmounted by octagonal pinnacles with finials and crockets. The parapets are to be embattled and panelled, and the buttresses are to be restored with gablets. The belfry and tower windows are to have mullions, transoms, and foiled tracery, with canopied heads, finials, and crockets. The clock is placed in a canopy, with buttresses supported by winged figures.

The west window will be in three cinque-foiled lights, with transom and tracery, and, with the aisle windows, to have lead lights, quarried. The west doorway and porch are to be restored exactly as formerly. The canopied niche containing the statue of Chancellor Popham is to occupy its original position over the doorway of the porch, and the parvise turret is to be carried up to its proper height and embattled as formerly. All the restorations and details are to be of the fifteenth century, the church having been built in the year 1450.

EDINBURGH ARCHITECTURAL ASSOCIATION.

LAST week a meeting of this Association was held in the Rooms, 37, George-street. In the absence of the president, Mr. Alex. Ballantine was voted to the chair. After ordinary preliminary business, Mr. R. T. Shiells called attention to the very commonplace character of the buildings in progress on the south side of the Castle Rock; and after exhibiting the plans of them, the following resolution was passed:—"That the Edinburgh Architectural Association highly approve of the steps taken by the town council regarding the Government new barrack building on the Castle Rock, as they are of opinion that if executed according to the drawings, the building will be quite out of harmony with the site and surroundings." A paper was then read by Mr. Thos. Henderson, on "Some Causes affecting the Development of Architecture in Scotland," in which the relations between the history of the Scottish people and certain features of the national architecture were traced and illustrated. The points principally referred to were the influence of the mixture of race of which the Scottish nation consists—the isolated situation of the country, and the absence of great wealth among the people. Above all, the intercourse with Ireland in the early ages, and with England and France, at a later period, was shown to have left marked traces on Scottish art; while the influence of the national religion, both embodied in the primitive Church of the Culdees and in that of the Reformation, favoured a simplicity of ritual not conducive to magnificence in the ecclesiastical buildings of the country as a whole, though there were many noble and notable examples. Mr. Thomas P. Marwick afterwards read a paper on "Architectural Sketching," part of which we print elsewhere.

ARCHITECTURAL PUBLICATION SOCIETY.

IN consequence of letters complaining of the stoppage of the "Dictionary," we have made some inquiries as to the position of the work. Mr. Arthur Cates says, "the deaths, one after another, of the chief workers, and the other engagements of Mr. Wyatt Papworth, who holds the management of the text, seemed to seriously affect our progress. I have hoped for some opportunity to arise of which advantage might be taken to go on, and meanwhile, considering that we are trustees for those who paid under the new arrangement, until the way is more clearly to be seen I demur to incurring any more expenditure than is necessary, and have a large sum in the hands of the tresurer, Mr. Sydney Smirke, available directly we can go on. Of this the subscribers may be sure, that the funds are well taken care of in the hands of Mr. Smirke. Perhaps the better course will be to hold a general meeting, to which the facts of the position may be fairly stated. The only causes for not having done so long ago have been the hope and reasonable expectation that I might be able to lay before it a proposal for completing the 'Dictionary' out of hand."

THE CHARING-CROSS APPROACH TO THE THAMES EMBANKMENT.

AT the last meeting of the Metropolitan Board of Works, Mr. Bazalgette, the engineer of the Board, made a report as to the gradients and general features of the proposed approach to the Victoria Embankment from Charing-cross, as compared with the curved line suggested by the late Sir James Pennethorne. The report discussed at considerable length the relative advantages of the Northumberland House scheme and a curved approach. The merits of the two projects, according to the reporter's view, were thus briefly compared:—"1. Northumberland House approach is the most direct and shortest route with the best inclinations. 2. It would be a handsome improvement, whereas one side of the curved line must be very unsightly. 3. The Northumberland House plan would probably cost about one-third of the curvilinear project." The report was adopted.

The chairman announced that the whole of the new loan of 1,800,000*l.* was now fully subscribed, at an average price of 95*l.* 11s. 10d. per cent., so that the stock to be credited amounts to 1,883,033*l.* 14s. 4d.

Mr. Dresser Rogers stated that a large amount had been subscribed in sums of 100*l.* by the public generally, while 400,000*l.* had been taken up by one subscriber alone.

THE RECENT HIGH TIDES AND THE ROTHERHITHE WHARF,

PROCEEDINGS AGAINST THE OWNERS.

THE recent disastrous high tides which flooded several houses in Rotherhithe and the neighbourhood, and did much damage, have led to steps being taken to compel the owners of the wharf wall to reconstruct it, as in consequence of the defective condition of the wall in question, the owners of the wharf are held accountable for the injury to property which the high tides caused.

A memorial has just been presented by the Rotherhithe Vestry, from the residents of Adam-street, complaining of the loss and inconvenience which they have suffered owing to the flooding of their houses to a height of upwards of 3 ft. It appeared from the memorial that in some of these houses the occupants slept on the ground-floor, and that several of them were washed out, and lost their beds and other articles of furniture. Some discussion followed upon the presentation of the memorial, from which it appeared that the responsible parties were the owners of the wharf to which the mischief could be traced; and it was stated by the surveyor that some three months ago he called the attention of the owners to the defective condition of the wharf wall, informing them that the wall was an insufficient protection against the action of high tides, and that in case of any such disaster as had now occurred, they would be held accountable for the damage. It was agreed to forward the memorial to the owners of the wharf, with an intimation that they were bound to compensate the memorialists for the damage they had sustained; and it was also resolved to intimate to the owners that the vestry considered them responsible, owing to their having failed to carry out the recommendations of the surveyor in regard to the wharf wall, and that proceedings would be taken to compel them to rebuild it.

NATIONAL MONUMENTS.

IT is to be hoped that political changes will not interfere with the passing of an Act for the preservation of our ancient national monuments. Sir John Lubbock's Bill, now before the House, contains various schedules of buildings, one of which we give, as conveying an idea of the ancient monuments intended to be protected:—

ENGLAND AND WALES.

	County.	Parish.
The Dolmen Plas Newydd, Anglesea	Anglesea	Llandedwen.
The tumulus known as Wayland Smith's Forge	Berkshire	Ashbury.
Uffington Castle	,,	Uffington.
Sarsen Stones at Ashdown	,,	Ashbury.
White Horse	,,	Uffington.
The circle known as the Three Hurlers	Cornwall	St. Cleer.
The stone circle known as Long Meg and her Daughters, near Penrith	Cumberland	Addingham.
The stone circle on Castle Rigg, near Keswick	,,	Crosthwaite.
The stone circles on Burn Moor	,,	St. Bees.
The stone circle known as the Nine Ladies, Stanton Moor	Derbyshire	Youlgrave.
The tumulus known as Arborlow	,,	,,
Hob Hurst's House and Hut, Bastow Moor	,,	Bakewell.
Minning Low	,,	Brassington.
The circle known as Grey Wethers	Devonshire	Lidford.
The Amphitheatre, Dorchester	Dorsetshire	Fordington.
Maiden Castle	,,	Winterbourne St. Martin.
Badbury Ring, near Blandford	,,	Shapwick.
Arthur's Quoit, Gower	Glamorganshire	Llanridian.
The tumulus at Uley	Gloucestershire	Uley.
Mule Hill, Isle of Man	Isle of Man	Rushen.
Kit's Coty House	Kent	Aylesford
Danes' Camp	Northamptonshire	Hardingstone.
Castle Dykes	,,	Farthingston.
The Rollrich Stones	Oxfordshire	Little Rollright.
The ancient stones at Stanton Drew	Somersetshire	Stanton Drew.
The chambered tumulus at Stoney Littleton, Wellow	,,	Wellow.
Cadbury Castle	,,	South Cadbury.
Cæsar's Camp	Surrey	Wimbledon.
Mayborough, near Penrith	Westmoreland	Barton.
Arthur's Round Table, Penrith	,,	,,
Stones at Shap	,,	Shap.
The group of stones known as Stonehenge	Wiltshire	Amesbury.
The vallum at Abury, the standing stones within the same, and those along the Kennet-road	,,	Abury.
The long barrow at West Kennet, near Marlborough	,,	West Kennet.
Silbury Hill	,,	Abury.
The dolmen (Devil's Den) near Marlborough	,,	Fyfield.
Barbury Castle	,,	Ogbourne, St. Andrews, and Swindon.
Old Sarum	,,	Stratford Sub-castle.

Any monuments of a like kind to the above, not being situated in any park, garden, or pleasure-ground, and which "neither forms part of nor includes the ruins of any castle, fortress, abbey, religious house, or ecclesiastical edifice," will come within the operation of the Bill, and the commissioners to be appointed under it may prohibit its injury or destruction, and take steps to acquire it in whole or in part for the nation.

The Last of a Foreman.—On Saturday last at West Brompton Cemetery, the funeral of the late Mr. A. Rae took place. He was for several years a foreman in the employ of Messrs. Geo. Trollope & Sons, of Belgrave Works, Pimlico. The various foremen of the firm, together with about sixty of the *employés*, attended to pay the last mark of respect due to one who, by his uniform kindness and straightforwardness, was highly esteemed by all who knew him.

NORTHUMBERLAND HOUSE: AN IDEA.

SIR,—The transfer of this well-known Charing-cross standard from the noble owner to the Metropolitan Board of Works, for improvements in connexion with the Thames Embankment, has called forth in the press a variety of comments, reports, and historical matter. It has occurred, Sir, to me that a fine opportunity presents itself for setting up a mutually contributed memorial of considerable interest both to present as well as future metropolitan generations. There can be no two opinions that the "finest site in Europe" (as Trafalgar-square has been called) will have its beauty wonderfully enhanced by the contemplated new avenue from Charing-cross to the embankment, which will certainly form an architectural vista wholly unequalled. But we shall lose our old favourite landmark, the noble façade, with its crowning ornament, the Percy lion, now enclosing Northumberland House from view. Northumberland House naturally calls to mind the noble owners, who are so prominently identified with the great improvement in question. The writer had the honour of knowing the father of the present Duke, when, as Lord Lovaine, he took part in the grand procession at the Coronation of George IV. The present Duke was then a little boy, the Hon. Algernon Percy, before he went to Eton, and was even then a youth of gallant bearing; and in after-life, when he became Lord Lovaine, displayed a large amount of unostentatious benevolence, while the world at large only knew him as a young nobleman in "The Guards," and a member of Parliament. But the Percys have always been a model race, and good exponents of "Noblesse oblige." And in our own day, if we commence with our life-boats, and wade through a whole catalogue of charitable institutions, or look into the class of intercourse existing between the family and their tenants, and other parties of all ranks, a goodly example presents itself for the peerage at large.

Now, Sir, for my "idea." My suggestion is, that the patriotic act of his Grace in thus disposing of his family mansion should be taken advantage of by all parties, the Duke, the Board of Works, and the people, to record of the same something after the following fashion, viz.:—The new opening, when made, will present a footway crossing from one side to the other of considerable length. Let there be erected, in the centre thereof, as a refuge for foot passengers proceeding from Charing-cross to the Strand, a noble oval pedestal of white marble, some 10 ft. in height, and say 12 ft. by 6 ft. in dimension, the same to be surmounted by a proportionately smaller one, either intact or clustered, of polished red granite, of sufficient height and size to carry a cap stone to receive our old identical standard acquaintance, the Percy Lion, who now towers over the same spot. The pedestal to bear a suitable inscription, recording dates and old particulars, with a ribbon fascis in relieved bronze, "That here stood Northumberland House, the London residence of the Percys." The erection might be further utilised by the judicious introduction of small semicircular fountain basins for drinking. The whole might cost comparatively nothing, as, doubtless, we have amongst us public spirited marble-workers who would be proud, either singly or in a body, to supply the material for the very honour of the thing, to say nothing of the act as an advertisement. Let the new avenue, which will, doubtless, consist on either side of noble edifices, be called, say "Percy Gardens," or "Avenue," or "Northumberland Gardens," and, to unite the *site* with the *dulce*, let the East and West Strand and Charing-cross corners of the same be respectively occupied by handsome worthy erections, especially built if possible, the one for "Coutts's" bank the other for "Drummond's," both of which wealthy establishments are sadly in the shade at present as ornaments of street architecture, and the arrangement would form an appropriate link uniting the ranks of *haut ton*, wealth, and business. "Last and not least," let his Grace himself lend his countenance to the whole, and stipulate for the perpetuity of the same by vesting for ever, in the hands of suitable trustees, one-fifth of the purchase-money named, for the use and benefit (according to his own notions) of the poor and needy of the adjoining parishes. This would leave him in possession of a balance of 400,000*l.*, which would assuredly build for him the handsomest ducal residence in London.

We have already inaugurated a race of Peabodys in our midst, and an English duke would be a proud addition to the family, and would form an example to which the "hon" himself would significantly point his tail for all who come after him to follow; and would, moreover, set up a noble contrast on the southern side of the Strand to that which occasionally mars the serenity and repose of Nelson's modern lions on the north side.

In continuation, as the level of the Embankment is some 15 ft. lower than that of the projected avenue, a carriageway junction might be made on either side the same diverging right and left to the Embankment, of agreeable and convenient grade of inclination protected on the outer side by a handsome dwarf stone wall, terminating with a lamp-pillar at the lower end; and at either upper end a flight of steps for foot-passengers curving round an elegant superstructure in the centre, down to the Embankment,—said central erection affording a fine position for architectural and floral display.

J. W., C.E.

THE ABATTOIR QUESTION IN BRADFORD.

AT the present moment, when the question of public or private slaughter-houses is engaging attention in the metropolis, owing to the probable enforcement of the Act prohibiting private slaughter-houses, it may be interesting to notice how the same question has been solved in the important manufacturing town of Bradford in Yorkshire.

Some time since the Bradford Corporation determined to build a commodious abattoir at Leeds-road, at a great expense, with the sole object of inaugurating a better state of things in regard to the slaughtering of animals. The butchers took umbrage at the site, built a rival slaughter-house at Bolton Bridge, just out of the limits of the borough, and there carried on the butchering business. It was claimed for the corporation that this proceeding of the butchers was an infringement of the manorial rights, for

which the corporation has to pay a large yearly sum. A heavy loss accrued to the corporation from the butchers removing to their own abattoir, and litigation has been going on until last week. Some members of the corporation were determined to test the rights acquired by the lease of the manorial privileges, while others thought that the time had arrived when litigation ought to cease, and the question be settled by the corporation buying up the butchers' abattoir. The butchers wanted 10,000*l.* for their plant and premises, and 2,000*l.* for law expenses. This, however, was thought to be a high price, and the council have just now agreed to purchase the premises of the Abattoir Company for 10,500*l.* The litigation is thus extinguished. It has, however, been a wasteful affair.

HYDE PARK CORNER.

The Earl of Longford writes to us (as also to the *Times*),—

"The opening of Hamilton-place suggests a further improvement in the same direction, namely, the construction of a short length of road in continuation of Hamilton-place across the corner of the Green Park to Constitution-hill, and a carriage-thoroughfare by that route to Buckingham Gate. This would give a tolerably direct line from the Marble Arch to Westminster Bridge; it would still present some graceful curves, but, with a little shaving at Buckingham Gate, no serious angles, and would relieve, by avoiding, the blockade (to say nothing of the coachmakers' bills) at Hyde Park-corner.

Some years ago many of us viewed with alarm the proposal to open a route across a portion of St. James's Park. Experience has shown the convenience and the innocence of that arrangement. With this experience to guide us, it is believed that the adoption of the suggestion here respectfully put forward would, without inconvenience to the Crown or any one of its subjects, prove to be of equal public advantage."

That great public convenience would be afforded by such an arrangement as that proposed is certain, and though one or two obvious objections come at once to the mind, it well deserves discussion.

A scheme by Mr. E. M. Barry, for improving the means of access at Hyde Park-corner, was illustrated in our pages some few years ago.

"TO ARCHITECTS."

We have received several copies of a printed paper sent out by "the purchaser of the Clarendon Hotel, Old Bond-street," inviting architects to submit designs, with specifications and estimates, for the erection of a building on the site, to comprise shops on the ground-floor, with suites of rooms or chambers over, after the manner of the Belgrave Mansions, Grosvenor-gardens, and offering a premium of 50*l.* for the most approved design, and one of 10*l.* for the second. Further,—"The designs which obtain premiums are, with the plans, &c., to become the property of the Advertiser, who does not bind himself to employ any competitor to superintend or carry out the work." The least amount of consideration will, we should think, suffice to prevent any respectable member of the profession from responding to such an offer.

STAINED GLASS.

All Saints' Church, Acton.—The fourth of the windows in the east bay of this church has been filled with stained and painted glass, the gift of Mr. W. Hunter, of Purley Lodge, Croydon. It is from the studio of Powell, Brothers, of Leeds.

Handsworth Church.—A stained-glass memorial window, in memory of the late Rev. John Hand and his wife, has recently been fixed in the east end of this church. The whole has been designed and executed by Messrs. James Ballantine & Son, of Edinburgh. The window is divided into three tall lights, in the Early Pointed style of church architecture, and has been filled with thick crystalline stained glass. The centre light illustrates "The Last Supper." The subject underneath is a space containing the text, "As often as ye eat this bread and drink this cup, ye do show the Lord's death till He come." The side lights are illustrative of our Lord in the Garden of Gethsemane. The text, "My soul is exceeding sorrowful, even unto death," is depicted in the one subject; and in the other is, "O my Father, if this cup may not pass away except I drink it, Thy will be done." The diapering throughout the window is formed of the Cross, outlined upon a light ground. The Dove, amid golden rays, emblematic of the descent of the Holy Spirit, is introduced in the top arching of the centre light.

Hall of Peterhouse, Cambridge.—The large bay-window in this hall has recently been filled with stained glass by Messrs. Morris, Marshall, & Co. Mr. F. Madox Brown was the designer of several of the figures of worthies. The window comprises three tiers, of seven lights each. The whole represents a tree, on the branches of which hang shields of arms: these occupy the lowest tier of lights. The second tier comprises seven figures, one in each light, being representations of six worthies, and the founder of the college, in his monk's dress. All these figures are by Mr. Brown. They represent, from our left, Homer, Aristotle, Cicero, the founder, Friar Bacon, Lord Bacon, and Newton. Four other windows, for the same hall, have been undertaken by the firm in question. They comprise three lights each:—1. With figures of Edward I., St. Peter, and Queen Eleanor. The first and third of these are by Mr. Brown. This window is in its place. 2. Figures of Dr. Warkworth, Cardinal Beaufort, and Chancellor Holbroke. These figures, designed by the artist we have named, are finished, but not yet set up. 3. Cavendish, the chemist; Grofton; and Gray, the poet. 4. Crashaw, Bishop Cosins, and Whitgift. The last three are placed, and are by Mr. Brown.

Books Received.

Happy Homes for Working Men, and how to get them. By the Rev. James Begg, D.D. Second edition, revised. Edinburgh: F. Lyon. London: Cassell, Petter, & Galpin. 1873.

Dr. Begg, who is well known as an able and acute writer on social economy, has published a new edition of the above work, which has already been noticed in our columns. His theory is that, under certain forms of co-operation, every working man may eventually become proprietor of his own house; and we are told that "upwards of 900 houses have thus been built in Edinburgh, at prices varying from 130*l.* to 215*l.*, the feu-duty [or ground-rent] being from 11s. to 20s. They are nearly all sold, and are chiefly the property of working men; whilst the shareholders of the association have received annually from 7½ to 15 per cent. upon their capital." We agree with the doctor (although we have differences on certain points) in holding that this would be an advantageous application of the present high wages of the working classes, particularly when compared with "the miserable and sinful objects to which these are at present so often devoted."

VARIORUM.

The *Lithographer*, monthly journal, No. 33, vol. iii. March 15th, 1873. London: Wyman & Sons, Great Queen-street. This journal contains matter useful both to the trade and to the public. We hope to see it take higher ground as it progresses under its new arrangements.——"Salvage Corps. By Henry J. Barber. Brighouse: Bayes. 1873." The origin and use of fire salvage corps, with reasons for their general establishment, are shown by the author of this pamphlet, who is vice-president and trustee of the West Yorkshire Fire Brigade Friendly Society and chief officer of the Royal Insurance Volunteer Fire Brigade at Brighouse.——"The Amalgamation of the Mayor's Court, London, and the City of London Court; with Remarks on the proposed Tribunal of Commerce. By G. Manley Wetherfield, Solicitor. London: Longmans & Co. 1873." The amalgamation of the two courts named into one complete City Court for Civil Causes, as here explained, would, the author believes, remove unnecessary complications and remedy all defects in these courts.——"The London Necropolis, or Woking Cemetery. Chief Office, Lancaster-place, Strand." In this pamphlet an account is given of the picturesque and well-conducted cemetery at Woking, with remarks on extramural sepulture, the requirements of which this cemetery helps well to fulfil, as well as those of funeral reform——The *Gazette des Architectes et du Bâtiment* (February 28th) has reproduced from our pages the plans and particulars of Mr. Chas. Barry's design for school in Winchester-street, Finsbury.

Miscellanea.

Messrs. Moreland's Iron Factory.—Messrs. Moreland, well known for many years in this peculiar line, have recently carried out a considerable addition to their establishment in Old-street, St. Luke's. The *Metropolitan* says,—The frontage in the main street is extended 35 ft.; and the new building, 48 ft. high from footing to ridge, is lighted mainly by skylights in the roof, and is designed for an iron store. There is no display on the ground level—a plain brick façade of red brick, with a diaper pattern in blue, with a large entrance-gate travelling on rollers, from which it is suspended, and passing, when open, in front of the hall. On the floor above are two large windows, 18 ft. high and 9 ft. wide, of cast-iron built up in sections. On entering the warehouse is a weigh-bridge, over which vans and carts must pass and register their load in so doing, or otherwise the weight of any quantity of iron cannot be taken accurately at once—15 tons are the maximum load; and it was manufactured by Messrs. Hart, of Leman-street, Whitechapel. The whole store is commanded by an overhead traveller 32 ft. in the clear, powerful enough to move and lift 10 tons. This was fitted up by Messrs. Appleby Brothers, of Emerson-street, Southwark. The site is supposed to be exactly upon one of the localities in which pits were sunk for the interment of the dead *en masse* at the time of the Great Plague of London, and a public-house at the angle of the street still goes by the name of the "Pitt's Head,"—a local name undoubtedly derived in the first instance from the circumstance to which we have alluded, although now, as may be imagined, the signboard that designates the house is a likeness of the celebrated statesman of that name. The works have been carried out by their relatives, Messrs. Joseph Moreland & Sons, of Old-street.

Public Hall for Chesterfield.—As the result of many committee meetings and much deliberation, a joint meeting of the members of the council of the Chesterfield and Derbyshire Institute of Mining, Civil, and Mechanical Engineers; of the committees of the Chesterfield and Brampton Mechanics' Institute, the Working Men's Club, the Technical Classes, and the Chesterfield Young Men's Christian Association; of the subscribers to the fund for plans, estimates, and preliminary expenses for the proposed public hall and buildings; and of other gentlemen interested, has been held in the Municipal Hall, Chesterfield, Mr. C. Binns in the chair. It then it appeared that the only available site in the town was at the top of the new street to the railway station, now in course of formation, where it was proposed to purchase from the mayor a plot of ground containing 1,500 yards, at 12s. 6d. per yard, and to erect thereon a commodious structure, adapted to the increasing necessities of the town and neighbourhood. It was suggested by the committee that there should be in common, for the use of the various societies, a large hall capable of seating 800 persons, a smaller room for 200, and a good library. Something like 10,000*l.* would be needed. The offer of the mayor was accepted by the meeting, and it was resolved to make an appeal to owners of property, the great works in the neighbourhood, and the public generally.

Widening the Metropolitan Thoroughfares.—The Westminster District Board of Works have received from their Works and General Purposes Committee, a report stating that having considered the systematic widening of the streets in the district, and the importance of widening Cannon-row, they have agreed upon the following recommendations, viz.:—"That it is very important steps should be taken for widening Cannon-row at the present time, and that it is advisable a communication should be addressed to the Metropolitan Board of Works, calling upon that Board to make the improvement in connexion with the Thames Embankment works. That as to the more general question of widening all narrow thoroughfares upon a properly-arranged system, from time to time, as opportunities offer, either from land being vacant or from houses and buildings being demolished, the committee are of opinion the subject is of great importance, and deserving of most serious consideration, not alone with reference to the Westminster district, but in regard to the whole of the metropolis." The report is to be considered at a special vestry.

Art and Morality.—There are few questions upon which more dissimilarity of opinion prevails than that which relates to the mission of artists. The *Saturday Review* calls attention to a fallacious doctrine which has recently been put forward, to the effect that the artist is unfettered by political, social, and religions considerations in the exercise of his art. Without entering into a profound discussion of the question in its numerous ramifications, it shows the best manner of ascertaining the true relations between art and morality. As human beings reach their highest development by practising the rules of morality, and the highest art is illustrative of the most fully-wrought faculties, it may be taken for a general rule that a thoroughly healthy state of mind is most conducive to the performance of great works. The best art and the loftiest morality spring from the same source, and may be recognised by purity and truth. With regard to those who are exceptions to the rule it may be safely asserted that their strength lay in the nobler sentiments of their nature, not in the collateral evils which were unfortunately mixed up with them.

Heating Apparatus. — Messrs. Truswell, Brothers, & Holden, of Sheffield, have brought out an apparatus, specially designed for this end, which is adapted to warm the air in public buildings, private houses, warehouses, sale shops, &c. The invention has been patented, and is in use in different churches, chapels, schools, and saleshops in Sheffield and suburbs, besides various other parts of England. The apparatus consists of a number of cast-iron pipes (round or oval) placed in tiers, layers, or rows one above another, with space sufficient between each to allow of the heat to pass. Those pipes are fitted into socket plates with expansion joints, so that the apparatus may be got up to any heat without injury from expansion or contraction, the arrangement being such as to insure the fire passing under or over the whole of the pipes. The apparatus is encased in brick, and the cold air passes into the pipes by means of flues or apertures in the brickwork, and then goes into the hot-air flue, from which it travels into the building to be heated. The heat is regulated by a peculiar ventilator. The patent has lately been further extended, and the patentee intends to compete for one or more of the prizes offered by the Society of Arts.

The American Iron Trade.—The trouble in the English coal and iron trades has been a golden opportunity for American iron interests. The production of American railroad iron in 1872 reached the unprecedented amount of 975,000 tons, an increase of 200,000 tons in one year. As compared with 1864, the production of 1872 shows an increase of 191 per cent., the amount in the former year having been only 335,000 tons. In 1871 the proportion of English railroad iron to the entire consumption was more than 43 per cent., but is reduced for 1872 to 35 per cent., the supply from Great Britain having actually diminished during the year, while the aggregate consumption has increased by more than 150,000 tons. "A year or two more of the same experience," says the *Boston (U.S.) Advertiser*, "and we shall be independent of the English iron market, and may even begin to compete with it for the foreign trade."

Co-operative Associations.—The accounts rendered to the Registrar of Friendly Societies by 746 industrial and provident (co-operative) societies in England show that in 1871 they received for grocery, drapery, and other goods sold 8,687,562*l*. Their expenses amounted to 382,361*l*., and they realised disposable net profits to the amount of 720,121*l*. The societies established in Lancashire received in the year more than three millions cash for goods sold; those in Yorkshire more than two millions; those in Middlesex, 688,000*l*. Among these last the chief return is from the Civil Service Supply Association, Monkwell-street, which numbers 3,422 members, has a share capital of less than 2,000*l*., received in the year 625,305*l*. cash for goods sold, had expenses amounting to 40,758*l*., and made 18,626*l*. disposable net profit. Above 200 societies neglected to make a return.

The Surveyorship to the Highway Board' Middleton Cheney.—Mr. Samuel Sharp, of Thenford, parish surveyor under the old Act, and a member of the Board for a number of years, has been elected by a majority of 21 to 10 of the Brackley Highway Board, as their surveyor. The salary has been raised to 200*l*. a-year.

The Air-Gas at the Crystal Palace.—The directors of the new Air-Gaslight Company resolved, with permission of the Crystal Palace Company, to light up the western side of the north nave of the Palace with something like 550 burners. The row of burners on the eastern side of the same nave was supplied with ordinary coal gas. During the illumination (about an hour and a half), the air gas is said to have emitted a light that was quite brilliant and steady, at a height of 50 ft., and a distance of several hundred yards, while it was being made at the time of burning in the Tropical Department with very little trouble. The light was quite white, and at times of intense brilliancy, though it did not transpire with what velocity it was sent through the pipes. Its illuminating power, as shown in the nave, was equal to that of the coal gas.

Royal Hibernian Academy of Arts.—The forty-fourth exhibition of paintings, &c., in connexion with this Academy, was opened in their Gallery, Lower Abbey-street. The gallery presents an appearance superior to that of any former occasion, in consequence of the alteration in the lighting from the roof, recently carried out under the superintendence of Mr. J. H. Owen, architect of the Board of Works. The angular formation of the roof, by which light to a great extent was obstructed, has been removed. The roof is now of a semicircular form, and the skylight has full play on the sides and ends in a manner that leaves little to be desired. Even the pillars have been removed, and there is nothing whatever now to obstruct the view from any part of the gallery, or to throw a shadow upon a picture.

Monumental.—A monument has just been erected in Burton Parish Church to the memory of the late Mr. William Worthington, of Newton Park. It is chiefly worked in Caen stone, except the slab on which the inscription is placed, and that is of Carrara marble, surmounted by three carved niches of the Decorated period, in which are three figures emblematical of justice, mercy, and humility. A memorial window has just been erected on the south side of the chancel of Newton Solney Church, to Mr. Calvert Worthington, second son of the above-named gentleman. The window consists of three main lights, with traceried openings above, and is of the Decorated period. The subject is a choir of angels, chosen because of the great interest the deceased took in forming the choir of the church. Messrs. Hardman & Co., of Birmingham, were the artists.

Alleged Substitute for Coal.—Mr. William Wright, of Sheffield, plumber, has patented an invention which proposes, in short, to use air for fuel. We do not quite understand it; but it is thus described:—"Atmospheric air is passed through a battery charged in such a manner that it carbonises the air which issues at the other end, combustible gas burning with a flame brighter than that of coal-gas, and when mixed with atmospheric air having a heating power capable of melting copper wire. Mr. Wright calculates that the gas may be made on this plan at the cost of 6d. per 1,000 ft., but the consumption will be one-half faster than that of coal-gas, so that the price will be practically 9d. per 1,000 against the present rate."

The Proposed New Railway Station at Middlesbrough.—After the last meeting of the Town Council, Mr. Peachey, architect, Darlington, was in attendance at the Corporation Hall, and exhibited and explained the plans of the proposed new railway station. On the site of their present station the North-Eastern Railway Company intend erecting a station, 300 ft. long, an up-platform and a down-platform, with two sets of offices, at a total cost of about 90,000*l*. Mr. Peachey is preparing to let contracts for the work. This large outlay includes cost of subways underneath the new station to relieve the traffic over the level crossing in Sussex-street, which is a busy thoroughfare.

Hospitals to be built for Burning.—Dr. Woodworth proposes that all buildings intended for the treatment of the sick should in future be constructed of wood instead of stone, brick, or iron, and that after having been in use ten or fifteen years, these wooden structures should be destroyed. He advises this course because hospital buildings become in time impregnated with poisonous exhalations, which, respired by a certain class of patients, conduce to provoke erysipelas and cognate disease.

Water-Supply by Steam Fire Engine at Warwick.—In consequence of repairs being required to the waterworks' engines at Portobello, handbills were issued informing householders that for two days the supply of town water would be stopped. Mr. Pritchard, C.E., borough surveyor, however, determined to attempt to connect the rising main with the fire "steamer," and so supply water as usual. Accordingly, Shand & Mason's small engine was placed *in situ*, and pumping was commenced. The experiment was successful. The low-lying parts of the town were continuously supplied, and it was only in the higher levels that an intermittent flow was necessitated, from the low strength of the "steamer" as compared with the stationary engines.

Contamination of the Manchester Water-Supply with Lead.—A letter from Sir Joseph Heron as to a lecture by Mr. Crace Calvert at the Royal Institution of Manchester having been published in the local *Courier*, Mr. Calvert has written to the same paper showing that the Manchester water, which is very soft and pure, does act upon lead (as such water is apt to do); and he republishes certain statements and recommendations as to the fact contained in a report published in 1861 by a sub-committee of the local sanitary association. This is a matter of serious importance, and ought never to have been lost sight of. The lining of lead pipes with tin, Professor Calvert states, can only afford temporary protection, and is of no practical value. He has himself tried to substitute iron piping.

The Anniversary of Thanksgiving Day. The Prince of Wales has accepted a testimonial in commemoration of Thanksgiving Day. It has been presented by the Ludgate-hill Decoration Committee, and consists of a poem profusely and elaborately illuminated by Miss K. Ashley, and inclosed in a casket carved in rich pollard oak by Mr. G. A. Rogers, of Maddox-street. Sir Wm. Knollys, in a letter to Mr. Herbage, the secretary of the committee, conveyed

"The thanks and admiration which both the Prince and Princess expressed on seeing one of the most beautifully illuminated and bound volumes, and one of the most elaborately carved boxes which art in this or any other country can produce."

The late R. W. Thomson, C.E.—The inventor of the road steamer with india-rubber tires on the driving-wheels has died, at his house in Moray-place, Edinburgh, in the fiftieth year of his age. Mr. Thomson was a man of great ability. Blasting by electricity was one of his earlier occupations, and Sir William Cubitt was so much struck with it that he at once set him over 500 men and engaged him in the gigantic blasting operations then in progress near Dover. From Cubitt's he passed into the employment of the Stephensons, and at twenty-two began business on his own account as a railway engineer. He afterwards patented the india-rubber tire for road locomotives.

The New Royal Hotel at Blackfriars.—The contract for the erection of the new Royal Hotel, at the corner of the Thames Embankment and Blackfriars, which is about to be erected for Mr. De Keyser, and for which Mr. Gruning is the architect, has just been taken by Messrs. Lucas Brothers, the amount of the contract being 49,790*l*. This is independent of the foundations up to the level of the Embankment, and 30 ft. above the ground-level at the rear of the hotel, for which Messrs. George Trollope & Sons are the contractors. Messrs. Trollope's contract has been completed, and the work is now ready to receive the superstructure.

Thames Embankment at Battersea.—The Wandsworth District Board of Works propose constructing an embankment similar to the Albert Embankment on the Thames, in front of St. John's Training College, Battersea. The scheme has received the approval of the Thames Conservators; provided the work is carried out to the satisfaction of their engineer. The Board has no Act of Parliament, and arrangements must be made with Earl Spencer, who owns the property, and who requires the land and premises to be valued by his surveyor.

Plymouth New Guildhall.—There is some talk of completing the new guildhall in Plymouth in time for the visit of the Bath and West of England Agricultural Society to the town in June next. The architects are at present engaged with the plans for the gas-fittings for the southern range of buildings.

A Veteran.—Mr. G. L. Taylor, the surviving author of Taylor & Cresy's "Architectural Antiquities of Rome" (who is now in his eighty-sixth year), has expressed a wish to read a paper at the Institute of Architects, on "Classic Architecture," as principally exemplified in the buildings of Rome. But as papers have been promised for all the ordinary general meeting nights of the present session, the council have arranged that Mr. Taylor's paper shall be read at the rooms of the Institute on Monday, the 7th of April, when the chair will be taken at 8 p.m.

A Hotel-keepers' Association.—A meeting of hotel proprietors and managers has been held in the "City Terminus" Hotel, Cannon-street, E.C., for the purpose of forming an Association of Hotel-keepers for Mutual Protection and Co-operation. Mr. John Hall ("Great Western" Hotel, Birmingham) was in the chair. An association was formed, to be called "The Hotel-keepers' Association" and other appropriate resolutions passed. The offices of the Association are to be for the present at the "Great Western" Hotel, Birmingham.

Sewage Irrigation at Doncaster.—The extensive sewage works which the Corporation of Doncaster have been carrying out during the last two years, and which have involved an outlay of about 25,000*l.*, have just been completed, and the sewage of the town is now being pumped up to a farm at Sandall, three miles off, and utilised in the irrigation of the land. The farm consists of 265 acres, and is the property of the Corporation. It has been let for a term of fourteen years, at 800*l.* per annum.

Addition to Stockton Workhouse.—At a meeting of the Stockton Board of Guardians tenders for a new vagrant ward, estimated to cost 1,000*l.*, were opened, and subject to the approval of the architect. The tenders of Mr. Bland (builder), Mr. Smurke (joiner), and Mrs. Atkinson (plumber), to do the work for 988*l.* 9s. 6d., were accepted.

Lath and Veneer Cutting.—A prospectus has been issued of the Lath and Veneer Cutting Company (Limited), with a capital of 50,000*l.*, in shares of 4*l.*, to purchase Ellis's patents for cutting wood. The payment is to be 14,000*l.* cash, and 10,000*l.* in deferred shares.

Free Library and Museum for Hereford. The chief stone of a Free Library and Museum for Hereford has been laid. The new establishment is being provided at the cost of Mr. Rankin, of Bryngwyn Park. Mr. Bowers is the contractor.

TENDERS

Accepted for a new public house, at Linthwaite, for Mr. Samuel Stocks, Milnsbridge, near Huddersfield. Mr. John Barker, architect:—

Excavator, Mason, and Bricklayer.

Pearson	£472 10 0

Carpenter and Joiner.

Balmforth	£330 0 0

Plumber and Glazier.

Allison	£69 8 0

Plasterer.

Bottomley	£42 0 0

Slater.

Wilde & Son	£36 15 0

Painter.

Bottomley	£16 0 0

For erecting a warehouse in Bermondsey-street. Mr. George Legg, architect:—

Webster	£7,517 0 0
Conder	5,729 0 0
Little	5,321 0 0
King	5,015 0 0
Shurmur	4,694 0 0
Sharpington & Cole	4,497 0 0
Coleman	4,439 0 0

For erecting a warehouse, &c., at Rotherhithe. Mr. George Legg, architect:—

Webster	£18,535 0 0
Conder	17,947 0 0
Crockett & Dickson	17,800 0 0
Little	16,370 0 0
Coleman	16,017 0 0
Watts	16,000 0 0
Ennor	15,492 0 0
Sharpington & Cole	14,677 0 0
Shurmur	13,680 0 0

For the erection of schools for 500 children, and two residences at March, Cambridgeshire, for the March School Board. Messrs. Mumford & Townsend, architects:—

Rowling & Sharpe	£4,999 0 0
Broadhurst	4,774 0 0
Hutchinson	4,727 0 0
Feast	4,586 0 0
Fast	4,440 0 0
Swann (accepted)	4,100 0 0

For the construction of a piled quay-wall facing the river Hull, for Mr. Willows. Mr. Robert Clamp, architect:—

Hird	£477 0 0
Pearson	469 1 6
Evington	347 13 6
Clarke & Sons	330 0 0
Dosser, Nelson, & Weddall	326 0 0
W. & J. Hall	300 0 0
Sissons	290 0 0
J. & W. Leggott	286 0 0
Hudson & Shanks (accepted)	267 9 3

For St. Jude's Vicarage, South Kensington. Messrs. G. & H. Godwin, architects. Quantities by Messrs. Gardiner, Son, & Theobald:—

					Enclosure railing.		
Jackson	£3,913	0	0	...	£227	0	0
Cowland	3,740	0	0	...	240	0	0
Adamson	3,730	0	0	...	233	0	0
Manley & Rogers	3,720	0	0	...	232	0	0
Nightingale	3,698	0	0	...	216	0	0
Dove	3,665	0	0	...	219	0	0
Hill & Sons	3,640	0	0	...	211	0	0
Avis	3,470	0	0	...	196	0	0
Henshaw	3,443	0	0	...	197	0	0

Additions to Devon House, Manor-road, Forest-hill, for Mr. John Drake. Mr. Alex. Graham, architect:—

Axford	£1,080 0 0
Langmead & Way (accepted)	1,054 0 0

Alterations to Red Lion public-house, for Mr. D. Hislop. Mr. J. Williams, architect:—

Langmead & Way	£450 0 0
Foster	440 0 0
Bricknol	421 10 0
Bridgman & Nuthall	409 0 0
Thompson	370 0 0

For painting and decorating Prince Alfred Tavern, Charrington-street. Mr. J. Miller, architect. Quantities not supplied.

Mullin	£156 0 0 (!)
Cocks	130 0 0
Bridgman, Nuthall, & West	109 0 0
Foxley	107 10 0
Patterson	97 0 0
Purkiss (accepted)	59 9 0 (!)

For alterations and additions to No. 3, Charles-street, Long-acre, for Mr. Hislop. Mr. T. Williams, architect. Quantities not supplied:

Langmead & Way	£450 0 0
Foster	440 0 0
Bricknell	421 0 0
Bridgman, Nuthall, & West	409 0 0
Thompson	370 0 0

For building a warehouse for Mr. Charles Venables, New-street, Cloth-fair. Mr. Sanders, architect. Quantities not supplied:—

Capps & Co.	£936 0 0
Kung & Son	898 0 0
Read	876 0 0
Bridgman, Nuthall, & West	838 0 0

For alterations and additions to Nos. 19 and 20, Nicholas-lane, for Messrs. Green & Son. Mr. Geo. Legg, architect. Quantities supplied:—

Bridgman, Nuthall, & West	£1,838 0 0
Kent	1,354 0 0
Little	1,289 0 0

For alterations and additions to "Sandstone," near Uxbridge, for Mr. F. B. Garrard. Mr. Charles J. Shoppee, architect. Quantities by Mr. Sidney Young:—

Macey	£2,369 0 0
Gibson Brothers	2,081 0 0
Colls & Sons	1,994 0 0
Adamson & Sons	1,745 0 0
Fassnidge & Son	1,692 0 0
Kearley (accepted)	1,650 0 0

For alterations to the City of Paris, Old Ford-road, Bethnal-green, for Mr. James Ayton. Mr. E. Brown, architect:—

White	£448 0 0
Blackmore & Morley	417 0 0
Pringle	405 0 0
Marr	362 0 0
Christoffer Brothers	295 0 0
Aldous	278 0 0

For superstructure of the New Royal Hotel, Blackfriars, E.C., for Mr. P. de Keyser. Mr. E. A. Gruning, architect. Quantities by Mr. James Barnett:—

Myers & Son	£55,872 0 0
Jackson & Shaw	55,327 0 0
Ashby & Sons	55,295 0 0
Holland & Hannen	54,763 0 0
Conder	54,215 0 0
Rider & Son	53,920 0 0
Browne & Robinson	53,780 0 0
Trollope & Sons	53,468 0 0
Ferry & Co.	52,900 0 0
Henshaw & Co.	50,827 0 0
Lucas Brothers (accepted)	49,790 0 0

For villa at Sydenham, for Mr. H. Grain. Mr. J. Norton, architect:—

Gooding	£2,508 0 0
Oldrey	2,440 0 0
Aitchison & Walker	2,395 0 0
Boden	2,390 0 0
Blandford & Jones	2,130 0 0
Blackmore & Morley	2,100 0 0
Kenat & Co.	2,040 0 0
Clark	1,999 15 0
Guest	1,933 0 0
Tibbett, jun.	1,838 0 0

For alteration and new shop-front, Buckingham Palace-road. Mr. Shea, architect:—

Wagner (accepted)	£289 0 0

For alteration and new shop-front, for Mr. T. S Thwaites, Buckingham Palace-road. Mr. T. Withers architect:—

Wilks Brothers	£138 0 0
Wagner (accepted)	112 0 0

Mirfield.—New schools, out-buildings, fence, walling, and master's house. For Mr. John Banks, architect, read Mr. John Barker.

TO CORRESPONDENTS.

Cracked Bells.—Will any of your readers kindly inform me if there is any way of improving the tone of cracked bells? I am interested in a small church which has two such bells, and where it is almost impossible to raise funds for re-casting.—P. Even.

H. R. (sound and sufficient knowledge could not be obtained in the time named).—T. M (paper was already in type).—J. S.—F. F.—R. W. P.—C. P.—T. L. W.—Sir R. M.—A. M. H.—R. M. B.—E P.—S. B.—A. J.—J. B.—J. L.—J. J.—Sixty years of age.—M. P.—L.—R. M. T.—G. C.—Lord L.—W. P. G.—R. Brothers.—M. & K.—J. B.—J G.—C. J. S.—H. R. W.—E. A. G—R L R.—G W. B.—G. W. U.—Gen. S.—R. B.—J. H.—S. C.—J. C.—Dr. M.—M. & T.—L. & W.—R. H W.—B. & Co.—W. G. S.

We are compelled to decline pointing out books and giving addresses.

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The Builder.

VOL. XXXI.—No. 1573.

*The Real, the Conventional, and the Ideal.**

IN the present state of the fine arts in this country, the most important,—or, at all events, the most self-supporting, — branch of design, is, probably, portraiture. In this pursuit, while family affection, social respect, historic pride, physiognomic study, concur in demanding the portrayal of individual likenesses, it is unfortunately too often the case that the mainspring of the call on the painter is personal vanity. Under this disastrous influence it is impossible that the noblest features of art should be developed. The vigorous grasp of physiognomical characteristics, good or bad, which is the chief merit of portraiture, is not cultivated by the painter whose main object is to please his sitter or his friends. Neither the dress nor the ordinary type of — at least the men — of our time and country is often picturesque. Thus the pursuit of portrait-painting for the sake of income tends to falsify or to conventionalise art, and to cramp, rather than to develop, the powers of the artist. Refuge is sought in the courtly blandishment of some fashionable painter against the unflattering testimony of the camera. Few things are more distasteful to a man of culture than to be expected to look through some richly-bound volume, full of the *cartes de visite* of the family and friends of the owner. The sacrifice of the most pictorial light, or of the most characteristic expression, in the least ordinary of the subjects; the intolerable self-satisfaction betrayed by others; the positive hideousness,—thanks to strong and ill-cast shadow,—of many, lead one to wish evil to Fox Talbot. But the walls of many of our exhibitions are crowded with productions which share the general want of interest of *cartes de visite* without claiming even their questionable virtue of a sort of grim fidelity.

At times, indeed, the painter will clothe his sitters with the mantle of his genius. He will see the *man*, and reproduce him on the canvas. Thus wrought Titian, Vandycke, Gainsborough. Or an artist may see his subject through the coloured light of his own pictorial imagination, and present it to the admiration of posterity aglow with that borrowed lustre. Thus did Sir Thomas Lawrence. An air of noble, if somewhat histrionic, dignity was communicated by his brush, while likeness was yet preserved. In comparing portraits of the same famous beauty by two such ornaments of their profession as Sir Joshua Reynolds and Gainsborough, no one could mistake who was the painter of either. The strong paternity of the painter's genius is as distinctly apparent as the material evidence of his art.

We are not without ample guidance for the formation of a pure taste in portraiture. All the elements of what may be called realistic, conventional, and idealistic treatment are illustrated by the relics of ancient art. As to painting, those only who have had the rare good fortune to witness the first unveiling of some long-buried Roman fresco at Pompeii can speak with full appreciation; but in sculpture we have instances of an excellence that is heroic. A few, very few, Greek gems and coins, a more numerous collection of portrait busts of imperial Rome, and a selection from the Papal medals, especially those about the date or ascribed to the hand of Cellini, carry portraiture to its *apogee*. As we look on them with wonder, no less than with admiration, we may reflect how the vehement pathognomical action of the human countenance among these impulsive races, and in a climate where the blood runs so hotly, ever present to the observation of the artist, instructed him in the subtle truths of physiognomy. Unchecked and violent play of feature, no less than of form, was constantly educating the ancient artist who looked at human beings as subjects for portrayal. With this constant exhibition of the clothing of sentiment and passion in expression was blended the influence of the traditions of art, the constant reference to those methods of delineating certain ideas, or certain characters, that had become conventional and determined.

The influence on Grecian art of special means of observing the play of human emotion may be detected, in its most delicate phase, in the difference that exists between the degree of individuality given by Greek artists to the representations of the two sexes. Certain ideal embodiments in the course of that progress of art of which the history fails us, had been arrived at by the period of highest excellence. Certain genii, or gods, or mythological personages, had assumed not only conventional attributes, but permanent conventional types. Jupiter, Hercules, Apollo, Mercury, Neptune, are to be recognised even in fragments. With the conventional idea strongly impressed on his mind, the artist constantly reverted to the formation of nature when he sought to reproduce the type. The Wearied Mercury, that masterpiece of Italo-Greek sculpture, was not an academic study from a model. It was not patched up, like the design of a Wedgwood vase, from a gallery of statues. It was not drawn by the artist from his own conventional erudition and anatomical knowledge.

It is impossible to study that all but breathing bronze without tracing the evidence of the different elements mastered by the sculptor in perfecting his marvellous creation. First is the tradition of art—the conventional idea of Mercury. No one would think the statue intended for that of a youthful Hercules, or of an Apollo, or of a Cupid. Then there is the inspiration of the pose,—the languid, momentary, voluptuous, repose;—the stereotyping, for all time, of an actual incident in the life of a real Grecian youth, that caught the sculptor's eye by hazard, and never faded from his memory. With this we have the fruit of patient, truthful study of the actual model; of the aid derived by the sculptor, in the embodiment of his well-pondered design, from the constant comparison of his work with the living form. In the absence of either of these elements of art, such a production as the Wearied Mercury would have been superhuman.

We may contrast such a work as this with the productions of Flaxman. In him we behold an artist of rare and delicate taste, formed on the purest models of the art of the past. He loved Greek art with a passionate love. He stored his memory and his sketch-book with its forms; he became almost as fully possessed with the conventional ideas of classic sculpture as Phidias himself. Nor was imagination wanting, nor labour. But occasion failed him. In the habitual life and movement of decorously-dressed English men and women, or in the commanded and artificial attitudes of models, classic art could find no food to digest. It became starved to death. One ramble, in a hot summer evening, on the wave-beaten shore of Sorrento would have given Flaxman that without which it was vain to seek to evoke the shade of Hector or of Helen. A glimpse at Southern life,—at the heroic,—the nude,—the natural,—and then a faithful study of the typical living model,—for even the proportions of the Northern races differ from those of their Southern cousins,—and Flaxman would have grasped that triumph which his taste, though not his method, deserved. But Flaxman's Italian sketches are not taken from life, but from sculpture. Thus, Italy failed to impart the true lesson to his mind.

While so distinct an individuality marks the heroic sculpture of the male sex, female forms, or rather female faces, are far less readily distinguishable. Flora, Juno, Hebe, Minerva, Diana, Venus,—who can tell which is represented in the absence of her attributes? It may be thought that the comparatively neglected state of female education in Greece may in great measure account for this want of ideal individuality. To some extent, this may be the case. But in an age which produced such women as Aspasia or Sappho, and in which freedom of female action was vindicated by such a tongue as that of Xantippe, there could have been no want of characteristic female portraits, had the artist been as free to observe the gentler, as the ruder, sex. And among the Roman portrait busts we find most marked instances of individuality. Sabina, and Plotina, and Cleopatra, have come down to us through the shadows of time with as distinct individual vitality as Tiberius or Scipio; or the immortal Caius Julius himself, whose long-throated effigy is such a glory to the British Museum.

In depicting goddesses and heroines convention was at a loss; for so was observation. With queens, and empresses, and famous beauties, the sculptor was as much at home as with their lords. But the most graceful inhabitants of Olympus never came altogether out of the golden haze with which the Southern sense of decorum thinks it needful to veil female chastity. And when at last a long-lost art dared to present,—in spite of some lingering sense of impiety, — the female form entirely unveiled, neither physiognomical nor pathognomical knowledge of the sex was on a level with the anatomical excellence which even in the work of Praxiteles tells more of the labour of the modeller than of the inspiration of the poet.

There can be little doubt that the conventional element of Greek art was an inheritance from Egypt. In Egyptian sculpture conventionalism may be said to have attained its highest power. Certain features, such as the eye, are represented, during certain periods of Egyptian art, absolutely out of drawing. Other details, whether accurate in their resemblance to nature or symbolical (such, for instance, as the short, square beard), can only be regarded as conventional indications of actual forms, whether the artifice were that of the sculptor or of the subject. The attitudes are stiff; the proportions, at times, preposterous. The constant repetition of reciprocally-indistinguishable forms, of Colossus or of Sphinx, however it may have excited the sense of sublimity, is hardly fitted to awaken that of beauty. But amid all that is so foreign to a taste which has been formed on Greek models, the sense of power, of repose, and of serenity that broods over the mighty images of the buried Pharaohs denotes a very lofty phase of art. The sculptor in the time of the eighteenth Egyptian dynasty may be said, like the ancient monarch himself, to have sought to see the gods. In the age of Pericles, the artist regarded human passion and human beauty. Under the fierce blows of Michelangelo, marble seemed to become plastic, and the observer gazes with wonder, not unmingled with awe, at the mastery evinced by the artist alike over his material and

* See *ante*, p. 177.

over his subject. In the works of Roubiliac marble is made to counterfeit a textile structure, in the drapery, and life—or death—in the figures themselves. In many of the works of Bacon we see an elegance equal to that of the Gascon sculptor, shorn of his audacious boldness; and we trace a graceful mannerism as characteristic as that of Lawrence himself. And so we descend to the street sculpture of the day,—to the Wellington on the Marble arch,—or to the Peel, which, in Palace Yard, proved intolerable even to London.

Regarded in another light, we may say that sculpture, in the time of the kings of the name of Thothmes and of Amenophis, had not yet fully separated itself from architecture. In the Greek period it had passed into its own special phase of epic art,—of poetry in marble. Imperial sculpture waited upon empire, and sank into portraiture. With the Italian artists, sculpture became the handmaid of religion, of superstition, and, finally, of ostentation. And so went on the decadence, till the sculptor sank into the companion of the sexton, or, still more lamentable, into the designer of lampstands, and the decorator of the *salon*. The terrors of death itself would be augmented, to a man of refined taste, if he thought his memory destined to be associated with the oppressive ugliness of such a stable-door as now disfigures the aisle of St. Paul's, under the name of a monument to Lord Palmerston and his brother,—a ponderous, gloomy, unmeaning gateway, flanked by two very questionable angels, trampling on their own wings, like a couple of demonstrative barn-door chanticleers.

Unquestionably the most perfect and harmonious combination of the ideal, the conventional, and the realistic is to be found in the architecture of Greece. The noble proportions of those Classic forms, which, after a lapse of more than 2,000 years, still challenge any attempt at rivalship, are derived from the very simplest origin. A row of posts,—rough, unsquared trunks of trees,—with a block or slab placed underneath (as we guard our mining framework of to-day), to give a broader basis for the upright; horizontal beams, laid from post to post, and others laid at right angles athwart; a pointed lean-to roof; these are the rude expedients, common to almost every human race, that have grown into the lofty columns, the graceful bases and capitals, the entablature, the triglyph, and the pediment. Realistic, in the humblest sense, in their origin, the various architectural elements bear the impress of a conventional mode of treatment that has maintained the general form of wooden structure when the material was entirely changed. The most brilliant and costly marbles of Attica were not employed in structures of an essentially masonic character. The very term of trabeate architecture tells of wood, and of wood alone. A true masonic style may be said to have originated in Italy, especially in those districts where, as on the Adriatic coast, a fine soft stone, that hardens on exposure to the air, tempts the sculptor to lavish his work. We there find in the windows, the door-posts, and the masks, gurgoyles, consoles, and other unnamed ornaments that luxuriate over the costly palaces, a richness that so far overpowers the original idea of Classic outline and regularity as to form almost an independent style. But as in Egypt and India we find either the earth mound or the cave to be the original type followed by the architect, so do we trace the impulse of a wood-building people even in the noblest triumphs of Greek architecture. Yet where does the ideal soar to such a pitch? Whence was learned the numeric harmony that defines every proportion? What grasp of optical law was possessed by the mind that substituted the delicate curve of the outline of the column for the rigidity of an undeviating straight line? How has the humble,—we may almost say the ignoble,—element of the pitched roof (the expedient of countries where snow has to be provided against) become the very Olympus of sculpture, in the glorious Athenian temples; and thus come to be considered as such a necessity in buildings of a certain costliness as to have descended to us in the porticoes of the British Museum and the Royal Exchange? So perfect became the workmanship, that the designer's art paused, and finally resigned itself to the mere effort of reproduction, with no variations but that of scale. In the capitals was provided, even by the severest law, an outlet for individual fancy,—a space for an extempore utterance in the liturgy of art. But even of that it is comparatively seldom that the architect has availed himself. The symbol of the Deity to whom a temple was dedicated is to be sought in the capitals of the columns. It is mostly confined to an insignificant boss. In the costly pillars which have been crowded by the great Saracenic builders into the Dome that protects the sacred Altar Rock at Jerusalem, at least a dozen different forms of capital may be distinguished. The most exquisite play of fancy (when we once depart from the pure Corinthian type), with which we are acquainted, to be found in this department of architectural design, occurs in the case of Pompey's Pillar at Brindisi, where the heads of sea-gods are entwined by the foliations of the capital.

We are not among those who hold that the delicate harmonies of structural proportion have been exhausted, and that, with the close of the Classic period, architecture uttered her last noble message. More than three centuries of Gothic art protest against such an idea—of art that was indigenous to non-Latin soil, and that sprang up with a vigour, and flourished into an exquisite beauty; that was fed by Teutonic fancy, Teutonic earnestness, and Teutonic faith. We will not now linger to trace the outcome of the three elements of which we are speaking, either in the severe and noble forms of Early English work, or in the burst of luxuriant beauty in which the art expired. But let any architect attempt to do what is thought desirable by some modern painters. Let him dissolve the harmony of his art. Let him be real, with the sordid realism which was encouraged by the window-tax; with the realism of that pigstye style of architecture which produced the hideous forms of the old Dissenting chapels, now generally swept away. Let him argue for the beauty of the conventional forms of street architecture, of suburban lath and plaster,—for the ideality of an elevation of his own, unlike any for which a precedent can be found elsewhere. We know to our cost what is the result of attempts such as these. We set them down, not only to bad taste, but to positive professional ignorance. From this judgment there is no appeal. And it is only because the painter addresses a more limited and a more timid public; because, little as he may know of the great and enduring laws of his art, ninety-nine out of a hundred of his spectators know less; that the imposition of assuming to found a new school on neglect of main principles of art can for an hour escape detection. Architecture may supply more ready illustration of this important truth than can either sculpture or painting; but the law in the three sister arts is the same.

The expression, then, of a realistic, an idealistic, or a conventional school is tantamount to the phrase of confessedly imperfect art. In any truly pictorial or sculptural design the three ideas must be combined. To attach undue importance to either is to ignore the proper influence of the others. Nor is this all. Not only is a devotion to, for example, what may be called a realistic treatment, accompanied with a blindness to some of the noblest qualities which the artist ought to cultivate with the utmost care, but it defeats its own limited object. An attempt to reflect in an imperfect mirror,—to copy, not to reproduce,—will, after all, have as little actual reality as Chinese perspective.

It is not the case that an appreciation of the true elements of excellence in art (such as leads the critic to describe the artist who seeks for fame by a pursuit of only one of the many studies necessary to complete mastery of design, as being only imperfectly educated) would tend to the production of sameness or unpicturesque uniformity. In the absence of original genius, high art cannot exist; and such genius will always speak in its own native, unmistakable accents. Let us press into the service of art the resources of chemistry and of mechanics. Let us chasten the imagination by accurate anatomical knowledge, fire it by the contemplation of all that is most beautiful in nature, and guide its wing by the study of all that is most excellent in ancient art. The result will be like that of giving tools to a workman or forces to a general. The true artist will create, under such a training, productions to which he could never have attained by uncultured effort; but he will no more lose his individuality or simulate the work of a brother artist than Wellington can be confounded with Hannibal.

It is therefore every way to be desired that writers and thinkers on art should cease to speak of the real, the natural, the ideal, the conventional, or the like, as distinct and competitive principles, pursued by schools of rival excellence. The true artist must grasp the whole. He must be natural,—for he must see nature as she is, not in her outer clothing alone, but as the teacher, the mistress, and the friend; and he must bear her message to the world. He must be real,—for such a message is truth. He must be conventional,—for he must know the result of the study, and the insight, and the practice, of those who have gone before him in his path. He must reap the fruit of their labours, and profit by their errors. He must learn to speak in a language that is understood by mankind, and to appeal to a sentiment prepared to respond to his utterance. He must be ideal,—for if he unite all the former excellences, and yet look only on the lowest, the meanest, the most paltry aspects of life, he will be but a hewer of wood and drawer of water for the temple of art. He must learn to seize the noblest motives, to portray the most beautiful forms, to clothe his work with the most elevated associations. Thus only can he hope, in his life or in his works, to attain to the fellowship of the immortals.

COLOURED DECORATION.

On this subject Mr. G. Aitchison read the following paper at the last meeting of the Architectural Association:—

From very early periods it is probable that something was used for the express purpose of decorating the abode of man. The skins and leaves earliest used to exclude wind and rain, or to insure privacy, must have suggested ornament when their place was usurped by woven stuffs; and in fact the greater part of all the patterns used for modern decoration point to their woven origin. To those who dwelt in caves, in holes, or subsequently in mud or mud-lined huts, sculpture most naturally suggested itself, and doubtless some rude kind of painting was almost coeval with it. As wealth and civilisation increased, the various substances that are useful, pleasant, or ornamental were added to increase the splendour and comfort of man's abode. The perfection to which decoration arrived at many epochs in the world's history we probably owe to religious enthusiasm. Man when confined to purely selfish objects is but a poor creature, and it is only when generations of men are fired with patriotic, religious, or benevolent enthusiasm that individual man exhibits the highest capacities of his nature. We shall find the most perfect specimens of decoration in the church, the temple, or the mosque, rather than in the house, the palace, or the council chamber.

The arrangement of decoration in one way is simple, as in the bulk of cases it is internal, and can but be applied to the floor, to the walls, and to the ceiling. The floor has to be walked on, and the lower part of the wall to be protected from injury, dirt, and stains, and, if possible, made agreeable to the touch. Therefore, properly speaking, the upper part of the walls and the ceiling are the only parts in which the decoration is purely for instruction and delight. And as "the proper study of mankind is man," you will find that the main body of the decoration in every palace, church, or temple is the depiction of man, except in the case of those religions where the portraiture of the human form is forbidden. But this is the art of the sculptor or the painter, and with neither of these do I wish to interfere, confining myself to the humbler part that falls to our lot. Let me say that no one should attempt decoration in whom loveliness of colour is not an enrapturing delight; for such a one, if he once departs from monochrome, will be a curse. If his greatest pleasure is not to bathe in the liquid-coloured light of fine stained glass,—to watch the colours fade out as the sun goes down, imperceptibly fading into greys and greens,—to be entranced with the deep azure blue of the mountain gentian,—never to forget the flaming star that the sun makes of the first autumn leaf, in the deep gloom of the woods;—if he has not been thrilled with the harmony of some bit of chequered light falling on a mountain stream from between trees,—or with the mysterious colours of a distant wood or mountain,—even if he does not dream of the beautiful colouring of some Oriental dish, dress, or carpet,—let him avoid coloured decoration. Always remember that you are Englishmen living in the nineteenth century, and in all probability doing work for Englishmen of the nineteenth century, and that you owe to yourself, to them, and to your country that you give something beautiful and new. Do not be a copyist, a reproducer, a paraphraser, or imitator, but do what is lovely to

you, and make those you do it for love it. You are an artist, an inventor, a maker, a poet if you will, and you are to impress your own creations on your own age. If you have no new ideas, no inspiration, nothing that you think lovely and want to do,—leave decoration and do something else. Decoration is an art, and therefore little can be written or said about it,—it is not a science for which rules can be given. At the most you can only give recipes, and those are not of much value. Colour is the main thing to study, and it is not the Greek or any other example that should be studied by day and by night,—but the book of nature. You have the sky and the clouds, sunset and sunrise, the pond, the lake, the river, the sea, and the ocean, the woods and fields, the rocks and mountains, the colours of birds and flowers, of butterflies and beetles, of beasts and fishes, and from these you cannot but learn. And you will learn much more even than form and colour,—you will learn what may be called the inexhaustible patience by which effects are obtained. You will generally on close examination find that in a brilliant flower the brilliance is partly obtained by the various gradations of tint and tone, and partly by its having some small spot, speck, or dot of complementary colour placed where it gives the greatest effect. The light is concentrated on one particular spot by its sculptured form. You will find that the surface is ribbed or embossed,—the texture is dull like silk, or shiny like satin, or piled like velvet, or shaggy like plush,—and that its general effect of colour is set off by the tertiaries of its leaves and stalks. After successive and unavailing attempts you may throw down your brush in despair on finding that your sketch has just missed the grace of the flower, and the peculiar loveliness of the colour. In such work, however, you will, if you persevere, learn much. You will improve your taste, and your admiration will be raised for the inexhaustible fertility of invention, and the exquisite subtlety of the methods that nature employs to bring to perfection one little perishing flower. You will also learn the relative value of form and colour. Throughout nature you will find that some things are to our eyes only barely agreeable; others are ugly; while some are of an exquisiteness of form or of colour that you could never have appreciated without diligent study. These are what the French call *distingué*. As an instance, the beauty of the flower of the pumpkin may be noted,—not rich in full colour, but perfect in form. The leaves of the lemon have charmed many a painter by their peculiar gracefulness, his trained eye discerning in these varied forms of delicate loveliness a rare quality, not revealed except to the initiated. Natural objects are by no means equal in beauty. It is as ridiculous to suppose that all things are equally beautiful as to contend that the croak of the crow or the scream of the peacock is as musical as the song of the nightingale. The union of perfect form with perfect colour is all too rare in the work of man. Remember always, that though we are now supposing colour to be the only matter requiring to be studied, when you can apply it to and among pure and finished forms its own value will be enhanced. Beauty of colour may do much to correct or to cloak imperfect architecture; but the finest work of man is the wedding of wealth of colour to what is in itself noble, graceful, or otherwise excellent,—as music to immortal verse.

In designing the decoration of a house, you have to consider the various uses for which the parts of the house are intended, and this must necessarily govern your style of decoration. Let us say, your house consists of a hall, staircase, library, dining-room, drawing-room, boudoir, and bedrooms.

The hall is a passage only for the inmates and their visitors, and a waiting-room for servants and messengers. It should convey, to a certain extent, a notion of comfort and of the quality of the house. It must not be too dark, or else it makes the reading of addresses, &c., too difficult; and as it is generally a receptacle for hats, coats, rugs, sticks, and umbrellas, it will require a plainer and broader treatment than other parts. As visitors cannot conveniently linger there, no very elaborate decoration is required. Such decoration might also spoil the effect of any more elaborate adornment of the staircase or the rooms, by raising the expectation too high, or it may give a smack of ostentation to the house. This applies, of course, only to the halls of ordinary town and suburban houses. A fuller and richer treatment of very special kind may be used in halls of large monumental country houses or town palaces. The hall of the Roman house in which the patron received his clients required, so to speak, much decoration, as something of a compliment to those who visited it; and a parallel demand for statelíness or appropriate elegance is made for a hall used often for receptions of any kind.

The staircase must be light; or, if the lighting is insufficient, the tone must be light, so as not to increase this insufficiency. A staircase may be treated in almost any way, either simply or elaborately; but, of course, this must greatly depend on its architectural character and on the decoration of the rooms. If the staircase is very small or narrow, elaborate decoration is thrown away. If the rooms are brilliantly and gorgeously decorated, the staircase must be simple, or you injure their effect. If the rooms are treated with severe simplicity, you may concentrate the splendour of your decoration on the staircase, unless it is to be the field for exhibiting sculpture or painting. In this case the pictures must be your first consideration,—the grounds for them kept quiet, and gold and silver used sparely if at all,—or the high lights will be destroyed by the brilliancy of the reflections from the metals.

For the dining-room, you want to convey the idea of warmth and comfort; and as it is frequently the picture-gallery of the house, it must be treated in entire subserviency to the pictures,—as a setting for the gems.

The library is for study, and its decoration must also be broad; not so light as to fatigue the eye, nor so dark as to render reading difficult. There must be nothing in its decoration to distract or even greatly to attract the eye.

The drawing-room is, perhaps, the most difficult room to treat, for it has to fulfil so many different and even opposite requirements. It must be light and cheerful by day, as well as brilliant at night. It must be suitable to the complexion and dresses of ladies, and this while its walls have to serve as background for pictures, china, and objects of *virtu*. Satin damask supplies much good decorative material for drawing-rooms. A room that is to be used largely for music has other difficulties as well. Here no stuffs may be used in hangings in any quantity: even flock paper is considered objectionable by musicians and musical critics. Wood, too, will be preferred to plaster. At all hazards and at the cost of any amount of difficulty let each room be first of all thoroughly suited for its special purpose.

The boudoir is easier. It is the temple of the lady of the house, and must be treated the way most advantageous to her complexion. An air of luxurious repose must also be given, with some tinge of its fitness for her especial pursuit, be that art, music, or literature.

The bedrooms should be light rather than dark, and may be either plain and simple, or gorgeous and elaborate, but to my thinking there should be nothing in their decoration which would suggest difficulty in the frequent use of the mop, duster, and scrubbing-brush. Frequently a large bedroom is used also as a private sitting or reading room. Hard painted walls, ceilings painted or whitened, give the agreeable impression that results from the suggestion of perfect neatness and cleanliness. Decorative papered ceilings are inferior in this view to washable surfaces.

Let common sense guide you in your main arrangements, art and skill in the disposition, and genius, or at least study, in your inspiration of colour. Carry, too, into each detail of each room the sense of special fitness to that part, also the appearance of adaptation to all the circumstances, which is never without a charm for the intellect. Floors should be rather dark than light; the lines, spots, or patterns not too trenchant. Though you do see carpets of living flowers walked over by processions in Italy, I think unshaded patterns are the best for floors, pavements, and carpets.

In ordinary houses and in most rooms the height of the dado is fixed by the height of the chairs, unless perhaps in a dining-room with very large pictures or tapestry. Then the dado may reach on occasion as high as the head, and perhaps have brackets or a shelf for china. Dados may be wood, either of the natural colour or coloured, stained, or painted and varnished, with but very slight polish. I think if the carpet or floor is not the lowest-toned portion of the whole decoration, the bottom of the wall or the dado should always be darker than the upper part. Force may, however, be given to a dado by architectural form,—by vigorous mouldings, for instance, — sufficient on occasion to give it emphasis enough to take proper place in relation to darker colours over. The upper part of the background proper may be of velvet, of dull stuff, of flock, distemper, or even flatting. If not for pictures, it may be hung with tapestry or figured paper, or it may be painted in a pattern sufficiently interesting to engage the eye and attention, but not too obtrusive. Good low-toned tapestry is always agreeable in a dining-room, if pictures are not to be hung on it; but you cannot put one picture over another. Bad pictures are as inadmissible as bad wine, being costly luxuries. Everything must be subordinated to good pictures. Warm neutral greys, greens, or dull reds are most serviceable as backgrounds, for reasons apparent to all who know Chevreuil's law of complementary contrasts. The main body of the ceiling should be white, or but slightly toned,—even a gold ground is rather heavy. Deep coffers and much gold give an effect of weight too heavy to be carried. Much gold has also a reddish, unpleasant heat, that should be carefully avoided or dealt with specially. In the background of Byzantine decoration the heat of the gold grounds is partly neutralised by the greenish tinge which intervenes between the picture and the ground. The Chamber of Commerce at Perugia has the main body of the ceiling black, an arrangement of colour only tolerable in a tall room, and then of very doubtful expediency.

The arranging reds and blues so as to harmonise seems to have been specially sought after by the Old Masters. This is attempted frequently by Titian with much success,—with reds and blues inclining towards purple. In the inferior Masters, the juxtaposition sets the teeth on edge. In the macaw and other gorgeously-coloured birds, Nature brings about this harmony. Here, in one of the most difficult problems in your decoration, you will find light and leading at once form critical observation of the ranks of the great ancient and modern colourists, and of nature. And this instance is but one among many. At the Zoological Gardens, or British Museum, you will often find the simplest and most perfect solution of a colour problem inviting a difficult harmony,—some spots or streaks interspersed of white or some intermediate colour, or a gradual bringing together of tints themselves. In precious stones, the absence of determinate colour has for many a great attraction. The turquoise most prized by jewellers is the deep blue; colour critics prefer the stones bordering on green. Much of the vulgarity of British dyed stuffs came from the raw unmixed colours used in them. This is happily much corrected, and the teaching from Oriental stuffs, that seem always pleasing, is bearing fruit. Hued surfaces are taking the place of the pure old colours. No doubt much of this preference rests on the delight of the human eye in variety.

In each room seek for some principal object as the key, and work up and down to that. If some prominent piece of furniture, as a splendid cabinet, is in a room, you must work your general decoration to be in harmony with it. If you want a room to be a success, you must choose carpet, curtains, and furniture: one blot of inharmonious colour may spoil all.

Every colour may be made to harmonise with every other, but only by varying its tint and tone. In nature there is no flat or uniform colour anywhere,—not in the gradual melting of a blue sky, nor in the smallest leaf or speck of dust. Large, flat, uniform tints are always unpleasant, and are only to be allowed where the surface is broken up by many objects. Those single colours please us most that approach other colours, or waver, as it were, between two. Emulate, if you will, the gorgeous colouring of India, the brilliant colouring of China, or the soft harmonies of Japan, but do not copy slavishly the works in which you find them.

Mr. Elim H. D'Avigdor, C.E.—As to providing improved dwelling-houses in Vienna and the vicinity, which has engaged popular attention for some time past, several pamphlets have been published, and of these productions, says the *Jewish World*, the German press is unanimous in commending one in particular, which is from the pen of an English gentleman, Mr. Elim H. D'Avigdor, C.E., a scion of the Goldsmid family. The pamphlet also contains designs for remedying the nauseous odour arising from the overflowing of the river Danube.

THE CITY CHARITIES AND DWELLINGS FOR THE POOR.

ON Wednesday last, the special committee of the Charity Organisation Society, at their meeting in the Offices in Buckingham-street, in the Strand, were engaged in a discussion extending over nearly three hours, on the "Bearing of City and other Charities on Metropolitan Dwellings for the Poorer Classes." Amongst the members of the committee present, were,—Lord Napier and Ettrick, the Earl of Aberdeen, the Hon. T. Pelham, Mr. Andrew Johnston, M.P., Sir Charles Trevelyan, Mr. W. Gilbert, Mr. J. Liddle, Capt. Gardner, R.N., General Cavannah, Mr. J. S. Storr, Mr. W. H. Hall, Mr. J. R. Rolland, the Rev. R. J. Simpson, Miss Octavia Hill, &c.

Mr. Gilbert, after endeavouring at considerable length to show that the various charities in the City had at their disposal sufficient funds to erect dwellings for the poor within the City and Metropolitan area, moved a resolution to the effect, "That a deputation from this committee wait upon the Corporation of the City of London, the Ecclesiastical Commissioners, and the Metropolitan Board of Works, to submit to them the justice of letting, on moderate terms, portions of land for building dwellings for the working classes, so as to allow them to profit in this way by the valuable endowments and charities originally intended for their benefit."

The motion gave rise to a lengthened discussion, in the course of which objection was taken to the latter part of the resolution, on the ground that eleemosynary aid to the poor was no part of the business of the committee, the improved dwellings for the poor being what they were alone appointed to consider.

In the course of the discussion, Dr. Ross proposed the following rider to the resolution:—"And that this committee is of opinion that the charities possessed by the companies, vestries, and other public bodies in the metropolis, in all cases where the original trusts cannot be carried out in their original intent, might be appropriated to facilitating the erection of dwellings for the industrial classes upon terms that would not permit such buildings to be regarded as charitable institutions."

After some further discussion, both the resolution and the rider were withdrawn, it being understood that Dr. Ross would bring forward the latter at a future meeting of the committee; and after some remarks from Mr. Andrew Johnston, M.P., Sir Charles Trevelyan, and others, in the course of which the maladministration of the several City charities was freely canvassed, the following resolutions, proposed by Lord Napier and Ettrick, and seconded by General Cavannah, were adopted:—"That the sub-committee be requested to consider and report upon to the committee the amount and position of house property held in trust by the City and other authorities, or any public bodies connected with the metropolis, which may be made available for the improved habitations of the labouring classes of the metropolis;" and "That the sub-committee be requested to report upon the above, or to report upon the best means of carrying out the above resolutions."

In the absence of the chairman of the committee, the meeting was presided over by the Rev. R. J. Simpson, rector of St. Clement Danes.

INDIAN ARCHITECTURE.

ON Friday evening, the 21st inst., Captain Lyon lectured at the Royal Institution, Albemarle-street, on the "Temples and Idols of India." Mr. Spottiswoode took the chair, and there was a large attendance.

In the course of his remarks, Captain Lyon said that India possessed 140 millions of inhabitants, and about her temples and idols very little was known, the information on such point being very scanty. It had been computed that there were 300 million deities worshipped in India; they were treated in every respect like human beings. The temples were very celebrated, and were embellished with some of the most wonderful carving in granite that anywhere could be found. At Madura, the Rome of the Hindus, there was to be seen a beautiful mundapum, which cost one million sterling, carved out of granite, the galleries of which were formed of carved pillars, each pillar being a solid block of granite 15 ft. high. This exquisite piece of workmanship was represented with marvellous delicacy of outline, conveying a very clear idea of the immense time, patience, and skilled labour that must have been bestowed on its erection. There was also to be seen, too, at Madura, the golden lotus tank which the Brahmins assert was fed by the waters of the Ganges, passing 1,000 miles under the sea for that purpose; the tank was one of the most celebrated throughout India. In continuing the journey south, we come to Streevelliputtur, and there behold the great Juggernaut car, the finest to be seen in the south. It was constructed out of several smaller ones, and carved out of the finest ebony. The yearly peregrination it undergoes is well known, and the sight, once seen, never to be forgotten, beggared all description when it made its journey. Further south there was a little bijou, which, being hidden behind a rock, was lost to sight to nine out of every ten travellers; but it was well worth a visit, and some agreed that it was the finest in the whole of India. Its elaborate carving was truly marvellous. According to the account by a Brahmin high priest, it was excavated and carved in the short space of twelve hours by a son who had become indignant at the slow progress of the temple which his father was erecting on the other side of the rock. Ramisseram was known as the most sacred temple of India; some persons assert even more so than Benares. Concerning its sanctity, a poem had been written called the Ramayana, which filled an enormous volume. Connected with this temple are marvellous corridors, 4,000 ft. in length.

Turning northwards, and following the coast, we come across Avadea Covill, which, though one of the smallest, is one of the most wonderfully carved temples in India, its chief peculiarity being that the stone forming the pillars was so hard that no chisel could be found to cut it in these degenerate days. Passing on to Tanjore, with its magnificent tower 300 ft. high, there was here to be seen the celebrated bull of Shiva, weighing eighty tons, dating from the eleventh century. The temple at Tanjore, though a very sacred one, and justly renowned for its beauty, was literally deserted.

Still further north, and close to Madras, there was Mahavellipore, or, as it was commonly called, the Seven Pagodas. Nothing excited so much astonishment as this place, and it was doubtful whether the world could produce anything more remarkable than the monoliths here to be found. The more we examine them, and indeed the whole place, the greater was our astonishment, while at the same time we were lost in conjecture as to the motive or purpose for which such an amount of labour and time had been spent in forming these marvellous structures; for no record existed as to when or by whom they were executed. Not one among the many works here begun had been finished, and all seemed to have been undertaken by some enthusiastic rajah, or by people under some strong religious impulse, and all stopped simultaneously either by the rajah's death, or some other catastrophe; and no one could really form any conception as to the elaborate carving here displayed.

Illustrations from photographs were exhibited by means of the magic lantern.

FEMALE SCHOOL OF ART.

WEDNESDAY last was a proud day for Miss Louisa Gann and the Committee of the Female School of Art. The theatre of the University of London was crowded with students and their friends; the mistress stood first on the list of premiums offered by the Committee of Council on Education to the head masters and mistresses of these institutions; the prizes to be distributed were numerous and well deserved; and their Royal Highnesses the Prince and Princess of Wales were on the platform,—the latter to hand these prizes to the pleased recipients, and the Prince to speak to them afterwards with that geniality and heartiness which distinguish all he does. Prebendary Thorold read the report, which gave cheering evidence of the progress of the school. Professor Donaldson, who has long worked for the school, read the names for presentation to the Princess, ending with the heroines of the day, Miss Alice Blanche Ellis, Miss Julia Pocock, Miss Emily Selous (now Mrs. Fennessy), and Miss Emily Austin.

The Rev. Sir Emilius Bayley, one of the trustees, in a very felicitous speech, referred to the great assistance to the school which had been afforded by the Royal Family, and conveyed the thanks of the meeting to the Prince and Princess.

His Royal Highness said it had given them great pleasure to be there, and he cordially congratulated the young ladies who were before and around him upon their recent achievements, and hoped and believed there were evidences that whatever profession or position in life they might hereafter be called upon to fill, they would continue to be an honour to themselves and to the school to which they now belonged. It was equally his duty to tender his acknowledgments to the president of the school for the great interest he had always taken in its welfare, and also to Miss Gann and her efficient staff of teachers for their past zeal and efforts, some of the fruits of which they had had an opportunity of seeing that day.

Sir John Lubbock, Mr. Francis Bennoch, Mr. Butterworth, Mr. William Smith, and others who have worked in aid of the school, were present.

SOME FINE FURNITURE.

WE have examined with great interest and pleasure some remarkable pieces of artistic furniture which have been prepared for the International Exhibition at Vienna, by Messrs. Jackson & Graham. They show in so good a light what can be done in this direction in England that our readers will not complain if we describe them somewhat fully.

The first we come upon is an *ebony cabinet*, 6 ft. 6 in. long and 9 ft. 6 in. in height, in the Italian style, inlaid with ivory, and enriched with lapis lazuli and jasper. The cabinet is in two divisions, each in three compartments, the lower division being enclosed with three panelled doors, richly inlaid with ivory, and the frieze supported by fluted pilasters with very finely carved capitals, the plinth and frieze being also panelled and inlaid. The upper division is also enclosed by three doors, the centre door having plate-glass, for the purpose of showing objects of art and *virtu*, the doors on each side having panels of ebony, inlaid with ivory, of rich arabesque design, fluted columns inlaid with ivory, and richly-carved capitals, to support the frieze and cornice of the upper division, and in the centre of the pediment are the armorial bearings and monogram of the fortunate owner of this beautiful work of art (the Earl of Bective). All the inlaid ornament is engraved in the most perfect manner, and the beauty of the design (by Mr. Lormier) has been heightened by the art of the engraver. We have no hesitation in calling the cabinet work perfection.

Near this is a small cabinet, also in the Italian style, in which various woods (the choicest specimens of their respective kinds) are used, including amboyna, box, thuya, purple, satin, palm, ebony, and ivory; and the way in which these have been introduced, and their colours and figures placed in harmonious contrast, has been most carefully and successfully studied, so as to produce a charming effect of colour. The lower part of the cabinet is open; the plinth, panelled back, and supports all finely inlaid with the various woods mentioned, in elaborate designs of great beauty; the upper part is inclosed by doors, and the frieze and cornice supported by fluted and inlaid pilasters; the panels of the doors are ornamented with most delicate and exquisite arabesque designs, inlaid in ivory and various fine woods; the whole being engraved with the greatest care in the highest style. This cabinet is the property of Mr. H. A. Brassey, M.P., who kindly permits it to be sent to the Exhibition. Like the last, it was designed by Mr. Lormier, and the dimensions are 3 ft. 6 in. long, and 6 ft. 2 in. high.

In a *large cabinet*, of architectural design, by Mr. Owen Jones, a novel and very beautiful effect is produced, without the aid of carving or engraving, by the ornamentation of the pilasters, columns, panels, and friezes with inlaid ornament of various woods. This cabinet, which has been made for Mr. Alfred Morrison, is 7 ft. wide and 8 ft. high, and is in two stages. The lower portion consists of a centre panel, 2 ft. 6 in. square, with two side panels, 1 ft. wide by 2 ft. 6 in. high, separated by pilasters, 6 in. wide. The whole of the panels and pilasters are elaborately inlaid with holly, grey wood, orange wood, and purple wood, on an ebony ground. Below the panels is a moulded base and skirting; above runs an inlaid frieze and cornice, the different members being in different-coloured woods. The upper stage of the cabinet is equally in three divisions, the centre division being glazed in front of the pilasters. Separating the divisions are detached columns, carrying a frieze and dentilled cornice. The cornice is arched over the centre division, and encloses an elaborately-inlaid spandrel.

The general character of the composition may be called Italian; but in the ornamentation an attempt has been made to combine the purity of Greek forms with Italian playfulness, and with a tinge of Orientalism in the colouring of the several portions. As a piece of cabinet work, it is perfect. There are thousands of small pieces of wood here combined with an accuracy truly marvellous. The inlaying of the columns has been a *vrai tour de force*.

There are three other cabinets designed by Mr. Prignot, two of them being of ebony, inlaid with ivory and box-wood in very elegant designs, and one with various woods, the chief being olive wood, and the inlaid designs in the Greek style, the different colours of the woods being harmoniously introduced. A large *sideboard* and a suite of *chamber furniture* also deserve notice, but we have said enough to show the remarkable character of the works prepared by Messrs. Jackson & Graham.

CONCRETE HOUSES IN GERMANY.

DR. RIESE lately delivered a lecture before the Berlin Polytechnical Society, on the use of concrete, for the walls of houses. The concrete used by him consists of one part of best Portland cement and nine parts of coal ashes, scoria, sharp sand, gravel, brick-dust, or similar cheap materials. In the autumn of 1871 the lecturer built the first house of this kind at Friedrichsberg, near Berlin. It is 40 ft. high. The front walls are, for cellar and ground-floor, 12 in. thick; first and second floors, 9 in. The supporting cross wall is 12 in. and the partition-walls are 6 in. in thickness. The building has shown itself sufficiently strong, notwithstanding the comparative thinness of the walls. In the middle of October of the same year the foundation for another house was dug, into which the lecturer moved within ten weeks from its commencement. It did not show the least trace of damp. The durability of the material and of the buildings has been indubitably proved by these experiments; and in consequence of these favourable results, twenty-eight cottages of concrete, mostly intended for clerks and working men, were erected at the end of the summer of last year. Most of them are inhabited already; the rest will be ready by April. In the twelve cottages last erected, the timber-work has been dispensed with, and concrete arching has been resorted to.

AN ORDER OF MERIT.

AT the last General Meeting of the Corporation of the Literary Fund, the president, Earl Stanhope, in the course of his address, referred to the recent debate in the House of Lords touching the wearing of foreign decorations by Englishmen. We were told on that occasion, said Lord Stanhope, that these orders were to be lightly regarded, and that, as Metternich said, it was a distinction to have no orders at all. And by whom? By Earl Granville,—a Knight of the Garter. Was it for that noble earl to tell other gentlemen that orders were insignificant, and that it was better to be without them? It would be as becoming for one of our merchant princes—a Rothschild or a Baring—to tell people that money was of no account. It was not for a statesman whose services had won for him the highest order in this country to blame those who had attained eminence in arts, science, or literature for being desirous of an honourable decoration. He (Earl Stanhope) thought that if the ambition of the blue or red ribbon was allowable or praiseworthy in statesmen, military men, or naval officers, it was not in any degree to be condemned in the artist, the man of science or of letters; and the very firmness with which they ought to resist foreign decorations being worn by Englishmen supplied a new and powerful motive for desiring that an order of merit should be instituted at home. If he met with sufficient approbation and encouragement he should be greatly inclined to move in the House of Lords an address to the Crown, praying that her Majesty would take the question of the creation of some such order of merit into her consideration. He thought such a motion would not be resisted, and that her Majesty and her advisers would not refuse to give it their attention. Seeing many literary and scientific men around him, he thought it not unbecoming to make a suggestion which might perhaps ripen into a practical result.

We hope it may do so. It is not the first time that we have urged the want of such an institution as should enable the sovereign to bestow a mark of honour on men who in arts, science, philanthropy, or literature, have deserved well of their country.

THE COST OF THE NEW LAMBETH WORKHOUSE, AND THE RISE IN BUILDING MATERIALS.

THE Lambeth new Workhouse, near Kennington-lane, which has been for some time in course of erection, and is now nearly completed, is likely to cost very considerably more than the originally estimated sum, which was under 20,000*l.*, but which has already been exceeded by about 5,000*l.*, the outlay amounting to 25,000*l.*, and it is now found that a further sum of 5,000*l.* is required. The board recently desired Mr. Parris, the architect, to inform them what further sum might be required to complete the building, and at their meeting last week a communication was read from the architect in reply, to the effect that he was not in a position to state the amount which would yet be necessary to finish the building. He, however, recommended that application be made to the Local Government Board for permission to borrow a further sum of 5,000*l.* He explained that this sum was required to meet the expenses of articles contracted for since the last loan, and was also caused partly by the unprecedented rise in the price of all building materials. The board at once agreed to comply with the architect's recommendation.

ENGINEERS AND THE HEALTH ACT.

SIR,—Some few months since I think I read in the *Builder* that the "Public Health Act, 1872," would find plenty of work for the engineers. I quite agree with that opinion if the Act is properly carried out. I, however, do not think that the authorities are offering sufficient inducements for any civil engineer to undertake the duties as laid down by the Local Government Board. I inclose two advertisements (taken from the *Local Government Chronicle*), in which you will find that after the person who may be unfortunate enough to be appointed has paid his expenses, he will have something like 20*s.* per week left for his services. May I ask if you consider that an ample salary to be paid to a duly-qualified man?

E. R. B.

SIR G. G. SCOTT'S LECTURES AT THE ROYAL ACADEMY.*

ON THE DOME.

IN my last lecture, after bringing down our consideration of domical construction to the period of the perfecting by the Byzantine architects of the system of what are known as "Pendentive Domes," I was proceeding to describe a few of its most marked productions, but was stopped short when I had given a rapid sketch of the most wonderful of its creations,—the Church of St. Sophia at Constantinople.

I will now proceed with my subject. After the Church of the Holy Wisdom, all subsequent domed churches of the Byzantine class seemed to shrink from a hopeless competition, and to content themselves with very moderate dimensions.

Among those remaining at Constantinople, that of St. Irene perhaps comes next in date. Its central dome, like that of St. Sophia, is flanked by arcaded aisles which, however, do not extend to the vaulting, but simply carry galleries. These wings, therefore, as well as the eastward extension, are covered by barrel vaults, the latter being terminated by a semidomical apse,—while westward is a second dome, like the central one in plan, excepting that, being less in dimension east and west, its base is an ellipse instead of a circle. The actual domes, however, differ much more widely; for, while the western one is a flat disk continuing the surface of its pendentives, the central dome is raised above them on a high drum pierced like a clearstory with many windows.

The Church of the Holy Theotokos, or of the Mother of God, is of a much later date. The church proper has but a single dome, though there are several others over the narthex. This dome covers the intersection of two barrel vaults, is supported simply on four columns, and rises high above its pendentives on a drum pierced by windows. The architecture of this church is very elegant, differing in date, it is probable, but little from that of St. Mark's at Venice. Others do not differ sufficiently from these types to make it worth while here to describe them. It may, however, be mentioned here that in the later Greek churches the domes, or some of them, rose often so high as to become rather elegant towers, arcaded externally. This is the case with several of the churches at Athens.

Among the churches of that city we find one type of great elegance, the Church of St. Nicodemus, in which the dome occupies the width of what we should call the nave and its aisles; each side of the square over which it stands being divided into three unequal arches, over which it rises on a lofty drum, and is carried on eight pendentives. This forms a most elegant interior, susceptible of many varieties; and, from the spacious central space which it affords, seems the most valuable type on which to found a domed design for a modern church.

It would, however, be endless to enumerate the varied forms of domed churches in the East, though, with all their varieties, they may usually be reduced to a few elementary types. If you desire to study them, I would recommend to you Salzenberg's "Old Christian Architecture at Constantinople," Couchaud's "Byzantine Churches in Greece," and Texier & Pullan's "Byzantine Architecture."

It is not, however, in the East alone that the Byzantine dome is to be found, even in its earliest days,—those of Justinian himself. It established itself equally at Ravenna; indeed, as we have seen in the Baptistery there, as well as in the tomb of Galla Placidia, it, in an early form, preceded those at Constantinople itself. Its great effort, however, there was the Church of San Vitale, erected by Justinian and Theodora. This church was evidently imitated more or less from the Temple of Minerva Medica, though whether directly or through that of St. Sergius at Constantinople can hardly be judged. It is a grand octagon, with a spacious surrounding aisle of double height. Seven of its sides have the same circular niches projecting from them that we find in the temple (as well as in the Church of St. Sergius), only they are arcaded and carried out with purely Byzantine details. The aisles are of two stories, united behind a lofty arcade. This is surmounted by a clear-story encroaching, to a certain degree, upon the dome. This, however, is not pendentive. It is covered externally by a roof. It has undergone much modernisation, but retains its general form and a good deal of its ancient decorations, which show it to have been treated much as St. Sophia, with which it was contemporary. The church is the more interesting from having been the type followed three centuries later by Charlemagne in his famous church at Aix-la-Chapelle.

The manner in which the dome was introduced and adopted in Italy during these ages was so diverse in its causes and its results as to cause it to be very perplexing to chronicle it in any clear consecutive order. There were, in fact, two distinct influences, both occasionally leading to its adoption.

At Rome, and in places under Roman influence, such examples as the Pantheon could not fail to have their effect on the subsequent architecture, and we accordingly find there numerous scions of this primæval family; while, as we have just seen, the purely Byzantine form was simultaneously introduced by way of Ravenna, and later on was planted at Venice.

Through this twofold influence the dome became very frequent throughout Italy. It was carried, as we have seen, by Charles the Great, from Ravenna to Aix-la-Chapelle, and, later on, was carried forward from Lombardy, under the first three Othos, across the Alps, down the valley of the Rhine, and far into the interior of Germany. Only a few years later it was conveyed from Venice into the interior of the south-west of France, whence it spread throughout an extensive district stretching eastward into Auvergne, and even as far as Lyons, and northward to the banks of the Loire, where, to this day, the effigies of our early Plantagenet kings lie, beneath a series of pendentive domes, almost as perfect as if at Constantinople.

I will not dwell at much length on the domes which were derived from purely Roman traditions, because they, for the most part, suggest no new type or development.

The most magnificent, probably, is that of the Baptistery at Florence, a noble work of early, though unknown, date. It is clearly founded in a great degree upon the Pantheon, though of octagonal plan, and with a dome of the same form. Its sides are in two stories,—the first

* See p. 217, *ante*.

with deeply-recessed colonnades on each side,—the upper stage, a clearstory. One face, however, is occupied by the arch of the sanctuary.

The dome had formerly an eye like the Pantheon, but has now a lantern turret. It is encrusted with beautiful enamel mosaic work, with an infinity of figures, the side over the sanctuary having a colossal figure of Our Lord in Majesty in a vesica. The architecture is of marble, and the pavement is tesselated work. The whole internal effect is beautiful and impressive in the extreme.

A parallel work is the Baptistery of Parma, a work of the twelfth century. It is polygonal in plan, and greatly inferior to that at Florence. The Church of San Tomaso in Limine, near Bejamo, is simply like an ordinary Templars' Church, with a hemispherical dome over its clearstory, and a turret rising from its apex. San Stephano, at Bologna, is in some degree on the same type.

The greater part of the Italian domes of these periods, and of this class, simply cover the crossing or the central tower of a cruciform church, and exhibit no important development.

The most original, perhaps, is the dome of the Cathedral at Sienna, which stands upon six piers, forming a hexagon, each side of which is equal in width to the nave and choir. In the next stage, the angles are corbelled out so as to form in the upper story a dodecagon, which form is followed out in the dome.

The merit of this plan is that it unites itself, with little obstructiveness, with the church on all sides of it, and opens out in its centre a space of double the width of the nave. It is also pleasing and elegant in its effect. But it is time that we returned to the Byzantine type, which you will remember that we left at Ravenna to follow out this digression.

We now adjourn from Ravenna to Venice.

The mercantile and perhaps political connexions of the old Venetians were mainly *Oriental*. This probably accounts for their architecture, up to the twelfth century, being *Byzantine*.

The Church of St. Mark, or the Chapel of the Doge's Palace, was founded in the ninth century, in honour and for the reception of the body of St. Mark, which had been procured from Alexandria, when the church in which it had been long deposited was destroyed by the Moslems. This church, however, perished in a popular tumult, late in the tenth century, whereupon the Venetians set about its reconstruction with a determination to render it one of the finest and most sumptuous in existence. All the East, so far as accessible to their ships, was laid under contribution for columns and other architectural embellishments. The design is often spoken of as founded on that of St. Sophia. This was not the case. The Church of the Apostles at Constantinople would rather seem to have furnished its model. It consists of a group of five square spaces, covered each by its pendentive dome. Its peculiarity lies in the breadth of the wagon-vaults which support and separate these domes, which is so great that the vast piers which sustain them are pierced in two stories, and divide each other into four piers, with a vaulted space between them. Each dome is consequently the centre of a cruciform space, the wings of which have wagon-vaults. The only exception is the east end, where an apse is substituted for this space, and out of this apse spring three minor ones, as at St. Sophia. Each dome is about hemispherical above its pendentives, and is pierced with windows, as at St. Sophia.

The domes are now, and have been for many ages, covered over by lofty domical towers, of timber, each surmounted by a sort of turret on its apex. The wings which flanked each domed space, bounded as they were by the perforated piers, were so suggestive of side aisles that the builders, familiar, no doubt, with aisled churches, added arcades from pier to pier, both in the nave and transepts. These, however, are merely decorative, supporting no galleries, as is frequent in the East, and only serving as narrow communications, equivalent to triforium passages, between the upper chambers in the great piers.

The entire church is internally encrusted with richly-coloured marbles and gold mosaic, with figures, just as at St. Sophia's; and the floor is of marble and porphyry tesselation, varying in scale from the most vast slabs to the finest mosaic work.

The interior was no doubt a joint imitation of St. Sophia's and the Apostle's Church, rivalling the former in its sumptuous decoration, and imitating the latter in its plan.

To those who have not visited the East, this interior gives a very faithful idea of the splendour of a Byzantine church, and I must say that I have myself seen nothing more impressive.

I will only further (before proceeding to another branch of my subject) notice one other church,—the little church of Santa Fosca, on the island of Torcello, close to Venice. This church is not domed, or has only a wooden dome, but was clearly planned for a proper domical covering. Its plan is like that of St. Nicodemus, at Athens, already alluded to, and is perhaps one of the most beautiful in existence, and one best adapted of all domical arrangements to modern use. Before I proceed further I must call your attention to a fresh step in advance.

The next step in the development of domes is the adoption of *pointed* arches for their support, often accompanied by an increase in the height of their own section beyond that of a semicircle.

The fact that the pendentive dome is, as it were, suspended in mid-air, so that a perpendicular line dropped from any part of its circumference passes through empty space, renders it imperative that the arches which sustain it in this airy position should be extremely strong, and should have as little outward thrust as possible; and it is equally desirable that the courses of stone forming the pendentives should not form very acute angles with the haunches of these arches. These considerations seem to have led the Mahomedan architects soon to substitute *pointed* arches for *round* as the supports of their domes; a step in which they were followed at a later period by the greater part of those western European architects who adopted the pendentive dome. There can be no doubt that this was a very advantageous change. Mr. Fergusson says,—"A little reflection . . . . will show how difficult it is to adapt the curves of a pendentive dome to a circular arch, and how weak the arrangement is when done. . . . . With a pointed arch, however, even when the pendentives follow its lines, there is some thickness in every part, and no curve need slope forward at a greater angle than 45 degrees."

On the other hand, the change was attended with the loss of geometrical accuracy. Hitherto we have dealt with none but perfectly correct geometrical figures; but, the moment the pointed arch is introduced, the pendentives lose this exactitude, and have to be adapted by what is vulgarly called "rule of thumb," to conditions not precisely suited to their forms. A pendentive between pointed arches has, it is true, a geometrical form of its own, but this is so awkward in its sections, that it has only to be seen to be rejected; for, instead of its central section being a regular arched curve, suited to a domical surface, it is a curve of *double flexure*, its lower part concave (as seen from within), and its upper part convex—in short, *an ogee*. This being inadmissible, the curve has to be accommodated the best way we can, so as to avoid this weak and unpleasing form. We have, in fact, to determine, according to the best of our judgment, what shall be the vertical section of the pendentive, and adopt such horizontal curves for the courses of masonry as will make it reach the extrados of the supporting arches in the easiest manner we are able. This was really done so successfully by the French architects, whose works I shall shortly have to describe, that, for myself, I must say I never found out the difficulty from seeing them, and was unaware of it till I worked out the profiles geometrically.

After all, however, it is only parallel to what we have to do in filling in the spaces between the ribs of Gothic vaulting.

The pointed arch, though beautiful and practically excellent, is no regular geometrical figure, but the union of portions of two; its use, consequently, induces irregularities which would be at once avoided by the substitution of an ellipse. But, then, our geometrical accuracy would be purchased by the sacrifice of beauty.

All the sections of a sphere being circles, the supporting arches of a true pendentive hemispherical dome are semicircular arches, and in the same manner those of an elliptical spheroidal dome would be semi-ellipses; but there is no regular solid figure, more than one of whose sections are pointed arches, so it is natural that when they are used, some part should have to be accommodated to fit them.

It may, however, be as well at this point to mention that pendentives, after all, had become mere rudiments of a form which had lost its original intent. Ever since the dome ceased to have the same curvature with its pendentives, and to be a continuation of their surface, the latter had become a mere form of *corbel*, for which any other variety might at convenience be substituted. This fact was amply acknowledged in every region where the dome was made use of; so that from the Pillars of Hercules to the Bay of Bengal, and among those who occasionally adopted and developed upon Byzantine ideas in Western Europe, we find all forms of corbelling used in addition to the typical pendentive. I shall presently have to show you some of these varieties, and will only now remark that, though they are perfectly legitimate means of support, the pendentive has still the advantage of them in its simplicity and in its superior adaptation to coloured decoration.

About the beginning of the eleventh century, the Byzantine style, in all its integrity (excepting only in its richer decorations), was conveyed into Aquitaine, as it is supposed, by Venetian merchants, who at that time had extensive commercial establishments in that part of France.

The earliest work carried out under this semi-Byzantine influence was, so far as we know, the Church of St. Front, at Perigueux,—a building obviously copied from St. Mark's, at Venice. The two churches are, in fact, nearly identical in their plans and sections, the one being an almost unadorned copy of the other, showing us what St. Mark's would be if stripped of its marble encrustations and its mosaics.

There is, however, *one* important difference, and one which bears directly upon the foregoing observations:—The domes at St. Front, as well as the great arches which support them, are *pointed* instead of *round*, though all the minor arches retain the older form. This agrees with what I have stated in my earlier lectures, that the pointed arch was introduced, not so much as a matter of *taste* as of *construction*. Thus, in the buildings in which it first appears, we usually find it in the arches carrying towers, in the wider vaulting, and in other positions where great weight had to be sustained before it made its appearance in minor features.

Here, at St. Front, we have it appearing at a date a century and a half earlier than in our own country, and used solely in the parts where the constructive necessities were the most urgent.

The style once transplanted into this region,—widely separated though it was from all its previous seats,—seems to have seized powerfully upon the public mind, and to have become, within a century, the nucleus of a new form of architecture, of very great beauty and interest, uniting the domical construction of the East with the Romanesque, and the Early Pointed architecture of the West.

The entire district, some 200 miles in extent, adopted the dome as its acknowledged form of vaulting, but nearly always supporting it by the pointed arch, and usually adopting it as the section of the cupola itself.

At Souillac we find a nave, apparently nearly as early as St. Front, covered by a series of pointed domes supported by massive transverse pointed arches, and terminated by a semi-domical apse, all carried out with scarcely an attempt at architectural detail.

At the Church of St. Stephen, at Perigueux, commonly called La Cité, we have an imperfect early nave of simple character, with one remaining of its domes, but to the east of it stands a later compartment, in which the same construction is carried out with very fine architecture, agreeing in character with our own transitional style.

This brings us to the new development; for the style now ceases to be Byzantine. It is very noble Gothic, united with domical construction.

The enlarged copies from my sketches of this and St. Front serve to show the greatness of the change,—the one a rude transcript of St. Mark's, without its decorations,—the other a noble interior of the transitional style, but with a pendentive dome; and it will be seen that this addition in no degree clashes with the style into which it is adopted.

At Angoulême we find this development carried out to full perfection. We have there a complete cruciform church, precisely in the style of the work last-named; the bays of the nave almost exactly like it, but the crossing rising to a far greater height, with a sort of drum forming a clearstory over the arches, and imperfect pendentives, and bearing the

dome aloft. I also give an enlarged copy of my sketch of this noble interior.

I may mention that this dome is not circular in plan, but that the middle of each side is flattened.

A very parallel arrangement exists in a church far more to the north, on the banks of the Loire, and one in which we, as Englishmen, are specially interested, as being the burial-place of our earlier Plantagenets. I refer to the Abbey Church of Fontevrault.

This church has four domical bays to the nave almost identical with those at Angoulême. The church is now a prison, and in some obscure portion lie the beautiful effigies of King Henry II. of England and of Eleanor of Guienne his queen, of Richard Cœur de Lion, and of Isabel of Angoulême the queen of King John, and mother of the rebuilder of Westminster Abbey.

There are in this district of France fully forty domed churches, so I will content myself with those I have allnded to; my main object being to show how perfectly compatible is the cupola with Gothic architecture.

The influence, however, of the dome extended, in France, far beyond the district in question; for we find it spreading eastward into Auvergne, and beyond that again to Lyons.

In Auvergne, it usually covers the intersection of cross churches, beneath the tower; at Le Puy it is used in a very unusual form to cover, not only this central space, but the bays of the vaulting.

The nave is divided into oblong bays by transverse arches, and the intervals are reduced to elongated octagons by corbels, doing duty for pendentives, and these octagons are domed over on the angular system. The same form of covering exists at Ainay, near Lyons.

I may mention that the pendentives in many of these French churches give place to corbels of varied design, as at Monthron, near Angoulême, Notre Dame du Pont at Clermont, Notre Dame des Dons at Avignon, and very many others. The last-named dome rises into a beautiful tower, and I may mention that small lantern turrets are common upon the Aquitainian domes.

I will not dwell upon the German domes because they do not illustrate any special development. They seem to have been the offspring of those Italian domes which followed Roman traditions. They mostly cover intersections of cross churches beneath central towers. Those at Aix-la-Chapelle and Nimweguen are of the ordinary type of domes covering octagonal buildings. That at Worms covers a square, but is by corbels brought out to an octagon, and then domed in that form.

In our own country, I know of no nearer Mediæval approach to the cupola than the semi-dome covering the apse of the chapel in the Tower of London.

The last form of dome which I will allude to is what may be called the *modern* type. It does not differ in essentials from what may be found among those of earlier periods, but is distinguished from them by several of the elements which it possesses in common with some of these, being developed on a larger scale and becoming more pronounced and more essentially characteristic.

This type of dome is:—1. Raised high in the manner of a tower; 2. The dome becomes an important external feature; 3. It is crowned by a smaller tower rising out of the dome; 4. It usually assumes internally the form of a lantern, with a range of windows beneath the dome; 5. In some instances the external and internal domes are independent structures, the former acting as a roof to the latter, with, perhaps, an intermediate structure to carry the culminating tower on its apex. Now, *every one* of these features is to be found in earlier domes.

The raising of a dome upon a drum or tower is common both in the East and West. In many instances, and especially in Mahometan buildings, the dome becomes an important external feature. The crowning of the dome by a small tower or lantern on its apex is frequent among the early domes of Northern Italy, and is seen on the five domes of St. Front at Perigueux, and, in a different form, on its prototype at Venice. The internal range of windows beneath the dome is found both in the true Byzantine districts, in Italy, in France, and in Germany; and, finally, the independence of the external and the internal domes,—the former becoming the roof to the latter, with even the intermediate structure to support the culminating turret or lantern,—is found in its full integrity in St. Mark's at Venice, where its early date is proved by its being represented in the most ancient of the external mosaics.

Why, then, if all its essential characteristics are to be found in ancient examples, do we call this form of dome "*modern*"? I would reply that, though its elementary ideas were old, their systematic combination, and the vast scale on which they were worked out, is due to the architects of the Renaissance. It is, in my opinion, their greatest achievement, being the union of the Classic with the Byzantine and the Mediæval ideal, and the working of them into a feature which no previous style had produced in so complete a manner or on so noble a scale. In saying this, however, I do not intend to praise this, as being as an internal feature superior to the true Byzantine dome; on the contrary, I think it a less reasonable and an even less beautiful covering, because it is raised to so vast an elevation as not to be visible at any natural angle of vision, nor to become a part of the general internal view of the building. It must, however, be confessed that, *when seen*, it is of wonderful and almost magic aspect; while externally it produces a nobler form of tower than is to be found in any previous development. I do not think it in any degree belongs essentially to the Renaissance, though it chanced to be developed under its influence. On the contrary, the first complete type of this form of dome (though happening not to be pendentive) was designed as the completion of a Gothic structure, and its only serious fault is that it was not carried out with more perfectly Gothic detail. I refer, of course, to that of the Cathedral at Florence.

That structure had been carried out during the fourteenth century,—*all but its cupola*,—from the design of Arnolpho and his successors. A dome equal in space to that now existing was prepared for, but various causes delayed for a century its actual erection; so that, when it was at length undertaken, the prevailing style had changed. It is probable that Arnolpho intended to have sprung his dome at a far lower level, and to have made it like that of the adjoining baptistery; perhaps not exhibiting externally its domical form. Brunelleschi raised the drum to a considerable height,—exhibited his dome as a vast external feature,—and crowned it with a culminating lantern, thus giving us at once the leading features,—and that on a scale never since exceeded, of what I have called the *modern* type of dome. Had he made its details more accurately to harmonise with those of Arnolpho's structure, his work would have been perfect. Not only is his dome erected on Gothic walls and arches, but its section is a pointed arch, so that in all but its decorative features,—and in these in some degree,—it is essentially a Gothic dome. It is not, however, pendentive, nor is it circular in plan,—and though opening by arches into the arms of the cross, it is after all merely the covering of an octagonal chamber, so that its claims rest more on its size, its height, and its external beauty, than any novelty of development.

Of its successors the name is legion. It would be useless for me to attempt to enumerate even the most successful of them. I will, therefore, content myself with a brief description of the two most typical—those of St. Peter's at Rome, and of our own St. Paul's.

I am not aware of any dome of great scale erected in the interval between Brunelleschi's dome at Florence, and that of Michelangelo at Rome. The latter, however, was the crowning result of the efforts of successive architects, especially of Bramante and Sangallo. In one sense it does, and the other it does not, show evidence of this lengthened period of development. Its unity of design would bespeak it as the work of one master-mind, while its perfection may mark it as the result of oft-repeated trials.

Though founded in idea on the dome at Florence, that of St. Peter's differs from it in many most important and essential particulars. In the first place,—while that at Florence is supported from the very floor upon an octagonal wall merely pierced by comparatively narrow arches, that at St. Peter's is essentially a *pendentive* dome, rising from four colossal piers which give it a square base, and united with the four arms of the church by arches, or rather *vaults*, of vast span. These arches, it is true, are not so wide as to reduce the pendentives which rise from between them to triangular forms, but are set so far apart as to leave a portion of the ideal circle between them, and to give the pendentives a horizontal base. This was necessary to give strength to the piers for the support of so gigantic a structure, but in no degree interferes with the pendentive character of the dome.

Again, at Florence the octagonal wall rises to the very base of the dome, while at Rome the drum, from the pendentives upwards, is circular. At Florence it is pierced only by rather ungainly circular windows, while at Rome it is colonnaded within and without, and beautifully decorated within. At Florence the dome is of that doubtful kind which has straight sides, carrying up the octagonal form to the very top, while at Rome the dome is circular and perfect. Both are in some degree alike in construction, being *double*, with a space between, not two domes, as at our St. Paul's, but one dome formed of two shells partially connected; a mode of construction well suited to the support of the crowning lantern.

Both domes are founded in their section on the pointed arch. Their internal span is nearly the same; but their proportions differ greatly; for, while that at Florence is internally only two of its diameters in height, that at Rome is two and a half: and while the former is externally one and three quarters of its diameter in height, the latter is two diameters,—each irrespective of the lantern. Strangely enough, however, the great external defect of the dome of St. Peter's is its want of height. It is so encumbered by the surrounding building, that its height, from near points of view, is greatly lost. Like the mountain,—which seems to be its prototype,—though towering nobly in the distant view, it becomes as you approach it entangled among the nearer though smaller heights. This is obviated at Florence,—at least from the eastern points of view,—by the more favourable distribution of the subordinate buildings.

The boast attributed to Michelangelo — that he would raise the Pantheon upon the top of the Temple of Peace,—has more meaning than at first appears. The Temple of Peace (so called), now known to have been the Basilica of Maxentius, consists of a vast nave with aisles. The nave is divided into three square bays of between 80 and 90 ft. in width, and these bays are groined. Had the pendentive dome been then known, each bay might have been covered by such a dome as that which spans the central bay of St. Sophia, and in such a case the *dome* of the Pantheon might, in loose language, have been said to be placed upon four piers and four arches of the Temple of Peace. But Michelangelo aimed at much more than this. It was not the *dome* only, but the *whole structure* of the Pantheon, which (in a figure of speech) he thus intended to raise upon a square substructure open on all sides to view from other parts of the interior. Thus he raised upon his pendentives what he compared to the *circular wall* of the Pantheon, and *on that* he raised its *dome*. This was not, however, the whole of his task, for over the eye of the dome (as of the Pantheon) he erected again another structure—a domed rotunda,—into which the eye reaches from below, and through whose windows the light penetrates into the dome. And, *more than all this*, instead of allowing his dome, as in the Pantheon, to be half buried within the walls of the building, he made it rise boldly from their upper surface, and gave it such a proportion as to render it an august and beautiful object from every point from which it is visible.

The task was *indeed* one of which the greatest genius might fairly boast!

Nearly every subsequent dome of any magnitude seems to have been founded, more or less, upon St. Peter's; and, so far as I can judge, our own St. Paul's is the noblest of them all.

The dome of St. Paul's is clearly founded on that of St. Peter's, though subject to extensive changes. The objects of these changes seems to have been threefold: 1st., to render it more conspicuous externally, especially from near points of view; 2ndly, to avoid disproportionate internal height, which was the more desirable from the smaller size of the openings through which the interior is viewed; and 3rdly, a desire to substitute *eight* arches and pendentives for the *four* at St. Peter's. The two former motives acting together led to the greatest peculiarity which this dome possesses, viz., it being, in fact, *two* domes, one to be seen internally, and the other externally, with the consequent necessity for providing some independent means for the support of the culminating lantern. In this case, the proportions of the interior and exterior are alike, each having two of its own diameters from the base to the top of the dome. The external height is consequently equal in proportion to that of St. Peter's, while its internal height is half a diameter less.

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We have seen at Florence and St. Peter's that the domes consist of a double shell, connected at intervals by ribs,—a very excellent method of supporting a lantern when necessity demands so difficult a piece of construction as its direct support by the dome itself. The space, however, which Sir Christopher Wren left between his external and internal domes rendered this constructional effort needless. He accordingly provided for the load on the apex by a mere *cone* of brick intervening between his domes, giving it a threefold structure, a dome proper within forming the covering of the church below, a cone of brick above this carrying the lantern, and a dome of timber over that, to give comeliness to the exterior, and to serve as its roof.

This expedient, certainly rather complicated, has been very differently dealt with by critics, some extolling it as an original effort of genius, while others have decried it as artificial and false. Neither party have, as I think, full justice on their side. In the first place, it is *not* original, the same principle having been, centuries before, acted on at St. Mark's, Venice. It is true that, in that case, not the external dome alone, but the lantern, with its supports, are all of timber. This does not, however, alter the principle in the least; for we have the threefold structure,—the dome proper, the supports of the lantern, and the external dome, just as at St. Paul's, as a glance at the sections of the two will at once prove. In more recent structures iron supports in the lantern have been substituted for the brick cone, bringing it still more nearly to the type given by St. Mark's. In the second place, I hardly think, with this Mediæval precedent before us, we need be so squeamish about the expedient being artificial. We constantly find double coverings to our ancient churches,—the vault to be seen within and the roof without; and if we desire to place a flèche riding upon the roof, we support it by constructions concealed between the two. This is precisely what Wren has done. The only difference against him is, that his roof is domical, and suggests to the thoughtless observer that it is the same which he sees within,—a mere peccadillo, after all,—and amply atoned by the fact that you gain by it the power of giving due height both within and without, and avoid the difficulty and danger of supporting a massive structure of stone, as large as some church steeples, upon the apex of a dome. Anyhow, public opinion has decided in favour of the expedient, for a majority of subsequent domes are constructed on the same principle; while I almost defy an architect now designing a dome and experiencing these two difficulties—1. The artistic difficulty of making the same dome look well from within and without; and 2. The constructive difficulty of balancing a steeple on the top of his dome,—to resist the temptation presented by this simple expedient; and the more so when conscious of having for it a Mediæval precedent.

The dome of St. Paul's is externally perhaps more successful than any other. Internally, it is good from the supporting arches upwards, excepting that it is damaged by the unreasonable system on which its painted decorations have been designed.

The arches below are, however, an exception to its claims or our praise.

The scheme on which the plan of the dome and its accompaniments is set out in St. Paul's is totally different from that in St. Peter's. In the latter, the space beneath the dome is penetrated by the nave and transept alone, irrespective of their aisles, which stop dead against the piers of the dome. In the former, the same space is penetrated both by the nave and transept, and their aisles. To take another view. In St. Peter's, the square occupied by the dome, and its piers, is surrounded on all sides by an aisle low in the angles and lofty in the centres of the sides; or, in other words, the aisles failing to penetrate the dome branch round its angles, while those of Sir Christopher Wren pierce directly through it.

St. Paul's has externally the advantage of the great corner piers rising from the ground, unencumbered by surrounding buildings; but internally grandeur is sadly lost through the smaller span of the large supporting arches; the want of bold simplicity in the piers, by the meanness and irregularity of the smaller arches, and the confusion caused by the mode in which the portion above them is arranged.

Externally, however, the outline of this dome is perhaps unequalled; and, even internally, if you look at general effect, and close your eyes to defects in detail, the impression produced is grand in the extreme.

I have used up all the time at my disposal without having even reached one of the greatest classes of domical structures,—those of the different Mahommedan nations, from Morocco and Southern Spain, by Egypt and Turkey, to Persia and India.

I the less regret this because I leave it wholly untouched for some one better acquainted with it than myself to take up: I will only offer two remarks upon it. The first is, that it is wholly an offshoot of the Byzantine style which was first adopted, and then developed upon by the infidel conquerors. The second is, that it is throughout, or nearly so, carried out with the pointed arch, and most usually with corbels instead of pendentives, giving in these two directions an extension to the developments which took place in Western Europe. I may also mention that, in splendour of decoration, it is impossible to conceive anything to go beyond it; though it is a style which seems alien to our Western and Christian prepossessions.

We have seen that the cupola,—the noblest of all architectural features,—has belonged by right to Roman architecture; was continued in the same style when it became Christian; was wonderfully developed in the Eastern and Christian Roman Empire; was continued in the Middle Ages in Italy, and transplanted into Germany and France; that it was taken up during the early days of the Renaissance from the unfinished Gothic Cathedral at Florence and, through that semi-Mediæval, semi-Renaissance graft, was thoroughly adopted into the revived Classic styles. What I now want to press upon you is, that it should be equally welcomed into our revived Gothic architecture. That revival needs but such a welcoming of all that is good and noble to render it *complete*, and no feature possesses these qualities in a higher degree than the cupola. Let us, therefore, make it *our own*.

I have myself made some few attempts at this, which I venture to submit to you.

The dome, however, without its appropriate decorations, is but the body without the soul. It is the sister art of painting which breathes life into the otherwise breathless form. This painting must, however, be adapted to its position with skill, knowledge, and study. I have not time left to dilate on this subject, but commend it to the students of that art, only begging them to remember that, while exercising their art upon an object like the dome, which has an essential form on which its very stability, real or apparent, depends, they *must* keep it in such subordination as not to disturb that essential, but rather to bring out and emphasise it; otherwise what I am urging will not prove a loving union, but a hostile collision, of the two sister arts.

OUR ANCIENT NATIONAL MONUMENTS.

Sir,—The time is now close at hand for the revival of the long-delayed discussion of the question on the best mode to effect the preservation of our ancient national monuments, and we may, with some confidence, I think, look forward to the Bill Sir John Lubbock has promised to introduce into Parliament. I have seen no draft of it; but I trust it has been well circulated among the numerous institutions throughout the kingdom, to call their attention to the subject, and to induce support to the Bill within and without Parliament. For many years this measure, professed by all to be desirable, has slept; for it is impossible to regard the communications made to Mr. Ayrton on the part of the Society of Antiquaries as indicative of what is generally understood here and in France by "ancient national monuments"; and I am not aware that any decided and effective steps have been taken by public bodies either in support of Sir John Lubbock's scheme or independently of this patriotic antiquary: as in other matters, so in this, what is everybody's business is nobody's.

The nearest approach towards a Government recognition of the necessity for some comprehensive scheme for saving what yet remains of our ancient national monuments was when the co-operation of such men as Sir Robert Inglis and Mr. Hume was secured to endeavour to obtain a Commission to investigate the subject thoroughly and comprehensively. A dissolution of Parliament suddenly checked our efforts and damaged our hopes. Then was formed the British Archæological Association, chiefly to impress upon the Government the importance of preserving the remains of ancient national art for the public, and to aid in advancing and illustrating historical education. Not only were cathedrals and churches, with their monuments, comprehended in the notions and plans of the founders of this popular and prolific institution, but the various primeval remains strewed over the kingdom, unprotected, were regarded equally with the sacred works of art supposed to be already under the safe-keeping of the clergy. The vast extent of pre-historic earth-works, megaliths, sepulchral structures, British *oppida*, &c., formed a prominent feature in our plan for preservation; and especially so as many of them are daily exposed to destruction from being but little known, and consequently at the mercy of the ignorant and selfish who claim ownership over them. There was no notion of restricting conservation to "regal and other tombs and monuments in cathedrals, churches, &c.," such as seem to have exclusively engaged the sympathy of the "Sepulchral Monuments Committee" of the Society of Antiquaries, whose list and application Mr. Ayrton refused to recognise. But since the establishment of the popular archæological societies the destruction of our ancient national monuments, the Celtic *oppida*, the Roman *castra* and villas, churches and their sacred appendages, has gone on as usual, slowly and surely; and more has been saved by private energy and good feeling than by any combined remonstrances or collective demonstrations; and when a society has been propelled to plead for some important monument, such as, for example, the Roman Theatre at Old Verulam, Governments have ever turned a deaf ear to the petition.

It is not my wish, sir, to intrude upon your time and well-occupied columns a subject which, to be fully considered, would probably demand more than you could conveniently afford; but we may, I feel assured, reckon on your goodwill to assist in bringing Sir John Lubbock's proposed Bill into greater prominence, in order that the public may understand its provisions and objects; and that societies of archæological and literary character may be stimulated to petition Parliament on behalf of the Bill, and at the same time bring it under the consideration of members of Parliament to prepare them for the introduction of the Bill. C. Roach Smith.

ST. PAUL'S CATHEDRAL FROM WREN'S POINT OF VIEW.

Amidst all the uncertainties of art in these days of progress and perpetual change, there are some few things luckily that always remain the same, and are certain. The almost *perfection* of Greek work is among these, and perhaps at the head of them. In sculpture, in architecture, and *drawing*, certainly, and it may have been in painting they were pre-eminent; but in nothing were they more singularly happy and thoughtful than in the *position* of their great temples and public buildings. This is a characteristic of Greek work which has as yet hardly been touched upon, and to do any sort of justice to it would be almost to write a volume. But to glance at it, we need but notice the admirable position, as a mere matter of planning, of the Pantheon, and its gateway of approach on the Athenian Acropolis. By referring to a plan of the Acropolis, it will be seen how admirably contrived the whole group of buildings was, and how, on approaching the famous temple, as the central object, you did so at an angle, and so saw at one view, and from the best possible point of view, the front and side of the matchless building. It was the very perfection of artistic and architectural judgment, and fine and noble taste. Not only was the building all but perfect, but the way to it, and the sight of it, were the best possible. Nor was this all. On great occasions, as on that of the Panathenaic Procession, those who composed it not only caught first sight of the temple at its best, *i.e.*, angularly, but they passed completely round it before reaching the doorway of the entrance, and its portico, with its flight of steps, its eight columns, its recessed columns, and its magnificent illustrative and instructive sculptures,—a written record in enduring marble, which but to see was to read. A *side* view was to the old Greek the best of views, and the most artistic. How different from our ways of doing things in these improved times. With us a "street-front" elevation is the one thing needful, and the way to look at a building is to stand right in front of it on the opposite side of the road, and in the middle of it,—the angle taking in the building

when bisected by a line from the eye to it,—is always a right angle with the line of the front of the building. This is the invariable orthodox way of looking at a street building, and any man proposing to view any such building from an angle of forty-five degrees from the front of it, and refusing to go further, and right in front of it, would most certainly be thought insane, or nearly so. But this was the old Greek's way, and he almost compelled you to keep away from the direct view of the front of his building till you were nearly under the portico of it. Thus was it with the Parthenon,—its architect *compelled* you to look at it aright and at its best.

We have been urged to these thoughts on the artistic methods of the antique Greeks, so far off from things that now are, and in all ways so different, by an accidental view, for some hours on successive days, of St. Paul's Cathedral from Sir Christopher Wren's own point of view,—indeed, from the windows of the house in St. Paul's-churchyard which Wren must have many times looked out of and at his work as it went on day by day. Indeed, the house we refer to is but a door away from the very house he himself lived in. What, then, did the great architect of St. Paul's *see* as its front and side elevations, the west and south, rose into completion under his very eye, and day by day? We can scarcely imagine it. So much nowadays is done by steam machinery, and by cut-and-dried and hackneyed processes, that all such work is alike everywhere. The same "plant" is used, and the scaffolding employed is reduced to its very simplest expression,—uprights, cross-pines, and a "traveller." But in Wren's days, especially under the eye of so ingenious a mechanic, the very scaffolding round St. Paul's and its great dome must have been a most complicated and ingenious mass of timber and hand machinery, almost as interesting,—mechanically, at least,—to look at as the cathedral itself. But our business at present is not so much with the mode of construction of St. Paul's, a subject yet awaiting a little cogitation by the way, but with Wren's special view of St. Paul's from his own window and point of sight. From an upper window of this house may perhaps be seen the very best possible, and most artistic and "architecturesque," view of the cathedral: a truly Greek view of it! The eye takes in the front and side *angularly*, and the dome rises from the mass of the structure with a picturesqueness that cannot be surpassed. Here we may notice one element in the designing or planning of St. Paul's which is noteworthy, and shows how Wren thought out his *plan*, with the "elevations" in his mind's eye at the same time. We refer to the angular blocks of masonry in which are the dean's vestry, the minor canons' vestry, the Lord Mayor's vestry and school, and the staircase to the whispering gallery, forming gigantic buttresses for the apparent support of the dome. A happy thought; and Wren, from his window, could not but see it, from the fact of his capital point of sight with the dome, and the structure on which it rests, both real and apparent, at their very best. In the many critical examinations of St. Paul's, we hardly think that the *sculpture* in it has been done full justice to, or, indeed, that the sculpture of Wren's time has been sufficiently examined and prized. It is, we think, worth all the study the student can bestow on it, and may well serve as an example to those whose fortune it is to fill our modern London with statues and sculpture. From his window Wren could get a good view of the figure-sculpture of St. Paul's, and must, of course, have seen each figure before it was hoisted into its place. Some of these are exceedingly fine, and being high up, and well out of the way, they have not suffered by painting over, as have the sculptures (St. Paul preaching at Berœa) behind the columns of the west portico, which were coated over many times with oil-colour. They are, too, unrestored, and so have great value, as showing the actual stone-cutting of the time in which they were executed. To give a list of them would occupy too much space; but one or two of them, as seen from Wren's point of quiet observation, may be of interest. The figures at the foot of the south-western tower are those of St. John and St. Luke. That at the south-western corner of it, just opposite our window of observation, is singularly fine. It represents the Evangelist St. John, seated, with the eagle at his feet.

The attitude and the whole expression of this figure are worthy of the place they occupy, and show how much Wren must have left the sculptor *to himself*, he probably regarding the sculptor as an independent assistant, with a responsibility of his own, and a personal and independent *credit* to gain or to lose. There is no evidence to show that Wren "designed," as it is called, much less executed, these figures: he simply provided fitting places in which figures might be afterwards placed, when his part of the work was executed. Indeed, just in the same way as the architect Setinus left Phidias, the sculptor, to his proper work, each getting the credit for his own, *but only his own*, work. You may see this from the street, but far more clearly from our window. You are nearer the work, and can see the individuality of the executive sculptor better and clearer. These figures afford, indeed, a lesson to us in our modern and every-day mode of work, and show what is possible. The figure in the opposite corner of the church, at the north-western angle of it, is, perhaps, a yet grander one, almost in the manner of Michelangelo, with magnificent drapery; but this cannot be seen from our window of observation. We may here observe, as we are so very close to it, that the clock cannot well be missed, being so large, and occupying so conspicuous a place as it does; but it does not mar or in any way get in the way of the architecture. A clock in a cathedral somewhere or other would seem to be a sort of necessity, both architecturally, and socially and morally, as marking to that vast majority who are without *portable* clocks Time's inexorable passage, waiting for no man!

It is impossible to catch sight of St. Paul's from Sir Christopher Wren's window, and to look at it as he must have so often done, without a thought of the *railings* round it, so irregular in outline, and placed there with such small consideration of their effect on the building which they surround. They are remarkable specimens of iron castings considering the time in which they were executed. They are very carefully and boldly designed, and contrast not a little favourably with the thin and meagre work which "railings" commonly now-a-days show. They form, with the *stone plinth* on which they stand, an indication of a "platform" on which the building should stand. The Parthenon stood on a rock platform, as on a solid basement. It adds not a little to the dignity of an isolated and regular structure. But in order that this effect should be as perfect as may be, the supporting platform should *harmonise in outline* more or less with the main lines of the structure which stands on it, and which it supports. Judging from *Greek* precedent and example, very great dignity indeed must accrue from the whole surface of the platform on which St. Paul's stands being retained, and its boundaries clearly defined by the stone plinth and railing. It may, as is obvious, be so altered in plan as for its lines to range with the main lines of the walls of the building. We could see all this from Wren's window with some clearness. We could not help thinking, too, of how differently, and how picturesquely, the *crowds* about St. Paul's must have looked in Wren's day. Picturesqueness and quaintness of costume add not a little to the artistic effect of a crowd. Our thoughts, too, travelled to old Venice and St. Mark's, and to Venetian crowds, and coloured costumes, and half-Oriental men, women, and children, and ways of life. Pictures in plenty,—no invention needed,—the painter might go to work on the spot, with but little in his mind's eye but the magic scene before him!

LONDON SCHOOL BOARD SCHOOLS, WILMOT-STREET, BETHNAL-GREEN.

THIS building, now in course of erection, is one of those for which designs were invited in limited competition. The successful design was that submitted by Messrs. John Giles & Gough, and is now being carried out by them without any deviation from the plans as sent in. The building is one of the largest yet contracted for by the Board, the plans being prepared on instructions to accommodate 1,520 children. There is, however, actual accommodation for nearly 1,600. Mr. E. Crickmay is clerk of works.

The entrance for the infants is in the centre of the building fronting Wilmot-street, and on the right of the buildings, and in Wilmot-street also is the entrance for girls, their play-grounds (which will be in one) being in the rear of the schools.

The entrance for boys is in the "New-street," entirely removed from the others and their play-ground is distinct, and cut off by the care-taker's rooms, which it has been thought best to place adjoining the boys' entrance. A basement is provided under the care-taker's rooms and boys' entrance and stairs, for coal storage.

The ground-floor of the entire block of buildings right and left of their central entrance is devoted to infants.

The first floor on the right is devoted to 220 girls; on the left to 240 boys. Between these two is placed the manager's, or board room, convenient for access to either school, and reached by a small private staircase.

The second floor, on the right, is devoted to girls (as on the first floor), 220 in number; on the left, to boys, 240 in number. These are divided, as below, by a room to be used jointly for drawing-classes, having upper and north light. These numbers give the total of 600 infants on the ground floor; 480 boys on the first and second floors; 440 girls on the first and second floors also; each department in two distinct schools. The more detailed arrangements of the plan are as follow, viz.:—

INFANTS' SCHOOLS.

Right and left of the central entrance, and immediately adjoining a mistress's room, are the cloak-rooms and lavatories. The space provided on each side is alike, and is in school and class room in each case for 300 infants, allowing 9 ft. superficial for each infant.

The large school-room has a gallery capable of accommodating at least two-thirds of the infants, with side and high back light, together with a smaller gallery and a large clear space for marching.

The class-rooms enter in every case only from the school-room.

A class-room is provided for babies, and another for the most advanced infants, capable of being thrown together as directed in Rule 4 of the Board's "Rules" as regards infants' schools; and as this is a school of the maximum size, a third and larger class-room is in each case provided.

Each school and class room has in every case direct through-ventilation, and window space is also given.

The Graded Schools, as before mentioned, occupy the first and second floors of the block of buildings, the left of the centre on both floors being devoted to boys, the right to girls, and the arrangements of both floors in each case alike.

THE BOYS' SCHOOLS.

The plan on the first-floor provides for 240 boys, in six grades of forty each, in one principal school-room and four class-rooms; on the second floor for a similar number, arranged in a similar way.

Each class-room is entered only from the school. They are arranged to be thrown together in pairs, and all have side-light and through-ventilation.

The principal school-room has light at the backs of the boys, and windows opposite, at a considerable height, giving through-ventilation.

A stone staircase, without winders or open well-hole, gives access to these schools, and on the half space are the lavatories, and hat and cloak rooms, and between the two schools masters' rooms.

THE GIRLS' SCHOOLS.

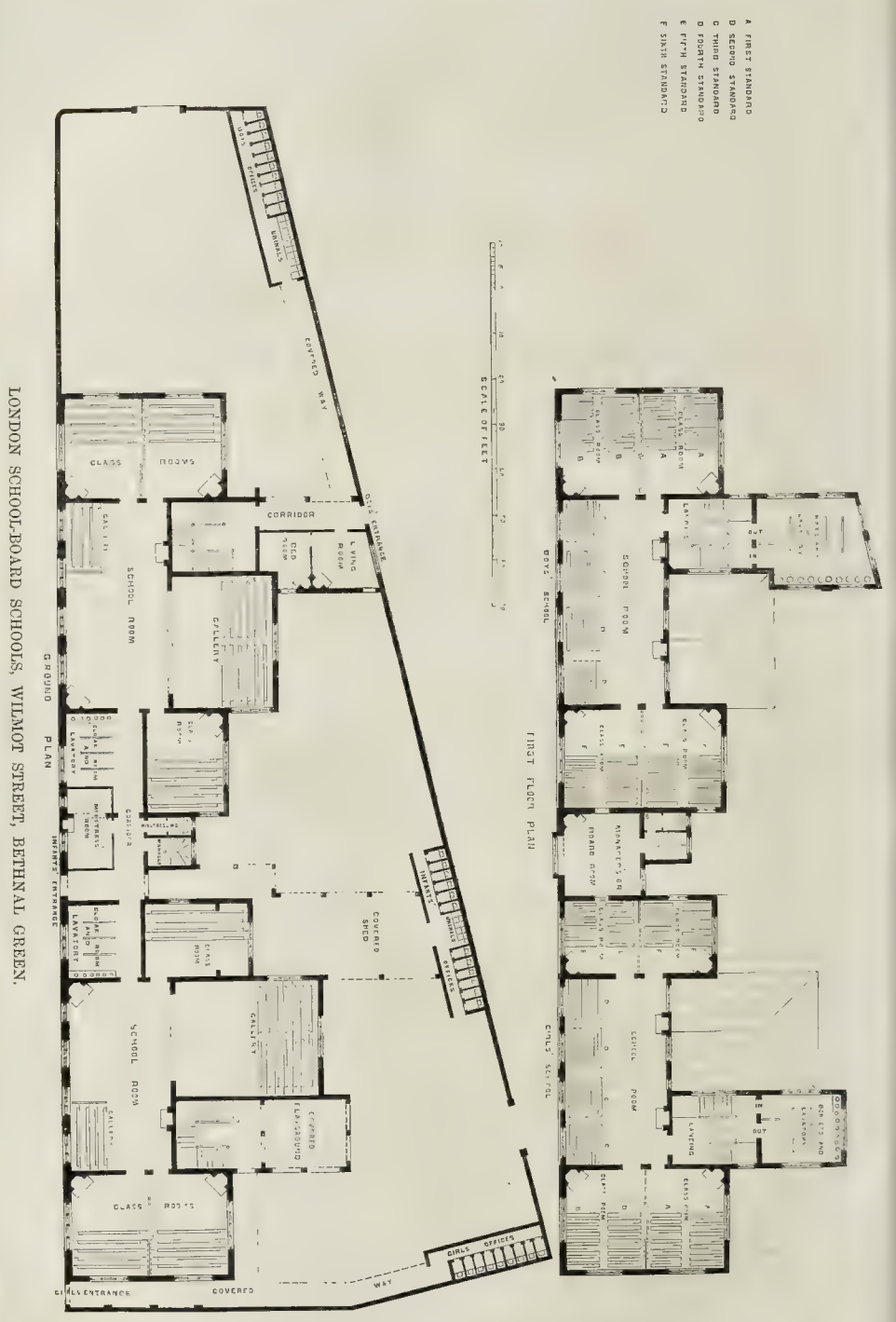
The arrangements for these are similar to those for the boys, except that the fifth and sixth standards are taught in class-rooms, having only thirty instead of forty, thus giving the required number of 440 girls. The cloak-rooms are also somewhat reduced in size.

The school and class rooms, together for each child, 10 ft. superficial space has been provided, and in the school-room alone a little over 4 ft. superficial for the entire number of 240 or 220 respectively on each floor.

The warming will be by open fireplaces, in which will be fitted patent ventilating stoves.

The materials will be stock brick, with red brick facing throughout, and moulded brick strings. Bath and Portland stone for heads and sills, &c.; roofs covered with Penmoyle green slates. The mullions and transoms are of fir, with casements hung to transoms to open down inwardly.

The cubic space of the entire building is 442,800 ft.; and the contract, including boundary-walls, play-grounds, &c., has been taken by Mr. A. Sheffield, of East-India Dock-road, for the sum of 10,389*l*.



LONDON SCHOOL-BOARD SCHOOLS, WILMOT STREET, BETHNAL GREEN.



LONDON SCHOOL-BOARD SCHOOLS, WILMOT STREET, BETHNAL GREEN.—Messrs. John Giles & Gough, Architects.

NEW BUSINESS PREMISES IN BURY.

A NEW pile of buildings has been erected at the top of Bolton-street by Messrs. Driffield, Brothers, drapers, and which has taken the place of some miserable old buildings which were totally unsuited to the centre of a town like Bury, however valuable as specimens of the architecture in vogue in old times. The site of the new premises is in the very centre, and holding a commanding position at the junction of the main arteries of Bury.

The new premises are built from designs by Messrs. Maxwell & Tuke, architects, Bury, and carried out by local contractors. The new building faces Bolton-street and the Old Market-place. The whole of the ground and cellar floors will be devoted by Messrs. Driffield to their own business purposes; but the three upper floors on the side facing the Old Market-place have been arranged as offices, two of which have been taken by Messrs. Maxwell & Tuke. The remainder of the building is appropriated as the living department for young people engaged in the business. The entrance to the principal shop is in Bolton-street, opposite the end of Silver-street. This is a room 48 ft. by 24 ft., and 14 ft. high, surrounded on three sides by fittings with moulded cornices, perforated frieze, and ornamental brackets. The whole of the woodwork in this shop is to be painted and grained oak and varnished. At the extreme end of the principal shop is the millinery show-room, 28 ft. by 14 ft., the entrance to which is in the centre of the shop, opposite to which will be placed a large plate-glass mirror. To the right of this room is a mantle and shawl room, 38 ft. by 20 ft., the three large windows of which overlook the Old Market-place. The two last-mentioned rooms will be finished in polished and ebonised woods, slightly relieved with gold ornament. The shop and the show and mantle rooms are arranged *en suite*, the return to the shop being through a large doorway about half-way up the right-hand counter. The whole of the cellar under these three large rooms is arranged as a ware-room and show-room for linens and other heavy goods. The approach is from the principal shop, opposite to the shawl-room entrance. Arrangement is made for unloading goods from carts at the back, and passing them down an inclined plane into the ware-room, which has been prepared with a damp-proof floor for their reception. The large back yard at the rear of the residence is gained by a special arrangement. The back part of the shop for a distance of 24 ft. is roofed in with fire-proof brick arching covered with asphalte. This forms an open yard, and allows the whole of the ground-space to be used for business purposes. The exterior of the building is composed of polished Yorkshire stone. The shop-fronts are of cast iron, with enrichments, cast by McFarlane, of Glasgow. The windows are of plate-glass, the upper part from special designs.

THE GLASGOW BARRACKS CONTRACT.

SIR,—A paragraph appeared in the *Builder* of March 8, opening with the following sentence:—"It is known that for some time past the construction of the new barracks at Maryhill, Glasgow, has been suspended, owing to the failure of the contractor to comply with the directions of the War Office, in certain details of the building."

Will you, sir, permit one who has some knowledge of the Glasgow barracks contract to offer a correction. As the word "failure" in the sentence quoted has been discussed during the last fortnight, with a conclusion that it may be interpreted against the contractor, the correction which I wish to make is this. If, instead of "failure," "declined" had been used to express the meaning intended it would have been nearer the mark, but not quite up to it. The real state of the case is something like the following.

As the work proceeded differences arose between the Government officer and the contractor's representative, the latter bitterly complaining of the exacting conduct of the former, and of the annoyance and vexation produced thereby. Like all other disputes in which neither side will recede, this one found its way into a wider and more authoritative field. In order to prevent deep-seated hostility, the contractor, as I have been informed upon very reliable authority, repeatedly suggested arbitration. I am happy to inform you, sir, that the matter has now advanced to that blessed and soothing stage,—a stage upon which many fierce combatants have sheathed their steel, and shaken hands. There are two arbitrators, and a referee; and, from their professional reputation, there can be no doubt whatever but that the rights and wrongs of this long-pending dispute will be awarded the most impartial justice. The contractor is well and widely known in the building trade, and believed, by those who know him, to be the last man in the world who would entertain the thought of either shirking or scamping anything he had in hand. As I have not, and never had, any business relations with him, and as neither he nor any one acquainted with him is aware that I have written this letter, I trust, sir, that you will look upon it as a spontaneous "word," in simple justice to a man with whom Dame Fortune has certainly dealt hardly in the matter of the Glasgow Barracks contract. M.

ARCHITECTURAL COMPETITORS.

THE gentleman who has been appointed to inspect the competition designs for the Chester Workhouse has addressed the following letter to the Clerk to the Guardians:—

"I think it would be well if some notice could be taken by your Board of competitors addressing communications to me on the subject of my examination of the plans. This morning I have a letter from one of the competitors, together with an enclosure, and although it is anonymous, excepting having the motto at foot, nevertheless it is, doubtless, intended to have its influence on any report I may feel it my duty to make to your Board. I think it desirable that this should be mentioned publicly that such letters addressed to me by competitors are very unfair to others, and may have a contrary effect on the minds of the guardians to that contemplated by a competitor.—I am, Sir, yours truly,

WM. CULSHAW."

If architects would obtain fair-play from others, they must exhibit it themselves.

SAINT MARK'S CHURCH, SOUTH SHIELDS, COMPETITION.

THIRTY-TWO competitors sent in designs for this church. Those by Messrs. Clarke & Son, of Nottingham, have been selected, and they have been instructed to carry out the works.

"TO ARCHITECTS."

SIR,—The inclosed * emanates, as I understand, from a successful linendraper in Regent-street. It has been sent to me accompanied by a card of a firm of architects, announcing "sites to let" in Bond-street.

Do let me advise retaliation. Why should not I invite tenders for my wife's spring bonnet, with samples of the "newest French article," to be forwarded to my office? Why should not those "exquisite silks" and choice "French merinos" be sent to me, examined (without any responsibility as regards damage, *of course*), and returned, if not approved,—*of course also* at the expense of the sender?

Is it possible that this wealthy tradesman does not know the cost to any architect submitting plans, that he insults us by his offer? Fancy *ten golden sovereigns* for,—not the *unsuccessful*,—unhappy wretch!—but as the *reward of the best but one*. I can fancy the offer emanating from that immortal firm,—"Brown, Jones, & Robinson,"—but not from any other. That great creation of Trollope, Robinson, must have composed this alluring advertisement:

"NOT FOR JOSEPH."

THE PRINCIPLES AND PURPOSE OF ART.

LORD NAPIER AND ETTRICK, K.T., took the chair on Thursday evening, the 20th inst., at a meeting of the members of the Society for the Encouragement of the Fine Arts, held at their rooms, Conduit-street, when Mr. George F. Teniswood, F.S.A., read a paper on "The Principles and Purpose of Art."

In the course of his remarks the lecturer said, that under the term "fine arts" were comprised poetry, painting, sculpture, and music; but that it was his purpose that evening to draw attention to painting, or the pictorial art. This art embodied the forms and the imagery of external nature; and there was a great distinction, as Mr. Ruskin had pointed out, between the terms "manufactured art" and the "fine arts." Art was not limited to the painting of a picture merely; it had its distinctive character, being an expression of thought by form, and its purpose was to embody the expression or emotion of the mind. Art, therefore, was not only in a great measure the offspring of the imagination, but was addressed to it; and there could be no art where this faculty was wanting. The artist was the interpreter of nature and of humanity, and was the vehicle of thought and sentiment, modified by his feelings and by his intellect. Art represented ideas, and realised truth by imagination; and if a work of art aroused no dormant quickening of that spirit which impels all moving thinking things, put it on one side. Art was the power of seizing the character of truth in whatever garb it presented itself. In the production of a picture, the means employed are those of form, composition, light and shade, and colour. Of these elements of imitation form was the most important, the artist having to define the shape of objects by line. There was no quality so distinctly the mark of a genius as original inventive power, and composition disposed and arranged the matter supplied by invention. Light and shade were of the highest value to the artist, and the power of darkness was the agent of the sublime.

Shadow appeals to the sensitive imagination, and is full of mystery, and many great painters have been strong in the representation of light and shade. Let us, then, not complain of exaggeration in deep-toned pictures. In colour the artist exercised original power and imagination. In conclusion, he said that the love of art may be enjoyed by all. It recognised no priesthood, and its temple was one wherein all could worship. It was a passion increasing, and an enjoyment within the privilege of all; for the universality of its practice and the antiquity of its existence were well known.

The chairman, in proposing a vote of thanks, after alluding in high terms to the eloquent lecture, said that the pictorial art reconciled us to the humblest objects of life, which, without this art, we should be almost unfamiliar with. The painter was the interpreter of the charms of nature, and his work increased our interest in the subjects. This was especially the case with regard to Dutch landscapes. The same might be observed in the manner in which painters of scenes taken from domestic life represented and idealised the emotions, sorrows, and joys of the poor, thus awakening our interest in such scenes. The power of painting, too, went still further, and awakened in our mind such an appreciation of subjects which we did not derive from the objects themselves, but which, when transferred to the canvas, a more delicate and refined enjoyment was to be derived from contemplating them, this being noteworthy with reference to flowers and leaves.

Major Britten, the president of the society, thought that there was one purpose of art which he regretted the lecturer did not touch upon, and that was the practical purpose of art. Our art workmen and artizans were far behind other countries in technical education, and this was a great pity, in such a great commercial country as ours. He hoped that the Government would be fully alive to this, so that something might be done towards extending art education among our artizans, for this was a purpose of art that well deserved attention.

INFLUENCE OF ARCHÆOLOGY ON ARCHITECTURE.

MR. J. H. CHAMBERLAIN, F.R.I.B.A., gave a lecture recently to the members of the Archæological Section of the Midland Institute, at Birmingham, on "The Influence of the Archæologist upon Revivals of Architecture." The lecturer said that there were two art-revivals which had been brought to pass within the last 500 years, and he proposed to sketch some part of the work that the archæologist had done in promoting them to the best of his ability and in spoiling them to the best of his ability, the latter having been managed by him far more successfully than the former. The two great revivals of past art were those of Italy and England,—that of Italy being known as the Renaissance, and that of England having no particular name except revival of Gothic. Italian revival had lasted somewhere about 500 years, during which time it had done, for good or for evil, a very great deal of work. It had covered the whole of Europe from one end to the other with various buildings, and it had influenced the art of painting and sculpture. In Italy art-revival was essentially a literary revival, and was owing to the discovery of ancient manuscripts and to literature rather than to the buildings which adorned and still adorn Italy. In England it could not be said that the author, the poet, and the "literary man" (to use an ugly phrase) had very much to do with art-revival here. Neither in the case of Italy nor of England was there a complete break between the past and the present in art. In England there had been no time in which Gothic architecture had ceased to be practised, although towards the middle of the fourteenth century the Classic change began, and was at last forced into an original style called Elizabethan. Italian revival had a marvellous influence on the art of the world, which was encumbered with buildings erected according to the rules and laws laid down in Italy 500 years ago, and erroneously supposed to be the laws by which the ancient builders were governed in putting up their temples and buildings. In Italy the chief cause of the revival

* Invitation from the purchaser of site in Bond-street mentioned in our last, p. 234.

of Classic art in the first instance was the man of letters, and the laws, after being discovered, were then moulded and fashioned by the archæologist. In England we might dismiss the man of letters altogether, and the archæologist might lay what claim he pleased to having been the principal cause of the foundation of art-revival here. The archæologist was influenced by the power of admiration, and that had led him to try and adapt what he saw in old work to what he wanted to produce in the present day. In the way of doing this, however, lay the whole difference between the good and the evil effect of the archæologist upon art. The lecturer then gave numerous illustrations in which the archæologist had influenced the architecture and style of public buildings in accordance with his taste, and especially referred to the dome of St. Paul's.

ST. GILES'S CATHEDRAL, EDINBURGH.

THE restoration of the choir of this church, which has been in progress for the last ten months, has been referred to in former numbers of the *Builder*. On Sunday last, the 9th instant, it was opened for public worship, upon which occasion the representatives of various public bodies, attired in their official robes, attended the services. Sermons were preached by the Rev. Principal Tulloch, of St. Andrews, and by Dr. Lindsay Alexander, a distinguished Nonconformist divine,—an instance of that approachment between different sects of Christians which is one of the signs of the times. Both clergymen referred to the subject of art as an aid to religion. "Our taste and our sense of art," said the learned principal, "should be consulted as well as our spiritual intelligence. We are bound to beautify our worship as well as to make it intelligible and earnest. When we allow our worship to be unseemly in any respect; our prayers to be informal, confused, and dogmatic; our praise to be a harsh, discordant noise, instead of a grave, sweet tone of melody; our communion service to be, what it too often is, a series of preachings, rather than a devout contemplation, with solemn thanksgiving and a loud amen,—let us remember that the apostle is not for us, but against us. If a Christian church be not a temple in the old sacrificial sense, neither is it a lecture-room nor a hall for discussion." Such would have been considered bold words to be uttered by a clergyman of the Church of Scotland not so very long ago, and even yet there are some who listen to them with fear and trembling. At a meeting of the restoration committee, one gentleman stated that he was horrified to find that there is a reredos; that the pulpit is placed against a pillar, and not in the centre of the east end, where,—greatest horror of all,—an open space is left, and occupied by a table, which some day may be utilised as an altar.

The restoration is in most respects a very satisfactory one, and bears a greater verisimilitude to cathedral arrangement than the restoration of St. Mungo's, at Glasgow. The stalls in this instance run east and west, and are really stalls, and not open pews, as at Glasgow. They are of solid oak, substantial, and richly carved with heraldic devices, &c. The royal stall is situated at the west end of the choir, and is screened from the entrance by oak panelling. The central canopy has the Royal arms, after the Scottish manner, and unicorns holding the Royal banner.

The reredos is of Caen stone, having panels in which are to be placed bas-reliefs in marble, representing scenes from the life of our Lord, above which are canopied niches, supported on shafts of green marble, which are to contain figures of prophets and apostles. The space in front of the reredos is raised two steps above the general level, and paved with encaustic tiles; upon this platform is placed an oblong oak table and carved oak chairs for the use of the clergy. The pulpit is octagonal in form, resting on four pillars of green serpentine, with foliated caps. At each angle is an angel bearing a scroll, and the panels are richly carved and cusped.

All the passages are laid with encaustic tiles, and appropriate brass standards are introduced for lighting.

Any one inclined to be hypercritical might object to the reredos and pulpit as being too ornate and pretty as compared with the severe and bald character of the interior; but, upon the whole, the restoration is satisfactory as far as it goes. If the whole building were opened up and treated in a similar manner, the result could not fail to be satisfactory; but as it is we have a bit of patchwork which renders the necessity of a complete overhaul of the building more obvious than before.

PROGRESS AT LISKEARD.

New Masonic Hall.—This building, situated on the Parade, next to the Devon and Cornwall Bank, is now nearly completed. The front elevation is ornate. It has been designed by Mr. Paul, of Liskeard, architect, and is built entirely of stone, several varieties and colours being introduced, contrasting with the sombre granite Bank next door. The style has been called French Classic. The plinth is of grey granite, and above, the walling is of local stone, raised in the adjacent parish of St. Clair. The dressings are of Ham-hill. The arch-stones of the windows are relieved by alternate bands of Polyphant, and above and below the moulded and carved cornice, that runs the full length of the building between the ground-floor and the story above, are bands of Polyphant also. The columns to all the windows, as well as those at the entrance, are of red Mansfield stone, and from them spring carved foliated capitals, by which the window-arches are carried. The front room of the lower story will be used as offices. The first floor is reached by a wide staircase. The newels are of oak, carved wheat-ears being largely introduced. The hand-rail is of polished mahogany. The lodge-room is 17 ft. 6 in. by 30 ft. The walls are relieved by a high skirting of varnished deal. The mantelpieces are of Portland stone, and upon their keystones, and in circular panels, are carved various emblems of the craft. Under Brother Paul's personal superintendence the work has been executed, Brother Lang, of the same town, being the builder. The carved stone and wood-work, and the sculpture, have been carried out by Mr. Harry Hems, of Exeter, sculptor.

New Drinking Fountain.—Upon the centre of the Parade, and hard by the granite-obelisk gas-lamp, Mr. M. Loam, twice mayor of Liskeard, has just erected, at a cost of about 200*l.*, a drinking-fountain. The base is 8 ft. 6 in. square upon plan, and is of tooled and moulded Cheese-wring granite, standing upon two steps of the same material. The basins are of polished red Dartmoor granite. The recesses on three sides are of Portland stone, and the water will issue from the open flower of a water-lily, carved in the same material. The upper part of these recesses are groined, the groining springing from a sculptured shell. Above these niches on three sides, and over the door upon the fourth, are pediments supported by carved brackets. The stone principally used is a local material, raised near St. Clair, a neighbouring parish, and this stone is interspersed with bands of Portland and Polyphant. At a height of 11 ft. from the ground is a carved cornice of Portland stone. Above the cornice the structure rapidly tapers off, to the total height of 13 ft. The architect is Mr. H. Rice, of Liskeard, and Mr. Harry Hems has executed the whole of the sculptured work. The structure itself has been built in part by Mr. Sargeant, and in part by Mr. Doney, both builders at Liskeard.

FROM SCOTLAND.

Edinburgh.—The officers of the 93rd Highlanders resolved to devote a small fund to the erection of a fountain on the site of St. Margaret's Well, West Princes-street Gardens. The ruins of the so-called Wellhouse Tower, says the *Scotsman*, stand immediately under that part of the castle which is known as the Holyrood Rocks, and the building they represent has played a not unimportant part in the fortunes of the castle. The old well in the interior of the tower, which was used by the castle garrison, and was accordingly sometimes poisoned by their besiegers, still furnishes a considerable supply of water. It is to this that the hand of the restorer has been directed, the object being to replace the wooden pump hitherto in use by something more suitable. A large tablet of sandstone has been let into the northern wall of the tower, while immediately in front a fountain has been erected communicating with the ancient well. The fountain, which was designed by Mr. James Drummond, is of polished grey granite, with a pedestal of sandstone, and, including a small ornamental jet, is about 5 ft. in height. The design is somewhat in the form of an urn, surmounted by a Scotch thistle in cast metal, with nozzles for two jets of water, which is supplied by a pump-handle.

Glasgow.—The Commissioners appointed by Government to inquire into the pollution of rivers in Scotland have recommended that steps be taken for the purification of the Kelvin, with all its tributaries; and the Commissioners are about to issue circulars to the different sanitary inspectors whose jurisdiction embraces any part of the river, to carry this into effect. The order of the Commissioners will embrace the interdicting of all paper, print, dye, and bleach works, including all the public works between North Woodside, Glasgow, and Campsie, from polluting the river. It will also become illegal for any portion of the town sewage being discharged into the Kelvin. Action is to be taken immediately for the carrying out of the Commissioners' recommendation.

DISINFECTANTS AND DEODORIZERS.

A PAPER "On Disinfectants and Deodorizers; their Uses and Modes of Application," was recently read before the Portsea Island Society for the Culture of Science and Literature, by Mr. G. H. Stayton, C.E., who is connected with the sanitary authority of the island. Having referred to irrigation (which, he considered, was foremost among the more successful modes of treating sewage), Mr. Stayton mentioned the application of carbon to sewage purification as recently brought before the public by a member of that society, Colonel Synge, and Mr. Stanford, of Glasgow. He believed their mode of treatment was by "intermittent charcoal filtration;" and they claimed for it that the valuable ingredients in sewage were arrested by carbon, were distilled, and more or less of the constituents separately secured, increasing the value of the deodorant. Also, that it perfectly purified sewage water, and reclaimed all the value possible. He had always understood that charcoal was a most powerful deodorant, as long as it was kept dry. From experience, he could say that it ceased to be a purifier of sewer-gases, and was totally useless for that purpose, after it had been thoroughly wetted; and one could only conclude that its use as a sewage deodorant would not give satisfaction, as it could not be relied on to do more than mitigate the evil, inasmuch as a filter of charcoal must very soon get blocked up, if largely used, as must be the case, if used for clearing sewage. The charcoal would then be useless, unless reburned or replaced with fresh, which could not be done without labour and expense being increased. Mr. Stanford stated that sewage purification by charcoal was made independent of existing limited and expensive sources of supply of charcoal, as it was furnished from an original stock, improved in value by means of the refuse dealt with; but if it were refuse, it would involve a dry deodorant carrier, which would do away with the necessity for sewerage works. Of course, that touched on a subject which had caused much disagreement among professional men, as to the "wet" or dry carrier for the removal of town refuse, which, he feared, was too wide for his subject to admit of discussion. Various other processes were briefly referred to, and Mr. Stayton entered into details on the various disinfectants in use,—carbolic acid, chloride of lime, Condy's fluid, sulphurate of iron, sulphurous acid, chlorine gas, &c.

THE COAL QUESTION.

AT a recent meeting of the Manchester Scientific and Mechanical Society, a paper was read on "Fuel, with special reference to peat and artificial fuel," by Mr. A. Hildebrandt. Speaking of coal, the author said the famine was the result of a short supply, brought about by the reckless selfishness of the colliery proprietor and the collier [and he might have classed the coal-merchant along with them]. The prices were not altogether dependent upon demand and supply, but were much more the result of combination among the holders of coal. Nor was there much likelihood of the prices coming down to anything like their original level, because the idleness of the collier suited the coal proprietor, who could now make larger profits upon less extensive transactions. It was rumoured that in some cases the proprietors had refused to bring to bank any surplus of coal which had been got above the ordinary quantity. The Parliamentary inquiry, with Mr. Mundella at

its head, would no doubt produce beneficial results in exposing dishonest practices. A great deal might be done to economise fuel; but if improvements were carried out at all they could not be done all at once. The first substitute which forced itself on the attention of one's mind was peat. Its extent was almost, if not quite, as extensive as that of coal, the area occupied by it in the United Kingdom being estimated at six millions of acres, one-seventh of the area of Ireland alone being peat bogs. The deposits ranged in thickness from 6 in. to 40 ft. The average heating power was somewhat greater than half that of a good quality of coal, but there were peats,—the bottom layers of peat mosses,—which were equal in value to coal. The great obstacle to its general adoption had been its cost, and there was no doubt that with coal at the price it was two years ago peat as a fuel for general purposes could not compete; but with prices more than double what they were then, there could be no question that peat as a substitute for coal for general purposes must be a commercial success. Manchester had the advantage of extensive peat bogs in its vicinity. They were contiguous to the London and North-Western Railway, near Patricroft and Leigh,—the Chat Moss, Irlam Moss, Bedford Moss, Astley Moss, Worsley Moss, Barton Moss, and many others. He strongly advocated a trial of bringing peat into the market, and said he would be glad to render any assistance which he might be enabled to give from his practical experience in the treatment of that material.

A NEW MORTUARY IN ISLINGTON.

AT the meeting of the Islington Vestry held on Tuesday the sanitary committee recommended that mortuary and *post mortem* buildings and waiting-rooms be erected at the chapel-of-ease grounds, in accordance with certain plans which were submitted.

Mr. West, in moving the confirmation of the recommendation, said that the committee had inspected the present mortuary and *post mortem* rooms, and had come to the decision to entirely reconstruct and rearrange the present building.

Some opposition was raised to the recommendation on the ground that the present building only required to be slightly altered; whereupon it was remarked that the present mortuary was little better than a collection of old sheds, and was in a disgracefully broken-down condition, and that as in the new building there would be an inquest-room it would put a stop to inquests being held in public-houses.

The proposal of the committee for the erection of the new buildings was confirmed.

The plans, which have been prepared by Mr. Higgins, the surveyor to the Board, provide for the reception of the bodies of persons dying from infectious diseases, likewise a room for bodies awaiting coroners' inquests, and a *post mortem* room, properly fitted up, where coroners' inquests can be held, and there will likewise be a room for mourners attending funerals.

SCHOOL BOARDS WORK.

London.—The public elementary school in course of erection for the London School Board, situate in Beazley-crescent, Old Ford, Bow, is planned in two distinct blocks; "A" being for the elder boys and girls, "B" for infants. The "B" block is now ready for the roof. Each block has separate entrances and playgrounds. The girls and infants have a play-shed fronting the Old Ford-road; the selected design for the whole being one submitted by Mr. Keith D. Young, which is being carried out under his superintendence, by Messrs. Hill & Sons, of Islington, the amount of contract being 7,548*l.* The schools are designed to accommodate about 1,000 children; the largest school-room being 48 ft. long by 21 ft. wide, which, with the usual class-teachers' and caretakers' rooms, will be warmed by hot air, supplied by the Manchester school-grate, each room having also the advantage of an open fire. The material used for facing is brick. The arches to windows and doors are Gothic, in red bricks, with Bath-stone lintel, the tympans being filled in with Cooper's red ridge-tiles. The conveniences are McFarlane's, and the lavatories are Messrs. Beard & Dent's iron enamelled basins, let into slate tops, with the necessary fittings. The buildings are two stories high, and the basements are built in cement concrete. The clerk of the works is Mr. George Hamlin.——The report of the works committee at the last meeting of the Board, stated that on November 13th the Board accepted the tender of Messrs. L. H. & R. Roberts, amounting to 6,996*l.*, for the erection of schools to be built on the site in Harper-street, New Kent-road. These schools were designed with the front towards Ripley-street, and it is now found that, if this arrangement be carried out, considerable loss of building space will occur, as the district surveyor insists upon the building being placed back from the more advanced line of frontage, which, on this side of the site, is very irregular. The committee have deemed it advisable to obtain fresh plans of the school, with the front towards Harper-street, and an amended estimate has been obtained from the builders for the erection of the schools according to the revised plans. The committee now recommended, and the Board decided, that the revised tender of Messrs. Roberts, amounting to 6,861*l.* (being 135*l.* less than the tender for the erection of the schools as originally designed), be accepted. The committee also stated that they had invited tenders for the erection of a school to provide accommodation for 818 children on the site in Eagle-court, St. John's-lane, Clerkenwell. The following are the respective amounts:—F. & F. J. Wood, 6,667*l.*; E. Conder, 6,050*l.*; Hill & Sons, 6,000*l.*; Dove, Brothers, 5,955*l.*; Scrivener & White, 5,900*l.*; J. H. Tarrant, 5,891*l.*; J. Grover, 5,875*l.*; T. Niblett & Son, 5,762*l.*; J. High, 5,495*l.*; W. Wigmore, 4,825*l.* The committee recommended, and the Board resolved upon, the acceptance of the lowest tender, that of Mr. W. Wigmore, of Bradfield House, Fulham, amounting to 4,825*l.*

Leeds.—Mr. Richard L. Adams, who has been appointed architect of the Leeds School Board, at a salary of 400*l.* a year,—the Board requiring only a portion of his time,—has resided eleven years at Leeds, says the *Yorkshire Post*, where he has practised extensively, especially as a church architect, in partnership with Mr. Kelly. The firm of Adams & Kelly has executed amongst other work, the following:—Christ Church Schools, Upper Armley; Christ Church, Upper Armley; Christ Church Vicarage, Upper Armley (in hand); St. Luke's Church Schools, Beeston Hill; St. Luke's Church, Beeston Hill; school-room, New Leeds; College Schools at Meanwood; Charles-street Schools at Leeds; St. Joseph's Schools, Hunslet; St. Mary's Girls' School, Leeds; St. Mary's Boys' Schools, Leeds (in hand); St. John the Baptist's Vicarage; Holy Trinity Church, Armley Hall; Holy Trinity Church Schools (in hand); Leeds Church Institute; Leeds Industrial Dwellings; St. Mary's Church, Batley; Christ Church, Gateshead; St. Matthew's Church, Hull; St. Andrew's Church, Hull (in hand); All Saints' Church Schools, Acton, London; schools at Adel (in hand); schools at Shadwell (in hand); church at Eccup (in hand); restoration of St. Mark's Church, Woodhouse, Leeds.

Bradford.—Mr. Neill moved that the resolution of the 10th of July, 1872, accepting the tender of Messrs. Beanland, for the Whetley-lane School, should be rescinded, and that the tender of Messrs. Wilson & Sons, for 8,300*l.*, should be accepted. He said that Messrs. Beanland had taken this contract, and sent in a tender which the Board proposed accepting. They could not legally and properly accept the tender, and it was postponed for some months. They then sent in a second tender, asking for 400*l.* more, in consequence of the advance in material and wages, and the second tender amounted to 8,300*l.* The committee then thought it was not a proper course to take to give an advance upon any tender, without again appealing to the public. They advertised again, and the result was, they had agreed to take Messrs. Wilson's tender for 8,300*l.* Messrs. Beanland sent in a third tender, which amounted to 8,500*l.* The committee thought that they had got the best tender, and he believed that the work would be well done. Mr. Duggan, in seconding the motion, remarked that Messrs. Beanland were notified of the acceptance of their tender long before they had sent in their second tender. The motion was then carried.

Exeter.—At the last monthly meeting the chairman stated that in answer to the advertisement for plans for schools to be erected on the three sites of the Exe Island, Mary Arches, and St. James's-road; for the first-named, thirty plans were submitted, with estimates ranging from 930*l.* to 2,440*l.*; St. Mary Arches, nineteen plans, with estimates ranging from 1,940*l.* to 3,210*l.*; St. James's-road, twenty-five plans, with estimates ranging from 590*l.* to 1,877*l.* The designs were furnished on the 15th of February, in conformity with the instructions to the architects, one of which was that the "Board are anxious to secure good design, and convenient arrangement, and also to avoid unnecessary expense in ornamentation." The plans were exhibited at the Judges' Room on Northernhay, and after careful and repeated consideration the committee selected from each group three plans, which, with due regard to economy, and the conditions of competition (for in several cases the estimated cost appeared to be altogether insufficient) seemed most likely to furnish the best schools, special attention, in all cases, having been directed to the internal arrangements. They next instructed their surveyor professionally to examine and report on those selected; and finally, after further examination of the plans, in connexion with the careful and exhaustive report of the surveyor, agreed to recommend to the Board for adoption the following plans:—Exe-Island, first, Mr. John Johnson, 25, Moorgate-street, London,—motto, "Well Considered;" second, Messrs. Fletcher & Nightingale, 32, Poultry, London,—motto, "RRR;" St. Mary Arches, first, Mr. J. Toner, Gray's-inn-square,—motto, "1873;" second, Mr. J. Johnson,—motto, "Well Considered;" St. James's-road, first, Mr. John Toner,—motto, "1873;" second, Mr. Robert Walker, King's Arms-yard, Moorgate-street, London,—"Experientia." This selection, though arrived at independently and on their own judgment, the committee were glad to find to have been in accordance with the opinion of their surveyor, subsequently made known to them. The committee recommended that the selected plans (with certain very slight modifications, which have been complied with) be forwarded to the Department for their approval. Mr. Andrew moved that the plans selected should be forwarded to the Department as recommended, and that the best thanks of the Board should be tendered to those gentlemen who had sent in plans, but who had been unsuccessful. They had received plans from no less than thirty-three gentlemen, most of them well designed. Not a single member knew to whom the plans belonged until after they were judged. Mr. Gidley seconded the motion, and added that their resolution would form an excellent answer to the very impudent post-card that had been received by the chairman with reference to the competition. The card ran as follows:—

"Sir,—It is stated in the city that certain gentlemen of the Exeter School Board had fixed on the architect to be appointed and to receive the prizes for proposed schools before the prizes were sent in. If this is correct, is it justice to those who have competed? I would recommend that a disinterested architect be appointed to adjudicate on the merits of each. Surely a School Board who look to the Bible as their guide, and have clergymen in their midst, would not be guilty of dishonesty."

It was referred to the Board in committee to arrange for obtaining plans for the school to be erected in Newtown.

Eccleshall.—The following tenders for the erection of the school at Undercliffe, to accommodate 300 children, were accepted:—Masons' work, Mr. W. C. Murgatroyd; joiners' work, Mr. D. Myers; plumbing, Mr. J. D. Garth; plastering, Mr. J. Firth; slating, Mr. Thomas Nelson; painting, Mr. J. D. Garth; ironmongery, Mr. J. Tennant. In every case the lowest tenders were accepted, amounting in all to 2,725*l.* 11s. The total cost, including purchase of site, architect's fees, legal expenses, &c., will amount to 3,244*l.* 3s. 6d. The clerk was instructed to submit the estimates to the Education Department for approval, and also to apply for a loan of the total amount to cover the cost of erection.

THE SPONTANEOUS IGNITION OF OILED COTTON OR SILK WASTE.

MAJOR MAJENDIE has communicated to the Royal Artillery Institution the results of certain experiments, instituted to ascertain the relative degree of risk accompanying the presence of oiled cotton waste and oiled silk waste in buildings and stores. Mr. Galletly made the investigation. He found that cotton waste soaked in boiled linseed oil and wrung out, if exposed to a temperature of 170 deg., set up oxidation so rapidly as to cause actual combustion in 105 minutes in the case where the action was slowest. A common lucifer match-box full ignited in an hour in a chamber at 166 deg. Fahr. Raw linseed oil ignited less readily. Mr. Galletly considers that the heavy oils from coal and shale tend remarkably to prevent the oxidation described, by protecting the

tissue from contact with the air. It appears that the so-called spontaneous action of oiled cotton waste proceeds from the substance being exposed in a finely-divided condition to the oxidising action of the air. It appears to have been hoped that silk waste might have offered greater security, but this proves not to be the case. It is to be regretted that nothing more encouraging can be drawn from the experiments than the caution not to leave oiled waste about, even in the smallest quantities, especially in warm places. We have before now shown the danger so incurred.

THE TEGETTHOFF MONUMENT COMPETITION.

THE secretary to the Austro-Hungarian Embassy presents his compliments to the editor of the *Builder*, and, in referring to his letter of May, 1872, begs to request him kindly to insert in the *Builder* the following paragraph relating to the award of prizes for designs for the Tegetthoff Monument at Vienna:—

"*Tegetthoff Monument, Vienna.*—The committee formed at Vienna for the erection of a monument to the late Admiral Tegetthoff, have awarded the prizes for the designs presented to them by different artists. The first prize has been awarded to Mr. F. Schlöth, in Rome; the second to Mr. L. Rau, in Berlin; and the third to Mr. Martin P. Otto, in Berlin. The other artists who have sent in designs are requested to apply to the Museum of Art and Industry, Vienna, for having their plans returned to them."

Imperial and Royal Austro-Hungarian Embassy, Belgrave-square, March 24, 1873.

NATIONAL MONUMENTS.

SIR,—The recent wanton destruction of the Constantine Tolmen in Cornwall and the attempted destruction of the Logan stone,—in 1824,—prove the necessity for a Bill similar to that which I hope Sir John Lubbock will cause to be enacted before the separation of this Parliament. Cornwall has even now some notable stone relics which I have seen recently, viz., several circles in the neighbourhood of Penzance, and stone pillars in their vicinity, described by Mr. J. T. Blight in his "Week at the Land's End," and otherwise. Cromlechs at Chûn, Molfre, Zennor, Pendarves, Trevethy (near Liskeard), and one near Lostwithiel; also a kistvaen, near Wadebridge, engraved in Warner's "Cornwall," which I have not seen; two pillars and remains of a circle in this vicinity; the Trippet Stone Circle, near Bodmin; the large Lanyon Cromlech. That at Coit, near St. Columb, has been destroyed recently. The circles, pillar, and remains of three circles, the Hurlers, and Cheesewring Rock near it; a holed stone, in Constantine; and several smaller stone relics, described by local antiquaries, merit preservation.

CHR. COOKE.

THE DRAINAGE OF WINDSOR CASTLE.

THE works for the drainage of Windsor Castle, Frogmore House, and the Crown buildings situated in the Home Park, have been completed, and, according to a correspondent, are now in full operation. The sewage collected from the different systems into one large pipe passes through the Home Park and Manor Farm to the pumping station at Old Windsor, next the navigation cut of the Thames, and close to the new iron and red brick bridge recently thrown over the stream by the Thames Conservancy Board. The pumping-station is a plain brick building, within an enclosure; the receiving-tank and other chambers being on the south of the engine-house. Owing to the immense quantity of water used at Windsor Castle, and which is supplied to the palace by the waterworks near the Windsor Lock, opposite Eton College, the sewage, although separated from the rainfall, is in an extremely liquid state. Passing through an iron grating or strainer, it falls into a well, whence it is easily pumped through the pipe across the bridge to the farm on the Ham. This is easily effected by a four-horse steam-engine, the pumps driven by which are perfectly able to keep under the supply of sewage. There is another engine of similar horse-power, which can be worked by the eight-horse boiler, or compressed air, supplied by a pipe from the Old Windsor Waterworks, which throw the water to Cumberland Lodge and the Indian Engineering College at Cooper's-hill, Englefield-green. The sewage, on leaving the pumping-station, passes over the bridge into pipes concealed within raised tanks, running round and crossing the farm. At the distance of every 22 yards (a chain) there are taps and earthenware pipes sloping from the covered conduits to the level of the field, whence by means of shallow iron troughs, made on movable lengths, the sewage is distributed wherever it is desirable. The irrigation works have been in operation for a month or two, and the ground (rather a heavy soil) repeatedly flooded by the Thames, has now been well saturated with the liquid sewage. About ten acres have been thus prepared, and the plough has been at work turning up the ground. When this is done it will be again drenched with sewage, after which a crop of Italian rye grass will be sown. The process of irrigation is said to be simply and efficaciously performed, and little, if any, smell is perceptible, although the sun was occasionally warm. The works have been carried out by Mr. Menzies, of Windsor Great Park, to dispose of the Castle sewage without passing it into the river, and without creating a nuisance in the district.

THE PROPOSED LAW COURTS.

THE following tenders for building the New Law Courts were opened on Tuesday last, at twelve o'clock, at the office of her Majesty's Commissioners of Works. The sums represent the totals on the tenders from the several builders who had been invited to compete:—

Lovatt	£1,000,000	"odd"	
Peto	928,500	0	0
Briggs (Birmingham)	871,242	0	0
Lee	870,870	0	0
Brass	866,863	0	0
Browne & Robinson	861,930	0	0
Holland	861,243	0	0
Trollope	859,313	0	0
Dove	852,200	0	0
Cockburn (Dublin)	846,790	0	0
Higgs	822,500	0	0
Lucas	813,636	0	0
Baker	780,690	0	0
Jackson & Shaw	759,878	0	0
Perry	759,000	0	0
Kirk (Woolwich)	754,000	0	0
Bull (Southampton)	719,787	0	0

THE BUILDING TRADE IN LONDON.

THE carpenters and joiners have applied to the Association of Master Builders of London for an increase from 8½d. to 9d. an hour. The following reply has been returned:—

"Sir,—I beg to enclose a copy of resolution passed by the committee of the Central Association of Master Builders of London.—I am, Sir, yours faithfully,

pro STANLEY G. BIRD, Hon. Sec.,
C. H. G.

Mr. C. Matkin, Secretary,
Carpenters' and Joiners' Committee, London.

Copy of Resolution.

'The committee of the Central Association of Master Builders of London has received with surprise a request from the carpenters to disturb the arrangement made so recently as to rates of wages and hours of work. In regard to the alleged present necessity of an increase of weekly earnings, the committee is of opinion that it should be met by working longer hours during the summer months,—an arrangement the committee is prepared to consider.'"

PATENT AND MODERN INVENTIONS.

SIR,—In your last week's number you describe a patent invention by Messrs. Truswell & Co., of Sheffield, for heating buildings by means of pipes fastened into a frame plate at either end, and built into a furnace, the pipes being heated by the furnace, and the air passing through the pipes. This *modern* invention is certainly thirty years old, and probably much more. It was used in a London church, to my knowledge, very many years ago; and, as far as I can remember, it answered to a certain extent. The apparatus (identical with that you mention) is described in Mr Hood's "Practical Treatise on Warming Buildings," fourth edition, p. 212, published in 1869; and this is only another instance how frequently it happens that old inventions are patented as new discoveries, which, in fact, have been known and used for many years.

A CONSTANT READER.

INSTRUCTED PAINTERS.

SIR,—I notice in the *Builder* of this week, March 22nd, that the Worshipful Company of Painters are to offer prizes for decoration, &c. The exhibitors, or candidates, are not aware of the injury they will do to their own interests, if it becomes known in painters' shops in London, and among the foremen thereof. Of course it is presumed that all the exhibitors are house-painters, accustomed to distemper ceilings, paint kitchens, bedrooms, or drawing-rooms, as the case may be. As I have said, if it becomes known, they will not get a job at house-painting This may seem extraordinary, but it is nevertheless true, which I can prove in my own case, and in that of an acquaintance of mine, who is a good workman in all that relates to the minor departments of house-painting, let alone decorations and ornament of all kinds, and who exhibited some patterns in the Painters' Hall some years since. He is very well known in the trade as a skilled workman, and they will not employ him; he is willing to do the commonest work,—in fact, anything that comes. I will not say much of my own case; only, because I am supposed to be a little skilled also, it has kept me out of work for some time. I am not so well known as the party I have mentioned, else it would be all the worse for me.

Where will be the benefit of Mr. Crace's lectures on drawing and decorations? As you will see by what I have said, when a man spends some years in the study and practice of decotion, and asks for work, he is told there is nothing fine enough for him, though at the same time he only wants to work as an ordinary house-painter. There is so little done in decorations, that men would starve if they were to wait till such work had to be done.

A PAINTER.

ELECTIONS UNDER THE SANITARY ACT.

LOUTH, LINCOLNSHIRE.

THE joint committee, consisting of twelve guardians and twelve members of the town council, representing the Urban and Rural Sanitary Authorities of Louth, met on Monday, the 17th inst., to elect a medical officer of health for the whole union, which comprises 90 parishes, with an area of 147,292 acres; the population is 34,760, and the number of houses 8,129. There were thirty-seven candidates, but the voting was confined to two of these, viz., Mr. T. W. Bogg, Louth; and Dr. Domenichetti, Penge. The latter gentleman, who had very high testimonials, was elected by fourteen out of the twenty present. The salary is 500*l.* per annum, 375*l.* being paid by the Rural, and 125*l.* by the Urban Sanitary Authority.

The appointment (for five years) of Dr. Domenichetti was confirmed by the town council at an evening meeting; the Doctor being also appointed the public analyst. The council also proceeded to the election of an inspector of nuisances. There were ten candidates to select from, but Mr. H. Marsden, surveyor, and Mr. T. W. Wallis, surveyor, both residents of Louth, were the only names voted for. Mr. Wallis was appointed, receiving eleven votes, and Mr. Marsden nine votes. The salary is 100*l.* per annum, but the officer appointed (for two years) is not required to give his whole time to the performance of his duties. The area of Louth is 2,560 acres, the population is 10,500, and the number of houses 2,713.

On Wednesday the committee of Board of Guardians met to appoint an inspector of nuisances for the whole union (excepting Louth). There were thirty-three candidates for this office; the salary, 250*l.* per annum, to include travelling expenses, and the officer must devote his whole time to his duty. The long list was reduced to five names, the final selection being postponed to the Wednesday following. This appointment will be for two years.

It is much to be regretted that political feeling should be allowed to prevail in elections such as these, but this is unfortunately the case.

THE TRADES MOVEMENT.

Liverpool.—A largely-attended meeting of master painters has been held at the rooms of the Builders' Association, Mr. Gardner in the chair. The meeting was called to further consider the demand of the operative painters to reduce their hours of labour from 56 to 54 per week, and to increase their wages from 6½d. to 7½d. per hour. The committee appointed to meet a deputation from the men reported having offered them a reduction in hours of labour to 55 per week (as worked by the other branches of the building trade), and an increase of ½d. per hour in wages, which they declined, agreeing to forego the time question, but to adhere to their demand for 1d. per hour to their wages. After fully discussing the question, it was unanimously resolved,—"That the offer of the committee, viz., 55 hours per week, and an advance of ½d. per hour, be confirmed and adhered to."

Leeds.—At a meeting of the engineering trade,

umerously attended, a resolution was passed, sking that "time and quarter" should be paid er the first two hours worked as overtime, and 'time and half" for each additional hour; louble time for Christmas-day and Sundays, ach day to stand by itself in the computation f either day-time or overtime. The workmen resent pledged themselves to work no more vertime after the date (March 15th), except nder the conditions above specified. Some fifty f the large mechanical employers in Leeds ave already had a meeting on the subject, and ave resolved that the demand cannot be con-eded, and have passed a resolution that they ill not pay for overtime at an extra rate until full week of 54 hours has been worked.

Aberdeen.—The painters are moving for an dvance of wages.——The operative joiners have emanded an advance on their wages of 2s. 6d. er week, to take effect at 1st April next. The asters have offered 2s., to commence on 20th me next. This the men have declined, and here is every probability of a strike.

Alloa.—The operative joiners have addressed circular to the masters, soliciting an advance f 1d. per hour on their wages, to take effect in me.

Ashroath.—At a large meeting of operative iners, it was agreed to request the employers r an advance of ½d. per hour on the present ate of wages.

Burntisland.—The joiners employed in the comotive workshops on the North British Rail-ay at Burntisland have applied to their overseer r an advance of wages. The avervge wage mounts to 23s. per week of 51 hours.

Clippens.—The fitters, joiners, and black-miths employed by the Clippens Shale Oil Com-any, who struck work in consequence of having ceived notice of an increase of their weekly orking hours from 54 to 57, have accepted eir employers' terms, and are now working the creased hours.

Ayr.—The dispute between the operative iners who struck work, and their employers, eems to be no nearer a close. The operatives emand an advance of ½d. per hour, and a duction of the hours from 54 to 51 per week. t a meeting of the masters, held on Friday eek, it was agreed to withdraw their offer of d. advance, and offer only ½d., without any duction of the hours.

FLOWERS FOR THE POOR.

SIR,—One of the kindliest efforts towards the melioration of the surroundings of a number of oor people in their homes, is now taking place the dirty and densely-populated neighbour-ood of Greengate, Salford. The movement has en begun by a number of benevolent gentle-en, and led by Mr. Lee Grindon and Mr. John lwards. Mr. Grindon is very well known as eminent botanist, whose writings descriptive the flora and their habitat found in the cinity of Manchester have given a great imulus to botanical study, and added largely the interest felt in our country rambles.

About the close of the past year these gentle-en invited the poor people, by handbill, to me and receive gratis a potted hyacinth bulb, hich they had to promise to tend, and with the derstanding that when the flowers were in oom there would be an exhibition. Many ndreds were distributed in this manner; and the plants are now at their best, a show was ld on Saturday afternoon last, in the Richmond cture Hall, when not less than 250 plants re brought up by their respective owners,—0 individuals, for nobody got more than one t,—and the plants were very creditable indeed their growers. Most of them had evidently en well cared for. The public were admitted view on payment of 2d. each, and prizes of ll-established hydrangeas, vallotas, &c., were idly given as rewards for the best flowers by r. R. S. Yates, and every exhibitor received a all parcel of flower-seeds suitable for the acinth-pot, when that flower should have done oming, with instructions how to sow it, &c. ny of the recipients, doubtless, never had ything like these in their hands before, unless night be the roe of a high-dried herring, and y would be perfectly ignorant of what to do h them. As fresh mould would be required the pot at planting, and such a thing is un-own in Greengate, a gentleman residing in wer Broughton has kindly offered to supply that is needed from his own garden. By-and-by there will be an exhibition of these flowers, and so the movement will grow.

I take it, sir, that this is one of the kindliest of the many kind efforts of the present day, most humanising in its effect, and redounding to the honour of its promoters, whom, as an outsider, I beg leave to thank most heartily, and to commend the movement to other workers in other places. E. G.

SCHOOLS OF ART.

Lambeth.—A largely-attended gathering of students and ex-students of this school and their friends took place at the school, Miller-lane, Upper Kennington-lane, for the purpose of presenting Mr. Edwin Bale, who has held the post of assistant-master for the last ten years, with a testimonial. The testimonial, as described by the *South London Chronicle*, consisted of a handsome richly-engraved silver claret-jug and salver, and also of two claret-jugs in sgraffito ware designed by Miss Barlow and her brother, students in the school.

Cambridge.—The annual exhibition of this school has been held at the Institution. The customary meeting in connexion with it took place in the assembly-room of the Guildhall, the chair being occupied by the Rev. Professor Lightfoot, who was accompanied on the platform by Mr. A. J. B. Beresford Hope, M.P., Mr. Sidney Colvin, the new Slade Professor of Fine Arts, the mayor, and others. There was a large attendance of pupils and their friends.

The hon. secretary read the report, in which it was said:—

"The school has now completed its fourteenth year, and the committee can speak with satisfaction of the attendance of the students, the numbers having been fully kept up.

The committee, however, think it their duty to state that the Government inspector in his report has called attention to the want of minute care and earnestness of purpose in the delineation of objects, and to the lack of desire to imitate closely general outline. These remarks apply principally to the groups of still life. The students have not this year succeeded in obtaining any of the higher or national Government prizes as was done last year; but this distinction is so special that the failure is no cause for discouragement."

The Government had awarded various ordinary prizes for work done during the year.

The Chairman said, an unexpected, but a pleasing duty now fell to his lot, in presenting to their master, Mr. Wood, a testimonial of the affection and the esteem which the students felt for that gentleman. Judging by his own sentiments, he did not think there were any higher tokens of appreciation than these. He was quite sure the appreciation of his pupils would go further to his heart than the treatment of the Government officials. It would, no doubt, be an incentive to future exertions.

Mr. Wood, who was warmly received, said he was extremely obliged to them. The awards of the Government Inspectors were not to be challenged, but he, nevertheless, did challenge them. He wanted the students to look more to Nature, and to infuse a little more life into their labours. It was true they were painstaking; but he wished them to stand higher (not with the South Kensington Department, but) with the public.

Frome.—The prizes and certificates won by pupils of this school in the annual examination in connexion with the Science and Art Department, South Kensington, in April, 1872, were presented at the rooms of the school, by the Rev. J. S. H. Horner, president. Owing, doubtless, to the unfavourable state of the weather, the attendance of pupils and visitors was small. The president said, they had now arrived at the eighth year of the school's history. During the year 1872, there were 297 works sent to London executed by their pupils. That was not quite so many as in the previous year, but it did not follow that the school was not doing as good a work, or that the pupils were less earnest and energetic. Such a school as theirs was certain to experience many vicissitudes and ups and downs. Of the 297 works, 286 were for elementary drawing, and 11 in the advanced section. In a town like Frome it was peculiarly their work to advance elementary drawing.

The Sub-Wealden Exploration.—Quite unexpectedly, at a depth of 131 ft., a stratified mass of pure white crystalline gypsum (statuary alabaster) has been reached. No such accumulation of gypsum was ever met with in Sussex before. Gypsum being a material which is commercially valuable, the landowners are seriously considering the question of working it.

CHURCH-BUILDING NEWS.

Longton.—Dresden Church, built from plans by Sir G. G. Scott, in 1853, and enlarged according to a provision in the original plans, in 1863, has again been enlarged, to meet the needs of this large and increasing suburb of Longton. The accommodation was originally 272, it was increased to 452 in 1863, and it has now been further increased to 670. This last increase has been made by lengthening the entire fabric westwards. A porch has been added, and many internal improvements made. The floor of the entire building has been boarded, and the centre aisle paved with Minton's encaustic tiles. The seats have been cleaned and re-varnished, and new kneelers provided. The organ has been improved, and a new bourdon stop added, by Messrs. Bellamy & Stringer, of Hanley. The total cost of enlargement and improvement will amount to about 1,000*l.* The architect employed was Mr. Lynam, of Stoke, and the builders, Messrs. Inskip, of Longton.

Murston.—The tender of Messrs. Adcock & Rees, of Dover, for rebuilding the church on a new site, according to plans prepared by Mr. W. Burges, has been accepted by the committee. The amount required is nearly 3,000*l.*, of which about two-thirds have been subscribed or promised. The new church is intended to be built in a more central position, so that the inhabitants of the eastern parts of Sittingbourne will be benefited as much as those of the actual parish of Murston.

Saffron Walden.—A meeting has been held in the Town-hall to consider the report of the architect, Mr. C. Butterfield, who had been consulted as to the state of St. Mary's Church, and the probable cost of its restoration. It was also an object of the meeting to open a subscription-list. The Rev. T. C. Beasley, vicar, presided. He said he had written to Mr. Butterfield as to the cost, and he had replied that the sum of 6,000*l.* would be the entire cost of the restoration of the fabric and the church. The report of the architect called special attention to the deplorable state of the north windows and the roofs, and proposed that these should be restored at once. It was proposed to extend the work over three years. The vicar further announced that Lord Braybrooke had authorised him to state that he would give 600*l.* towards the restoration fund, in addition to restoring the entire chancel at his own cost. He estimated that the cost of the latter would amount to about 800*l.* A subscription-list was then opened, with a total of 1,084*l.*

Broadclyst.—The chief stones of a chapel and school have been laid at Westwood. The buildings themselves will cost about 1,500*l.*, but that does not include site or surroundings. The architect is Mr. Edward Ashworth, of Exeter; and the builders are Messrs. Diggins & Smith, also of Exeter; the Bath stone dressings are supplied by Messrs. Mitchell & Son, of the Haven Bank Works; and the carving is being done by Mr. Harry Hems, of Exeter. The building is Early Decorated Gothic. The walls are being constructed of Killerton stone, with Bath stone dressings. This Killerton stone is dark-coloured, honey-combed, of volcanic origin, rather soft when taken from its ancient oven, but which hardens to great power of endurance when exposed. The nave is 39½ ft. in length, by 21½ ft. In the north transept is the vestry, 9 ft. by 7½ ft. The chancel is 21½ ft. in length, by 14 ft. in breadth. The seats will be open, according to the fashion of the times, and calculated to accommodate 110 persons. A Corsham stone pulpit will be the rostrum for the preacher, and there will be a font of the same material. The chapel is to be lighted by six windows in the nave, filled with cathedral diamond glass,—three windows will give light to the chancel. There will be an entrance-porch, 8 ft. by 7 ft. The roof, as a matter of course, will be open, with carved braces, and moulded wall-plates. The chancel roof will have trussed rafters and collars, with carved ball-flowers in the hollows, lined with V-jointed boarding. The chancel-arch will spring from carved corbels, the work of Mr. Hems. The floor of the chancel will be laid with black and red Minton tiles, the sacrium and footpace with encaustic tiles to a design,—the nave and porch with Langport stone paving. The roof will be covered with county slating to vary in colours. The bell-turret is to have a Warner's bell of 2 cwt., with wrought-iron cross and moulded base upon the apex. The school premises are a few yards further up the field. The schoolroom is 27 ft. by 18 ft., with a mis-

tress's dwelling and all necessary offices. It is to be a "dame school." It is in a style consonant with that of the chapel, the materials of construction the same. The walls are to be lined with brick, in lieu of plastering. The school is to accommodate about sixty children. The walls, at points, are now several feet above the ground.

Books Received.

Remarks on the Land Transfer Question, with a Sketch of a Plan for a General Register. By F. H. Colt, of the Inner Temple, Barrister-at-law. London: Sweet. 1873.

The cost, the uncertainty, and the delay attendant on the purchase and transfer of land, often form serious obstacles to those who would possess it, especially in small quantity.

Mr. Colt has brought before the public (under the sanction of a permitted dedication to the Lord Chancellor), a proposal which seems to us to be at once simple and effective. He allows Time to come to the aid of legislation in a manner which is both easy and effective. He proposes that every transfer of land, after the passing of the suggested Act, should be compulsorily registered, such register giving to the transferee a perfect title as against the transferror. In case of demise or of bankruptcy, the transfer by will, by legal heirship, or by operation of law, is to be thus registered, as well as in the case of sale and conveyance, no charge upon land, except a first mortgage, to be put on the register. The operation of this plan would, within the lifetime of a couple of generations, establish a perfect legal title to all the landed estates of the country that would be at once indefeasible, easy of access, and readily available to purchasers. It would do this at a minimum cost, and with a minimum degree of interference with existing interests. The remarks to which we refer are reprinted, with additions from the columns of the *Law Journal*, of which, we believe, Mr. Colt is one of the editors.

The Year-Book of Facts in Science and Art. By John Timbs. London: Lockwood & Co. 1873.

Once more Mr. Timbs embalms for the popular eye the most recondite fruits of the year's progress in science and art amongst the adepts, much of which might otherwise not be seen or heard of for years, if at all, by the public. And yet Mr. Timbs is not seldom taken to task by hypercritics because he is not the author, but only the editor, as a rule, of some of his most useful books. But of what worth, compared with this volume, would such a book be, even were it *written* by the hypercritic himself? It is the *ipsissima verba* of men of science and of arts which constitute its value.

The present volume has a portrait of Dr. W. B. Carpenter, the president of the British Association in 1872, and a *vignette* of the central rotunda of the Vienna Exhibition, with a reference to p. 27, on which is our own account of the rotunda, duly acknowledged. The interest of the volume is as varied and great as it has been any year during the last quarter of a century, or at least since the origin of this standard work.

VARIORUM.

"The Illustrated Guide and Directory of Manufactures," edited by R. S. Barker (75, Fleet-street), has reached a third edition, and has been enlarged. The object of the work is "to show the buyer at a glance the names and addresses of the leading manufacturers engaged in any particular trade in all parts of the kingdom." We are disposed to think that many names might yet be added, still the book goes a long way towards doing what it professes to do. ——"The Export Merchant Shippers of London," 1873 (Dean & Son), is another directory that will be found useful by many of our readers. The shippers are arranged alphabetically, and there is an index to places of shipment also.—— "Vacher's Parliamentary Companion" has been published for March, and contains its usual large amount of necessary information. ——The second edition of "How to Make a House Healthy and Comfortable," by H. J. Lanchester (Simpkin, Marshall, & Co.), contains some additional matter, and will serve to make popular advice often given before, but which cannot be too often repeated.——"Steam in the Engine: its Heat and its Work. By P. Kauffer, Managing Engineer, Leeds. London: Blackie & Son." In this volume the author has compared his own practical experience with the data from Joule's and Regnault's experiments; and gives the conclusions to which repeated trials and observations have led him.——"Cracroft's Investment Tracts: American Railways as Investments. By Robert Giffen. London: Stanford." Information is here given as to the average profits of American railways, the conditions and distribution of profit, the land grants, the legal position of American railways, &c. On page 28 the author gives some incredible-looking figures as to the wealth and population of the United States, by decades from 1790 to 1860. According to the table in question, the value of real and personal property in the States has mounted up from 750,000,000 dollars in 1790 to 30,069,000,000 dollars in 1870, which, even making the largest possible allowance for depreciation of dollars between 1860 and 1870, is a tremendous leap, even over 16,159,000,000 dollars in 1860. Yet, as the author remarks, if wealth increases in England twice as fast as the population, the rate of increase in the States between 1840 and 1850 (3,764,000,000 dollars to 7,135,000,000 dollars) should at least be credible, as it is in little more than the same ratio; and many reasons, he adds, could be urged for believing in the higher rate between 1850 and 1860. The average property to each person is stated to have been 187 dollars in 1790 and 776 in 1870.——"Second Annual Report of the Board of Commissioners of the Department of Public Parks for the year ending May 1, 1872. New York: Bryant & Co." The detailed nature of this report may be seen from the fact that it consists of about 250 pages of imperial octavo size. On the subject of concrete pavements, the Report says:—

"This department has laid, chiefly in the year 1871, a large extent of concrete pavement. Various patent compositions and processes have been employed for this purpose, all of which were expected to be improvements upon the ordinary stone and gravel roads and walks previously used. On inspection, at the close of the last winter, the condition of but a very small part of all these pavements was found to be satisfactory. The surface of the walks which had been laid more than one year was disintegrated in whole or in frequent patches, and it was evident that an extensive reconstruction, or large repair, was immediately necessary.

A number of gentlemen connected with the public works of Philadelphia, Washington, and Brooklyn were invited by the Department to make an examination and study of the subject, and a report of certain conclusions reached by them has been made public. It was ascertained that over one hundred patents for bituminous concretes, especially designed for the surface of walks and roads, had been issued from the United States Patent Office, the specifications of most of which provide for an admixture of substances, the only effect of which would be detrimental to the purpose in view. The reason of the failure of others is found either in the fact that the bituminous substance used contains different and unknown proportions of accidental impurities,—some positively harmful, and some simply useless,—or in the fact that greater judgment and skill is in some parts exercised by the workmen engaged in the manipulation of the combination than in others. The practicability of obtaining here a concrete pavement similar in character to those which have been found for years past so satisfactory in Paris is not doubted, but as yet no method by which an equally valuable result can be accomplished, except at a cost which would forbid its general application, has been completely established."

Miscellanea

Steam-Boiler Inspection.—The Twenty-second half-yearly report of the Midland Steam-Boiler Inspection and Assurance Company, at Stourbridge, has been issued in a printed form. It states that there were 3,285 boilers under the care of the Company, and this number has since increased. There have been two slight and one serious explosion among the assured boilers during the past half-year, but without injury to any one. There was no explosion among the boilers under the Company in the first half of the year 1872. During the past year there were made 13,626 examinations of boilers, of which 1,697 have been seen inside, and 1,808 in the flues. Of the 3,285 boilers under the Company, 1,155 were used at collieries or mines, 1,502 at ironworks, and 628 at mills of various kinds. The boilers may be described in general terms as 2,514 fired externally, and 771 fired internally. The detection of internal or external corrosion has been frequent. The causes of explosion have been, as heretofore, about equally divided between faults of construction, want of proper inspection, and inattention of attendants; but there has been an unusual number of casualties to steam pipes and fittings. In a recent case of explosion, we may remark, careless attendants had first lighted the fire, and then filled the boiler!

Utilisation of Slag.—Mr. Woodward, of Darlington, has patented a plan for manufacturing bricks from scoriæ, and the system is now at work at the Eston Works of Mr. Thomas Vaughan. The slag is taken as it comes from the blast-furnace. It runs into a series of moulds, placed at regular intervals on a revolving table. After being removed from the moulds the bricks are thrown into a kiln or furnace close at hand, where they are annealed; and afterwards they are used in any ordinary structure for which clay bricks are suitable. The fracture is said to be close and firm, and they are capable of resisting an intense heat. So far as strength is concerned, they will withstand a crushing force of 3 to 4 tons per cubic inch, or four or five times more than that of common bricks. The scoriæ brick remains unaffected by exposure to the atmosphere, it is said, but this does not accord with what has been said of slag used for roads which is said to contain sulphur, and to be liable to disintegration. This should be disproved, if possible, of the bricks. There is a considerable loss by breakage, but once solidified they are as hard as granite. It is calculated they can be made for 8s. per 1,000, or even less, whereas ordinary bricks cost 20s. and upwards per 1,000. A new company has been formed, on the limited liability principle, to work Mr. Woodward's patent, and they have acquired the right to the slag of all the blast-furnaces on the Tees, including those both above and below Middlesbrough.

A New (?) Patent Grate.—A patent has been taken out by Messrs. Carrington & Platt for a fire-grate of simple construction, designed to prevent the formation of smoke, and to cause more perfect and regular combustion of coal. It consists of an ordinary fire-grate, with bars in front, and a back and sides of fire-clay, the whole of which is pivoted in a suitable frame on two supports. By a small handle this grate can be rotated on these points. Small grids are placed at the top and bottom. The fire is lighted in the ordinary manner, and when it has burnt clear, the upper grate is removed, and fresh fuel placed on, as in ordinary grates; the movable grid is then replaced, and the grate is turned round, with the fresh fuel at the bottom. Thus the fuel burns gradually downwards, and the production of smoke is almost, if not entirely, prevented. The advantages of the invention are said to be great economy of fuel, prevention of smoke, and perfect combustion, as well as a steady, continuous fire, requiring little use of a poker, and saving more than 20 per cent. of fuel. The rotating grate is an old invention, as past pages of the *Builder* will show; but it may be none the worse for that, only it does not seem to have yet come into general use.

Technological Examinations.—The programme for 1873 of the Society of Arts has appeared in print. It states that at the conference held at the house of the Society on the 20th July, 1872, Prince Arthur in the chair, the council's scheme of technical examinations, as proposed by Captain Donnelly, R.E., a member of their body, having been cordially approved of, the council have decided to hold annually, in conjunction with the examinations of the Science and Art Department, examinations in the technology of some of the arts and manufactures of the country. Due notice will be given of the several industries in which examinations will be held. The examination will be by a special examination-paper, to be worked in conjunction with these examinations. The practical skill will be judged by the returns of the candidates' employment, for some years past, in the particular art or manufacture. The programme of examinations for each industry is given. The subjects for the year 1873 are Cotton, Paper, Silk, Steel, and Carriage-Building. Announcements will be made from time to time of any additional prizes that may be offered in each subject.

The Amalgamated Society of Engineers.—At the Newcastle-on-Tyne County Court on Wednesday a member of the Amalgamated Society of Engineers made a claim on the funds for a weekly allowance under the rules. For the defence it was stated, according to reports, that the rules of the society were not registered, and this plea was held to be fatal to the claim. There must surely be some error in this account. If not, it is time the members took advice as to their position. The society is stated to number 40,000 members, with funds to the amount of 250,000*l*.

"Removal" of Northumberland House.—It is proposed to remove the house bodily, in the American style, on a balk timber framework, inserted transversely and longitudinally below the basement of the house, and by the application of a series of powerful screw-jacks lifting the superincumbent mass, moving it along a prepared tramway, and then veering it around to square with the approach from Pall-mall!

Proposed Widening of Charing-cross.—At the last meeting of the Metropolitan Board of Works, the Parliamentary Committee reported that they had further considered the Admiralty and War Office Re-building Bill, by which it is proposed to pull down the buildings on the west side of Charing-cross from Drummond's Bank to the Horse Guards, extending westward to the depth of nearly 500 ft., and on that site to re-build public offices. It had occurred to the committee that this would be a favourable opportunity for widening the thoroughfare at Charing-cross, and they recommended that they be authorised to confer with the First Commissioner of Her Majesty's Works, &c., as to whether an arrangement can be made for widening the thoroughfare at Charing-cross, in connexion with the Admiralty and War Office Re-building Bill. The Bill has since been withdrawn.

Who Orders must Pay.—At the Sussex Lent Assizes, before Mr. Justice Brett, the case of Macfarlane & Co. *v.* Dr. J. F. Money was tried. Dr. Money, of Brighton, employed a builder, Mr. Kemp, under an architect, Mr. Hill, to erect four houses for him, under a contract with the builder. Messrs. Macfarlane & Co., of London and Glasgow, supplied iron-work; and expecting a balcony Dr. Money was consulted. The question at issue will appear from the judge's summing up. His lordship said the question was not whether plaintiffs had given credit to defendant, but whether there ever was a contract between the parties by which defendant agreed to pay plaintiffs for the goods supplied for building the houses. The invoices were not sent in till some time after the goods had been delivered, nor until Mitchell had ascertained that Kemp was in difficulties. It was for the jury to say whether the fact of the invoices being sent in to Dr. Money after Kemp had failed did not show that plaintiffs were looking out for some one to pay them for their goods. The jury immediately returned a verdict for the defendant.

Weather Reports and Charts.—A specimen report and chart of the weather in the British Isles and their vicinity, prepared by Mr. G. A. Rowell, has been lithographed by Whiteman & Bass, of 236, Holborn, London. As Mr. Rowell remarks, "The value of maps showing by signs the simultaneous meteorological conditions over a vast extent is now fully proved by the tri-daily issue of weather charts by the American Government, giving at a glance (on a map 22 in. by 14 in.) the state of the weather, at intervals of eight hours, over the whole of the United States. These charts must be extremely valuable to the agriculturist, in giving a warning of the approaching storm or a change to wet or dry weather; and so also to those engaged in maritime affairs. They have also already led to a knowledge of important facts as regards the course and cause of storms. The plan of the annexed map is suggested as a ready means for giving the information to which it relates; it is similar to one I submitted to the Ashmolean Society in 1848."

Accidents.—About 100 ft. of the Drogheda Quay-wall has fallen into the River Boyne, carrying with it a corresponding length of adjoining street about 12 ft. broad. The accident was caused by tidal action undermining the wall.——A gas explosion in the High-street, Lincoln, has blown out the new front of a shop put in a week before, and strewed the High-street opposite with a *débris* of looking-glass, teapots, and other wares. Gas having escaped through the night, the too usual course of seeking for the source of the escape with a naked light and not with the nose was adopted, and with the usual result.

Clerk of Works to Paddington Vestry.—At a recent meeting of the vestry, the Highways Committee submitted the names of three candidates, viz., Mr. John Conway, Mr. George Lewis, and Mr. John I. Oram, as most eligible for the office of clerk of works. On a ballot being taken, Mr. John Conway was elected, at a salary of 140*l.* per annum.

Costly Water Fittings.—The vestries and district Boards of the metropolis are protesting almost with one accord against the preposterous regulations which the water companies have made, and the Board of Trade have approved, in pursuance of the Act passed last session for ensuring a constant water supply, and the Metropolitan Board has expressed its determination to resist as far as possible the enforcement of the regulations. It is declared that the cost involved is equal in many cases to the rent of the house for two years, and involves a cost over the house-owners of London of 11 millions sterling! The Metropolitan Board have ascertained that the expense of providing the fittings required will amount to more than 10*l.* for a small cottage, and to 60*l.* and upwards for each of the large houses in the West-end of London, and they are in hopes of inducing the Government to appoint a Commission on a subject which interests every householder in the metropolis.

Extension of the London Hospital.—A public meeting has been held in the Egyptian Hall of the Mansion House, for the purpose of aiding the managers of the London Hospital, Whitechapel-road, in raising a sum of 100,000*l.*, which is required for the purpose of providing additional accommodation, and meeting in other respects the growing demands upon the hospital. The Lord Mayor presided, and among those on the platform were the Duke of Cambridge, president of the hospital, and other influential gentlemen. The present expenditure of the hospital is said to be 20,000*l.* a year in excess of its fixed income. The secretary, at the close of the meeting, read a list of the sums already subscribed to the fund, amounting to 37,000*l.* It was stated, that of the 100,000*l.* now asked for, about 25,000*l.* would be expended in erecting the additional accommodation that was required and the remainder would be devoted to the maintenance of the hospital.

Crane-testing.—In a case decided at the Devon Lent Assizes,—Kerslake *v.* The Exeter Corporation,—the plaintiff had supplied a crane for defendants, and the chief point turned on the testing of the crane. The judge said there was not a tittle of evidence of adoption by the corporation. The crane was not tested to their satisfaction, and in ordering it to be removed they only did what they were bound to do. A crane was a very dangerous thing, and if life was lost by the poor workmen who were bound to work under it, it would be a case of cruel manslaughter on the part of those who compelled the men to work with it. The corporation were quite right in acting in the spirit they did. The jurymen did not seem to understand the case, and his lordship had to further explain it to them. They then found their verdict for the defendants.

Steel from the Ore with little Coal.—An important lecture has been delivered to a crowded audience of the fellows of the Chemical Society, at Burlington House, by Dr. C. William Siemens, F.R.S., "On the Manufacture of Wrought Iron and Cast Steel direct from Iron Ore by a new Method." By this process the blast-furnaces, as well as the laborious puddling operations, are suppressed, the ore being simply deoxidised, and the iron precipitated, in a new furnace, from which it is withdrawn in the state of blooms, and at once shingled or melted into steel. In place of some 4 tons of best coal to obtain a ton of wrought iron, only 28 cwt. of coal of an inferior quality produce the same weight. An interesting discussion followed the lecture, in which Dr. Frankland, F.R.S., and other leading chemists took part. It resulted in the confirmation of the views propounded by Dr. Siemens.

Land in London.—At the London Auction Mart, on Wednesday week, Messrs. Edwin Fox & Bousfield sold the Globe Tavern, at the corner of Fore-street and Finsbury-pavement, for 17,000*l.*, the two houses adjoining in Fore-street for 8,400*l.*, and the Moorgate Tavern, in Finsbury-pavement, for 8,150*l.* The area of the several lots amounted to 3,448 ft., so that the price realised was at the rate of 10*l.* per superficial foot.

Mr. Wagner, C.E.—In our last we printed a letter headed "Northumberland House: an Idea," sent to us, clearly written by the writer, Mr. J. Wagner, a civil engineer. On the day it was published (Friday, the 21st), the writer died, at his residence in the Vauxhall-road, aged seventy-one years.

Compulsory Taking of a Manor Farm for Drainage Purposes.—At a special meeting of the Reading Town Council, the common seal of the corporation was affixed to a notice to Mr. Richard Attenborough of the intention of the Local Board of Health, pursuant to the Reading Local Board Waterworks, Sewerage, Drainage, and Improvement Act, 1870, and the Acts incorporated therewith, to issue their warrant to the sheriff of Berks for summoning a special jury for the purpose of determining the price and compensation payable to the said Richard Attenborough, and stating the amount which the council are willing to give for compensation. The *offer* was 5*s.* for the Manor Farm, &c.; but the special jury, of course, will make the award, and the the Board will pay it. Mr. Hawkins, Q.C., and another counsel, have been retained for Mr. Attenborough.

Local Improvements at Westerham.—A short time since an improvement in the footpaths of the High-street of this town was made by several owners of property, and now a long stretch of new pavement has been laid down in front of the property of the squire, who has caused sundry walls and fences belonging to him to be pulled down and set further back, so as to enable his workmen to continue the footpath along one side of the road, where previously none existed. Colonel Warde has also settled upon giving, as a site for the group of almshouses which a certain charitable Sister of Mercy is about to erect here and endow, at the cost of about 10,000*l.*, a piece of ground which will possess a frontage to the London-road. The plans and elevations have been prepared by Mr. F. Streatfeild, of Charts Edge, and Mr. Worssell's contract for erecting them has, we understand, been accepted.

The City Walls of Gloucester. — Mr. Bellows, one of the members of the Cotteswold Naturalists' Field Club, has laid bare portions of that part of the wall lying north of the East Gate of Gloucester, at his new premises in Eastgate-street. The wall, exposed for a length of 42 ft., says the local *Chronicle*, proved to be about 6 ft. on the top, increased by three successive sets-off to a width of about 7 ft. towards the base. Nothing as yet has been found so as to indicate specially a Roman origin. On the inner side, however, amongst broken pottery and other rubbish of undoubted Roman character, were found three pieces of Samian ware with the potter's mark upon them, and a few other ancient relics.

Slaughterhouses in the Metropolis.—At the last meeting of the Metropolitan Board of Works, the Works Committee reported that they had considered the subject of the Bill introduced by Dr. Brewer, M.P., to repeal the 7th section of the Building Act of 1844, prohibiting the existence of slaughterhouses in the metropolis after 1874. It appeared to the committee that the Board should approve the Bill, and they recommended accordingly. At the desire of the solicitor, the consideration of the report was deferred in order that he might fully consider the Act, and report to the Board thereon; and also take the opinion of Mr. Manisty, Q.C., and Mr. Poland, as to its interpretation. Meantime, Dr. Brewer explained the provisions of his Bill. We regret that we cannot support him.

London International Exhibition, 1873. At the fourth meeting of the committee on Scientific Inventions and New Discoveries at the Royal Commission Offices, Gore Lodge, Mr. Chas. B. Vignoles, F.R.S., in the chair, the committee examined the objects already delivered, and rejected those which, in their opinion, were unworthy of admission in the class, which consists of objects the excellence and novelty of which are so great as to render it undesirable that their introduction to the public should be delayed until the proper year for the exhibition of their class of manufacture in the Industrial Division. The arrangement of objects is proceeding rapidly.

Parquet Floors.—We willingly mention that Messrs. A. J. Arrowsmith & Co. obtained a medal and certificate at the Dublin Exhibition for their parquet floors. The same firm are providing handsome parquet dados for the principal apartments of Bolton Townhall.

"The Vapour Stove."—We are asked to state that the "vapour stove" recently mentioned in our pages is sold in London, not Liverpool. The manufacturers must take the usual modes of making their address known.

Tracing-paper.—A method for rendering ordinary drawing-paper transparent for the purpose of making tracings, and of removing its transparency so as to restore its former appearance when the drawing is completed, has been invented by C. Puscher. It consists in dissolving a given quantity of castor-oil, in one, two, or three volumes of absolute alcohol, according to the thickness of the paper, and applying it by means of a sponge. The alcohol evaporates in a few minutes, and the tracing-paper is dry and ready for immediate use. The drawing or tracing can be made either with lead-pencil or India-ink, and the oil removed from the paper by immersing it in absolute alcohol, thus restoring its original opacity. The alcohol employed in removing the oil is, of course, preserved for diluting the oil used in preparing the next sheet.

Driving Machinery by Waste Heat of Steel Works.—Arrangements have been patented by Mr. Joseph Knott, of the Highfield Steel Works, Sheffield, for applying the waste heat of steel melting furnaces to the driving of the machinery. They are very simple. Mr. Knott has six furnaces along the end of one melting-room, discharging their surplus heat and flame into a perpendicular chimney stack of the usual kind. A boiler-room adjoins, and the boiler is laid along the side of the chimney stack. To the perpendicular fines dampers are fitted, by the insertion of which the heat and flame are diverted into a wide horizontal flue under the boiler.

Proposed Memorial to the late Samuel Bamford.—A meeting of the subscribers to the fund for the erection of a memorial at Middleton in honour of the late Samuel Bamford, has been held in that town. Various designs were submitted, including one of a statue, and it was decided that the most suitable form would be an obelisk of rough granite, with an appropriate inscription.

Society of Biblical Archæology.—A proposition has been made by the few surviving members of the Syro-Egyptian Society, the Anglo-Biblical Institute, the Chronological Institute, and the Palestine Archæological Association, to incorporate, with all their books and effects, as life members of the society of Biblical Archæology, and this will be recommended for consideration by the council.

A Great Make.—Messrs. Thomson & Browning, the London agents of the Darlington Iron Company, write,—"It may be interesting to some of your readers to know that during the last fortnight 3,988 tons of rails were made at these works. We do not think so large a quantity of rails has ever been made in England, under one roof, within the same space of time."

Engineer to the Great Yarmouth Port Commission.—Sir John Coode, C.E., has accepted the office of consulting engineer to the Great Yarmouth Port and Haven Commission, and will in a short time inspect the harbour works.

TENDERS

For metropolitan meat and poultry markets, Smithfield. Western extension. Mr. Horace Jones, architect. Mr. W. Reddall, and Messrs. Williams & Taylor, surveyors :—

Higgs	£103,232	0	0
Myers & Sons	99,880	0	0
Baker & Son	99,483	0	0
Lucas, Brothers	98,448	0	0
Peto Brothers	95,870	0	0
Webster	93,950	0	0
Hart	88,946	0	0
Perry & Co.	88,875	0	0
Henshaw & Co.	87,845	0	0
Trollope & Sons	85,743	0	0
Ashby & Horner	84,917	0	0
Conder	84,520	0	0
Ashby & Sons	84,245	0	0
Hill & Sons	83,527	0	0
Browne & Robinson	83,180	0	0
Holland & Hannen	82,848	0	0

For alterations, &c., in rear of No. 26, Red Lion-square, Holborn, W.C. Messrs. Davis & Emanuel, architects :—

Goodwin	£390	15	0
Verrall	336	0	0
Williams & Son	327	0	0

For Brierly Hill Board schools and teachers' residences. Mr. T. Smith, architect. Quantities by Messrs. T. C. & J. P. Sharp :—

Thompson	£6,623	11	7
Lovatt	6,100	0	0
Nelson	5,685	0	0
Horton	5,598	0	0
Stockton & Sons	5,479	0	0

For a shoe manufactory, Stafford, for Messrs. Hollin & Anderson. Mr. J. Ratcliffe, architect :—

Ratcliffe	£1,897	0	0
Adams & Pemberton (accepted)	1,890	0	0
Whittome	1,856	0	0

Engineers and Heating Apparatus.

Rudge & Griffiths	£260	0	0

For a leather warehouse and house, Marston-road, Stafford, for Messrs. Lewis Brothers & Arkell. Mr. J. Ratcliffe, architect :—

Bridgett	£1,332	0	0
Adams & Pemberton	1,210	0	0
Ratcliffe	1,190	0	0
Reynolds	1,150	0	0
Whittome (accepted)	1,146	0	0

For the Christ Church schools, Rowley-street, Stafford. Mr. J. Ratcliffe, architect :—

Adams & Pemberton	£1,039	10	0
Whittome	1,016	10	0
Ratcliffe (accepted)	1,009	0	0

For Amersham and Woodrow National Schools, Bucks. Mr. Vernon, architect :—

	Amersham.		Woodrow.		
Taylor	1,625	0	£195	0	
Snell	1,421	0	190	0	
Child	1,392	0	184	10	
Stone	1,360	0	200	0	
Fincher	...	...	...		
Baughurst	1,350	0	145	0	
Sexton	1,320	0	168	10	
Batchelor	1,290	0	173	0	
Spicer	1,272	0	181	0	
Woodbridge	1,275	0	170	0	
Reavell*	1,275	0	155	0	
May	1,200	0	150	0	

* Accepted.

For the erection of a villa at Leytonstone, Essex, for Mr. F. F. Lironi. Mr. W. Mundy, architect. Quantities supplied :—

Rivett	£1,789	0	0
King & Son	1,780	0	0
Brown	1,760	0	0
Smith	1,687	0	0
Ennor	1,684	0	0
Chapman	1,660	0	0
Forrest	1,631	0	0
Arber	1,575	0	0

For the erection of schools at Globe-terrace, Hackney, for the London School Board. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour :—

Langmead & Way	£8,821	0	0
Conder	8,475	0	0
Sewell & Son	8,090	0	0
Hearle	7,943	0	0
High	7,931	0	0
King & Son	7,846	0	0
F. & F. J. Wood	7,704	0	0
Niblett & Son	7,207	0	0
Perry & Co.	7,178	0	0
Shurmur	4,840	0	0

For the restoration of Tempsford Church, Bedfordshire. Mr. E. Browning, architect :—

Foscer	£2,655	0	0
Thompson	2,641	0	0
S. & W. Pattinson	2,414	0	0
Halliday & Cave	2,388	0	0
Perkins & Sons	2,327	0	0
Law & Son (accepted)	2,292	0	0

For rebuilding premises for the London and County Bank, George-street, Richmond. Mr. R. Brewer, architect. Quantities by Messrs. G. Lansdown & Pollard :—

Will & Sons	£2,340	0	0
Gascoigne	2,316	0	0
Sweet	2,040	0	0
Sims	2,020	0	0
Carliss (accepted)	1,967	0	0

For alterations and additions to premises, Nos. 6 and 7, Chiswell-street, for Messrs. Blyth & Son. Mr. B. Fletcher, architect. Quantities not supplied :—

Bridgman, Nuthall, & West	£515	0	0
Bayes & Ramadge	500	0	0

For residences, schools, and other buildings, in concrete, faced with brick, at Grey's, Essex, for the Governors of Palmer's Charity. Mr. T. R. Maples, architect. Quantities supplied :—

	Main Building.			Tower.
Bridgman, Nuthall, & West	£7,009	0	0	£225
Kirk	6,254	0	0	230
Mann	6,099	0	0	270
Blake	5,900	0	0	200
Everett	5,875	0	0	200
Pearson	5,795	0	0	210
Woodbridge	5,550	0	0	170
Cobham	4,894	8	11	220
Rawlings	4,843	0	0	150

For the erection of school and residence, at Birdbrook, for the Birdbrook School Board. Mr. F. Whitmore, architect. Quantities by Messrs. P. & L. Curtis & Son :—

Last & Son	£925	0	0
Cole Brothers	830	0	0
Grimwood & Sons	829	10	0
Theobald	785	0	0
Fell	772	0	0
Mason & Son	735	0	0
Hall	717	0	0
Pudney & Son (accepted)	698	3	0

For erecting a warehouse and offices at the Docks, Gloucester, for Messrs. Wait, James, & Co. Mr. C. N. Tripp, architect. Quantities by Mr. H. Carrington :—

King & Godwin	£8,230	0	0
Meredith	7,933	0	0
Collins & Cullis	7,914	0	0
Chatterbuck	7,860	0	0
Ashbee & Son	7,630	0	0
Estcourt & Co. (accepted)	7,545	0	0

For the rebuilding of No. 313, High Holborn, for Messrs. W. Watson & Son. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Riddett :—

Haylock & Son	£4,075	0	0
Kilby	3,640	0	0
Wagstaff & Son	3,605	0	0
Patman & Fotheringham	3,583	0	0
Browne & Robinson	3,435	0	0
Sabey & Son	3,399	0	0
King & Son	3,304	0	0
Axford	3,268	0	0
Elkington (accepted)	3,065	0	0

For the erection of stables, car-shed, and offices, Broad-street, Portsmouth, for the Provincial Tramway Company. Messrs. Davis & Emanuel, architects. Quantities supplied :—

Burbidge	£1,695	0	0
Morey, jun.	1,650	0	0
Bramble Brothers	1,525	0	0
Cooper	1,498	0	0
W. R. & C. Light (late)	1,490	0	0
Ward	1,487	0	0
Quick (late)	1,466	0	0

For new wing to residence, Bickley Park, Kent. Messrs. J. Young & Son, architects :—

Hart	£1,488	0	0
Kirk	1,435	0	0
Newman & Mann	1,435	0	0
Fish	1,430	0	0
Conder	1,297	0	0
Arnaud	1,295	0	0
Merritt & Ashby	1,235	0	0
Burrows & Brooker	1,076	0	0

For new warehouse, 52, Bow-lane. Messrs. Young & Son, architects :—

Kirk	£1,718	0	0
Hart	1,682	0	0
Fish	1,650	0	0
Ashby & Horner	1,627	0	0
Newman & Mann	1,556	0	0
Sewell & Son	1,543	0	0
Merritt & Ashby	1,525	0	0
Conder	1,494	0	0

For additions to walking-stick factory, 180, Old-street, St. Luke's. Plans by Mr. A. D. Dawnay :—

Nicholas	£816	0	0
Pask	620	0	0
Nutt & Co.	577	0	0
Falkner	575	0	0
Porter	573	0	0

For the erection of the Craven schools and lecture-hall, Marshall-street, Golden-square. Mr. R. H. Burdett, architect :—

Hill & Sons	£3,980	0	0
Macey	3,825	0	0
Dunn	3,813	0	0
Axford	3,657	0	0
Stoner	3,595	0	0
Keyes & Head	3,385	0	0
Scrivener & White (accepted)	3,357	0	0

For co-operative stores and dwelling-house, at New Basford, Notts. Mr. H. Walker, architect. Quantities supplied :—

Barker	£998	0	0
Cooke & Broomhead	989	19	0
Wooll & Slight	979	0	0
Hind	970	0	0
M'Pherson	928	0	0
Horsfield	920	0	0
Marriott & Co.	880	0	0
Cooper	816	0	0
Cargiel (accepted)	805	0	0

For the erection of twenty-eight houses, fence, walls, and conveniences, at Newstead, Nottinghamshire, for the Newstead Colliery Company. Mr. S. Rollinson, architect. Quantities supplied :—

Wilcockson	£3,750	0	0
Bramwell	3,740	0	0
Pattinson	3,584	0	0
Marriott	3,600	0	0
Hadfield	3,349	0	0
Stevenson & Weston	3,255	0	0
Forrest (accepted)	3,175	0	0
Hays	3,140	0	0
Greenwood	3,005	0	0
Hadfield	2,900	0	0
Green	2,810	0	0
Attenborrow	2,615	0	0

For wrought-iron railing in Marylebone-road, fronting the workhouse. Mr. H. S. Snell, architect :—

Main & Co. (accepted)	£441	0	0

For granite curb and foundations :—

Howard Brothers (accepted)	£375	0	0

TO CORRESPONDENTS.

J. J. A. (thanks : not desired).—H. S. S. (too late for attention this week).—W. P. & T. B. (thanks : not desired).—T. N. M. (shall have attention).—G. M. B. (apply to Local Board, or the Inspector of Nuisances).—K. & Son.—S.—W. D.—B. N. & W.—G. G. & Sons.—J. T.—C. N. F.—North Herts.—J. K.—O. S.—R. W.—S. R.—A. Z.—C. S. & Sons.—J. M.—J. B.—C. R. S.—A. V.—Messrs. S.—D. & E.—G. S.—H. R. W.—A. J.—J. G.—D.—F. S.—C. C. H.—E. R. B.—M. & P.—E.—W. W.—G. T.—E. F.—G. T. C.—A. H. (under our mark).—C. C.—A. D. D.

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The Builder.

VOL. XXXI.—No. 1571.

*Welsh Annals, Antiquities, and Families.**

ABOUT four years ago, the Camden Society photo-lithographed, for the benefit of its members, a curious work in the possession of Sir Thomas E. Winnington, entitled "Marble in History," by T. D. We gave our readers an account of the masterly manner in which Mr. Gough Nichols, who edited it, traced this T. D., through the medium of his own sketches, to his native haunts, and identified him as Thomas Dingley, of Dilwyn; and we also gave an outline of the singular survey, which was confined, chiefly, to the cider counties and those adjoining them. The same Thomas Dingley accompanied the Duke of Beaufort into Wales, and made sketches of the seats and arms and monuments of the Welsh gentry, which survey, known as the "Beaufort Progress," has been published by the Duke of Beaufort, for private circulation only. Just such a task as either of these has now been executed by Dr. Nicholas, with the advantage of all the extra appliances that the march of two centuries has afforded. Instead of the stiff pen-and-ink sketches of the old antiquary of Stuart times, we have views from photographs, and instead of his pale vellum binding we have cloth of crimson and gold. Moreover, in the two handsome volumes before us, which are entitled "Annals and Antiquities of the Counties and County Families of Wales," there are more geological, geographical, and historical particulars than Mr. Dingley furnished. But much of the same ground is gone over as that viewed by the Duke of Beaufort and his suite, and several of Dingley's sketches are reproduced to illustrate it.

Now, the Welsh have a saying by way of a laugh at the supposed national yearning for the identification of a remote ancestry, that the surname of Adam was Williams, and that the patronymic of Noah was Jones. In Andrew Borde's "Boke of Knowledge" there is a Welshman who expresses the same longing for an ancient lineage. He says, "I am a gentleman, and come of Brutus blood; my name is Ap Pryce, Ap Davy, Ap Flood." There is, doubtless, as indicated in these and many other instances, an intense interest in consanguinity in Wales, and there is also a very good and ancient reason for it. In very old times a man who was avenging an injury did not desist from pursuing his revenge upon the family of his enemy till he had arrived at the ninth degree of relationship from the actual offender. Under these circumstances, and in those days, it was imperative for a man to trace his relations, both up and down the stream of life, to a very remote degree of kinship. We know that old customs and habits of thought, like echoes, linger longer among the hills than elsewhere, and we shall probably not be wrong in assigning a Welshman's consideration for a pedigree to this, or a similar old-world influence. A Cymro, or Welshman, past the ninth descent, was the head of a new family, which he represented in the national councils, which was another arrangement calculated to keep lineage before the eyes of the people in a remarkable degree. And as, in addition, he held rank and claimed property by kin and descent, and enjoyed the possession of land in virtue of descent from free men, a pedigree could not fail to be of the greatest importance. Not content with preserving and copying genealogical trees in great numbers, the Welshman sometimes inscribed his lineage with his coat of arms upon his buildings. The mansion built by Sir John Games, knight, in 1582, at Newton, near Brecon,* has his shield of arms sculptured in stone on the fireplace in the great hall, with this inscription:—"John Games, mab ag etyfedd hena Edward Games ap John ap Morgan ap Edward ap Morgan ap Dafydd Gam, 1582. Ar Dduw y gyd. Games," which, translated, runs:—"John Games, the son and eldest heir of Edward Games, the son of John, the son of Morgan, &c. 1582. On God depends everything. Games." The ancient mansion of Abermarlais, in Carmarthenshire, bore an inscription of like character, to this effect:—

"Urien Rheged, King of Rheged, in Ireland, and King of Gwyr, in South Wales, Lord of Is-Kennen, Karnwyllon, and Kydwelly. He was in King Arthur's tyme, and married his sister by the mother's side, by whom he had Owen and Pasgen, with others. Urien was the fourth in descent of Coel, Emperor of Great Britain."

To have come over with the Conqueror is no merit in the eyes of a Welshman, whose hills, vales, moors, and river-banks all speak to him of a more remote and nobler ancestry than the adventurous knights who accompanied William the Norman across the Channel. Uther Pendragon, Arthur, Urien Rhegid, Cynetha Weledig, Coel Godhebog, grandfather of Constantine the Great, Boadicea, Bran, Caractacus, Bronwen the Fair, Cadwaladr, Merlin, Taliesin, Howel the Good, are illustrious, reliable realities to him, by the side of whom the Normans are newcomers.

Just as in the days of the Plantagenets in the Honey Island, as the old Cymry used to call England, all intellect and taste expended itself in the practice of architecture, so, in older times, in Wales, all possessors of talents were bards. One of the Welsh historical triads says,—"The three beneficial artizans of the Isle of Britain: Corvinwr, the bard of Ceri of the long white lake, who first made a ship, with a sail and rudder, for the Cambrians; Morddal, the man of the white torrent, the artist of Ceranit, son of Greidiawl, who first taught the Cambrians to work with stone and lime (at the time the Emperor Alexander was subduing the world); and Coel, son of Cyllin, grandson of Caradog and great-grandson of Bran, who first made a mill of round and wheel for the Cambrians; and these three were bards." Again, "He that has skill in emblazoning arms, portraying heroic actions and wonderful events, so that they may be understood as soon as the emblazoning is seen, is called the sign-showing bard." It is not too much to affirm that no one could treat properly of Wales and the Welsh who was not, in feeling and temperament, a bard; and accordingly we have pleasure in perceiving that Dr. Nicholas may be fairly classed among the sign-showing or heraldic bards of old; for not only has he portrayed many heroic actions and wonderful events, and detailed the descent of many heroes, but he has performed his task in a manner that may be understood as soon as the emblazoning, so to speak, is seen. He has done more than this for the old country; for he has snatched a county from England, and shown clearly that it is Welsh. This is Monmouthshire, which by modern geographers is placed with the English counties, but which from time immemorial, before the reign of Henry VIII., formed part of Wales, and even long after that time was allowed to be one of its thirteen counties. In all things, too, he is grave and certain, and armed with authority. He has aimed at producing a new visitation of Wales, which, though not under the auspices of the College of Arms, may be considered as complete and faithful as if compiled by a professional herald. Each county is treated as a distinct district. Its physical features are noticed; its annals, structural antiquities of all ages, noted; its extinct families enumerated; great men celebrated; and present county families described, with their lineage, dignities, alliances, and public services, sufficiently fully to enable a clear and well-defined presentment of its ancient and modern characteristics to arise in the mind of the reader.

A similar task, as far as the histories of the families of the Principality are concerned, was undertaken in the reign of Elizabeth, by Lewys Dwnn, Deputy Herald of the College of Arms. And in the reign of Queen Anne there was another antiquary, Henry Rowlands, pursuing the same study, though limiting it to the island of Anglesea, pacing the sites of the ancient groves, counting the monoliths, carnedds, and cromlechs, making up lists of the high sheriffs of the county; lists, too, of the members of Parliament, and of the clergy of the various benefices in the county, with the same interest, aim, and faith. Since this worthy vicar of Llanidar laid down his pen, more than a hundred high sheriffs have taken office, with due pomp and circumstance. His successor, therefore, has many new names to add to his lists, and many events to record that never foreshadowed themselves in his most troubled dreams. It is, of course, easy to travel in Wales, and see but little that these heraldic bards saw. Lady Morgan, for instance, after staying with Lady Stanley, at Penrhôs, thought only of its sweet walks, quiet crags, black rocks, its perfumes, drawing-rooms, gardens, and strawberry-plants, we may read in her correspondence. But it is certain, those who would get a full enjoyment out of Welsh travel should avail themselves of the pioneering of these painstaking scholars.

Perhaps the most interesting of the Welsh counties is Merionethshire. Henry Rowlands would, doubtless, have awarded the palm to Anglesea, *i.e.*, the Englishman's isle, the subject of his work, and the scene of his labours; the chief seat of the Druids, the site of the old home of the Tudors, the refuge of the pursued in all ages. Thomas Dingley would, probably, have preferred Montgomeryshire, in which division of the principality his long journey came to an end, and his patron was met by four coaches, with six horses to each, containing the Duchess of Beaufort, and his grace's daughters and their attendants, and where a series of noble entertainments was enjoyed by all the suite. Lewys Dwnn would, as certainly have voted Pembrokeshire to the first place, on account of his own descent from the Dwnns of Picton Castle, who traced to Meurig, king of Dyfed. But we are inclined to give Meirionydd the preference to either on account of its intactness, its old heroic character, its freedom from levelling influences, and the picturesqueness of its scenery. It is allowed to be the most Welsh part of Wales. It consists of a triangular area of 666 square miles, one side of which, 37 miles long, borders Cardigan Bay. Dr. Nicholas remarks, appreciatingly, "How much of this surface is arable land it

* Annals and Antiquities of the Counties and County Families of Wales. By Thomas Nicholas, M.A., Ph.D. London: Longmans, Green, Reader, & Co. 1872.

* Of which we give a view. See p. 266.

would be perilous to say: a much larger proportion would be desolate moorland, or bare and craggy rock; but in narrow intervals between the hills, where the cataracts leap, and the small rivers pursue their lively and noisy courses, there are found scenes of smiling fertility, abysmal steeps and tangled forest, the charms of which it is impossible for any effort of imagination to surpass. No part of Britain more bewitchingly invites the artist, or more sweetly regales the intelligent tourist." Here and there, along the banks of the Rhine, in the neighbourhood of the Lurleyburg, for instance, there may be spots approaching rivalry with the scenery, though as a whole that famous stream is quite eclipsed by the Mawddach. "Switzerland itself," avers Dr. Nicholas in continuation, "though, doubtless, abounding in scenes of different type, and of more colossal grandeur, possesses nothing of similar scale and character to surpass this exquisite district."

There are three systems of mountains in the county. The most famous elevation is Cader Idris, 2,914 ft. above the level of the sea; but this is not the highest. Aran Mowddwy raises its mass some 40 ft. higher still. From these mountains descend many beautiful streams,—the Dee, the Wnion, the Cain, the Eden, the Lliw, the Tryweryn, and Cwn Prysour,—some wending towards Bala Lake (that great hope of the metropolitan anxious for a sufficient water-supply), and others towards the estuary of Barmouth. "Around is a region of mist, bogs, and lakes,"—we quote Dr. Nicholson again, rather than trust to memory,—"of wild fowl and diminutive sheep, of humble cottages, turf fires, simple and shy manners, and withal nearly unmixed Celtic blood. No coach-road has yet traversed it, and no railway ever will invade it, unless, indeed, some treasures of gold, copper, or slate, as yet undiscovered, should tempt the enterprise of the ages coming to form one." In a word, those who would see a primitive county, that the tourist has not yet discovered, should inquire for the moors, heaths, and craigs of Craig y Dinas, Llech Idris, Bedd Porus, and Mynydd yr Wden. One of the battles of the White and Red Roses was fought near the village of Pennal, and won by the valiant Welshman Thomas ap Gruffyd ap Nicholas (of Dinefawr). Owen Glendwr filled this district with his presence and name, especially in besieging and taking Harlech Castle. Margaret of Anjou took refuge in this fortress, too, and looked out upon the Bay of Cardigan and the estuary of Traethbach and up to the Harlech mountains for aid and succour, doubtless, till her eyes were tired with looking; and when Edward IV. was King of England, this grand old Welsh stronghold was still holding out for the Lancastrian party. It was when Edward sent the Earl of Pembroke to reduce it that its defender, Dafydd ap Jevan, made the answer so often quoted and always admired,—"I held a tower in France till all the old women in Wales heard of it, and now the old women in France shall hear how I defend this castle." In the Vale of Dyffrin, too, close by, are numerous pre-historic relics. This was a field where, to follow Dr. Nicholas once more, "the wage of battle was tried in times both of British civil strife and of contest with English and Norman invaders; the ravines and crags of the Artro and its tributaries gave refuge and concealment to many a band of retreating patriots, and the celebrated Pass of Drws Ardydwy was repeatedly a real Thermopylæ." Apart from these warlike associations and charms of landscape, this district has the additional interest of possessing many pleasant seats. Prince Llewellyn had a residence here; but of this there are no traces beyond a large artificial mound. The mansion of Peniarth, a seat of the Wynne family, possesses one of the finest libraries in Europe. A new mansion has lately replaced the ancient residence of the Myttons, which is of great extent, and in a picturesque situation, surrounded by mountains, with cascades dashing over rocks, yet toned down with ornamental grounds and plantations. Corsygedol is an Elizabethan structure, once the seat of the Vaughans, but now the property of Mr. Coulson, who preserves in it the finest collection of paintings of old and new masters in the Principality. The gate-house of this mansion was designed by "Yuyr Shôn," Inigo Jones, whose hand is also to be detected in other seats in the neighbourhood. No part of Wales contains a larger number of camps and caers. The largest caer is that on the Craig of Ddinas, which is in the centre of a small valley. Round the crest of this great crag is a rampart formed of walls of great thickness, and within the enclosure is a carnedd, with a rock close by on which are to be made out indications of seats. There are also geometric incisions mentioned, which, upon examination, will be found, probably, to correspond with the now familiar cup and circle marks. This caer is supposed to be that alluded to by Taliesin, as being the "cave of silence" in which Elfin was confined. There is a caer at Penrallt, on the estate of Mr. J. Humphrey Jones. Another on the farm of Llwyn Griffri, Talybont, which has been examined and measured by Dr. Griffith. There is another overlooking the vale of Isgethin, above Llanddwywe; a fifth on a hill above Llanfihangel y Pennant; and several others north of Corwen. And tumuli abound. There are the remains of Cymmer Abbey, near Dolgelley; and Egryn Abbey near Barmouth; and of a religious house or oratory, Cae Abatty, near Plâs Dinas, Mowddwy, the new seat of Sir Edmund Buckley, above mentioned. But above all, in point of popularity, there is the grave of Gelert, the celebrated hound of Prince Llewelyn ap Iorwerth, which was presented to him by King John of England, who was his father-in-law, and which he slew in haste and error, under the impression that he had killed his infant son, whom he had, in reality, defended and preserved from the attack of a wolf. Of late years there has been an inclination to doubt this tale, because counterparts of it have been found in other lands, and we are glad to see Dr. Nicholas active on the defensive side of the legend.

It is not a little curious that most Welsh antiquaries dwell with pleasure upon the fact that the Royal family of England owe their seat upon the throne, and their Scottish kingdom, to their Welsh descent. In Queen Anne's day this circumstance afforded them immense satisfaction. The Rev. Henry Rowlands, whom we have quoted before, remarked:—"We have by a strange compensation of Providence, the honour to say that her late Majesty Queen Anne of glorious memory, as well as some of her royal ancestors before her, enjoyed the ancient kingdom of Scotland, the kingdom of England, and the principality of Wales, by right of inheritance, from persons whose descent and origin were from the Isle of Anglesey. For she had the name of her family, and the crown of Scotland, as descended from Walter Steward, who was born at Aberffraw; the crown of England, in right of the Lady Margaret Tudor, paternally descended from Owen Tudor, of Penmynydd, in Anglesey; and she inherited the principality of Wales from Gwladus Ddu, the only surviving daughter and heir of Llewelyn ap Iorwerth, Prince of Wales, born and bred in Anglesey, who was married to Sir Ralph Mortimer, by which marriage the inheritance of the Principality, in right of blood, came to the house and family of York, and by them to the crown, where it now happily rests." Mr. Rowlands went still further, for he added that if a right to a new territory belonged to the state or kingdom whose subjects discovered it, then King George was entitled to all America, by virtue of its first discovery by Madoc ap Owen Gwynedd, three hundred years before Christopher Columbus was born. Dr. Nicholas follows suite so far as to preface his book of illustrious lineages with that of her present most gracious Majesty, whose pedigree he traces to Rhodri the Great, King of all Wales, who died A.D. 876. This is done in a very short space. For brevity's sake we will take up the line at Henry VII., the first of the Tudors. He was the son of Princess Elizabeth, daughter of King Edward IV., eldest son of Richard, Duke of York, son of Richard, Earl of Cambridge, by Anne Mortimer, daughter and heiress of Roger Mortimer, 1st Earl of March of his family, who was great-grandson of Gwladys, wife of the Lord Marcher, Ralph Mortimer, and daughter of Prince Llewelyn ap Iorwerth of North Wales, son of Gruffydd ap Cynan, sixth in descent from Anarawd, Prince of North Wales, eldest son of Rhodri the Great.

Although Dr. Nicholas gives views of most of the Welsh castles, some of which we reproduce, he has been curiously exclusive in the matter of the churches. The ecclesiastical antiquities are, indeed, scarcely glanced at, and, consequently, yet present a very inviting subject for a future work. Several of the castles are illustrated with two or three views. Caerphilly Castle, for instance, is shown in three aspects. This the author fixes upon as the grandest and most wonderful ruin in Wales or England. It covered, with its projecting earth-works and redoubts, thirty acres of ground; and to this day its massive walls, its towers,—one leaning as though about to fall at any moment, but which has remained in the same position since the days of Queen Isabella,—its vast halls and gateways occupy a very large site among the bleak hills of Senghenydd. We mention this fortress especially, however, because we have a suggestion to make concerning its name. Dr. Nicholas says of it:—

"The earlier British name, Senghenydd (a corruption of St. Cenydd, who is said in the *Brut* to have founded a monastery on the spot), is both familiar and intelligible; but the modern Caerphilly, or, more correctly, if the components are Welsh, Caerphili, is a perfect puzzle. How it arose, and what its reason, no man can tell. Conjecture, therefore, has been rife; and the most far-fetched and strained derivations have been proposed. It were beneath the dignity of scholars not to search for a key among the archives of Greek and Latin, and we have been accordingly offered *Cara-filia*, on the assumption that some one's 'beloved daughter' had held some relation to the place."

About 1092 Glamorganshire was partitioned by Robert Fitzhamon among the knights who accompanied him into Wales, and then Saiwg-henydd fell to the share of Einion ap Cadifor ap Collywn, who had assisted him in his advance. So late as 1221 the castle is mentioned as Sang Henyd; but in 1270 the Brut records, "in that year Llewelyn ap Gruffydd took the castle of Caer-filu." Now we think the reason of the change of name in the Brut, from Senghenyd to Caer-filu, may be traced to the high consideration in which the Normans held the castles they built or strengthened. When Richard Cœur de Lion looked upon his newly-built castle, Le Château Guaillard, in Normandy, he said to it, in his pride and pleasure, "How beautiful thou art, my daughter of a year!" Here we have, at all events, one application of the term "daughter" to a castle. And *Cara-filia*, from this point of view, and not from the relationship of any one holding or living in Caerphilly, may be the real solution of the mystery of the change of name. The euphonious resemblance between the Norman *chère*, dear, and *caer*, the common Welsh word for stronghold, may have led to the permanence of the application of the enthusiastic term.

The inevitable alteration in the form of names, both of consequence of importation into a foreign country and the lapse of time, is shown in the case of one of Robert Fitzhamon's knights, to whom the lordship of Llanwerydd was apportioned in the distribution of the county to which we have just alluded. This was William le Esterling. Some of the old documents mention him as Desterling. But by the fourth generation his family were known as Stradlings. The Stradling pedigree states "Sir Robert Stradling married Hawisia, daughter of Sir Hugh Brin, knight, whose mother was the lawful Welsh heiress, on failure of male issue, to the castle and manor of St. Donat's (Llanwerydd)," and so, by marriage, as in the case of many other conquerors in all times, obtained a rightful title by just heirship to the estate. Fitzhamon, who took Cardiff for himself, died after twelve years' possession, and left no son. His daughter married a natural son of Henry I. by a Welsh princess. This same Henry I., by the bye, kept his brother, Robert Curthose, Duke of Normandy, shut up in Cardiff Castle for twenty-six or twenty-eight years. Turbervill, another of the Norman adventurers, married the Welsh heiress of the district assigned to him with Coity Castle. (Coed-ty, some of our readers, thinking of Kit's Cotty-house, Kent, may be glad to know, means surrounded with woodlands.) The seat of the Earl of Dunraven stands on the site of a very ancient Welsh Castle, thought to have been the residence of Caractacus, which was given, with other possessions, to William de Londres, another of Fitzhamon's knights, who afterwards built for himself Cydweli Castle, in Carmarthenshire. But with the solitary exception of one female descendant of Turbervil, all these Norman families, Granvilles, Humfrevills, Sywards, St. Quintins, Berkrolles, Le Flemings, and the rest, are extinct. The Stradlings were the longest to linger, and the last of these was Sir Thomas Stradling, who died in 1738, aged twenty-eight. Their castle of St. Donat Dr. Nicholas describes as unquestionably one of the most perfect of the ancient baronial halls of Wales, but he gives no illustrations of it. Omissions such as this mar the effect of the survey considerably. A second edition, with more numerous views, is however not impossible, when we hope, among other items, all the other ancient mansions, though they be now but farmhouses, the ancient churches, and the markings on the

rocks in connexion with prehistoric works, will not be forgotten.

Although, thinking of the purple hills, the winding waters, the steep wastes which, as has been truly said, when the gorse is in bloom, appear to be covered with the mantles of a thousand kings; the old inviting manor-houses, the mystic forsaken caers of the ancient Britons who lorded it there before the artificial settlement of five royal tribes and fifteen noble tribes was thought of; the grey cottages of their peaceful descendants; the sea; the craft coming and going, with their dove-coloured loads of slates; and the high, lone slate quarries up on the hills, which do not spoil the beautiful face of the country like the coal and iron industries, we have placed Merionethshire before the manufacturing districts, we would not pass lightly over the many grand features of other counties. Dr. Nicholas treats each district with equal care and fulness as far as his description and particulars are concerned. The paucity of illustration in some instances is due to the difficulty of procuring photographs, and the fact that the doctor is not an artist. The ancient home of the Tudors would have been an interesting contribution to the illustrations, but no photographer has yet pitched his apparatus on that royal soil, although Penmynydd, the Tudor's birthplace, is scarcely an hour's walk from the Menai Suspension Bridge, which is figured in every guide, pocket-book, almanac, and hotel bill in the district. After mentioning that the country through which it is approached is common, bare, and lonely, our author explains,—

"And yet veritably you are on sacred ground. Earnest, strong men, mailed and visored, rode along those lanes, were lords of those acres, looked out on those grey boulders on the moorland, and on those crags and heathy knolls, and went off to fight by the side of the Black Prince in France; and you are close to the dwelling where lived that Tudor ap Grouw who was made a knight by the Black Prince's royal father. You have on the right a little church perched on a rising ground, where the family of Tudor worshipped and are buried, and which contains to the memory of Owen one of the noblest tombs in the land; and going down a steep, short hill, you see to the right a quiet farm-house, whose whole expression forbids the thought that from that homestead there ever sprang anything great or historic. A few trees, far from stately, shelter the dwelling. The entrance is by a lane deep and narrow, which speaks of the wearing feet and rains of generations, but of little besides. You see no grey or ivied ruin of wall or tower, no gabled roof or mullioned window, pillar or pediment. All that is visible is a downright commonplace Anglesey farmhouse, which seems to be satisfied with its humble lot, and to know of nothing higher."

If the reader had got out of the train at the nearest station to the Menai Suspension Bridge, and had walked the hour's walk through the common bare country, and down the deep, narrow, rain-washed lane, he would not be able to see the house in which Owen Tudor was born much plainer than this account shows it to him. To marry a queen was a perilous performance, we must own, for a Welsh gentleman. Down came the jealous with their reproaches, as we know, but note here to show another change of a good name into a questionable sound. Richard III. issued a proclamation calling his grandson "Oon Henry Tidder, son of Edmand Tidder, son of Owen Tidder," and denouncing him as being descended of bastard blood, "both of the fader side and moder side," which denouncement the old Welsh plan of preserving pedigrees enabled him to triumphantly refute.

One portion of Glamorganshire offers a decided contrast to the grey sunny serenity of this old farmhouse, and the distant quietude of the old times it recalls. We allude to the neighbourhood of Swansea. The first copper-smelting works were erected upon the river of Swansea in 1717, beyond the boundary of the corporation, at Glandowr, soon corrupted into Landore. In 1720 another establishment was opened, within the corporation limits. Then followed the Aberavan or Taibach Works, the Forest Works, Punclawdd Works, Loughor Works, the great Havod Works, Morfa Works, and lastly, Llansamlet Works, in 1806. The marketable value of the sulphurous smoke which once rolled away into space, but is now condensed into an acid used in making phosphate manures, is estimated at 200,000*l.* yearly. This being the value of what was once wasted, we can easily conceive that the profits of the coal, iron, and copper industries in the aggregate must be enormous. But the grandest fact connected with the subject, or, if we may not say fact, we will substitute probability, is the extent of the reserve of coal beneath the vale of Glamorgan, from Cardiff to St. Donat's, and thence to Bridgend. The extent of the entire west coalfield is estimated to measure above 1,000 square miles; and when all the known stores are exhausted there will be still the vale of Glamorgan to begin upon. Dr. Nicholson is not on the side of the alarmists, it is clear. The population of Glamorganshire, in 1801, was 71,523. After a lapse of seventy years, or in 1871, we find it 396,010, or five times as many. The population of Middlesex, including London, has only trebled itself in the same time, we must remember. This marvellous increase is, of course, due to the coal, iron, and copper centres. Merthyr Tydfil makes a large contribution to this return. We are glad to assist in spreading the following testimony:—

"The great ironworks of Cyfarth-fa, Dowlais, Penydarren, 'Plymouth,' &c., give employment to tens of thousands of men, women, and children, whose annual earnings amount to fabulous sums; and were it not for the curse of intemperance and its associated vices, this region, with all its drawbacks, might be the home of a human community marked by all the elements of prosperity and happiness,—a physical Sodom associated with a moral and social paradise. And worthy efforts are made to counteract the evil by the good. Places of worship are built by the score. Leading families take active part in the social amelioration. Schools of a superior kind are actively encouraged by the great proprietors, as at Dowlais and Merthyr, by direct personal effort, and not merely by cold money contributions. The battle to draw out and refine the good in humanity and to overcome the stubborn obstructions of evil, is almost as earnest as the battle waged with the rocks and mountains to extort from their bowels the ores of iron and lead and the jet of coal. But it is only *almost* as earnest."

Dwelling upon this section of the work as we prepare to close it, and reminded of the more chivalrous portions of it by the arms of Wales emblazoned on the cover, we feel that if the present generations can do better than the grand old Welshmen, well and good; but if we cannot, their example should animate us not to do less. The duties that are ours to perform are not so inspiriting as theirs; are not so likely, in a word, to be heard of by all the old women in France, and all the old women in Wales, successively, like those of Dafydd ap Jevan; but they are as onerous. We have not to defend castles as fair as daughters, like Caerphilly, from brave knights and stout men-at-arms. But whilst, in our immense centres of population we have dense ignorance, disregard of sanitary laws, sensual intemperance, and other wrongs to right, we must own we have more gigantic foes that will take our gravest considerations, our strongest united efforts, and our best appliances to vanquish. If Dr. Nicholas's work should do no more than press this conviction home, it will have its great use. But after our indication of its valuable contents we need scarcely say more concerning it.

NORTHUMBERLAND HOUSE AND LONDON IMPROVEMENTS.

The meeting held at Willis's Rooms last Saturday, under the presidency of Lord Lyttelton, to consider the propriety of memorialising the First Lord of the Treasury to delay the contemplated demolition of Northumberland House, and other proposed metropolitan "improvements," until a more complete investigation had been made as to the expediency and propriety of the proposed changes, would have been more largely attended than it was if those who arranged it had informed persons known to take interest in the matter of their intention. There is a growing feeling abroad on the subject which would have led to a large attendance. Nevertheless, good work was done. A memorial to the Prime Minister was adopted, setting forth the lamentable state of our whole arrangements with regard to public works, arrangements which unite vacillation, uncertainty, costliness, extravagance, meanness, and other conflicting vices; and thus proceeds:—

"The Charing-cross, &c., Approach Bill proposes to deal with one side of Trafalgar-square, the finest and most important site in the metropolis, and takes powers to purchase and sweep away Northumberland House, an old architectural mansion, with a view to the making of a new street, leading in a direct line from the Nelson Column to the Embankment at or near the Hungerford Bridge station of the Metropolitan Railway. Under the present system of Parliamentary procedure, the Bill that is to effect this great change in the character and aspect of Trafalgar-square will, unless some special action be taken by Parliament, pass through both Houses as an unopposed Bill. No designs, elevations, or models of the proposed buildings, nor any view of the general effect of the new street, and of the changed aspect of Trafalgar-square will, in the ordinary course of things, be submitted to the Committee on the Bill. No opportunity will be given to the Committee of considering the general question of the Thames Embankment Approach in connexion with any rival plans; and thus this new line of street in the heart of the metropolis, involving the destruction of Northumberland House, will be dealt with precisely as if it were an equivalent portion of a new public road or railway in some remote and purely rural district of the country. We respectfully submit that, while we boast of our civilisation, we are thus acting in a way in which it can hardly be supposed that the most barbarous people would deal with the collection of huts or wigwams which, by courtesy, may be called their capital. So far, then, as relates to the Bill in question, we would urge that further and fuller consideration should be given to it than under our present forms of Parliamentary procedure it is likely to obtain before the powers sought by the Metropolitan Board are granted."

The memorial further calls for some system of efficient supervision which may afford a guarantee to the public that no important works will be executed without having been maturely considered by Parliament and by competent persons appointed for the purpose, in all their aspects, regard being had not only to public utility, but also to appearance and general effect.

The chairman spoke strongly against the proposed destruction of Northumberland House, as did Lord Elcho, who followed with an address of considerable interest. Speaking on the general question of supervision, Lord Elcho said, in the committee of 1869 many suggestions were made for amending our system with regard to public works. Mr. Cole, whose approaching retirement they all regretted, suggested that the First Commissioner should be counselled by a permanent body of professional men,—for instance, the architects of the City and the Metropolitan Board, the president of the Institute of Architects, a representative of the Royal Academy and of the Civil Engineers. Whether that body of five thoroughly competent persons would be enough he could not say. At all events, our capital deserved a better fate than that which threatened it. We had an unrivalled park and a noble river. We had the new Embankment, Whitehall Chapel, St. Paul's, Westminster Abbey, and, he would add, Westminster Palace. The nation which had produced Inigo Jones, Wren, Barry, Turner, ought to escape the stigma of continuing to have its work done in the present helpless chaotic way. [No one can doubt this, and every effort should be made to bring it about.]

Mr. John Leslie properly enforced the necessity of combination in building the proposed new War Office and forming the new street.

Mr. Cowper-Temple said, What he most desired was an efficient approach to the Embankment, and if the new street were the best he could endure the loss of Northumberland House. But no one had a right to decide without examining details, and he was, therefore, in favour of creating a proper tribunal for that purpose. He thought well of the proposed council. Mr. Beresford Hope said the burden of proof lay with the destroyers, and they had shown no case. We want more than the proposed council. The Office of Works must be reconstructed, it is too much a department of the Treasury. We must have a Minister of Works. Professor Ker said that once the Metropolitan Board had three architects; now it had none, for Mr. Vulliamy was compelled to devote his time to the business of making valuations. In consequence, the line of the proposed street was not an architect's line; it was—he spoke with all respect—a vestryman's line. Other speakers followed to the same effect, and the memorial was agreed to.

At present, however, no one knows where to go to sign it.

We fully agree with its two prayers: the special, calling for further consideration as to Northumberland House; the general, demanding proper, prevision, with the aid of competent persons, as to public works. As we have said before, if any great advantage can be gained for the public by the destruction of Northumberland House it must go, but if, as we believe, an equally good road can be obtained by entering on the west side of it, the destruction should not be permitted. Looked at carefully, and with a view to relieving the Strand of traffic the most efficiently, we have been long convinced that neither the road to the west of Northumberland House (that which has been called Sir James Pennethorne's plan), nor the road proposed by the Metropolitan Board, is the best. For that purpose the entrance should be on the east side of the Charing-cross Hotel, following the line of the front of the National Gallery and Duncannon-street. All we ask for, however, is a careful consideration of the whole question by a competent tribunal.*

Institution of Civil Engineers.—According to the daily papers the members of the Institution dined together, on Saturday evening last, at Willis's Rooms, when the Chancellor of the Exchequer, Mr. Lowe, made an interesting speech.

* Plans showing two of the routes may be seen at Willis's Rooms.

PRESERVATION OF ANCIENT MONUMENTS.

It is much to be regretted that Sir John Lubbock's Bill is so indistinct and limited. Mr. Wyse, in 1813, moved "An address to the Queen for a Museum of National Antiquities," *in conjunction* with a *Commission* for the conservation of national monuments. He was supported by Hawes, Bernal, Borthwick, and Ewart; but these men had no notion of confining support to *pre-historic times!* It is to be deplored that Sir John has not gone farther. Possibly in committee the scope of the measure might be enlarged.

OUR ANCIENT NATIONAL MONUMENTS.

It may be satisfactory to the readers of the *Builder* to know that Mr. C. Roach Smith's letter in the last number has been of great value, by drawing public attention to the desirability of supporting Sir John Lubbock in his efforts to compel some care to be bestowed on those relics of past art and skill which are, notwithstanding the exertions of the British Archæological Association, and kindred societies, becoming yearly fewer and more decayed.

Mr. Roach Smith pays but a just tribute to the members of the Association who have, at considerable personal cost of time and money, for years striven to inspire a more tender care of every remnant of the evidence of bygone races in this country. It is a pleasure to know that our exertions and outlay have not been in vain; a greater, and still growing, love of antiquities, not merely for their own sake, but for the tales they tell of earlier civilisation, has been the result; and it has tended to the preservation of antiquities wherever we have been able either to hold one of our annual meetings, or to impress on authorities about to allow destruction the importance of preventing such proceedings.

But it is one thing to instil such a love into the minds of the world, and quite another to persuade a Government to make an expenditure on the matter; and, much as I and others think it desirable, it may be difficult at present to obtain the powers which Sir John Lubbock seeks. Should the Bill happily pass, it cannot but be a step towards a larger measure. It has often been my lot to express my rejoicings over a Mediæval ruin; for amidst the wholesale restorations little of our still-used buildings of those ages will remain for our successors. It will be as necessary to have care for structural remains of periods later than the Roman and Saxon if we desire to afford means of study to future generations. The Bill, however, is a step in the right direction, and although it has raised an outcry in one quarter, where the owner asserts that he is perfectly preserving the work named, it is obvious that great national monuments should be as much under public care as the treasures in the British Museum.

It would be untrue, as well as ungenerous, if I allowed the idea to be formed that I ignore other great archæological societies; for although they are mostly, if not wholly, emanations from this, they are influential and important; and I trust (speaking in the name of our council) they will endeavour, as we are doing, to strengthen Sir John Lubbock's hands in any way he may consider most available.

As year by year we see in previously unvisited localities, the continued and rapid decay of many valuable works, we come to no other conclusion than that the national monuments should be preserved for, and by, the nation itself.

Edward Roberts,
Hon. Sec. Brit. Archæ. Assoc.

MANCHESTER CONSERVATIVE CLUB COMPETITION.

Out of the forty-nine designs submitted, those by Messrs. Pennington & Bridgen, Mr. Salomons, and Mr. Walker, have received premiums, 100 guineas each. The amount named for expenditure is 23,500*l*. Mr. Murgatroyd, architect, advised the directors in their choice. The designs were, for the most part, indifferent. Messrs. Clegg & Knowles, Messrs. Maycock & Bell, Messrs. Price & Linklater, Messrs. Alley & Wilson, Messrs. Blackwell & Booth, Messrs. Speakman & Hickson, Mr. Redmayne, Messrs. Horton & Bridgford, Mr. Lowe, Mr. Heathcote, and Mr. E. M. Gibbs, were prominent competitors.

THE "ROTTEN ROW" WORKS AND NEW PLANTATIONS IN BATTERSEA PARK.

The saddle ride or Rotten-row which has for some time past been in course of construction round Battersea Park is now completed, with the exception of about half a mile in length, the works from the York-road entrance on the south side westward having been finished within the last few weeks, and there will shortly be a continuous equestrian ride entirely round the park nearly two miles in length. Simultaneously with the formation of the ride on the south side, the land immediately adjacent on the extreme southern boundary of the park has been tastefully and ornamentally laid out in mounds of an undulating character, and artistically planted with trees which have been removed from other parts of the park. The greatest portion of these trees, which are the growth of several years past, have been carefully raised, with the soil around the roots, by a process of machinery, and placed in their new position without any injury, and now present an appearance indicating that they had been there for a considerable length of time.

SIR G. G. SCOTT'S LAST LECTURE AT THE ACADEMY.

I am now about to close the very fitful and non-continuous series of lectures which I have from time to time, during the last fourteen years, had the honour of delivering from this chair.

I have to express my regret that it has never been in my power, owing to the press of other engagements, to give the full complement of six lectures in each season; and that in some years I have been prevented by circumstances,—wholly beyond my own control, from lecturing at all. I may further mention that my earlier lectures were only pro-professorial, and were coupled with a parallel course, on Classic Architecture, by Mr. Smirke, who subsequently, on being appointed professor, took for five years the whole duty upon himself; so that, as I said before, my own lectures have been but fitful and non-continuous.

I have further to confess that these disjected lectures have been for the most part limited to the particular phase of our art in which I am myself most deeply interested; for I do not see much utility in artificially forcing myself to appear as a teacher in a phase which is not that which I view as my special mission.

I trust, however, that on my own special subject I may have been useful; anyhow, I believe I have done more than has been done before, and I am sure that I have at least taken an infinity of pains, and that by the kind aid of those around me I have illustrated my lectures by drawings profuse in number, and often excellent in execution.

My lectures have been non-continuous, not only as to their periods of delivery, but as to their subjects. I think, however, they will be found, should they be hereafter published, to contain a fairly clear account of the rise and perfection of our Mediæval architecture, with some useful digressions extending somewhat beyond this range.

I have not continued this history of Mediæval architecture beyond the period of its perfect development; because, beautiful though are its late phases, their history does not maintain the same interest with that of the noble enthusiasm which urged on its earlier growth.

On now closing my lectures, I think I may become, for once, rather more discursive, and may venture a little to the right and left, and in other directions, in search of matters bearing generally upon architectural art as viewed in reference to the past, the present, and the future, and (which concerns yourselves more nearly) in reference to your own individual studies.

Our art, as has so often been remarked, differs from the sister arts of painting and sculpture in this,—that whereas they arise directly from the artistic aspirations of our nature, apart from practical necessities and utility, ours arises first from these necessities, and then from the desire to clothe their results with beauty. It may be said that the yearning after abstract beauty unlinked with utility is the higher and more spiritual sentiment; but, on the other hand, if we look around us throughout the creations of nature, we are prompted to reply that, in linking beauty with utility, we are more directly imitating Him who made man in His own image, and in whose works this union of the useful and the beautiful is one of the most universal characteristics.

Architecture, then, as distinguished from mere building, is the decoration of construction. If I were lecturing on architecture, in the broadest form of the expression, I must treat throughout of construction, and of its decoration, *pari passu*, as the latter has but little meaning if severed from the former, which is its groundwork. And, even in lectures from this chair, where architecture is viewed specially in its character as a Fine Art, it is still impossible,—as indeed it would be undesirable,—wholly to sever that higher characteristic from the more practical phase to which it owes its origin.

Now, the history of this concurrence of art with construction is the History of Architecture; and, to an architectural historian who is capable of taking at once an artistic, a philosophical, a political, and a religious view of the facts which he chronicles, nothing can be more interesting than to follow out from the earliest ages to which we can carry back our researches,—firstly, the practical changes in building, arising from the exigencies of climate, the stage of civilisation, the traditions of race, and the varied influences of political and religious circumstances; and to connect with these the changes, the progress, and perhaps the decline and degradation of the art made use of in the decoration of their buildings; and to trace out the causes which led to those changes.

Let us not, however, suppose that a knowledge, however intimate or accurate, of architectural history, is of necessity a part of the study of architecture itself. On the contrary, at no period when a genuine, unborrowed style of architecture has prevailed, has any knowledge whatever existed of the history of art; nor at any period previous to our own has the history of architecture,—beyond a very limited knowledge of that of Greece and Rome,—been viewed as an object of study.

From the dawn of civilisation to what is known as "the revival of letters," the leading nations of the world possessed each a genuine architecture of their own; all growing, by a natural growth, from an original stem,—unborrowed and unimitated,—and practised by artists highly skilled in their art, but ignorant of its history.

The "revival of letters" was followed by a revival also of the architecture of those races whose literature was resuscitated; and with this revival came a certain, though scanty, knowledge of its history; but the investigation of the entire history of architectural art, and the constituting it into a branch of our literature, has been reserved for a period which possesses no architectural style of its own, excepting as the result of revival or imitation.

Is, then, this study to be viewed as a thing to be avoided? Certainly not. Our predecessors worked honestly and with perfect success, in accordance with the conditions of their times; those of our times are wholly different, though, I fear, the reverse of favourable; but, nevertheless, they are the conditions to which we have succeeded in the due course of events which we could but little control. It may be that this historical and archæological tendency of our time is the saving clause in our position; which, in its absence, might have been an utter blank. Let us not, then, throw away that which, for aught we know, may be our solitary birthright, in the vain hope of recovering conditions long since passed out of our reach. It is ours rather to use well and wisely what we possess, regulating, controlling, and guiding it, striving earnestly after better things by whatever means; but without rejecting those suggested by the circumstances of our period.

Nevertheless, let it ever be remembered that art history is not art, nor architectural history architecture. They may, like the Syren's song, lead us wide of our mark, though they may, perhaps, if rightly used, be made to guide or aid us in a right path.

The study, however, of architectural history has many and wholly differing phases. It may, for example, be followed purely from an historical and archæological point of view, or it may be pursued mainly with an artistic sentiment. Both are interesting, but I need hardly say, the latter is the spirit in which our studies as artists should be followed up.

It may, again, even if artistic in its purpose, be followed up generally, and through the whole course of the history of the art; or it may, while not neglecting the main line of history, be con-

centrated and intensified upon those styles, or that style, which we desire to be the guide and foundation of our own artistic productions. I need not say that here, again, the latter is the course most profitable to ourselves.

The great danger of the study is the dissipation and unfocussing of our own artistic thoughts; just as the great strength of the days when this study was unknown was the absolute concentration of all architectural thought upon the matter actually in hand—an advantage which in our day is absolutely and, I fear, irrecoverably lost.

Be this, however, as it may, it has become a part of the necessary education of a gentleman to know something of the past history of our great art; and, *a fortiori*, it is necessary to an architect, if only as a matter of literary culture. We must, however, take care that our thoughts and tastes are not led away by it into a state of objectless dissipation, having no concentration on any one guiding form of art, but viewing all forms of beauty with equal pleasure, and free from any strong and healthy preference.

The most natural course for the student of architectural history is to limit himself mainly and firstly (though not eventually, perhaps), to those styles from which our own architecture, whether native or borrowed, whether living or revived, is lineally descended—"to look to the rock whence we were hewn." And truly it is a right glorious genealogy which we can boast!

The history of architecture is the history of civilisation, for architecture unites and embraces the sister arts, and art is the visible exponent of civilisation.

Our more Western civilisation is distinct from that of the far East; and, without disparagement to the latter, its study may be viewed as separate from it.

Our own branch of civilisation and art may be said to have arisen on the banks of the Euphrates, of the Tigris, and of the Nile, and to have moved westward with a quiet course along the genial shores of the Mediterranean; while the eastern branch took a contrary direction by India and China, reaching Japan and perhaps the opposite continent of America. Let us, however, confine our attention to our own branch.

Though the banks of the Euphrates and the Tigris were the nursery of our race, and though recent discovery has made us in some degree familiar with their architectural monuments, we, nevertheless, fail to trace them back to a period which will compare with the antiquity of the remains on the banks of the Nile. In studying the one, we long for relics carrying us back to a date even approaching that of the known history of the inhabitants, while in the other we are perplexed to find chronological room for works stretching back into such unknown regions of the past.

Egypt must, we may fear, ever remain a land of mystery. Its chronology seems inscrutable, its painting, its sculpture, and its architecture alike wonderful and mysterious. One flash of historical light shines upon its early days—like the lightning upon the midnight landscape—in the Scriptural history of those three centuries during which the people of Israel sojourned there, and helped in their slavery to prepare materials for its structures. After this it seems again involved in indistinctness till the period of its decline. Its monuments seem continuous through all these ages, and even onwards to the days of the Roman Empire; but how early they commenced no antiquary has yet been able to show; while, strangely enough, the earliest and latest monuments—those preceding Greek architecture by, perhaps, fifteen hundred years, and those erected when that art was in decay—as clearly belong to one and the same style as do the earlier and later of our own Mediæval buildings.

Their character may be said to be threefold. The imitation almost of mountains in the pyramids, the rock-cut tombs, and the architecture proper—which is columnar in its most stupendous form; and whose greatest remaining monument is the mighty Hall of Karnac, with its hundred and thirty columns—perhaps the most impressive of all the works of antiquity. All these were accompanied by painting and sculpture of a highly mythic but most marked and characteristic kind.

An art like this, existing in full perfection in its ancient monuments, and also as a still living art, side by side with the rise of Grecian architecture, could not fail to exercise some influence upon it; yet the evidences of that influence are far from being clear. The genius of the two peoples was absolutely distinct, and Egypt was already a conquered nation while Greece was making its early strides towards fame. They were, too, of wholly different races, so that, though the young nation, during those brilliant strivings which led to its surpassing all races of men in its culture, was familiar with Egypt, and must have looked with wonder at its almost appalling structures, it is, after all, but little that we can trace of actual imitation; and that, strangely enough, not of the productions of its living art, but of a phase which had been extinct fully a thousand years. The inner and earliest sanctuaries at Karnac, and an obscure rock-cut tomb at Beni Hassan, contain pillars to which we trace some resemblance in the Grecian Doric; but whether that resemblance was intentional or accidental no one can say. Curiously, the tomb at Beni Hassan evinces proof of the imitation of timber construction, which gives it an additional alliance with the Doric; but can we conceive of a new art, founded on wood construction, being imitated from an art of a thousand years back, which chanced to evince the same conditions? As reasonable would it be for timber constructors in our own colonies to make pilgrimages to Anglo-Saxon churches which happen to suggest a timber prototype, in search of types for their new structures.

More reasonable, however, it may be to suppose that the latest type of Greek art, the Corinthian capital, may have been suggested by the foliated and bell-shaped capitals of Egyptian columns.

Passing, for a moment, from the Nile to the Tigris, we find buried under the Assyrian mounds an architecture as different as possible from the Greek, yet containing a few almost accidental foreshadowings of some of its details. This architecture, seems, however, to have influenced firstly that of Babylon (now almost wholly lost), and subsequently that of the Persian monarchy, which brings us again in contact with the Greeks.

Here we find, at last, a direct similarity in taste; for, different as are their capitals, no one can look at drawings of the columns of the Chehil Minar,—the great hall or temple built by Xerxes at Persepolis,—without being convinced that there was a near relationship in their style to that of Greece. Strangely enough, however, this resemblance is not to the earliest phase of Greek,—the Doric,—which was its contemporary, but to its second phase,—the Ionic,—which, putting aside the chronological difficulty, need not be wondered at, as the Ionic cities had long lain within the Persian monarchy. Yet it goes to prove that the influence of Persian architecture was unconnected with the origin of that of Greece, and only affected its more advanced stage.

I view Greek architecture then, in the main, as an art of spontaneous growth. Its first form, the Doric, as strictly and absolutely Greek. The second, the Ionic, as Greek in the main, but with a few suggestions from the land of the Great King; and the third, the Corinthian, as equally Greek, but with one single suggestion, perhaps from Egypt; the whole as the spontaneous creation of that most wonderful, in intellectual power, of all the races of man,—that race inspired, as it would almost seem, of God to be our instructors in literature and art, and our initiators in science, just as was another people to be the teachers of His holy religion.

The actual origin of Greek architecture is buried in impenetrable obscurity. If the building called the Treasury of Atreus, or the Tomb of Agamemnon, was really of that period, it would distinctly prove that what we now know as Grecian architecture was unknown to the heroes in the "Iliad," inasmuch as over its entrance remains a little piece of highly-decorative columnar work, bearing no resemblance to the subsequent architecture of Greece, and going far to prove that these early inhabitants of Greece had a style of building which did not evince a timber but a stone original. Of these early structures, including the Cyclopean walls of the Pelasgian cities, Mr. Freeman eloquently remarks,—"These awful remains of the world's youth stand before us as the relics of unrecorded days, of the dim times of poetic legend, enveloped, as they were, in religious mystery for ages before a line of what we deem ancient history was penned. The historians and philosophers of the days of Pericles knew no more of the authors of these gigantic fragments than ourselves; all that survived, even to them, were the shadows of fallen greatness, the feeble echoes of a voice long since hushed in death. Our ancients had to explore the remains of these far earlier days by the same faint glimmerings of legend and tradition as ourselves . . . . . and to us, whose early youth is spent among the immortal lays, whose living substance is called up by even the pictured resemblance of these massive piles,—monuments, as we would fain believe, of the days of Achilles and the Atridæ, and the old time before them,—to us every rugged stone seems vocal with some old heroic legend. Each gateway may have seen the marshalling of heroes, arrayed to man the thousand ships of Argos, and to wait upon their chariot-wheels, to whom Leus had consigned her twofold throne and sceptre."

The difficulty is to explain how, in a country where a distinctly stone architecture (stone not only in fact, but in idea) had for ages existed, it could be suddenly changed for an architecture evidently based upon a timber ideal. Were it only the Cyclopian walls of the old cities which remained, the perplexity would be less. Such walls exist also in Etruria; yet we gather from Vitruvius that the Etruscan temples had a construction founded upon timber. It is that little scrap of actual columnar architecture at Mycene which defies explanation, but which is thought to point to an Assyrian original.

The Dorians, however, were a different (how different is not known) and an invading race. It may be that their former seat had been in a specially timber country, and their former architecture actually of wood; and that, on emigrating into a stone country, they translated their architecture into its prevailing material.

The intrinsic marvel, however, is their power to invest in art, so homely in its origin and so simple in its character, with such sublimity of aspect and such refined beauty of detail. But why should we wonder at this? Look for a moment at their figure-sculpture, even in its first archaic simplicity, and we need not wonder at what such men could do. But, oh! look at it again, after the desolating Persian had been driven from their shores, when the shattered institutions of Greece had been re-established, and her ruined temples restored; when national glory, self-gratulation, and thankfulness had given a new and generous impulse to every feeling of the great mind and soul of Greece, and see then what art they produced (you know it right well in the Elgin-room at our own museum), and then you need not wonder at any other miracles of art that they performed!

I am not going to drag you through all the changes in ancient architecture: you will see for yourselves how the majesty of the Doric Temple was succeeded by the greater refinement and elegance of the Ionic, and the richness of the Corinthian, though their developments were not exclusive of one another, like those of Mediæval art, but cumulative and practised side by side.

I confess that, so far as capitals are concerned, I agree with Mr. Ruskin in thinking the first and the last each more reasonable than the second. The moulded capital and the foliated capital are things of all time. The voluted capital was an accidental introduction from the East, and has no permanent meaning, wonderful though it be.

The special features, however, for artistic study in Grecian architecture, of whatever order, are the exquisiteness of its proportions, the purity of its lines, the refinement of its mouldings and enrichments, and the superhuman instinct it evinces for delicacy and almost spirituality in the refinement and perfection of every line; but above all these is the manner in which it welcomes, indeed presses, into its service,—or, rather, devotes itself to the service of,—the all-glorious sculpture of which it was at once the dutiful handmaid and the loving mistress. Nor need we doubt that it treated the painter's art one whit less lovingly.

As a style, the sentiment of Greek architecture may be said to be a quiet, calm solidity and repose, free from all question as to its stability, because it admits of no pressure but what is vertical. This quality, however, it shares with the Egyptian; but the Greek unites with it the most studied symmetry of proportion, the greatest purity of line, the most refined detail, and the noblest allied art.

When the Greek orders were adopted by the Romans,—a most natural alliance, seeing that the Greeks built within a comparatively short distance from Rome on the south, and that the Etruscans in the north borrowed Greek decorative art,—we find that they united with it an element in itself discordant with the simple static principle which gave such calm dignity to the Greek. It is, as I have heard, a saying among the Moslem builders in India, that the arch "never sleeps"; it is always night and day

pushing outward. Thus, purely trabeated architecture sleeps in safety, while arcuated architecture never ceases to exert force. The one is a static, the other a dynamic style,—only becoming static when its abutments are of undoubted sufficiency. Thus, repose belongs of a right to one, but has to be purposely secured in the other.

We know next to nothing of the early architecture of the Romans. Recent excavations show the walls of the time of the kings to have been pretty much like those of Etruscan cities; and it is probable that, like the Etruscans, they early introduced the arch as a leading principle of construction. When they superadded to their own architecture (whatever it was) that of Greece, the latter became in many cases an artistic veil, concealing more or less the actual construction; and even where the artistic effect was purely trabeated, we find arches used behind it to aid the apparent construction. The two systems were thus used together, and side by side, gradually uniting themselves into one. In purely engineering works, the arch became boldly predominant. In purely architectural works, it was often wholly concealed; while, in works of an intermediate kind, the two were used together, naturally and with perfect freedom. Nor were these, or the purely arcuated structures, open to the objection of presenting any apparent instability, for their massiveness was such as to defy all suspicion of want of strength.

It is true that the Romans, from a want of that delicacy of taste and eye which characterised the Greeks, failed to treat their details with the same refinement, though this was not always the case; but, in spite of this defect, the Roman style greatly amplified and extended the capabilities of Classic architecture, rendering it capable of meeting every possible emergency and demand, whether of material or of construction, and giving it a cosmopolitan character suited to a people which had conquered the world, and which, if itself a race of iron, united under its world-wide sway the brass, the silver, and the gold of the older rulers of mankind.

Of Egyptian architecture we have little but of vast tombs and colossal temples; of Assyrian and Persian structures much the same may be said. Of Greek we have little but the temples, and a few public works of a monumental character; while of Roman architecture we have works of every possible description, meeting every demand, necessity, or wish. Such works must have existed during older periods, but were probably on an inferior scale and of ephemeral construction; but those of Rome were marked and permanent in their structure, and have thus been handed down to our own day, so that we may say that the whole range of their architecture is perfectly known to us; and, so far as we are concerned, it is the first of ancient styles which can be called complete.

As time went on, we find the arch, the vault, and the dome asserting, ever more and more, their supremacy. The influence of the Christian church followed this on in the most marked manner; and, when the seat of empire was removed to a new, an Eastern and Christian metropolis, where no great monuments of older or Pagan art existed, this change would appear to have gone on with yet increased rapidity.

We have of late years become better acquainted with the course of this change, through the discovery of the ancient cities of northern Syria, and their illustration by the Count de Vogüé, which show us what the late Roman and early Byzantine buildings of every class were, on a scale suited to provincial towns, though influenced by the local tendency to megalithic construction which pervades the old architectures of Syria. I have not time to dwell upon these most instructive remains, which, beginning in Pagan and going on into Christian times, culminate in the vast and splendid dome erected over the pillar of St. Simon Stylites. I, however, commend De Vogüé's work to your attention.

In my lecture on the Dome, I have said almost as much on Byzantine architecture as is perhaps needful for the purpose of this rapid sketch. I may add, however, that it was a purely or almost purely arcuated style, though yet more pre-eminently a domed style, and most of all a purely Christian style; that it rejoiced in surface decoration, in painting and mosaic, and in marble incrustation and inlay, though, from religious scruples, it discouraged sculpture. It delighted in every form of Oriental splendour, and the representation which its mosaics afford us of its secular buildings, when in full perfection, shows us that, though splendid solemnity characterised its churches, gaiety was a marked element in its more ordinary architecture. It is true that the gradual decay of the Empire caused a decline in the artistic quality of its buildings; yet we must admit its architecture to be one of the boldest and most original of developments; and we owe to Byzantium a heavy debt of gratitude for having kept alight the lamp of art during the long and dreary ages when Western Europe was trampled down by barbarian hordes, its arts destroyed, and its civilisation well-nigh forgotten.

It was from this still glimmering lamp that Charlemagne nobly attempted, though almost in vain, to rekindle that of the Western Empire. It was from the same that the three first Othos made a second and more successful effort; it was from thence that the revived art was further aided at the time of the Crusades; and to this source we, in a large degree, owe our modern civilisation. All thanks and honour, then, be to the unfortunate Eastern Empire, which, having performed its work, has now so long been trodden under foot of the Gentiles!

As architectural art recovered itself, after the ages of darkness, the later works of old Christian Rome, the still living architecture of Byzantium, and the half-living architecture of the day in Rome itself, formed together the groundwork of the revival. This architecture was all mainly arcuated; and the increased difficulty of obtaining and transporting large blocks of stone tended to render this the necessary element in the reviving style. We know the style which thus rose in Italy. I do not believe myself that much of this is so old as the time of the Lombard kings, but that it was in a much greater degree the work of the Othos,—emperors at once of Italy and of Germany,—and thus extending the same style from the south of the Alps, across into Germany, and onwards almost to the Baltic. I cannot, in this short lecture, follow up the details of this early Romanesque style; but I beg you to do so for yourselves, and at the same time to make yourselves acquainted with the contemporary architecture of France, in which, subject to many variations, the same feeling will be found to prevail.

I have, in my last lecture, mentioned the introduction of purely Byzantine architecture at Venice, as especially illustrated in St. Mark's and the churches at Forcello, &c. (I may add, in secular buildings). I mentioned also its transference, apparently by the Venetians, into the south-west of France, where and whence it exercised a very decided influence on the subsequent architecture, and I have, in one of my early lectures, shown the extension of that influence at a later date,—in the form of architectural sculpture,—into the north of France, and thence into our own country. I will here add that parallel, though not exactly similar, evidences of Byzantine influence pervade the Romanesque of Germany, whose rulers were in constant communication with the Eastern Empire,—an influence greatly promoted in decorative art by the importation of woven fabrics, metal-work, jewelry, and illuminations from the East into the West.

From such united influences, added to and aiding the earnest strivings after refined and improved art, arose the Romanesque architecture of the eleventh and twelfth centuries, becoming at length a perfectly original, consistent, and artistic development of arcuated architecture.

I have, in my previous lectures, gone much into detail in recording and explaining the history of the development of this Romanesque into the subsequent pointed-arch style. It is, perhaps, mockery to refer you back to lectures which perhaps no one now present heard; but time will not allow me to do more, and should they be published, you may perhaps think it worth your while to refer to them.

As the Byzantine was the Christian architecture of the East, so was the Pointed style the culminating Christian architecture of our own group of nations in the West; and, while the former had the disadvantage of being developed during ages of gradually-declining civilisation, the young and vigorous shoot which grew from it in the West had the immense advantage of developing itself during the vigorous upstriving of a new and better civilisation.

To ourselves it is incomparably more interesting, inasmuch as it became the architecture *par excellence* of our own and immediately neighbouring countries. It grew up in this country with our institutions; it is of the same age with our constitution and our system of laws, and in many respects with our ecclesiastical polity. It adapted itself to our climate, our materials, and our scenery. In this style are the monuments of our kings and of our forefathers; and, above all, in its original and identical temples do we still celebrate the offices of our holy religion. Well, then, may we say,—in common with each nation of Western Europe,—that this is our own, our natural and our national style!

And well may we glory in this assertion, for look at the monuments of that style! I have not been stinting or cold-hearted in my eulogy of the architecture of ancient Greece and Rome, so I may call you to witness that I am not narrow or one-sided if I give way to a generous enthusiasm now I come to speak of that which we may proudly call our own.

The architecture which produced our glorious cathedrals and abbeys; our churches of every scale, from these down to that of the humblest hamlet; which produced the colleges of our universities, with their noble chapels and halls; which produced the stately municipal buildings of the great manufacturing cities of Mediæval Europe; with every form of structure needed, for whatever purpose; and united true and appropriate art with every form of building, from the humblest to the most stately. An architecture, too, which decorated its edifices with such a form of art as our ancient painted glass; and which carried on its influences over metal-work, jewelry, painted decorations, and every collateral art in the same spirit of exquisite and original taste, may well claim to stand side by side with the most glorious productions of antiquity; but to ourselves, as the inhabitants of the countries where it prevailed, and the descendants of the artists who produced it, it has pre-eminent claims to our most loving and enthusiastic admiration; while the more closely, constantly, and carefully we study its remains, the more entirely shall we be convinced that our love and admiration cannot exceed what is due to its intrinsic excellencies.

This architecture, though a lineal descendant of those of the old world, was, when in the fulness of its development, so absolutely diverse from them that they can in no way be compared by likeness, but only by contrariety. It was an absolutely new phase of art, bearing no kind of resemblance to its early progenitors. Where their characteristics were horizontality of line, directly downward pressure, a clinging closely to mother-earth, and an imperturbable repose, we may almost say an eternal sleep, those of this new creation wear an upward soaring, an apparent inversion of gravitation into a striving towards heaven, and a vivacious wakefulness in every feature. Constructively, instead of the mere support of dead weight, its principle is the systematic balancing of an infinity of diagonal pressures; yet this, though a constructive fact, is not an artistic characteristic, for in its more spiritual effects, weight and thrust seem to be annihilated, and converted into upward striving, so that the archivolt, the flying buttress, and the ribs of the vaulted roofs, seem rather the medium of upward than of downward pressure. In elegance and expressiveness of detail, no previous style had surpassed it; in endless variety of imagination or in spirituality of sentiment none had ever approached it. It was the greatest marvel that architectural art had produced, and it united all these magic qualities with a gravity and solemnity in the temple, a stern solidity in the castle, an asceticism in the monastery, a quiet, retiring sentiment in the seat of learning, a cheerfulness in its civic and domestic structures, and a deeply touching expression in its sepulchral monuments which no style could possibly go beyond, and none have yet equalled.

It presented, too, during its course a beautiful series of variations. Its earliest phase stern and precise, with details rivalling the Greek in the studiousness of their contour; in its second, lighter and less severe; in its third, branching off into an infinity of charming lines, suggestive almost of vegetable growth; and in its last, while returning rather to earlier rigidity, indulging in new developments scarcely foreshadowed by its earlier forms. Thus, at Glastonbury, at Salisbury, in the choir of Westminster, in the naves of York and Winchester, and in the chapels of King's College and of Henry VII. we have a series of works, all belonging to the same general type of architecture, yet presenting diversities the most marked, and beauties the most varied.

Nor was it alone in its successive periods that

varied phases were produced. Each country in which it flourished had its own series of national and provincial types. Thus, in France, in England, in Germany, in Spain, and in Italy, and even in far-off Scandinavia, we find it adopting ever-changeful forms, though all belonging to the same great stem.

Mr. Fergusson, though an opponent of its revival, thus speaks of Gothic architecture:—"Not even the great Pharaonic era in Egypt, the age of Pericles in Greece, nor the great period of the Roman empire, will bear comparison with the thirteenth century in Europe, whether we look to the extent of the buildings executed, their wonderful variety and constructive elegance, the daring imagination that conceived them, or the power of poetry and lofty religious feeling that is expressed in every feature and in every part of them."

And again, while speaking of its sculpture, which is not usually considered as its strongest point, he remarks:—"The great cathedrals of Chartres and Rheims even now retain some 5,000 figures scattered about or grouped together in various parts, beginning with the history of the creation of the world and all the wondrous incidents of the first chapter of Genesis, and then continuing the history through the whole of the Old Testament. In these sculptures the story of the redemption of mankind is told, as set forth in the New, with a distinctness and at the same time with an earnestness almost impossible to surpass. On the other hand, ranges of statues of kings of France and other popular potentates, carry on the thread of profane history to the period of the erection of the cathedral itself. Besides these, we have, interspersed with them, the whole system of moral philosophy, as illustrated by the virtues and vices, each represented with an appropriate symbol, and the reward or punishment its invariable accompaniment. In other parts are shown all the arts of peace, every process of husbandry in its appropriate season, and each manufacture or handicraft in all its principal forms. Over all these are seen the heavenly hosts, with saints, angels, and archangels. All this is so harmoniously contrived, and so beautifully expressed, that it becomes a question even now whether the sculpture of these cathedrals does not excel the architecture."

Noble and exquisite, however, as it was, it at length ran its course; and, by some uncontrollable movement of the human mind, it gave way to what the world had, till then, never witnessed—a resuscitated style.

I will not attempt to philosophise on this new phenomenon in art. It seems to have originated in a double cause; firstly, the very natural pride felt by the Italians in the antique monuments of their own land and their own race; and, secondly, in the appreciation of these antique monuments which was engendered and fostered by the revived love of classical literature.

It is not difficult to understand how this tended to the revival in Italy of old Roman art; and, once revived there, the centre of ecclesiastical and, in a great degree, of literary influence; the centre, too, of the revival of painting in its highest form, it need not be wondered that it spread itself as a fashion into more northern countries where the same literary tastes had taken root. However this may be, the fact is undoubted, that from this time forward original art ceased, and borrowed or resuscitated art took its place.

My predecessor, Mr. Smirke, in one of his lectures, gave a highly interesting description of the noble enthusiasm which inspired the early architects of the Renaissance in Italy; and I can quite appreciate this feeling in a land where the Mediæval styles were less deeply rooted, where classical traditions had never been extinct, and where the reminiscences of ancient Rome were a subject of national exultation. The revival of the noble literature of their mighty ancestors could scarcely fail, in such a country, to prompt a wish to revive their arts; and I am convinced that such a revival became a spontaneous and irresistible movement, wholly unconnected with any premeditated plan.

Anyhow, whether for good or for ill, the revival was a great and potent fact; and its results have now lasted as long as the whole period of the ascendancy of Pointed architecture, and have extended their sway to all parts of the globe where European influence is felt; nor can its opponents deny that, on its native soil especially, its productions were often of the most masterly description and exquisite beauty; enriched as they are by decorative painting which has never been excelled; by sculpture of which antique artists would not have been ashamed; and by other arts of proportionate merit. In other lands, it has produced works of which no one would venture to dispute the merit; and, though a borrowed style, it has developed anew many marked chronological and national varieties, and has produced, as we have seen in my last lecture, works and types scarcely even foreshadowed by its antique originals.

Nevertheless, in the opinion at least of many, it had, by the close of the last century or early in the present, so far run its course, at least in this country, as to have lost its old artistic power. Art had become enfeebled, while art-history had risen more prominently into view; and the decay of the one was promoted by the distraction of thought occasioned by the other.

The revived knowledge of the architecture of Greece rudely disturbed the vernacular style derived from Rome, so that by about the year 1830 the old state of things seemed almost hopelessly damaged; and every architect, instead of working on the traditions handed down to him by his predecessors, seemed to do just what was right in his own eyes, though with a special rage for not very practicable reproductions of Greek, coupled with a conviction that Roman and its derivatives were little short of barbarous.

All the traditions of the past appeared to be broken up. Our every-day architecture, as exhibited in ordinary houses, had become mean and contemptible in the extreme; and, though things have since greatly mended, it has been from a purely eclectic and not in the least degree from a traditional point of view; while the untutored house-builder, left to himself, even now disports himself in reminiscences of these first decades of our century—the halcyon days of Gower-street and Tavistock-place.

It was just at this strange juncture that, by some occult influence, the public mind was brought back to view—first with interest, and then with admiration and love—the long-neglected architecture of our own country and our own race (a group of kindred races). At first this was with no intention or thought of revival; it was only interest, admiration, and love. Writers on this subject, whether friendly or hostile, affect to systematise the movement; but it was wholly unsystematic. It arose from the inmost feelings of the heart, and in no degree from premeditation or plan.

It is now the fashion to speak contemptuously of revivals; and truly they do seem strange and inconsistent after following the more natural history of art from the dawn of civilisation to the Renaissance. Yet I cannot but agree with Mr. Smirke that the Classic revival was, in the land, at least, of its rise, a natural, spontaneous, and unpremeditated movement of the human mind. That the Gothic Renaissance was so too, I know, for it was my own happy lot to be a humble agent in it, and I am old enough to have watched it, I may say practically, if not literally, from its commencement.

People talk of Horace Walpole, of Sir Walter Scott, or of any one else they like, as the early promoters of the feeling which led to the revival. I do not know how it may have been with others, but, for myself, I know that my love for Gothic architecture was absolutely spontaneous, and that I had no kind of incentive for following up its study other than the delight I took in it, before I knew a word about other architecture, or was acquainted even with the published works on our own, and that without a thought of its study ever becoming practically useful to me. I am convinced that the revived love for our old buildings, followed as it was subsequently by a desire to imitate their architecture, was as spontaneous and as irresistible a movement of the human mind as those which had originated either Classic or Mediæval art, or that which, two thousand years after its first rise, had led to the revival of the former. It is true that its results have not yet been so all-pervading as those of the Classic Renaissance, yet they have been very great; out and away the most marked feature in modern architectural history, inasmuch as it, almost alone, has resulted from ardent and genuine enthusiasm, and from the inmost recesses of the heart.

As one of the survivors from among the more active of the earlier agents in this great movement, I may claim a right to dilate a little on my reminiscences of it.

In writing respecting it, nearly nineteen years ago, when my memories were more fresh, I made the following remarks:—

I described the movement as "being the development of a new and vigorous style upon the foundation of the glorious architecture of our own country and of our own forefathers, in the place of one at once alien to our race and our religion."

"This," I went on to say, "I need hardly tell you is a mighty and most arduous undertaking—so mighty indeed, and so arduous, that I doubt whether, if it had been in the first instance fully appreciated, any body of men could have been found with sufficient daring to set about it. The strength, however, of the movement lies in the fact that it was not deliberate nor preconcerted, but was the involuntary working out of a deeply-seated mental revolution. It was not that a body of men deliberately banded themselves together to carry out and propagate particular tastes or opinions; such would have been but a feeble, or at best an ephemeral and merely local movement; it was rather that a number of persons, in different neighbourhoods and countries, and without any concert, had been led by their own unbiassed and unguided instincts to an appreciation of the long-neglected beauties of our own indigenous architecture." This (with other feelings), I proceeded to say, "had led them first to study, then to imitate, and ultimately to attempt the revival of the style which had thus involuntarily approved itself to their natural perceptions of what is right and beautiful.

There is here no conspiracy, no organised movement, no preconcerted effort. Not one of those engaged in it ever thought of its being a movement at all; few of them knew in the first instance that others were affected by the same feelings with themselves, nor perhaps were conscious of any external causes which had given rise to such sentiments in themselves. Yet all, from some internal impulse, seem severally to have been impelled in one and the same direction; and, having at a later period discovered the concurrence of their feelings, their efforts have since assumed the form of a united movement, though originating from the individual and unbiassed feeling of persons wholly unknown to each other."

In the same paper I spoke in the following terms of the greatest of the early promoters, and in fact the great hero and Coryphæus of our revival, and of the societies which were formed throughout the country for the furthering of the study of our ancient architecture. "About the time I am referring to, an immense impulse was given to the reformation of architecture by the earlier publications of Pugin. His 'Contrasts,' published in 1836," — an architectural *jeu d'esprit*, placing side by side in somewhat burlesqued contrast, selections from Mediæval and modern works,—"while it enraged the majority of our architects, excited others most strongly to press forward toward better things. His 'Three Principles of Pointed or Christian Architecture,' which appeared in 1841, was a gigantic step in advance. It grappled at once with all the fallacies which had corrupted modern architecture, and established a code of rules, founded upon common sense, utility, and truth; while his 'Apology,' which came out a little later, showed the necessity of falling back upon our national style, and its ready applicability to every requirement of our day. In the meantime the success of his own personal labours was truly astonishing. Not only were the advances he made in the revival of Pointed architecture most rapid, showing genius in every touch,—this was, in fact, the smallest of his achievements,—he actually revived by his own personal exertions nearly every one of its subsidiary arts: architectural carving and sculpture, stained glass, decorative painting, metal-work,—whether in brass or wrought iron,—gold and silver work, enamelling, embroidery, woven textures, paperhangings, encaustic tiles, the manufacture of furniture, and even of ordinary household crockery-ware, all felt the impress of his hand and of his genius.

Shortly after Pugin became publicly known, the same course began to be vigorously taken up in our own Church. The societies formed in connexion with both Universities were followed up by others in all parts of the country. That vigorous periodical, the *Ecclesiologist* . . . did immense service in exposing the desecration and degradation to which our old churches were subjected, and in promulgating correct principles of ecclesiastical architecture and arrangement.

A noble feeling for the subject rapidly spread itself among all classes. The zeal for church building and restoration greatly outran the increased knowledge, acts of individual munificence

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multiplied on all hands, and an entirely new state of things came about."

Two more decades have nearly passed over our revival since I thus chronicled its progress; and, if it has had (as has been my own painful experience) reverses to deplore, it has had a continued series of successes to rejoice over; and if its early ardour has at all sobered down, this has served, for the most part, to give steadiness and maturity to its efforts; and anyhow, it now possesses architects and other artists of distinguished talent to carry on the work, and, while it has long held absolute possession of the ecclesiastical architecture of the day, it now adds to this many of the most important of our secular buildings.

Its success has been indeed enormous; yet its failures and drawbacks have been in proportion to it. Its artistic merit has been limited to those who have followed it up with an earnest and generous enthusiasm, for it has unhappily been practically followed up by a mixed multitude who view it as a fashion of the day, by which professional practice is to be obtained; but are devoid of all ardour and love for what they are engaged upon. The consequence is that, while we have a certain proportion of new churches and other buildings which need not shrink from comparison with those of the Middle Ages; we have a swarm of others—mere cold-blooded, heartless, travesties—a disgrace to our age, and a disfigurement to our towns; but, worse still, while a minority (as I fear) of our ancient churches have been repaired or restored by men who treat them with a loving care, and with studious and intelligent reverence, a large proportion are left to the tender mercies of the mere pretenders,—often not architects at all,—who have no knowledge of, or reverence for, the treasures committed to their unworthy hands; and who have done and are doing their best to rob our country of one of its richest inheritances—its genuine and indigenous architecture.

Nor is this the only drawback to the Gothic revival.

It suffers also from a degree of capriciousness even among its abler and more art-loving followers, who, jealous, perhaps, or contemptuous of others, refuse to co-operate in any steady purpose, and who, morbidly keen in their perceptions of beauty, are apt to follow momentary fancies—now favouring one type, and now another—and, perhaps, reviving styles little allied to their purpose, as if the object of the age were to revive just for revival's sake, rather han to gath er in these extraneous beauties to enrich the resources and to widen the capabilities of one received style. This tendency seems to threaten the noble movement with premature decay, though I do trust that there remain earnestness and steadiness of heart enough to avert this danger, and to guide these artistic strivings into a healthy channel, and cause them to add new life to the general movement.

It is, in truth, as yet unsettled whether we should concentrate our revival on one phase of the old style, or whether, as the ancients did with their orders, we should use them *ad libitum*. The one seems somewhat artificial, the other somewhat too eclectic; but *solvitur ambulando*, and perhaps this discursiveness I have been regretting may promote that solution.

I have found, as I went on, that the scheme of my lecture was much too extensive for the time at my command. I had intended to say something of the application of the sister arts to architecture, as well as on the subordinate and allied arts. I must omit this; nor do I much regret it, as I trust I shall be succeeded by men better qualified to deal with the subject.

I will close my lecture,—itself the last of my long but disjected series,—with a few words of advice to architectural students.

First of all, I would repeat what I once heard from that accomplished artist who formerly graced this chair,—Professor Cockerell,—that the first rule for success in art is the same which the wise man laid down with reference to morals, "Keep thy heart with all diligence, for out of it are the issues of life." If the inmost heart of the student is purely and earnestly devoted, with generous ardour and enthusiasm, to his work, you may make pretty sure of his success; but, if he follows it up in a cold, perfunctory spirit; from a sense of duty or self-interest rather than of earnest love; whatever may be his success in a merely professional point of view, he will never do any good in a higher and an artistic sense. The first thing, then, to encourage is a loving zeal for the art you have chosen.

The next aim is self-culture, and that of a two-fold kind: the cultivation at once of an intimate knowledge of the form of art which you select as your groundwork, and of a personal artistic power to work in it.

In these days of miscellaneous distraction, it is difficult to give advice as to the choice of a groundwork of study. Having no actual style belonging to our age, you must choose between the two Renaissances,—the Classic and the Gothic,—as best you may.

It was my own lot, arising from the period at which I commenced, to have been trained in one (at its deadest period), and to have, from the love of it, trained myself in the other; but I will suppose, for simplicity's sake, a single and simple choice. Nor is it for me to dictate, were it in my power to do so, what that choice should be.

What I have to say is that, your choice being made, you must study with all diligence, and with the most assiduous attention, the best and purest examples of the style you have chosen; making yourself thoroughly acquainted with it from its very root to its minutest details, and using every endeavour to catch the true artistic spirit of the style in its best phases.

If Classic architecture (whether antique or as revived) be your aim, you are at some disadvantage from not having within your reach its most authentic examples. Books and the works of our own best architects must supply the need till you have opportunity to study it in its native land.

If Gothic architecture is that on which your loving choice has fallen, you are more happily situated. Then you are not studying an imported art, but that of your own country; you have not to travel widely from home to study its noblest productions, for they are at your very doors; you have not to go through a long course of book-study, treating of examples of art which you have no means of seeing and studying with your own eyes; but, though not rejecting books, you may go from them to the originals and judge of them for yourselves. Even if kept pretty closely in London or its vicinity, you do not want opportunity for the study from its noblest productions of the art of your choice. The glorious fane of St. Peter at Westminster supplies an inexhaustible fund for study, while the history of Mediæval art may be followed up by the aid of such examples as the Chapel in the Tower, the Temple Church, St. Saviour's, Westminster Hall, Crosby and Eltham Halls, and other minor examples; while an hour's run will take you to the stupendous church of England's protomartyr, which equals its sister abbey as a fund of artistic study and information. The advice, then, I give to the student of Mediæval art is, lose no opportunity of studying and carefully sketching from old examples, wherever they may be found; nor, I would add, should you neglect the aid afforded by collections of objects of study such as our museums contain; but study not only the mere fact, but the spirit and sentiment of the style you are learning.

This, however, alone is but the skeleton. You must clothe it with muscles, and breathe into it the breath of life, by the direct culture of your own individual artistic powers. Make yourselves artists,—not so much artists in the lower sense of being able to make your ideas look well on paper, as in the incomparably more important sense of making your works really noble works of art in reality and in execution. It is of very little importance to any but yourselves whether your drawings look well; but it is of infinite importance that your works, when carried out, should be really worthy of admiration, and should produce the impression on the mind which they ought to produce.

Make yourselves, then, artists, not alone in respect of mere architecture itself, but in respect also of its allied arts; in respect of architectural sculpture, in respect of painted decoration, in respect of figure sculpture and of figure-painting in forms suited to architecture; of painted glass, mosaic work, metal work, and all the subordinate arts. I do not say that you should really practise these arts yourselves, but by training yourselves in them you will become fitted to direct, guide, and check those whom you employ, or who are made your art colleagues.

Few, indeed, of us have as yet come up to the standard,—very few have even approached it. I address you as the rising generation of architects, and urge you to do what your immediate predecessors have, for the most part, failed of having the means of doing. Let your new generation go far beyond its predecessor. It is not for us moderns to be content with a standard of our own degenerate age. To "measure ourselves *by* ourselves, and to compare ourselves *with* ourselves," is never the part of wisdom. Set, rather, before yourselves a standard of glorious days of old; and, remembering always the right noble *Catæna Patrum*, whose successors you will be, make it your first endeavour to raise yourselves to a level worthy of your parentage, and then to press ardently onwards, if Providence shall permit, to ever new and higher attainments.

CONGREGATIONAL CHURCH, CAMBRIDGE.

This building, which was begun in the autumn of 1872, will have something of novelty in certain points of its arrangement. Two chief objects were aimed at in the design,—first, to put the whole of the congregation within sight and hearing of the service; and secondly, to do this without having recourse to thin columns and slight construction. It was desired, on the one hand, to avoid cast-iron and lath-and-plaster, and, on the other hand, to avoid the inconvenience which generally results from a series of massive nave piers. Many forms of plan on which both these objects are attainable are suggested by Post-Roman and Mediæval works; but from the confined nature of the site, some of the most promising of them proved to be inapplicable. To obtain the requisite number of sittings, it was necessary to cover the whole of the ground, with the exception of two passages left for access to the schools,—and the general form of the nave thus presented itself as a plain oblong, about 60 ft. by 54 ft. internally. This space has been divided into a central and two side aisles, by one large clustered pier on each side, which supports two wide arches; and these again carry a lofty clearstory. The nave opens at one end by an arch of 20 ft. span into the tower gallery, and at the other end into a polygonal apse, occupied by the choir. The nave pier on the side next the pulpit is so placed as to produce no obstruction whatever, the architect contends; the opposite one interferes with the view from about half a dozen sittings, or less than 1 per cent. of the whole.

The front of the church is formed by a tower, 27 ft. 6 in. wide, and about 130 ft. high. The interior of the tower is occupied below by a large entrance-porch, and above by the end gallery before named, which is lighted by a wheel-window some 40 ft. from the ground. The windows throughout are highly placed, and the greater part of the light will come from above. The gallery staircase, with its enclosing turret, carried up in the angle between the tower and the end of the south aisle, will be noticeable externally. It has an octagonal roof of stone, like that of the tower, the latter having the peculiarity,—which was less common when it was designed than it has recently become,—of an octagonal belfry-stage, with a pier above each angle of the square from which it springs. In the treatment of these piers, however, and in some other particulars, the type kept in view was rather that of Coutances and St. Lo, than that of St. Albin, Angers, which has lately appeared in such numerous adaptations. The total length of the interior, including apse and gallery, is about 100 ft., and 700 sittings of convenient size will be provided. The inside of the church is lined with ashlar, with occasional bands of red Wolverhampton stone. The roof and ceiling are of Baltic timber. The apse-ceiling is of pitch-pine, with panels intended to receive coloured decoration. The ceiling of the nave, as will appear from the view, is pointed, but of a low pitch. This form was adopted, partly for its acoustic merits, and partly to secure an equable temperature, by getting a thick stratum of air between the roof and the ceiling. It also makes it possible to dispense with a visible cross-tie in the trusses. The nave arches are kept square on the soffits, and are panelled,—a mode of treatment which, if uncommon, is not unprecedented, even in the best Mediæval work. In the present case, it seemed likely to assist in giving scale to an interior which, from the fewness of its main divisions, was in danger of being deficient in that very important element of effect,—the danger, in fact, of most interiors which venture either on wide naves or wide bays.

Externally the walls are of Yorkshire parpoint, with dressings of Ancaster stone. The joiners' work is of pitch-pine. The work is being executed by Mr. Horsman, of Wolverhampton, under a contract for 8,000*l*. The architect is Mr. James Cubitt, of London.

WELSH CASTLES.*



Cydweli Castle.



Harlech Castle.



Newton, near Brecon.



Conway Castle.

[* See p. 257, *ante*.]



CONGREGATIONAL CHURCH, TRUMPINGTON STREET, CAMBRIDGE.—Mr. James Cubitt, Architect.

OUR PUBLIC MONUMENTS.

The few public monuments which London can boast of are rendered apparently fewer in consequence of the vast area over which they are so sparsely scattered, and it is difficult to get a comprehensive glance at them. A city devoted almost exclusively to business, and not, like Paris, to æsthetic considerations, it offers but rare opportunities for the display of purely artistic decorations. It boasts many magnificent buildings, where art has lent its aid to gild the utilitarian requirements of the place; and edifices such as Westminster Abbey, St. Paul's Cathedral, the Houses of Parliament, Somerset House, and the Royal Palaces, not to speak of the hotels and private commercial buildings, are an ornament to any city. But in their case the primary object of their erection was their use, and art has been called in, only as a secondary consideration, to beautify and embellish. They are to be met with in all parts of the metropolis, but monuments *per se*,—*i.e.*, purely decorative or memorial structures, without any primary useful object,—are few and far between, and are apt to be overlooked among such giants. And they are from their nature, and from the difficulties attendant on their design, naturally slow to increase. It is my intention to try and give a short sketch of the most prominent or most important of these witnesses to a nation's glory, a nation's taste, and a nation's pride in her most worthy sons. I shall omit any reference to statues or memorials "indoors," such as those in the Houses of Parliament and Westminster Hall, and in Westminster Abbey and St. Paul's Cathedral, confining myself to a few of the purely "public" monuments out of doors.

One of the most life-like and spirited statues in London is Marochetti's colossal "Richard Cœur de Lion," erected in Palace-yard, between the House of Lords and Westminster Abbey. The natural pose of the finely-modelled horse, and the defiant attitude of his rider are admirably executed, and the effect is very good. It seems a pity that so good a specimen of art should not have been placed in a more popalous thoroughfare.

Equestrian statues are equally difficult of execution and effective in appearance. They admit of more varied treatment than simple figures, but our artists have not been happy in their rendering of the different attitudes of a horse and its rider.

The "Iron Duke" seems to have been very badly treated by the sculptors and monument-makers. Have they any special grudge against him that they determined to make him a laughing-stock when they placed the "little man with the big cocked-hat" on the top of the triumphal arch on Constitution-hill? Placed in such a prominent position,—the taste of which is in itself very questionable,—he should at any rate have been made a little more worthy of respectful observation. Placed where he has to be "looked up to," he is really "looked down upon" as an example of statuary. Viewed from a short distance hardly anything is to be seen except a horse surmounted by a field-marshal's hat and an outstretched arm and hand holding a roll of plans.

A second representation of the Duke of Wellington, which graces the open space in front of the Royal Exchange, is less ambitious, and though somewhat tamely modelled, is less objectionable, and is a very fair specimen of mediocre art. In the actual design and workmanship of the Hyde Park-corner statue, there may be very little to complain of, but in such works the general effect must be studied according to the position they are to occupy. As an example of the neglect of this simple rule I will instance the Crimean memorial in Waterloo-place. A double pedestal,—the upper one surmounted by a figure of Britannia, or Victory, or some equally indefinite female, holding out wreaths of laurel; on the front of the lower one two or three admirably-executed figures of the Guards, in their winter uniform, standing in an attitude of mourning; at the back, a trophy of guns and colours. The female figure, perched up aloft, has her hair hanging down her back in two pigtails; her arms are outstretched in opposite directions, each hand holding two rings. Are they hoops in which she invites all the neighbouring birds to come and rest, or are they quoits? Happy thought! they are intended for laurel-wreaths! At a very short distance her back, with a stiff heavy mantle hanging straight down, looks perfectly flat, and reminds me of a statue of George III. I once saw and admired at Weymouth, where the artist, having expended his skill or cash, or both, in developing and decorating the front part of his Majesty's body, has actually rounded the back off without an attempt at modelling it at all!

The local authorities seem to look upon this Guards' Monument somewhat in the light of a "street-refuge;" its base is generally surrounded with wheelbarrows, picks, shovels, and heaps of broken granite which the small boys of the neighbourhood amuse themselves by trying to throw into the mouths of the cannons forming the trophy on the pedestal above.

Ichabod! may fairly be exclaimed of the list of London monuments. The statue in Leicester-square has at last disappeared. Gracing that locality for ages, without a friend, an owner, or a name, its origin and original alike unknown, it has now vanished from the scene,—

"Unwept, unhonour'd, and unsung."

For years it was a fertile source of speculation on the part of antiquaries to discover its author, and the person whom it was meant to represent. I believe a similar uncertainty exists as to the equestrian statue of a jaunty gentleman in wig and pigtail on a short, thickset horse, which looks down Whitehall from Charing-cross. Is he a Stuart or a Guelph?

And who is the military man who, hat in hand, salutes the passers-by from Pall-mall to Cockspur-street? He deserves to have a name; for, though the flowing tail of his horse depends from a very thin root, his *tout ensemble* is worthy of a return salute.

But it is impossible to specify a tenth of the smaller statues sprinkled over London. Each square boasts of one or more, but their excellence is never very remarkable, and they are content to hide their defects in the exclusiveness of their retirement from the more thronged thoroughfares.

"The Monument" is a tribute of homage to no man's memory; but as marking a great epoch in the history of London, it deserves a short notice here. 202 ft. in height, it is an imposing column, and can be seen from a considerable distance. This is one of the most primitive styles of memorial structure, and though the most simple, it is still one of the most effective. In this case the fluted column is really very fine. The effect is spoiled by the cage that has had to be erected at the top of it, to prevent would-be suicides from throwing themselves down headlong. The spherical metal finial at the summit is meant to represent a ball of fire. To my eyes it always presents the appearance of a brazen plum-pudding be-stuck with small flags.

Nelson's Column, second in height to *the* Monument, is 176½ ft. high, — an elegant Corinthian pillar, surmounted by a statue of the hero in whose honour it was erected. Unlike the Monument and the "Duke of York's Column," it has no interior staircase, and so is not spoiled by the hideous cage with which these other two are disfigured. It has been suggested that a cage should be placed there too, to enclose Nelson himself, who, some critics assert, should not be placed at such an elevation, as they say it is a cruel idea to put a man on the top of a column with no means of descent. With the good effect produced by the column as a whole, particularly since Landseer's grand colossal lions have taken their place at the base, the objection is puerile, and surely the taste is not so bad as that which placed an elderly civilian gentleman in a chair with his head uncovered, without even an overcoat to protect him, and exposed him to all the changes of this changeable climate of ours, as is done in the case of the Peabody statue at the back of the Royal Exchange. The designer no doubt wished to make a change from the ordinary style of memorial effigy, but it is cruel to place the great benefactor in such an unsheltered position. In rain or sunshine, I feel equally inclined to "cover his defenceless head" with an umbrella.

The Duke of York is satisfied to survey London from a height of 124 ft.: though, the column being placed on higher ground, its summit is not really so much below that of the Monument. Another patent suicide-preventer renders hideous the appearance of this column. I do not know which particular Duke of York the figure represents: whether it is he of whom it is said,—

"The Duke of York march'd up the hill with 20,000 men;
He march'd them to the top, and then he march'd them down again."

The authorities have a wholesome dread lest an erratic flash of lightning should throw down the image which they have set up on high, and have taken the precaution to provide a lightning-conductor, the upper end of which passes *out of the head of H.R.H.*

A single glance at the Duke of York's and Nelson's columns teaches the practical lesson that bronze statues should never be placed at such a height that their features are lost to view. The Duke of York's figure is bronze, blackened by time, and smoke, and rain; and being represented in a large, flowing cloak, the outline of his limbs cannot be perceived, and the effect is an unbroken mass of black cloak, surmounted by a ball for a head. Nelson, on the contrary, is of stone, which is cleaned instead of blackened by the rain, and his costume being that of an admiral, free from folds of drapery, his features and limbs are all easily distinguishable.

While we are in the neighbourhood of Waterloo-place, we will go and see two unobtrusive little memorials to the memory of two great men. One, Sir Colin Campbell, is represented, about life-size, standing on a neat granite pedestal; below sits Britannia, leaning against the British lion, and holding out a spray of laurel. Query: if the laurels are intended for Sir Colin, how is he to get them without an undignified descent from his elevated position?

The other is in memory of the great Arctic explorer, Franklin, and his brave companions. A bronze bas-relief on the pedestal represents the burial of the discoverer of the north-west passage in the midst of the mountains of ice through which he had vainly endeavoured to force a passage. On the pedestal stands an excellent statue, a little larger than life-size, of Franklin.

One of the most ambitious, most utilitarian, most novel, and most unsightly of memorial erections in London is the drinking-fountain in Great George-street, Westminster, built in memory of the great work in which such men as Wilberforce, Clarkson, Buxton, and others laboured so zealously,—the emancipation of the slaves. This production has been profanely called the "gigantic extinguisher." It certainly closely resembles one of those useful household utensils, considerably enlarged, and gorgeously decorated, supported on six small pillars, between which there is just room for the thirsty traveller to pass, and under which he may be sheltered from the outer rain or sun while he refreshes the inner man.

A word on drinking-fountains. Why should they be closed for the "winter months," as is generally the case? People become thirsty, though to a lesser degree, in the winter as well as in the summer, and if, during that season, the way-worn hydropath approaches one of these structures, hoping to quench his thirst, he is confronted by a board which tells him that the quickening streams are closed till the 1st of March.

The granite column erected in Broad Sanctuary, Westminster, to the memory of the Westminster scholars who fell in the Crimean war is a pretty little structure, and from its position will serve to remind the Westminster boys of the honour that awaits them in the proper performance of the duties of manhood in years to come.

I cannot help referring to the striking view that is to be obtained near here from the end of Victoria-street, looking east.

The Houses of Parliament, Westminster Abbey, St. Margaret's church, Henry VII.'s chapel, with the surrounding buildings, and the Westminster Scholars' column in the foreground, make up a very effective "corner of architecture."

The National Albert Memorial deserves a paper —and a long one, too—to itself. The bold conception of Sir Gilbert Scott's fertile brain, it is a fitting tribute to the memory of him who, twenty years before its inauguration, had, near the same spot, carried to so successful an issue his grand design of a world's show of industrial and artistic produce. Its ornate Gothic style contrasts finely with the stern ponderousness of the Albert Hall, contiguous.

A large sum was expended in the work, but the return is worth the investment. If we had nothing else we have here a proof that the most ornate examples of the Italian school can be reproduced, or so modified as to exist without incongruity, even under this inclement sky of ours. Rome's Coliseum needed no protecting roof. The scenes enacted in its arena were open to the sky above. The visitors to London's imitation of the great model require a shelter from unpropitious Jupiter Pluvius and the rude blasts of Boreas. It was a daring design, that of pro-

ducing a Coliseum, with a roof which would not spoil its outward appearance. Still bolder was the determination to defy the rainy, smoky atmosphere with a highly-decorated structure, such as the Albert Memorial, with its marble sculpture, its gilded pinnacles, its tesselated pavement, its inlaid work, its precious stones, and a thousand valuable minute adornments and enrichments, which, as a whole, produce an effect of elegance, and yet solidity,—in a word, of complete success,—which it would be difficult to rival anywhere.

With such a triumph of art, it is surely too soon to say that English taste is dead, that English art is a thing of the past,—a name. With all the faults of the many mediocre productions of monumental skill, we have some examples deserving of praise. It is good to feel that the most ambitious work, where failure would have been most keenly felt, is one of the most successful of which the country can boast.

C. E. FRYER.

HEATING BY GAS.

IN a paper by Mr. John Barber on the Heating of Public Buildings, read lately at the Royal Institute of British Architects, the writer said,—We live in an age of improvements, and none of us will deny the fact that much happens now as a matter of course which was deemed impossible years ago. Economy, or at any rate convenience, is derived by dealing with essences. It is much more convenient to swallow a tea-spoonful of medicine than to drink the bucketful of wash from which it is concentrated. Why should we not apply the same principle in warming our buildings, and use a few thousand feet of gas in preference to burning a ton of coal? and why, taking all things into consideration, should such a course be uneconomical?

During a late professional visit to Denmark, I became intimately acquainted with a Dane who had gone much further than any enlightened Englishman I have yet met with in the treatment and use of gas for other purposes beyond lighting. I visited his house several times before being aware it was heated by gas; and having had my attention drawn to the subject of stoves (heated with gas) by Mr. Seddon, only a short time before, my mind was naturally ripe and ready to take in any ideas which might improve my knowledge on those points. I looked round his room on one occasion for a novelty in the stove line, and not finding one, although the day was very cold and the room warm, I asked how it was heated. My friend took a panel out of his window bottom, and there I saw a few gas-burners, with perfectly blue flame, playing on a firebrick lump, with no pipe to take the products of gas combustion away. The heat from combustion and the heat absorbed and imparted by the firebrick was all allowed to enter the room, and although I was in the room for hours I did not feel any choky or stuffy sensation. Here was a realisation of the very idea which had presented itself to Mr. Seddon and myself, and which I was proposing to bring to a successful issue. Now I must tell you that the gas there was the best I have ever seen, though no dearer than London gas (6s. per thousand, if used for lighting purposes, or 4s. 3d. per thousand, if used for cooking and heating). I ought also to tell you that my friend cooked entirely by gas, his roasting fire simply consisting of a 16-inch drain-pipe, with a cross bar at top, inside which the meat was hung, the bottom of pot resting on a tripod, which also carried a circle of gas jets; a sort of ventilated dish-cover crowned the whole. The consequence was that carpets and furniture were not spoiled by dust and cinders from fire; chips were saved, as also space for holding them, and labour in not having coals to carry to and cinders from the fire; and the first cost of the stoves, if we may call them so, was much less than the elaborate iron ones generally used in the Scandinavian kingdoms.

Now I feel I may be speaking to sceptics, but I fully believe it is possible so to burn gas, even London gas, that the heat arising from combustion shall be neither unpleasant nor injurious; and if so, I contend that we may most reasonably expect to find economy in its adoption for warming houses in lieu of the use of coal; for this reason—that in coal all the products of combustion itself go up the chimney, whereas in gas, treated as I propose, they would serve to heat the room; and in considering the economy of gas as a heating apparatus for houses, we must credit it with the saving in wear and tear of carpets, chips, coal-cellar and chip-house, chimney breasts and chimney tops, hearth-rugs, fenders, fire-irons, and register grates, the marble chimney piece and its necessary accompaniments, chimney ornaments, mirrors, &c. In fact, it thoroughly re-models a room, and renders much expensive furniture unnecessary; and it is my firm opinion that if due and proper consideration be paid to all these points, the economy will be in favour of the essence of coal—that is, gas,—and not coal itself. I am not a chemist or a gas engineer myself, and must leave the actual treatment as to admixture of air to ensure the Bunsen flame and other matters to them to work out; but I think I have just held out to them sufficient promise of success. With the foregoing remarks fresh in your memory, you will most readily conceive how easy and convenient it would be to apply a gas-stove under the window-cills of a church or public building, as previously suggested when treating of hot-water apparatus; how easy to regulate the temperature of the building, giving more heat or less, as required, by turning a tap; in fact, the more I think of it, the more advantages turn up in its favour over and above any other system of heating apparatus. What is wanted is a fair and impartial trial, and this may be accomplished without very much trouble or expense. Try one room in a house first, and have a meter specially for the gas-stove; carefully register on a thermometer the temperature inside and outside the room for a week; then repeat the operation, use coal in the firegrate, maintain the same temperature inside for the same length of time, weighing the coal, and this will show the actual cost in consumption,—the other items of economy, as enumerated above, require no test. After arriving by experiment at the proper form of gas-jets to adopt, in order completely to destroy any pernicious effects arising from the combustion of gas, it becomes an easy matter to arrange the form of stove to which the burning gas-jets are to transmit their heat. I would recommend the following plan: fix a system of gas-jets within a terra-cotta or earthenware cylinder placed horizontally, the outside of which is ridged to as great an extent as possible (similar to the gills of a gill-stove), to increase the superficial area of the heated surfaces with which the circulating air is in contact. Upon the top of this cylinder or terra-cotta gill-stove lay a vitrified earthenware trough, to be filled with water, and place the whole apparatus in a recess under the window-cill, as previously recommended. By following out these suggestions we obtain,—first of all, the great advantage of the form of gill-stove for transmitting heat to circulating air; secondly, we obtain the advantage of softening the heated atmosphere by evaporation of water; thirdly, we have compulsory induction of air by placing the stove in a recess slightly larger than itself; then the advantage of introducing the warm air into the building in a convenient, unconspicuous position, where its effect is more likely to be general. Again, we have no dirt, ashes, coals, or other lumber to provide for or to remove;* and, lastly, we succeed in obtaining a heating power which can be increased or diminished at will, to suit the requirements of the day or the tastes of the public within the building. There is yet the crowning advantage of all to enumerate, which is the securing of the whole products of combustion and radiation, as well as the heat caused by simple circulation. This last advantage, I must confess, is not yet certainly secured; but why should it not be? Nothing need now be put down as impossible to obtain, for every day brings us fresh evidence to prove that what were impossibilities once are now admitted as simple facts.

NEW CHAPEL, UPPER HOLLOWAY.

THE new chapel which has been erected at the corner of Archway-road and St. John's-road, Upper Holloway, occupies a commanding position. The architectural style of the building is Romanesque. The ground was of a somewhat peculiar form, and made the planning of a commodious structure difficult. The building committee therefore invited several architects to submit designs, and those submitted by Mr. John Johnson, of Moorgate-street, were chosen as most suitable.

The west front has a flight of steps leading to a landing the whole width of the building. There are three circular-headed entrance-doors, with columns, with carved capitals, and enriched arch soffits; above is a large light window, with rose-window in head, the spandrels being carved with Romanesque foliage. To this front there are two turrets, containing gallery stairs, with pointed domical roofs of blue Bath stone, with iron finials, the height from ground to top of finials being 85 ft. The chapel is in plan a Latin cross, the total length east and west being 110 ft., and the total width across at transepts 95 ft. The width of the nave is 44 ft. The ceilings are in blue and white, with blue and red lines and ornaments. The timbers of the roof are light brown, the walls and dado being Pompeian buff and brown, with panels of blue, with red and blue enrichments, the plaster cornices and mouldings being left white. The communion is rather richly treated by arcading and diapers. The architect prepared the designs, and himself executed a portion of the decorative work. The basement has a large school-room for 200 boys, 200 girls, and 150 infants; also four class-rooms, each 18 ft. by 16 ft. The walls are of brick, with light yellow facing, with bands of dark Malm paviors, and dressings of Bath stone, &c. The warming is by hot air and hot water, executed by Mr. Waller, of Fish-street-hill. The gas-fittings are by Mr. Glasse, High-street, Islington. The foreman of the works was Mr. Taylor, and the general contractors were Messrs. Dove Brothers, of Islington. The cost of the building is about 5,600*l.*, but the total cost, including land and all charges, is about 7,200*l.*

* That frequent marrer of architectural effect in churches, the heating apparatus chimney, is removed altogether.

PROVERBS FOR GENERAL CIRCULATION.

A COLOSSAL social superstructure on bad foundations will inevitably be sapped by the tide of progress.

England forgets that she owes her wealth and power to about half a dozen great intellects.

A nation is in great danger which forgets to whom its success is due, for it will neglect those intellects which could alone maintain its position.

Englishmen batten upon the profits derived from ideas, and are for ever ridiculing the peoples who fight for one.

Let your great intellects be either robbed or dishonoured, and ere long your nation will be despoiled and dishonoured.

A nation's art will be its monument: by that the future will determine its aspirations or abasement.

People would soon be astonished at results if they would all work together for the common good.

What is the use of having senses if men are not trained to use them properly?

Yield and feign timidity if you wish to find out whether a coward means to attack you.

No one need stand in fear of brave men, but the wrong-doer; it is only cowards who stab in the back.

Flippancy in art, literature, and social life is a bad habit; the longer encouraged the more difficult to eradicate.

Do not let a nation's hardiness decay, but do not make it too hardy lest it prove fool-hardy.

Establish a temperate zone of thought and policy round the globe, and the social world will be safe.

One of the first results of educational equality is, that all men become ambitious; the final one, that they all desire to be happy.

Heaven metes by the will of the worker, not the amount of the work.

The great wish of most people is for a fortune and nothing to do. How fully men are punished when it is realised!

People often show their bitterness instead of contempt by tossing their heads.

Coxcombs often appear to be of greater account in the world than great men.

To express contempt for personal defects is not only a sign of ill-breeding, but of a poor understanding.

Men are, at first, as they were made; they may afterwards *make themselves* either better or worse.

Let your resentment quickly cool, and it will save you a vast deal of trouble and anxiety.

If you are in the wrong acknowledge it at once! You may disgrace yourself by a weak defence.

Keep your difficulties to yourself, and let people know that you are in expectation of good fortune.

Scribbling upon and defacing works of art is an unmistakable sign of a low state of culture.

A REVIEW OF WORKS ILLUSTRATED IN THE "BUILDER."

LIVERPOOL ARCHITECTURAL ASSOCIATION.

At a recent meeting of this Society, Mr. W. H. Picton read the following paper:—

Pressed by our secretary for a paper, I venture to offer a few thoughts which have passed through my mind on a review of the architecture of the past year, as illustrated in the *Builder*. Valuable and interesting as the architecture of past ages must ever be to the student, that of the present day possesses a yet keener interest to the architect engaged in the active practice of his art, and striving earnestly and often with difficulty to fit it to the exacting requirements of the age and to breathe a spirit of beauty over new forms of construction. With this noble purpose in view, the works of our brother practitioners are of inestimable value, affording suggestions to that end which are in vain looked for among older examples. I shall endeavour in the present paper, to the best of my ability, to point out in a spirit of friendly criticism the merits and defects of the buildings I have selected, and to note anything of value which we can extract from them.

My first example is the *Roman Catholic Church of St. Mary of the Angels, Dublin*, of which Mr. J. J. M'Carthy is the architect. It was built for the religious order of the Capuchins, and is a single-span church. The plan consists of a nave with lateral chapels and apsidal chancel with large sacristies. Its width, clear of the main walls, is 45 ft., and including the chapels 65 ft. Its total length is 160 ft., and interior height 73 ft. The view given shows the west and south fronts. The whole design exhibits a unity of purpose which gives it much power of effect. Both fronts have the same leading features, although worked out in a different way. The arches from buttress to buttress, and the projecting features between the latter, are the same in both, but the projections in one case form the entrance porches, and in the other the side chapels. The side chapels are, I consider, admirably managed, with a gable occurring in every other bay, the alternate bays having straight eaves, and being covered with stone water tabling. In order that the line of the buttresses may appear down to the ground line, care is taken that they are not covered up by the projecting chapels, but sufficient left of them to satisfy the eye that they are still there. The main openings into the church, elevated above the chapels, become large clearstory windows, and the effect of their elegant triplet lights in the interior must be exceedingly fine. The large pinnacles at the angles of the west front are worthy of note, where the corner, formed by the two buttresses, is made into a niche with a shafted pedestal and statue. The spire has quite a Continental feeling about its treatment, and though rich in the general effect appears a little overcrowded. The building as a whole displays, I think, a considerable amount of originality, and the arrangement of the chapels is one which might be worked out well for a Protestant church in the shape of narrow aisles, simply to gain access to the pews with the usual piers and arches.

Chapel of St. Paul's College, Stony Stratford. The plan of this building consists of an atrium, or enlarged porch, extending across the whole western gable of the chapel, a choir proper for the members of the college, and a deep sacrarium terminating apsidally. The total length is 114 ft. by 35 ft. across the choir. In the interior, brickwork is used for architectural features. Window-tracery, cornices, wall-shafts, piers, &c., are all carried out in brick. Stone is employed in the shape of sculptured corbels and capitals, and the introduction of some shafts of grey granite adds to the effect. The ceiling is arched and ribbed, with tie-beams and shafted kingposts. There are no windows in the apse, but it has a high roof-light, from a spirelet, which rises just over the centre of the sacrarium, which affords light for the frescoes intended to adorn the walls, showing scenes from the life of St. Paul, the patron saint of the college. The floor is laid with tesselated patterns, the richer design being preserved for the sacrarium. The choir is fitted up with panelled and carved seats, in oak and pine, arranged choirwise, with a projecting canopy over the upper seats, and canopied stalls for the warden and chaplains. The building is the work of Messrs. Goldie & Child, and the cost over 5,000*l*. No material has risen so much in the estimation of the architect during the last enty years as brick. From being so much despised, that it was everywhere, if possible, hidden away from view and covered with stucco, it has come to line the interiors of public buildings and churches, preferred in many cases to stone, and built in along with polished marble and granite. The great attention now bestowed on the manufacture of bricks and terra-cotta will explain this fact to some extent; but the chief reason lies, I think, in the development of a taste for colour, which has been growing ever since the Gothic revival. In the first stage of this development there was undoubtedly a disposition to overdo the thing, and to paint over the surfaces to too great an extent; but now a more refined method prevails, and the colour is not laid on as something extraneous, but comes, as it were, from within, being in the coloured stone and bricks employed in the construction of the building. This method of colouring prevails in this church. The general effect of the interior is exceedingly striking, but, to my mind, is marred by the tie-beams. With the noble open roofs left to us as examples by our ancestors, it is, I think, a retrograde step to return to the horizontal tie-beam, which has absolutely nothing to recommend it. In this instance the ties look like shores placed across the church, to keep the walls from falling in, and their rigid lines cutting across the arches of the roof are harsh and ugly in the extreme. The high roof-light over the chancel is a noteworthy feature of the design. In many churches the costly decoration is completely lost in consequence of the blinding light which pours into the building through the windows, and to attempt to see the paintings on the walls is as impossible as to see the landscape around you with the sun in your eyes. An opening in the roof, on the contrary, affords a steady light throughout the day, and is out of the reach of the eye.

One of the grandest new churches illustrated this year is the *Roman Catholic Church of Our Lady and St. Philip, Arundel, Sussex*, the work of Messrs. Joseph A. Hansom & Son. The church has been erected by the Duke of Norfolk. The *Builder* states that the first work of throwing in concrete for the foundation was begun in December, 1869, but a serious interruption took place in having to carry the foundations down to the solid chalk rock, which in some instances was as much as 50 ft. below the surface of the ground. The church is cruciform in plan, having nave and aisles to the west of the transept, and choir and chapels to the east. At the north-west angle the tower stands in the place of porch, and at the south-west angle is an octagonal baptistery projecting from the line of south wall. Besides the entrance under the tower there is a great western portal, and in each transept a smaller door of admission to the church. At the south-west angle are the sacristies lying between, and communicating with both the church and the presbytery. Within the church at the west end is the large organ-loft raised high on stone-groined vaulting, and with carved stone parapet front. The whole of the church, the choir, the three chapels, the baptistery, and tower-porch are groin-vaulted in stone ribs and bands and chalk filling. The dimensions of the church are as follow:—External length, from east to west, 200 ft.; interior, across the transept, 94 ft.; width of nave and choir, 33 ft.; width of nave aisles, 12 ft.; length of choir, 52 ft.; height to ridge of nave groining, 72 ft. The flèche or sanctus-bell turret rises to a height of 140 ft. The spire is 270 ft. to the apex. From the above description, it will be seen that the church is of first-rate dimensions, and equal to many of our smaller cathedrals. It is a matter for congratulation that in this important work the architect has adhered to the native style of the country. The church is a specimen of pure English Gothic, and there is no feature shown in the view before us for which a precedent could not be found in ancient examples in England. The different parts of the structure blend well together, and form a noble group, culminating in the tower which rises boldly up at one end, and lifts far aloft its heaven-pointing spire. The whole design of tower and spire is masterly. At the foot, solidity is given to the angles by filling up to a considerable height the corners which would otherwise be formed by the projecting buttresses. For two stages above the ground, the tower is kept plain and massive, pierced only by bold arched openings and small windows. Above these is a band of arcading with crocketed canopies, which is on a level, and in accord with, the clearstory, with its row of windows and balustrading. Above come the belfry windows with rich tracery heads and crocketed canopies, forming a central feature to arrest the eye as it travels upward to the spire. The springing of the spire is gracefully feathered with pinnacles and crocketed canopies, which, while breaking up the rigid spire lines, all assist in directing the eye upwards to the apex. The introduction of the projecting chapel in the angle, between the north transept and choir, has a very happy effect in varying the formal lines of the building and giving freedom to the design. Two flying buttresses extend across this chapel, and answer to those in the nave. The east side of the north transept exhibits another variety of treatment, having only a row of small windows, light being scarcely required, as it is amply provided for in the large north window. Another evidence of careful thought is shown in the thickening out of the wall of the choir, by which great stability is given to the structure, and the unpleasantly weak effect avoided which is often noticed in foreign cathedrals, where the buttresses stand out from apparently thin walls, like so many scaffold-poles. Sculptured statuary is freely introduced over the whole exterior, and no less than thirty-three statues of the saints may be counted on our illustration of the church, all in niches with crocketed canopies. These, standing in their shadowy recesses, enliven and lend a grace to the whole composition, the finishing touches to this fine architectural work. I now pass on to an example of modern house-building.

Wykehurst, Sussex.—This house, we are informed, is the work of Mr. E. M. Barry, R.A. It stands in a commanding position, among varied scenery. The style of the architecture is based on that of the French châteaux on the Loire. The house is built of stone, and the roofs are of tile and lead. The hall and entrance are faced internally with stone. From the hall a triple archway of stone gives access to the principal staircase, which is of oak, with steps 7 ft. in width. From the nature of the site, a basement story was considered advisable, and on this floor are placed the servants' offices. The floor over these offices is of fireproof construction, being composed of concrete with wrought iron joists. The kitchen and scullery are placed outside the main house, and have nothing over them. They are situated near to the back or luggage entrance and stairs. There is a lift for luggage and coals in the back staircase. All the external walls are built double, with an air-space between the two walls. The floors are double-framed with main beams of wrought iron. The first floor contains the best bedrooms, with private sitting-rooms and drawing-rooms arranged in suites, having separate bath-rooms and private closets. There are other family bedrooms, and also servants' rooms, on the second floor, the partitions and framing of the roof being made double with special precautions against cold and noise. All the best bedrooms and sitting-rooms have balconies commanding a fine view, and each window towards the south and west is fitted with wooden "jalousies," or shutter blinds, which when not in use fold back into the thickness of the walls, thus avoiding disfigurement to the architecture. The turret staircase near the entrance is for the use of the servants, who can thus attend to the front door without passing through the house. The cost of the house was about 35,000*l*. The ground plan of this noble mansion is spacious and well arranged, each department being kept distinct, and compact together. Beginning from the left of the plan as it stands, first comes the family portion, with morning-room, school-room, and library, all entering from a common corridor; next the grand hall, 40 ft. long, and drawing-room, which may be called the state apartments. In the centre of the hall is the entrance-lobby, and at the angles are circular turrets, which project boldly out, and form a prominent feature in the design, one of them containing stairs from the basement for the servants, as before mentioned. The drawing-room has a projecting loggia, with a flight of steps leading on to a terrace. The stairs are on a scale rarely met with in a modern house. On the first landing is an octagonal bay, with lofty window the full height of the building. Leading from the staircase is the dining-room, with large semicircular bay at one side, looking on to the terrace, and sideboard recess at the end. Attached is a serving-room, and with office adjoining. Beyond is the billiard-room, lighted by a large bow window at the side, and windows at one end. Behind it is the smoke-room. The external elevation of the entrance front is exceedingly striking and effective. Like a skilful painter, the architect has concentrated

the greatest amount of ornament on the centre of his composition. Here the handsome projecting portal, the angle turrets, the balustrades and dormers, give becoming dignity to the most important part of the mansion, while to the right the work is more domestic in character, with a greater amount of wall space, and quieter in feeling altogether. The position of the staircase is well marked out by the lofty octagonal apse which projects out from the front, and forms a distinct feature of the design. The part of the house over the luggage entrance is carried up three stories as a pavilion tower. The sky-line is broken up throughout, and without any straining after irregularity, a delightful picturesqueness and variety of effect is obtained. Several fine contrasts are to be seen: for example, between the rich central portion and the plain and massive turrets at the angles; again, between the traceried octagon staircase apse and the broad surfaces of the pavilion tower. Observe also the difference in treatment shown in the flank elevation between the side of the morning-room and the side of the library. On the upper stage of this front also an excellent effect is obtained by splaying off the corners above the morning-room, by which means a valuable break is obtained, adding thereby greatly to the pleasing character of the design. The dormer windows, with their varied shapes and sizes breaking up the large masses of the roofs, lend an additional charm to the whole. Mr. E. M. Barry has, I consider, done good service in adopting this very picturesque style, which has all the charm of our English Elizabethan, with much more refinement of feeling. In these days of Ultra-Gothicism, it is the fashion among some to undervalue these hybrid styles which lie between the Gothic and Classic. The student, in endeavouring as best he may to bring forth some new creation for his art, is more likely to produce it out of the chaos which ensues upon the breaking up of an old and effete phase of art than from the "faultily faultless, icily regular" order of a style at its best. There is freshness of feeling, and a daring originality in these styles both in England and the Continent, which afford much food for thought and room for development. In the course of the transition from Norman to Early English, and in that from the last phase of the expiring Gothic to the Renaissance, many bold experiments have been attempted and new ideas thrown out, which have never to this day been followed up. I believe there is a wide field still open here for the earnest architectural student, and in this field the old French châteaux exhibit many features and details well worthy of attentive study.*

THE NEW JUNIOR ARMY AND NAVY CLUB BUILDINGS.

THE buildings at the corner of Pall Mall and Waterloo-place, formerly the offices of the European 'Assurance Company, having been purchased by the Junior Army and Navy Club, are now being entirely reconstructed for the purposes of the club. With the exception of taking down the main external walls it may be said that the premises are being wholly rebuilt, and when the works now in progress at the two elevations are finished, the building externally will present an entirely altered appearance. In the Pall Mall frontage a new porch has been erected, nearly 11 ft. in width to the outside of the pilasters and piers, the doorway being 7 ft. wide. The porch has a bold and massive cornice, above which is a balustrade surmounted by vases. The building has been raised by the addition of another story to both the Pall Mall and Waterloo frontages. The new building will have a flat lead roof. Two large bay windows, 14 ft. in width to the outside of the piers, have been introduced into the ground-floor of the Waterloo-place frontage.

Internally the building has been altogether reconstructed, nearly the whole of the interior walls having been removed, and the former offices in the building on the several floors have been thrown into large and spacious apartments, supported from the basement chiefly by iron columns and girders. The basement contains the kitchens, servants' hall, housekeeper's room, steward's room, sculleries, and the whole of the cooking apparatus, together with extensive cellarage for wines. On the ground-floor is an entrance-hall, together with a morning-room, reading-room, and smoking-room for the members of the club. The front portion of the first floor of both the Waterloo-place and Pall Mall frontages has been converted into a spacious dining-room, its dimensions being 93 ft. in length by 23 ft. in width, whilst at the rear of this floor are a number of offices for the private use of the members of the club. The second floor contains two billiard-rooms, card-room, committee-room, lavatories, &c., and the billiard-rooms are ventilated with Benham's patent ventilator. The third floor contains the secretary's office and the club bed-rooms, and the fourth floor the servants' dormitories; the last-named story being reached by a separate staircase, carried up from the basement to the top of the building. The several apartments in the interior, more especially the dining-rooms and billiard-rooms, will be elaborately decorated in colours and gold, on a ground work consisting of Parian cement, the ceilings (which are in panels) and cornices being enriched.

The architect is Mr. Rowland Plumbe, and the builders are Messrs. Baker & Son. Mr. Richards is foreman of the works in charge. The estimated cost of the new building is upwards of 10,000*l*.

* To be continued.

THE NEW CORN EXCHANGE BUILDINGS, SHEFFIELD.

THE working plans for this structure have been provisionally approved by the Duke of Norfolk. Messrs. M. E. Hadfield & Son are the architects. The following is a short description.

The new Exchange will be erected upon the present hay and straw market, having its principal façade to the new street (60 ft. wide), which is about to be laid out in the line of Sheaf-street and Exchange-street, forming a direct communication from the Manchester, Sheffield, and Lincolnshire, to the Midland Railway stations.

In the centre of the principal front (to the street first mentioned, which is 227 ft. long) will be the principal entrance to the Exchange, through a portal within a tower, which will rise with the flèche or spire to a height of upwards of 200 ft. A continuous arcade extends on each side and along the return wings, each compartment being occupied as a sale-shop, having a basement and mezzanine floor, &c. Passing through the tower, a broad flight of steps gives access to the vestibule, which is 37 ft. 6 in. long, and 17 ft. 6 in. wide, with a vaulted groined roof of stone. At each side are staircases to suites of offices occupying the chamber or upper floors of the front building, and adjoining are settling rooms for the corn factors.

The Corn Exchange Hall will be 110 ft. long, 55 ft. wide (10 ft. longer, and 5 ft. wider than new Cutlers' Hall), and 60 ft. high to the arched ceiling. It will be lighted by windows on the north-east and west sides, and by a glass counter ceiling in the centre. A panelled dado will surround the room, in which there will be space for 100 desks or stands. The floor will be of oak. Adjoining the room at the north-east corner will be an entrance-porch, giving access to lavatories, &c., and also communicating with the implement court, which will be 70 ft. by 52 ft., having a glazed roof, and being specially adapted for the sale of agricultural produce in bulk, implements, &c. The space under the entire building will be cellared, each cellar being lighted, and having spacious avenues of access.

At the north-west angle of the building, accommodation is proposed to be made for a restaurant or refreshment-rooms.

The design is Gothic, of the fifteenth century, and English detail. The materials will be brick and stone. The tenders for the work are to be procured forthwith. The expense is expected to be about 30,000*l*.

When the new Exchange is completed, the present building will be cleared away, and the site appropriated for enlarging the wholesale fruit and vegetable market. The hay and straw markets will be removed to the present cattle-market, and the latter will be provided with accommodation near the Park Station of the Manchester, Sheffield, and Lincolnshire Railway.

THE ARCHITECT.

To truly build, it needs an architect,
With thinking powers above the average man,
To make his art through handicraft reflect
The ends foreshadow'd in design and plan.
The purpose sought, the work should realise;
Proportion show, and use in every part:
Not only strength and beauty to the eyes,
But time-preserving energy and art.

C.

BUILDINGS FOR THE DUBLIN WHISKY DISTILLERY COMPANY.

A NEW distillery has been founded in Dublin by a few gentlemen forming a limited company. The site selected for the building is in the picturesque district of North Richmond, upon the triangular tract of land to the west of Ballybough Bridge, bounded by the river Tolka on the south, and Richmond-road, Fairview, on the north. Here the company have secured several acres, and have besides facilities for acquiring still more, when the increasing demand for their product shall call upon them to extend their works and stores. Possession of the site was only obtained on the 1st of July; the building operations were commenced towards the end of that month; and now the immense edifice, with all its complicated machinery, is almost complete, and the directors confidently expect to commence work early next month. The plans for the building were furnished by Mr. Chas. Geoghegan, architect, under whose direction the works have been carried on by Messrs. T. Wardrop & Son. He has embodied in them every modern improvement, and provided so effectually for every requirement of the manufacture, that the distillery will certainly be unsurpassed, if equalled, by any other in the kingdom. The principal entrance is on Richmond-road, towards which the building presents a continuous frontage of about 370 ft., with a square projecting wing at the extreme west, crowned by a high Mansard roof. A massive gateway admits to the interior under an archway penetrating the main building, and leading to a large courtyard in the rear. To the right of this passage is seen the boiler-house, where three immense boilers are fixed on beds of solid masonry; two of these will be used for the supply of hot water, and the third for the generation of steam. In the centre of the courtyard rises the great smoke-stack which will be a conspicuous feature of the landscape, being visible for many miles. It is 130 ft. high, of octagonal form, about 12 ft. square at the base, and gradually diminishing to the top. In the engine-house, a lofty apartment, measuring 30 ft. by 14 ft., is placed a horizontal steam engine, supplied by Messrs. Coates, of Belfast. It is of 25 nominal horse-power, and possesses a governing apparatus on a new principle of extreme delicacy. Two mash-kieves, of 26 ft. diameter each, will receive the malt for the preparatory process of the distillation. The cooling-house contains eight large coolers capable of containing 1,400 barrels each; and in another department long ranges of immense store-vats supported on iron pillars and framework, stand ready to receive the finished product. At the extreme west end are the malt mills and stores, seven stories high, provided with the newest and most improved apparatus for screening the malt, elevators for raising it to the different floors, and endless screws by which it will be carried to the discharging loft above the mash-kieves. The still-house contains four large copper stills, with all their appurtenances. On the top of the building are two immense tanks, from which water, derived from a well 60 ft. deep, will be supplied to all the departments. The floors all through the edifice are supported by iron girders and pillars.

INIGO JONES'S WATER-GATE.

AT the last meeting of the British Archæological Association, on March 26th, Mr. George R. Wright read a short paper, illustrated by a print after a drawing by Hollar, on the sadly-neglected and ruinous condition of the "York Stairs," once the water-gate of the famous York House, the residence, amongst other illustrious people of Lord Bacon, and afterwards of the two profligate Dukes of Buckingham; the latter of whom, regaining his father's river-side property through marriage with the daughter and heiress of Lord Fairfax, to whom the Parliament had presented it, enlarged and embellished the mansion, under the direction and designs of Inigo Jones, who built the water-gate in question, and which is the only portion of the once princely dwelling now remaining, to mark the site of its former grandeur. The object of the paper was to urge upon the Association the necessity of calling upon the Metropolitan Board of Works to rescue the gate from its present melancholy and forlorn condition, and to utilise it in the place where it now stands, half-buried in the accumulated mud and rubbish of some 200 years by making it a footway entrance to the new gardens of the Embankment, from Buckingham

street, and thus give the public another and most interesting approach to the Embankment itself. A unanimous vote of the meeting indorsed the recommendations of Mr. Wright, and it was agreed to solicit the council at their next sitting to bring the matter at once before the Metropolitan Board of Works, and so endeavour to save another of London's time-honoured memorials from further degradation and decay.

THE COAL QUESTION.

The Coal Committee have been at work. At one of the last sittings of the committee, Mr. Baker, inspector of the Staffordshire and Worcestershire district, gave evidence showing the amount of coal raised in the mines, and stated that the men worked about four days and a half per week. Their wages had been raised 40 per cent., and the price of coal 100 per cent. He did not think that prices were likely to increase, and one reason for this belief was that the great demand would cause coal to be worked in many places which had hitherto been unproductive. Mr. Wardell, inspector of mines for Yorkshire, also gave evidence. The coal-owners met at certain times and fixed prices, but in his opinion the original cause of the high price of coal in his district was the prosperity of the iron trade.

The South Wales Strike.—At last the great strike in South Wales has been definitively closed, the workmen employed by the Rhymney Iron Company having returned to work at the reduced rate. The question whether the proffered terms should be accepted was decided by ballot, and nearly three-fourths of the men voted in the affirmative. All the ironworks of the district are once more getting into full activity.

Where do the Coal-Profits go to?—At a meeting held in Manchester, for the purpose of forming a coal-supply association on the mutual system, Mr. Tattersall, who was the chief speaker, entered into calculations to show that, even at the present high prices of coal, he could buy pits, and after setting aside a liberal allowance for the redemption of the purchase-money for the first two years, at the rate, namely, of 3s. 9d. per ton on the increased output which he expected, paying wages at 3s. 6d. per ton, which was 6d. more than the current rate, 1s. per ton for working materials, 1s. for management, and 3d. for contingencies, he said he believed he could raise coal to the surface for 8s. 6d. per ton. This was said at a meeting of practical miners.

Singular Demand by South Staffordshire Colliers.—At a large mass meeting of the South Staffordshire colliers, held in Dudley, it was unanimously agreed that if the masters would reduce coal 5s. per ton, the men would rest content with the present wages, and return to work. The total number of colliers affected by the movement is about 12,000.

Beating Rothschild hollow.—A correspondent of the *Manchester Examiner* is responsible for the following:—"The Earl of Dudley has forty pits, each yielding 400 tons of coal daily, thus showing a day's output to be 16,000 tons, which, at the lowest price, 8s., shows a daily profit of £6,200*l.*; a week's, 19,200*l.*; or a yearly sum of £991,400*l.* But the pit price for engine coal only has been 20s. per ton, and all is not engine coal, so he shows a grand total profit of 4,992,000*l.* per annum, and a margin left for what is called 'purgey and slack.'"

ACCIDENTS.

Fatal Scaffold Accident in Holloway.—Information has been forwarded to Dr. Lankester of the death of a bricklayer from a fractured thigh. It would appear that the deceased was working on a scaffold near Tufnell Park, when in turning round he slipped and fell off the scaffold, a distance of 14 ft.

Scaffold Accident at Sheffield.—An alarming accident occurred lately at the offices of the Sheffield Gas Company, which are being erected in that town by Messrs. Chambers & Son, of Bishops Monckton. The building on one side has already attained great altitude, and on this part a high scaffold gave way, carrying with it a bricklayer and five labourers to the ground, a distance of 60 ft. below. The bricklayer had a fractured skull, and he and a labourer are now in a dangerous state. The other men were also more or less seriously injured.

Fall of a Store at Greenock.—A three-storied slate store at the cotton-mills in Greenock now being converted into a sugar-refinery, suddenly fell, through the joists of the upper flat and roof giving way. Two labourers who were at work in the store were severely injured by being precipitated from the top floor to the ground. A carter was also severely injured by the falling beams. Three other labourers were injured, though not severely; and the managing partner of the new refinery was cut on the head. The six workmen were, after much difficulty, extricated, and were removed to the infirmary.

"THE DURABILITY OF IRON ROOFS."

Sir,—Mr. Redmond's letter on the above subject, is one that is worthy of most serious attention, not only on account of human life that is endangered, but also on account of railway shareholders' pockets that are made to suffer.

If flakes of iron, the thickness of a florin, fall from any roof, time after time, it is only a matter of calculation how long that roof will stand. The paint that is used is of course intended to preserve the metal from oxidation, and to outward appearance it apparently does so; but what is going on *underneath?* It is well known that the oxides and carbonates of lead, from which most paints are made, act chemically upon iron,—a kind of galvanic action is set up between the two metals and the lead is eating into the very vitals of the iron, on some descriptions but slowly, on others rapidly. What causes this difference, I do no not know. A paint having no chemical action upon metal, should always be used,—one whose base is perfectly innocuous, and the most pure.

J. G. H.

*** It is said that if paint be coated *over rusted* iron, the oxygen of the rust will not rest satisfied with the iron it has already oxidised, but will leave it for the new metal below, so that the iron once rusted and painted will be gradually eaten through or disintegrated by the oxygen of the rust.

SCHOOL BOARDS.

Leicester.—The following is a list of tenders submitted to the Building Committee, for the erection of the new Board Schools, for the site in Slater-street:—Flude, 7,276*l.*; Firn, 6,380*l.*; Barnett, 6,369*l.*; Sharp, 6,345*l.*; Eagle, 6,320*l.*; Hewett & Son, 6,277*l.*; Major, 6,269*l.* 15s.; Ratcliffe, 6,220*l.*; Lewett, 6,130*l.*; Winkles, 6,091*l.*; Sackree, 6,000*l.*; T. Bland, 5,805*l.*; Herbert, 5,749*l.*; Osborne Brothers, 5,640*l.*

Carlisle.—Mr. Birkett, architect, being present, the plans for the new schools again came on for discussion. It was reported at last meeting that the Department had reckoned the plans for two of the schools as calculated to accommodate only 213 each, instead of 250. Mr. Birkett said he thought the Department allowed for class-rooms, and could only account for their reckoning by assuming that they had omitted the extra width of 5 ft. over the ordinary, which the Department might have considered unnecessary. He had, however, altered his views during a visit to Wales, where he had found no schools so large as those without having two class-rooms, called double class-rooms. He had accordingly altered the plans so as to make two double class-rooms to the schools, but the amount of accommodation would remain the same. The class-rooms might be divided either by a partition or by a permanent wall. After a long discussion, the principle of the new arrangement was adopted, but some alterations were made in the details, after which fresh plans were adopted.

Longton.—The tender of Messrs. Inskip, of Longton, for making the requisite alterations in St. John's school for 512*l.* was accepted.

Pembury.—Mr. Robert Wheeler, as architect to the board, prepared and submitted plans for the proposed new schools and school-houses. After being approved by the board, the plan was duly approved by the Educational Department, and tenders for the erection of the buildings were advertised for and obtained. The tender of Mr. Edward Wheatley, of Tunbridge, at 1,591*l.* 13s. 7d. was accepted. A contract and bond having been entered into, the works are now in progress.

Bristol.—The School Designs Committee submitted fifteen tenders for the erection of new schools in Freestone-road, St. Philip's, and they recommended that the tender of Messrs. Bevan, of Bedminster, be accepted, at 3,080*l.*, if the foundations were of Hanham stone; and 3,170*l.* if of brick. This, and other matters tending to reduce the cost somewhat, the committee suggested should be left to the architect, Mr. Coleman. The report was adopted, and also recommendations for asphalting the yard, the obtaining of designs for school fittings, and the borrowing of 4,000*l.* from the Loan Commissioners to cover the cost of the land and the erection of the building.

VETERAN FRIENDS.

Sir,—Mr. Geo. Taylor is not the only veteran attached to the R. I. B. A. who deserves a few kind words. There is one who not only from his age, from his worth, and kindness of heart, from the interest he has ever taken in the Institute, and those around him, from his industry, from his knowledge, from his travels, and from his desire to impart the benefit he has derived in his intercourse with the world, merits many a kind word in his behalf. Of late we have seldom heard his name mentioned at the Institute, but let us hope he will ever receive a kind word from one and all. W.

SOME COMPLAINTS AGAINST CHELSEA.

Sir,—Will you kindly allow me space to relate the following? The Board of Guardians for the parish of St. Luke, Chelsea, gave an invitation by public advertisement in your paper to builders to tender for the erection of relief offices for their parish, reserving to themselves the right to demand sureties from the successful tenderer. The tenders, when opened on the 19th of March, were as follow:—

Howard, Brothers	£3,139	0	0
Reast & Co.	2,892	0	0
Thorne	2,825	0	0
Temple & Foster	2,824	0	0
Rankin	2,700	0	0
Henshaw	2,643	0	0
Lacy	2,805	0	0
Elkington	2,550	0	0
Wagner	2,447	0	0

Mr. Elkington's tender was accepted conditionally that his sureties were correct. On the 21st ult. I received a letter from the clerk to the Board, which I inclose, stating that the contractor who was accepted not being prepared with sureties, would I be willing to abide by my tender and provide sureties? I reply that I am prepared to do both. Without my hearing anything more from them, they at their next meeting, on the 26th ult., hand the *job* over to Mr. Thorne. I may perhaps be allowed to say that I have carried out several contracts exceeding this in amount. My sureties were first-class; and I was not unknown to the Board, having executed a contract for them more than six years ago. Then, why do they give 220*l.* more to Mr. Thorne than to me? Robert Lacy.

Sir,—I am the owner of a house in Edith-grove, and have just received a notice from the vestry calling upon me to pay them a portion of the sum of 858*l.* 18s. 11d., the estimated expense of paving that street. Included in that sum, 18*l.* 5s. are charged for forming and metalling the road. Colonel Gunter and his lessees are the owners of this street.

A friend of mine is the owner of a house in Blantyre-street, and has lately paid a portion of the sum of 24*l.* 18s. 9d., the cost of paving that street. Included in this sum, 3*l.* 12s. were charged for the road. Mr. Cox, a vestryman, and his lessees are the owners of this street.

Now, sir, upon these facts, the obvious inference to be drawn is that the owners of Blantyre-street had done their work so much better than the owners of Edith-grove, that the vestry's surveyor's requirements, before taking to the street, would be met relatively in the two cases by the above disproportionate expenditure.

This inference, however, must be fallacious, because I see by the local papers that the vestry are now called upon to spend 123*l.* 4s. of the ratepayers' money in laying broken granite upon the roadway of Blantyre-street. May I surmise that there are some advantages in being a vestryman that do not meet the public gaze? Inquirer.

Flower-vase and Hyacinth-glass Holders. Mr. C. Bachhoffner, of 41, Hatton-garden, has registered a useful invention of his whereby flower-vases and hyacinth-glasses can be readily held and fixed or unfixed in the ornamentation of windows or other parts of rooms, or in exhibitions, halls, &c., much in the same simple way that we have seen wax candles affixed, with brass fittings, to pianos. They were exhibited at the late Horticultural Show, and excited attention there from the simplicity and convenience of the arrangement for the floral decoration of rooms either in summer or in winter.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE Sixth Annual General Meeting of the friends of this valuable institution was held at the Office, 27, Farringdon-street, on Tuesday, the 25th ult., under the chairmanship of Mr. Thomas Robinson, one of the partners in the well-known firm of Messrs. Cubitt & Co. There was a numerous attendance.

The report stated the Institution to be prospering, and the balance-sheet showed:—Income, 315*l.* 9s.; expenditure, 92*l.* 1s. 6d. Amount paid in pensions, 101*l.* 5s.; amount invested, 1000*l.*; and balance, 190*l.* 6s. 1d. There are eight pensioners, all of them widows, one of them being the recipient of half her husband's pension, without election.

The Chairman, in an appropriate speech, congratulated the friends of the Institution upon its increasing prosperity, and compared its financial position since the first report, year by year; income had been gradually increasing, and expenses of management decreasing. The last year had been the most successful, the income being 41*l.* 13s. 3d. in excess of the previous year, and the expenditure, after transferring the sum of 20*l.* 1s. 3d., which properly belonged to that year, being 9*l.* 16s. 3d. less than the cost of the prior twelve months. Probably the cost of management had reached its minimum; and, whilst giving the committee credit for care and economy, he would observe that, with the same expense, the amount of relief could be greatly increased. He strongly urged upon all present to spread the knowledge of the objects of the Institution amongst those builders' clerks who had not yet given it their support, and referred to the remarks of Mr. Arthur Cates at the last election of pensioners, showing that the successful candidate obtained her pension simply from the fact of her husband having been a strong supporter of the Institution from the beginning. It was a matter of regret that so few were sensible of this advantage, when simple self-respect and self-preservation should induce them to become members of the Institution.

Mr. H. J. Bayes, in proposing that Mr. Robinson be elected president, said he was glad to find from the balance-sheet that the Orphan Fund had reached half the amount of the limit set in Rule 14, section 2. As one of the framers of the rules, he had never considered that the funds were to lie idle until 1,000*l.* had accumulated, but that when that amount was in hand, a meeting should be called to determine in what manner it should be used By purchasing life presentations in some of the existing asylums, and insuring the lives, a child could be kept and educated at an annual cost of about 15*l.*

The meeting, which was a thoroughly successful one, was closed by a cordial vote of thanks to the president and vice-president, both of whom briefly replied, Mr. Stirling stating that he had always been well pleased to give both time and influence to the Institution, and would willingly do so at any time when called upon.

WOODEN HOUSES.

SIR,—I have looked carefully through the *Builder* for several weeks past, but see no advertisements from builders of wooden houses. What I want is to get some idea of the cost of erection of a wooden billiard-room to adjoin the house I live in. I know from travelling in Russia, Sweden, and other countries where wooden buildings are used that they are very warm, and would I am sure be much cheaper than brick or stone in the present high price of building materials.

Would the insertion of a short advertisement in your paper be likely to put me in communication with builders of this description? ARTHUR T. HOLDEN.

*** We know no better mode. Builders of such structures should themselves advertise.

BREACH OF CONTRACT.

IN the case of Porter *v.* Dobson, at the Yorkshire Spring Assizes, defendant did not appear. The plaintiff was Mr. Thomas Porter, publisher, and he sought to recover damages from the defendant, Mr. Dobson, for breach of contract with regard to the letting of a shop in connexion with a house. Mr. Field, in opening the case, said that plaintiff agreed to take the house of the defendant at a rental of 13*l.*, exclusive of the shop attached, and it was agreed that if plaintiff required the shop he was to have it, and the joint rental was to be 31*l.* The agreement was made in May, and subsequently, plaintiff requiring the shop, told defendant so, but he refused to let him have it unless he would pay 40*l.* for the good-will of the same. The plaintiff having been called to prove the agreement, the jury found a verdict for the plaintiff, damages 40*l.*

HYDE PARK CORNER.

SIR,—In reference to your mention of the Earl of Longford's suggestion for further improving the opening up of Hamilton-place by the construction of a short length of road across the corner of the Green Park to Constitution-hill, will you permit me to remind your readers that in your issue of April 6th, 1867, under the head of "Hyde Park Corner as it is and as it should be," you published an illustration of a proposal for effecting the improvement of the southern end of Park-lane by the construction of a road along the edge of Hyde Park, and opening to Piccadilly immediately opposite to Grosvenor-place, and that it was shown that this work could be executed for considerably less than one-tenth of the estimated cost of the Board of Works scheme. In a previous number, March 2nd, of the same year, it was pointed out that the necessity for the improvement was "caused by the erection of the Paddington and Victoria Railway Stations, and the consequent increase of traffic between these two points, and that therefore a plan having for its object the continuation of this enormous stream of traffic in a direct course to its destination was better than one which would make that stream stop short in the middle of its course, turn sharp off at an acute angle, and then, after a passage of 300 yards, make another turn at a still more acute angle before it could again assume the direction in which it was ultimately tending."

Despite your advice, and the strong protest of many of the London vestries against the extravagant scheme of the Board of Works, the suggestion was rejected by that body.

Now, when it is too late, their error is made palpable, and hence the proposal of Earl Longford to remedy the evil at a still further outlay.

As no compensation had to be paid, it is quite clear that the proposal you recommended would have been executed for less than the estimated cost of 11,000*l.* The estimate of the Board of Works for opening up Hamilton-place was 100,000*l.* I have reason to believe that it has cost considerably more than this sum. Would it not be interesting to your readers to know *how* much more?

H. SAXON SNELL.

MR. HENRY LESLIE'S CHOIR.

THE second subscription concert of the season took place at St. James's Hall, on Thursday evening, 27th ult. The programme which consisted entirely of sacred music, included a new motett, "O Deus! Ego amo Te," by Mr. J. G. Callcott, the accompanyist of these concerts; Leslie's part-song, "The Pilgrims"; Palestrina's "Exaltabo Te"; Schubert's 23rd Psalm, for female voices; the ever-popular "Judge me, O God," for an eight-part choir, by Mendelssohn, &c. The execution of the most difficult part-music by this admirable choir is so widely known that it is needless to say more than that its reputation for precision and delicacy was fully maintained in the performance of the above-mentioned pieces. Mr. Callcott's motett, which the composer himself conducted, is a work of considerable merit, and would have had a better chance of being appreciated by the audience had it been given later in the evening. It was evidently sung by the choir *con amore*, but being the first piece in the programme, those who wished to give it the attention it deserved were prevented by late arrivals. The next time it is performed, let us hope it will receive better treatment. Mr. Sims Reeves was announced to sing, but an apology was made for him, and Mr. Henry Guy sang, in his place, "Deeper and deeper still." This gentleman possesses a sweet tenor voice, and sings like a true artist, especially in piano passages, but lacks power for declamatory music. Mr. Valentine Smith, who made his *début*, is a *tenore robusto*, with a full rich voice, but has yet much to learn as a singer. Mr. Santley contributed "Honour and Arms," an offertorium by Neukomm ("Confirma hoc Deus"), and Gounod's "Nazareth," the final chorus being sung by the choir, in unison, with grand effect. As usual, this was unanimously re-demanded. The third concert is fixed for Thursday, 24th inst., when the choir will sing a selection of madrigals, glees, and part songs, and Madame Patey, Mr. Sims Reeves, and Mr. Santley are announced as the soloists.

THE AMALGAMATED SOCIETY OF ENGINEERS.

IN reply to Mr. Headlam, in the Commons, the Attorney-General said he had no materials for forming a correct judgment with respect to the case said to have been decided by the County Court judge at Newcastle, where a working engineer brought an action against the Amalgamated Society of Engineers, alleging that, after subscribing to its funds for twenty-one years, he was denied the privileges of his subscription, and had been non-suited because the society was not registered. Associations like that of the engineers could be registered under three separate Acts; and if they were registered, those who contributed to their funds would have the protection of the statutes. If, however, such societies, to suit their own purposes, chose not to register, and if individuals knowing that chose to join them, they must take the consequence. It was not his intention to propose any alteration in the law of partnership in consequence of this case.

We have since received a circular note from Mr. Allan, the general secretary of the society, stating that the plea of non-registration was put in as against the judge and not as against the plaintiff's claim. This, however, does not at all affect the real matter,—the actual position of the members. If the plea is good in the one case it would be in the other.

Improvements in Lurgan.—Messrs. Harvey & M'Laughlin, of Belfast, have commenced the erection of the new Court-house in William-street. On Monday before last was commenced the new Intermediate and Endowed School.

CHURCH-BUILDING NEWS.

Church Lawford.—A new church has been built upon the site of the old one,—dedicated to St. Peter,—taken down to make way for the present erection. The pulling down of the former dilapidated building commenced in May, 1871. It was then intended to leave the old tower standing; but after the removal of the rest of the church, this was found to be so unsafe that it had to come down as well. The style of the new building, like the old, is Early Decorated, and by the architect's directions, and under the superintendence of the clerk of works, the whole of the available portions of the early church have been preserved and re-inserted in the new building. The nave arcading on the north side is almost all old. So also are the Early lancet windows upon the north side of the chancel. Also the west windows of the north and south aisles, together with some other remains. Under the tower several old remnants of Early English stone coffin-lids, with foliated crosses upon them, belonging to a still earlier church, have been preserved in the walls. For some hundreds of years they have done duty in the last building as jambs of windows, &c., or were entirely built up in the walling. Some corbels have also been preserved in the belfry. The church, on plan, consists of chancel, south chancel aisle, nave, north and south aisles, and tower at west end of nave. The nave is divided from the aisles by an arcading of five bays, and from the chancel by a moulded arch. Above each bay is a clearstory window. The roofs are in a great measure old stuff, much of the oak being in a good state of preservation. There are several old carvings upon these timbers. The glazing throughout the building is of cathedral tinted glass. All the chancel fittings are of oak, the bench-ends being carved. The aisles and chancel are laid with encaustic tiles, those within the sanctuary being glazed. They are from Messrs. Minton, Hollins, & Co.'s manufactory, Stoke-upon-Trent, and have been laid by the tilers of that firm. The seating throughout the church, outside the chancel, is of deal, the ends being moulded. A good quantity of carved stonework is concentrated about the western doorway, inside and out. The architects, Messrs. Slater & Carpenter, of London, have been represented during the whole course of the works by their clerk of works, Mr. W. Thompson. Messrs. Law & Son, of Lutterworth, are the contractors. The carving throughout has been executed by Mr. Harry Hems, of Exeter. Mr. Barlow was the foreman of masons. The total cost of the work will be about 5,000*l.*, of which the Duke of Buccleuch has contributed 2,500*l.*

Gloucester.—An offer has recently been made by the Misses Hedley, sisters of the late Rev. Mr. Hedley, the first incumbent of St. James's, to give 2,500*l.* towards the erection of a new district church for Barton, conditionally that the chancel of the building shall be dedicated to their brother's memory, and that a further sum of 2,500*l.* be raised from other sources. The present incumbent has been working with a committee to carry out this object. The committee have received promises of subscriptions to the amount of 600*l.*, and they anticipate obtaining 800*l.* in grants from different societies. This leaves a deficiency of 1,000*l.*, and they intend to appeal to the public for help, and especially to employers of labour, as the Barton district is inhabited chiefly by the working classes. It is proposed to place the edifice in a part of the district where the want of a convenient place of worship has been most felt. The committee are engaged in considering as to the best of three eligible sites near the top of Victoria-street, in Lower Barton-street.

Derby.—The chancel of St. Werburgh's ancient parish church has for some time been undergoing considerable alterations. Two months ago a new organ was erected in the chancel, by Messrs. J. W. Walker & Son, of London. The tesselated pavement and choir-stalls have been uncovered. The pavement within the rail, the choir-stalls, and the altar-cloth are the gift of Mrs. Heygate. The pavement just alluded to is a design in squares, containing numerous descriptions of marble, surrounded by encaustic tiles. The step round the altar is of black marble, the riser being of a variegated description. The whole of the tilework has been laid by Messrs. Simpson & Son, of London. The choir-stalls are of English oak, by Mr. Chapman of Norwich. They are in four blocks, with passages between each to the vestries. The gas standards are by Mr. T. Crump.

Winchcomb.—The parish church of Winchcomb has been reopened, after having undergone an extensive restoration, for the carrying out of which it has now been closed for some months. Winchcomb was at one time the capital of Mercia, and more than a thousand years ago King Offa commenced the building of the abbey, which his successor, King Kenelph, completed. The abbey has passed away, and the church which succeeded it has also crumbled into dust; but the present church has stood nearly four centuries, and the renovation and restoration it has undergone are calculated materially to extend its history. The church is 158 ft. in length and 68 ft. wide, has a spacious chancel, an ancient screen, oak roof, and chancel fittings, and a massive tower. Its features of interest have been preserved in the restoration. The work done has cost nearly 3,000*l.*, all but a small proportion of which has been raised in the neighbourhood.

Kidderminster: Opening of a Mission Church.—The Rev. H. J. Fortescue, one of the curates of St. Mary's, has provided a mission church in Stourbridge-street, at a cost of about 1,500*l.* It is a brick building, of Gothic style, and has been erected by Mr. R. Thompson, from the designs of Mr. John Davis, of Birmingham, and opened for divine service.

STAINED GLASS.

Sidford Church, Sidbury.—A stained-glass window has been placed in the new church at Sidford, by Mr. and Mrs. Bayley, of Cotford House, in memory of two sons. The glass is from the firm of Messrs. Clayton & Bell. The subject is the Ascension of our Lord.

Thorne Parish Church.—A new stained-glass window has been placed in this church, by the representatives of the late Miss Sales, in memory of a nephew. Mr. O'Connor, of London, was the artist. The window has six compartments, in each of which are represented prominent subjects, taken from the life of our Saviour: including "The Agony," "The Garden," "The Betrayal," "The Scourging," "Crucifixion," "Ascension," and "The Descent of the Holy Ghost."

Wistow Church, Hants.—An east window of stained glass, from Messrs. Clayton & Bell's, has been recently placed in the chancel of this church, as a memorial of the late Professor Pryme and Jane Townley, his wife, by his daughter and grandchildren. The window may be described as of four lights, with tracery of the fifteenth-century type. The whole has been filled with stained glass, treated so as to correspond with the date and character of the stonework. The tracery contains angels, and in the lower lights the subjects introduced are:—"Bearing the Cross," the "Crucifixion," the "Resurrection," and the "Ascension." Those portions of ancient glass which were formerly inserted in the east window—discoloured by time, and without order or arrangement,—have been restored by the same artists, and placed under canopies executed in a manner to accord with the old example, thus forming one complete whole. Two subjects represented in the main lights are the "Annunciation" and the "Resurrection." This small window has been fixed in the south aisle.

Paisley Abbey Church.—An application has been made to the heritors of the Abbey parish of Paisley, in Scotland, on behalf of the Glasgow St. Andrew's Society, for liberty to fill in with stained glass a window in the Abbey Church to the memory of Sir William Wallace, of Elderslie. The subject selected is Samson assailing the enemies of his country single-handed, and the artist is to be Mr. James Ballantyne, of Edinburgh. A committee has been appointed to carry out the object, the subscriptions being limited to a guinea each.

Burgate Church.—The chancel of this church having been partially restored, the family of the late Rev. C. R. Ashfield, who was rector of the parish for thirty-six years, have just put up a stained-glass window to his memory. It is in three compartments, and is treated in accordance with the style of architecture prevalent in the fourteenth century. The subjects, which are placed beneath canopies, illustrate our Lord's three miracles of raising the dead; namely, the raising of Jairus's Daughter, of the Widow of Nain's Son, and of Lazarus. Under each subject appears an angel bearing a scroll, with a text upon it descriptive of the incident. In the tracery, or upper portion of the window, an emblem of the Holy Trinity and the Alpha and Omega are introduced. The design has been executed under the superintendence of Mr. Phipson, the architect, who has been architect to the general restoration of the whole church, by Messrs. Lavers, Barraud, & Westlake, London.

Miscellanea.

The Purchase of Railways by the State. At a recent meeting of the Statistical Society, Dr. Farr, Registrar-General, in the chair, a discussion on Mr. R. B. Martin's paper on this subject was resumed by Captain Tyler, of the Board of Trade, who, having alluded to the importance of the question, said that he was there in a private capacity, and not to advocate purchase of the railways of the State. The question was, what would happen if the State did not purchase the railways? Perhaps, not in a few years, but in a reasonable term, the result would be a railway monopoly. The tendency towards combination was shown by the amalgamation of the London and North-Western Railway and the Lancashire and Yorkshire Railway with the Caledonian system, a combination which represented one-fourth of the railway capital of the United Kingdom. Captain Tyler said there were three points to be considered in regard to the taking over of railways by the State. First, there was the financial consideration. The purchase at first sight seemed a gigantic operation. The nominal value of the railways was 550 millions. In one sense it would be a purchase, but in another it would not. The same individuals would continue to hold the stock, only it would be State instead of railway stock. The second consideration was the difficulty with regard to the administration. The State, in taking the whole railway system under its management, would seem to be undertaking an overwhelming task, but it should be remembered that there were existing Government departments whose responsibilities were even greater, and whose administrations were far more extended than the railway system. The last difficulty, with regard to rates, demands for personal injury, and loss of goods, and the construction of new lines, Captain Tyler disposed of briefly, expressing his conviction that there would be a general reduction of rates and fares all over the country, and the manufacturers of the kingdom would be placed on an equality with those of other countries.

Working Men's Club and Institute Union.—A meeting of this institution has been held at the Cannon-street Hotel, Sir H. Johnstone, M.P. (in the absence of the Lord Mayor) in the chair. There were present:—Lord Lyttelton, Mr. Hughes, M.P., Mr. Hodgson Pratt, &c. The Chairman said that applications were being made every day from various parts of the country for advice, and also for funds,—in some cases merely to start clubs,—and it was precisely to afford such encouragement that the institution had been founded; not in the way of patronage, for they disclaimed in any way patronising, but by way of co-operation. The following resolutions were passed:—That, regarding the present position of the working classes of the country, the formation of Working Men's Clubs is a matter of the gravest importance, alike in relation to their employers, themselves, and the community; that in consequence of the use of public-houses for large numbers of the working classes, a central organisation was imperatively required to afford them requisite stimulus, information, and guidance for the establishment of such institutions; and that this meeting, satisfied that the Working Men's Club and Institute Union supplied the requisite organisation, and had been carrying forward an important work, hereby pledges itself to give it a generous support.

Mr. Smith's Explorations in Assyria.—The *Daily Telegraph* has received a telegram, dated Bagdad, from Mr. George Smith, who is now at Mossoul, prosecuting his search for Assyrian records. The telegram states that the Turkish Government has been good enough to forward telegraphic orders to the Governor-General of Bagdad, directing that he might be permitted to commence operations at once, without waiting for the arrival of the firman, which had at once been granted. Several discoveries have already been made, and some long letters had been despatched by Mr. Smith.

The Drainage of Windsor.—The mayor, the aldermen, and burgesses of the borough of New Windsor, acting as the local sanitary authority, have appeared at a special petty session in the townhall, before the borough magistrates, to answer the summons issued at the instance of the Thames Conservators, charging them with having neglected to comply with the notices served upon them in pursuance of the Thames Conservancy Act, to divert the sewage of the town from the river Thames. After some proceedings in the matter, Mr. Michael, on behalf of the sanitary authority, said they were now engaged in negotiations for the acquisition of land, and it was hoped that the works might be very soon completed. He asked that the case might be adjourned for two months, at the expiration of which time he hoped the Board would have taken such steps as would satisfy the magistrates and the Conservators that the nuisance would be very soon stopped. Mr. English did not object to the adjournment, but hoped some practical steps would be taken. The case was then adjourned until the first Monday in June.

Dwellings for the Working Classes.—A deputation, appointed by the Model Houses Association, have had an interview with the President of the Local Government Board, at Whitehall, to urge upon the Board the necessity of immediate legislative action to enlarge the scope of the Artizans' and Labourers' Dwellings Act, 1868, and to render the work of the same more effectual. The objects of the deputation were also, in addition to requiring an extension of the above-named Act, to obtain powers to borrow money for the adaptation of dwellings, as there existed a great difficulty in procuring sites for building afresh. Mr. Stansfeld, in reply, said he did not think he had ever received a deputation whose statements he had found it so difficult to answer, and for the reason that he entirely sympathised with the objects the deputation had at heart. It was not possible to exaggerate their importance, but he was uncertain what means would suffice to effect a real and efficient cure for the evils complained of. The right hon. gentleman then went through the suggestions of the deputation at some length, and said when the time came, which he did not think was at present, for the amendment of those matters, he should be happy to receive suggestions, and to act upon them.

The Warwick Water-Supply.—A committee of the town council, including the mayor, appointed to consider the question of the water-supply, has reported to the council in favour of a scheme for the appropriation of the Haseley brook, as proposed by Mr. E. Pritchard, C.E., their surveyor, and engineer of the new scheme, whereby a supply of pure water could be got by gravitation to replace the river Avon water, which is becoming more and more unfit for water-supply. Plans and a report by Mr. Pritchard accompanied the committee's report. The engineer's report, and a supplement as to the water supply of various towns, which shows *inter alia* that in many cases storage is said to improve the water, have been printed by Lacy, of Warwick. These proceedings are just in time, for Mr. Simon, of the Local Government Board (medical department) has just written to the Warwick Council, calling their attention to six cases of fever said to have occurred in the Warwick registration district, and requesting information on the subject, and as to what has been done for the sanitary improvement of the borough since 1870, in accordance with recommendations then made by Dr. Buchanan in a report on Warwick.

Building Trade Co-operative Labour Society.—A correspondent states that a number of working men in the south-eastern district, representing the various branches in the building trade, are forming a sort of co-operative society, for the purpose of taking, at a fair price, the labour only of any branch in the trade, from respectable builders. The men are unconnected with any of the trade-unions, and are being organised under a well-known general foreman, who will take the entire charge, and submit prices from the drawings and specifications, if desired, before tenders are sent in.

St. George's Union.—It has been determined to convert the workhouse at Kensington belonging to this Union into an Infirmary, and plans have been prepared for raising the building another story, and adding other additional structures, besides entirely re-modelling the Administrative Offices.

St. Marylebone Workhouse.—The reconstruction of this building, which is in a very dilapidated condition, has been delayed for some time, owing to a difficulty in arranging the conditions of the lease with the ground landlords. Terms having at last been settled, the guardians have requested their architect, Mr. H. Saxon Snell, to prepare plans for laying out the building upon an entirely new plan; but as it would be impossible to erect the whole at once and find accommodation for the inmates elsewhere, it may be some few years before the entire work is completed. Working drawings and estimates are being prepared for the first portion, which will consist of a block of buildings extending the whole length of the Northumberland-street frontage. This building will contain accommodation for 608 chronic and infirm inmates, and probationary wards for twenty paupers, besides a porter's lodge, master's residence, stores, board and committee rooms, clerks' offices, and rooms for the district registrar. The estimated cost is 26,000*l.*

The Proposed Eastern Counties Aquarium, at Yarmouth.—An abridged prospectus of the Eastern Counties Aquarium Company (Limited) has been published. The company has been formed for the purpose of erecting a large fresh and sea water aquarium on the beach at Yarmouth, to be followed by the construction of a great central hall, capable of accommodating 1,500 persons on the occasion of balls, concerts, banquets, and public meetings; and also for the formation of a library and billiard-rooms, croquet lawns, restaurants, &c. The total share capital is 50,000*l.*, in 25,000 shares of 2*l.* each; but the aquarium and its immediate surroundings, which it is intended to get into operation first, will only cost 25,000*l.* The mayor and corporation of Yarmouth have granted for 999 years an eligible site of about seven acres, near the Britannia Pier.

Turner's "Liber Studiorum."—The sale of the first portion of the valuable engravings from the works of J. M. W. Turner, R.A., was concluded recently at the rooms of Messrs. Christie, Manson, & Woods. The following were the more important lots included in the last day's sale:—The whole of the remaining impressions of the "Liber Studiorum," in 68 lots, produced nearly 1,500*l.*; 17 complete sets of the work, impressions on thick paper, each set comprising 71 plates, and a large parcel of loose impressions, 380*l.*; the copper-plates of 12 unpublished numbers of the "Liber Studiorum" fetched 750*l.*; and other plates, including Calais Pier, Fishing-boats preparing for Sea, the English Packet coming in,—engraved in mezzotint from the picture in the National Gallery, by T. O. Lupton,—450 guineas. The whole five days' sale realised upwards of 20,000*l.*

The Lancashire Statue Memorial of the late Earl of Derby.—A meeting has just been held at Preston in connexion with the movement for the erection of a statue memorial of the late Earl of Derby, for the county of Lancaster. The subscriptions were limited to 1*l.* each, and up to the period of his death it was estimated that nearly 100,000 persons had contributed. Shortly after the demise of Lord Derby a meeting of the county gentry was held at Preston, where it was decided to raise funds for erecting a statue to his memory within the old Parliamentary division of North Lancashire. The statue, which is to be erected in Miller Park, Preston, will be formed of Carrara marble, and is estimated to cost about 2,600*l.* It is expected that the ceremony of unveiling will take place in June.

The Public Health Act at Altrincham.—Altrincham was one of the unions in Cheshire which appointed a nuisance inspector, temporarily, to the 25th March, to make a preliminary report on the sanitary state of the district. From that report it would appear that in every township in the union the privy accommodation was defective. The water-supply in most instances was of a questionable character, from proximity of wells and pumps to drains, and throughout the union generally the cottage accommodation was bad. The report altogether contains a formidable list of nuisances to be seen to.

Our own Thunder.—The article headed "Workmen's Tools in the Middle Ages," in a paper called the *Furniture Gazette*, sent to us by an obliging correspondent as "deserving of quotation," is taken, without the slightest acknowledgment, from our own pages.

The Union of Benefices Bill.—Attention ought to be called to the threatened removal of certain City churches, contemplated in the Union Benefices Bill, recently referred to a Committee of the House of Commons. The subject has been considered by the Institute of Architects' Committee for the Conservation of Ancient Monuments, and a memorial has been addressed to the chairman of the Parliamentary Committee, which, it is hoped may help to save some of the more notable of the threatened churches from destruction. Professor Donaldson has given evidence on the subject before the Parliamentary Committee. Mr. Beresford Hope is doing his best.

The Railway Benevolent Institution.—The presence of the Prince of Wales, as president, at the annual dinner of the Railway Benevolent Institution, at Willis's Rooms, attracted a large number of noblemen and gentlemen. There were nearly 400 guests. The Prince pressingly urged the claims of the charity on those present, and himself contributed a second donation of 110*l.* The list of subscriptions amounted to no less than 5,000*l.*, and altogether the banquet was the most successful of all the series, at least since that at which Charles Dickens was the president.

Bedfordshire Archæological Society.—At the monthly meeting, the Rev. H. Wood exhibited Romano-British relics lately discovered in "South Field," in the parish of Biddenham. Among them were three large cinerary urns, of various and elegant forms, and one large *poculum* or cup of brownish yellow earth. Near the urns were found vertebræ and other bones, some human, and also a number of flint flakes and a part of a well-worked arrow-head and two scrapers of flint. Flint flakes have been found at or near the same spot on a previous occasion.

Enamelling Paint.—An article with this name, is being sold by Mr. T. Griffiths, of Liverpool. It is provided of a light stone colour and a chocolate, and is said to be good against damp in walls, and rendering buildings of brick, stone, concrete, or wood water-proof; and to prevent corrosion of metals, and form a hard enamelled surface. It appears to be composed of some substance like asphalte or bitumen, in spirit solution, and is extremely light in weight, although a single coating is said to equal in body that of any ordinary paint.

Escape of Gas: a Family Suffocated.—At Dundee, a foundry labourer, his wife, son, and daughter, were lately found lying dead in bed in their house, in Lowndes-alley. Gas had once been in the house, but the supply had been cut off for some time, and it is supposed that gas had escaped from a pipe in the house, and suffocated the inmates. There was a strong smell of gas, and no appearance of foul play. Provisions and money were found in the house, and they are said to have been respectable people.

Iron Chapel burnt at Knowle.—Last Wednesday the Congregational Iron Chapel was destroyed by fire. The flames having got a thorough hold of the flooring, soon communicated with the roof, which in a short time fell in with a heavy crash. The side "walls" soon afterwards fell in, leaving nothing upright but the entrance-porch, which had already been half destroyed. The great majority of iron churches are the merest shams in the world, and ought to be called wooden churches.

Testimonial to Mr. George Smith, of Coalville.—On Saturday, a number of gentlemen and ladies, with Lord Shaftesbury in the chair, met in the Social Association's Rooms, Adam-street, Adelphi, for the purpose of presenting a testimonial to Mr. George Smith, of Coalville, Leicestershire, for the exertions which he made on behalf of the brickfield children of England. The testimonial consisted of a Bible, a purse containing 100 guineas, an illuminated address, and a silver teapot to Mrs. Smith.

Corn Exchange for Dunmow.—It has been resolved to form a limited liability company, to be called the Dunmow Corn Exchange Company, to provide a building for a corn exchange and other purposes. Negotiations are on foot for a site in the High-street, and a committee has been appointed to form the company, treat for purchase of site, obtain plans, solicit the public to take shares, &c.

Royal Society.—The Royal Society *conversazione* will be held at Burlington House on Saturday, April 26th.

"Wiring the Work."—We have received a long letter from Mr. Tall, in reply to Mr. Brannon's note in our issue of the 22nd ult., denying the validity of that gentleman's patent; we cannot, however, open our pages to the discussion.

French Publications.—The *Encyclopédie d'Architecture*, for March (Paris, Morel & Co.), contains engraved illustrations of the Swansea School, erected from the designs of Mr. B. Bucknall.

TENDERS

For villa residence at Dulwich, for Mr. E. Downs. Mr. R. Peters, architect. Quantities by Mr. A. J. Gate:—

Blott	£2,175 0 0
Merritt & Ashby	2,066 0 0
Browne & Robinson	2,029 0 0
Henshaw & Co.	1,990 0 0
Downs & Co.	1,945 0 0
Watson, Brothers	1,863 0 0

For terrace walls, &c., at Sundridge Park, near Chislehurst, for Mr. Scott. Mr. W. H. Fletcher, architect. Quantities by Mr. Ladds:—

Anscombe	£2,835 0 0
Stimpson & Co.	2,695 0 0
Willicome	2,565 16 8
Punnett	2,230 7 6
Bowley	2,198 0 0
Staines & Son	2,186 0 0
Matthews	1,908 16 0

For house in Tufnell Park, for Mr. Purvis. Mr. George Trueftt, architect:—

Bywaters (accepted)	£1,450 0 0

For completion of Nos. 52 and 53, Gayton-road, Hampstead. Mr. Frederick Sparrow, architect. Quantities not supplied:—

Child	£365 0 0 !
Hislop & Pollard (too late)	400 0 0
Bridgman, Nuthall, & West	389 0 0
Temple & Foster	385 0 0
Brown (too late)	377 0 0
Stephens	369 0 0
Edgar	337 0 0
Till	273 10 0

For new infant school and residence at Walmer. Mr. Wm. Scorer, architect:—

Woodcock	£610 0 0
Chamberlain	609 0 0
Trollope	605 0 0
Cotterd	540 0 0
Gibbons	541 0 0
W. & G. Denne (accepted)	540 0 0

For cleaning and decoration to Talmer-square Congregational Church. Messrs. Tarring & Son, architects:—

Keyes & Head	£330 0 0
Richards	326 0 0
Shurmur	308 0 0
Brindle & Co. (accepted)	294 15 0

For the erection of the New Catholic Church of Our Lady, Help of Christians, at Wednesbury, Staffordshire. Mr. Gilbert R. Blount, architect. Quantities by Mr. J. Carew:—

Trow & Sons	£5,250 0 0
Parnell & Son	5,025 0 0
Barnsley & Sons	4,988 10 0

For the erection of new schools and master's residence at Eckington, Derbyshire, for the Local School Board. Messrs. Stevenson & Robson, architects. Quantities by Mr. G. D. Eadie:—

Marriott	£15,177 0 0
Beresford	12,930 0 0
Chambers	12,445 0 0
Chapman	11,747 0 0
Ridal	11,294 0 0

For additional work at 52, Buckingham Palace-road. Mr. Shes, architect:—

Wagner	£216 0 0

For the masonry required in laying out some ornamental grounds at Bath-road, Ventnor, for the Ventnor Local Board, according to the design of Mr. John C. Livesay, town surveyor:—

Lale	£350 0 0
Beavis	252 0 0
Jackman	238 10 0
Bull (accepted)	229 0 0

For repairs and decorations to the Admiral Keppel, Fulham-road, for Messrs. Watney & Co. Mr. H. Newton, architect:—

Elliott	£337 0 0
Taylor	323 0 0
Shurmur	251 0 0
Brindle & Co.	244 10 0

For alterations and new buildings at the Sessions House, Newington. Mr. C. H. Howell, architect. Quantities by Mr. Roberts and Messrs. Widnall & Trollope:—

Browne & Robinson	£18,835 0 0
Holland & Hannen	18,662 0 0
Macey	18,562 0 0
Brass	18,350 0 0
Trollope	18,175 0 0
Lucas	18,140 0 0
Higgs	17,864 0 0
Rider	17,459 0 0
Perry	17,340 0 0

For principal's residence, Southlands, Battersea, for the Wesleyan Education Committee. Mr. W. W. Pocock, architect:—

Nutt & Co. (accepted)	£1,500 0 0

The Builder.

VOL. XXXI.—No. 1575.

*Works in Iron.**

R. MATHESON, a member of the firm of Andrew Handyside & Co., of Derby, says in the book he has published, with the above title, dated January, 1873, that it is almost certain that there will be a reaction downwards from the high prices of iron which have ruled through the year 1872, but that it is hardly probable that the low prices of 1869, even if reached at all, will ever long prevail. The constantly diminishing purchasing value of gold is apparent in the iron trade, as elsewhere; and as not only the price of fuel and the rate of wages have risen, but the hours of labour have been reduced, there are many elements at work to keep up prices; although against these there must be placed the economies that may be obtained by improvements in machinery, new methods of working, the competition of an increased number of ironworks, and by fluctuations in the home and foreign demand.

When the hot-blast was introduced in Scotland, forty years ago, the quality of the iron made by that method was greatly reduced; so much so, that it has since been customary to require iron to be made by the cold blast wherever a good quality of iron has been required; but now the iron-makers claim to have so improved the system of working and applying the hot blast, that the difference in quality between iron so made and cold-blast iron is, they say, greatly lessened, and is practically of no effect for most purposes. Several qualities of iron may be produced by either system from the same smelting-furnace, and with the same materials, according to the proportion of fuel used in the operation of smelting; thus, when the fuel used is in large proportion to the burthen, soft, tough, grey iron is produced; but when the quantity of fuel is diminished to its lowest point, hard, brittle, white iron is the result.

To judge of the quality of cast-iron from an inspection of a fracture requires considerable experience and skill, and can hardly be taught except by experience. The following description of the various kinds of cast-iron may, however, form a useful guide. No. 1 is the production of the furnace when charged with a large quantity of fuel in proportion to the quantity of ironstone. This iron is the most slowly made of all the descriptions of pig-iron, and contains a larger proportion of carbon in chemical combination or mechanical mixture than any other quality. It is the most fusible pig-iron, and most fluid when melted, and is used for small and delicate castings. The fracture of this quality of pig shows a dark grey colour, with a high metallic lustre; the crystals are large, many of them shining like freshly-cut lead. However thin this metal may be cast, it retains its dark grey colour, if of good quality. No. 2 is intermediate in quality and appearance between No. 1 and No. 3. No. 3 contains much less carbon than No. 1. The crystals shown in a fracture of this iron are smaller and closer than in No. 1, but are larger and brighter in the centre than near the edges of the fracture. This iron is capable of being made sufficiently fluid for large castings. A mixture of a proportion of No. 2 with this improves it. The colour is a lighter grey than No. 1, with less lustre. No. 4, or bright iron, has a light grey fracture, and but little lustre, with very minute crystals of even size over the whole fracture. It is the "leanest," or contains less carbon, of any of the grey irons. It is not fusible enough for foundry purposes, but is used in the manufacture of wrought-iron. It is the cheapest of the grey irons. When inferior in quality there is usually a thin coat or "list" of white iron round the edges of the fracture.

Mottled iron is intermediate between No. 4 and White, the fracture being dull dirty-white, with pale greyish specks, and with a white list at the edges. White iron is the worst and most crude, being hard and brittle; the fracture is metallic white, with but little lustre, and not granulated, but having a radiating crystalline appearance. This iron, says the author, is largely used in the manufacture of inferior bar iron.

Where specially severe service is required of cast-iron, special tests are required, as in the case of railway chairs, where the test of a weight falling on the casting resembles in some measure the heavy and sudden shocks of passing trains; but for ordinary purposes the test is the transverse strength and elasticity of a beam. A convenient size for the bar to be tested is 3½ ft. long, 2 in. deep, and 1 in. broad, placed on bearings 3 ft. apart, and loaded on the middle until broken; but as considerable power of cohesion may be attained in alliance with extreme hardness and brittleness, it is necessary also to measure the deflection which occurs, and thus to ascertain the elasticity and ductility of the iron. If a bar made of twice-melted iron—*i.e.*, iron first made into pigs from the ore, and then remelted—be subjected to this test, it will be found that the weights necessary to break bars of this size made from the same kind or No. of iron will vary from 2,300 lb. to 3,500 lb., according to the locality from which the ore is obtained; and if made from mixed irons, from 2,700 lb. to 4,300 lb.; and that the ultimate deflections before fracture will vary from two-tenths to five-tenths of an inch. These wide differences in the quality of the same kind of iron from different localities cause corresponding differences in prices. Some of the Derbyshire and Yorkshire irons are generally sold at higher rates than the average, while some of the Middlesbrough iron is of a very inferior kind, although by judicious mixture of the local ore with other and better sorts a good standard may be reached.

The hematite iron found in different parts of Cumberland and Lancashire, and elsewhere, is of a peculiarly tough nature, which renders it very valuable for mixing with other kinds. Almost all kinds of pig iron are improved in quality by mixing with other sorts, but in those cases where the cost per ton is the only consideration the lowest price for castings will of necessity be obtained from those founders who use the cheapest iron, and who do not incur the expense of buying and carrying to their premises more expensive kinds for mixing with it. The cheapest castings are, in some cases, not made from pig iron at all, but directly from the ore-smelting furnaces. A large proportion of the iron castings supplied for building purposes in this country are made without any reference whatever to the quality of the iron. It is often the case that an increase in the dimensions is supposed to compensate for inferiority of quality, but beyond a moderate thickness cast iron becomes spongy or open. A hollow column, 1 in. thick, for instance, will not be doubled in strength if made 2 in. thick.

The price of different sorts of iron varies considerably, but the cost of labour and of transport are the same for all, and pig iron of a lesser cost and proportionately lower price will, when made into a casting, show an inferiority more than proportionate to its low price; thus a saving of 25 per cent. in the cost of the raw material will be reduced to 10 per cent., or even less, in the finished casting, which still preserves its inferiority in quality of 25 per cent. It would be an advantage, therefore, if specifications of ironwork were given with greater distinctness and more often enforced. A strength capable of enduring 25 cwt. on the test-bar without fracture should be the minimum quality allowed, even for short and heavy columns; but for other purposes, a load of from 28 cwt. to 30 cwt., and a deflection of five-sixteenths of an inch, should be demanded. The deflection will vary from three-tenths to five-tenths of an inch. There is no difficulty, says the author, in getting such iron, and higher qualities can be given if necessary, breaking strains of 30 cwt. to 35 cwt., being obtainable with judicious mixtures of the best kinds of iron; and in testing such iron it will generally be found that some of the bars will endure as much as 38 cwt. In the minds of those who are not aware of the great differences of quality that have been referred to, the numerous accidents and risks that often attend the use of cheap metal, have created a prejudice against the use of cast-iron altogether; and many people, considering it to be without elasticity, avoid it wherever wrought-iron can by any means be used instead. This is the more to be regretted because cast-iron allows infinite variety of shapes, more nearly approaching the exact forms and sizes required by design or strength than is possible with wrought-iron; and for many situations cast-iron is even stronger and more enduring.

Wrought-iron, like cast-iron, when put into large dimensions, is not so strong per square inch as smaller sections, when well made, because of the greater amount of working the smaller sizes undergo, but sometimes the method of rolling iron into peculiar sections causes lamination on some of the parts, which renders the iron not everywhere equally strong or elastic. From this it arises that from certain sections, where the iron is afterwards heated in the fire or worked on the anvil, it is difficult to produce the shapes that may be required without burning or cracking the iron.

Great uncertainty in the quality of iron has usually been caused by the manner in which the specifications have been given, as "Best," "Best Best," "Best Staffordshire," and so far as these words distinctly implied a certain quality they were sufficient; but as the B. of one district was equal, perhaps, to the B. B. of another, and the terms thus conveyed a conventional and rather uncertain meaning, at last it became necessary to indicate the really best quality as "Best Best Best." It is now thought expedient to avoid such phrases, and to state distinctly the strains and tests to which the iron shall be equal.

If notoriously cheap and inferior sorts be omitted, wrought iron may be obtained in the open market to sustain the following strains, and respectable manufacturers of bridges, roofs, and other iron structures may be expected to use such iron without express stipulation. Square, round, flat, and L bars will endure a tensile strain of from 20 to 24 tons per square inch before breaking, and 20 tons should be considered the minimum. T bars have about the same strength, but, owing to the manner in which they are rolled, it is in some other respects inferior to L and simple bars.

* "Works in Iron." By Ewing Matheson. E. & F. N. Spon, 1873.

Plates, as a rule, are not capable of sustaining such a high degree of tension as bars made from the same quality of pig-iron; and from 18 to 20 tons may be taken as their breaking-strain. As the breaking-strain of a number of bars purchased together will vary, a specified minimum breaking-strain implies an *average* strength of a higher figure, and, for iron of fair quality, this average may be taken as about 22 tons for bars and 20 tons for plates.

The limit of elasticity, rather than the ultimate or breaking strength possessed by a piece of iron, determines its value for structural purposes. With a strain of 10 or 11 tons per square inch of section an elongation of a hundredth part of its length takes place, and the quality of the iron should be such that when this force is withdrawn the bar will return to its original length. If the iron is stretched beyond this point, the rate of elongation increases, and a permanent set takes place,—*i.e.*, the bar will not entirely recover itself after the strain has been withdrawn. For determining the quality of wrought iron, apart from its mere breaking-strength, the fact that it can be bent cold to a certain angle without damage will show its toughness. A plate ½ in. thick, bent to an angle of 35° without damage will, if it possesses sufficient breaking-strength, afford, for ordinary purposes, a satisfactory proof of its elasticity. Some kinds of wrought iron will bend to a much greater angle than 35°. Lowmoor iron will bend nearly double without breaking. The iron from which rivets are made should be of a better quality than ordinary bars, and its ductility should be such that it will bend double when cold without cracking.

Although the price of iron fluctuates, the relative prices of the different shapes at any one time are about the same. Assuming that the price for plates is 12*l.* per ton, ordinary flat and round bars may be purchased at 10*l.* to 10*l.* 10*s.*; L irons at 10*l.* 10*s.* to 11*l.*; and T irons at 11*l.* to 12*l.* per ton. But for L and T irons of a section whose total dimensions exceed 8 in. (that is, exceeding 4 in. by 4 in., or 5 in. by 3 in.), and for bars over 6 in. wide, extra prices are charged.

Joist iron I, and channel iron ⊔, of small sections, up to about 7 in. in depth, may be obtained at about the same price as T iron, but with larger and wider sections the price rapidly advances, so that with a depth of 12 in. or 14 in. a price of 15*l.* is reached.

Bars of all kinds may be obtained in lengths of 20 ft., 30 ft., and even 40 ft., according to their section; but when a weight of 4 cwt. is exceeded, extra prices are charged. Plates can be obtained of any size up to 24 square feet area, if not exceeding 4 cwt., without extra price, but the increase in price is not very great up to 8 cwt. Thin plates of large area cannot be rolled.

As cast-iron resists a compressive strain with six times the force with which it is capable of resisting a tensile strain, it has been usual to follow Hodgkinson's rule of making the sectional arc of the bottom flange of a girder six times as much as that of the top flange, but it may be considered that the strength of a beam ought not to be determined by its resistance to fracture, but rather by its resistance before the limit of elasticity is reached, and the proportionate resistance of cast-iron to compression and tension in this case is only three to one. Assuming three to one as the proportion to be adopted, the section of the girder should be so arranged that its centre of gravity is at a point three-fourths of its depth from the top; that is to say, if the total depth of the girder be divided into four parts, the quantity of metal in the lower fourth part should be equal to that of the upper three parts.

Irregularity of thickness of metal in castings tends much to reduce their strength, for the thick part takes longer to cool, and draws towards it the thinner part which has already cooled, and which cannot yield without being strained; and if such castings are afterwards subjected to percussion, they may break. The shrinkage in dimensions from the molten to the cold state is about an eighth of an inch per foot.

For wrought-iron girders, the plate-girder is the most simple, and, up to a certain size, the most economical. It is rigid and durable, and is the most appropriate for small spans. Where great rigidity and strength are needed, two web plates are sometimes employed, thus enclosing a space, and making what is called a box, or tubular girder. This enables wider flanges to be used, and makes a much stronger beam. It is, however, necessary that the inside of the girder shall be spacious enough to give access to the painter's brush, as it is liable to rust, and consequent deterioration, if unpainted. When the exigencies of a design render small box-girders necessary, special precautions should be adopted to prevent deterioration by rust. The iron should be allowed to rust, and should then be well scraped and coated with bituminous paint. Rolled beams are sometimes used with advantage instead of plate-girders of small depth. They are especially suitable as joists for fireproof floors, as rafters in iron roofs, &c. They are made from 4 in. to 14 in. in depth for general use, but for special occasions they have been made as much as 3 ft. in depth; nevertheless, it may be said that, for a greater depth than 10 in. or 12 in., a plate-girder is preferable to a rolled beam.

Deterioration of iron-work is rapid when the proper painting is neglected; the flakes or scales of rust which fall from wrought iron of course weaken its structure in proportion to the entire thickness of the iron, and this proportion is considerable in the case of plates ¼ in. to 1 in. thick. With wrought iron girders and joists sustaining, as they often do in warehouses, immense loads, the risk of ultimate disaster through this cause is considerable.

When iron-work is completely imbedded it is preserved from rust, and it is said that in cathedrals and other ancient buildings, iron-work has been found which has kept in good condition for 600 years. This, however, and the effect upon it of lime or cement, requires further investigation.

In the process of casting iron, the molten metal fuses the sand upon the surface of the mould, and produces on the casting a skin which has the appearance of a silicate, and which is much harder than the purer iron within. This skin is of value in giving a hard, smooth continuity of surface to the iron; and as it would, if allowed to rust, soon be destroyed, it is desirable to protect it by paint. A casting, therefore, should have a coat of oil or paint as soon as possible after it leaves the foundry, and before any oxidation has commenced. A second coat of paint should soon afterwards be added, and then the original surface of the iron may be permanently preserved by occasionally painting, from time to time, as required. Whether one year or five years elapse before fresh paint is wanted depends upon the weather and climate, and the kind and quality of the paint. If rust does appear on a casting, it should be carefully scraped off before the paint is applied. Upon the surface of wrought iron a skin is formed during the passage of the heated bars or plates through the rolling-mill. This skin, unlike that upon cast iron, is not inseparable from the solid metal, but forms a scale which can be detached. It is a chemical combination of iron with oxygen, the proportion of the latter increasing as the iron is exposed to the air, until it produces peroxide, or rust. But the elements of rust are on the iron from the commencement. The scales must fall off sooner or later, and in a manner entirely unlike the granular rust of cast iron. The thin skin or scale which forms on new wrought iron is of no value, and it must fall off or be removed before the real iron is reached. When the iron is galvanised, it is necessary to remove the scale before the zinc will adhere to the iron, and this is effected by a process of "pickling," the iron being first dipped in dilute acid to remove the scale, and then washed in pure water.

This is occasionally exacted in very strict specifications of wrought-iron work intended to be painted, but somewhat the same results may be obtained by allowing the iron to rust, and then scraping off the scale preparatory to painting. If some rust remains on the iron the paint should not be applied lightly, but by means of a hard brush should be mixed with the rust. When iron structures are sold for delivery only, one coat of paint is included in the price, and if the iron-work has to be erected also, a second coat after it is fixed is also included. When more than this is required it should be stipulated in the contract. For bridges, roofs, and similar structures, three or four coats should be given in all. As a general and approximate rule, 2d. to 4d. per square yard, or 3s. to 5s. per ton on the weight of ironwork, may be taken as the expense of each coat of paint after the first.

Numerous examples of executed bridges and roofs are given in Mr. Mathoson's "Works in Iron," and the means and cost of erection, besides the fundamental principles of construction to which we have referred, and altogether the book will be very useful to architects and engineers; and the vocabulary of French and German equivalents of English technical terms which is appended will render the book particularly valuable to those going abroad.

FLOOD, FEVER, AND LOCAL GOVERNMENT.

THE British rainfall of the winter of 1872-73, which has exceeded by one-half the average depth, has read a lesson to some parts of the country which they will be slow to forget. It is one of the most odious characteristics of humanity to rejoice in the occurrence of evil because its prediction has been verified. We trust that we need not disclaim such a disposition. It is not for our own gratification, but for the public service, that we take the occasion of the long-continued floods in Somersetshire to insist anew on the importance of a central and scientifically directed investigation of the great national question of water-shed, water-supply, and water-conservation.

In December and January last (and the subsequent rainfall has been such that we may almost now use the present tense), 150 square miles of the low-lying lands in Somersetshire were permanently inundated. Some accounts give a much larger area to the mischief. In Langport, the cellars, streets, and living-rooms were flooded, and many villages were permanently isolated. Mr. Neville Grenville, acting on behalf of the Sedgemoor Commissioners of Sewers, brought these facts before Mr. Secretary Bruce, and used the expression, "the present plague of waters cannot be exaggerated."

The question of neglected hydraulic engineering has in this instance assumed an economic importance to which possibly some small degree of attention may be afforded by the Government. Indeed, we are told that the Government promised to send to the spot, *at the expense of the inhabitants, under a personal guarantee*, a gentleman who was one of Mr. Brunel's resident engineers on the Cheltenham and Great Western Railway. As to the sanitary part of the matter, the truncated legislation of last year has produced its natural result; that is to say, *nil*. "Ague is prevalent," writes an inhabitant of Sedgemoor. "My daughter and niece are suffering from it now; when the waters subside, fever will doubtless follow. It is idle to appoint medical inspectors, if such a vast fever bed as Sedgemoor is to remain untouched."

It is discovered that the Land Drainage Act of 1861 does not give power to any one to do anything efficient in this case. Sedgemoor, however, is but one instance out of many. The valleys of the Parret, the Brue, the Ile, the Yeo, the Tone, and the Axe, are all in a state of confluent flood. There are large inundations in other places where Commissioners of Sewers have jurisdiction; but everywhere they are nearly powerless to initiate any necessary works, even in cases of extreme urgency.

It is proposed to hold a public meeting at Bridgwater, so soon as Mr. Grantham has completed his report. A remarkable feature of the case is, that no attempt seems to be made by any of the sufferers to derive any advantage from the sanitary measures of 1872. The formation of sanitary districts was the one expedient which survived out of the original Bill. And yet we find the old Sewage Commissioners appealed to, the inefficiency of old legislation deplored, and the sufferers applying,—not to the Local Government Board, but to the Home Office! A more cruel satire on the administration of the sanitary measures cannot be imagined. Here are thousands of people flooded out, hundreds of square miles under water,—and no one seems to have any idea that it is in the charge of any Minister but the Home Secretary, who offers the luxury of a report—at their own expense!

There can be no doubt that a great national question is here paltered with in an inexcusable manner. It is not creditable that our Government shows such supineness where both the health and the wealth of great districts of the country are involved. There is not even the paltry excuse of economy. The equation showing how many human lives ought to be sacrificed, in order to effect a saving of 100*l.* in the Budget of the year, is one that we have not yet seen fairly worked out. Probably the Chancellor of the Exchequer and the head of the Local Government have elaborated the *formula*. We shall be

glad if one of our friends will put the question in Parliament. We hesitate to venture any guess as to the unit of value that may be adopted. How many lives go to a pound? In some districts, perhaps, a negative value is attached to the former quantity. In that case it will be a grand stroke of political economy at once to diminish the population, and to reduce the nominal expenditure of the nation. If that rule be established, we do not see where its application will meet a limit. It will be of use all round. The policy of "do nothing" will receive its most complete support and appropriate development. First there will be the usual result of saving trouble and Parliamentary responsibility to the Minister. Parliamentary responsibility,—for what has public life to do with such figments as conscience? It is not a question whether a few hundred people shall or shall not be carried off by fever. "Thou canst not say I did it." Our legal institutions are not such as to admit of any trouble being given to any one on such a mere theoretic question as that. But the actual, odious responsibility is this. The honourable member for Screwemtight will give notice that on such a day he shall put a question to her Majesty's Government, regarding the waste of public money lately involved in making an altogether uncalled for inquiry into the health of a certain district. Such a matter, the mover would prove, had none but a sentimental interest. It was entirely confined to a few hundred inhabitants of the district in question. The great law of supply and demand has, on the present occasion, supplied the deficient quantity of water for which there was such a vociferous demand a summer or two ago. If such a supply was attended by ague and fever, these were mere natural phenomena, with which enlightened legislation had nothing to do. The inhabitants were perfectly free, as far as legislation is concerned, to leave the district if they disliked such phenomena. If they did *not* leave, it proved that they preferred remaining. No one had a right to interfere with their choice. They were in all probabily, many of them, members of the "surplus population." If otherwise, and if fever carried off so many as to raise the price of labour in the district (the only practical evil), surplus labour would soon flow in from other districts, and restore the natural level. In fact, fever and ague are among the beneficial agencies of nature, as reducing surplus population.

Against arguments such as these we know that it is of but little avail to raise our voice. We do, indeed, venture to think that of all the produce of Great Britain that which is at the same time the most costly to rear, and the most valuable when reared, is human life. We are prepared to support that view by facts and figures, though we shall only be sneered at by certain persons.

But apart from that,—apart from the "sentimental" view, that the effect of a single outburst of fever, thoroughly preventible and totally unprevented, may have a terrible effect on human life; apart from that great responsibility as to which,—being only moral, and not Parliamentary,—the Minister is content to shut his eyes; we have a word to say which should, even now, claim attention. We speak in an authoritative tone. We will use the magic phrase before which, in the country of Cervantes, all doors fly open,—"*de la part du Roi*,"—we invoke the name of King L. S. D. What a terrible waste of something so much more valuable in some estimates than mere human health and life is involved by giving up these fertile valleys to the occasional ravages of floods, and to the permanent invasion too often of reeds and rushes and bog-growing vegetation!

The great check to the fertility of this country is to be found in the uncertainty of the seasons. Or, we may say with greater precision, in the unqualifiable neglect of our agriculturists to take such measures as are demanded to make the best of that uncertainty. No attempt has been made, on anything like a systematic plan, to average our ample and abundant rainfall. We do not store the heaven-sent treasure, as people in more thirsty lands have long been taught to do. We not only give no heed to facilitate the discharge of the waters when they reach the lower levels of the natural drainage districts, but we throw obstacles of all kinds in the way of the outlet which the physical character of the country has afforded from Saxon times. Mills, weirs, water-rights of all kinds are allowed to exert a prescriptive energy in drowning our most fertile river valleys.

The question of irrigating the high-lying and waterless districts is one involving cost, time, and much intelligent investigation. But the question of freeing the natural outlets from artificial obstructions, is far more simple; and, to return to our present argument, it is self-supporting. Five tons of rich meadow hay per acre may be obtained from well-watered, but unflooded, land in any part of England. We are not putting this as a theoretical possibility, but as an outcome of actual experience; and, in the cases cited, it is not said how much area of land is actually wasted by the barbarous system of water-carriers generally adopted. In those water meadows which raise heavy crops in a season elsewhere grassless, how general is the presence of flags and rushes, the evidence of wasted area and diminished swathe.

We might go further if we point to the industry of Lincolnshire, of Norfolk, and of Holland; and to the laughing crops raised below the level of high water. But we are confining our attention at present to that simple amount of security which is to be attained by the simplest procedures of the engineer, and which will immediately recoup the outlay. And we throw in the health and vigour of the inhabitants of the districts that cry out for this attention gratis, because we are as yet waiting, as before intimated, for the solution of the equation; 1*l.* = *x* human lives, to find the value of *x*.

Confining our attention for the moment to England and Wales alone, we have to point out that this area constitutes some eight or ten grand natural watershed districts. Physically, or according to the character of the rivers, they may best be divided into eight; but the size of two of the areas thus marked is so great as to render more feasible a division into ten. Each of these districts is enough to occupy the full attention of a civil engineer of the first eminence in his profession. The general course of the waterflow in the district, from the high lands where the rainfall is parted, to the ultimate escape into the sea, should be carefully studied, attention being paid at the same time to the physical and to the geological structure of the country. No large amount either of cost or of time would be required, in order to enable these engineers to arrive at such a perfect knowledge of the details of their respective districts as to be able at once to give good and sound advice as to the leading conditions of any public work or private work of magnitude projected within the area in question, in so far as it affected or was affected by the course of rainfall and of drainage.

The amount of public time that would be saved, and of public convenience that would be attained by a systematic division of the country into engineer districts such as we suggest, with a resident engineer appointed to each, would be incredible. As it is, when any great work is proposed, not only must a special study be made by, or on behalf of, the proposer, but an independent study has to be made by every opponent, or by every one whose interest is, or may be, affected by the proposed operations. Not only so, but legislative sanction has to be obtained. If this is made a mere party question; if the sanction or the rejection of a Bill is to be a mere matter of personal influence, irrespective of the merits of the case, we have nothing to add. But if ever we should arrive at the time when it was thought right that the action either of the Legislature or of the administration of the country should be directed by intelligence; if we can conceive it possible that the real value of any engineering proposal had to be weighed by a committee which inquired into the real merits of the case,—then the function of the district engineer would become one of evident importance. A few hours given to the exposition, by such an officer, not of his own opinion of a measure, but of the actual facts of his district, and of the mode in which the proposed measure was accommodated to those physical facts, would save weeks and weeks of dreary battling in committee; where the acumen of the examining counsel, or the adroit cleverness of a witness, is the element that determines the verdict,—at least, when that is not mere matter of foregone conclusion and counting noses.

It is tolerably evident that the time has not yet arrived in which sanitary and economical reformers can cast the burden of their cares upon a sympathising and intelligent Government. But we are sure that the lasting gratitude of the people of England will follow the name of that Minister,—whatever be his political hue,—who shall first deal with the great sanitary and economical question of the water circulation o the country on none other than sanitary and economical principles. A good occasion has been lost, but it is seldom too late to mend.

ON THE LAYING OUT OF CITIES.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

When we turn our thoughts to the antique past, stimulated by the fact that, from the earliest ages, various large cities have existed, we must expect to be disappointed in obtaining any complete idea of their formation and arrangement, because their remains are so small, and contemporary notices of them so vague; indeed, it is almost a waste of time to seek satisfactory information concerning them. That they were enclosed by walls, and possessed fine public buildings ranged principally around a large open space, a campus, agora, or forum, is about all that we can with certainty assert. Pompeii, which bore somewhat the same relation to Rome and Naples that Brighton does to London at present, remains in a partly perfect state, and affords us some idea of what a populous and fashionable seaside town was under the earlier Roman emperors, and in the most civilised country of Europe, and certainly the impression is not a very favourable one. It is a very suggestive fact, and one that we should bear well in mind, that not a single city remains at the present day to give us the model of what a city was some two thousand years ago. Will the same remark hold good some two thousand years hence? We have every reason to think so; and the cities of the future will be as different to the cities of the present as the cities of the present day are to those of the past. Is that difference great? We can answer at once and with certainty, it is enormous, it is almost incredible! One great cause of that difference is, that there was in ancient times no middle class, only masters and slaves. Amongst the ancient Romans, even the liberal professions were held fit only to be practised by slaves. There was a grand priestly and aristocratic luxury,—a mean, squalid, general poverty. With the advance of the later Roman empire came also an advance in the conveniences of life; but art itself declined, and with the fall of the empire, the art of building cities fell also; then the dark ages settled over Europe. Throughout this period, or from about the fifth to the eleventh century, many new cities and towns arose throughout Europe, of which the royal residence, the church, or the castle formed the nucleus, surrounded by walls, within which all was narrowness and filth: nor is this to be wondered at, when we remember that the greatest people of Europe during this period used their fingers to eat with, and thought it no mean accomplishment to be able to write their own names. Luxury, sanitary provisions, and even comfort were unknown, except amongst the great nobles and the higher clergy. But why did the dark age people build such close, pent-up towns? Land was not dear, as it is now; and they might have had spacious streets, tree-planted areas, parks, and so on. The reply is, that they had no idea that system and art ought to enter into the arrangement of a town. They probably did not think about it at all; they did what their fathers had done before them; they followed precedent, and the principal precedents of the West were derived from the East. The Mahomedans of the eighth and succeeding centuries were to the world what the Christians became at a later period, the first in arts and arms. Europe was their pupil, and followed closely their example. Life with Orientals was then an incessant warfare against two enemies, the sun and their fellow-creatures; so that when men congregated together, they sought to keep out both in the best way they could, raising strong walls against the one, and forming narrow streets against the other: thus they enjoyed the comfort of coolness, or at least of shade, and the comfort of a sense of security; beyond that they appear to have had no particular ideas. The plan of many such towns is preserved even to our own day, of which Albenga, on the Riviera, is an interesting example; a sort of large prison, intersected by narrow and tortuous passages, tending to keep out sunshine and fresh air. Life must have been very dreary within so dark and confined a space. So things went on

* From a paper by Mr. J. B. Waring, Fellow, read at the ordiuary general meeting, held on Monday, the 31st of March.

in the same fashion, over and over again, into the semi-opaque or Middle Ages; and Mr. Hudson Turner, in his most valuable work on the "Domestic Architecture of England," speaking of London in the thirteenth century, when its population was under 20,000, remarks that "as to the appearance of the City, we shall not perhaps be far wrong in assuming that it presented the aspect of a mass of low whitewashed tenements; the plasterers' brush appears to have been unsparingly employed, to give a cleanly exterior to the dwellings of the Londoners"; but if the outsides were clean to the eye, the interiors of the cities must have been often filthy. "In the principal thoroughfares," says Mr. Turner, "it is evident there was some kind of foot pavement, though the roadway appears to have been frequently left to its chance; and the streets leading down to the river, which offered the means of a natural drainage from the upper and more level parts of the city, had usually open drains flowing through them, the effect of which was to maintain them in a continual state of mud." Even in the great hall itself at Westminster, the refuse and dirty water flowed in an open kennel through it, until the foul odours arising therefrom led Henry II. ordered the construction of a "subterranean conduit" to convey the "offensive matters into the Thames"; and this, Mr. Turner thinks, is perhaps the earliest instance of underground drainage in this country. But to return to the more immediate subject in hand, we come at last to a glimpse of a better state of things in the reign of Edward I., who, from one cause or another, founded completely new towns, which were often called in France *villeneuves* (new towns) or *villefranches* (free towns). Mr. Turner informs us that "the inhabitants were all made free men, exempt from the power and jurisdiction of the neighbouring barons or bishops; their tenure was direct from the Crown, and they were granted the important privilege of free trade." Here, for the first time, so far as we know, in the history of cities,* we come to a clear and definite system of arrangement; and it appears probable that this system is due to Englishmen, since Mr. Turner gives an extract from an original document in French, wherein Edward I., anno 1298, wrote from Bordeaux (then the capital of the English provinces in France) to London, "desiring the authorities there to send him out four persons competent to lay out the plans of towns, who best know how to divide, order, and arrange a new town, in the manner that will be most beneficial to us and for the merchants." Alfonso, of Poitiers, coming to the Duchy of Guienne, about the same period, finding the nobles and higher clergy quite independent of him, also founded free towns, such as Rovergue and Agen, the last of which is still in a pretty perfect state. Edward founded Sauveterre, Monsegur, La Linde, Saint Foix, Libourne, and Montpazier, in France; and Kingston-on-Hull and Winchelsea in England, all formed on a general plan, of which Montpazier will serve as a good example, and fully described by Mr. Turner, from which we give the following extracts:—"These towns are more regular and symmetrical than most modern towns, and are built on an excellent and scientific plan. . . . . There are always two parallel streets at a short distance from each other, and connected by short streets at frequent intervals; between these principal streets, and in parallel lines, are narrow streets or lanes, corresponding to the modern mews, and employed for the same purpose. By this means each plot of ground for building on is of a uniform size and shape, a parallelogram, with one end facing a principal street, and another a lane. . . . . The principal streets were 24 ft. wide, the lanes 16 ft., and the passages only 6 ft. . . . . Near the centre of the town was a large market-place, at one corner of which was usually the church; and it should be observed that the principal streets do not cross each other in the centre of the market-place, but run in a line with its four sides . . . . so that the traffic did not interfere with the central space." Our own opinion is, that this plan of rectangular divisions, which is also that adopted in the United States of America, is *not* a good one, for reasons which we shall presently state; nevertheless, it is a great improvement on old customs, and has no doubt some special advantages.

* This remark applies to Mediæval cities in Europe. Marco Polo, writing in the thirteenth century, describes Pekin as formed in a regular plan of squares, like a chessboard, a plan of ancient adoption in China.

The foundation of new towns seems to have ceased shortly after the thirteenth century, and the principal cities of Europe appear to have been built up from time to time in a haphazard manner, whilst their internal condition was of the worst description, of which an idea may be formed by reading the article "Paving of Streets," in Beckman's "History of Inventions," volume 1. In the seventeenth century, however, the Great Fire of London (1666) produced two plans for the systematic arrangement of new streets, &c., which present some new and noticeable features. They were designed by Sir C. Wren and John Evelyn, and both are engraved in Strype.

The fire destroyed buildings estimated at about 13,200 houses, covering an area of 436 acres, and, both in form and extent very closely corresponded with the great fire of Chicago, in 1871; besides dwelling-houses, St. Paul's Cathedral, eighty-seven parish churches, the Exchange, and other public buildings were burnt, and an opportunity was afforded of designing, as it were a new city. Sir C. Wren's is shown on the wall. Leaving out details, he proposed to form three kinds of streets, 90 ft., 60 ft., and 30 ft. wide respectively; to form a canal of Fleet Ditch, to be 120 ft. wide; a quay along the river-side 40 ft. wide; the principal public buildings to be massed together round the Royal Exchange, on a large area of octagonal form, from which radiated the main streets, and in which, at stated intervals, were to be placed the various churches, whilst all churchyards and "unnecessary vacuities, and all trades that use great fires or yield noisome smells" were to be outside the town. This plan of Wren's is a great advance on the old system, or rather no-system, and, indeed, in some respects, could scarcely be improved upon. We need hardly say, however, that neither his nor Evelyn's plan was adopted, much to our loss at this day.

When the great fire took place at Chicago, it occurred to me that an opportunity presented itself of laying out the new city on an entirely new plan. I had not at that time seen Wren's plan for rebuilding London; but it required only some consideration to be convinced that the rectangular plan common in the States was open to many objections, and that an entirely different principle should be adopted. That principle I found in the spider's web, especially in the web of the "geometrical spider," in which the quickest way of reaching the centre from any given point is clearly obtained; and time is, we know, money, which all men now seek after so earnestly. My further ideas on the subject will perhaps be best understood by the papers I sent to the Mayor and municipality of Chicago on the subject, and from which I give the following extracts:—

The main plan is to be on concentric circles, or rather semi-circles, divided into sections by radiating streets, and sub-divided into wards, to be provided with means against fire, and sanitary arrangements complete in each section respectively, corresponding to our old system of wards or guards. In re-building the city, advantage might be taken of a combination of squares, crescents, terraces, boulevards, and streets, so as to produce the greatest pictorial effect. The houses might have colonnades on the lower story, as at Bologna, forming comfortable walks in summer or winter, whilst arcades, like those of Milan and Paris, should connect the principal points of interest. All buildings should be constructed as nearly fireproof as possible, and permanent sites for fire escapes be established at stated distances throughout the city. To avoid the monotony which characterises the new portions of Paris, Lyons, and other French cities, in which large blocks of new buildings have been lately erected, and one street so closely resembles another that sometimes you can hardly say in what street you are, I propose that various styles should be assigned to various blocks of buildings, so that all styles of architecture may be represented—Greek, Italian, Gothic, Lombard, &c.—as may be found consistent with good taste. Moreover, we should thus avoid the unsightliness commonly seen in England, of buildings widely different in style, out of all harmony, and sometimes painfully incongruous, placed in juxtaposition and mutually destructive of each other's effect. I would suggest that all buildings wherein large masses of persons congregate, such as theatres, churches, assembly-halls, &c., should be provided with numerous ways of speedy egress, not only for safety's sake in case of sudden panic, but for the ordinary convenience of the crowd; whilst the ways of ingress may still be few in number. Public baths and laundries, and public kitchens and bakeries for the poor, should be established in the poorer quarters of the town, as well as a regular system of public drinking-fountains for men and cattle. There should be a large public park, gymnasium and baths, and a public garden with terraces and fountains, laid out on the model of the old Italian gardens, such as, for instance, that of the Pitti Palace at Florence; these should be connected with the boulevards, which might consist of a central paved promenade lined with trees, having a road and tramway on each side, furnished with a handsome paved way next to the houses for foot passengers. An example of this kind, which produced an excellent effect, I have seen at Toulon, and would carry out on a larger scale.

A few good canals, crossed by ornamental swing bridges, as in Holland, might serve to connect the traffic of Lake Michigan with the principal railway stations and the Illinois canal. Spacious markets should be erected in central positions; those for fish being furnished with troughs to each stall, filled with water, in which fish can be kept alive, as in the "Halles" at Paris. Abbatoirs, cattle markets, and all offensive or dangerous manufactures, should be kept outside the city precincts, and finally, not only should a system of sewerage be carefully prepared, for the purification of the city, but the sewage matter should be utilised as manure, which might prove of incalculable service on the cleared prairie land of the State; and in all cases, it should be borne in mind, that as Chicago has grown so rapidly in the past, there is every reason to believe that it will increase still further in the future; therefore, whatever is done, an eye should be kept to the requirements of an increased population.

It may appear fanciful, and yet in many respects a large city appears to me to resemble a human being. It has arteries and veins, or large and small thoroughfares, through which the blood corpuscules, in the shape of men and women, continually circulate. It has a heart; its centre, where all meet, and where the great business of life is mainly carried on. Lungs, or parks, and open spaces in which the air is purified; it requires water reservoirs and apparatuses for receiving and discharging solid and liquid secretions, by means of drainage and sewage, outside the body corporate; moreover, to complete the resmblance, the surface of the city, its skin, so to speak, requires constant cleansing by water and friction, to insure that cleanliness which is essential to health; whilst the municipality may be regarded as the brain, which brings experience and science to bear on the regulation of the entire body, having an equal regard to the convenience, health, and external appearance of the whole city.

As regards the figures adaptable for the block plan of a city, with its thoroughfares, it will be seen that the choice lies almost entirely between a square, a parallelogram, or a circle; and our own opinion is all in favour of the last named, both for beauty and convenience.

Space, air, and trees should enter into all plans for new towns or new quarters, and I would propose that instead of the old system of gardens at the back of two houses, the garden should be in front of the house, then the pavement and road for ordinary traffic, with a double tramway in the centre for the carriage of trains and cattle, not by steam but by horse-power; for there seems to me no valid reason why railway trains should not be carried right through a city without changing. This of course would necessitate a much wider roadway than is common at present. All streets, terraces, &c., should be provided with back roadways for house service, coals, dust, and the carting away of refuse or sewage matter; and in a well-arranged city a back road to each street will be as necessary as a back staircase in a well-arranged house.

Society of British Artists.—The fiftieth exhibition made by this Society, and now open in the Suffolk-street Galleries, consists of 924 paintings and drawings, and four small pieces of sculpture. The president of the Academy sends a portrait, and Mr. Leighton, R.A., some small contributions. The collection cannot be said to be strong in figure-pieces, but has some good and many pleasing landscapes. We will take an opportunity to speak of it more at length.

SCHOOL BOARDS.

London.—The Works Committee recommended the acceptance of the lowest tender, that of Messrs. Perry & Co., of Tredegar Works, Bow, amounting to 7,176*l.*, for the erection of schools designed by Mr. E. R. Robinson, to provide for 1,100 children, on the site in Globe-terrace, Hackney, purchased for the Board for 3,000*l.* 19*s.* 6*d.* The list of these tenders has already appeared in our columns.

Northampton.—The following letter was read by the clerk with respect to the sites selected by the architect chosen by the Board:—

"I have the honour to acknowledge the receipt of your two letters of the 28th ult. The official architect reports as follows upon the plans for the Spring-lane site:—'These plans are satisfactorily arranged. There is accommodation for 673, viz., 198 boys, 198 girls, and 277 infants.' His report on the plan for the school to be built on the site near Vernon-terrace was as follows:—'The arrangement for the boys' and girls' schoolroom should be revised in accordance with rule 4. The present arrangement causes considerable loss of desk and bench space. If properly arranged there would be accommodation for 540, viz., 180 boys, 160 girls, and 220 infants. My Lords acquiesce in the Board's proposal to purchase the small additional piece of ground adjoining the Vernon-terrace site.'—I am, &c., P. Cumin."

Bristol.—The School Design Committee brought forward fifteen tenders for the erection of new schools in Freestone-road, St. Philip's. They recommended that the tender of Messrs. Bevan of Bedminster, be accepted at 3,080*l.*, if the foundations were of Hanham stone, and 3,170*l.* if of brick. This and matters tending to reduce the cost somewhat, the committee suggested, should be left to the architect, Mr. Coleman. The report was agreed to, and also recommendations for asphalting the yard, and obtaining designs for school fittings, and borrowing 4,000*l.* from the Public Loan Commissioners to cover the cost of the land and erection of the building.

Halifax.—The Sites and Building Committee reported that the Education Department had finally approved of the plans for the Queen's-road Schools, and would recommend the Public Works Loan Commissioners to grant a loan of 10,220*l.* 17*s.* 6*d.* on their account. The committee suggested that the plans and specifications of Booth Town School be sent to the Education Department, and that on their approval tenders should be invited for the works. The report was adopted.

STONE FLOORS.

Sir,—I have a floor of very soft stone. The goods are spoiled by the fine dust from the said floor. I should be glad to know of any material to put upon the surface, say ½ in. or ¼ in., from which there would be no dust. Anything like the foreign asphaltes would do, but for the cost. Perhaps ordinary asphalte would do, if it could be made very good. The method of combining tar and Portland cement, and the purposes for which it is wanted, would also oblige A Contractor.

ON MODERN ART-ARCHITECTURAL CRITICISM.*

It is not our intention to attempt an elaborate essay on the subject of criticism generally, or to venture even to glance at the large area of its subdivisions lying open for dissertation; nor does it immediately concern us at the present moment to inquire whether to Aristotle we owe the art or science of criticism, or whether in their day, Aristarchus, Varro, and Longinus were distinguished "practitioners," or Hesychius, Dionysius Alexandrinus, Eusebius, St. Jerome, &c., "masters," of the art.

With the limited space at our disposal it must suffice us to know that from the eleventh to the eighteenth centuries this art, or science, has possibly, somewhat interruptedly, been made a "study," and in the sixteenth, seventeenth, and eighteenth centuries raised to a "polite art" by all nations of the globe who boasted of any amount of cultivation or refinement.

Up to this latest date even was criticism invested with good sense, logic, and an inflexible rule of fair dealing, placing the critical works and essays of the time amongst the best of our standards now, it was left to our more enlightened (or more degenerate, as our readers may prefer) days to totally ignore the "*kritikos*" or power of *judging* in such matters, to forget that "criticism" involves seeing beauties as well as faults, to be oblivious of the fact of its requiring discrimination, exactitude, and the impartial hand which should hold the scales whilst the trembling balance wavers betwixt praise and blame.

We have changed all this; for the better? No. With a practice apparently far more consonant to modern times and taste, we, as a rule, indulge in undiscriminating and uncompromising condemnation until, almost in despair, we find ourselves in this nineteenth century asking, "What *is* criticism? In what does it consist,—in analysis, or in mere expletive verbiage?"

To a greater extent, possibly, than ever previously occurred, the press is now mainly the reflection of public opinion and feeling on most matters of social importance; and yet, judging from the contributions of some, at least, of our contemporaries, and the editorials of a portion of the press, there is no such thing as criticism apart from a moral vivisection, not of the *matter* but of the *man*, and that true criticism should consist, not in the scientific use of the dissecting-knife, but in a perpetual wielding of the tomahawk and scalping-knife; in constant endeavours to maim and mutilate the entire structure, good and evil, rather than to delicately probe and scientifically diagnosticate, with a view of preserving the sound and severing the obnoxious portions.

Undoubtedly the philosophical, political, and, in spite of a prejudice to the contrary, even the theological, fields of literature are well supplied with eager, accomplished, and generous workers, who, more frequently than not, seem imbued with a true spirit of criticism,—"judging," or at least to the best of their ability attempting to judge, in the best sense of the word, the various doctrines, hypotheses, and party views which come to their notice.

It is only when we reach the confines of art,—or most certainly of art-architectural criticism,—that we observe at once the traces of an internecine strife rather than the symbols of dignity appertaining to a judgment-seat.

Whether it is that from the very refinement of art its devotees become abnormally sensitive and irritable, we are unable to say, but it is undoubtedly a fact that as a body we seem singularly deficient both in justice of discernment and fortitude of endurance when jousting in the arena of criticism.

Nor even in this arena is it by any means a struggle of honest, above-board, hard blows, and harder returns. Our anonymous attacks partake more of guerilla warfare than of the lance and the quarter-staff, and in the few contests that do openly occur the aim appears to be as to who can throw most mud, in the praiseworthy hope of some sticking, rather than an endeavour to discuss the merits of the subject more immediately under review.

Surely when we become art-workers we need not cease to be generous! Or is it that we are under a delusion that manliness consists in much abuse, and that it would be a deplorable weakness to indulge in gentle and generous recognition of merit in any work of a "brother-in-art"? If it be true that "out of the abundance of the heart the mouth speaketh," it is to be hoped, in the name of all that is human, that there is a vital distinction between that of an ordinary social being and the same individual when transmogrified into an art-architectural critic.

Moreover, is not the course we pursue,—to take a more practical, if somewhat lower, view,—commercially an error?

Is not the mind of the public already sufficiently callous to the merits of our art (prone to look upon us, even at the best, as evils necessary, but a nuisance) as scarcely to need the constant iteration of intestinal squabbling to confirm it as to our weakness and our folly?

If, therefore, this unfortunate fluency and frequency of critical commonplace, seasoned with a strong spice of what may be termed "literary acrobatism," is known to repel not only the mere surface-skimmer, but the earnest thinker and well-wisher, to make architecture as an art less entrancing and its practisers less influential, shall we of ourselves both propagate the offence and weep over the result?

Not only in this general tendency to a cynical appreciation of others, in this disruption in our very midst, is danger to our reputation for strength of mind and common sense to be observed and feared, but even in the very advocacy of those earnest and pure-minded devotees of distinct schools whose enthusiasm is apt to deteriorate unconsciously into partisanship.

Not that we are by any means preaching a crusade for, or advocating, "'art for art's sake,' and no criticism," too conscious that in these days *that* must be a myth, a text, a peg on which to hang much fine writing, not a tangible fact on which to practise; but rather are we condemning "criticism for criticism's sake," seeking to eradicate that *odium architecturum* which, to our shame be it said, has long since in its virulence thrown far into the shade that proverb of bitterness the *odium theologicum*.

Let us consider for one moment, and take at random, in our own mind, any recent review or reviews on subjects architectural: what do we find?

A practitioner is inexcusably successful over his compeers! Immediate suggestions are covertly made as to local or other interests, or sinister imputations of some marvellous forecast on his part, delicately veiled under the description of his being "wise in his generation." He may have committed the indiscretion, at some early period in his career, of writing a book, and may have since become, as well as a literary man, an accomplished architect: nevertheless, without the least examination of the architectural work supposed to be under review, he is immediately twitted with his former literary efforts, and assured that in those alone is he "at home"! He may have become famous in church architecture, and a secular work falls into his hands: never mind that he is an able, conscientious man, and his work a success, you will hear on all sides that "it savours of ecclesiasticism, it is 'monastic'"; "very suitable for the Dark Ages, no doubt, but utterly unfitted for modern requirements"; that he had much better "keep to the path in which he had distinguished himself"; and so on: but not a word of real criticism of the work, though much on the man, not a word of argument or proof to support the mere assertions of the critic. Should he have given his attention early to, and have gained a reputation in, the more decidedly decorative portions of the profession, we hear glibly repeated that he is not a "practical man," or that he can "decorate a house, but cannot build one," regardless of the actual fact that the criticised has probably built more than all his critics together! And so on through all phases and all branches of professional practice it seems the constant endeavour of the critic to import into his criticism as much of the man as possible, and to carefully avoid any impartial consideration of his work.

Failing these more personal notices, we obtain either a vague, dreamy, nerveless, "damning with faint praise," or an impatient despotism of opinion, an unscrupulous wielding of intellectual force, goading the victim to an ingenious weaving of literary pitfalls, into which possibly he falls, to the intense delight of the anonymous fowler.

Surely this is scarcely fitting work for literary athletes; worse than useless in either forming or guiding public opinion; a safe and sure means of promoting jealousies and mutual mistrust amongst those who frequently have no possibility of professional intercourse with, or knowledge of, one another except through press notices of their respective works; of no more value in raising the standard of professional tone than attempting to steer a vessel by ignoring the compass and abandoning the helm; as short-sighted in policy as refusing a crop of sterling grain and revelling in the winnowed chaff!

And yet such appear to be modern notions of architectural criticism! Such the empty crumbs so greedily accepted and devoured as art-manna by a public eager for flitting pleasures, and anxious for seasoned dishes, even though they be made of devilled reputations!

Nor do we hear from our professional ranks one word of remonstrance; on the contrary, of all critics thus sinning we out of our own midst are undoubtedly the greatest sinners. Not from outsiders, but out of the mouths of "colleagues," of "brothers in art," or, as some will have it, of fellow "trade-unionists," have from time to time proceeded critical witticisms on contemporary works, which, however amusing at the time, are, we fear, not calculated to raise either the status of the critics or that of the profession they represent.

Quite recently we had the edifying spectacle of a member of the profession, writing of another still more distinguished member's crowning work, that "it would have been a lesser evil to have had a war or a pestilence than that such a building should be erected."

Is it necessary to quote further examples, which must occur to all who interest themselves in current professional topics, to account for the easy descent from such premises to the would-be scathing of a contemporary reviewer? Can we be surprised that the public fights shy

* By Alfred Jowers. Prize Essay, Royal Institute of British Architects.

of birds who so wilfully foul their own nest? Or that, on many occasions, public especially, we, as a profession, get unmercifully snubbed and morally kicked?

To what a painfully low ebb all sense of professional cohesion (other than that induced by a mutual "per cent." interest) has receded, may be judged of by the sole public reply vouchsafed but very recently to the proposal of a most worthy and respected member of our profession, who, in his earnestness, suggested the fencing round of our body by a code of honour, as a means of ensuring some measure of *esprit de corps* and uniformity in practice. And the reply? Not an eager acceptance of, but a duly printed and published protest against, the proposal as an act of "trade-unionism." Trade-unionism, forsooth! as though codes of honour and *esprit de corps* were terms synonymous for 10 per cent. and six hours' labour, or other of the constitutional symbols of trade-unions!

PART II.

Hence the unsatisfactory position of the profession, and the low estimation in which it is held by the public. For unsatisfactory the position is, however much we may attempt to ignore the fact, or to bolster up our own egotistic self-sufficiency.

Of course, it is equally true that the profession boasts a few *duces*, who, by reason of sheer force of character, intellectual attributes of an exceptionally high order, powerful friends, or even by luck of that "opportunity" which is said to occur to every man once in a lifetime, have won for themselves a position in which they are to a great extent paramount to the public; no less certain, however, is it that by that same public is the great majority of the profession held in supreme contempt, or looked upon at least with indifference.

In no other profession or calling under the sun are there so many wiseacres, so many amateur busybodies, capable in their own estimation of teaching us the thing which is or should be.

Every man or woman upon whom chance has conferred the somewhat doubtful benefit of the grand tour, or whose ancestors, with a hankering for a reputation as *literati* or *dilettanti*, had garnered certain art-books, thinks himself or herself fully as qualified to be as unsparing both of advice and criticism, as though by the purchase of curios they became at once distinguished in art, or by their formation of a marquetrie panel became masters of constructive science.

In what estimation would be held the amateur legal luminary? What is the term applied to the non-qualified medical practitioner? Are there no such beings as architectural quacks? No; at least not recognised as such; and why? Because, from the utter want of "bond" amongst the individual members of the profession we fail to stand out as a type or body definitely distinguished from the flood of irregular practitioners or amateur aspirants; and such is our liberal-mindedness, that even the suggestion of the slightest fence of a common understanding amongst us as men of honour is scouted as trade-unionism!

Nor is it possible to acquit the press of much blame in this matter. It is (or at least a portion of it) much too prone to admit the small backbitings of disappointed vanity or injured self-consciousness; too forgetful of how much good it might do to the future of its correspondents, and of the profession, did it sometimes put down its heel firmly on the snarling tendency of the unsuccessful.

Possibly a few "sensation" readers might be lost, but at most the weeding would be of those unhappy individuals who, in mere wantonness, delight in heedlessly impressing the mailed dents of their crotchets or their grievances upon the architectural toes of their "brothers-in-art." Anyway, the gain in tone would far counterbalance the loss in talent.

Of course, there is no denying the pleasure, the sense of power (akin to that of the priest in the pulpit) in anonymously wielding our literary weapons. Possibly there is scarcely one of us who has not at some time or other indulged in the luxury.

But there must be a limit to all things even to the keenness of a critic's scimitar, or the thickness of epidermis of the criticised.

Life, mental or physical, cannot be carried on in ecstasy, or prolonged on a diet of spiritual stimulants.

We cannot be always ignoring the fact of many colours combining to make the purest white, or ever be trying to thrust aside matter that does not meet our individual views as something repulsively evil, instead of endeavouring to evoke order out of chaos, and wisely building in afresh those elements which promise some virtue out of much that is vicious.

Probably we all occasionally read professional papers other than those more immediately relating to our own special calling.

Do we, in those devoted to Church matters, find reverend gentlemen indulging in scathing reviews and bitter criticisms of their colleagues' sermons?

Do we, in medical journals, see surgeons rushing into print, and recklessly imputing to brother professionals clumsiness and want of knowledge in operations, or hysterically repining that they were debarred from participating?

Do we, in the legal journals, find counsel, as an afterthought, reviling the speech of their advocate - antagonist? Or, to come still nearer home, do you read of members of the sister profession (engineering) hovering ever aloft, like birds of prey or harpies of old, hungering to mutilate or defile the latest creation of a colleague's brain?

No! So much the contrary, that on a recent occurrence of a symptom of failure (or what was at the time thought to be a failure) in a public work, it was engineers, to their honour, who calmly and judicially examined and reported, alike uninfluenced by public panic or professional jealousy.

Would any of the professional journals representing Church, law, medicine, or engineering, admit the petty jealousies with which our journalistic representatives occasionally disfigure their pages? Is it too late to hope that, however self-ennobling it may seem to a writer, rich in the sense of having nothing to lose, to hound down and try to "run to earth," as it were, a professional man whom skill or chance has raised to a more or less temporary pinnacle of fame, he may at least pause, and try the luxury of self-restraint, the novel charm of contemplating that what he may have missed in brilliancy of display, he has gained in his contribution to a general fund,—still sadly deficient,—of generous fellow-feeling.

Surely Malice was keen-witted, and Generosity dull and blind when many of these bitter-shafted criticisms were launched at the toil-worn and weary art-worker!

Keenly sensitive imagination, snubbed by the rude precocity of "common sense" or the "practical," and frozen by the prudery of rigid "precedent"!

Surely it is more to the glory, and tends more to the advancement of our art, that we should have a constant crop of ideas, a harvest of wrought-out thoughts, even though intermingled and partly choked with a rank growth of riotous seedlings tropical in their licence, rather than that the few choice blooms of elegant conception should lie broken and withered under an undiscerning egotism, crushed and mutilated under a wild avalanche of inconsiderate condemnation miscalled "criticism."

PART III.

Hitherto we have dwelt chiefly on those phases of adverse criticism which have had their origin more or less in professional or allied sources. It may be well, perhaps, that we should now turn to views expressed by those whom we may define more correctly as outsiders, and whose judgment might therefore be regarded as more impartial, or at least more unbiassed, than that of those actively engaged in the struggle of professional practice.

We may, moreover, state that neither in the observations we have already made, nor in the farther remarks we may offer, have we the least intention of suggesting a "masterly inaction" or "rest-and-be-thankful policy." On the contrary, we are desirous of moving with the times, not deprecating but anxious for criticism, and simply stipulating that it *should* be criticism, and not simply condemnation.

It would entail by far too long an essay to attempt an "ab initio" defence and reply to the many indictments against us as a body, or even to "hark back" to the early days of Government competitions, or even to the somewhat later "architects and market-gardeners" period of our exaltation! Moreover, there is now and then an attack which, favoured with the advantages of a strong position and forcible type, may be looked upon as proceeding rather from a "semi-professional" masked battery than from open foedom of an irritated or indignant public. And to what, when it is analysed, does this mitrailleuse discharge of random literary blows amount?

To a great many hard words, disagreeable suggestions, and impossible assertions, with a cheap and temporary notoriety for the author.

Nor is this by any means a difficult rôle to play; and this desire for notoriety is the only possible interpretation of the singular dogmas to which, under the influence of criticism, intellectual writers capable of brilliant composition can give birth.

Is it for a moment possible to conceive that any one man, wrapped as he might be in egotism, soured as he may have been by a dire train of untoward circumstances, could sit down and honestly think himself capable, in the course of some forty pages of letterpress, of attempting to detract from the reputations of some dozen men whose professional ability and social probity have, after years of earnest toil, met with acknowledgment from their brethren and approval and reward from the public? Could any sane person solemnly propose that, in these days of fierce competition and hand-to-mouth struggle for life, we should, crab-like, proceed backwards to those halcyon days which, Minerva-like, we fear, have but sprung ready-armed from the too fertile brain of the writer, but in which we are gravely assured that the architect, builder, clerk of works, and artizan were all comprised in one marvellous individual, the *bête-noir* of modern times, the irrepressible "working man"! Yet such is the advice, combined with the flattering unction, "that nothing would be more gratifying to our social progress than such an elevation of the men whose works continually affect our daily life. There will then be no need of the 'profession,' and architects will subside into their proper place as bookmakers, artists, business men, students of symbolism and archæology, and, in fact, pupils and illustrators of those very workmen whom they now profess to direct and to control."*

As to the works of these gentlemen, in the face of universal strikes "continually affecting our daily lives," we think there can be but one affirmative opinion; but as to the "social progress" which would result from any sudden upheaving, or, we should more correctly say, any *further* upheaving of the social fabric, we must confess to a scepticism as extreme as that which forbids us for one moment to entertain an idea so preposterous as that the picturesque charms of Canterbury, the grandeur of Durham, or the chaste completeness of Salisbury were ever in either or all instances the sole conception and *execution* of one inspired head and hand; on the contrary, we are firmly convinced, and assert emphatically that, whether with or without drawings, there always did exist, and ever will exist, the same marked divergence of mental and physical labour, the same sub-divisions of master and subordinates, the artizan and labourer, as we now find. Undoubtedly, in the absence of mischievous agitation, there was one great difference; authority was kindly exerted, labour willingly conceded, and possibly from this alone arises the oneness, the immeasurable beauty and completeness of Mediæval works.

But, in fact, neither from these pseudo-professionals nor from the genuine and unmitigated "one of the public," is it possible to gather a tangible basis on which the ill-defined undercurrent of half-contemptuous, slighting, half-unsufferance endurance of our profession at present rests. In many instances might we most appropriately borrow a simile of one of our would-be bitterest critics, and say that these aimless attacks are "*à propos* of nothing save of desperate imbecility."

Equally impossible is it to understand on what qualifications they venture to assume the judgment-seat, and to apportion the exact measure of praise or blame to be awarded their victims on the muster-roll of Art.

And yet is it so difficult to comprehend? Does it not all proceed, to borrow again from our friend the critic, from that half-knowledge that "puffeth up"?

"Knowledge" generally, and of ordinary topics—still less, technical knowledge of special subjects,—is no "heaven-born" gift, or a goal to be attained by any "royal road," but is the result of careful study, of sheer hard work, of untiring energy, perseverance, and ability rightly applied, in conjunction with eyes educated to see and a mind trained to receive the best impressions from the choicest sources.

With a mirage of such knowledge sufficiently like the real thing to avoid a crass exhibition of incompetence, with a keen pen, and a reckless conscience, what course easier than to titillate a

public, still less informed by an effective chiaro-scuro of what they *get*, a brilliant rendering, Turneresque in its vagueness, of what they deserve to have?

Over and over again has the system been tried, nor has so well-worn a device a thread of novelty's rag left to cover its nakedness.

Politically it has been tried, and successfully tried, but men were slow to learn that they were poor, down-trodden worms, until by the same process of semi-excitation, semi-flattery, the fact was continuously dinned into their ears by ambitious individuals desirous of notoriety, and caring little who formed the rungs of the ladder which led to the longed-for prize. It was a stroke little short of genius which applied the same process to art.

From such teachers and such texts proceeded fruits which might well have been presaged. Much cant talk of "architectural imposture," "draughtsman's dull labour," "deceptive custom," "imitative second-hand work," &c., widely sown, brought forth a plentiful crop of unthinking persons, who became intoxicated with such literary nectar. With large views and small means, filled with the little knowledge which is dangerous, taught to look with contempt upon their architectural advisers, possessing no magician's wand, and yet desiring a realisation without counting the cost, can we wonder that a public was produced which, trusting to its own devices, commenced with precipitation and ended with prejudice? Perhaps we *may* wonder that this prejudice was fastened as an incubus on our unhappy backs.

Nor would this be worthy of one moment's regret were an architect's works, like the fame of modern critics and essayists, a thing of the day,—a mere passing, evanescent "sensation;" but happily (or unhappily), perhaps from the very fact of our work ministering to a man's necessities, it is stamped with permanency, and becomes at once either a monument of fame, or a target for scorn. Wielding the intractable, bending not only matter but wills to our purpose, with our sterner materials providing a home for our hand-maiden, Sculpture, and a clinging place for the beautiful exotic, Painting, our realisations stand for good or for evil as a record for future generations, not only as a standard of art-practice of the period, but also according to the measure of praise or blame they may receive, of the generous intelligence or apathetic ignorance of contemporary public opinion and judgment.

Looking to what is required of us, and the difficulties of fulfilment, we might reasonably have looked for sympathy and strengthening support, rather than injustice and unfair depreciation; but, nevertheless, sure are we that from all these flustering flames and ashes of discontent, Phœnix-like, our profession will arise the brighter; that the long list of famous names,—from Buono and Peter di Cozzo to Giotto and Wykeham; from Brunelleschi and Leon Battista Alberti to Sanmicheli, Michelangelo and Philibert de Lorme; from Jones, Wren, Vanbrugh, Wyatt, and Dance, to Basevi, Barry, Pugin, Cockerell, and Pennethorne;—will be prolonged with lustre undiminished in the hands of our present leaders, whose names, unhappily, conventional good taste forbids our particularising; and that when they in the autumn of their prosperity and zenith of their fame withdraw from the struggle, the standards relinquished will (enriched by their names) be eagerly seized and nobly pressed forward by a younger school, whose brilliant promise will ere then, we trust, have blossomed into a successful career.

Meanwhile, to all of our maturer brethren and younger colleagues who, suffering under censure, ill considered, or obloquy undeserved, may feel themselves unnerved, unfitted for the fight, we would commend the thoughts of one who, not always free from censure, even when painting word-pictures of surpassing brilliancy, yet built himself an imperishable fane in the world of literature, and dying, bequeathed in winged words, a sentiment to us most singularly fitted:—

"I direct that my name be inscribed in plain English letters on my tomb. I conjure my friends on no account to make me the subject of any monument, memorial, or testimonial whatever. I rest my claims to the remembrance of my country upon my *published works*, and to the remembrance of my friends upon their experience of me in addition thereto:"—

Of, "Si monumentum quæris circumspice," a noble paraphrase.

ON THE ECONOMY OF FUEL FOR DOMESTIC PURPOSES.

On this important subject, Captain Douglas Galton, C.B., read a paper at the Society of Arts on the 2nd inst. We condense portions of it.

The total quantity of coal now annually consumed in the United Kingdom is stated by Sir W. Armstrong to be about 110 millions of tons. The Coal Commission estimate that the consumption of coal may be roughly divided into three parts, one-third being used in manufacturing processes, one-third in steam-engines, and one-third for domestic purposes. On this assumption, therefore, the latter may be assumed at nearly 37,000,000 tons in the year. This means a consumption of about one ton and a fifth per head of the population. I am, however, inclined to think that the amount is over-stated, and that probably even one ton per head of the population of the United Kingdom would be somewhat in excess of the average. The increase in the price of coal, of from 25s. to 30s. a ton, which we have recently experienced, is thus equivalent, on this assumption, to a tax of from 1*l.* 5s. to 1*l.* 10s. a head.

I think I may say, without hesitation, that the quantity of fuel now absolutely wasted in our houses amounts to at least five-sixths of the coal consumed. That is to say, if the greatest care and the best method of applying the heat were in all cases adopted, we could effect in heating and cooking all that we now effect, with one-sixth of the coal we now use; and if, in the construction of our fireplaces and cooking apparatus, simple principles were recognised and ordinary care were used, we might without difficulty save from two-thirds to half of the coal consumed. Therefore, instead of consuming 32,000,000 tons per annum for domestic purposes, we should not consume, if coal were fully economised, above 5,000,000 tons, and, if even only moderate economy were practised, from 12,000,000 to 16,000,000 tons only need be used. Thus, this economy in the household consumption of coal would enrich the nation to the extent of from 20,000,000*l.* to 30,000,000*l.* annually.

One pound of coal is capable, if all the heat of combustion is utilised, of raising the temperature of a room, 20 ft. square, and 12 ft. high, to 10 degrees above the temperature of the outer air. If the room were not ventilated at all, and the walls were composed of non-conducting materials, the consumption of fuel to maintain this temperature would be very small, but, in proportion as the air of the room was renewed, so would the consumption of fuel necessary to maintain that temperature increase. If the volume of air contained in the room were changed every hour, one pound of coal additional would be required per hour to heat the inflowing air, so that to maintain the temperature at 10 degrees above that of the outer air during 12 hours would require 12 lb. of coal.

One pound of coal may be assumed to require, for its perfect combustion, 150 cubic feet of atmospheric air; 8 lb. would require 1,200 cubic feet; but, at a very low computation of the velocity of the gases in an ordinary chimney-flue, the air would pass up the chimney at a rate of from 4 ft. to 6 ft. per second, or from 14,000 to 20,000 cubic feet per hour, with the chimneys in ordinary use, and I have often found a velocity of from 10 ft. to 12 ft. per second giving an outflow of air of from 35,000 to 40,000 cubic feet per hour. This air comes into the room cold, and when it is beginning to be warmed it is drawn away up the chimney, and its place filled by fresh cold air. A room 20 ft. square and 12 ft. high contains 4,800 cubic feet of space. In such a room, with a good fire, the air would be removed four or five times an hour with a moderate draught in the chimney, and six or eight times with a blazing fire; the air so removed would be replaced by cold air. The atmosphere of the room is thus being cooled down rapidly by the continued influx of cold air to supply the place of the warmer air drawn up the chimney. The very means adopted to heat the room produces draughts, because the stronger the direct radiation, or rather the brighter the flame in open fireplaces, the stronger must be the draught of the fire and the abstraction of heat. The only way to prevent draughts is to adopt means for providing fresh warmed air to supply the place of that removed.

Warming by means of air conveyed by flues to various parts of the building, will answer, as a rule, in ordinary existing houses, best in connexion with open fireplaces, which draw in the warmed air to the various rooms, because there must be some means of forcing or drawing the warmed air into the house, and it would not be convenient to keep a steam engine in an ordinary house to pump in the warmed air. These open fireplaces would then, however, be wasting the spare heat which each fireplace sends up its own chimney; but, on the other hand, very much smaller fires would be needed to keep the rooms warm, than when the rooms are not supplied with fresh warmed air. Theoretically, however, it can be shown that if we are prepared to give up open fireplaces, and arrange our houses on the plan of having flues which would draw off the air from near the floors of our rooms, and which would also warm fresh air, heated from a central fire, to be constantly admitted near the ceilings, and if the climate were such as to make us desire to have the system in continuous operation, such a system would probably be by far more economical of fuel than open fireplaces, because the fuel used could then be made to do its full duty. The variations of our climate, and the low price of fuel which have hitherto prevailed, have prevented such systematic arrangements from being adopted in this country.

The plan of carrying the heat from the fire to the air to be warmed by means of hot-water pipes, affords, also, a very economical method of warming air, because the best constructed hot-water apparatus will enable the full heating value to be got out of the fuel. Fuel may be consumed to far greater advantage in a close furnace than in any open grate, because the admission of air for the combustion of the fuel can be regulated to any required extent. The heating surface of the boiler may also be so arranged as to absorb a very large proportion of the heat generated by the fire.

But in deciding on the amount of heat in hot-water pipes which is most favourable to economy, the following considerations occur:—At least twice the quantity of air which is strictly necessary by theory passes through the fire in the best constructed furnaces. In an ordinary grate this consumption is enormously increased. Each part of oxygen supplied by the air and necessary for combustion is accompanied by four parts of nitrogen, which is of no value for combustion. Consequently, if twice as much oxygen passes through the fire as is strictly necessary, we have one part which combines with carbon and produces combustion, and nine parts which, being inert, must act, in the first place, to lower the temperature of the fire; and, secondly, to carry a larger amount of unutilised heat up the chimney. Moreover, when water is heated sufficiently to generate steam, each particle of water converted into steam absorbs or makes latent 960° Fah. of temperature. In experiments on the evaporation of water, the temperature of the gases passing off in the chimney was ascertained to vary from 430° to 530°, diminishing to 415° at the top of a flue 35 ft. high, with dampers open; and about 380° at the bottom of the flue with the dampers closed. With a boiler of which the temperature of the water is maintained at 200° without evaporation, the temperature of the flue need not exceed from 230° to 240°.

It is clear from these considerations that, in order to ensure the maximum effect from the fuel, the heating surface of the pipes should be sufficiently large to warm all the air required without its being necessary to raise the temperature of the water in the boiler to any great extent, and the proportion between the boiler surface and the pipe surface, that is to say, between the surface which absorbs heat, and the surface which gives out heat, should be such as to render it unnecessary for the fire to be forced, because the lower the temperature at which the gases from the fire pass off up the chimney, the greater will be the economy.

In order to show the waste which results from forcing the boiler, *i.e.*, from passing the gases into the flue at a high as compared with a low temperature, I will give an instance of one experiment. The proportion of heating surface in the boiler to the heating surface of the pipes, is assumed by some manufacturers as 1 to 100, or, when great heat is required, 1 to 40. An experiment made on 4,000 ft. of pipe, heating certain greenhouses with a wagon-shaped boiler with 40 square feet of heating surface, showed that a certain temperature was kept up for 8 hours with 8 bushels of coal; but when, by the addition of another boiler, the heating surface of the boiler was increased to 80 square feet, the temperature could be maintained for the same period with 4 bushels of coal. The outer temperature was the same on the two days.

On these grounds it is not so economical, so-

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far as the consumption of fuel is concerned, to use steam instead of water, either water heated to a high temperature under pressure, or to heat air for warming purposes, because the gases from the fire employed to produce the higher degree of heat will pass off at a high temperature, and the heat they contain be wasted. On the other hand, the capital outlay required where highly-heated pipes are used, is smaller than with hot-water pipes, because a smaller heating surface, and therefore smaller pipes, will suffice when the temperature is high; and, moreover, a very small pipe will convey steam to any required place; whereas, with hot water, at a relatively low temperature, much larger pipes are required. It follows that where the price of fuel makes it necessary to reduce the permanent annual expenditure, the original capital outlay must be increased. There is a further consideration in regard to economy with hot-water pipes, steam-heating, and all appliances for warming buildings from a central fire, viz., that if the heat has to be conveyed for long distances before its useful application comes into force, very much heat is lost, and consequently fuel is wasted. On the other hand, against the saving which would result from a more immediate application of the heat to the place to be warmed, there is to be weighed the diminished expense of attendance consequent upon the use of one fire instead of several fires, each with its attendance and supply of fuel. There remains one source of economy to be applied to close grates used for heating water, which has not yet been adopted. I mean the application of some of the heat which is passing into the chimney to warm the air which feeds the fire. Theoretical considerations show that an advantage of from six to nine per cent. might be obtained from this source, and the experiments which I have made bear out this result.

But, after we have designed the most effective arrangements for economising the fuel which warms our dwellings, if that object is to be fully secured, we must arrange to retain the heat in our houses. The architect should devote to these considerations the same care which he now is frequently satisfied with bestowing upon the beauty of the design for a building. The arrangements of the plan should be adapted to the retention of heat. All portions of houses exposed to the air should be formed of materials which are found to be the slowest conductors of heat. Whatever may have been the *lâches* of the manufacturers of fire-grates or kitchen-ranges, the nation has latterly very much disregarded the means of retaining heat in the house. The uniform model-house of the speculating builder is constructed with thin walls, thin glass windows, ill-fitting casements, and a roof of slates, with nothing under them. The old half-timbered house was warm, because it had an air space between the inner and outer skin; the brick-built, stone-faced house is warm because it has, so to say, a double wall. In modern houses it has long been shown that, without much increased expense, the use of walls built hollow will keep the rooms effectually warm and dry, and yet this mode of building is the exception rather than the rule, possibly because it gives the architect or the builder a little additional trouble. A slated roof, if ill-constructed, is a material agent in allowing of the escape of heat, because there is necessarily an inlet for air where the slates overlap. The old thatched roof, although most dangerous in cases of fire, was a great preserver of heat. In well-built modern houses the slates are laid on felt, which is laid on close boarding, and this arrangement keeps the house warm in winter and cool in summer. As regards the windows, glass ranks high as a non-conductor of heat, and the effect of using thick glass, instead of the very thin glass so often seen, is very largely to economise the heat. Evidence of the cooling effect on the air of a room of a window of thin glass is afforded by the cold draught which anyone perceives when sitting on a cold day near a closed window of thin glass. Proposals have been often made to glaze a window with double panes; and no doubt such a plan is a good means of retaining heat in the room, but the inside of the glass between the panes will in time become dirty, and then it can only be cleansed by removing one of the panes. A more convenient, but more expensive, plan is to adopt the system, which prevails universally in the northern parts of Europe, of a double casement.

It is not, however, my object here to give a treatise on building. The conclusion which I would draw from these various considerations is, that if we desire to economise to the utmost the daily expenditure of fuel, we must increase our outlay of capital. So long as coal was cheap, it may have been better worth the while of the individual consumer to employ coal wastefully rather than spend money upon the arrangements for economising heat. On the other hand, when coal is dear, the daily expense from the waste of fuel will induce a capital outlay to secure economy of heat.

The question of saving fuel for cooking purposes is even more important than economy in warming; because cooking is an operation required every day, and the waste of fuel in cooking is even more considerable than in warming.

An ordinary cooking-range in houses which, for convenience, may be designated middle-class houses, is derived from the time when the same fire was used for cooking and for warming. It is interesting to consider Count Rumford's remarks on this question. He largely developed the use of steam for cooking in large establishments, but in considering private kitchens he showed that 9-10ths of the heat produced in cooking operations was wasted, and only 1-10th utilised in cooking, by the use of open fireplaces. He laid down the following principles on fire-place construction.

1. Each boiler, kettle, and stewpan should have its separate fireplace.

2. Each fireplace should have its grate, on which the fuel must be placed, and its separate ash-pit, which must be closed by a door well fitted in its frame, and furnished with a register for regulating the quantity of air admitted into the fireplace through the grate. It should also have its separate canal for carrying off the smoke into the chimney, which canal should be furnished with a damper or register. By means of this damper, and of the ash-pit door, the rapidity of combustion and generation of heat is regulated, and on the proper use of the two registers the economy of fuel will much depend.

3. In fireplaces for all boilers which are too heavy to be easily lifted with the hand, an opening just above the level of the grate should be made for introducing fuel to the fire, which opening must be closed by a close-fitting stopper or door. In fireplaces constructed for small stewpans this opening may be omitted, and the fuel be introduced through the opening into which the stewpan is fitted, by removing the stewpan occasionally for the purpose.

4. All portable stewpans should be circular, and suspended in their fireplace from the circular rim. The best form for large fixed boilers is an oblong square, broad and shallow rather than narrow, and deep, and it should be of thin metal.

5. All boilers and stewpans should be fitted with covers to render them well adapted for confining the heat. The best arrangement is to make the covers of thin sheets of tinned iron, and double; that is, with an air-space between the outer and inner cover.

We have, during the last twenty years, introduced, as a rule, close ranges. They are certainly cleaner and more convenient for cooking, and, if great care be exercised in the use of the dampers, they will be found more economical than open fires. But, as a rule, they are based on the principle of making one fire perform a variety of operations. Independently of the question of a combined fire, as compared with the separate fires advocated by Count Rumford, a consideration of the form of modern kitchen-ranges will show that most of the principles laid down by him have been entirely neglected. The doors of the fireplace and ashpit seldom fit close; the boilers are rather deep and narrow than broad and shallow; the use of the hot-plate prevents the stewpans from being suspended from the rims for the fire to play round them; the use of double covers for saucepans and boilers is rather a rarity than a usual arrangement.

I have already mentioned several points of detail where fuel can be saved in our kitchen ranges, viz., by great attention to the close fitting of the ashpit and fire-grate doors, the use of double covers to saucepans and boilers, the use of sand on the hot-plate to prevent the escape of so much heat from that part; and beyond these an important point in securing economy is the separation of those culinary processes which require different gradations of heat. The three main parts of the ordinary cooking apparatus are the oven, for baking and roasting, the boiler, and the hotplate. If the boiler is to be of the form most effectual in saving fuel, the flame and gases from the fire should play under and round every part of it; the water should be kept at something under 212°, so that the gases, after leaving the boiler, may not enter the flue much above that temperature, and, inasmuch as that is a higher temperature than is necessary for the purpose of producing a sufficient draught in an ordinary chimney, the heat in these gases should be still further utilised. In the first place, they should be used to warm the water which will be required to replace what is drawn off from the boiler; and, in the second place, an economy can be obtained by employing the gases, which pass off into the chimney at a temperature above what is required for creating an efficient draught, to warm the air supplied to the fire for purposes of combustion. The experiments which I have made on the supply of warmed air to feed the fire, have, unfortunately, not been worked out sufficiently to enable me to give them in a clear form with exact results; but an economy of from 6 to 9 per cent. might be obtained from this source.

PROPOSED CATHEDRAL FOR GOULBURN, NEW SOUTH WALES.

THE Cathedral about to be erected in the rising Australian town of Goulburn, and of which we give an illustration, will also be the parish church, the present church being notoriously inadequate to the requirements of the population. The Bishop of Goulburn, on his arrival seven years ago, found himself surrounded by perhaps unprecedented difficulties, and by claims which at that time appeared to be of a more pressing nature. He therefore resolved to postpone it. The diocese, containing an area of 120,000 square miles, was to a very great extent destitute of clergymen and churches; and the want was universally felt. The bishop, therefore, in the first place devoted himself to the task of aiding the parishes to provide clergymen, churches, and parsonages. By the divine blessing the result has been the introduction of twenty-four additional clergymen, and the erection of twenty-five churches and ten parsonages of a substantial character, at very great cost. Besides, a sum of about 4,000*l.* has been collected towards the endowment of the bishopric. When present arrangements are completed it is expected that the diocese will possess forty-six churches, nineteen parsonage-houses, and twenty-nine clergymen. Thirteen wooden churches are not enumerated.

During this interval the colony has passed through great vicissitudes and a very severe financial crisis; and it has been only by great effort and much self-denial on the part of the bishop, the clergy, and the members of the Church generally, that these results have been attained. Much, very much remains to be done, independently of the duty of completing the fund for erecting Bishopthorpe.

Meanwhile Goulburn, the centre of operations for the diocese, while unselfishly assisting the interior from year to year, has itself been somewhat neglected. And now the feeling is well nigh universal that the time has come to provide more adequate and more suitable accommodation for the city. Goulburn has a population of about 4,000; but the present building will scarcely accommodate 400 persons. The new building will be a cathedral church for the diocese, and at the same time a parochial church for Goulburn.

The proposed cathedral will be in the Decorated style; the walls to be built of the blue rubble stone of the neighbourhood, the facings, dressings, &c., of white sandstone from Wingels, and the nave pillars of blue stone from Melbourne. The nave and choir are to measure 146 ft. long inside, and 95 ft. inside across the transept. The width of the nave and aisles inside will be 54 ft., and the height of the clear-story wall, 36 ft. The tower and spire at the south-eastern angle will measure to the top of the finial 185 ft. At the west end there will be a narthex and two porches, and above the narthex a recessed gallery for the organ, opening by a large arch into the nave. The nave, transept, and aisle will be fitted with 1,000 fixed seats, and the choir will have the usual fittings for the bishop, clergy, and choristers. The architect is Mr. E. J. Blacket, for many years the colonial architect of New South Wales. The estimated cost is 16,000*l.*, but it is proposed to begin with nave and transept, costing about 12,000*l.*, towards which the committee have only obtained 3,500*l.* Aid is earnestly desired from the mother country, and either of the banking firms of Barclay, Bevan, & Co., Lombard-street; Hoare & Co., Fleet-street; or Ransom, Bouverie, & Co., Pall-mall, will receive subscriptions.



PROPOSED CATHEDRAL FOR GOULBURN, NEW SOUTH WALES.— Mr. E. J. Blacket, Architect.

THE CATHEDRAL OF LIMBURG.

The cathedral church of Limburg on the Lahn, in the now mediatised dukedom of Nassau, was originally a collegiate church dedicated to St. George, and belonged to the Cathedral of Treves. It had a dean and canons of its own, who were subject to the control of those of the mother church. After the treaty of 1815, the collegiate church of St. George was erected into a bishop's see, and it became the cathedral of a Roman Catholic diocese, comprising, and co-extensive with, the dukedom of Nassau.

Perhaps no church in Europe possesses so beautiful a site as that of Limburg. Standing upon a rock more than 100 ft. high, which is precipitous to the north and east, it looks down upon the beautiful river Lahn, which washes the base of this great rock platform on two of its sides, and upon an old town, a perfect marvel of picturesqueness, which gradually creeps up the other two sides, and by a number of crooked and steep streets connects itself with the church.

A church more suited for such a site could scarcely be imagined, it is a solid and massive late Romanesque building, and seems to be part of the rock upon which it stands; but as it rises it by degrees becomes more light and elegant, until the whole breaks into a magnificent group of seven spires.

The church was erected by Duke Conrad Courtsweg, of Nassau, who died in the year 1227, and whose remarkable monument is represented in the immediate foreground of our illustration. It is not a large church, being only about 220 ft. long, and about 150 ft. across the transepts.

In plan it consists of a nave of four bays, exclusive of the space between the two western towers, transepts each two bays deep, a choir of three bays with a semicircular apse. The aisle is carried round the apse, but there are no radiating chapels. There are, however, two small apsidal chapels projecting from the eastern side of the transept. The great feature of the exterior of the church is its matchless group of seven steeples, placed as follows:—two at the west end, both of which are noble square towers, gabled and capped with pyramidal spires; two at the end of each transept, which are somewhat similar to the western ones, only much smaller; and one over the crossing, consisting of an octagonal lantern, crowned by a very lofty slate spire.

Internally, the principal feature is the triforium, which is treated with great richness, and is still used as a gallery.

The ritual choir of the church crosses the transepts, and occupies one bay of the nave. The screens which enclose it are coëval with the church, and are adorned with pictures representing scenes from Our Lord's passion painted upon slabs of black marble. These, however, have been so frequently "restored" and painted over that it is impossible to say what they were like originally.

The church contains a very fine late Romanesque font of large size, and one or two curious monuments, of which the most interesting is that of the founder of the church, represented in our view. The costume of the effigy on this monument is very remarkable. The Duke Conrad is represented as dressed in a large kind of toga, and wearing on his head the Phrygian cap (or cap of liberty); in his right hand is a short bâton; round the cap is a coronet of precious stones, and on his hands are several rings.

The figures attached to the columns supporting the slab of this tomb are the most hideous grotesques we ever remember to have seen. What they are intended to represent it is difficult to say.



THE CATHEDRAL OF LIMBURG, NASSAU: THE FOUNDER'S MONUMENT.

A REVIEW OF WORKS ILLUSTRATED IN THE "BUILDER."*

LIVERPOOL ARCHITECTURAL ASSOCIATION.

Among the many remarkable works which have been in progress during the year, the buildings erected by Herr Guldenpfennig are particularly worthy of note. One of them is a range of farm-buildings erected at a place called Werver, near Paderborn, in Westphalia, for the Baron von Brenkin. These buildings consist of a gatehouse, two large stables, a large coach-house, harness-rooms, a cow-house, poultry-house, porters'-room, outdoor servants and coachmen's room. All these are in the lower or ground floor, which is constructed of stone worked roughly, and partially covered with rough mortar. In the upper story, which is framed in oak and filled in with patterns worked in red brick, are two large lofts used as granaries, divided from one another by the upper portion of the gateway, which forms a large apartment with two projecting bay windows. The roofs are covered with tiles made in the neighbourhood, the hips and ridges being ornamented with finials and crestings of lead and iron. The entire cost was about 900*l*. This, however, does not include the timber, which was supplied from the extensive woods belonging to the proprietor. The architect of this very pleasing and picturesque building has entered most thoroughly into the spirit of the Mediæval builders. In a district where timber is abundant there is an appropriateness in the erection of half-timbered structures, and it should ever be our study to embody our art in the native materials of the country.

Other examples by the same architect are given in the *Builder* of October 12th. They consist of a doorway and bow window, and a pair of folding-doors to drawing-room of Boeddeken Manor-house, Westphalia. These exhibit the same quaint feeling as before. The bow window is boldly corbelled out from the wall on cleverly designed timber brackets: above these the window is divided into five compartments with splayed and moulded uprights and transoms. The portions above transom heads are made circular openings, and are filled with stained glass. At the angle of the eaves is an iron gargoyle, or spout-head for discharging the water from the gutter, which projects far enough to throw the water clear of the building. The entrance-door, with its two-light fanlight and the two small flanking windows are thoroughly in accord with the work above, and the whole must form a very attractive bit in the design of the Manor-house. The drawing-room folding-doors are highly elaborate, and are treated with much originality. Unlike our English ones, they are seldom kept open, but, like the French, are only fully used when receptions are given. The whole opening is 5ft. wide, and on ordinary occasions only 2 ft. 6 in. need be open at one time. Great fondness for German and Latin inscriptions is shown in various parts of the building, and over these folding-doors, in German, is a legend, of which I give the translation:—"If the devil rules on earth to-day, God will be master to-morrow. A.D. 1871." The space above the doors is formed into two triangular crocketed canopies, filled with trefoil panels, and enriched with carved flowers, the background divided into narrow panels with shields. The doors themselves have two rows of chamfered and stopped linen panels, and two of small square carved panels splayed so as to form a circle. The doors are hung with large ornamental hinges. There is the same antique charm about these that seems to be possessed by all the works of this eminent architect. They are not mere copies and adaptations of mediæval work, but rather original designs by a thoughtful mind thoroughly imbued with the spirit of the past.

I wish now to call your attention to some school buildings erected by the Commissioners of the Royal Patriotic Fund at Wandsworth, Surrey. The cost was about 25,000*l*. The building is capable of accommodating 230 boys. The exterior is of red brick with Portland stone dressings. The plan is well considered, and may be divided into two parts; the right half being the portion appertaining to the boys, the left to the superintendent and the management generally. The entrance-porch conducts you into a commodious entrance-hall, 15 ft. square, with which the committee-room and office communicate. Beyond are the main staircases to the dormitories, the superintendent's private apartments, and the chapel. The boys' portion of the building comprehends large school-room, 70 ft. long, with two class-rooms and pupil-teachers' room, large play-room, lavatory, swimming-bath, &c. The part belonging to the management contains superintendent's room (well placed at the angle of the building to command the whole), kitchen, servants' hall, bedding and linen store, buttery, bread store, larders, dry goods store, &c. Close to the superintendent's room is a private stair leading to his apartments above. Only a portion of the buildings on the ground-floor is carried up two stories, and is occupied as dormitories. I want more particularly to draw your attention to the exterior elevation of the principal front, as given in our illustration. There is great breadth of character about this, which gives it much dignity. At the same time, great variety is imparted by the different treatment of the windows on each of the three stories. On the ground-story they are arranged in groups of two-lights and three-lights alternately, divided by detached shafts; on the first-floor stage, in a regular succession of arched openings; while on the second floor there are large bold dormers, which break up pleasingly the rigid line of the eaves. Much importance is given to the entrance-door, which opens into a bold and well-designed porch, and from the centre of the front rises the tower. This is kept quite plain to the height of the ridge line of the roof, with the exception of three small openings, and is then crowned with a belfry story, having deeply-recessed arched openings and angle buttresses. The tower is roofed with a slated spire in two stages, with crocketed angles. On each face of the lower stage of the spire is a small dormer. The ends of the façade are treated differently from the rest. Here are octagonal bow-windows carried up two stories, and a two-light window with a circle over on the third stage. I think you will agree with me that, considering the simple and plain character which the architect had necessarily to give to a school building, he has succeeded in imparting as much variety to it as was possible under the circumstances. The tendency at the present time is rather, I think, to do too much, and suitability to the purpose for which a building is erected is sadly too often forgotten by the architect, and the restless effort to produce something striking gives to many modern designs a disagreeable flutter and vulgar pretence. There is one other great element in the effect of this building which I wish to point out in the depth of the window reveals. These give a mass of shadow which adds considerably to the broad effect of the whole.

The Hull Dock Company's New Offices.—This building stands on a triangular piece of ground facing two streets and the Dock quay. Its plan consequently presented much difficulty, especially as a maximum accommodation was required upon a comparatively limited area. The entire building is faced with Ancaster stone, excepting the principal sculptures, which are of Portland, and the basement, which is of Bramley fall stone. Entering by the principal door, and passing through the vestibule, leading from which are a waiting-room and porter's room, the principal hall and staircase are gained. To the right, a corridor leads to the dock-master's office, connected with which are clerk's office and lavatory, &c. From the other side of the hall, another broad corridor gives access to the offices of the resident engineer, drawing-office, clerk's office, and resident engineer's clerk's office, conveniences for which are provided at each end of the range. The portion of the building facing the quay is occupied by the office for general wharfage department, with superintendent's office at one end. The dimensions of this large office are 88 ft. long by 30 ft. maximum width. It is amply lighted at the back by windows looking into internal courts. There is a separate entrance to this department in the centre of the curved façade to the quay. On the opposite side of the room is a passage communicating with large strong-room for deeds. The arrangement on the floor above is very similar to that on the ground-floor; the space over the wharfage department becoming here the proprietors' court, with directors' committee and retiring rooms at one end and ante-room at the other. The remaining portion of this floor is occupied with offices for the secretary and solicitor. The design of the exterior displays much skill and judgment. The Venetian style employed was thought to be appropriate to the situation of the building near the water's edge. Both the ground and one-pair stage are broken up with coupled pilasters between the windows, those on the ground-stage of the Ionic order, and above of the Corinthian. These give a great number of upright lines, which on the curved front are most valuable, tying together the irregular sweep of the curved horizontal lines, and giving also height to the building, which is helped materially by the lofty cupolas introduced over the circular rooms at each angle of the building. Each end of the fronts is treated more massively than the centre. Here the pilasters are omitted, and projecting piers broken up with rustics are carried the whole height of the building. These side projections give much stability and breadth to the design, besides which they contrast pleasingly with the columnar treatment of the rest. The small circular windows in the frieze relieve what would otherwise be rather a heavy feature, notwithstanding the elaborate carving with which it is covered. The entrance has much importance given to it by being boldly projected out from the front. Altogether, I think the architect, Mr. Wray, may be congratulated on having achieved a most meritorious work.

The Horton Infirmary, Banbury.—This building, an example of thoughtful planning, and of much quiet taste in the external design, was commenced in June, 1869, by Miss Horton, of The Holt, Middleton Cheney, and of Highbury, London, and was intended by her as a gift to the town of Banbury. She did not live to see the completion, which was effected by her grand-nephew, Mr. J. H. Horton. Mr. Charles H. Driver, of London, was the architect. The plan consists of a main building nearly 200 ft. long, with a projecting central block and two wings. The main portion contains the administrative department, and the wings, wards for men and women. A portion of the centre block of the main building only is carried above the ground-floor, affording accommodation for surgeon and matron. The whole of the remainder of the building is on the ground-floor, except the kitchen, which is obtained under the women's ward, with scullery, pantries, wine, beer, and coal cellars, with a lift to the ground-floor. The main entrance leads you to the matron's room on the right, and room for surgeon on the left, with staircases to bedrooms above. The entrance-hall leads into a broad corridor extending the whole length of the building, and communicating with the various departments of the hospital. Opening from the corridor is the operating-room, 20 ft. by 16 ft., with an open-timber roof, which is lighted by four large windows and a lantern-light. A gallery is provided at one end for students' use, under which are lavatories and sinks with hot and cold water laid on, as also to the sinks for the use of operating-room. There are waiting-rooms for men and women, and dispensing and consulting rooms, a room for convalescents, 16 ft. 6 in. by 14 ft., and room for hospital stores and comforts. The wings containing the wards for male and female patients respectively are each 48 ft. long by 24 ft. wide, and 16 ft. high, with fireplaces at each end, and lighted on both sides and at end. At one end of the wards, and having a direct ventilation from the external air, are lavatories, sinks, and bath-rooms; at the other end are ante-rooms sculleries, and nurses' rooms. The wards and rooms appertaining to them are plastered throughout with polished Parian cement, the dressings to the doors and windows are executed in cement, and the floors are wainscot, waxed over. The erection of the infirmary cost 6,200*l*. The exterior is, I think, a very successful composition, although hardly giving you the idea of an infirmary. At the first glance it would be taken for a group of school buildings. This fault apart, it is a good instance of an architectural character given to a building by very simple means. The walls are faced with red brick and black bands, and Box-ground stone dressings. The central block, with its slated tower, hipped roofs, and gable, presents a great number of sloping lines, which harmonise well together, and carry the eye upward to the highest point, and give a most effective sky-line. The elegant cresting of the tower, with its three finials, lends a satisfactory finish to the whole. The arrangement of the windows of this portion of the front is worthy of note,—two on the ground stage and one above, those above having dormer heads, which effectively vary the rigid line of the eaves. The wards, with their high-pitched roofs at each end, balance the composition, and they are very successfully treated. Their broad, simple masses contrast rather strongly with the broken-up character of the centre, but not more so, I think, than they should do, as they express one large apartment, while the centre gives, very properly,

* By Mr. W. H. Picton. See p. 271, *ante*.

the idea of a number of small offices, of which it is composed. The chimneys are brought up boldly to a considerable height above the roof, and break very advantageously the lines of the building. The gable-ends of the wards have large two-light windows, in a pointed arched bricked recess, with occasional stone voussoirs, which are ornamented with incised ornaments and bands of black brick. A stone label is carried round this arch. The window-lights are divided by a stone shaft, with foliage cap, and the tympanum of the arch above is filled in with a carved shield and foliage. On each side of these windows are small square-headed lights. One of the chief merits of the design is that it truthfully expresses externally its internal arrangement. In the central block, the five breaks in the front show the five rooms of which it consists; the corridors, with their unbroken series of windows, exhibit plainly what they are, and the wards are equally well defined. This element of truthfulness is sadly too often overlooked in modern architecture particularly in buildings of a classical character. The effort of the architect in these too often is to obtain symmetry and a perfect balance of parts, for which he will even sacrifice the arrangement of his plan, or build up useless features, in order to make the ends of his façade agree. But this is not worthy of the name of architecture. In the first case, it is putting the cart before the horse,—"delight before commodity and fitness"; and in the other it is a hypocritical sham. I am sure that if we would only express honestly and truthfully the character and features of the buildings we are called upon to erect, not bending to the style, but making the style bend to us, our art would develop and flourish in a degree of which we have little experience as yet. I do not for one moment wish to decry consistency of style, but consistency to the character and purpose of our building is a far higher and more important element, to which the other must give place. Combine the two where possible, but make the latter the first consideration.

I have now brought under your notice nine different examples of buildings which have been carried on during the year 1872. No one who looks into any architectural journal, and compares the works of the past year with those of an earlier period, can help being struck with the superiority of the former, and the marked improvement which has taken place in the productions of our art since these journals were first published. There is, I believe a growing disposition among architects to break the chains of precedent and tradition, to make less of style, and to go to the fundamental principles of truth and fitness, on which all architecture worthy of the name should be based. The fruit of this will be undoubtedly the ultimate formation of a new style, of which there are many evidences in the gradual fusion of the Gothic and Classic elements, which is seen increasingly year by year. Truth of construction, truth of material, truthful expression of the purpose of the building, truthful ornamentation,—these are now become the watchwords of the day, and they are words hopefully eloquent in promise for the future.

"Nothing," says Mr. Ruskin, "can atone for the want of truth,—not the most brilliant imagination, the most playful fancy, the most pure feeling (supposing that feeling could be pure and false at the same time), not the most exalted conception, nor the most comprehensive grasp of intellect, can make amends for the want of truth; and that for two reasons,—first, because falsehood is in itself revolting and degrading; and, secondly, because nature is so immeasurably superior to all that the human mind can conceive, that every departure from her is a fall beneath her, so that there can be no such thing as an ornamental falsehood. All falsehood must be a blot as well as a sin, an injury as well as a deception. We shall, in consequence, find that no artist can be graceful, imaginative, or original, unless he be truthful; and that the pursuit of beauty, instead of leading us away from truth, increases the desire for it and the necessity of it tenfold."

New Travelling Crane.—Mr. T. Grosse, a German engineer, resident in Manchester, has designed a new travelling crane, on an improved principle, the chief object of which is to prevent the danger from overturning, one of the most important defects in this class of machinery.

THE ROTUNDA FOR THE VIENNA EXHIBITION.

WE have already given some particulars and an illustration of the building erected for the Vienna Exhibition. Let us add a few statements made by the correspondent of the *Journal of the Franklin Institute*:—

Accurately stated, the exterior diameter of the Rotunda is 107·83 metres, and its height 84·1 metres. A rounded roof, supported upon thirty-one iron columns, 24·35 metres high, rises, with an angle of 31°, to a height of 48·2 metres, and is terminated by a central ring of 30·9 metres diameter. The exterior of the roof is covered smoothly with sheet metal, and, viewed from below, has the appearance of a smooth truncated cone. Upon this conical roof is placed a so-called observatory, composed, like the rest of the structure, entirely of iron, the outer diameter of which is 32·4 metres, and the height 10 metres. Upon this, finally, there is placed another building, 8 metres in diameter, and 18·5 metres high, which terminates in a crown, whose highest point is 84·1 metres above the flooring below.

At a height of 23 metres in the interior of the Rotunda there is placed a gallery, directly against the pillars, having a breadth of 142 metres. This may be reached by two stairways, on opposite sides of the Rotunda, or by two elevators, introduced for the purpose.

The entire space covered by the Rotunda measures 338·8 metres in circumference, and the surface covered by the roof measures 9,405 square metres, the interior circumference is 319·6 metres, and the space available for the purposes of the Exhibition and accommodation of the visitors is 8,129 square metres.

To give an idea of the forces operating upon the various portions of this structure, a few data are attached.

The vertical pressure upon one of the iron columns of the Rotunda = 109 tons. Pressure on the lower portions of the radial rafters = 211 tons; horizontal strain on same = 181 tons. Tangential strain on the lower roof ring = 863 tons. Pressure on the upper ring, upon which the observatory rests = 217 tons. The total weight of the structure of the Rotunda may be stated in round numbers at 80,000 hundred-weight (Zoll centner), or about 4,000 tons. The pillars rest upon *béton* foundations, which were prepared for this purpose as early as October 30th, 1871.

THE DISPOSAL OF THE AYLESBURY SEWAGE.

THE report of Mr. Hawksley, C.E., for the disposal of the sewage of Aylesbury, has been discussed at the Local Board. Mr. Hawksley at once discards irrigation as unsuited to the physical and economical conditions which present themselves in the neighbourhood of the town. He also rejects the process of Mr. Bailey Denton, intermittent downward filtration, tried with so much success at Merthyr Tydvil; the soil, he considers, being insufficiently open and porous for this mode of treatment. With regard to the various proposals for a sewage-farm, he thinks that the suggested sites are all unpleasantly near the town. The remedy he proposes as the best and cheapest for the purification of the sewage is precipitation by quick-lime, which he states has been adopted with entire success at Birmingham. He proposes the establishing at Heydon Mill of clarifying and precipitating works, sufficient for the immediate treatment of half a million gallons of sewage daily, and capable of easy enlargement if necessary. He estimates the probable cost at 6,000*l.*, inclusive of land and compensation; and the annual working expenses at between 250*l.* and 300*l.* The precipitated matter, he considered, would possess a market value as a manure, and would be readily bought by farmers, but the price it commanded would not be sufficient to cover the expense. Several members of the Board stated that the proposed site would be difficult to get to; that a road would have to be constructed; and that, in addition to the cost incurred thereby, there was also the sewerage of the town, which had not been included in the estimate, and they calculated the whole cost at not less than 12,000*l.*

It was decided to obtain from Mr. Hawksley an approximate estimate of the total outlay, and then to submit the scheme to the ratepayers at a town's meeting.

MATTER OUT OF PLACE IN IRELAND.

CONTEMPORANEOUSLY with the agricultural demands for *the matter* that has been sadly out of place for months past amid the purlieus as well as in some of the more favoured parts of Dublin, some action appears to have been taken by the Dublin authorities towards compelling persons guilty of polluting the atmosphere of that city to remove their noxious accumulations. This is what we have before observed repeatedly,—namely, a show of action at a time when those proceeded against would, in any case, have found it their interest to clear out their filth to meet the demands of the farmer for spring tillage. But this is not all: full time is being given for those traders in the aggregations of foul matter who have been proceeded against to remove the same with due leisure to secure their own gains. Nevertheless, in the next official stock-taking, so to speak, all such spring cleansings will be duly noted down, and credit taken for, as the results of official action.

It is scarcely necessary to say that the very unsatisfactory state of the public health in Dublin demands a much more decided and thorough mode of dealing than such make-believe proceedings, which but create a false impression among those who do not inquire into what deeply concerns themselves, but take official reports as evidence of work done. We have before shown the amount of mortality and the comparatively small birth-rate of Dublin, which together account for the fact that the population of the Irish metropolis has actually diminished of late years. The poor, and especially the very young and the aged, are the chief sufferers; but many heads of families, many bread-winners, also succumb, adding seriously to the amount of taxation of a local nature, which now amounts to almost 10s. in the pound of the valuation.

Within a few days past, two medical men, engaged in the active practice of their useful profession, perished,—one by fever, "caught, doubtless," * in the discharge of his perilous calling, at the early age of thirty-one; and the other, aged about sixty, but who had for years suffered from the effects of a fatiguing and riskful profession, and who, but a few days before his death, was heard advocating improved sanitary measures for the poorer parts of Dublin, died almost suddenly, in the midst of his professional work.

A third medical man lost his life in the following manner:—returning home late at night from a patient's residence to the town in which he lived, he was thrown from his vehicle, which was upset by a large heap of manure, that a farmer had placed on the highway for the more easy removal to his land next day. When the mischief was done the constabulary assisted the doctor home,—only, however, for him to die of the injuries he received within a few hours, unconsciousness having almost immediately set in.

Agriculture is an important industry, but it should not be supposed that those who practise it are to do so to the damage either of themselves or others, whether we regard the work of collecting and storing manure, rearing pigs, and stall-feeding dairy cattle in Dublin and other large Irish towns, or the means adopted in some country towns and on the Queen's highway for facilitating the labour of the farmer.

Where such matters are so plainly fraught with danger, and even with fatal results to the public, it becomes the duty of the State to intervene; nor shall we be surprised if measures be taken by the surviving family of the deceased medical gentleman (he has left a widow and nine young children unprovided for) to recover commensurate damages.

In like manner, we cannot but think that it is time a coroner's inquest should be held in all cases fatal from fever arising in apparent relation to causes in Dublin, such as we have referred to as so common in that city. In the words of the *Freeman's Journal* (of 25th ultimo), "For a score of years, the month of May has been signalized by little less than universal quake; for as the thermometer rises, disease and death stalk boldly out from the noisome dens in which they have lain hidden. The summer-time has been shorn of half its glories by the gloomy reapings of the King of Terrors, to whom fever, cholera, and small-pox bring a woeful harvest."

* As recorded in a morning contemporary published in Dublin.

DILAPIDATIONS DISCUSSED.

After the reading of a paper "On Dilapidations," by Mr. Banister Fletcher, at the Architectural Association on the 4th inst.,—

Mr. L. W. Ridge, in speaking on the subject of ecclesiastical dilapidations, said that their nature could be more readily explained by reference to their contrasts with other dilapidations. The holder of a benefice is to all intents and purposes an owner for life, subject to certain limitations. He is not to allow property to suffer either from injury or neglect in any way affecting the fabric. He is bound if a house or other building falls down to build it up again as before. No allowance can be made for wear and tear: he must make good any want of repair during his holding, or must pay at the end of it. If a floor, for instance, is very generally and seriously worn he must put a new floor; it will not be enough to renew broken and damaged portions as in lay dilapidations. Painting must be renewed when it is necessary for the durability of buildings, as on perishable woodwork, &c. It is thus doubtful whether, in any case, painting or colouring on external cement work can be demanded. But while the liabilities of an incumbent are thus greater with respect to matters of structure,—than are those of tenants under ordinary leases with repairing covenants,—the incumbent is under no obligation to keep up to any high standard of tenantable repair. Decorations and finishings do not come into notice at all. He is not called upon to do internal painting, papering, whitewashing, or colouring. The recent Act has in no way altered the general principles previously established. It has been framed for the purpose of easing off things that, in practice, worked hard on some incumbents. It facilitates the obtaining permission to alter and amend buildings, making them suitable for modern requirements, or the average wants of the incumbent of the living. Charges may be made with less trouble on the revenues of the benefice for desirable and approved works. Perhaps, however, the most important provision is that which enables an incumbent to amend his buildings to the satisfaction of the surveyor for the diocese,—receiving, when the works are completed, a certificate which relieves him from liability for five years from its date, except for a wilful (voluntary) waste. Insurance against fire is arranged for also by the Act. The value of the relief that may thus be obtained by incumbents can be judged when it is called to mind, that aforetime everything on the lands of the benefice was to be kept up that was proved to have existed within reasonable memory; a matter depending on testimony involving vague, sometimes considerable, liabilities. The surveyor in lay dilapidations represents an individual owner having reversionary interests; the surveyor under the Ecclesiastical Dilapidations Act practically represents (Mr. Ridge said, in answer to a question from a member) the ultimate owner of church property.

Professor Kerr called attention to the provisions in Lord Selborne's Bill, now before Parliament, for the appointment of permanent assessors attached to the Courts of Judicature, to whom is to be entrusted the decision of questions of fact, instead of to a jury, as at present. This will, if made law, probably secure intelligent decisions on complicated questions of a technical kind,—among which will be the too often very imperfectly comprehended questions involved in trials as to dilapidations. On the matter of covenants in leases, on which something had been said by previous speakers, he endorsed all that could be put forward as to the inefficiency and frequently the gross injustice of the repairing clauses,—copied regularly into new leases, and accepted by lawyers completely ignorant of their meaning. The real intention of the bargain between a good landlord and a good tenant is that the property shall be used fairly and kept up fairly, and no more. The only reason why people accept the unreasonable terms of leases without question again and again is, that they are rarely insisted on,—never by landlords who wish to act as they ought: if they were, there would be brought about a complete change, and lessees would have leases that embodied precisely the intentions of their bargains. The covenant to paint internally once in every seven years, on pain of forfeiture, Professor Kerr considered most ill-advised. Much internal grained work, and plain painting, even, if carefully used, requires no such renewal. It would be mere waste and annoyance. In cases where this and other similar covenants are taken advantage of by grasping or unprincipled landlords pressing for forfeiture or costs, the hardship suffered and wrong done to their unfortunate tenants provokes indignation in right-thinking people.

The president, Mr. J. D. Mathews, spoke of the necessity of some arrangement by means of which the provision of so many months' notice could be adjusted to suit the case of a lessee and his under-lessees. A sub-lessee usually holds under the same covenants as are in the original lease from a freeholder;—why should the lease be forfeited if repairs are not completed by the time specified in the notice to the original lessee? He also spoke of the obvious injustice of a lessee being responsible for the acts of his assignee, contending that a certain lapse of time should free him from liability, especially where the assignee has been practically, even if not formally, recognised.

Mr. Fletcher, in reply to the thanks that had been voted to him, alluded to the various points that had been raised. Particularly with reference to the question of forfeitures, he stated that all that could be wished for as a measure of practice would be attained if compliance with the covenants and payment of the expenses incurred in an action always put an end to any claim for forfeiture. The insurance clauses in leases are thus affected by an Act passed a few years ago; there is no good reason, he said, why the repairing clauses should not be similarly dealt with. He also insisted on the justice of always scheduling a description of buildings, their age, their noticeable defects of structure, &c. This could easily be done if once made the custom, and the effect of it to lessees taking over old or improperly built structures must be obvious. He was glad to agree with previous speakers who had advocated such a course.

IMPROVED DWELLINGS FOR THE POOR, AND UNREMUNERATIVE RENTS.

At the meeting of the Special Dwellings Committee of the Charity Organisation Society, held on Wednesday, the 2nd inst., Mr. Thomas Hughes, M.P., in the chair, an interesting discussion took place, "On the Influence of Unremunerative Rents on the Movement for Improving Dwellings."

Mr. C. Gatliff, representative of the Metropolitan Association Dwellings Company, enlarged upon the importance of the Peabody trustees and others who built for the poor, taking care that only those were admitted into their houses who could not help themselves. A clear line ought to be drawn between associations working on commercial principles and associations working on charitable principles. So long as this was not done, the charitable associations drew away tenants from other improved dwellings. He moved the following resolution:—"That the influence of unremunerative rents on the movement for improving dwellings, unless confined to the less fortunate, or classes not earning more than 20s. a week, will seriously affect, by competition, efforts based on commercial principles, which are essential to ensure the extensive improvement and permanent success of the movement."

Mr. Easterwick, M.P., inquired of Mr. Gatliff the principles upon which his society acted.

Mr. Gatliff, in reply, stated that the Metropolitan Association was restricted by its charter to a dividend of 5 per cent. They had power to set aside 15,000*l.* for equalising dividends, but further sums were to be applied for advancing the objects of the association.

Sir Charles Trevelyan observed that most great enterprises in England had an element of public spirit in them. It had been so in the establishment of steam communication with India, and of telegraphic communication with America. He saw no occasion for charity to any greater extent than this. The necessary work could only be done on the commercial footing. There was danger of perpetual conflict between those working on charitable principles and those working on commercial principles. All associations should let at the market rates, with the full conviction that they were doing the best for the masses. They would then make it known that the undertaking was a highly profitable one. It was in the nature of things that those should be first provided for who had made the best of their opportunities. Room would thus be made for those below them. He moved, as an amendment to Mr. Gatliff's motion, "That commercial and charitable principles cannot be carried on concurrently in the reconstruction of the sordid parts of London without mutual conflict and obstruction."

Mr. Eastwick, M.P., hoped that the commercial principle did not mean letting houses in a filthy condition to the largest number who could crowd into them. The masses, who could not or would not help themselves, must be educated and helped. Still, the work could not be done on eleemosynary principles.

Dr. Greenhill understood the commercial principle to mean getting a fair return for money, and not an exorbitant return. The insufficient returns obtained by some societies had discouraged people. Each instance of comparative failure had done harm. He was not prepared to say whether the working classes who earned the lowest wages could pay enough to get proper accommodation.

Miss Octavia Hill thought there was a deeper reason against unremunerative rents than had yet been given. The ultimate result would be to lower wages, and to keep a large class dependent on charity. Improvements must be made gradually, and the poor must be educated up to them. She believed that they might be made to pay.

The Rev. G. M. Murphy had no doubt that the Peabody trustees did their best to make correct inquiries. It was very difficult to select the right class.

Dr. Ross remarked that the commercial principle would prevent people building better houses than there was a demand for. He did not see how the very poor were to pay for sufficient accommodation.

Mr. Storr thought that the object of the committee should be to stimulate the authorities. The metropolis was in an anarchical condition. The work of charitable associations was a drop in the ocean; but until there was effectual government in London, and the power to remove buildings not fit for habitation, the evil could not be effectually dealt with.

Mr. Bosanquet suggested that power might be given to the Peabody trustees, to take houses not fit for habitation at a valuation. They had no private interest to serve. He failed to see how the distinction which Mr. Gatliff wished to establish between the charitable and commercial associations was to be carried out.

The Chairman was of opinion that the commercial principle was the only one that could be relied upon, with certain limitations, that building should be well done, and each class of houses good of its kind. There should be just enough inspection to check overcrowding, and secure repairs. Some rise in rents could not be prevented. If wages did not rise it was the fault of those who gave charitable doles. They should not play into the hands of those who were grinding the poor down. Subject to these conditions, the only solution of the question was to build good houses, and let them to those who would pay the full market value for them. It was the highest charity to make people independent.

Mr. Gatliff's motion was then rejected, and the amendment of Sir Charles Trevelyan carried by a majority of 12 to 4. The committee adjourned until the 23rd instant.

IMPROVING HOUSES.

In our last volume we described the miserable condition of three dwelling-places in Great St. Andrew's-street, Seven Dials, which had been taken on lease by the Society for Improving the Condition of the Labouring Classes, with the intention of repairing and rendering them fit for healthful habitation. On Thursday in last week a meeting of friends of the Society was held on the premises, Lord Shaftesbury presiding.

Mr. Payne, the excellent secretary of the company, read a report which gave a clear and succinct account of the whole transaction, showing how it had been brought about by the gifts of several individuals; that the cost of making the houses sound and comfortable had been from 1,000*l.* to 1,100*l.*; and that the rentals would give a return of about 6 per cent. on the outlay. The ground floors were fitted up as shops; the upper floors were let to families at a lower rent than used to be paid in the old building.

Lord Elliot moved a resolution to the effect that the report be adopted, that the subscribers be thanked, and expressing a hope that the work of the society in making this renovation would be followed in other parts of London. He said there were not only many houses in London unfit in themselves for human habitations, but

many more unfit by reason of their surroundings and the localities in which they were placed, reminding him of Thackeray's "Codlingsby," who had a mansion of Oriental magnificence in Holywell-street. It was with some a cheap and easy way of accounting for the wretchedness of some wretched dwellings by abusing the owners of the property; but it should not be forgotten that the law did not enable all landlords to sell. It was impossible to greatly improve the part of London in which they were met as the property now stood. He thought, in efforts of this kind, decent houses should be built of various sizes, as some of the very poor could only pay 2s. or 2s. 6d. a week; but he feared, that to effect much good there must not only be private organisation, but a legislative enactment for the compulsory purchase of land in certain cases.

Mr. Godwin, being called on to second the resolution, spoke of the overcrowding in many parts of London, and the evils resulting from it. A map had recently been published which showed that in London proper twenty acres had been recently cleared of houses for railways and other public works, and that twenty acres more were scheduled in new Bills for removal. There were enormous funds at command for the improvement of the condition of the working population, if rendered rightly available; and he urged on statesmen of all denominations that it was the great question of the day, and demanded the most serious consideration from all. No nation could be prosperous with a decaying people. There was surely nothing more valuable than human life,—nothing more precious than an immortal soul,— and this question concerned both.

After the adoption of the report,

The Rev. Canon Nesbit, rector of St. Giles's, moved a vote of thanks to Lord Shaftesbury for presiding, and contended that drink was the great cause of crime, and that drinking was itself largely caused by the pestilential air of the dwellings, which drove a poor man out. Where was there for him to go to but the public-house, where he would drink one glass for the good of the house and perhaps many to the harm of himself? They did not wish to turn the poor out of St. Giles's, neither did they wish to do away with their independence by wholly eleemosynary aid; nor, on the other hand, did they want to achieve a great financial success. He thought they might do some philanthropy in a business spirit, and, by taking up the case of such houses as these, obtain a reasonable return for their money.

The Hon. William Vernon cordially seconded the motion, not only in his individual capacity, but as secretary of the Charity Organisation Society. This movement, he feared, could only palliate the evil complained of; unless legislation assisted them more, its removal was hopeless. In that room, for instance, supposing it to be occupied by a family, and the father sickened and died of an infectious disease, what would become of the children? On this point—the disposal of the body between death and burial—he had to inform them that a scheme was now afoot for a public mortuary for the poor of Drury-lane and part of St. Giles's, and that the Vestry of St. Martin's had granted a site available in Drury-lane.

The vote of thanks was then carried unanimously.

The Earl of Shaftesbury, in acknowledgment, congratulated the Society on what they had accomplished; and said no one could form any idea of the filth, the stench, and the vermin in these houses a year ago, without actually witnessing it. He quite agreed with Lord Elliot that such renovations as this were only a part of the object aimed at. But the state in which they left the houses was very much better than their former state; they had, at any rate, made it possible for families to live there in decency and in the practice of Christian duties. They must bring commercial principles to their aid. The renovation of London would cost ten millions sterling, and could never be effected by the philanthropic principle alone. The displacement of the poor going on in London, as Mr. Godwin had shown, was enormous. From railway Bills, which had to state the numbers of houses and persons to be displaced, it was calculated that since 1852 the average displacement of the very poor in England and Wales had been 50,000 a year. During a large displacement in Westminster many crossed the river, and some who remained had to pay double price for their wretched lodgings. Referring to the renovation of Tyndal's-buildings by the Society, the chairman described the condition of the court as so bad that the workmen struck work on account of the vermin, and as sending twenty-two fever cases to the hospital in a year. Since the alteration no fever case had occurred; and the conduct as well as condition of the people had very much improved, according to the statements of the police. Changed domiciles would soon make a changed population. He trusted that the example of this society would be imitated in many other parts of London; as certainly many would thereby be extricated from misery, and a condition of things altered which was now a degradation and a disgrace to the metropolis.

The condition of the houses when Mr. Eyton, the Society's architect, began the work, was found to be even worse than we had described; some of the walls were hanging up by the eyebrows, and might have collapsed at any moment.

THE NEWINGTON VESTRY'S DEPÔT AND MORTUARY AT WALWORTH.

For some time past the Newington Vestry have been engaged in the construction of extensive premises, at Walworth, which are intended to serve the several purposes of a road-scrapings and dust depôt, a stone-yard, cart-sheds, store-rooms, offices, and stabling, together with a mortuary, for the use of the parish. These premises, which have been constructed at a large outlay, are now fast approaching completion, and will be fully opened and utilised for general parish purposes in about a fortnight from the present time.

The premises, which are situated between Manor-place and Penrose-street, on the west side of the Walworth-road, and which are intersected by the London, Chatham, and Dover railway (the two sections being connected by the arches under the railway), occupy altogether an area of between two and three acres in extent. The land upon either side of the railway, upon which the depôt has been formed, was purchased from the railway company by the vestry, who have also leased from the company seventeen of the railway arches. For the purpose of removing the dust and street sweepings into the country by railway, a timber siding for a stand of twenty-eight trucks has been erected alongside the railway, at an elevation of 20 ft. above the yard level of the depôt. The dust and street sweepings will be raised from the depôt to the railway trucks by means of a steam crane on the railway level, drawing up skips containing the dust and refuse. The railway level of the siding contains a fantail for removing the trucks from one set of lines to the other; also a timber staging or jetty for the steam crane under which, sunk below the paved surface of the depôt, there are eight pits and hoppers, built at an equal distance from the centre, and formed in a circle round the jetty, so that the skips fit into them. Two of these skips are for the reception of dust, and the other six for shooting road-scrapings, and a complete set of tramways is laid throughout, and facilitate the removal of the various materials from point to point, until they are finally discharged by the steam crane into the railway trucks. This portion of the work has been executed by Mr. Ritson, the contractor; the plans for the railway timber siding, steam crane, and other works in immediate connexion therewith, having been prepared by Mr. Mills, engineer to the Chatham and Dover Company.

The arches under the railway have been fitted up, three of them as stables for fifty horses, and others as cart-sheds, store warehouses, and offices, the contractor for this part of the work being Mr. Cook, of Walworth-road, builder.

The entire area of the depôt has been drained and paved on a bed of concrete, and in laying out the levels of the depôt, a scheme of slop drainage and slop filter-beds has been adopted, in which provision is made for the drainage of 1,000 loads of slop, or the depositing of 5,000 to 6,000 loads of snow. This portion of the works has been carried out by the workmen of the vestry, according to plans prepared by Mr. Gledhill, the surveyor of roads to the parish. This method of slop drainage is an experiment, and it is expected that under its practical operation a saving of upwards of 500*l.* a year will be effected in the cost of conveyance and loading.

One portion of the depôt will be set apart as a store-yard for drain-pipes, bricks, lime, stone, and paving materials; another portion for the road-sweepings or slop just referred to, and the remaining portion for dust. A boundary-wall, 8 ft. high, encloses the entire area, which has just been planted all round with trees.

The mortuary, which forms a portion of the establishment, is not the least important feature in the works. It is situated at the extreme end of the depôt, separated from the rest of the premises, and approached by a gateway altogether distinct from the rest of the establishment. The dimensions of the mortuary are 25 ft. by 20 ft., and it contains a room for dissecting and *post-mortem* purposes, fitted with the necessary slate slabs and tables, sinks, and drainage, and has a concrete floor, with Portland cement surface. One of the railway arches, which immediately adjoins it, has been converted into a disinfecting-room, the dimensions of which are 50 ft. by 25 ft. It has been fitted up with a complete disinfecting apparatus, containing all the latest improvements in connexion therewith. The arrangements of the mortuary and disinfecting-room are such that the hearses containing bodies, or carts containing materials requiring disinfection, can draw at once out of the premises without causing any nuisance to the neighbours. The works connected with the mortuary and dissecting-room have been executed according to plans prepared by Mr. Hardy, the surveyor of sewers to the vestry; and have been carried out under his superintendence.

The estimated cost of the depôt and mortuary, which is intended to be very complete, is upwards of 7,000*l.*, exclusive of the land.

ENGLISH BUILDINGS FOR LEGHORN.

A correspondent informs us that the municipality of Leghorn, with a desire to improve and add to the inducements to strangers on the Continent to visit and stay at Leghorn, are about to grant to a party of English gentlemen the concession of a large tract of land in the best portion of the town, just outside the city walls, which will be so extended as to inclose it. This piece of land, on part of which formerly stood the barracks, has a sea frontage on three of its sides, the fourth side facing the Corso. The object of the municipality in making this concession, is to enable these gentlemen to create a winter season in Leghorn, by erecting a superior class of house, built, as is usual abroad, in flats, but containing those comforts and requirements which are necessities to the English, American, and other visitors. An esplanade will be built all round the sides facing the sea; and on that looking toward the Island of Gorgona is to be erected a large hotel, with suites of rooms, replete with every English convenience, such as fireplace, good ventilation, and good bath-rooms, &c. On one of the remaining sides, facing the sea, will be erected a club-house, which will be conveniently situated for gentlemen cruising in their yachts in the Mediterancan. On the other side there will be a kursaal. On the rest of the estate it is proposed to erect villas, as before mentioned, so far embodying the foreign principle that they will be constructed to be let in flats, but each flat will be furnished in such a manner as to combine all the requirements and comforts of an English home, with the beauties of an Italian climate.

The price of land in this portion of the town is increasing very much in value, and in the case of that opposite the estate in question, the value has gone up over 50 per cent. within the last twelve months. An architect has already been to Leghorn to make a report and survey, as well as to aid in carrying out the necessary negotiations. The misfortune is that Italian authorities are hard to deal with: an English company would have to keep all its eyes open.

CONSTANT WATER SUPPLY.

It is gratifying to know that a serious grievance, which the inhabitants of London have long had occasion to complain of, is in course of being at least partially redressed: we refer to the intermittent and often greatly defective supply of the prime necessary of life—water. From the last report of Major Frank Bolton, Water Examiner for London, it appears that progress is being made by several companies in the provision of constant supply. During the past year the Lambeth Company have given constant supply by means of stand-pipes, in a number of courts and alleys, to about 460 houses, and have made arrangements to give a like supply to about 5,000 houses of a similar class. The alterations in fittings under the new rules and re-

ulations of the Board of Trade are being gradually ffected as occasion permits, and they are being arried out in all new buildings. The Grand unction Company are constructing near Kilburn high-service reservoir, the work being well orward, that will contain 6,000,000 gallons. The Vest Middlesex Company have recently given onstant supply to 100 houses on the application f the owners, who have provided fittings in conormity with the regulations of 1872. The comany is fully prepared to extend the constant upply when called upon to do so. To afford eans of giving constant supply, the company providing additional engine-power at Hammerith and at Hampton. The Southwark and auxhall Company are constructing, at Nunhead, reservoir to contain 18,000,000 gallons, to nable them to provide a constant high-pressure upply. The works are being prosecuted vigorusly. The East London Company have given otice that, from the 25th March, they will give onstant supply to the part of their district ounded on the north by the Hackney-road, on he south by Church-street, Bethnal Green, on the ast by Cambridge-road, and on the west by Shoreitch. The district indicated embraces 205 streets, ,328 houses, and about 40,000 inhabitants. errules have been used hitherto to restrict the upply, but their use will be discontinued, as ontrary to the orders of the Board of Trade of 0th August, 1872. The New River Company ave provided additional steam power, mains, and igh-service reservoirs, as required for the high-ressure constant supply of the Metropolis Vater Act, 1852. After the passing of the Act f 1871, the company undertook the construction f a new service reservoir at Highgate, 336 feet bove Trinity high-water mark, as further addiion to their power of affording effective constant ervice. This company also has afforded constant supply in a number of cases by means of tand-pipes, and they have recently agreed with committee of the Corporation of the City of ondon to furnish constant supply at once to a rge number of the houses of the poor within he City bounds, and are now only waiting the rrangements of the officers of the Corporation o carry this design into effect. The Kent Water ompany are also stirring in this matter, and ave given notice that from the 1st of June next ey will give constant supply to about 1,000 ouses in Rotherhithe, Deptford, and at New ross. It is necessary to say that other tatements are made by some less friendly itics.

The East London Company has now storage eservoir capacity at Walthamstow for 360,000,000 allons, the reservoirs having an area of 220 cres. The engines that are being provided by he West Middlesex Company at Hampton and Hammersmith are the one of 120, the other of 35 horse power, each having a 68-inch cylinder. xtensive new works have been ordered by the helsea Company that are not likely to prove noxious, as were their proposed works at ampton Court.

STATUES FOR THE SCOTT MONUMENT.

About two years ago a movement was set on ot by Mr. James Ballantine, for the completion f the Scott Monument, by the fitting up of its terior as a museum, and the providing of atues to fill the niches which diversify its exrnal surface. The former object has been tained, and the latter is now in course of alisation. Of the statues required to fill the merous niches, says the *Weekly Scotsman*, the ommittee charged with the undertaking found emselves in a position to commission sixteen, s a first instalment, and these, in the hands of e various sculptors intrusted with them, are for e most part either finished or rapidly approachg completion. To Mr. Wm. Brodie, R.S.A., ur subjects were assigned, the same number eing allotted to Mr. John Hutchison, R.S.A., hile two each were given to Mrs. D. O. Hill, r. Clark Stanton, A.R.S.A., Mr. D. W. Stevenn, and Mr. Lawson, London. It was provided at the figures should be of a uniform height—mething just under life size—and that all ould be hewn out of Binnie freestone in a style execution adapted to the elevated positions—me 15 ft. to 20 ft. above the ground—which ey are intended to occupy. Mr. Brodie's atues illustrate the "Heart of Mid-Lothian,' d "Kenilworth." From the former novel ere is Jeanie Deans, in homely attire, and all bundle in hand, as she took the road on her ission of mercy. Jeanie's eccentric admirer, Dumbiedykes, forms a companion subject, hands crossed in front, and head to one side, with a wistful look as he ejaculated "Jeanie, Woman!" "Kenilworth" furnishes the Earl of Leicester and Amy Robsart. Mr. Hutchison gives illustrations of "Waverley" and the "Fair Maid of Perth." Mrs. D. O. Hill's subjects, taken from "The Pirate," are Magnus and Minna Troil, the former a venerable figure in flowing cloak, with hands on a staff. Mr. Clark Stanton, to whose lot "Ivanhoe" has fallen, gives us a stately Rebecca, with waves of rich hair rolling down upon her shoulders, and a countenance full of dignified composure. In dealing with Friar Tuck, Mr. Stanton has departed from the ordinary pot-bellied ideal, and has modelled a stalwart figure with frank jovial expression, holding in his hand an antique drinking-horn. Mr. D. W. Stevenson illustrates "The Abbot" with a statue of Mary Queen of Scots, and one of Halbert Glendinning. Mr. Lawson had assigned him Diana Vernon, the heroine of "Rob Roy," together with Bailie Nicol Jarvie. The Bailie stands with one hand in the pocket of his deep waistcoat, and the other fumbling at his long cravat, as while exclaiming "My conscience!" In addition to these statues, there are being prepared by Mr. Hutchison a series of heads in alto relievo, intended to be cast in bronze, for the decoration of the interior of the monument.

THE TRADES MOVEMENT.

Liverpool.—The differences between the master painters of Liverpool and the operatives have been adjusted. The men claimed 7½d. per hour for 54 hours' work per week, which was rejected by the masters, who offered 7d. per hour for a week of 55 hours, being an advance of a ½d. per hour upon the existing wages. The men declined these terms, and after several meetings of joint representatives, it was decided to refer the matter to the arbitration of Mr. Clarke Aspinall, the borough coroner, and a local magistrate. Mr. Aspinall's award has been received by Mr. Hugh Shimmin, the Secretary to the Master Builders' Association. It is in favour of 7½d. per hour for a week of 55 hours. This, it is expected, will finally settle the matter.——The building trades of Liverpool have recently been in an unsettled state in consequence of the disputes with the house carpenters and joiners of Liverpool and Birkenhead. The men claim an increase of wages, and a reduction in the hours of labour, which practically involve an increase of pay amounting to 2s. 4d. per week, with five hours' less work. No positive change, however, can take place until the 1st of May, as both parties on the 1st of November last bound themselves to give six months' notice of any change. The men have already rejected a proposal of the masters to increase the wages by ½d. per hour without reducing the hours.——At a large and influential meeting of master joiners, held at the rooms of the Master Builders' Association, Mr. Rome in the chair, called to take into consideration the advisability, or otherwise, of leaving to arbitration the dispute between the masters and the operatives on the wages question, a resolution was passed "unanimously and emphatically declining to go to arbitration upon the present trade rules." This resolution was arrived at in consequence of it being considered that the offer made by the employers in February last was a most liberal one in the present state of trade. A general strike in the building trade will probably take place on the 1st of May, unless the men forego their claims for further concessions.

Leeds.—The plasterers' labourers, numbering about 100, have struck work, their masters not having conceded their demand of 6d. per hour. Hitherto they have been paid 5½d. per hour. A meeting of the employers has been held for the purpose of considering the matter, and the result of their deliberation was a unanimous determination not to increase the rate of wages.

Leamington.—The operatives in every branch of the building trade at Leamington have struck. Through the local trades' council, they some time ago served notice on the masters for shorter hours and increased pay. They stipulated 54 hours instead of 56½ hours should be a week's work, and demanded an increase of wages, ranging from a farthing per hour for labourers to seven-eighths of a penny for carpenters. The masters formed an association, embracing the whole trade, and served counter notices on the men, to come into operation, adhering to the old wages, but making alterations in hours for beginning work. The men proposed arbitration, but the masters intimated that they should make no concessions. It is calculated that about 800 men have struck.

Wednesbury.—At a special meeting of the members of the Operative Bricklayers' Society the following resolution has been unanimously adopted:—"That an increase of ½d. per hour in summer (7½d.), and 1d. per hour for twelve weeks in winter (8d.), for red brickwork; also, 1d. upon furnace work, at 1s. 6d. per hour, and 1d. upon ditto at 1s. per hour, allowance to remain as previous,—be requested." It was also decided, "That the notice of 1872 be rescinded, and that all future notices be given on the 1st of April, to take effect on the 1st of May in each year."

Woodhouse.—The master builders of Woodhouse and Handsworth have conceded the following, being a part of what was asked for the operative masons in a notice recently given: "To begin at half-past six instead of six in the morning, and an advance of 2s. per week on their wages.

Glasgow.—At a meeting of Glasgow joiners it was reported that eighty-six employers had consented to accede to the demands of the men for an advance of ½d. per hour; twenty promised to pay the advance if the trade generally did so; nine had refused, and four had not yet given any decided answer. As the nine masters who decline to give the advance employ very few hands, the threatened strike will be averted.

Arbitration is working successfully in the provinces. It has just averted two great strikes in the building trade, one at Liverpool, the other at Birmingham. Mr. Clarke Aspinall, as we have seen, has decided the Liverpool case in favour of the men as regards wages, and of the masters as regards hours. Only the first part of the Birmingham award has been given,—that settling the hours; the decision as to pay was expected shortly.

Mr. Rupert Kettle, to whom was referred the question of wages in the North of England iron trade, has declared that puddlers shall receive an advance of 9d. per ton, and that all other ironworkers shall be paid an advance of 7½ per cent. on present prices. This decision was communicated at a meeting of the Board of Arbitration at Saltburn.

NATIONAL MONUMENTS.

Sir,—Having read Mr. C. Cooke's remarks in your paper of the 29th ult., under the heading of "National Monuments," I am at a loss to understand the harsh expressions used from time to time by gentlemen who profess much veneration for notable stone relics. I have before, in the *Times*, mentioned certain particulars respecting the Tôlmen Rock, in Constantine, Cornwall, and I would suggest that when a relic is offered to the country at large for a mere nominal sum (as was the case with the Tôlmen Rock), there should be an effort put forth to purchase the rights to such monuments before any person or persons give expression to censure.

The Tôlmen was the key to large masses of beautiful granite rocks; and although it was thrown down after working-hours, unknown to me, yet I maintain, had I ordered its destruction, it is not becoming in any one to question the action of a proprietor with respect to a monument or relic, when he has had the opportunity of purchasing all rights to the same.

Penryn. Wm. Hosken.

In the *Gentleman's Magazine*, May, 1844, pp. 483, 488, reference was made to various destroyed stone monuments in Cornwall, near Penzance; and it was stated that the late Sir Charles Lemon, of Carclew, offered a reasonable price for the Constantine Tôlmen, and the land on which it was placed. The then owner demanded 500*l.* as purchase-money, which Sir Charles declined to pay. Dr. Borlase deemed it to be a rock idol, and engraved it in his work upon the Antiquities of Cornwall, 2nd edit., p. 147. This relic, when I inspected it in May, 1861, was ominously near a stone-pit, as the Cheesewring is now. The Rev. R. Polwhele, when vicar of Manaccan, distinctly saw the Eddystone light from the Tôlmen, some fifty miles distant as the crow flies! The fine cross, which stood about half-way between Helston and Penryn, near the road-side, has been destroyed recently. A protective fence round old relics, as at Capel Garnon, in Carnarvonshire,

and at Bryn Celli, in Anglesey, is useful, and easy to construct. Sir J. Lubbock's Bill should include post-historic monuments; although, as it is, if passed, it may prevent cromlechs and pillars from being destroyed through ignorance, cupidity, and folly, or mischief.

CHR. COOKE.

A MUSEUM FOR CHESTER.

AN effort is now to be made to provide the "rare old city of Chester" with a museum capable of displaying her archæological treasures. The Marquis of Westminster lately presided at a meeting of the principal professional men and tradesmen of Chester, the object being to consider a scheme for uniting under one roof the city library and reading-room, the society of arts, the architectural and archæological society, the natural science society, and also for establishing a local museum, the nucleus of which is already secured to the city by a very fine geological collection presented by Lord Westminster. Plans were submitted of the house and a portion of the premises lately occupied by Mr. C. Potts, deceased, and a sum of 4,000*l.* was named for the same. The joint committees of the societies received power to treat for a rental of the premises, with the option of purchase.

GAS.

Air-Gas.—While noting particulars of the experiments lately made in London with an apparatus in which common air was charged with a hydro-carbonaceous spirit or mineral oil, and then stored in a gasometer for use, we suggested that the simplest and best way would be to fill the gasometer with mere air by lifting it, and then by weighting it forcing the air to pass through the hydro-carbon spirit on its way to the burners; because air so charged with spirit must tend to deposit the spirit in the gasometer before it is used. Now it turns out that the plan adopted at Sheffield by a Mr. W. Wright, and not very clearly announced in a local paper, is no other than this suggestion of ours put into practice. The *Sheffield Independent* thus describes it:—

"The new gas can be used either for lighting, heating, or soldering purposes, to each of which uses it was yesterday applied. The apparatus for heating consisted of a sheet-iron box, 4 ft. 6 in. long by 18 in. wide, with a small cistern, 6 in. deep, on two of the sides. At either end of the box was a 3-in. pipe. Air, supplied by a small fan, entered the box through one pipe, became carbonised; and left through the other—pure gas! It then passed into a perforated iron box, 6 ft. by 4 ft.; and in a few minutes after it was ignited, so great was the heat, the plate at the top became red hot. Unmistakable evidence was thus afforded of the heating power of the gas. In the yard, an airometer had been fixed to show the lighting power of the gas. *When the airometer was raised it filled with air; and on a weight being placed on it, the air pressed through three cylinders which contained the apparatus for carbonising it. The air, which had thus become gas, then passed to an Argand burner, was ignited, and gave a brilliant light.* The gas was also used for soldering purposes. A small pair of bellows, worked by the foot, pressed the air through a small cylinder, in which it was made into gas. Another pipe taken from the same bellows met the gas at the end of the blow-pipe, and thus a steady blast was created. The secret of the invention is in the spirit that is used, and in the mode in which it is applied in the cylinders. By means of the small apparatus Mr. Wright had at work, he was able to manufacture gas at the rate of 5,000 ft. per hour. He has not yet ascertained definitely whether what is either its lighting or its heating power, but both are believed to be considerably above those of the ordinary gas. He is of opinion that the outside cost will not be above 6d. per 1,000 ft."

Silber's Lights.—One of Silber's patent lights is about to be erected by the St. George's Vestry at Ebury Bridge. It is stated these lamps give a better light than gas, and are less expensive. If so, no time should be lost in adopting them all over London.

Price of Gas.—In the House of Commons, Sir C. Dilke asked the President of the Board of Trade whether, looking to the excitement which at present prevails in the metropolis on the subject of the price of gas, there was any objection to printing the accounts of the Metropolitan Gas Companies for the year 1872 at once, instead of at the end of the session of Parliament. In reply, Mr. C. Fortescue said,—"I am not able at once to have the accounts of the Metropolitan Gas Companies printed, because they have not yet been received; but I believe they will soon be presented, and that I shall be able to lay the return before Parliament at an earlier period than usual."

Instantaneous Gas-lighting Apparatus.—Professor Klinkerfone's apparatus for the instantaneous lighting and extinguishing of gas-lamps has been exhibited in the Gas-Meter Testing Office, Glasgow. The system consists in having each lamp furnished with a separate battery, and the apparatus used is a combined hydrostatic tap and galvanic battery. By increasing the gas-pressure from the street mains galvanic action is produced, the supply opened, and the jet ignited. By reducing the pressure the tap immediately closes, and the flame is extinguished.

SANITARY AUTHORITIES.

Gloucestershire.—A meeting of delegates from various sanitary authorities of the county, for the purpose of appointing a medical officer of health, has been held at the Gloucester Workhouse. The Rev. H. W. Maddy, chairman of the Gloucester Board of Guardians, presided, and about thirty delegates were present. The salary of the proposed officer had been fixed at 600*l.* per annum, with 200*l.* for travelling expenses. There were sixty-seven candidates, of whom eight were requested to attend the meeting. After the delegates had examined the testimonials, and had had interviews with each of the candidates, Dr. Francis Thomas Bond, of the Hartley Institution, Southampton, was elected, such election being subject to confirmation by the Local Government Board.

Public Health Act (1872).—In reply to Dr. Lush, in the House of Commons, Mr. Stansfeld said that the instructions given to the poor-law inspectors under this Act, and the urban and sanitary authorities, were not identical, as the conditions of each locality were different. In cases where medical officers of health were appointed over large areas, it would be necessary, sooner or later, for the authorities to avail themselves of the local knowledge of the poor-law medical officers for sanitary purposes, but he was not prepared to say what the remuneration for extra services, to which the latter were undoubtedly entitled, would be.

WOODEN HOUSES.

SIR,—If your correspondent, Mr. A. T. Holden, will turn to page xvi. (advertisement sheet) of the *Builder* of last week, he will find at least *four* firms who would send him an estimate for a wooden billiard-room on application. To my knowledge, one of these,—the seventh from the top,—recently supplied a two-roomed house, 25 ft. 6 in. by 13 ft. 3 in., by 7 ft. 9 in. at the eaves, within thirty miles of London, for about 75*l.*

ALFRED STRONG.

METROPOLITAN IMPROVEMENTS.

SIR,—The want of a properly-constituted and recognised tribunal for metropolitan improvements is becoming daily more evident, and is one deserving of much consideration. My proposal is to establish a "permanent Board," to be styled the "Metropolis Improvement Board," and its members to be selected in manner following,—three members of the Government of the day, three of the Metropolitan Board, three of the Royal Institute of British Architects, three of the Institution of Civil Engineers, three of the Thames Conservancy Board. A comprehensive plan, embracing all the principal improvements, should then be drawn out, and such portions as bear immediately upon the necessities of improved communication should be set in hand, bearing in mind, however, that *direct taxation has already reached its limits*; and you, sir, will, I hope, agree with me, that if these improvements are to proceed *pari passu*, as they have of late progressed, other means must be provided for paying for them than out of the rates.

That this might be accomplished is a "consummation devoutly to be wished," and is, I believe, one worthy of the attentive consideration of Government, who should bear in mind that there is no more false economy than in starving "public works."

PALLADIM.

CREWKERNE BURIAL BOARD COMPETITION.

SIR,—Will you kindly permit me space to inform architects and others intending to send in designs for the church and chapel, and other buildings, for the new Cemetery, Crewkerne, how I, in common, I suppose, with the other competitors for the premium for the best design for the laying out of the said cemetery, was served. Designs were advertised for; and in reply to my application for outline plan and particulars, a small tracing of a piece of land about 7 acres in extent was supplied, without particulars, except that 4 acres only were to be appropriated for the cemetery, and it was left open to competitors to select the portion each one deemed most suitable. I sent for further particulars, and declined to compete unless they were supplied, and after a week's delay my queries were answered. I then got up a design and estimate, and sent them in, and in a few days afterwards received a letter stating that *all the designs were rejected*, and that the Board had deemed it *indispensable* to a correct estimate that the person furnishing the same should have personally inspected the site. The same letter stated that the plan was returned together with another outline tracing showing the land the Board had definitely resolved to use, and contained a request that I would inform them whether I should compete again, as the Board would be willing to receive another design if I thought well to send one. The land I suggested was almost identical with that afterwards decided to be appropriated, but the outline of the south-west side on the second tracing was altogether different from the outline for the same side on the first tracing, and the cardinal points on the first differed by about thirty-seven degrees from those on the second tracing, consequently the time and money expended on the designs were wasted; and when written to upon the subject, the town-clerk acknowledged a slight difference, and replied that he was not in a position to say that the first plan was incorrect, neither did he suggest anything of the kind. Why, then, was not the second plan like the first? He further stated, that he went out of his way in supplying any tracing at all, and that the Board had not stated they would not accept an estimate from any person not having inspected the site, evidently forgetting that, in a former letter, he had used the word "indispensable," as above.

AN UNFAIRLY TREATED COMPETITOR.

"SOME COMPLAINTS AGAINST CHELSEA."

SIR,—There is a paragraph in Mr. Lacy's letter, which appeared in your last issue under the above heading, which, if unexplained, might do me a serious injury. It says:—

"Mr. Elkington's tender was accepted conditionally that his sureties were correct. On the 21st ult. I received a letter from the clerk to the Board, which I enclose, stating that the contractor who was accepted not being prepared with sureties, would I be willing to abide by my tender and provide sureties?"

The facts as stated are substantially correct, though very wrong inferences may be drawn from the statement.

I was asked by the Board if I was prepared with sureties, and replied that I did not consider that for so paltry an amount as 2,550*l.* it was worth while to trouble any one to be security for me, but *offered to leave the first 1,000l. in their hands till the completion of the works.* Surely this should have been good enough.

As matters have turned out, I suppose that, had I offered the Bank of England as security, it would have been no use; but if the guardians meant Mr. Thorne to have *the job*, why not have given it to him without tender?

THOMAS ELKINGTON.

CASES UNDER THE BUILDING ACT.

AT the Clerkenwell Police Court, Mr. Robert Turnbull, of Sylvan Cottage, Hornsey-rise, appeared in answer to a summons taken out by the surveyor for the eastern division of Islington, for erecting a building situate on the north side of the yard at Mr. Trimmer's Brewery, Hornsey-rise, Islington, contrary to the rules of the Building Act.

Complainant stated that he summoned the defendant to this court about a fortnight ago for neglecting to give him, as the district surveyor, two days before the building in question was commenced, notice in writing, stating the particulars and intended use of such building, and for which offence defendant was fined 40*s.* The present summons was for constructing the same building, contrary to the Building Act. The building was erected upon brickwork, with timber framing, with an asphalte roof, and enclosed on three sides.

Mr. Wakeling, for the defendant, said the building in question was not a permanent erection, only a temporary shed to put the drays of the brewery under. It was on wheels, and could be moved about anywhere, and it was only required for about six months, while his client could erect a permanent building on another portion of the premises; that by section 56 of the Metropolitan Building Act, it was enacted, "When any builder is desirous of erecting any iron building, or any other building to which the rules of this Act are inapplicable, he shall make an application to the Metropolitan Board of Works, stating such desire, and setting out a plan of the proposed building, with such particulars as to the construction thereof as may be required by the said Board; and the latter, if satisfied with such plans and particulars, shall signify their approval, and thereupon such building may be constructed according to such plans and particulars." His client had made application to the Board under the above section for the erection to be allowed to remain for six months; he had also deposited tracings of the building, and paid 19*s.* for fees upon same, and his application would be laid before the Board at their next meeting; therefore, under these circumstances, he (Mr. Wakeling) asked that this summons should stand adjourned, to know the result of his client's application to the Board.

The magistrate adjourned the summons for fourteen days.

WORCESTER DIOCESAN ARCHITECTURAL SOCIETY.

THE annual meeting of this society has been held in the Council Room of the Natural History Society at Worcester. Mr. G. J. A. Walker presided, and there were also present—Sir E. A. H. Lechmere, bart.; the Revs. R. Cattley, W. Thorne, T. G. Cartler, W. W. Douglas, T. King, J. F. Green, E. Robinson, H. V. Vernon, G. C. Salt; Messrs. Walker Rennick, E. Lees, Hyla Holden, G. A. Bird, J. Cotton, and J. Severn Walker (hon. sec.)

The Hon. Secretary read the annual report, which was adopted.

Sir Edmund Lechmere, in moving the adoption of the report, said he thought it might be worth while to consider whether another object, in addition to the original object of the society, might not be recognised; that it should not merely be an architectural society, but also, as was the case at Oxford, an historical and antiquarian

ociety. He believed such an object would be productive of a great increase of members, without diminishing in any degree the practical tility of the society. Sir Edmund then expressed the hope, as one of the Cathedral Restoration Committee, that the Architectural Society would not come down upon them with a sweeping criticism as soon as the works now in progress are completed, but that even now, if they saw any points that would promote the interests of architecture or the beauty of that noble edifice, they would give the committee the benefit of their advice.

Mr. Severn Walker said that, with regard to the suggestion thrown out by Sir E. Lechmere, the society was practically, although not in name, archæological; but if they could make it more expansive, and enlist greater sympathy from the public generally by altering its title, and adding to it an historical section, it might be advantageous to do so.

The president, vice-presidents, honorary secretaries, treasurer, and auditors were re-elected, and the committee for the ensuing year formed.

RE-OPENING OF THE PRIORY CHURCH, DUNSTABLE.

After a partial restoration at a cost of about 3,700*l.*, this church, according to the *Bedford Times*, has been formally reopened for divine worship.

Three years ago, the sum of 5,000*l.* was expended, and now 1,700*l.* more have been devoted to the work of restoration. The north aisle, however, remains to be restored, and towards this the Duke of Bedford has promised to supplement his former donation by a second sum of 500*l.* 300*l.* more are also promised from other sources. The exterior also needs restoration. As for the interior, the work of restoration became a matter of necessity, for it was not until the roof threatened to fall in,—the tie-beams were rotten, rafters were dropping, and an ornamental corbel had fallen,—that a decided step was taken towards the restoration of the edifice.

At the entrance an oak screen has been erected. The clergy of the rural deanery have presented the church with a pulpit of marble, the sides being of variegated brown, from Torquay, and the upper portion of polished Derbyshire marble, with a carved eagle supporting the book-rest upon its wings. The steps are of brown Mansfield stone, and the lower portions of Kettering stone. The floor is laid with Minton's encaustic tiles. Haden's patent hot-air heating-apparatus is provided. A new reading-desk of carved oak has been purchased. The old style of pew is done away with, and open pews supplied instead. The chancel, as far as it goes, is all new, but a good deal is required to finish this part of the edifice. A new font has been provided, and a new vestry erected. The old gallery is cleared out, and the organ-loft has disappeared.

Mr. S. Clarke was the architect under whom the restorations have been carried out. We have a view of the church some time ago.

GIFT BY THE CROWN TO THE TOWN OF DUMFRIES.

The estate of Hannahfield, which, in default of heirs, fell to the Crown, has been gifted to the magistrates of Dumfries, and the sheriff and sheriff's substitute of Dumfries and Galloway, in trust.

Part of it is to be converted into a public park, and the revenue derivable from the remainder to be applied to the improvement of education in Dumfries and Galloway.

The greater part of this estate originally belonged to the burgh of Dumfries, and was called the Kingholm; but, about fifty years ago, it was sold in order to extinguish debts incurred by the burgh. The purchaser was a Mr. John Hannah, a native of the burgh, who had accumulated a considerable fortune in Jamaica. His gentleman added to the landed estate, and being unmarried, intended to leave the property for the support and maintenance of an educational institution,—the Burgh,—and had actually prepared a will for that purpose, but died before the deed was completed. His only relative was a nephew, who succeeded by law to the estate; he again left it to his widow, and she having died, in 1868, intestate and without issue, it fell to the Crown, as *ultimus hæres*.

In granting this gift, the Crown has reserved to itself the right of drilling troops upon the park. Dumfries was a military station, and the War Office was frequently put to considerable expense in brigading the contingent quartered there, there being no sufficient space of ground in the neighbourhood at command.

It is expected that the personalty will be sufficient to defray all preliminary claims, so that the land will be free of burden.

The good news was received by the Dumfriesians with demonstrations of joy, ringing of bells, banquets, &c.

In this instance the Crown is only following the example set by several wealthy private individuals, and is besides practically carrying into effect the intentions of the person by whose exertions the estate was acquired.

DIGGING FOUNDATIONS TO THE INJURY OF ADJOINING HOUSES.

Burdon v. Gradon.—This action, brought in the Durham County Court, is one of some interest to architects and builders, in regard to foundations, and also to owners of house property.

The plaintiff claimed 50*l.* damages of the defendant, who is a builder, under the following circumstances.

Mr. Burdon stated that in 1842 he built a house, and superintended the laying of the foundation. The ground was peaty, but the floors were laid with 2 ft. of concrete. The house on the north side, and a timber-yard, belonged to Mr. Gradon, the defendant, and considerable alterations have since been made in Mr. Gradon's property, and an engine erected close to the witness's house. The defendant has cut away one house, and removed three walls that formerly supported witnesses house, and the garden party-wall fell down in consequence of the excavations made by the county architect, who is architect to the alterations. The floor of the back kitchen sank 5 in. on Mr. Gradon's side, and the fireplace was injured. In the front kitchen the floor was sprung up, and the fireplace let down. The outer walls were cracked in several places; back window-frames considerably out of level. The ridge of the house on Mr. Gradon's side sank 5 in., and parted from the adjoining property, and the front windows are dropping in, and the damage was done within three months of the commencement of the excavations, and he estimated the damage at upwards of 50*l.* Upon speaking to the defendant, he said he would send a man down to make it good, but all he did was a little work to the spouting. He could not now let the house, and had to live in it himself. He further experienced a great nuisance from the vibration of the defendant's steam-engine which did his building work. The engine was worked with metal cog-wheels, and caused a great noise.

In cross-examination by Mr. Edge, counsel for the defendant, the plaintiff said: The tenant who occupied the house twenty years ago did not remove because witness would not repair it. Another tenant had complained of the roof, but there was only one slate off. Did not speak to Mr. Gradon about the damage until 1871, as he wished to ascertain its full extent, and he had spent 10*l.* in repairing it since he went to live in it. Will not swear that the defendant did not offer to put the floors right, rather than be unneighbourly.

Mr. Robson, a builder, proved the damage, and cost of reinstatement.

In answer to the case, Mr. Edge said, the action had been brought in order to make his client build the plaintiff a new house. No excavations had been made as stated by the plaintiff. His client had offered as a neighbour to repair the floors, but the plaintiff would not let him, and now sought to recover vindictive damages. In fact, Mr. Gradon had done nothing he was not entitled to do in carrying on his business, and the present condition of the plaintiff's property was owing to his neglect in repairing the house. With regard to the claim for compensation, on account of the alleged nuisance of the defendants' engine, every care had been taken in working the machinery, and no unnecessary noise had been caused.

Mr. Crozier said he was the county architect, and prepared the plans for the alterations of Mr. Gradon's premises. The work was done according to these plans, and no excavation had been made in carrying out the alterations either under Mr. Gradon's house, or within 6 ft. or 7 ft. of the walls of the plaintiff's house. The front kitchen of the house pulled down had been filled up to the extent of 6 ft. or 7 ft., and an archway made through the house itself, so that conveyances could be taken into the defendant's premises. The present floor of the back kitchen also stands on the old floor, and is 2 ft. higher than the old floor: 2 ft. of concrete was laid on this floor in order to make a good bed for Mr. Gradon's machinery. There were no cracks in the defendant's house in consequence of the vibration of the engine. He did not consider that anything Mr. Gradon had done to his premises had in the least injured the plaintiff's house. The only place where any excavation was made was in the garden behind the defendant's house, but that work was only carried to within 7 ft. of the plaintiff's property. Before Mr. Gradon commenced his alterations, witness had noticed the dilapidated state of the plaintiff's house.

The judge, Mr. Meynell, said if machinery adjoining a dwelling-house made such a noise as to cause inconvenience or injury, or a nuisance to any one, an action would lie; but if it were only a slight noise it would not be actionable. If a person had a piano in his house, and his neighbour, owing to the thinness of the walls, was annoyed by the instrument, that would not be sufficient ground for an action. In this case all the evidence was given by Mr. Burdon, who stated that he experienced inconvenience when the engine was started in the morning. He alleged that the engine shook his bed, and prevented him from sleeping, and if that were so why there was a nuisance. With regard to damages, it was usual in cases like this only to give a small amount in the first instance, because other actions could be brought afterwards if the nuisance were not abated. Still if the jury considered it right, they could give substantial damages for the alleged nuisance.

* The jury, without leaving their box, gave a verdict for the defendant in both cases, and the Court allowed Mr. Gradon full costs of counsel, attorney, architect, and several witnesses, who were not examined.

THE ANNUAL REPORT OF THE METROPOLITAN BOARD OF WORKS.

The report of the Metropolitan Board of Works for 1872, which has just been issued, contains some interesting particulars as to the work which has been effected by the Board during the past year, together with other works contracted for and immediately to be commenced.

Amongst other items contained in the report it is stated that during the year sixty-five plots of the surplus land in Queen Victoria-street have been let at a rental of 26,592*l.*, and some have been sold, including 15,531 square feet to the Metropolitan District Railway Company for 73,373*l.* The report adds that all the remaining ground will very probably be let or sold during the present year. The works at the Chelsea Embankment were rapidly proceeding. On the question of parks, the report states that the Board have resolved not to let for building purposes any portion of the land purchased for Finsbury Park, and that a greenhouse is to be erected there in which to propagate plants for the gardens of the Thames Embankment. Southwark Park has been similarly dealt with, and all the ground purchased, with the exception of a small outlying portion, is to be included in the park. The Board have also purchased of the Crown 23¾ acres for 20,450*l.*, for the purpose of adding it to Victoria Park, for the recreation and enjoyment of the public.

A review of the drainage and sewerage works effected by the Board during the year forms a prominent feature in the report. With the exception of 8,000 feet between the Chelsea Suspension Bridge and the pumping station at Cremorne, the main drainage works were complete, and the delay in completing this portion was occasioned by the Chelsea embankment. For the intended new western pumping station near the Grosvenor Canal, Pimlico, contracts have been signed to the amount of 126,950*l.* for buildings, and 56,789*l.* for machinery, making a total of 183,739*l.*; and in the course of two years the works will be complete. The report adds, that when that is done, the sewage from the westernmost portion of the sewer will no longer be pumped into the river, but raised into the eastern portion, and conveyed into the Abbey Mills pumping station. Contracts have been entered into for sewer connexions in the city; and five contracts have also been entered into for sewer works at Hammersmith Creek, Stamford Brook, Hackney Wick, the Fleet sewer, and High-street, Shoreditch. In addition to the sewer and drainage works executed during the year by the Board itself, the Board has also given its sanction to plans for twenty-four miles of sewers executed by the several District Boards, these sewers varying from a 9-in. pipe to a brick sewer, 4 ft. 3 in. in dimension; whilst during the year 356 branch sewers have been connected with the main sewers.

At the conclusion of the report it is stated that the net debt of the Board at the close of the year was 6,389,530*l.*, and that it had lent to various District Boards during the year, sums amounting in the aggregate to 215,273*l.* for public works; also a further sum of 62,400*l.* to certain of the Boards for paving and other purposes; and had contributed 73,600*l.* towards public works, costing 149,052*l.*

FROM SCOTLAND.

Edinburgh.—In reply to the memorial forwarded to the Secretary of War, calling attention to the baldness of design and generally unsatisfactory character of the buildings now in course of erection on the south slope of Castle-hill, as quarters for married soldiers, a communication has been received to the effect that the matter shall receive due consideration in the proper quarter. Meanwhile, the *Weekly Scotsman* states that the city superintendent of works, Mr. R. Morham, jun., has prepared a plan by which, without any material alteration of what has already been done, the internal character as well as the external appearance of the buildings would be greatly improved. The introduction of pantries and of sanitary appliances on a more satisfactory scale than was contemplated in the original design affords the

opportunity of adding certain features in the elevation and sky-line of the block. This plan is, we believe, to be forwarded to the War Office, as affording a feasible suggestion for the improvement of the buildings.

CHURCH-BUILDING NEWS.

Blaydon.—A new cemetery has been set apart at Blaydon, and the consecrated portion dedicated by the Bishop of Durham, in the presence of a large company. The ground set apart for the cemetery was purchased two years ago from Colonel Towneley, and two chapels and mortuaries have since been erected, together with a superintendent's house and offices. The buildings and laying out of the cemetery have been carried out by Messrs. March & Smith, under the superintendence of Mr. Matthew Thompson, architect, Newcastle. The churchyard being nearly filled up, the cemetery supplies a desideratum in the parish.

Alton.—The steeple of the parish church has been for some time under repair, the work being placed in the hands of Messrs. Puzey & Filewood, of this town, builders. The steeple has been entirely stripped of its former covering of lead, weighing many tons, and will be replaced by oak shingles.

Chard.—A Mission Church, in connexion with the Free Church movement, has been built here. It occupies an elevated site in a meadow adjoining the station-road, and has been erected principally at the cost of the Rev. C. S. Grueber, B.A., of Hambridge, near Langport. The church, as it stands at present, is a very modest and unpretending structure, and will be so for some time to come. The east and west walls are the only portions of the fabric which it is intended to leave in the same state as they are now. These are built of local stone, with Ham-hill dressings. There is an oriel window at the west end, but the east wall is only lighted by small side windows; the intention being to leave space for a large altar-piece. The building is 105 ft. long by 27 ft. wide. There are an organ-chamber, a small vestry, and a robing-room. The side walls are built of flint and brick, and are to be removed, if more room should be required, as soon as the funds can be obtained for building transepts. The timbers of the roof are stained and ceiled between. The chancel is elevated (in two stages) 6 ft. above the floor of the nave, and the altar is to have gilt crosses, candelabra of various sizes, drapery, &c. The seating consists of very plain chairs. The building is lighted with eleven large windows and gas. Some arrangements have been made for heating the church, but at present the heating-chamber (beneath the altar) is without an apparatus. The contractor was Mr. M. Davis, builder, Langport, and the cost is estimated at 1,500*l.* The formal opening of the church has not been fixed.

Horsham St. Faith's (Norfolk).—The restoration of this well-known church has long been desired by those who were acquainted with its history, its condition, and the wants of the parish. Distant four miles from Norwich, on the Aylsham-road, its tower arrests the attention of the traveller, whilst its connexion with the once famous Abbey of St. Faith's, commends it to the antiquary. An effort is being made to accomplish the restoration of the church. It is proposed to underpin and otherwise strengthen the outer walls, and thoroughly restore the windows, tower, belfry, porch, roofs, pulpit, screen, and re-seat the whole of the interior. If a sufficient sum of money can be raised, the brick arches of the nave (now leaning outwards), the chancel arch, and clearstory will be rebuilt in stone. The cost of these works will be about 2,100*l.* or 2,700*l.* if the arcading is rebuilt. The plans and specifications have been prepared by Mr. R. M. Phipson, and approved by the vestry, and by the bishop, and tenders have been sent in. It is proposed to commence at once, if an appeal issued meets with a ready response. A lady, connected with the parish, has offered 1,000*l.*, and it is hoped that this donation will be followed by other gifts from owners of property in the county.

Thirsk.—A vestry meeting has been held in the crypt of Thirsk Church to receive the report of a committee appointed last Easter for the restoration of the church. The scheme adopted by the committee was based upon a report and plans prepared by Mr. G. E. Street, architect. The committee proposed that the following should be the order in which the different parts of the work of restoration be undertaken, according to the funds at their disposal:—1. The roof, exclusive of pinnacles and other external adornments. 2. The scraping of walls and pillars. 3. Re-flooring and re-seating. 4. Re-warming and re-lighting. 5. Vestry, ground porch, pinnacles, &c. The scheme of the committee was approved and adopted unanimously by the vestry. It may be added that Mr. Street's estimate for the whole work is 4,600*l.*

Bridgnorth.—The new tower of St. Leonard's has been completed and opened. It has been already described in our columns. The stone employed in its structure was brought from the Town's Mills Quarry. The dressings are in red Alveley stone, and the panelling in the belfry windows is of white stone from the same district. The height is the same as that of the old tower, viz., 89 ft. to the top of the cornice, 95 ft. to the top of the battlements, 106 ft. to the top of the pinnacles, and 125 ft. to the top of the summit of the spire. The embattled cornice at the top is surmounted by eight other pinnacles crocketed. On the north-west angle of the tower is a turret, terminated by a starting from eight other pinnacles, and further enriched with crockets running up each of its sides. The large window in the tower is filled with stained glass by Messrs. Clayton & Bell. The subject is the types of Baptism, the Saviour being the central figure. On either side are figures of Moses, Noah, John the Baptist, and Nicodemus. Messrs. Slater & Carpenter, of London, were the architects; Mr. Escourt, of Gloucester, the contractor; and Mr. Harry Hems, of Exeter, was the sculptor employed.

Monmouth.— St. Thomas's Church is being restored. The vicar discovered that the roof of the chancel was in a bad state, and that the foundations appeared to be giving way in places. He communicated with the Duke of Beaufort, to whom the church belongs, and the result was that Mr. Pritchard, architect of the diocese of Llandaff, received instructions to restore it at the entire cost of the Duke. It was further discovered that the stonework in the north and south windows had perished. The east window, of three lights, was found to be an innovation, the lights being merely placed in the wall with cement. The work of restoration is now rapidly progressing; the whole of the foundation has been renewed with native stone from Longstone Wood; the walls have been underpinned, and the old heating apparatus taken up. The latter was found to be so useless as to necessitate laying down another. On the coping from the north door being removed, it was found to be a casing placed over the original coping. This door has never been touched since its first erection, and it was found that its entire restoration was needful. The tracings are so far discernible. In stripping the old walls, which had at some time or other been stuccoed over, a window was discovered between the north door and the wall of the nave which divided the chancel, which will be restored to its proper use. In stripping the plaster from the south wall it was discovered that a Norman window had been taken out in its entirety, and the place filled in with stones and bricks. In all cases where a window has been built up there will be replacements, of the same design, and everything possible will be done to render the restoration of this interesting church a perfect one. The outside of the walls will be painted, not covered with plaster, as before; there will be a new open roof of pitch pine, with a boarded ceiling, and the covering will be of sea-green slates from Penmole. There will be new altar rails and steps, and encaustic tiles will take the place of the present wooden flooring.

Ilkley.—For some time past the parish church at Ilkley was much too small for the increasing number who attend it. Application was made to the lord of the manor for a site for a new church, and he consented to grant a site in what was originally known as "The Riddings," a short distance below Wells House, on condition that 1,000*l.* were raised towards the object. This sum has been obtained, and it is believed that the transfer will immediately be made and building operations commenced forthwith.

Moving a Lighthouse.—The Ness Point Lighthouse, near Lowestoft, is being moved inland about 100 yards. The bottom iron framing has been unscrewed from the lower piles, and the building lifted by means of screw-jacks. Iron flanged wheels have been screwed to the bottom frame, a temporary railway has been laid down, and the building has by these means been moved some 40 ft.

Books Received.

Illustrated Guide to the Fish, Amphibian, Reptilian, and supposed Mammalian Remains of the Northumberland Carboniferous Strata. By Thomas Pallister Barkas, F.G.S. London: Hutchings, Bouverie-street, Fleet-street. 1873.

Atlas of Carboniferous Fossils from the Northumberland Carboniferous Strata. By T. P. Barkas, F.G.S. London: Hutchings.

The author of these works has long been engaged in the investigation of the palæontology of the coal measures, with the indispensable aid of practical and intelligent coal-miners in Northumberland, and the interesting results are the Manual and Atlas under notice.

Amongst the discoveries made by Mr. Barkas is one which has for some years excited a good deal of heated controversy among palæontologists and geologists. This was a mandible, illustrated in the Atlas and described in the Manual, as probably that of an insectivorous mammal. Now it has not hitherto been considered to be orthodox to admit or suppose the existence of any mammal during the carboniferous era, the foregone conclusion, or hypothesis, amongst the orthodox being that the time for the existence of mammalia had not then come. This hypothesis has been based upon the fact that heretofore such remains have not been found,—a curious reason for objecting to the finding of them now, but simply an indication that it is disagreeable to have a fine theory overturned by facts. Mr. Barkas calls the mandible in question a supposed mammalian relic, but he seems to have no doubt of it, and probably it is so; but is it to be wondered at that remains of land animals should be few and far between in ocean deposits where fishes are so abundant? A new light on the antiquity of the mammalia, and even of man, appears to be struggling through the darkness and the errors of past geological and palæontological speculation; and we may ultimately find that, while little else but fishes were being deposited in certain regions of the sea, mammalia, and even mankind, existed in abundant numbers elsewhere on the face of the earth. Even already recent facts seem to show that man did exist *before* the glacial era, during the drift of which era such complete evidence of his existence had shortly before been found; and Mr. Barkas is one of those pioneers of the new light whose fact-respecting animus ought to be favourably regarded, even were he proved to have been mistaken in the present instance, which, so far as we know, he has not yet been.

Street's Indian and Colonial Mercantile Directory for 1873. G. Street, 30, Cornhill.

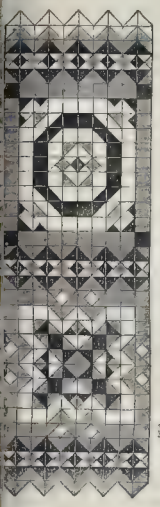
Considerable improvements have been made in this Directory. The various steam routes to the places treated of, with rates of fares and times of transit, are given. All the London agents to each of the banks are named, so that the merchant is enabled to see to whom to apply; also particulars as to the principal products and the articles in which the trade of each place chiefly consists. Information, too, regarding the principal Government offices in each town, and of the various railways in operation or construction, is added. It is quite evident that Messrs. Street have bestowed a large amount of time and labour, both locally and at home, on the production of the work, which we can, in consequence, recommend.

VARIORUM.

"The Complete Peerage, Baronetage, Knightage, and House of Commons for 1873. By Edward Walford, M.A. (Hardwicke)" is one of the handiest little books that can be found for the library table.——The *House Furnisher* remarks,—"The artist-decorator has need to pay some attention to methods of artificial lighting. By present system and practice, light is inadequate; the gaseliers are usually not much removed from ugliness, and in public rooms are placed so as to interfere with designed effect of ceilings; ventilation, when provided for in conjunction with the lighting, entails a new element of deformity, and now gas tends to becoming a costly product. The ample light being necessary for its own contributing to a general effect, and for illuminating the decorations, if such there be, of an apartment, as much as for writing or reading by, it is even more important than would readily appear that there should be reduction rather than increase of price, or that substitutes should be found. There is a company

The Builder.

VOL. XXXI.—No. 1576.



Opening of the International Exhibition.

ON MONDAY last the third of the series of ten annual exhibitions planned by Her Majesty's Commissioners for the Exhibition of 1851, was opened under favourable auspices as regards weather and other influences. The three days preceding Easter Monday were characterised by dull leaden skies and piercing winds, but on Sunday night the clouds lifted, and Monday morning dawned with an azure dome, flecked only by fleecy clouds that were highly ornamental, and the reverse of threatening. It might have been supposed that the unusual brightness, pleasantness, and hopeful promise of the morning would divert many visitors from the in-door attractions of the Exhibition who might have resorted to it under less summery circumstances, but this does not seem to have been the case. Probably the fact that the fine day turned out a grand maximum of pleasure-seekers. The lovers of *al fresco* entertainments and enjoyments had abundant opportunities for the gratification of their tastes; but, however this may be, the Commissioners, General Scott, and his staff may be congratulated upon the successful opening of an interesting, and, we may suppose, attractive collection, the number of visitors being, in so far as we could learn, considerably in excess of that they have been on the opening day of either of the two preceding Exhibitions. There was no ceremonial to attract a crowd, fashionable or otherwise; the doors were thrown open simply, and the public admitted to judge of the Exhibition on its merits: they came by thousands, and pronounced a favourable verdict that will be endorsed daily between now and the end of October next, when the Exhibition will close.

It is quite well known that all has not been plain sailing in these Exhibitions as between the Commissioners and the exhibitors, and the annual collections have been attacked by some detractors. They have been pronounced failures as regards specialties, but this must be held to be at least an open question. It may be admitted that last year, when cotton manufacturing processes were the specialty, and this year, when silk manufacture has its turn, the exhibits in the machinery-in-motion department, as illustrating these important branches of our national industries, are inadequate, if the magnitude of these interests are taken into consideration. This also, however, must be admitted, that even the limited display of machinery of last year in cotton manufactures, and of silk manufacturing machines this year, as and is sufficient to show fairly, and with passable completeness, the *rationale* of the two processes. This much is indisputable, that last year the display of products of the cotton manufacture, and this year of the silk fabrics and productions, ancient and modern, may be regarded as completely successful expositions.

But the specialties of this year's Exhibition include, in addition to silk and silk manufactures, food, drinks, and their preparation, also cookery and coaches.

Visitors on the opening-day followed, of course, their own tastes, but reached the objects that interested them under difficulties, from having to master the contents of an official catalogue of nearly 200 pages, first accessible on their entering the Exhibition.

The exhibits of distinct classes are not,—for good reasons, doubtless,—placed very compactly, and this remark applies especially to the carriages, which, occupying much space, are distributed in various localities, at a considerable distance from each other; as, for instance, in the east and west arcades, the French supplementary court, and other rooms. There can be no question that the display of spring carriages, ancient and modern, in State coaches of the Sovereign, of the Lord Mayor, of the Speaker of the House of Commons, and of numerous other official personages, and of modern vehicles, is very full and rich. These last include drags, landaus, broughams, phaëtons, Victorias, and other carriages of the park character; with a profusion of shooting-carts, dog-carts, gigs, Norwich and Alexandra cars, cosy carts, and an endless variety of other vehicles. In addition to these more imposing exhibits, there is a profuse display of spring-carts, wagons, brewers' drays, town vans, and even of trolleys, wheelbarrows, perambulators, and velocipedes, two, three, and four wheeled. The models of old mail-coaches, and the actual mail-coaches that were run off the road by the railways, are peculiarly interesting objects. One of the most important departments of this display, and destined, probably, to produce important results as affecting the comforts of street locomotion, is the exhibition of improved Hansom-cabs, in the east arcade. The exhibitors include,—Messrs. Edwards & Sons, of Cardiff; James Evans, of Liverpool; Forder & Co., of Wolverhampton; J. C. King, of Camden-town; G. Huband, of Regent's Park; J. Lambert, of Great Queen-street; T. H. Lewis, of Regent's Park; J. Marston & Co., of Birmingham; Standfield & Crosse, of Exeter; Wm. Stoneham, of Seymour-street, Euston-square; Turton & Rogers, of Leeds; and B. Ward, of Lamb's Conduit-street. The prices of the improved cabs have as wide a range as from 30 to 100 guineas. Without attempted enumeration of particular examples, it may be said truthfully of the abundant display of modern spring-carriages,—the finest ever brought together,—that they afford conclusive and satisfactory evidence of the high degree of excellence and proficiency that has been attained in body-making, smith work, wheel-making, trimming, painting, and all branches of the coachmaker's trade: so far as the art goes, there is something yet to be done.

Next to coaches, cookery and cooking appliances enlisted popular attention. The major portion of the kitchen ranges shown are in the South Gallery, Room XXIII., but there are also some interesting objects far removed from these in the iron annexe adjoining Room XII., at the entrance to the School of Practical Cookery. There are fifty exhibitors in this class, some of them showing a large variety of objects, the whole embracing coal and gas cooking-stoves and ranges, fixed and portable; stoves for roasting, baking, boiling, broiling, grilling, and toasting; hospital, workhouse, and barrack cooking apparatus; cottagers' and emigrants' stoves and fittings; cooking apparatus for petroleum oil fuel; Naphtha cooking-stoves; Field kitcheners; married soldiers' ranges, and ship's cooking apparatus; hot-air ovens and chambers; fire-trough field cooking apparatus; for campaign service; self-acting roasting machines; portable sub-fire ovens; hot plates; and a great variety of other objects, almost all interesting at any time, but that would have been especially so a month since, before the demand for coal abated, and its price fell.

In the theatre of practical cookery that has been fitted up in the east machinery annexe, where the Walter printing-machine used for the *Times* was exhibited last year, Mr. Buckmaster delivered, on Monday, between twelve and one o'clock, an illustrated lecture on cookery. There was a good attendance, although the hour was early. There is hopeful evidence given already that in the course of the next six months the school of cookery will be instrumental in doing something to abate the national stigma that the English people, many of whom are notoriously underfed, are really the most extravagant feeders in the world, and chargeable, as regards their use, or abuse rather, of materials for sustenance at their disposal, with producing a "plethora of waste." It is to be hoped that Mr. Buckmaster may at least be instrumental in producing extensively accurate impressions as to the economic value and the virtues of the too long neglected *pot au feu*. In this connexion a valuable practical proposal by Mr. John Macgregor, of the London School Board,—"Rob Roy" of canoeing celebrity,—should not escape notice. Mr. Macgregor proposes to pay for the attendance at the lectures on cookery of 1,000 girls selected from the London Board schools. It need scarcely be said that, even discounting the number freely, on the grounds of parental prejudices, or of inaptitude on the part of the scholars, there should be left out of the 1,000 a goodly number of apt scholars, future wives and mothers, who may prove radiating centres of beneficent influence, and powerful agents in a domestic and social revolution of the most salutary character.

The machinery-in-motion department in the western ground-floor rooms excited much attention. Many of the machines were in operation, but all were not ready, and notice of this department and others may be properly deferred.

Concerning the Creswick and Phillip collection, we shall take our own time to speak of it in our own way. The architectural drawings placed in the gallery of the Albert Hall are not very important.

On Monday the visitors had the privilege of listening from the west quadrant to a concert by the Life Guards' band stationed in one of the band kiosks, in the Royal Horticultural Society's Gardens. Mr. Barnby's orchestra gave also two concerts in the Royal Albert Hall.

COLOUR.

LIGHT and shadow, as appreciated by the human mind, are intimately related to the delineation of form. Both light and shadow have, indeed, a special power of their own, which depends more on mass, or on intensity, than on figure. These cases, however, are comparatively rare and exceptional. A burst of golden sunlight, or the fierce blood-red glare which is thrown upon its black canopy of upcast ashes by the seething lava of a volcano, reads its own message to the mind, without waiting to be clothed in definite shape. But even in these signal cases, what may be called the absolute effect is fleeting. In a short space of time the eye begins to apply itself to the perception of the contour and undulations of the landscape, lighted by the sun, or of the majestic and threatening aspect of the fire-lighted columns of *scoriæ*. And if we take the only phenomenon of light which may rank with either the sunbeam or the lava glare, the hieroglyphics scrawled by the lightning on the veil of night, the bizarre form, and the rapid and startling motion, impress the imagination as distinctly as does the actual brightness.

But colour affects the mind in a mode distinct from the foregoing. It appeals to a different faculty, or order of faculties, from those which deal with form. Colour may be said to bear the same relation to light and shadow that music

bears to speech. The analogy is not poetical alone, it is true. Without entering here into the philosophical investigation of the opposite theories of light, it is undeniable that something of the nature of pulsation or vibration, of motion referrible to time, is involved in its action. Rythmical changes in these pulsations are associated with colours. We know that the ordinary terms in which colours are spoken of as qualities inherent in bodies, are merely conventional. They are scientfically incorrect. Colour is produced in the eye, or it may be more proper to say in the sensorium, by the incidence of light at a particular angle, or at a particular velocity. We know by the charming spectroscopic experiments of Mr. Huggins, that if the velocity with which a given pencil of issuing rays strikes the eye be increased or diminished, by the movement of the object on which they fall, the apparent colour will change; the actual flow of light remaining, under all circumstances, the same. All such terms as primary and secondary colours lose any but a conventional import in the face of this magnificent demonstration of a truth, of which the existence is indeed hinted by the hues of the rainbow.

Thus guarding ourselves from any accusation of assuming a physical theory of colour which is inconsistent with the little, the very little, that we know of its intimate nature, we may recal the close analogy that has long since been detected between the tints of the rainbow and the notes of the musical scale. And we do this, not only for the purpose of illustration, but with the object of pointing out how the effect of colour on the sensorium is different, not only in degree but in kind, from the effect of form. Form appeals more directly to the intelligence. Those of us who have not the misfortune to be born blind cannot conceive of material existence except under the category of form. And thus it is that shape has such a message to our minds. Form has a definite meaning in the general order of our ideas, whether we grasp that meaning in each individual case or not. So language has a definite meaning, noble and instructive, tender and winning, irritating or alarming; we know what the speaker, in our own tongue, intends to convey to the intelligence. But the tone in which the words are spoken is something allied to, but altogether different from, the words themselves. We can understand the tone, even if the language is foreign. The reason is that the spoken words appeal to the intelligence, while the tone directly awakens the sympathetic emotions. So it is with music. We cannot tell what idea is present in the mind of the nightingale, but his song awakens within us something of the emotion which he is endeavouring to excite in his mate, or which he is pouring forth from the full happiness of his own aërial life. So again an ear devoid of musical education, or of that delicate perception of time which is a gift very much apart from other mental endowments, cannot listen to the choral thunders of the organ of St. Paul's, or to such a splendid burst of music as the rendering of the "Song of the Seraphim" by the voice of Christine Nilssen, accompanied by the silver trumpet of Harper, without a sensation being aroused in the bosom of which the intelligence can give no adequate account.

Thus, if we rightly understand, form in the abstract, and form as defined by light and shadow, appeal directly to the intelligence. Colour appeals directly to the emotional part of the mind. Form is speech,—colour is music.

In any dissection of the elements of art, it is as well, in the first instance, to seek for direction from nature. It is in the forms of the clouds, shaped by no laws that we can formulate, not bent into planes and angles by any force of crystallisation, nor branched or balanced by any vitality of organic growth, that we may trace the countless vagaries of varied, yet even harmonious contour. On a grey, dull day, when the pale blue of the English sky can scarcely be detected, when masses of vapour, all of dull monochromatic tints, wreathe, and bow, and transform themselves into aërial castles, or mighty shadowy genii, the eye will linger with delight on the ever-changing celestial panorama. But when, as the sun goes down, or still more powerfully when he first rises in the east, purple and gold, and clear azure, and the bright silver lines of the columns of the dawn are thrown upon the vault of heaven, our attention is not attracted by the forms of the clouds. It is the glory, the harmony, or the magnificent contrasts of the colouring that fills the mind. We wish to draw the quaint fleeting forms of the grey clouds,—we are content to feel the magic of the living colouring.

Again, if we take the most beautiful object in this world, a noble human face, let us think of one in which sculpture can find no fault, in which physiognomy will love to find a mirror. Throw over this face the blue-black hue produced by certain diseases, or the unhealthy tint of the jaundice, we turn from it instinctively, although not a lineament of its positive formal beauty has been altered. Take a rude, uninformed, even a vulgar face, and light it up with the brilliant red and white of perfect youthful health, and the charm of beauty is at once added to its humble individuality. The nose may be small,' the mouth large and clumsy, the eyes small and unlighted by intelligence; and yet, by force of mere glory of colouring, the peasant girl gives a pleasure to the beholder which the delicate, cultured, sickly, wealthy beauty can never unconsciously awaken.

Colour has the peculiarity of charming by itself alone; by the brilliancy, the depth, and the purity of its tint, apart from any question of balance, harmony, or distribution. The pure blue, cloudless sky of Italy, when the sun is so near the eastern horizon that the morning star has become all but invisible, while neither cloud, speck, nor shooting ray disturbs the still, vast, turquoise vault, may be regarded as the most striking example of pure and perfectly enchanting colour. The glorious red of our common poppy (in the rapid extermination of which by more careful cultivation of our wheat-lands the farmer is so regardless of the picturesque), when spread over a happily neglected field, is perhaps the finest instance of colouring to be seen in England. We may compare with it the golden blaze with which the furze-blossom covers miles and miles of the Pembrokeshire cliffs and downs,—a blaze which, but for the partial relief afforded by the green of the foliage, would soon become as intolerable as the odour of the blossoms, which, at first most delightful to the smell, after a time produces a sharp pain by its intensity. Perhaps the most lovely of all the colours produced by plants growing socially in large numbers is that of a field of flax, the pure, deep blue of which almost pales the azure of the sky. Flowers which have the rare peculiarity of varying between blue and red in the same, or at least in indistinguishable, species, are those which revel in the fullest and purest tones of colour. Thus the brilliancy of the scarlet flax may be taken as an example of one of the most glorious of all colours. The pimpernel, or shepherd's weather-glass, in the South of Europe (where, as in this country, it is mostly of a somewhat dull scarlet), in certain years is replaced by blue seedlings, indistinguishable from their red parents except by the possession of a lovely tint approaching the *Bleu de Roy* of Sèvres, and purer than the gentian itself.

All vegetable colours are beautiful. Every flower, if we except some of those ominous tribes that give warning of their venomous or rare chemical qualities by their pallid or lurid hues, appears always to be adorned in the very tint that suits it best. Even in the quaint tattooing of the gardeners, where squares, and stars, and crescents, are cut in the living turf, and crammed with variegated-leaf plants, and dwarf, hot-bed-reared geraniums, the blaze of beautiful colour redeems the clumsy toil of the horticulturist. The monsters into which the azaleas have been tortured,—pyramids or globes as stiff as if they had been moulded in clay, and with every leaf improved away out of sight, are yet beautiful, in spite of their deformity, by the charming hues of the blossoms. Nature cannot be forced to go wrong in colour. The wealth and glory of her hues overpower every fault in their distribution.

In birds, we see how nature, when left to herself, disposes of this magical gift. These creatures,—which in their power of flight, their natural melody, their instinctive skill, and their tender care of their young, from the moment when a second egg gives to the mother a hope that she takes good means of realising, embody most of the higher qualities that poetry attributes to the angels,—present the most numerous and splendid examples of colouring. In some instances, indeed, the exquisite delicacy of the feathers augments tenfold the lustre of their hues, by metallic reflexions, or by shadowy gradations of hue, as in the trogons and humming-birds. The triumph of taxidermy which is displayed, in some of these species, in the British Museum, ought to be known to all our readers. A perfect cascade of delicate cream-coloured spray falling over the darker tints of the lustrous body feathers, in one of the rarer Birds of Paradise, is an object that will be familiar to all the observant visitors of the zoological galleries.

As the tropical countries are those in which the ardent power of the sun calls forth the most brilliant colours both in the vegetable and in the animal world; and as the amount of land near the Equator is proportionately so much larger in the old than in the new hemisphere; so it is chiefly to the former that we are accustomed to look for examples of brilliancy of colour. In Brazil and the West Indies, and no doubt in many a deathly swamp untrodden by the white man's foot, humming-birds and butterflies may vie with the sunbeam in lustre. But the animals of the Old World, for the most part, occupy a higher place than those of the New. Among African birds, the simple combination of red and black, as in the case of the Bateleur Eagle and the Barbary pigeon, forms one of the most perfect lessons in colouring to be found in the great book of nature.

The sun has not only clothed his favourite children, the natives of the equatorial regions, with special glory of colouring, but has imparted to the human races that can bear his beams, as if in recompense for the bronzing or blackening of their skin, a special instinct in the application of colour. Black, indeed, is not the actual hue with which he tints the African. The negro infant, at birth, is of a dull cherry-red, and this colour, darkened to the extreme, is that which he bears through life. In the north of Africa exists a splendid race, with aquiline noses and true hair, the youthful members of which resemble Greek statues in bronze. The North American Indians are of a real copper hue. But we are not referring to the colour of the skin, set off as it is by lustrous hair, and by eyes that resemble stars, to be met with in Eastern travel. We are referring to the rare subtlety with which the textures of Eastern fabrics are wrought as concerns their colour. Quaint forms of pine, or shell, or pyramid, so conventionalised, ages ago, as to convey no meaning in themselves, are made the vehicle for such harmonies and contrasts of colour, now full and bright, now subdued into magical semi-tones, as to leave the European colourist absolutely nowhere. It is the same in the porcelain of Persian or Moorish origin. It is the same in the glorious stained windows through which the daylight has to struggle before it can kiss the most sacred spot in the world,—the mystic Sakhrah Rock, under the shadowing dome of the mosque of Omar. Wherever Oriental taste deals with colour, the result is like that of Nature herself. One exception, alas! we noticed in the Indian display at the Kensington Exhibition of 1872. The cheap aniline dyes have reached the Indian market. There is a quasi metallic lustre in their colours that is, after a little time, extremely wearying to the eye. The vulgarisation of the Oriental work that results from their introduction into Indian tissues is indescribable.

The beauty and vitality with which the painter clothes his work, when he is a master of colour, can be only very faintly echoed by the engraver, although he makes a technical use of the word, and translates the hues of the canvas, to some extent, by his wonderful monochrome. But it is very striking to observe the utter failure of photography to produce anything like a good engraving, when the camera is applied directly to a polychromatic object, such as a highly-coloured picture. This difficulty is not to be overcome by skill, — it is an inherent chemical condition. The only rays that chemically affect the negative are those of the blue end of the spectrum. Red light and yellow light, are invisible in photography, except in so far as they may contain a small portion of blue light. If a richly-coloured painting, in which these three colours are boldly introduced, is exposed to the camera, the dark blues will look white in the image, and the yellow will be turned to black. Thus, while photography may be a great aid to the engraver, it can never be a rival —never other than a servant, when monochrome is left behind. The magnificent picture by Gustave Doré, representing Christ leaving the Prætorium, which attracts so large and so hushed, almost awed, an attendance to the Gallery in Bond-street, is thus being reproduced for the engraver. The picture has been photographed, and the photograph enlarged, to the size of the intended engraving. On this photograph, printed of course but lightly, an artist is engaged to colour

after the original. From this the engraver will work, employing the aid of photography to give absolute accuracy to his forms, and then using the instinct of his art to translate the colour. This is the true method. A mechanical process may be called in to aid the living artist, but it can never rival, nor supersede, his genius—when, indeed, genius is present.

But the point where the command over colour is lost by the painter is what we call its play. In all the magnificence of nature, in all cases where colour, either of a splendid or of a gloomy tone, produces the most powerful impression on the mind, it does so by the aid of nature. The most glorious sunrise would lose the greater part of its charm if the evanescence of its hues could be arrested. Nothing can make up, to the human imagination, for the absence of life. When colour is avowedly absent, as in pure sculpture, an order of emotion is excited which is not altogether sensuous. The imagination gives life to the statue, if it be one on which the potentiality of life has been impressed by the sculptor. The seated figure on the Medici tomb is not regarded by any cultured observer as a piece of marble. The grand Idea of Michel-Angelo scowls from under that shadowy casque; and it needs but little effort on the part of the awe-stricken spectator to attribute a ghostly life to the figure. With a painting, this is altogether different. We are not speaking now of human expression, or even of the expression of animal life given by such magic pencils as those of Landseer and Rosa Bonheur. We are speaking of the harmony of colour. With reference to this, nothing can make up for the want of that constant interchange which is the result of motion. The very constitution of the optical powers of man involves this law. Thus we may partly account for the intoxicating influence excited, over the minds of many, if not of all, by spectacle. If we can make abstraction of that common sympathy which is so remarkable in incident of all great assemblages of people, and if we select instances where the intellectual interest is low, or is fictitious, as in the case of a well-known play, there yet remains a powerful effect on the imagination which is due to colour, to bright light, sumptuous dresses, flaming jewels, and all the external movement and glitter of a stately assembly or well-dressed crowd.

The play and movement of colour have been seized upon as the principle of a very humble instrument, now far less commonly to be seen than was the case twenty or thirty years ago, which may some day prove to have been only the first step in a very productive path. Of course we refer to the kaleidoscope. The defect of this ingenious little tube is the exact and invariably geometric outline of the figures which it produces. It gives play of living colour, but the limiting lines are so severe, and often so ungraceful, as to disturb the effect that the movement would otherwise produce. But if we conceive an instrument like the kaleidoscope in which, whether by the use of curved mirrors or by more directly chemical means, the successive colours should be bounded by the shadowy outlines of the clouds, or even branched and interwoven into one another like the light and shade of a forest, or the foliations of Persian faïence or of Indian embroidery, we may see that it is not impossible for the spectator to be, by artificial means, charmed by a display of the visible music of rich and changeful colours.

We do not understand that the sentient or emotional part of the mind can be educated like the intellect. Yet all life is, to a certain extent, an education of the emotions. And perhaps the gradual expenditure of the golden fountain of youth forms the sternest part of this education. It is therefore quite possible that colour, as an emotional element of beauty, can never be so mastered by human science as design in form. But, on the other hand, we find the kindred art of music,—music which is audible colour,—to have made, within the past two or three centuries, more distinct and rapid progress than any other art or branch of art. We cannot doubt that our musical knowledge and power is far in advance of that attained in any previous period of the history of civilisation. Music is the only art in which the men of our days are not outwarfed in comparison with the giants of the past. We speak, of course, of pure, not of industrial, art; and we must remember that to the great progress of science and of manufactures music owes very much of her present power. The instinctive genius of Straduarius detected forms and conditions for the violin which the subtle anatomy of the highest mathematics can only explain and confirm, not improve. The violin attained perfection in his hands as an instrument,—a perfection not since approached. But if we take the mighty organs of the day, with electric touch and steam-fed lungs, we have a grand example of mechanics ministering to art. It is not impossible, if somewhat of the same enthusiastic study were given to the subject of colour by those whose eyes are as alive to its beauty as are the ears of the lover of music to melody and harmony, that we should obtain splendid results. As it is, the lover of colour must seek its charms not in art, but in nature,—in the clouds, in the flowers, in the rainbow, or, rarest and noblest of all, in the changeful, rosy, and transparent complexion of a beautiful English woman.

SOCIETY OF BRITISH ARTISTS.

Years ago, and from time to time, the Society of British Artists numbered amongst its members some of the ablest and best to be remembered landscape-painters. Landscape was the specialty of the Suffolk-street show of pictures once, and the possibility of its resuming to a certain extent its old prestige, and becoming the chief honoured and honouring home for the professors of its depiction, occurs when such admirable specimens as Mr. H. T. Dawson's "Misty Morning on the Tamar" (181); Mr. G. Cole's "Fern Cutting: Mist clearing off—Harting Coombe, Sussex" (10); Mr. W. Gosling's "Harvest-time at Hennerton" (149), although the heavy bowed wheat is almost a too magnificent sample—ten ears to the 4 lb. loaf; Mr. S. R. Percy's "Glencoe, Argyleshire" (133); Mr. H. Moore's "Gathering Ferns" (138); and Mr. Jas. Peel's Welsh scene, "Canal and Aqueduct on the Usk" (169) are present to suggest it. An increase of such productions, and some better assistance from the general society of British artists than has hitherto been offered, would establish the title of this institution to be as fairly representative, instead of, as it is now, but nominal. Sir Francis Grant is not the only Royal Academician who lends a countenance to this occasional assistance; the "Portrait of Mrs. Markham" (73) shows a very handsome and winning one; for Mr. G. Richmond gives similar help, only varying in relative interest, "Portrait of William Blake Richmond" (37); supplemented by a vigorous chalk drawing of "The Archbishop of Syros and Tenos" (866). Mr. Leighton, too, indicates, in a couple of small studies of heads (370 and 514), how well he can draw as well as paint. "A Roman" and "Vittoria" are probably early performances, but they tell of sound training, and with Mr. Palmer's landscapes (369, 371), wear a look of affinity to "old masters."

Very little variety from preceding collections can be found to separate the one for this season from many another. Mr. C. Baxter's Neapolitan or Italian tambourine-girl, "Camilla" (132), is the most attractive of some three or four of his fascinating bewilderments, who will leave no play for a critic's conjecture 300 years hence as to their paternity; any further than "Sunrise, with the story of "Leander" (160), or rather the finis of it (for the long-breathed swimmer has done his last, and is stretched on a cold rock by his too-powerful, and now slowly retreating adversary—the sea), could be mistaken for any other's version of it than Mr. A. J. Woolmer's: both these painters appear to be inimitable in their totally dissimilar manner, and divide between them nearly all the imaginative leaven that, shared by a dozen, would vastly improve the batch of their productions. The most difficult achievement for the artist is to combine fact with fancy, no doubt,—or, at least, it seems to be. Proof enough exists now of a wide-spread capability to paint cleverly, and represent very satisfactorily natural appearances, or anything that may be imitated, yet the dearth of pictures amongst paintings—authorship as distinguished from and compared with caligraphy,—becomes the more remarkable as the supply of paintings and drawings is multiplied.

Mr. J. Gow has applied considerable power and good taste for colour on the figure of the eighteenth-century belle, with a lover at her feet, about to replace the shoe he has adorned with one of his latest presents, "Diamond Buckles for my Ladye's Shoon" (4), and again in a representation of "Goldsmith amusing young Collins," by juggling with a sixpence (264). Mr. E. C. Barnes has often turned to better account similar advantages than he has in (19) "Butterflies," the name given to an ordinary agroupment of elder sister and younger brother. "The Eve of May-day" (25), in old London, when youths and maidens took holiday, and the streets were garlanded with spring flowers, is very picturesquely and neatly described by Mr. D. Pasmore. Mr. W. Hemsley's country boy stolidly intent upon accomplishing the trick of cup-and-ball, "A Day after the Fair" (44), or when performing "A Tonsorial Operation" (285), he hammers a big nail into the doll's head, to fix its back hair, like most of Mr. Hemsley's models, looks free of all consciousness that he is being painted. A perfect naturalness that never verges on vulgarity, is the real secret of such works' success. Mr. Roberts is even more refined in his treatment of matter-of-fact instances, but then he goes a step or two up the social ladder to fetch his actors or actresses,—to be most precise in allusion. "Lizzie Farren (afterwards Countess of Derby) bringing her Father's Breakfast of hot Milk to the Prison" (294), assisted by a polite boy, who had observed her difficulty in avoiding a fall on the frosted pavement, is the prettiest and most agreeable notion of the incident possible, but a very improbable one: the heroine is costumed more like a little countess already than the daughter of a poor strolling player, though by no means warmly, and she does not look cold.

And strangely unlike "Little Em'ly" to be at all like David Copperfield's admiration is the demure and nicely-painted anybody who sits for her here (90); pleasant enough to look at, though her connexion with Dickens's creation is as little clear as "No Name" could make it with Wilkie Collins.

"Solving the Problem" (80), by Mr. G. E. Hicks, may either mean to ensure how holy writ may be heard, read aloud, with real feeling, or how the blind may really lead the blind; for one of those who have all their learning at their fingers' ends is instructing from the embossed text a crowd of wondering children.

Mr. A. B. Donaldson's two pictures should certainly have been hung in better positions. With so much trite rubbish sickening the eye at its level, it is as much an insult to the spectator that worthy work should be denied fair view as it is to the clever painter. "Violets, Penny a Bunch," by Mr. Haynes King (62); "The Ballad," by Mr. J. J. Hill (108); "The Jesuit," by Miss M. S. Tovey (104); "Portrait," by Mr. P. Priolo (161); "A Beggar Boy," by Mr. J. H. Walker (184); "News from Abroad," really admirable, by Mr. R. J. Gordon (360); by whom another seated figure, "Anxiously Waiting" (159), serves to provide evidence that the quality of the former was obtained by no "fluke," are some of the best painted heads in the collection. The dogs, one of which is "The Keeper's Favourite" (49); and the game, by Mr. J. S. Noble, are not easily to be surpassed; and "The Cattle on the Coast" (113), by Mr. T. F. Wainewright, would take high rank in their class anywhere but at a Smithfield show.

Mr. J. T. Peele's "Highland Supper" (54) fails by very little of being a very much finer production; "Meal Time" (69), a Mediæval domestic adaptation much in the style of Mr. Marks; "A French Girl" (110), by Mr. W. H. Weatherhead; "Left in Charge" (143), by Mr. Edwin Roberts; "Marine Monsters," by Mr. W. M. Wyllie (156); "Wood Gatherers" (175) and "The Seaside" (321), two of Mr. E. J. Cobbett's most telling works; "The Mountain Spring" (197), a very favourable example by Mr. J. Henzell; "Tea-time, Daddy," a homely, natural representation with its worth of being directly drawn from nature, by Mr. J. C. Waite (218), and "The Heir-at-Law," by Mr. E. Porteus (412), are indicative of what constitutes the bulk of 500 oil paintings or more.

Mr. Wyke Bayliss, F.S.A., contributes a fine architectural interior of "Ypres-Cathedral: Relics in the Chapel of the Black Virgin" (189), and nearly as elaborate a water-colour drawing of "Interior of Dixmude Cathedral—a Village Festival" (736). Mr. W. Henry copies the style of the late David Roberts, R.A., so closely that he can never hope to paint equally well. "Interior of the Jesuits' Church, Venice" (491), is very noticeable, if it be only to remind followers that they must always be behind.

Between 300 and 400 water-colour drawings lend additional interest to the present exhibition. The wonder is that there should not be something astonishing amongst them.

DEMOLITION OF A PLAGUE SPOT IN KENSINGTON.

THERE are few readers of the *Builder* who have had to pass through the High-street of Kensington on foot but have had their attention called to a number of idle men, girls, and boys who for years past have claimed the frontage of a low public-house, set back from the pavement, as their recreation-ground, and if the weather suited, also the pavement for "a lay-down," and thus turning the pedestrians into the road.

Few, however, ever ventured to the rear of this "plague spot," that defied laws for the prevention of fever, small-pox, and other epidemics, and even the metropolitan police force; for the parochial authorities, as well as the magistracy, were paralysed and powerless. The only man who knew all about this truly horrible colony was the collector of the rents for the landlord, who was a builder and a magistrate of the county of Middlesex. The plague spot was, however, a mine of wealth to the owner,—it was an "Alsatia" sacred to the lowest class of Irish,—many of whom were *wanted* before they left Erin, and others, most dangerous of all, known as the Cockney Irish. Rent of an exorbitant nature was duly paid on the Monday, and the collector was besieged for an apartment in Jennings's-buildings. This latter demand for a "snuggery" was the secret of the landlord's and collector's protection from violence when visiting the "Warren."

There was a time when the "police" had to fetch a priest, to ensure their lives, if they wanted a notorious character, or even to quell a faction fight; but at last no "father" would act as a "special protector," and the order came out from Scotland-yard to let Jennings's-buildings fight it out amongst themselves. So long as the "boys" did not fight in "Tavern-yard," the following spots, -New-court, Cooper's-gardens, Palace-place, and Jennings's buildings,—were fields the men could bleed on and where the women could make mats of their torn-out hair unmolested.

At the rear of the Tavern, was a long dancing-shed; and when Tom Hardy was alive, and kept this fortress, his good lady also dispensed eatables, and, perhaps, not one of the colony but were indebted to these tradesmen for ale and groceries. It was also a smuggling-shop, and when the dance was on, unrefined whisky was brought in, and the boys would take off their boots and the wenches their petticoats to pawn with a money-lender present to keep up the merriment. The writer of this was in the shed one grand night for the benefit of a "jantilman" who wanted a "mouthpiece" to get him out of a little trouble he was suffering through, for merely trying to drown a policeman by knocking him off the towing-path into the Thames. When it became time to hear the cock crow, and go home with the milk in the morning, the ball broke up, and the dancers then proceeded to the "Square," and arranged themselves into opposite parties. Stones, brickbats, choppers, pokers, frying-pans, saucepans, crockery, and every handable means of murder were freely distributed. The cries at last reached the ears of the police, through the peaceable inhabitants outside the "Warren" jumping out of bed and opening their bedroom windows, joining in the chorus of "Murder." It was murder, murder, everywhere, and no police to hand!

The police inspector called upon the landlord of the tavern to aid and assist in the name of the Queen, and in a few minutes, the belligerents, bleeding and howling, retired into their holes, at the simple order of the landlord and his wife. These practices, only altered for the worse, have been going on ever since, and nearly opposite to the palace her Majesty was born in; and as diseases of all natures were constantly decimating the "Warren," and spreading throughout the metropolis and country, the parochial authorities helpless, a gentleman of name of Grant has purchased the estate, the enumerated population of which is, according to the last census, 876, in eighty-three tenements; but Dr. Dudfield, the medical officer of health, who rejoices at the advent of Mr. Grant, sets down the number at 1,200 souls or more.

To get rid of this "plague and lawless colony" was no easy matter for the new landlord; and the after-experiences have led Mr. Grant to appreciate the motives of the *subscribers* to the Notting-hill Volunteer Fire Brigade in shutting their doors in the face of the yearly collector, as the report stated the brigade had put out a fire in Jennings's-buildings, and which, but for their timely arrival, would have burnt the place down. The original collector of rents would not, and could not, dispossess the inhabitants of the "Warren." The County-court officers at Brompton had plainly told the judge that they had wives and families, and no pensions for them if killed. The magistrates of the Hammersmith Police Court were told by the warrant-officers, that if ejectments were issued it would be an impossibility to carry them out; for if the tenants were ejected one hour, they would occupy their rooms as soon as the police left.

In this fix, the new owner of this delightful estate, with a "Palace-place," called a parley of the "Warren," and actually had to agree to give the occupiers of each room 2*l.* compensation, as well as the right to remove the firewood in their rooms. The new owner did not, perhaps, take into thought the meaning of "firewood" in the Irish vocabulary; but he knows now. His houses are a complete wreck,—floors, staircases, doors, window-frames, joists, roof-timbers, stoves, water-tanks, pipes, stones, slabs, the pavement, tiles, and slates have all disappeared, and not one brick would have been left, but for a strong force of police, and these had to protect a body of bricklayers, who have now blocked up the entrance of this horrible "Warren."

The colonists have dispersed, some to Nottingh-hill, some to Fulham, and others to Battersea. The nest is destroyed: who will look after the birds?

From first to last this plague-spot, it is computed, has cost the parish of Kensington at least half a million of money. What this "Alsatia" has cost the country it is impossible even to guess.

NEW BARRACKS ON THE CASTLE HILL, EDINBURGH.

IT seems to be generally understood that a barrack should be Bœotian in style: why it is so is one of those things "which no fellow can understand." The west end of the Castle Rock of Edinburgh is disfigured by a block of building of this nature, and now it is proposed to disfigure the southern slope of the Castle Hill in a similar manner. The building in question is intended for the accommodation of married soldiers, and consists of a long narrow strip three floors in height, having rooms of 14 ft. square without any recess or convenience whatever, each of which is to be used by a single family. They are approached by open iron galleries on the north side, and the elevations otherwise show no break or architectural feature. About fifty or sixty yards in front is an erection providing a depôt for coals, &c. The plan appears to be a stereotyped one, which the War Office authorities seem to consider suitable for any site, and which might do upon a flat surface where a court-yard could be formed, but in this instance the slope is so steep that access to the outhouses can only be obtained by the formation of a flight of steps or a zig-zag pathway. These barracks then would not only be exceedingly ugly, but very inconvenient.

The attention of the Town Council and the Architectural Association having been called to this matter, a memorial was forwarded to the War Office, pointing out the unsatisfactory character of the building, accompanied by a plan prepared by Mr. Robert Morham, City Superintendent of Works, showing how the external appearance of the building, as well as the accommodation, could be improved without materially altering the original plan. Mr. Morham proposes to secure this end by advancing wings at each end and the centre slightly, and adding gables and towers, which latter features are not merely ornamental appendages, but contain cupboards and other useful additions to the comfort of the inmates, a class who do not usually possess much furniture to give comfort to their temporary residences.

The additional expenditure involved would be under 2,000*l.*, but the War Office adheres to its original plans, founding, upon the fact that they have passed the Dean of Guild Court,—a very lame plea indeed, seeing that the jurisdiction of that Court does not extend to the æsthetic character of the plans requiring its sanction. When it is kept in view that private individuals have, with praiseworthy consideration, given the buildings recently erected in this neighbourhood a character in keeping with the surroundings, it does seem strange that the rulers of the wealthiest country in the world should act in so narrow a spirit.

Much money has been spent upon museums and art-galleries, and yet when art is to be applied to practical use it is ignored: this is surely being "penny wise and pound foolish." Were such a building to be erected in France, the opportunity would be embraced of producing a structure which would add to, and not detract, from the beauty of a city like Edinburgh. The matter is not to be allowed to rest, however; it has been taken up by the city members, and we earnestly hope they will be successful in preventing the completion of a building which would prove a blot upon one of the most picturesque sites in the kingdom.

THE BUILDERS ON THE WALWORTH COMMON ESTATE.

IN the *Builder* of the 22nd of last month, we stated that the Newington governors and guardians, as the managers of the Walworth Common Estate, were making grave complaints against certain builders on the estate for violating the terms of their agreements with respect to materials used in the buildings, and also in regard to the takers of land who had failed to commence building under the terms of their contract, and that the surveyor had been instructed to take proceedings in all cases where there had been such violation of contract.

At the meeting of the governors and guardians held last week, it was stated that the solicitors, acting upon the reports made to them by Messrs. Jarvis, the surveyors, had taken steps for re-entering and taking possession of plots Nos. 1, 2, 3, 4, and 34, 35, 36, and 49, in Alvey-street, in consequence of the takers of such plots having failed to proceed with the buildings thereon; and that there had been a similar re-entering and taking possession of certain plots in Mann-street, arising out of the same cause. The result of this proceeding is that, under the terms of their contract, the takers of the plots in question forfeit the money deposited by them at the time of letting, together with their interest in the plots of land taken.

RAFFAELLE'S HOUSE IN URBINO.

OUR readers may remember that an endeavour was being made to raise money for the purchase and preservation of the house in which Raffaelle was born. The sum asked of the municipality was 20,000 lire. On the 6th inst., the anniversary of the great artist's birth and death, there was a large gathering of visitors, and a meeting was held in the Ducal Palace. The list of subscriptions was read, and on its appearing that 5,000 lire were required to complete the purchase, our countryman, Mr. Morris Moore, stated his willingness to give that sum, in addition to his former subscription. At four p.m. the deed of purchase was signed. An address was presented to Mr. Moore, and at a banquet in the Salon di Ariosto the freedom of Urbino was conferred upon him.

The Ducal Palace in Urbino was considerably injured by an earthquake on the 12th of March, but the principal rooms escaped damage.

THE NEW BUILDINGS IN ST. BRIDE STREET AND LUDGATE CIRCUS.

THE newly-formed St. Bride-street, from Ludgate-circus to the junction with Shoe-lane, will very shortly present a prominent architectural appearance. The west side, more particularly, is being rapidly covered with large and substantial buildings of a palatial character. Messrs. Cook's Continental excursionist block of buildings, which has already been described in the *Builder*, has, during the present week, been advantageously exposed to view by the removal of the scaffolding; and we understand that those portions of the spacious building intended as Messrs. Cook's offices, and the sections now being fitted up for the Midland Railway Company's depôt and receiving offices, will be opened for business in the course of a fortnight.

Adjoining Messrs. Cook's block, extensive premises are in course of erection for Messrs. Collinson & Lock. This block, which is a bold-looking and massive structure, built of red brick, with stone dressings and window piers, is very lofty, the St. Bride-street elevation being carried almost to the height of the adjoining block just named. The building consists of a basement and ground-floor, with four stories above. The ground-floor contains a large central window for

business purposes, upwards of 16 ft. in width, with spacious entrances on each side. The several stories above have large central bay-windows, each containing five divisions, with double windows on each side. Messrs. Woodzell & Collcut, Finsbury-place, are the architects; and Mr. Hennor is the contractor.

A portion of the site immediately adjacent, at the angle of Poppin-court, is also about to have a large building erected upon it; the architect for the intended structure being Mr. A. Bridgeman.

Still higher up the street, northwards, another fine building is in course of erection, and already carried up to the third story. The materials used in this building are white Suffolk brick; the windows, which are circular-headed, being of red brick, bands of the same material being also freely introduced in the elevation, together with ornamentation in terra cotta. Mr. H. H. Bridgeman is the architect for these premises, Messrs. Elkington being the contractors.

A little further up, again, another large block has just been erected, designed by Mr. L. H. Isaacs; whilst, immediately adjoining, very extensive new premises are about to be erected for the proprietors of the *Standard*, in addition to their new premises in Shoe-lane, recently completed. These premises will have a frontage to St. Bride-street of about 51 ft. in width, and extend the entire depth from the last-named street to Shoe-lane. The excavations for the foundations and basement of the building are now in progress, and the extent and magnitude of the intended structure may be conceived when it is stated that the contract for the foundations alone is between 3,000*l.* and 4,000*l.* Mr. Gundry is the architect, and Messrs. Trollope are the contractors.

The foundations are also in progress for another new building, adjoining the last-named, at the junction of St. Bride-street and Shoe-lane. The west side of this new street will thus shortly be covered with important buildings.

Returning in the direction of Ludgate-hill, on the east side of the street, the Mutual Investment Company's new buildings, at the corner of St. Bride-street and Farringdon-street, are now completed, and have this week been opened for business; whilst within the last few days workmen have been engaged in excavating, preparatory to the formation of the south-east of Ludgate-circus, adjoining the London, Chatham, and Dover Railway Company's.

THE NORFOLK COUNTY SCHOOL.

At North Elmham, a pleasant village, which was once a city, and from the year 603 to 1075 was the seat of the Bishops of Norwich, the foundation stone of the new Norfolk County School has been laid.

The movement which is taking place in Norfolk, like that which took place in Devonshire some years ago, must be attributed to the efforts of the Rev. J. L. Brereton, Prebendary of Exeter Cathedral, and is part of the system which has called into existence county schools in Bedfordshire, Suffolk, and other counties; has led to the Oxford and Cambridge Local Examinations; and promises to culminate in the establishment of a county college in connexion with the University of Cambridge.

North Elmham is almost in the centre of the county of Norfolk, and conveniently situated for railway accommodation. The site selected is contiguous to the mansion of Lord Sondes, and skirted by the River Wensum. The estate, which has been purchased by the Earl of Leicester, comprises thirty-seven acres, and has a frontage next the river of nearly half a mile. The Wensum will afford ample accommodation for boating and swimming, whilst the grounds are sufficiently capacious for all the purposes required for a public school. The movement has throughout had the sanctio n and support of the Prince of Wales, whose estate is situate twelve or fifteen miles distant. The building is being erected on the summit of the hill, overlooking Lord Sondes's park. The style adopted is the old English Domestic, the exterior being of flint, with red brick dressings, large dormers and weather tiling at intervals. The roof will be covered with red and black banded tiles. All the timber work, externally and internally, will be stained and varnished. The large hall on the ground-floor is intended to be a general place of meeting, the reception-room being raised a few steps to form a stage or platform. The school-room will also be so arranged as to increase the space, where necessary, to afford accommodation for about 500 persons. The galleries round this hall are fitted with presses for clothes and linen. No lavatories will be provided on the dormitory floor. It is intended to have ordinary washstands in the dormitories, and to give as home-like an appearance as possible to them. Large barrack-like dormitories will be avoided; the largest of the rooms contains only thirteen beds, and many only six or seven. Kitchen offices and dining-hall are on the top floor. The master's house communicates with the building, but is practically detached from it. A corresponding building on the opposite wing will form, if ever required, an infirmary, sufficiently detached from the main building to prevent anything like spread of infection. It will be complete in itself, and can be at any time cut off from the main building by ventilated lobbies, having closed doors.

The heating at present contemplated is by open fire-places only; but provision is made for hot-water pipes in the large hall, school, &c. The ventilation will be by the same means, with ventilators placed below and above the level of each floor.

The architects are Messrs. John Giles & Gough, of London. In the present building the average cost of county schools is by no means reached, and the problem of the promoter, Mr. Brereton, is solved. This gentleman has contended that 30*l.* per boy should in a school of 300 boys furnish the building proper. The architects have on their present plan obtained a contract for the structure within this sum. The builder is Mr. Robert Skipper, of East Dereham.

OPENING OF THE YEOVIL WATER-WORKS.

The new waterworks for Yeovil have been completed, opened, and formally handed over to the town authorities by the engineer, the clerk of the works, and the contractor for the reservoir. The contract for supplying the pipes (about 14 or 15 miles) was taken by a Glasgow firm, Messrs. Stewart & Co., at about five guineas per ton. Immediately afterwards the price began to rise rapidly; and had the purchase been delayed, the total cost of the pipes would have been increased from about 7,000*l.* to nearly 14,000*l.*

The contract for laying pipes was let to Mr. Joseph Walker, of Crewe, represented throughout by Mr. Worthington.

The water is obtained from the lower greensand, in the parish of Melbury Bubb, near Evershot. The main supply is derived from springs in a wood called Spring-pond Plantation, close to Holywell Tunnel, and a second contribution is obtained from the tunnel itself. The water from the plantation passes through a small circular filtering tank, which was constructed at a cost of about 100*l.* The tunnel stream joins the main a little lower down. The length of the 8-in. main, from the sources to the reservoir on Newton-hill, is about eight miles. The main from the reservoir to the town is 11 in. in diameter, and the town mains vary from 3 in. to 11 in. The laying of the pipes cost over 2,000*l.*

The reservoir was constructed by Mr. Ridal, of Wadsley, Sheffield. It is about 100 ft. in length and 50 ft. in breadth, and will contain a depth of about 10 ft. of water. Its capacity is somewhat over 250,000 gallons, which is more than the daily consumption of Yeovil is likely to reach for some years. The reservoir which is lined and floored with brick, is covered with arches resting on brick pillars. The whole is covered with earth, and the earth is sown with grass, so that a few months hence it will present the appearance simply of a green mound surrounded with an iron railing. The total cost of this part of the work was a little over 2,000*l.*

The reservoir is more than 200 ft. above the lower parts of the town, and the sources are 100 ft. higher still. The water, therefore, flows very freely through the eight miles of main, and the pressure on the town mains is equal to that of the steam in a locomotive boiler!

The works were designed by Messrs. Thomas & Charles Hawksley, of Westminster, and were carried out under their superintendence, represented by the clerk of the works, Mr. C. E. Robinson. The cost of the works proper, exclusive of payments for land, compensation, and incidentals, has been about 13,000*l.*, or about 400*l.* or 500*l.* more than Messrs. Hawksley's original estimate. The total cost will ultimately reach about 20,000*l.*

SUGGESTIONS AS TO THE ARRANGEMENT AND ARCHITECTURAL TREATMENT OF PICTURE GALLERIES.*

Buildings for the exhibition of paintings may be considered under three principal heads: in regard to lighting, which is a purely practical point; in regard to the arrangement and classification of the pictures and other works of art, which is, or should be, based on æsthetic considerations, but which practically affects the planning of the rooms; and in regard to the architectural and decorative treatment of the building, which, though in one sense a purely artistic matter, is governed to some extent by practical considerations bearing on the due effect and the character of the works of art exhibited. Picture-galleries in general, again, must be to a certain extent regarded as divided into two classes—those intended for periodical exhibitions of new works, and those intended as permanent receptacles for collections of a less transient interest; for the conditions in these two cases are not by any means the same. In regard to lighting, however, both permanent and periodical art-galleries are on pretty much the same footing; and no other question connected with them can be of so much importance, obviously, as this: nor is there any point in connexion with the subject on which there have been so many theories, and, I believe, so many failures. In regard to paintings, a great portion of the difficulty of lighting arises from the fact that the vehicles now almost universally used by oil-painters reflect light more or less, and the necessity for placing water-colours under glass brings them into the same category. It was this difficulty which led, in a great measure, to the employment of fresco for the paintings in the Houses of Parliament, as some of our leading artists pronounced that it would be impossible for oil-paintings to be satisfactorily seen under such a light as they would be subject to there, from low windows placed at various angles to the surface of the picture. The popular faith on this point, at present, may probably be summed up in these two articles,—that you cannot have too much light in a picture-gallery, and that you must have it from the top. Both these articles of faith must be taken with a certain reservation, however. It is quite possible to have too much light in a picture-gallery, and to defeat your own ends in introducing it. In regard to the top light, however, its superiority may be accepted as generally incontestable in the case of the great majority of pictures in most collections; the circumstances in which it may not be the best will be referred to afterwards. It may be said, however, that definite reasons have been assigned in contradiction of the top-light theory; and the Berlin gallery was built with side-lights, on the ground that painters almost invariably work with a high side-light, and that the spectator should see the picture under the same light as it was painted. In reference to which it was pointed out by Sir Charles Eastlake, that if a picture was painted with a side-light from the left, and had to be so hung as to get a side-light from the right, the conditions of the painter's light would just be reversed. To which it may be added that the spectator does not want to see the picture as the artist saw it, when working upon it, minutely and in detail, but to take in the whole effect from a little distance. But the real philosophy of the top light seems to be simply this,—that it is only by placing the light high that we can insure escape from the surface glitter from the picture, and a skylight is the simplest and most manageable way of procuring a high light; besides that, if properly constructed, it operates equally in regard to all the walls of an apartment. The manner in which the high light enables us to avoid the reflection may be seen if we make a section of the proposed room with its skylight, and then annex to it a reverse section, taking the plane of the picture as the dividing line; the lines drawn from the extremities of the light, in the reversed section, to the eye of the spectator, will show, where they cut the plane of the picture, on what portions of the wall a reflection from the picture will be inevitable. Thus it will be seen that, with a light at a considerable height above the upper line of pictures, the larger pictures, which require to be viewed at a greater distance, and which on that account alone should be hung highest, are below the line of reflection when viewed from a proper dis-

* From a paper by Mr. H. H. Statham, architect, read at a meeting of the Liverpool Architectural Society.

tance; and when the spectator approaches nearer to examine the smaller works nearer the eye, though the larger pictures are thereby brought into the line of reflection, the smaller ones lower down are still clear of it. The higher a picture is hung, then, the more subject is it, in the majority of cases, to surface reflection; and it is to obviate this that in badly-lighted galleries we often find the upper row of pictures inclined forward, so as to throw the reflection below the spectator's sight-line; a method of hanging which has a singularly unsightly effect on the general aspect of the room, and does not tend to improve the effect of the picture. Such an expedient is merely shirking a difficulty, and always means either that the picture has been placed too high or the light too low. The principle laid down by Sir C. Eastlake was, that the picture and the source of light should not be within the range of vision at the same time; the range of vision being comprised within about 60°, the light should be so far above the picture that, at the point at which the spectator would stand, the picture and the light should subtend an angle greater than 60° with the eye. This, though a somewhat different way of putting it, comes to very nearly the same result practically.

The next question to that of the position is the construction of the light. The commonest form is that of a simple raking skylight, with the glass on the level of the outer roof, and following its line. This has been adopted in the rooms at Burlington House, and there is little to find fault with in the light there. Another arrangement,—possessing, I think, some advantages,—is that of a double skylight, the upper one on the roof consisting of clear glass, the lower one on the ceiling level being a horizontal glazing, with obscured and, if possible, roughened, glass. This brings the apparent light lower in the room, which, however, would only be of consequence in a room of somewhat limited height, and any disadvantage it may have even in this way is counterbalanced by the mild and diffused character of the light which is gained in this manner; for it must be remembered that a mass of diffused light, and not "rays of light," is what is wanted in a picture-gallery, and this treatment would go far to weaken the bad effect of reflections, even where the pictures were so placed as to be liable to receive them; besides which, by the use of the lower layer of obscured glass, the bad effect of sunlight passing through wet glass (in showery weather) is avoided; and this method offers possibilities for very good internal treatment of the ceiling. In such a case, easy access between the lights, for dusting and cleaning, would of course be imperative. It is necessary in arranging the building for top light, if any of the rooms are lower than the others, to take care that the higher ones are not placed so as to rob any of the lower skylights of their best light, and for the same reason a site should be selected not overlooked, or likely to be overlooked, by loftier buildings,—a very obvious consideration perhaps, but one of those little things which are sometimes in danger of being forgotten, just because they seem so much a matter of course. Another point which is worth attending to in the plan of top-lighted galleries, is to cut off the corners on plan, so as not to place the pictures in the corners too far from the light. The corners of the rooms appear to be considered by hanging committees to be rather good positions for the smaller pictures, so far as attracting spectators goes; it is certain that many of the finest of the smaller works at the Academy are placed at the angles of the rooms, and you generally find a group wedged round them, the confluence of two streams of spectators; but there is nearly always a certain deficiency of light in the corners, and if they were canted off at an angle of 45°, the pictures hung there would get all the moral advantages (as we may call them) of the position, with more light and more convenience to the spectators. In regard to the equal distribution of lighting over the pictures it may be observed that the octagon room in Post Office-place, where the Liverpool Academy Exhibitions used to be held, was very successful in this way; and it may be suggested whether a room in this form is not one of the best adapted for the exhibition of a large number of miscellaneous works under equal conditions; all dark corners and jamming of the spectators at the angles are avoided, and all pictures on the same line are very nearly equidistant from the light. They would, of course, be still more so in a circular room; and it is noticeable that the room which Rubens built for the exhibition of his own works is in this form. But for a permanent gallery, where pictures ought not to be crowded, but to be so placed as to be studied separately, a long room would probably be found the most effective form, for the combination of architectural and pictorial effect. In long rooms lighted by a skylight, a practical difficulty occurs in the necessity for roof trussing at intervals, which must tend to obscure the light at certain points; and here the system of the double skylight, before described, would assist us in meeting the case, as the light would be so far diffused by the thick lower glass that no definite *bar* of shadow would be seen across the lighting surface, unless the tie-beam were very close to the glass. The late Mr. Papworth suggested a good while since, on this very account, a form of roof construction with an iron curved truss carried high above the lower skylight, which, in fact, was to be hung from the truss, giving a light to the pictures through the sides and centre, and with an opaque hanging ceiling over the spectator, so that he might have no light except where he wanted it. A disadvantage of this arrangement would be that the opaque ceiling might obscure the light in regard to some of the larger pictures which would have to be viewed further off. But in regard to a collection of one class of pictures, especially landscapes of not very large size, and which must be viewed not far above the level of the eye, a low hanging ceiling over the centre of the room might have a very good effect (and has been suggested, in fact, for the landscape-gallery in Mr. E. M. Barry's design for the proposed new National Gallery), letting the spectator look upon an illuminated landscape before him while he is himself in shadow: a good effect, I mean, in regard to the pictures; for how it could have a good effect on the room, or how a room so constructed could be made to look well from an architectural point of view, it is not so easy to see. One other point, which has a bearing on the position of columns, pilasters, and other architectural features in contiguity to the pictures, is that the latter have a tendency to reflect light or bright-coloured objects near them, to some extent; but they will do this the less in proportion as they have an adequate supply of direct light: the better a picture is illuminated, subject to the conditions named above, the less will it be disturbed in effect by the reflections from objects in the room, or from the dresses of the spectators.

Artificial lighting would, of course, be governed by the same considerations as the admission of daylight, in regard to the position of the light. But in order to obtain that diffused quality of light which has been said to be desirable for pictures, the artificial light should, I think, be communicated through obscured glass, and this is another advantage which, I think, might be found in the double-skylight system, that the gaslight (which at present is the only light which can be used for artificial lighting) could be placed above the glass of the lower skylight, and thus the separate points of light from the gas-jets would be broken up into a mass of light. It does not appear to me that any position of gas-lights within a room, and communicating light directly to it, could be otherwise than disadvantageous to the effect of the pictures, in producing glittering reflections. Another advantage of such an arrangement as I have mentioned would be, that all heat and products of combustion from the gas could be kept out of the apartment altogether; and this is decidedly desirable in a permanent gallery, where the same pictures are to hang for years, or perhaps for generations. In 1859 a commission was appointed to inquire into the best method for the preservation of pictures, consisting of Messrs. Faraday, Hoffman, Tyndall, Redgrave, and Fowke, and the following quotation from their report shows that they attached some importance to keeping the pictures from the action of gas:—

"Coal-gas may be free from sulphuretted hydrogen compounds, and in London is so at the present time; it then has little or no effect upon pictures. But it has not yet been cleansed from sulphide of carbon, which, on combustion, yields sulphurous acid gas, capable of producing 22½ grains of sulphuric acid per 100 cubic feet of present London coal-gas. It is not safe to permit this product of combustion to come in contact with pictures painted in either oil or water colours, and the commission are emphatically of opinion that in every system of permanent gas-lighting, for picture or sculpture galleries, provision should be made for the effectual exclusion or withdrawal of the products of combustion from the chambers containing works of art."

Another point, which is naturally connected with artificial lighting, is artificial warmth; and it must be remembered that an equable and moderate temperature is an essential element in the preservation of pictures. In a permanent gallery fires, for every reason, must, of course, be considered inadmissible; and probably the best possible way of warming such a gallery would be by hot-water pipes; the furnace for generating heat being placed in a fireproof vault, and, if possible, out of the building, as, for instance, in a quadrangular arrangement of building, the heating apparatus might be in a vault under the central court. An advantage of the hot-water system is the readiness with which the degree of heat can be regulated by shutting off the water from a portion of the pipes. The kind of heat communicated by hot-water pipes is also less dry and parching than that from most other contrivances for artificial heating. In order, however, to provide against too much dryness in the atmosphere of the room, the system has been adopted in the Berlin Gallery of placing a large vessel of water in each apartment, which is evaporated gradually by the warmth of the room, and imparts a certain degree of moisture to the air. Dr. Waagen gives it as his opinion, that this is "equally good for the pictures and for the public."

In regard to the question of the arrangement and classification of works of art, the distinction between permanent and periodical exhibitions is, of course, very great. The object of the latter is to give room for the exhibition of as many as possible of new works which come up to a certain standard; and as the style, character, and size of the works sent for exhibition can only be generally surmised beforehand, it is impossible to suit the arrangement of the rooms to the pictures in detail. It is generally considered sufficient if a separate apartment is provided for water-colour drawings, and another for sculpture. That the water-colour drawings, with a scale of tone and a range of effects so totally distinct from those of oil-painting, require to be exhibited separately, is obvious enough; but I cannot help thinking, that even in the case of annual exhibitions, a further classification of works might be carried out than is generally attempted; and that the possibility of doing this depends in a considerable degree upon the arrangement of the rooms. The Royal Academy Exhibition, even under its present improved conditions, is little more than a huge jumble of pictures, large works and small works, portraits, landscape and *genre* pictures, crowded together indiscriminately in a manner which renders it difficult for either the eye or the mind to do justice to any work depending for its effect upon more delicate treatment of colour or detail than those around it. The only approach to classification in the Academy consists in placing in one room (the north-east room) all the works contributed by the members of the new school of light, fresco-like painters,—Albert Moore, Armstrong, Barclay, and others. These pictures, with their light tints and absence of shadow, would be fairly killed by being placed singly in the midst of more heavily-toned pictures; but the same thing is the case, in a lesser degree, with works not differing so much in style: paintings on a large scale for instance, and paintings on a small scale, are a mutual injustice to each other, and cannot advantageously be studied when jumbled up together.

Now it would, I think, be quite possible to avoid this drawback, without entailing needless inconvenience on hanging committees, by planning galleries either with a range of smaller rooms for the exhibition of cabinet pictures, or (as small rooms are bad for circulating a crowd of spectators through) by so arranging the large rooms that screens can be placed for hanging the smaller works apart, while the large ones are hung on the main walls. There has been an excellent opportunity afforded of seeing how well such a system of hanging works, since the early part of last year, when Sir Richard Wallace, as *Punch* expresses it, "invented Bethnal-green" by lending his splendid collection to the new museum there, and making that comparatively humble suburb a centre of attraction to all lovers of art. I have never seen pictures so well arranged in any place where they were necessarily placed as close as they would go on the walls. The building, as you know, is part of the old Kensington edifice, the "Brompton boilers," re-erected in a new position. The upper floor consists of a wide gallery running all round, the centre portion being open from floor to roof; the building is lighted, if I remember rightly, by long skylights running longitudinally; the large paintings are all placed against the main wall, round the back of the gallery,—the smaller pictures, the Ostades, Terburgs, Meissoniers, and others of that class

are hung on each side of small separate screens placed close to the front of the gallery, leaving just sufficient room for spectators between the screen and the gallery railing. It was thus possible, when studying, for instance, the splendid specimens of the works of Meissonier and Decamps, to forget the larger pictures altogether, and to suit the eye to the scale and finish of the smaller ones; and I am sure that I came away from that gallery with a much more just idea of the genius of Meissonier, and of the splendid finish of his work, than I could possibly have gained if his exquisite little productions had been wedged in between larger pictures, and overshadowed by their projecting frames, as would have been the case had they been sent to the Academy for exhibition. On the other hand, the provision of a separate apartment for sculpture (I am speaking now of "periodical" galleries) is one open to question. As a general rule, sculpture requires a decided light in one direction, and not a top light, though a high light is of course best. It is partly for this reason that it is generally supposed necessary to provide a separate apartment for sculpture, as is done in Burlington House, where the sculpture sent for exhibition at the Academy is placed in the room opposite the entrance, which is the only one lighted by a side light. But there is a serious drawback to this, and one which I believe sculptors feel very keenly, that the room thus selected becomes, according to the general usage in regard to the treatment of sculpture galleries, the only colourless room in the place; and the effect on coming out of the picture-galleries into the sculpture-room is as if a sudden chill came over everything. If this is felt even by those who are enthusiastic lovers of sculptural art, it is far more so by the general public, who as a rule understand and care much less for sculpture than for pictures. The consequence always is that the sculpture is nearly deserted in exhibitions; and I am told, on good authority, that the sculptors hate the Academy sculpture-room, and regard it as a sort of den. Moreover, works of sculpture will not bear to be crowded together; one interferes with the view of another, and with the right appreciation of it; for no work of art so much requires undivided attention as a work of sculpture, if it is worth anything, does, owing to the highly conventional and abstract character of the art. For these reasons I think that in periodical exhibitions, where the precise arrangement of the building for the works exhibited is impossible, it is a great deal better to leave room for the principal sculptural works to be placed in isolated positions in the picture-galleries. They have far more chance of receiving proper attention there; each work serves as a kind of centre for the eye to dwell upon, while the pure white of the marble rather tends to heighten the effect of the pictures than otherwise, care being taken that the sculptures are not placed so as to throw any injurious reflections on any of the pictures. In the International Exhibition galleries a good many of the sculptured works are placed down the centre of the picture-galleries, on pedestals alternating with vases and other objects of the like nature; an arrangement which adds very much indeed to the general effect, and by which the statues are on the whole fairly seen, although the room is too narrow, and the light too immediately above them to be considered entirely satisfactory. A better arrangement, when wall space can be spared for it, is to place the statues against the side of the room at intervals, as the important desideratum of a principal light in one direction and on one side is thus secured for them; this was done with some of the principal statues in the 1862 Exhibition, and I well remember the effect of Lough's splendid figure of "Comus" thus placed, half-way up the English gallery. This, of course, can only be when a wall is not crowded to its fullest capacity with paintings; but on the whole I think that sculpture would be much better served in periodical exhibitions by being placed in the general picture-galleries; and that the sculptors would be willing to compound with some disadvantages of lighting in order to secure a position where their works would form central and important objects, instead of being penned together like a collection of curiosities in one room, where they suffer far more from crowding and close juxta-position than pictures do. So much as to the possibility of classification in periodical exhibition galleries. When we come to consider the question in regard to a permanent gallery, the necessity for definite arrangement and classification of the works, and the provision for this in the building, become more distinctly obvious; and no such gallery can be considered a good or a satisfactory one which does not provide for every class of work, and every individual work, being seen to the best advantage, optically and æsthetically. And the first and broadest distinction which can be drawn is as between large and small works. Large pictures, containing broad masses of light and colour, and requiring to be contemplated from a distance as a great whole, ought certainly not to be placed in the same room and under the same light with small cabinet works, depending for their effect upon delicacy of detail and elaboration. This has been recognised in some of the best and most celebrated art-galleries,—in the Pinacothek at Munich, for instance. Here the larger works are hung in the grand saloons, which are 42 ft. wide, 52 ft. high to the top light, and 31 ft. to the cornice (I do not know if the pictures are hung up to the level of the cornice,—if so, I think it is too high to hang any but colossal pictures); and the smaller works, chiefly of the Flemish school, are arranged in a series of small rooms at the side, with a side-light to the north. Our present National Gallery is a most unhappy example of utter unsuitability in this respect; and I have no doubt that the effect of the splendid collection of Flemish pictures lately bought from Sir Robert Peel is very much marred by their being arranged in a mass around a large room, instead of being placed in smaller apartments more suitably designed and lighted for such pictures. And here, reverting for a moment to the subject of lighting, we may notice the principal exception to the general rule as to top-lighting for pictures. Sir Charles Eastlake has laid it down that, while large pictures require to be distant from the eye and from the light, small pictures should be near the eye and near the light; and therefore in many cases, at least, their conditions of lighting would be best met by a small room and a side-light. It would be important, however, to consider at what angle the light should fall on the picture, and what should be its relative position in regard to the picture and the spectator, so as to afford the best result. A square room, as shown in the Munich Gallery, is not a very scientific form, for the light could not possibly be good for the pictures on the opposite wall unless it were a very high one, in which case, as a side-light, it would be bad for the works on the side-walls near the window. Reflections of light from the pictures, when considered horizontally, are found to be confined to the space bounded by lines connecting the extremities of the light with the extremities of the picture, *and* to a space enclosed by lines forming an angle of 30° with those bounding lines at the edge of the picture. Applying this to a square room with side-light, it will be found that scarcely any portion of the wall opposite the window would be available for satisfactory inspection of pictures, particularly if under glass. The plan proposed by Sir Charles Eastlake for utilising side-light, was to have a gallery lighted at both sides by windows at intervals, going nearly to the top of the room, and then to subdivide this by screens or partitions placed at an angle of about 62° with the wall, in alternate directions. The effect of this obviously is to reduce the wall opposite each window, which is a bad position, and increase the area of the side walls. This is very ingenious, although less satisfactory to the architectural mind, no doubt, than a square room; and besides the advantage over the square apartment, the inner and narrower side of the room could be utilised as a place for a statue, which, with the opposite window kept high, as suggested, would be as good a situation for sculpture in combination with painting as, in all probability, could possibly be obtained. The *sides* of the room, it is true, are for the most part at a less advantageous angle for pictures than in a square room, so far as reflections are concerned, and perhaps a lesser angle than 62° might be better, but the plan combines several advantages in regard to economy of space and effective arrangement. On a larger scale, too, it might be worked into a circular building, in a very symmetrical form, and with a great amount of hanging space in proportion to the area of the building. I do not, however, mean to infer that a top light would not be the best for cabinet pictures also, could the light be brought low enough to be near them; but in a large building, the other apartments of which would be much loftier, it might be difficult in many cases to secure a low top-light for the smaller pictures, especially having regard to the difficulty before alluded to, of so placing the lower skylights as not to have their light robbed by the higher portions of the building.

The question of classification in a gallery of art, however, includes much more than the mere division into large and small works,—comprising, in fact, the whole system or principle on which the collection should be arranged; for a collection without a definite principle of arrangement loses half its value either as an opportunity of study or of enjoyment. A very long gallery filled from end to end with pictures of various classes and nationalities, even if well classed as to the size of the paintings, is a somewhat wearisome way of arranging, or rather a neglect of arrangement; both the eye and the mind are dissatisfied with such a maze of works, and require, as it were, a division into chapters, each with its own heading, to form a kind of resting-place. Assuming, then, on this if on no other ground, that works of art should be arranged rather in a succession of smaller rooms than in one or two very large ones, upon what principle are they to be grouped? There are two main principles, more comprehensive than any others, which may be followed, viz., a classification as to class of subject, or as to schools of painting. The adoption of either of these in its entirety must have a very distinct effect on the planning and arrangement of the rooms.

If the division by class of subject be adopted, this arrangement will naturally, or *ought* naturally, to lead to a considerable diversity in the size, proportions, and lighting in the rooms respectively devoted to large historic subjects, to landscape, and to *genre*. If the division into different schools be adopted, the rooms will be more uniform in dimensions and arrangement, being adapted for a generally advantageous display of works varying in subject; the only marked difference which would be forced upon the architect would be in the case of schools of painting, which, like the old Dutch and Flemish, deal almost entirely in comparatively small works of high finish, and which therefore, as already observed, would require smaller and differently lighted rooms. Which of these arrangements would answer the end of such an institution best must depend very much on what we consider that end to be. If it is for elucidating and giving opportunities for the study of the history of painting, there can be little doubt that the classification according to schools is the most useful, the more so if arranged chronologically. One drawback to this is, that to complete the chronological sequence, works of little artistic beauty or power must often be introduced, illustrating the childish beginnings or the feeble decline of a national art. If, on the other hand, the object is the study of painting as one of the imitative arts, as the art of transferring various aspects and incidents of nature to canvas, and giving them more or less of *vraisemblance*, then the division into classes of subject would be more to the purpose: the spectator would then see before him the various ways of looking at nature to which different countries and their artists had habituated themselves, the various points of view from which the same objects may be regarded, and the various kinds of interest which the painter can extract from them or infuse into them. I am inclined to think this would be the more instructive as well as the more pleasurable arrangement. The chronological history of art can be learned from books, and is after all but the dry skeleton of the matter, of which the pictures themselves are the living reality. In other words, it is of more consequence that people should learn to understand and feel the real interest and beauty of a fine painting, and its relation to natural beauty (which is a very subtle subject), than that they should learn that it is of such a school, and that such an artist was the head of the school, and such others were his pupils and followers. But, perhaps, a middle course between the two might be followed by a division, not into "schools" (which are often mere different sets of mannerisms), but into nationalities,— French, English, Italian, Russian, &c. (for the Russians are going to be a very remarkable people in the way of art),—each nation having a large room for its larger pictures, grouped according to centuries, and a small room for its smaller works. I think this would be perhaps the most interesting way of combining enjoyment with instruction in a large gallery of art; for national difference in feeling and style in art is a very great and deep-seated distinction, showing itself not only in the various methods of execution employed, but in the way

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of looking at nature, in the preference for this or that class of subject, &c.; and philosophical as well as artistic lessons might be derived therefrom.

ART IN IRELAND.

At the last meeting of the Architectural Association of Ireland, Mr. Henry MacManus, R.H.A., read a paper on the "Geography of Architecture," a portion of which we print:—

About the year 1750—the brightest period of our modern history, which dawned like a sudden morning-light after a dark tempestuous night—we are struck with astonishment at the energy employed to cultivate the fine arts in Ireland. A new dynasty was seated on the throne of these realms, and the resident gentry, relying on the Act of Settlement, vied with each other in their efforts to serve their country by promoting its material welfare. Among the nobility, the names of Lord Duncannon, the Earl of Lanesborough, the Duke of Leinster, Lord Newtoun, and Lord Ranelagh stand foremost. The clergy were the most active in the resuscitation of Ireland; the names of the Rev. Dr. Samuel Madden, Rev. Charles Jones, Rev. Dr. Henry, Dean Maturin, the Bishop of Ossory, and Rev. Dr. Barrington, are recorded by their deeds; and private gentlemen, such as William Maple, John Putland, David La Touche, Arthur Pomeroy, Holt Waring, Jones Ford, Dr. Prior, Dr. Weld, and Mr. Caldwell, have also distinguished themselves by their patriotic endeavours.

As early as 1738, Dr. Madden, the originator of that art movement in Ireland, in an enlightened address to the nobility and gentry, among other good and cogent reasons for establishing an art institution, gives the following:—"The fine arts have always been considered by all cultivated nations as the greatest ornaments and elegancies of every country, so that the utter neglect of them that prevails in Ireland will ever be a proof against us of barbarism and Gothic ignorance till we shall shake it off." And again:—"When the necessities and conveniences of nature are sufficiently provided for, the art of delight and amusement will constantly come in, and if we do not bring them to us we will be apt to go abroad to them; since we must have luxury we should encourage that kind of it which has the most of pleasure and the least vice in it."

In 1757 my Lord Duncannon writes from the Continent to the Dublin Society:—"The art of designing is of the greatest use, not only in the polite arts, but through every manufacture, and this the French have proved since the establishment of their Academy by supplying nearly the whole world with their fashions. Had the Parliament thought proper to appropriate the absentee pension-tax to this very worthy and great work, it would have done the business completely, and much to our honour." Four years later the Parliament granted 12,000*l.* for sundry purposes. From that time we find the so-called Classic style of architecture making its appearance in this country. The names of the noblemen who introduced good architecture amongst us are:—Charlemont, Portarlington, Powerscourt, Cunningham, and Beresford. Through their exertions sprang up, as if by enchantment, those beautiful structures, the pride of our capital and the admiration of all visitors of taste or ordinary intelligence: they are the work of one generation of noble Irishmen. Cassels, Wilkins, Vallancy, and Gandon were strangers that were principally engaged in these works, though by that time we had native architects capable of whatever was required of them, and in all directions throughout the country the gentry were building, as if in wholesome rivalry, abbeys and castellated mansions with banqueting-halls, turreted towers, barbican-gates, court-yards, and terraces. These found artists in the Morrisons, Papworth, Baker, Johnston, Murray, and *Capability* Brown,—picturesque dwellings that mark the splendour of a resident nobility, and inspire admiration.

Up till that time there was nothing in the way of architecture that had any recognised existence: there were only the old ruined castles of the Pale, and a few scattered, bald, heavy-roofed, rueful-looking manor-houses with segment-top windows in the lowest Dutch taste staring from the end of a straight avenue of lime-trees. It was here that the descendants of the settlers of Cromwell or William aroused the echoes at early morn,—a lusty, hard-drinking, hard-headed race, fond of hunting and good cheer, but, alas! entirely indifferent to the civilising influence of the arts. Meantime, sculpture was represented in Ireland by two foreigners,—Rysbaech and Van Nost. The recumbent statue of Dean Drillincourt is of the best class of the day, and that of Prior, by Van Nost, is very respectable. Van Nost was patronised by the Royal Dublin Society, and taught most of the rising sculptors of his day. His works, by the way, have the contorted and fluttering air of Roubiliac and Bernini made utterly grotesque by the minuet attitude of Lucas and other figures of the same kind in our monumental sculpture.

Let us now glance at the three societies which arose in these realms in imitation of the school in Paris. The one in London indirectly helped the life-school of St. Martin's-lane, which produced those men who, under the Royal protection, became the Royal Academy of Arts. It was subject to the vicissitudes common to infant institutions, and was removed from Spring Gardens to Somerset House; thence to the National Gallery, Trafalgar-square; and lastly to a home of its own in Burlington House, Piccadilly.

In advocating the existence of academies, their first president says:—"The principal advantage of an academy is, that besides furnishing able men to direct the student, it will be a repository for the great examples of art. The student *perceives* and *receives* at one glance the *principles* that many artists spend their lives in ascertaining."

Edinburgh had *her* drawing-school in a garret in High-street, at a rent of 5*l.* per annum!

From the fact that the Royal Academy in London was open to North British artists no academy was incorporated in Scotland until 1826, just two years after the Royal Hibernian Academy was founded by charter in 1824. The delay arose from the same cause in both cases. Two rival societies of artists in Ireland existed fifty years before one of them was incorporated by royal charter in 1824.

Holding sacred the opinion of Sir Joshua Reynolds, it is needless to say that the object of these three academics of art is identical. The drawing-schools of the Dublin Society were at first in Mr. West's Academy, in George-lane, and continued there until Mrs. M'Mullen's rooms, in Shaw's-court (now Commercial-buildings), were rented by the Society at 30*l.* per annum. Next we find the institution housed in Grafton-street, then in Hawkins-street (now a theatre), until, in 1815, the Society purchased Leinster House. This time-honoured institution deserves more than a passing word, though, indeed, it generally speaks pretty loudly for itself; but this is permitted only on holiday occasions, and we rejoice with it. The Dublin Society had been founded seventy years, and supported by an Irish State grant fifty years, before the union of our Parliament with that of Great Britain, an event the possibility of which was never contemplated by its noble founders, who had established it in the spirit of a great national institution, in which the gentry and nobility of the country were to unite in developing its mental and physical resources. It is needless to say, that ever since that event in our history, which occurred at the beginning of the present century, the arts and the functions of the parent society have undergone a certain *ab*action, if I may be allowed the expression, as injurious to them as it is fatal to all peaceful development of national feeling.

The following remarks will show, by inference, what the Society might have done had it been left to the fostering care of a resident gentry and local Parliament. Some distinguished artists who were taught in this Society, with a list of their English compeers, must go far to soothe our national vanity as to our capacity for art, though we must deplore the interruption of its progress, however expedient, on other accounts; yet this roll of time-honoured names must first acknowledge the fact that it gives none to correspond with those of Hogarth, Reynolds, Romney, or Gainsborough. These painters flourished fifty years before Ireland had an academy, but their names are in their way unapproachable. Francis Danby ranks with Turner in landscape, Mulready with Wilkie, Behnes with Chantrey, Foley with Flaxman, Barry with Haydon, Maclise with Etty, Comerford with Ross, and Irish Hamilton, Hone, Chinnery, Shee, Cumming, and Cregan need not yield to Owen, Hopner, Beechy, Briggs, Jackson, Lawrence, or Opie, as first-class in portraiture; while Irish Peters, Tresham, Heaphy, and Rothwell may rank with the painters Hilton, Howard, Bird, Drummond, and others who worked for history or illustrated the beautiful incidents of life. Most of these men belong either to the end of the last or to the beginning of the present century, and are identified with the old order of things.

The names of artists get so mixed up together by writers and speakers on both sides of the Channel that we shall presently be done out of our fair claim to the merits of our distinguished countrymen. The inter-communication of Irish with English artists has not tended to the production of a national style of art in either country, therefore our efforts in spite of us come under the general head of British art.

The works of Irish artists exhibit at no time a distinct nationality, either in subject or treatment. British art, as it stands, exhibits a simple unity of purpose,—namely, to sell, the public taste being the standard aimed at.

If we wish to bring forward Irish art, we must retrace our steps eight centuries; then indeed we may claim for Ireland the highest reputation for ornamental art, acknowledged by all who have the capacity to judge of it, compared with the productions of other nations,—Indian, Persian, Greek, Roman, or Arabic. It is still here to maintain its undisputed claim to be the finest conventional ornamentation in existence.

There is no saying how far the fine arts might have advanced in this country but for the disturbance caused by its altered position seventy years ago. The accounts of this period present a Babel of conflicting interests and opinions, and show the evils of a community demoralised in the extreme,—a hopeful nationality disintegrated at one stroke,—and exhibit, unhappily, the corrupt materials consequent upon such a state. Political and social disorder oppressed the country like a nightmare, and weighed it down for years,—"It became treason to love; it was death to defend." But lovely woman interceded for the vanquished,—our patriotic women whose writings prepared the way for a better understanding with our neighbours, who lent a not unwilling ear to their sweet influence. . . .

On the occasion of the royal visit in 1821 the Society was made a royal institution. The Royal Hibernian Academy was incorporated, and the smiles of royalty shed a gleam of hope throughout the land. One of the first acts of the Society on entering its new residence in Kildare-street was to move for a Wellington testimonial in the park. So much space was required for the library, museum, chemistry, and natural philosophy departments that the drawing-schools were nearly forgotten, and were at this time housed in the hay-loft. Indeed, these schools suffered much, not only from want of accommodation, but also from insufficiency of instruction. For a whole century it was the boast of the Society that the figure-school was under a Mr. West, who was the pupil of Vanloo. In 1730 Mr. West died and was succeeded by his son Francis, who had been his father's pupil. This Francis West also died, and was in like manner succeeded by *his* son, who had also been taught by his father. So that for a period of 110 years the figure was taught by this trio in succession, each less capable than the other,—the elder West being simply figure-draughtsman and no artist whatever. It is well for the Irish student of this time that the last West died an old bachelor. To make this state of things more unfortunate still, the Society, about forty years ago, suffered both in dignity and finance through the impolitic and overbearing conduct of Chief Secretary Grant. The schools, however, such as they were, found a friend and supporter in Isaac Weld. William Carey lectured on the fine arts; Mr. Pomeroy and General Vallancy did what they could as chairmen. Captain Davis encouraged lithography on its first appearance; but notwithstanding these efforts the Society became nearly worn out; its art schools were a reproach, the objects in the museum broken and dusty, used-up old porters, old and incompetent officers, it seemed on the verge of ruin. But a new epoch was approaching. The state of local politics made it imperative for the Government to take her by the hand (hold out her hand), and to assist this fine old but much-abused institution. Since that time a new generation has sprung up to witness the Society in a higher state of efficiency than ever it had attained before.

Ireland since the Union can boast only of one first-class portrait-painter, and, before photography, but of one miniature-painter, but of no

figure or landscape painter of eminence. Though we cannot of late support artists of any standing, we indulge in the absurd propensity of taking credit to ourselves for the reputation our countrymen obtain in other parts of the world whither they go to earn their bread. "What cannot be cured must be endured," but we have no right to boast of having distinguished men who owe us nothing but their birth, and possibly a considerable deal of suffering before they left us. Foley had made his fortune before we heard of him, and now we thrust honours upon him he could well dispense with. Hogan was permitted to live amongst us in poverty, and when he died every one crowded at his funeral quite unabashed at their neglect of him while he lived. Behnes, whose head of Clarkson equals the best of Chantrey's busts, died in Middlesex Hospital! Now if we could point out a spot on this island that contains even one work by Maclise, Mulready, Danby, or Behnes, it would go some way to excuse the taste we have for appropriating to ourselves the credit due to others. We need not point to one particular class who are indifferent to art; we may say that all are alike in this respect.

Yet, after all this, we still labour under the delusion that we are a nation. We were so once, and had trades and manufactures of our own; but they have gone, and we have become simply salesmen for the manufactures of other countries. The trades have gone with the old guilds. Where are our gold and silver smiths gone? With Saint Loy to Birmingham, Sheffield, and London. From the time we open our eyes in the morning till we close them again at night we see nothing of *Irish* manufacture or workmanship, if we except those rude atrocities known as bog-oak ornaments, which are purchased by visitors to this country, and called, as if in derision, "Irish manufacture." And yet our idea of Irish trade is still associated in our minds with ingenious and contented workmen making at home the objects we see around us, but the idea has changed its significance, and now really means trading in wares; and this view of it is to be found in the code of moral sentiments among chapmen since the time that Jacob higgled with Laban.

In the year 1849 the Government established schools of design in this country. They had already an existence in England and Scotland. Their object was to train designers to assist the manufacturer who desired to compete with France in the market. But so little did the Government of that day understand of the relations of manufacture to art, that Lord Clarendon, anxious to advance the manufactures of this country, imagined this would be best done by getting up schools of design. It has since been discovered that the manufacturers must first exist, and then a cultivated taste in the customer will demand beauty in pattern. For this purpose the present Schools of Art were organised, where the elements of practical art are taught to all ranks, from the palace to the hovel, under the care of an enlightened administration. The success attending these schools is well known, and has called forth many a noble panegyric.

I proposed to draw your attention to the circumstances which have influenced the fine arts in Ireland, and I have done so to the best of my ability within the time allotted me. I have shown you that the fine arts were introduced into this country by a resident gentry, and at whose departure from the country they languished. I have shown you how attempts were made to create manufactures amongst us in lieu of the trade we lost by the union with England, and that they resulted in failure. I have intimated that we are only a nation of agents for foreign houses. I have endeavoured to show you that we have a capacity for everything except governing; that our sagacity cannot suspect the insidious approaches of what must ultimately ruin our national honour; and that we are at this moment blind to the fact that we are imperceptibly but surely controlled by those who only understand our weak side, our vanity, and that, provided we get a pretty shadow, we do not mind who takes the bone. This is called progress, and so it is, but it is a circus progress, with a whip in the middle and a body of clowns and mountebanks making smaller gyrations within it.

These facts put together may convey this lesson,—namely, those who cannot govern themselves must permit others to direct them; whether for good or evil, will depend upon the part we ourselves take in it.

GREENWICH ROYAL NAVAL COLLEGE AND SCHOOL: NEW WORKS.

In the *Builder* of February 1st, we gave some particulars concerning the internal structural changes in Greenwich Hospital, and additional works on the other side of the highway, in connexion with the Royal Naval School. The four grand blocks, each having a spacious inner quadrangle, were appropriated to the accommodation of retired admirals, commodores, captains, commanders, pursers, and all grades of officers, petty and pettier, as well as to a host of old salts, men before the mast, who had their berths some in one great room, labelled, it may be, on the lintel,—"The *Howe*, 13 men"; or, "The *Princess Caroline*;" or, "The *Royal Charles*"; which we remember as the show-ward, where the fanciful old tars had their sleeping-berths,—they could not be called hammocks,—curiously adorned. All these have been swept away, with compensation to the former inmates proportioned to their rank and influence. A number of the officers retired upon full pay, with allowance for their "emoluments,"—an unknown quantity to any one but themselves, until they were required to "declare." One,—perhaps more,—of the officers made a claim for the value of his pew, hitherto free, in the hospital chapel; and another, it is stated, actually scheduled the Admiralty for his *funeral expenses*. Short work was made with the old salts, who, simple-minded men, did as they were ordered, and, old and done up, took what they could get. The hospital was emptied of the tenants for whom it was intended, and the question arose,—"What shall we do with it?" To make it a Royal Naval College is probably the best use to which it could be put, and there is every prospect that, applied to this purpose, Greenwich Hospital will again lift up its head, and become a great national institution. During the first three months about sixty students have entered as cadets at the Greenwich Royal Naval College.

The adaptations of the buildings to their new uses will not be completed before October. It is believed that after that time the college will have 200 students under instruction and training. In the meantime, as we have seen, the students that have already entered are well accommodated and cared for. They are under proper discipline and control as regards training and teaching, and for recreation are provided with billiard-rooms, reading-rooms, baths, &c., and have rooms spacious enough and so fitly furnished as to satisfy any one but the veriest sybarite.

In addition to the gymnasium, to which we formerly referred, a new laundry and bakery at the east end of the Royal School area are in progress. The new buildings will have one side elevation to Park-row, better known, perhaps, as "Teapot-row," and the other to the west. The premises will have an entrance near the Park gates. The laundry and bakery are designed to serve for the 800 boys and the resident officers in the Royal Naval School, and also, if need require, for the 200 students, and professors and officers who may be in the adjoining college.

The new laundry will be 85 ft. 6 in. in length by 35 ft. inside, with 18-inch walls. The bakery is 59 ft. by 24 ft., and has attached to it a brew-house for working the yeast required. It has two large ovens, each 10 ft. by 6 ft. in the clear, with passages on each side and at the back. The working-room of the bakery is 25 ft. by 21 ft. 6 in. It has two troughs for mixing the sponge, each 25 ft. long by 4 ft. wide at the top.

The wash-house is 32 ft. by 30 ft., and will be furnished with two large washing-machines, two drainers and rinsers. It has adjoining it a large receiving-room for clothes that have come in to be washed, and in another place a large mending-room for the clean clothes. The wash-house is besides fitted up with bins for the reception of dirty linen, sorted. It has a drying-closet, heated by steam, supplied with fourteen long and high sliding clothes-horses. A store-room and the matron's office adjoin the wash-house. In addition to the other machines already named it has two hydro-extractors, and it may here be stated that in driving the washing-machines, drainers, and rinsers, in working the hydro-extractors, and wherever it can be applied, steam-power will be employed. In the mangling-room, 34 ft. by 18 ft., there will be two large mangles. The ironing-room, which is 38 ft. by 18 ft., will have a proper stove, and near it two radiating clothes-racks. It is furnished with four long ironing-tables, each 3 ft. wide.

Above the laundry there are rooms for the man in charge, and others for miscellaneous purposes. In the basement there are boiler-rooms and a disinfecting-room. The foundations are upon concrete that is laid upon the natural gravel. The whole of the work is done in bricks from Chatham, made by the convicts, the facings being of picked Chatham bricks and the dressings of red brick.

The buildings are to be covered by bound roofs with a raised lantern along the ridge, with opening sashes for ventilation.

The power will be supplied by a 6-horse power high-pressure horizontal engine, combining the most recent improvements. The engine will be served by two 10-horse power Cornish boilers with one fine each. The boilers to be of the best Staffordshire plates, and with Low Moor plates over the flues. The boilers to be tested to 120 lb. pressure to the square inch. The engine, boilers, tanks, shafting, washing, mangling, baking, and other machinery, are estimated to cost 1,545*l.*, including setting, fitting, and all appurtenances.

The works are designed by Colonel Sir Andrew Clarke, R.E., C.B., director of Admiralty works; Mr. Loughborough clerk of the works. The execution of the constructive portion is in the very competent hands of Messrs. George Smith & Co., contractors, of Great George-street, Westminster.

THE SHEFFIELD NEW STEEL AND IRON WORKS BUILDINGS.

A very extensive block of buildings for the Sheffield Steel and Iron Works Company, who intend to carry on business on an unusually comprehensive scale, has just been completed. These works, in which the Bessemer process will be a prominent feature of manufacture, are perhaps on a scale of greater magnitude than any similar establishment in the country. The buildings already erected, and premises in connexion, cover an area of 15 acres, and, with the view of still further enlargements, the company have purchased an additional 15 acres of land immediately adjoining the already erected works, which are conveniently situated a short distance from the centre of the town, and close to both the railway and canal.

The buildings include the rail-mill, 400 ft. in length, 50 ft. high, and 60 ft. in depth. This portion of the establishment is supplied with powerful mills and machinery, and its great capacity may be conceived when it is stated that it is equal to the production of 4,000 tons of steel rails per month. It contains seven boilers and fourteen furnaces, together with several rolling-mills for the manufacture of steel-boiler plates, and also special mills for the company's particular make of steel.

The Bessemer House, which adjoins the rail-mill, is one of the most prominent buildings in the block, and replete with apparatus and machinery for carrying out the Bessemer process of steel manufacture. Within this building there are no less than six "converters" of iron into steel, each "converter" having a capacity of six tons. There are also twelve cupolas, from which the iron is passed into the "converters," six hydraulic cranes, and a pair of hydraulic pumps to work the accumulator and cranes. The blowing-engines used in the Bessemer process at these works have steam cylinders 40 in. in diameter, and the blowing-cylinders 60 in. in diameter. This machinery admits of the production of 2,000 tons of steel per week.

The tyre-mill is another portion of the buildings. It is 170 ft. in length, by 130 ft. in depth, and the machinery is equal to the manufacture and finish of 1,000 tyres per week.

The spring shop is a large and important portion of the works. It is 34 ft. in height, and the roof covers an area of 386 ft. by 136 ft. In this building several departments are carried on, including rolling, forging, fitting, &c. It contains fifteen furnaces, sixteen water-tanks, and ninety-six fitting-places, and amongst various other articles manufactured here it may be stated that all kinds of railway-springs are made within it.

In addition to the several buildings already mentioned, there are also departments specially devoted to smiths, founders, buffer-makers, axle-makers, carpenters, and engineers, besides separate buildings for the draughtsmen's offices, and the general offices of the establishment.

ACTON LOCAL BOARD OFFICES.

THE erection of distinct buildings for parish purposes is a distinguishing feature of the present time. The accompanying engravings illustrate the offices which have been recently completed for the Local Board of Acton, Middlesex. The building stands by the side of the main road from London to Uxbridge, at the entrance to the Steyne, and was erected from the designs and under the superintendence of Mr. Edward Monson, at the cost of 2,000*l.*, including the fence-walls.

The materials used are stock bricks, relieved with cement dressings. At the end nearest to Ealing parish are two bay-windows. The south front of the main building is brought forward so as to present a good face to the main thoroughfare, and to admit of the main entrance. The front doors are of oak, which shut back into recesses so as to form the sides of the lobby; while the inner doors are of mahogany. The columns to the front door are of Mansfield stone, with Portland cement caps. All the windows on the ground-floor have cast caps, and the Board-room windows have enriched heads, drip mouldings, and ornamented blocks, supported by Mansfield stone columns. Level with the ground at the back are the engine-house and the fire-escape-house,—the latter having an entrance sufficiently high to admit the escape without being lowered, and sufficiently commodious to admit of drill for the men in wet weather,—together in one yard, quite unconnected with the offices. The tool-house for the workmen, as well as the cart-shed, are also entered without interfering with the housekeeper's part of the building. The housekeeper has a living-room, a scullery, and coal-house in the basement, with a bedroom approached by a separate staircase, quite isolated from the main entrance. Under the hall, which has a fireproof floor, and is paved with Minton's encaustic tiles, is the strong-room, and adjoining this is the collector's room, which can be entered either from the Steyne or by the main entrance on the ground-floor. On the right, as the visitor enters, is the surveyor's office, through which is the plan-room, and at the back of this is the lavatory, with modern fittings, by Jennings. The walls of the latter are partly lined with white tiles. On the left of the surveyor's office is a commodious room, with two bay windows. The main staircase, leading to the first-floor, is of Portland stone, and is lighted from the top by a lantern. The Board-room is 27 ft. long by 18 ft. 6 in. wide, and 14 ft. high, and opposite to it is the committee-room. The whole of the external walls are 14 in. thick, covered inside with Keene's cement, on a Portland cement ground, and painted. The doors to the principal rooms are of mahogany. The Board-room is lighted with one of Strode's sun-burners, and the others have bronze pendants. There are cement skirtings to each room, and provision for ventilation. The various rooms are fitted with marble chimney-pieces, that in the Board-room being of Sienna and statuary marble. The contractors were Messrs. A. & J. Blick; the stonework was executed by Mr. Mence; the plumbing, by Mr. Sutcliffe; the gasfitting, by Mr. Mason; and the plastering, by Mr. Nichols, all of Acton.

The building will be found useful for other purposes besides those strictly official.

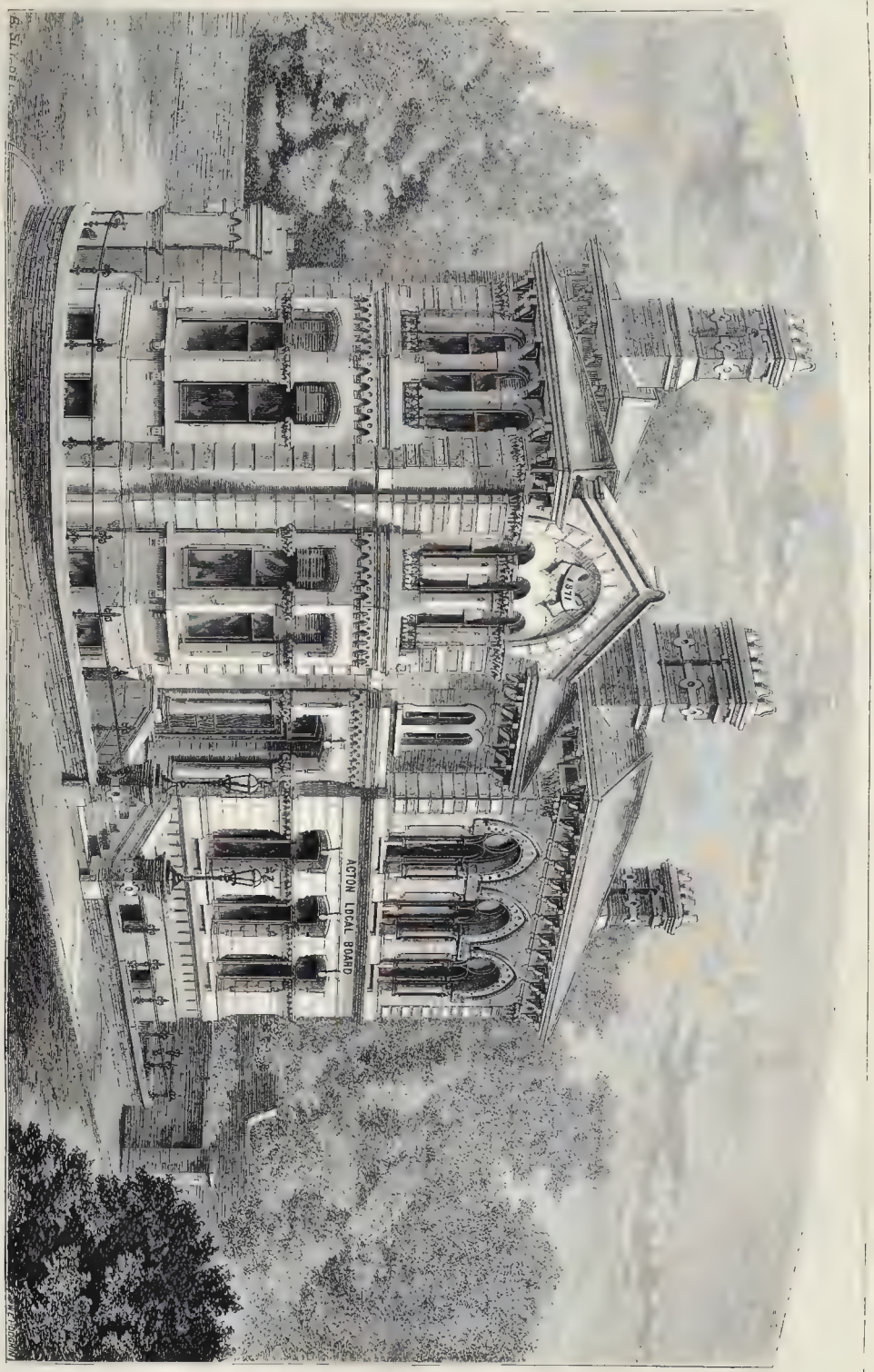
SANITARY CONDITION OF SHIPS.

WHEN, years ago, we first drew attention to the condition of our ships in a sanitary point of view, sneers, not to say laughter, were the response. The existence of the evils complained of, and the necessity for remedy were but slowly admitted. At the present moment, it seems that the crews of her Majesty's ships *Doris* and *Narcissus* are suffering severely from enteric fever, induced, it is stated, by bad water, dirty bilges, and deficient ventilation. It is reported, indeed, that there were no less than thirty-eight cases of fever on board the *Doris*. The *Lancet*, commenting on this says:—"Unpleasant facts of this sort intensify the importance of having a medical officer conversant with hygiene attached to the constructor's department of the navy, whose special duty shall be to confer with the official naval architects on all points relating to ventilation, whether in the cabins, 'tween decks, or hold of the ship."

Would not a sanitary engineer seem rather to be the man required? However, whether it be a competent doctor with engineering knowledge or an engineer with hygienic knowledge, we will not complain, provided the proper knowledge be there, and be rightly applied.



NEW OFFICES FOR THE LOCAL BOARD, ACTON, MIDDLESEX.



ACTON LOCAL BOARD OFFICES.—Mr. Edward Mosson, Architect.

DILAPIDATIONS DISCUSSED.

In the course of the paper on "Dilapidations," by Mr. Fletcher, referred to in our last, the writer said:—

I wish to call attention to the custom, on certain estates where the freeholders are peers of the realm (I do not wish to allude more particularly to the freeholders), on the near determination to arrange terms of renewal with the occupying tenant, and when these are fully arranged, and the agreement embodying them signed, to require payment in *cash* for the dilapidations under the old lease. Can anything be advanced in favour of such a claim? I venture to say all will agree with me in saying *No*. There is not a *scintilla* of justice in the claim. What right has the freeholder to that money? Not one iota. The position is this: the lessor says, "I will repair and surrender to you, in accordance with the covenants of the lease under which I hold; but if we can arrange terms of renewal, it will suit me better" (because either his business will suffer from removal, or, if a private house, he wishes to avoid the expense connected with a removal). The negotiation continues carefully, in many cases extended by the freeholder's agent; so that no time is left in which to do the repairs under the present or existing lease. The new agreement signed, the tenant feels happy; he thinks,—poor innocent fellow!—that he has nothing to do but make the alterations and outlay agreed to in such new agreement, within the time specified therein, and he is free. What are his feelings, and what would be those of my hearers, if such a case happened to them, when the freeholder's surveyor comes in, a few days before the expiry of the lease, to take a schedule of the dilapidations? To the indignant reply of the tenant, "There can be none; I have the new lease, and have agreed to improve the property, and fully repair," comes the calm reply of this great freeholder's agent! "The new agreement in no way affects your liability under the old lease, and as to-morrow that old lease expires, there will be no time to do the repairs, and I shall therefore require the amount or value thereof paid in cash." Such an instance of injustice has happened only too often in my experience. On what ground can the freeholder justify the receipt of money? What loss has he sustained? The new lease is valued by his surveyor as if it were in thorough repair, and the valuation is so taken by the lessee. Surely you cannot admire such practice, and therefore it behoves us all, as far as lies in our power, to prevent such extortion, which, curiously enough, seems only to obtain in a few estates in London, where the freeholders are peers and men of high rank.

While dealing with this portion of my subject, I cannot refrain from comparing the position of English leaseholders with that of Irish tenants.

Recent legislation has certainly created an anomaly. Now the Irishman can lay out almost any sum he chooses in improvements and building, and, if required to go, gets fully compensated for his outlay. His landlord may consider the outlay stupid and unprofitable, but he cannot prevent the outlay, although he is bound to repay it. He must at some time or other find the money to recoup the tenant a great portion of the outlay. Now turn to the position of the English leaseholder. He may build and improve as much as he likes, but not one penny can he require his landlord to repay him; worse still, he is liable for dilapidations on the very improvements he makes. Pardon this digression. I have made it to show forcibly the exact position of the English leaseholder. To further exemplify it I need only mention that if modern sanitary science, through its official medical officers, considers the premises unfit for habitation, and that they cannot be structurally altered to render them fit, the lessee has the pleasure of pulling them down, or, if not, the authorities will do it for him, the result being he is deprived of his income while the freeholder scarcely suffers. More frequently he does not suffer at all, for this reason,—he acquires at a much earlier date the reversion, and the value of the time thus gained compensates him for having the ground vacant. Surely if modern science considers that premises which every one considered fit for occupation years ago, are now unfit, some portion of the loss should fall on the freeholder, and he should find some portion of the money to render the premises fit and proper to meet the requirements of advanced scientific knowledge. Let us try to look at this point, as it bears much on dilapidations generally. A. and B. enter into a contract; both believe that the premises at worst are fit for habitation. Improved science says, some time afterwards, "We find these premises are unfit for habitation." Now, what in the name of common sense ought men to do? The granter of the lease should say, "I am sorry the article I gave you for a number of years for a certain sum has become valueless from causes over which we have no control, and about which we could have no idea; therefore, *pro rata*, will meet you in making the property what is required by advanced science." Such a course would appear right, only I regret I cannot mention an instance where it has been done. Bear in mind that in Ireland the outlay made by the tenant would have to be repaid him when he quitted the premises; dwell on this point, because I feel it is the key-note of dilapidations. Unquestionably dilapidations are more favourably construed as regards the tenant than they were formerly. The most recent decisions show that in repairing to *avoid* a money payment, it is not necessary to use new materials. Old stuff may be used, provided of course that it is of proper quality. Tindall, C. J., stated that the lessee was only bound to keep up the house as an old house, and not to give the freeholder the benefit of new work. More recent decisions appear to incline even more favourably to the lessee. In repairing it must be remembered, that if the tread of stairs be worn so that they require repairs, only nosings can be claimed; that if a door be required, the only claim that can be sustained is piecing. I think the foregoing will explain how at the present time we must take our schedule. Next, as to the time of doing the works to prevent a money claim for dilapidations: they must be performed *during* the continuance of the lease.

ARTIZAN SOLDIERS.

The normal operative element which has hitherto been confined to the Royal Engineer Corps and the Pioneer force is about to undergo a large development, by a systematic organisation in respect to every regiment. The question of the employment of soldiers at trades is not novel in itself, but as by the new formation many issues are raised, and particularly as regards the future of the building operative, it may well claim a little serious attention.

Pioneers from the earliest have been connected with armies, and we need only instance the case of the Roman legions, their mission, and their work in Western Europe, and more especially in connexion with this island. It is now proposed, that in each regiment of the British army an efficient pioneer body shall be formed, comprising men who to their ordinary duties as pioneers will be available for imparting instruction to soldiers desirous of learning a trade, and practising the same for military and governmental purposes.

According to the "Queen's Regulations and Orders for the Army," the distribution of this operative force will be as follows:—One sergeant, a carpenter by trade, if possible; three carpenters, two bricklayers, one plasterer and slater, or a man each able to slate or plaster; one smith, capable of shoeing horses; one mason, who will also require to be a stone-cutter; one painter and glazier, two plumbers and gasfitters; the total consisting of one sergeant and ten pioneers. Power will be invested in commanding officers to appoint subordinate men to be of the Pioneer Corps, without asking permission of a higher authority. Transfers from other regiments will be allowable when any regiment is unable to furnish the specified quota, or by enlistments of new men of the required trades. Should men be taken on at stations where their qualifications cannot be properly tested, they may still be appointed as pioneers, but the first opportunity that occurs for testing them is to be availed of. Although pioneers are, as a rule, intended to be stationed at the head-quarters of every regiment, yet, at the discretion of the commanding officer, they may be otherwise disposed. A small proportion of carpenters, smiths, and plumbers whom the Royal Engineer Department may have classified as ordinary pioneers may be received at Woolwich for instruction. Each non-commissioned officer having the control or selected for taking charge of a body of pioneers, must himself be an artizan of some kind, as he will otherwise be required to correspond and keep accounts appertaining. All competent men selected for the duty of pioneer sergeants will, on the application being made to the Adjutant-General, be sent for entry to the School of Military Engineering, and, after a state of probation, may have their appointment for their new duties confirmed after six months' trial. It is regulated that, after appointment, no pioneer sergeant can hold a second situation.

In the "Equipment Regulations," the tools needed for the use of pioneers are stated, and the materials for barrack damages and repairs will be furnished through the Royal Engineer Department. Next comes an interesting feature; the pioneers may be either employed on work for the Royal Engineers, or the Contract Department,—1st, by contract or agreement made with the pioneer sergeant; 2nd, by piecework; 3rd, by day-work or the hour. Men belonging to the building branches, such as carpenters, joiners, masons, bricklayers, blacksmiths, gasfitters, plumbers, glaziers, painters, and others, are peculiar to the Royal Engineers, and these will be classified and tested by the Royal Engineer Department; but the Contract Department will see to the qualification of the armourers, smiths, wheelers, carriage-smiths, saddlers, coopers, shoeing-smiths, saddle-tree makers, collar-makers, &c. In the employment of these soldier operatives, priority is to be given to all pressing work needed for public service, and for the performance of this work a preference will be given to skilled and competent men. The work of the regiment may be performed as circumstances permit, and the officers are allowed to employ the men on private jobs for themselves, and others may so employ them, if approved of by the commanding-officers.

A danger seems to lie here, for the word "others" may be made to include work within or without the barracks, and officers' private jobs may be extended to their lodgings, for numbers of them reside outside the barracks with their families. A fund is to be raised to defray the cost of repairing or replacing tools, and this fund is to be created by a contribution not exceeding 5 per cent. to be deducted from payments made for work executed. It is intended to make the system self-supporting without meddling with the ordinary regimental pay of the soldier-craftsmen and pioneers. It may be asked what will be the effect on the mechanical world outside the army by these new regulations in the British army. We believe the system contains the germs of much good, but it is not entirely free of future danger, and will be all the better for a little discussion.

EWELME AND DORCHESTER.

Sir,—The tourist season is now coming on, and to your young architectural readers a brief excursion to Ewelme, near Dorchester, in Oxon, may prove as interesting and instructive as it was to myself.

Being at Wallingford, and having read of the Ewelme Rectory scandal case in the House of Commons, in my own mind I judged that the living, being a pretty good one, would probably contain a church worth seeing. Half a mile from Wallingford, I took the fields by the west side of Cromarsh Giffard Church, a small ancient Norman one; a beacon elm-tree guides the stranger for three miles without a house near the way. A few yards from the tree is a steep descent, at the bottom of which stands the village; and the first sensation at the view of it is that of having walked into another age rather than one at the latter part of the nineteenth century, the several clusters of farmsteads, with their outbuildings forming a scene of rural beauty seldom met with. Among the blocks of buildings can be seen an Elizabethan one, near the church, for which I made. I found it to be the National School. It is built of red brick, with angular buttresses and wholesome-looking chimney-shafts, that fairly put to shame our miserable sham bits of chimneys in this much-vaunted civilised age. The doors contain the old oak tracery in the head. Ascending the ground, I came upon the schoolmaster's house, a substantial-looking block, with a battlemented entrance at each side of the yard enclosing it. Next I came upon a good red brick gateway, with a pointed arch, enclosing a huge ornamental cusp, cut in brick. Near this stands the quadrangular block of the almshouses, and, entering by the north side, I found the houses surrounded by a courtyard, with a covered way to each side, the plan of the block showing the greatest concern for the comfort of the old inmates. The windows and doors, by opening upon the courtyard, effectually screen them from the summer's heat and winter's cold. In the centre of each

passage-way is an opening, enriched with an unglazed three-light traceried dormer window and richly traceried barge-board, the openings being to facilitate crossing from one side to the other. I was told the pensioners had 9s. a week, besides various gifts and what they can earn by working, showing that we are decidedly behind-hand with our deserving and infirm poor. We bundle them into costly workhouses, and make their latter days a comparative misery to what was the case four centuries ago. Ascending a flight of steps, a covered way to the west end of the church is arrived at, the doorway being rich. The church is of late Perpendicular date. Internally it is handsome, and plain externally, with a vestry on the north side of the chancel. The whole block, consisting of the church, almshouses, and schools, were evidently planned and built at the end of the fifteenth century, and, considering the state of preservation they are in, there are few places that can boast of such an interesting block to the architect or casual visitor.

Should the visitor decide to go on towards Dorchester, at Berwick Salome is a poor old church, with a low timbered tower, tarred over. I was surprised to learn it contained a peal of six bells. On going up to them, I found them to be in a space of 10 ft. by 10 ft. The font is a good and small Norman one, with interlaced circles in two series round it, with leaves between, a peculiarity observable in the circles being that a connecting band is only round that half of the font facing the east, the west half being without it. At Warborough is a lead font, of early Perpendicular date. The tower has outside the figures 1666 upon it, in flint stones, and, considering the date, it is a creditable specimen, having buttresses and pinnacles, looking well at a distance. Next comes Dorchester Church, which is too well known to need any comment from me. The font is of lead, of early Decorated date, and enriched with sculpture. In a glazed case at the west end is collected a number of stones, exquisitely carved and highly enriched with tracery: they evidently formed the groining to an altar-piece or monument, some of them retaining their original colours and gilding. They were taken out of a blocked-up doorway in the north wall of the nave, which is now blocked up again. The building is undergoing restoration at the east end of the south aisle. I trust I have not intruded too much upon your valuable space, but that it may prove an incentive to our young architectural friends in their leisure time to roam about and see the treasures of their native land, which are in such profusion as no other country can produce.

J. B. Watts.

PROVERBS FOR GENERAL CIRCULATION.

Look before you leap, and behind after you have leapt.

Of two equally matched for the race one can only win by an accident.

A *screw* may take the lead of a lamed thoroughbred.

If the theory of progressive development be true, all men are cannibals.

If you wish well to mankind, check your national predilections and prejudices.

The object of schools and colleges is to render mediocrity tolerable,—they cannot make great men.

If there is a past in which men have done ill, let them have hope; for there is a future in which they may do well.

A body that has received a very fine polish may be easily hurt.

Men are intellectually and physically unequal. Is it just to judge them by one standard?

Shall the ear which has a hundredfold reproach that which has only seventy?

Be not envious of ill-gotten success.

The wily fowler does not spread his net in sight of the birds.

It is well for men that there are *laughers*, or they would be more ridiculous than they are.

If the *laughers* are to be effective they must neither laugh too much nor too often.

Prosperity is the destruction of a fool.

No one could gain an advantage if all men were equally matched and equally circumstanced. He who wins always wins by some balance in his favour.

Who shall estimate the taxes of time and money which bad workmanship imposes upon the world?

The shifting signification of words is a perpetual stumbling-block to the understanding.

How poor are they who have neither patience nor hope.

People should recollect that they cannot swear to things themselves, but only to their impressions of them.

Success is oftener achieved by sap and mine than assault.

All evil springs from currents turned aside: Obstruct the river, and the flood runs wide.

The mind is the east from which the day breaks.

Haze frequently lends importance to very insignificant objects.

We do not altogether like the clearness of reason, notwithstanding our professions to the contrary.

Many people go upon stilts all their lives.

Men without repose in their natures are uncomfortable companions.

There is too much talk, too much work, too little thought.

There are plenty of intellectual mines, but there are but few properly worked.

The time has come for taking coals to Newcastle.

Look to education; take care that it be of the right kind, and you need have no misgivings about the future.

The watchers are the first to note the dawn.

Education should make men from whom sculptors would desire to make statues.

A virtuous people will become a beautiful people.

Nothing in the universe is independent.

The world does not go far wrong when men sleep.

The effulgence of a great luminary dims the glory of lesser lights.

The heavens are not all light.

We should have more music if all men were in tune.

Why all this scurry: are men struggling to live, or to die?

If you had eyes all round you a pebble might trip you up.

No one need be offended when a pig grunts.

It is unfortunate to be a toad, though he have a jewel in his head.

A rat may be undermining your house, and you shall never hear him gnawing.

Your dove-cote may supply bills to unroof you.

Never show that you suspect, nor accuse till you have found that your suspicion was well founded.

Try what forgiveness will do before you resort to punishment.

The long-eared are timid, so be sure you make noise enough to frighten them.

Do not *gib* when you are whipped.

There are villains who spread their nets as systematically and treacherously as the spider.

Human foxes have holes: why not draw and hunt them?

Do not rear human ferrets: their pretended antipathy to rats only covers a taste for nicer game.

Serpents lie coiled and still, till they can dart and sting.

You shall know where fortune is dying by the swoop of the vultures.

Birds of prey see a long way.

The brave man who has conquered himself will not fail to gain other victories.

Many a man dies just as he comes in sight of the promised land.

In trying to overreach others, a man frequently overreaches himself.

We often injure ourselves by trying to stretch further than we are able.

When a man is in trouble, his dog does not desert him.

The masses, like sheep, make much bahing, look brave, and follow the bell-wether: nevertheless, the wolves select their prey.

We must not make too much of originality, for if all knowledge were erased, this would be re-acquired; and new men would rethink and re-elaborate the old thoughts.

All things beautiful and true are included in the Divine repertory: man's merit is, at best, to have trained his mind's eye to perceive them.

Institution of Surveyors.—At the next meeting, April 21st, a paper will be read by Mr. W. Menzies, entitled "Arterial Drainage Works, Water-Supply, and Sewage-Drainage Works, executed at Windsor, between the years 1867 and 1873.

THE TAY BRIDGE.

A very fully illustrated account of the Tay Bridge, North British Railway, the method of building the piers and sinking them, the caissons and so on, will be found in the *Engineer* of April 4th.

The total length of the bridge from shore to shore is 10,320 ft. Commencing from the south, or Fife side, there will be three spans of 60 ft., two of 80 ft., twenty-two of 120 ft., fourteen of 200 ft., sixteen of 120 ft., twenty-five of 66 ft., one of 160 ft., and six of 27 ft. The first three spans (60 ft.), south side, are on a descending gradient of 1 in 100, the two 80 ft. spans are level; the bridge then rises with a gradient of 1 in 353 to the centre of the 200 ft. spans. It again descends with a gradient of 1 in 73·56 to the north shore, passing at a height of about 18 ft. over Magdalen Point and the esplanade now being constructed.

The bridge thus comprises eighty-nine spans, and at the commencement on the south side the rails are 78 ft. above high water, running over the tops of the girders as far as 200 ft. spans which cross the navigable channel of the river. Over these fourteen spans the rails run on the bottom of the girders, giving a clear headway of 88 ft. above high water. On reaching the 120 ft. spans on the north side, the rails are again on the top of the girders, which is continued, with the exception of the 160 ft. bowstring span, to the north shore. From the south side the first five spans are on a cure of twenty chains radius. The bridge then runs straight across the river as far as the end of the sixteen 120 ft. spans on the north side; thence the whole of the 66 ft. spans, 160 ft. bowstring, and the 27 ft. spans are on a curve also of 20 chains radius, forming nearly a quadrant of a circle, the length being about 2,000 ft. This long curve is necessary to bring the bridge,—which runs nearly due north,—at right angles across the river into the town, alongside the Caledonian Railway.

The greater part of the piers are built of brick, varying in diameter from 6 ft. to 15 ft. Fig. 1 shows the elevation and section of a pier 9 ft. 6 in. diameter at the water-line, supporting the 120 ft. spans. Fig. 2 shows the elevation and section of a pier 13 ft. 6 in. diameter at the water-line, carrying the 200 ft. spans.

The method of building the piers and sinking them to the foundation is carried out in a novel manner, and specially adapted to rivers having strong currents, and with little soil overlying the rocky bed,—which here in one case did not exceed 4 ft.,—prohibiting the use of timber staging, as heretofore used for such structures.

The piers are first built up to the height of 15 ft. on the foreshore on a temporary basis of concrete, the girders carried by the pontoons are floated over the pier, and with the falling tide are left hanging to the pier by brackets, the pontoons being floated away and moored in the harbour. The pier is then built up to such a height that when resting on the bottom in its permanent position the top will be above low water. The girders, on which are resting the hydraulic rams for lowering the pier, are then connected by the wrought-iron lowering links with the base of the pier. The pontoons are floated underneath the girders, and the whole pier floated from its temporary resting-place at high water and towed out to its permanent position. The heaviest piers floated out weighed 145 tons, and were lowered by six hydraulic rams.

The brickwork is built of Portland cement, in the proportion of one of cement to one of sand; and such is the strength of the brickwork, that after a few months those cylinders which capsized, after being floated on to the foreshore, could only be broken up by blasting.

Up to the present time, on the south side, twenty piers are in position, fourteen of which have been sunk to their permanent place. The first seven spans of superstructure are up to their proper level, and Nos. 9, 10, 11, and 12 spans are within a few feet of it. On the north side the piers and superstructure of the 27 ft. spans are completely finished and planked, and the bowstring span of 160 ft., with its piers, is nearly finished.

The bridge is being carried out from the designs of Mr. Thomas Bouch, M.I.C.E., of Edinburgh. The whole of the work was undertaken by Messrs. C. de Bergue & Co., of London, Manchester, and Cardiff, for the sum of 217,000*l.*; and the construction is being carried out under the superintendence of Mr. William Paterson, C.E., the contractors' engineers being Messrs. Grothe & Austin.

The contracts for the collecting line between Leuchars Junction and the south side of the bridge, together with railway running into Dundee and station, have been undertaken by Mr. Waddell, of Bathgate.

RECONSTRUCTION OF THE NORTH BRIDGE, EDINBURGH.

The North Bridge at Edinburgh, which connects the new town with the old, resembles, so far as the traffic over it is concerned, London Bridge, which connects the City with the Surrey side of the Thames. There is an enormous traffic over both, and the carriage and foot ways across each have long been too narrow. The rebuilding or widening of the Edinburgh bridge has for some time been contemplated, and it now appears that the latter plan is to be adopted.

Messrs. D. & T. Stevenson, engineers, acting on instructions received from the municipal authorities, have just furnished plans, accompanied by a report, in which they recommend the widening of the bridge in preference to its being entirely re-built. According to these plans, it is proposed to make the carriage-way 32 ft. 6 in. wide, and the footways 11 ft., the entire width being thus 54 ft. But beyond this an additional width is proposed by the construction of projections on either side of the bridge supported by transverse iron beams. The total estimated cost of the proposed extensions, exclusive of the paving, is 13,500*l.* Messrs. Stevenson calculate that it will take something like twelve months to execute the proposed works, in consequence of there being a legal obligation in force preventing the bridge from being altogether closed, which it is alleged would have the effect of ruining the tradesmen who have places of business at each end of the bridge. They, therefore, propose to complete one side of the bridge before proceeding with the works on the other side.

Messrs. Stevenson report against the construction of an entirely new bridge, not only on account of the large outlay of 50,000*l.*, which would be necessary, but also on the ground that the works would take a considerable length of time to execute, and that there would necessarily be a serious stoppage of traffic between the old town and the new town, as well as of the railway traffic under it.

It appears that the proposed works will cost between 2,000*l.* and 3,000*l.* more than they would have done a year ago, in consequence of the advance in the price of iron.

WESTMINSTER ABBEY.

The reredos (of which we gave a view some time ago) is now completed. The reredos was, in its main features, set up in 1867. Three years later the vacant niches were filled, under the direction of the present dean, by Mr. Armstead, to whom the sculptures in the frieze are also due, by four statues, representing Moses, Peter, Paul, and David, the two Apostles being those to whom the Abbey is dedicated, and Moses representing the law-givers and statesmen, towards whose transept he looks, as David represents the poets, on the side of Poets' Corner. Since that time the decoration has been completed by the addition of framework and canopies of wainscot, gilt and inlaid with enamelled plaques of metal and plaques of filagree and jewel work. The general treatment of the space below the large picture is copied from the ancient retabulum discovered some twenty years ago, and now preserved in the south aisle of the Abbey. The *Times* says,—This retabulum was of the earlier part of the reign of Edward I., as is shown by the arms of Eleanor of Castille, and was probably painted by an Italian artist. It is recorded in Dugdale's "History of St. Paul," that there was there a like retabulum, made by one Richard Pickering, a citizen, in 1309, which is described as "a beautiful tablet, made and fitted to set upon the high altar, variously adorned with many precious stones and enamel work, as also with divers images of metal, which tablet stood betwixt two columns, with a frame of wood to cover it, richly set out with curious pictures." Its cost was 200 marks, which would, when translated into modern money, exceed the cost of the new screen in the Abbey. The vacant space underneath the picture has been filled with seven heads, representing the holy women of the Bible, which were designed by Messrs. Clayton & Bell, who employed Mr. Rust, of Lambeth, to execute them in mosaic, and who also undertook the ornamental glass-work and the gilding. The whole of the woodwork has been executed by Messrs. Farmer & Brindley, the enamelled and jewelled plaques by Mr. Skidmore, of Coventry. The three large porphyry slabs in front of the Communion-table were given by the present Lord Elgin.

THE WHITECHAPEL BATHS AND WASH-HOUSES.

We regret to learn that the Whitechapel baths and wash-houses, the foundation-stone of which was laid by the late Prince Consort, and which for thirty years past have been of great service in one of the poorest and most crowded parts of London, are in danger of being sold to satisfy a claim upon them.

It appears from an appeal on their behalf which is now being made by the Rev. Canon Kingsley, that they have been closed since March, 1871, and are now in a dilapidated condition, and are likely to be sold this year in order to pay off a mortgage of 4,000*l.* Canon Kingsley, in making an appeal for subscription to raise the amount, and also to re-open the baths, points to the statement of Dr. Liddle, medical officer of health for the Whitechapel district, who says that since the closing of the baths thousands of poor women in the neighbourhood have been forced to wash and dry the house-clothes in one room, in which all the family both eat and sleep together, drinking in the seeds of disease from an atmosphere reeking with foul steam. Poor men's homes will never be fit for civilised beings to live in until such public baths as those at Whitechapel are within every poor man's reach. It appears that the committee which has been formed to raise the required sum, and so save the baths, consists of Mr. Cowper-Temple, the Rev. J. Cohen (rector of Whitechapel), the Rev. Canon Kingsley, and the Rev. W. Rogers (rector of Bishopsgate).

BUILDERS AND BILLS OF QUANTITIES.

An architect, who had advertised for tenders, with this intimation,—"One guinea will be charged for the quantities, which will be returned on receipt of a bonâ fide tender," says, "Mr.—— (who applied to me for quantities, which were sent to him on the 6th of March last), returned them to me on the 14th of the same month, with a note, stating that he declined to tender, on account of his not being able to come to Manchester to see the plans, and requesting the guinea by return of post. Is he entitled to the one guinea, under the terms of the advertisement? If he is not, I should wish you to give it to some charity, or dispose of it in such a way you may think best.

What would my position have been had the other builders acted in the same way, by returning the quantities, more especially as there was a meeting of the Board convened to receive the tenders on the 18th, according to advertisement?"

We have returned the guinea to the writer, but have no hesitation in saying that we think the builder is not entitled to it.

THE NEW RESERVOIR AT GORLESTON, GREAT YARMOUTH.

A new reservoir has just been constructed by the Yarmouth Waterworks Company. The desirability of constructing a reservoir at Gorleston has long been felt, and to meet the general demand the Waterworks Company have built a covered reservoir, from designs by Mr. Hawksley, of London, C.E., and the work has been carried to completion under the superintendence of Mr. Ayris, C.E., the manager of the company, assisted by Mr. W. H. Bishop, clerk of the works.

The new reservoir is situated on an eminence on the Lowestoft road. The ground taken by the company was about five or six acres in extent. Entering the enclosure by a brick gateway, facing the east, a roadway, the sides of which will eventually be planted with trees and shrubs, leads to the reservoir, which, in its exterior aspect, differs but little from the reservoirs at Ormesby and Caister. The roof of the reservoir is approached by twenty-five steps, leading to an opening in the shape of a half-circle, and another staircase of twenty-five steps into the interior of the reservoir. The reservoir is constructed upon the principle of corridors, six in number, each corridor being of the span of 12 ft.; and to secure strength, the outer walls are made to form a series of bays, the roof of each bay terminating in a half dome; while there is a tank at each corner of the reservoir, with circular outer walls and domed roof, which form a tie to bind the walls of the building together. A thick bed of concrete has been laid under the entire floor, projecting beyond the foundations of the outer walls and puddle-bank, and upon the concrete is a bed of clay, covered with white bricks, forming the floor of the reservoir. A thick puddle clay bank is carried up outside the external walls from the concrete foundation to above the water-line of the reservoir. The latter is 115 ft. square inside, and the height from the floor to the roof is 16 ft. The reservoir is calculated to hold 800,000 gallons of water, and when full the depth will be 14 ft. 6 in. The reservoirs at Norwich are constructed upon an almost precisely similar principle, and hold about a million and a half gallons each. A well, 65 ft. deep, has been sunk, from which a portion of the water will be supplied, by means of a steam-engine, to the reservoir, and another pipe, connected with the Ormesby main will be laid across the river at Gorleston. The material used in the construction was as follows:—800 yards of concrete, 1,400 tons of clay, 80,000 bricks, 300 tons of lias lime from Leicester, 1,000 bags of cement, 10,000 cubic yards of material dug from the land adjoining to form the banks and to cover the roof, and 150 men were employed, with a large number of horses and carts. The total cost is estimated at from 7,000*l.* to 8,000*l.* The total cost of the other works of the company at Ormesby, Caister, &c., amounted to upwards of 80,000*l.*

ROYAL ITALIAN OPERA.

Mr. Fredk. Gye does well in giving a certain number of singers unknown to London a chance of founding a reputation here, provided, of course, that he or his agents are first well satisfied as to their capabilities and probabilities; the subscription is too large to allow of experiments that are certain to be failures. With two of his lady adventurers, at any rate, on the present occasion, the public have reason to be satisfied,—Madame Paoli and Madlle. D'Angeri. The former lady especially, in the "Favorita," showed more than promise, and was generously received: the other characters were sustained admirably by Signor Nicolini, who is fast rising in estimation, and M. Faure, who can scarcely rise higher.

Both these artists distinguished themselves in a representation of Gounod's "Faust," which has been given. The scene and grouping of the Kermess are the most artistic things of their kind to be seen, and suggest a series of pictures by Teniers. Signor Cotogni (*Valentine*) should not be omitted when praises are being bestowed.

On Tuesday evening, Mdlle. Albani, who made an admirable *début* last season, re-appeared with signal success in "Lucia di Lammermoor." It was a fine performance, and has placed her high in the Town's estimation. The subscribers, who are numerous this year, we are glad to hear, can well afford to wait the coming of the great gun of the establishment, Madame Patti, whose appearance always serves to fill Covent Garden to overflowing.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

At the meeting on April 9th, Mr. H. Syer-Cuming, V.P., in the chair, Mr. E. Roberts, hon. sec., referred to a communication he had received from Sir John Lubbock on the subject of his Bill for the Preservation of National Monuments, and mentioned that the council had that day agreed to petition Parliament in favour of the Bill, considering it a step in the right direction, although not going far enough in its scope, being limited to British, Roman, and Saxon remains only.

Mr. Thomas Morgan exhibited a handsome pair of steel scissors, of Spanish manufacture, the handles being inlaid with silver ornaments and tortoiseshell. On the blades was the following inscription:—

JUAN ROMERO ME FECIT EN LA
DL USSO DN'M'R'COM : GEN.

Mr. Isaacson Tucker, Rouge Croix, explained to the meeting that he had lately paid a visit to the "York Stairs," on which Mr. George R. Wright had read a paper at the last meeting, and found

that the arms on the gateway were those of Villiers, Duke of Buckingham. He quite concurred in the view taken by the Association, that this interesting memorial should be immediately raised from its present degraded condition, and made an entrance into the garden of the Embankment from Buckingham-street. A question arose as to whether the above work of Inigo Jones had been removed from its original position at the time of the destruction of York House, although the opinion of the meeting was in favour of keeping it in its present situation, under any circumstances. Mr. Wright doubted its having been removed, and referred to the drawing by Hollar, in the Pepysian Library, at Cambridge, in support of his view.

The Chairman exhibited a curious cast-iron chair of Sussex workmanship, and observed in reference to the antiquity of casting iron in Britain, which had been noticed by Mr. J. W. Grover, C.E., on a previous occasion, that it was undoubtedly practised in this country as early as the fifteenth century, and quoted several writers in support of that opinion. After other exhibitions,

The Chairman read a paper on the "Origin and Use of Hour Glasses," and the meeting adjourned to the 23rd inst., St. George's-day.

WARMING BY GAS.

Sir,—Mr. Barber's suggestions upon gas warming for domestic purposes open up a question deserving some attention. Makers of gas-warming apparatus will tell you that their schemes insure the perfect combustion of the gas, and that therefore no tube or chimney is required to carry off the products of combustion, or, as some have put it in other words, "there are no products of combustion to carry off," but their real objection to a flue is, that by carrying off the products of combustion in their necessarily heated state, the apparatus does not show so economical a result.

I am not a chemist addressing chemists, but we probably know sufficient of the matter to be aware that the combustion of gas does not annihilate it, but rather decomposes it, and allows the elementary gases of which it is formed to enter into new combinations with the gases of the atmosphere. Ordinary coal gas is (barring impurities) carburetted hydrogen, a combination of carbon and hydrogen; the act of combustion is the combination of the carbon with the oxygen of the air. Thus, one of the products must be carbonic acid, or carbonic oxide. I read from a book before me that "*Carbonic oxide is extremely poisonous, even worse than carbonic acid, is colourless, and possesses very little odour.*"

No method of warming by gas can be other than poisonous, unless provision is made for removing the products of combustion, and utilising the heat by means of radiation only; then we obtain for breathing heated atmospheric air instead of heated carbonic oxide, or heated carbonic acid. By the usual method of gas-warming, we not only rob our breathing air of its vital oxygen, but by mixing that oxygen with carbon, prepare a deadly poison.

The difference between the results of the ordinary gas jet for lighting purposes, and that of the Bunsen burner, in which air is mixed with the gas before combustion, is, I believe, that in the former case carbonic acid is evolved, and in the latter case carbonic oxide, the latter compound differing in its composition from the former in containing a larger quantity of oxygen, the more poisonous composition being the result of the more perfect combustion.

A. H.

HOT-AIR DOCTORS.

So long as the whole of the air admitted into a room has to be roasted on its way thither, so long may we be certain the atmosphere, from a health-invigorating point of view, will never be what it ought to be; but if the stove is merely looked upon as a source of caloric, to be cooled and aërated before it passes into the apartment, then something may be made of it. Dried and scorched air, which has necessarily lost all its ozone in its passage through or over the source of heat, cannot be healthy; but if it is generated at, say 200°, and is cooled by admixture with fresh air before it passes into the apartment to be heated, then it becomes another and very different thing. This is the rock upon which the day-dreams and waking schemes of a large majority of our hot-air doctors have been so far wrecked, and until they hark back to a more natural system, and one by which air can be warmed, aërated, moistened, and if necessary medicated, they will never heat our dwellings or public buildings in a really satisfactory manner. All the recent improvements have been directed almost exclusively to the economy of fuel, a very necessary point certainly; but there is something of more importance than the saving of pence, and that is, a warm and thoroughly healthy atmosphere.

Let those who are rushing in for patents for mere mechanical contrivances ask themselves a few questions as to the chemical and hygrometric nature of the atmosphere they are likely to generate, and they may possibly discover their scheme is not a perfect one. Hortulanus.

THE TRADES MOVEMENT.

Brighton.—A very large meeting of operative carpenters and joiners employed in Brighton has been held,—Mr. George Duddell in the chair,—to receive a report relative to a memorial which had been presented to the builders of Brighton in August last. The following was the formal request of the memorial:—"That work shall commence at six o'clock a.m., and terminate at half-past five, and one o'clock on Saturdays, making a total of fifty-six hours and a half per week; allowing within the above-named hours half an hour for breakfast and one hour for dinner, the same to apply all the year round, and the wages to be 7d. per hour, making a total of 1*l.* 12*s.* 11½*d.* per week, and overtime to be paid 9d. an hour." These alterations were to come into operation on the 1st of April this year, and circulars had been sent to the masters, reminding them of this fact; but no reply had been received from the masters to either the memorial or the circular. After discussing the matter, the meeting unanimously passed a resolution to the effect that, having heard the manner in which the memorial had been treated, the executive committee be instructed to send a circular to the employers, asking them to meet a deputation of the men; that such deputation consist of not less than three nor more than seven; that the meeting take place not later than April 18th; that the employers give notice not later than April 12th of the number they propose upon the deputation, so that the men may appoint a like number; and that the meeting pledges itself to the decision of such conference. Two other resolutions were also unanimously adopted, as follows:—1. "That, in the event of the employers not meeting the deputation, the committee be empowed to withdraw one or more firms, as they may decide; and this meeting pledges itself to support them." 2. "That this meeting pledges itself to allow full pay to any delegate who may be discharged in consequence of this movement." It was announced that promises of support had been received from London, Manchester, Birmingham, and other large towns.

Weston.—The society men of the carpenters and joiners are now out on strike, demanding their present rate of wage, 23*s.*, to be increased to 28*s.* 3*d.* per week. They state that an application to their masters to settle the matter amicably has been met with contempt, and they give as their reasons for making the demand that the prices of provisions are much higher than heretofore, and that the wages given in neighbouring towns are far in advance of those paid in Weston.

Inverness.—The operative slaters are at present out on strike. They have been paid at the rate of 5*d.* an hour, and they now ask for 6*d.*, which the masters decline to grant.

Stonehaven.—The journeymen slaters have come out on strike. They have received for whole time 4½*d.* per hour, and they wish to have this sum advanced to 5½*d.* The men have left the town for Aberdeen.

Mr. Rupert Kettle's Award in the Iron Trade.—This award has been published in full in the columns of the *Staffordshire Advertiser*. After disposing of the question of the sliding scale in the negative for the present, the award thus settles the question of wages:—"I feel myself at full liberty, with the consent of both parties, to fix the rate of wages for six months—*i.e.*, until the end of the ordinary Michaelmas quarter. And after the fullest attention I can give to the subject, and in the fervent hope that it may be beneficial to both parties, I fix, subject to its including all the claims I before mentioned, the rate of wages for puddlers shall be increased 9*d.* per ton from the 31st of March until the 4th of October; and that all other ironworkers shall be advanced for the same period at the rate of 7½ per cent. upon the present prices."

SCHOOL BOARDS.

London.—The works committee invited tenders for the erection of a school to provide accommodation for 1,058 children on the site in Jamaica-level, Southwark. The following were the respective amounts:—

Thompson	£7,925	0	0
Shepherd	7,800	0	0
Gammon & Sons	7,435	0	0
Newman & Mann	7,386	0	0
Tarrant	7,297	0	0

The committee recommended the acceptance of the lowest tender, that of Mr. J. H. Tarrant, of 33½, Weymouth-street, New Kent-road, S.E., amounting to 7,297*l.* The cost of the site was 2,500*l.* An application has been made to the School Board by Mr. Charles Reed, the vice-chairman, for their sanction to contracts being entered into by committee during the vacation, for carrying on the foundation works of the proposed new Board offices on the Thames Embankment, on the understanding that the actions of the committee would be submitted to the consideration of the Board on the 30th inst. The application was granted. As appears from our list of tenders on the 12th inst., tenders for concrete foundations for the Board offices have been called for and sent in.

Leicester.—The clerk read a letter from the Rev. Canon Burfield stating that the contract for the new schools of St. Mark's had been taken by Messrs. Osborne, Brothers; that there would be accommodation for 485 boys and girls in equal proportions; and that they would be finished by the end of the present year. The clerk also read the following report from the architects' committee:—The architects' committee have to report that fourteen tenders were sent in for the erection of the schools in Slater-street, a list whereof they submit with their report, and the committee recommend that the lowest tender,—that of Messrs. Osborne, Brothers,—be accepted by the Board, subject to the Education Department. The committee also present an elevation which has been prepared by Mr. Tait for the school in Elbow-lane, which they recommend to the Board for adoption. Tenders for the school in Slater-street:—

Firn	£6,380	0	0
Barnett	6,369	0	0
Sharp	6,345	0	0
Eagle	6,320	0	0
Hewitt & Sons	6,277	0	0
Flude	6,276	0	0
Major	6,296	15	0
Ratcliffe	6,220	0	0
Lewitt	6,130	0	0
Winkles	6,091	0	0
Sackree	6,000	0	0
Bland	5,805	0	0
Herbert	5,749	0	0
Osborne, Bros.	5,640	0	0

The first part of the report was adopted; and the latter part was held over, as Mr. Tait's plans were not then before the Board. The scheme for Wyggeston hospital schools has received the sanction of the Privy Council, and by it the trustees of the hospital are to pay over to the governors of the schools 15,000*l.*, 6,000*l.* of which are to be applied to building boys' and 4,000*l.* for building girls' schools. The boys' school is to accommodate 300, and the girls' school about 200, with a capacity for extension in each case. Adjoining each school is to be a residence for the head-master and mistress. The scheme is viewed with great dissatisfaction in the town.

HOUSES FOR THE WAGE CLASS.

Sir,—Although a carpenter, I do not say there is nothing like leather. Wood may be best in Norway, Sweden, Canada, and where a surplus of slabs from deals, forest thinnings, &c., exist; but in this part of England I am doubtful whether wooden buildings are profitable, taking labour, insurance, and repairs into consideration. Like cottages and other buildings the returns from which are small, I fancy we ought to look for a material which can be produced at a cost little above the labour getting and carriage.

In this neighbourhood (Fulham) and other suburban districts old brick rubbish, grouted with Portland cement, ground bricks, and hydraulic lime, would be better and cheaper. In other localities ironstone, sandstone, gravel, or chalk might be at hand; if none of these are handy, and clay should be close to hand, pier walls would in a short time be hard enough to bear any ordinary wear and tear. Either of these materials would be incombustible, and is not liable to rapid decay. They might also be made ornamental if required; even ivy or other climber might set them off.

Houses for the wage classes are also worthy of consideration. You note some buildings in Germany and elsewhere of concrete. Would it not be desirable in this and other suburban districts to build a few hundred semi-detached houses, having gardens and room to erect workshop or plant-house, that the occupier may amuse himself after leaving his daily work instead of spending his time in a tap-room, and teach his children to labour or cultivate a few flowers? I think that class of house would tend to raise the moral standard, and keep it up in the new-comers from the country districts, rather than the plan now followed by building eight or ten roomed houses to be let in tenements of one, two, or three rooms each, however large the family may be who occupy them. Would it not be preferable for the wage-receiver to pay a trifle more ground-rent, saving by the privacy afforded?

Selecting this locality for the experiment, the following advantages occur:—

We are close to the District, Metropolitan, Western Extension, and North-Western lines, giving access to most parts of the metropolis, Surrey, and other western counties; we are near the educational centre of South Kensington, the cheap musical experiments at the Royal Albert Hall, and to Hyde and Battersea Parks. I think, however, the directors of the District and Metropolitan lines, if they profess to run a workmen's train, ought to be obliged to adhere to the old times, 5.15 and 5.30 a.m., and not be allowed to defer the train until 6.15, thereby causing a loss of some 4s. per week to many working men. The companies receive the profit arising from friends of the artizans travelling, and ought to bear the loss, if there is one, on one or two early trains. There is also a possibility of helping the educational movement.

Were a co-operative company formed for the erection of houses similar to those I refer to, the unoccupied ground might be used by the growing boys on the half-time system. The parent would thus benefit, and the child would receive an industrial training.

Surely among your wealthy readers there is public spirit enough to try and benefit their fellow men, even if they do not get quite as large a percentage on their investment. There are several plots of ground near here for sale, if any warm-hearted person will try that field of labour.

Joseph Chretien.

THE WAY TO THE VIENNA EXHIBITION?

Sir,—The coming Exhibition at Vienna will most probably be an attraction sufficiently strong to induce great numbers of the art-workmen of this country to pay a visit to the Austrian capital. I have no doubt some one of your numerous readers, who, from experience, may be able to afford information, will kindly tell us the best way to take the trip, so that the journey may be performed in the least possible time, and afford an opportunity of viewing the greatest number of places by the way commanding architectural interest.

Personally, being tolerably well acquainted with Italy and France, I should like to travel *via* Germany, in which case I should be glad to know where to make my stopping places. I am sure that many hundreds of my fellow art lovers and workers will join with me in thanking, in anticipation, the kind correspondent who may enlighten us upon this subject.

H. Hems, Carver.

A SMOKY CHIMNEY.

Sir,—Can any of your correspondents suggest a remedy for an old country fireplace which smokes continually with the violent south-west winds? A metal hood has been put on the top of the flue, and closed at one end, towards the south-west, but it still smokes. The flue-opening is large at the lower part, and occasions a strong current of air, which cannot well be reduced. Were a grating erected over the fireplace into the flue, would it effect a remedy by a current of air passing into the flue?

A Subscriber.

STORING RAIN-WATER.

Sir,—I should feel greatly obliged if one of your correspondents would give me information on the best means of saving the rain-water from my house for supplying the kitchen boiler, baths, and house generally with pure, soft water. As I am about to increase the size of my house, it would be a good opportunity for carrying out some arrangement of the kind; but those whom I have consulted on the subject have not any very satisfactory views for doing so, and my own experiments with two water-butts charged with shingle and charcoal have all failed to keep the water pure. There must be some way of economising and storing rain-water for household purposes, taken from the roof, and I should be glad of any information your correspondents may be willing to give.

G. M.

TRADE SOCIETIES AND THE LAW.

Sir,—The late case at Newcastle, in which the Engineers' Society refused to pay a member the benefit for which he had for upwards of twenty years subscribed, will, it is to be hoped, turn the attention of the members of all trade societies to the position in which they are placed by the law imposed on them by their leaders. The present law regulating the position of these societies received its main features from the Bill brought in by Mr. Thomas Hughes in 1868; which Bill was prepared by Mr. Frederick Harrison, and agreed to by a conference of trade delegates as a desirable Act. No opposition among the unionists appears to have been given to this proposed Act, until it was placed before a public meeting at Exeter Hall, under the presidency of Mr. Samuel Morley. From the moving of the following by a very small party in the meeting, it appeared that Mr. Harrison's Bill took away all legal claim of the members on these societies. The resolution proposed in reference thereto was,—

"That this meeting is of opinion any legislation on trade-unions, to be just, should make such unions legally responsible for any assurances made to its members."

The meeting listened very impatiently to the mover of this, as may be seen from the *Times* report of the proceedings. However, with all their effort, this Bill did not become law, and the injustice proposed to be legalised was postponed until 1871, when Mr. Bruce introduced the Government measure, which contained the same provision. After what is now the "Criminal Law Amendment Act" had been separated from this Bill, the unionists gave their general support to it. But at the trades conference, called to take the Bill into consideration, which was held at the Sussex Hotel, Bouverie-street, E.C., March 1, 1871, the delegate from the Wokingham carpenters called attention to the injustice likely to be perpetrated on the members by the proposed measure, and he proposed the following resolution:—"That this meeting is of opinion any legislation on trade-unions, to be just, should make such unions legally responsible for any assurance made to their members; therefore this meeting must withhold its support to the present Bill, until such time as that portion of clause 5 is erased which would relieve the societies of their legal responsibility in this matter." This met with no support at all. Not another single delegate could be found supporting the interests of the members. They were all desirous for protection as far as the fraudulent acts of their treasurers were concerned; but that the individual member should be protected against the society, should it at any time wish to act in a like manner, was not thought desirable. This was indeed asking protection for the strong, and for assistance to injure the weak.

The Wokingham men still pursued their opposition to the Bill, and memorialised the Home Secretary on the matter. From their memorial I take the following sentence, thinking they may even now assist in making clear the position of trade-unionists under the law. The memorial ran thus:—

"To the Home Secretary, &c.—We cannot imagine the reasons that could have induced the Government to attempt to place members of such societies outside the pale of the law, more especially when they would in the same measure provide for the societies being recognised, and give them legal protection for their funds. We consider it nothing but justice that such associations should be protected against the fraudulent; but, surely, it will be the reverse of justice if a like protection is denied the members as against the society, and should the 5th clause remain unamended, no protection or redress would remain to members in case any society refused to pay any benefit to which a member may be justly entitled."

"We can agree with that portion of the clause which declares the society shall not be able to directly enforce any agreement for the payment by any person of any subscription or penalty to a trade-union, inasmuch as the society is fully able to, and does, protect itself in this matter, by (in our own society) compelling the members to subscribe twelve months before becoming eligible to benefit; and, after which, should a member neglect to pay his subscription within a given time, he forfeits every claim on the society, with all moneys he may have previously paid."

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"We would further urge that it is not for the public good that any association should be incorporated without being compelled to fulfil its agreements."

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This had no effect on the Government. Sir Charles Dilke, the Hon. Auberon Herbert, and other members of Parliament, were asked to support the prayer of the Wokingham men. These members, however, "would not take the matter up; the leaders of the working men must be seen." The Bill became law, and, I believe, the only petition against it was presented to the House of Lords by Earl Russell. One clause of this petition said,—

"Your petitioners believe it is not desirable the protection given to members of societies registered under the Friendly Societies Act should be withdrawn, experience having shown such protection to have been needful, and your petitioners are therefore unable to see why the members of trade-unions should be denied the same protection."

Surely the members of these societies will now see to what a pass their leaders have brought them. Each member is entirely at the mercy of the executive of his particular society. His only appeal is to the members, and he must, indeed, have a strong case if he is able successfully to cope with the executive.

But have not the public an interest at stake as well as the members? That there is good in these associations none will hardly deny, but that good never can be injured by coming within the law, or, if so, it is the law that should be altered. Trade-unions are not infallible. Rattening is not altogether a thing of the past. Remembering this, is it wise such a power should be placed in the hands of these societies that they may have a legal right to withhold a benefit justly due to a member, for the reason perhaps that he refuses to act the part of a coward and traitor to the freedom of his fellow-man? Is it wise to refuse protection to those members (and I believe they are the majority) who wish all their actions to be fair and above-board? Only two short years after the passing of the present Act we learn of the gross injustice at Newcastle by the most respected of the large trade societies. There is no doubt the law is unjust. May this first injustice under it be the last; let it not be a fact that the law of England protects the funds of societies obtaining money under false pretences, for such is the case when promises of benefits are held out to men in return for certain subscriptions, and when such subscriptions have been paid and distress comes, the society refuses to meet its engagements.

The members in self-defence should demand an amendment of the law, and the public should not tolerate a law under which the Amalgamated Society of Engineers has refused its superannuation benefit to a member of twenty-one years' standing. A member, let it be remembered, who has paid upwards of 60*l.* to the society, is now cast off, and is not even given a reason when he seeks redress in an English court.

M. H. J.

Worcester Park.

STEAM TO PUT OUT FIRE.

Sir,—I believe steam would be the quickest, easiest, safest, and most effectual agent to extinguish fires in buildings,—steam from fire-engines or other steam boilers near.

Break or disconnect the iron gas-pipe next to the stop-cock (outside all buildings); then clap on the steam. The force would instantly burst the thin leaden pipes in the interior and fill the house. No fire will stand steam; furthermore buildings and goods would not be flooded. This could be applied to ships' holds to quench spontaneous fires amongst cargoes,—steam from cook-house, boilers, or otherwise.

R. T.

SHIPS' BOATS.

Sir,—Would it be possible to launch boats more expeditiously from ships by having a *launcher* on board, such as a long narrow plate of iron, with a groove in the centre, for the boats to slide down upon into the sea, with a strong grapple at one end to be affixed to the part of the ship required, when the launcher was heaved overboard; and this small boat-railroad inclosed with iron hoops, that the boats might slide *straight* down (like the skeleton of a half-barrel)? Perhaps mechanical minds may grasp my meaning, and know whether the suggestion is quite impracticable.

H.

POROUS TILE ROOFS.

Sir,—Would you or some of your correspondents kindly inform me what is the best remedy for tile roofs that are porous? I find the upper part of my house is damp, and have traced the source of it to the tiles being porous. The lower part is perfectly dry, as the foundation is in a rock.

W. R.

SANITARY MATTERS.

Appointment of Sanitary Officers.—Dr. Griffiths, of Sheffield, has been appointed medical officer of health for the borough of Sheffield, at a salary of 600*l.* per annum. He is required to devote his whole time to the duties of his office. Mr. H. Allan has been appointed public analyst.

Sanitary Reform.—A Bill introduced by Sir Charles Adderley to amend the law relating to public health, proposes to extend the provisions of the Nuisances Removal Act to unwholesome milk; to add to the definition of the word "nuisance" houses without an adequate supply of wholesome water, any ditch, gutter, cesspool, dam, &c., in such a condition as to be a nuisance or injurious to health, and any animal kept in such a situation as to be similarly injurious. The Bill also proposes, among other things, to extend the right of complaint under the above-mentioned Act; to extend the power given to magistrates to close a house unfit for habitation to any part of a house or building; to extend the provisions of the Sanitary Act as to houses let in lodgings; to give power to rural sanitary authorities to make building by-laws, and to give power to the Local Government Board to make by-laws on the default of the sanitary authority. One of the clauses in the Bill proposes that every sanitary authority shall from time to time cause the water supplied for domestic or drinking purposes to be analysed.

CHURCH-BUILDING NEWS.

Grosmont (*Monmouthshire*).—The Church of St. Nicholas, Grosmont, on the banks of the Monnow, was restored in 1870, but again danger threatens it if means be not at once taken to restore the tower and spire; piers which support the tower, bells, and spires are crumbling away from the weight imposed upon them. About 600*l.* have already been subscribed to the fund, and the remainder of the 2,000*l.* required for the work will, it is hoped, easily be obtained. This church possesses one of those altar-stones marked with crosses in the centre and at the angles. The chancel is in perfect repair, but the rest of the building is in a lamentable state, and expense has already been incurred by shoring up the centre portion. 2,000*l.*, according to an estimate made by Mr. Seddon, the architect, would defray the cost of restoring the tower and spire with the transepts, reseating them, and erecting new frames for the bells, &c.; but should it be required to restore the nave and aisles, another 2,000*l.* will be wanted. A meeting on the subject was recently held by the ratepayers and tenant farmers, over which Archdeacon Crawley presided, and a resolution was unanimously passed to contribute a voluntary rate of not less than 5 per cent. upon the assessed value of the parish; but the parish is an agricultural one.

Lowestoft.—A meeting of parishioners has been held in the Kirkley Schoolroom, for the purpose of considering the propriety of enlarging and rebuilding Kirkley Church. The rector presided, and it was unanimously resolved "That as the parish of Kirkley, with a population of nearly 2,000 souls, has accommodation for only 220 persons within the walls of the parish church, the enlargement of the church is absolutely necessary." The plans were explained by Mr. Steward. It was proposed to do only a portion of the enlargement at one time so as not to prevent the services being held. When the entire plan is carried out the church will be rebuilt and seat 850 persons. The expense of the first portion of the enlargement was estimated at 500*l.* The sum in hand and

the promises amounted to 250*l.* A committee was appointed to carry into effect the wishes of the meeting to enlarge and restore the church.

West Clandon.—The parish church has long been in a dilapidated condition, and it is now proposed to restore it. A portion is considered unsafe, and this part it is intended to rebuild, and the exterior of the building will be put into substantial repair and made to exhibit an appearance more in accordance with its religious character. The interior also requires considerable renovation. It is estimated that 1,500*l.* will be required to restore the church entirely, and towards this sum Lady Augusta Leigh has promised 300*l.*, the Viscountess Cranley 200*l.*, Mrs. Onslow (East Clandon Park) 100*l.*, and the Rev. J. C. Harkness (the rector) 100*l.* Mrs. Onslow has also promised a memorial window.

Woodley.—The Church of St. John the Evangelist, Woodley, has been consecrated. The edifice has been erected as a chapel of ease to Sonning, and it has been built and endowed by the late Mr. R. Palmer, of Holme Park, at a cost of 6,000*l.* The church is built in the late Early English style, and consists of a nave chancel, north aisle, organ-chamber, porch, vestry, and parvis. The exterior is faced with flint, with Bath stone dressings. The roof is tiled, and the turret is furnished with three bells. The front of the churchyard is enclosed with a flint and brick wall, the remaining sides being guarded with iron fencing. The chancel is separated from the nave with a triple arch, supported by Forest of Dean columns, with Bath stone capitals, bands, and bases. The screen wall separating the chancel from the nave is filled in at the base with gilded ironwork and gilded gates. The chancel is paved with Minton tiles, and also the nave and aisle. The organ-chamber is separated from the chancel by an oak park close. The reredos consists of carved panels, the two outer panels being filled with green marble, decorated with gold. The centre panel contains a carved representation of the Crucifixion; the left panel a representation of the Centurion and the Roman soldier; and the right panel, a carved representation of Joseph and Nicodemus proceeding to the Cross. The reredos is composed of Caen stone, with English alabaster arcading, supported on polished red granite columns, carved Italian alabaster capitals and bases. The super-altar is of Devonshire marble. The east window above the reredos consists of three lights of stained glass, supplied by Mr. Hardman, of Birmingham. In the centre light is a representation of the Ascension; in the left, the Lord's Supper; and in the right, St. John the Evangelist in a trance, beholding the Holy City coming down from God out of heaven (as recorded in the Book of Revelation). In the chancel are the sedilia and the credence-table. The tracery is filled in with the descending Doves, the Lamb, and the Angels. The seats in the nave and aisle are of deal, stained and varnished, and the choir-stalls in the chancel are of oak. The font is composed of Caen stone, supported on Forest of Dean columns and base. The columns are filled in with emblems of the Passion. The cover is made of Riga oak, and is the work of a young man resident in Sonning. The pulpit is approached by stone steps and an iron bandrail. It is composed of Bath stone and English alabaster. The bookboard is of stone, supported on a column, at the base of which is a carved head of St. John the Evangelist. The roof of the church is open, the principal ribs and wind-braces being of oak. In the turret is machinery for ringing the bells. By means of a wheel, one person can ring the three bells. This was invented by Mr. Belcher, of Sonning. The church was designed by Mr. H. Woodyer, of Graffham, near Guildford. The clerk of the works was Mr. W. Cooper, of Croydon. Messrs. Wheeler, Brothers, of Reading, were the contractors for the masonry; Mr Green, of Sonning, for the brickwork and plastering; Mr. Brown, of Sonning, the staining and decorating; Mr. Cox, of Sonning, the carpentering work. The heating-apparatus has been supplied by Messrs. Remmington & Son, of Skipton, Yorkshire; and the ironwork by Messrs. Filmer & Mason, Guildford.

Bruntingthorpe. —The memorial-stone has been laid of a new church now in course of erection by Mr. H. F. Allen, builder, Leicester, from drawings, and under the superintendence, of Mr. W. Smith, architect, London. The old church, having been for years in a very dilapidated condition, has been pulled down, and the new church will have an additional aisle and chancel aisle, which will afford greater accommodation than the old one.

Halifax.—The erection of a much-needed church, to be named St. Augustine's, is to be commenced forthwith. A few weeks ago tenders were invited for the erection of the entire building, when it was found that they ranged from 11,000*l.* to 9,000*l.* Under these circumstances, therefore, it was decided to proceed with the erection of a portion only of the building. The church committee have resolved to begin the erection of the nave, aisles, and transepts, leaving the tower and spire and the chancel to a future date. The cost of this portion of the building will be over 5,000*l.*, and about 4,000*l.* are already promised.

Worting, near Basingstoke.—During the past twelve months considerable improvements have been carried out at the Church of St. Thomas of Canterbury, in this parish. It became necessary to take some steps for effectually warming both chancel and vestry. The two stoves in the north aisle of the church being insufficient for the purpose, it was therefore decided that Messrs. Haden's process should be employed to remedy the want. Before winter set in, the two stoves had been replaced by an apparatus which, by means of small hot-air gratings in the vestry and chancel, and a larger one in the nave, keeps the whole church at one uniform temperature, which can be raised or lowered at pleasure. The construction of the necessary flues and the chamber for the reception of the furnace, involving the under-pinning of three walls, was carried out by Mr. Whistler, of Sherborne. The organ filled a recess on the north side of the chancel. Its position was unfortunate, and the construction of the new warming apparatus suggested a more convenient arrangement. Accordingly, the pit in which the organist used formerly to sit has been boarded over level with the chancel floor, and is occupied by the bellows, so that the choir can now be disposed north and south; and the organ has the advantage of being raised into a position far more favourable to its sound, and also better for the choir which it accompanies. Every available portion of the original organ has been worked into the new instrument, and some considerable additions have been made. The builders of the organ are Messrs. Wordsworth & Maskell, of Leeds. The design was by the Rev. F. H. Sutton, vicar of Theddingworth, who wrote a work upon "Gothic Organs."

SCHOOL-BUILDING NEWS.

Leighton Buzzard.—Tenders for the building of the New British Girls' School, in accordance with the plans and specifications of the architect, Mr. W. C. Reed, have been sent in as follows — viz., Messrs. Eyre & Son, Hockliffe, 1,037*l.* 12s. 6d.; Messrs. Wright, Bros., & Goodchild, Croydon, 953*l.* 5s.; Messrs. H. Edwards and C. Gibbons, Eggington and Leighton Buzzard, 935*l.*; Mr. Charles Room, Eaton Bray, 906*l.*; Mr. David Cook, Leighton Buzzard, 852*l.*; Mr. John Shelton, Newport Pagnell, 731*l.* 13s. Mr. Shelton's tender, being the lowest, was accepted, and a contract has been signed, and the works are to be completed by the 1st of August. The contract includes the needful approaches, offices, and drainage, and all joiners' work of pitch pine; but does not include the gas-fittings, desks, and forms, or furniture.

Walsall.—The foundation-stone of new schools in connexion with Centenary Wesleyan Chapel, Stafford-street, has been laid. The schools have been built near to the chapel, and will form an addition to the schools already existing, which have been found too small for the requirements of the district. The building will be 65 ft. by 30 ft., and will comprise two class-rooms 16 ft. by 14 ft., a small room, 10 ft. by 12 ft., and also a gallery. The building is 25 ft. high. There will be accommodation for 300 children. Messrs. Loxton Bros. are the architects, and Mr. James Adkins is the builder. The total cost will be 795*l.*, including the cost of the fittings.

Bircle.—The corner-stone of a new day and Sunday school for the parish of Bircle has been laid by the incumbent of the parish church. The building will be in the Gothic style. Mr. S. H. Brocklehurst, of Manchester, is the architect; Mr. James Hill, of Bury, is the contractor for the masons' work; and Mr. S. Horrocks, joiner and builder, has the contract for the woodwork The schoolroom will be 80 ft. by 21 ft., and there will be one classroom, 16 ft. 6 in. square. In addition to the school there will be a teacher's house, containing three rooms on the ground-floor, and five bedrooms. The site for the new building is situated a short distance from the church, and has been presented by the Earl of Derby. The school and teacher's house are estimated to cost 1,000*l.*, the money being raised by public subscriptions, the amount already promised being about 500*l.* It is expected that the school will be ready for use about Whitsuntide next, and will afford accommodation, according to the Government standard, for about 230 scholars.

Driffield.—The foundation stone of the School Board new schools has been laid by the chairman of the Board in the presence of a large company. The site is immediately at the outskirts of the town. The school will accommodate 250 boys, 250 girls, and 200 infants, with master's residence. The buildings are in the Lombardic style, with brick facings relieved by arches and bands in red stock bricks, with slated roofs, and the floors are composed of upright blocks of larch set endwise. Mr. H. J. Paul, of Manchester, is the architect, and Messrs. Hewson Brothers, Driffield, the contractors for the work at the sum of 4,566*l.* 6s. 6d.

Everton (Liverpool). The foundation-stone of a new mission-room and schools for the district of Christ Church, Everton, has been laid. The site of the new building is in Gordon-street, off Netherfield-road, about a quarter of a mile distant from the church. The new building will stand between Gordon-street and Conway-street, one side of it being in Leech Hall-street. It will consist of three stories. The basement will comprise an infant school, 65 ft. by 28 ft., with a class-room 30 ft. by 25 ft., and playing-sheds adjoining. The ground-floor will contain the girls' schoolroom and a large room for "mothers' meetings," and above this and extending the whole length of the building will be the boys' school and mission room, the dimensions of which will be about 81 ft. by 42 ft. In the mission-room accommodation will be provided for about 700 adults. The entrance to the girls' and infants' schools will be from Gordon-street, and that to the boys' schools from Leach Hall-street. Accommodation will be provided for about 300 boys, 200 girls, and 200 infants. The style of architecture will be Gothic, of an unpretentious character, and the principal gable will be surmounted by a bell-cote. The cost of the building will be a little over 2,000*l.*, in addition to 1,100*l.* paid for the land. The architects are Messrs. T. D. Barry & Sons, and the builder is Mr. Hugh Dyer.

Luton. —The foundation-stone of new national schools for the parish of Christ Church has been laid. The site of the new buildings is in the Buxton-road, an open and healthy situation, and the schools, which are to accommodate 750 boys, girls, and infants, will, when completed, have a frontage of 164 ft. The architecture will be Gothic, and the total cost is estimated at something like 2,860*l.* The work will be carried out by local tradesmen, the architects being Messrs. J. R. & W. Brown, and the builders Messrs. Smart, Brothers.

Books Received.

Notes on Church Organs: their Position, and the Materials used in their Construction. By C. K. K. Bishop.

This is a well-written little book, by a writer whose family have for three generations been honourably known in connexion with the art of organ-building; and gives, in a concise and readable form, information and advice as to the placing of organs in churches, the best materials for pipes, &c., which should be useful both to architects and to "organ committees." Nearly all that is said here on the subject of the position of organs, and some other hints besides, will be found in an article in a former number of the *Builder* (October 23, 1869), under nearly the same title; but the advice, as far as we can judge, will probably have to be repeated a good many times before the majority of the architects concerned in such matters can be persuaded to attend to it. In regard to one question, as to the placing of the organ in cathedrals, we quite agree with the author in thinking that the old central position on the choir-screen was a far better one than most modern church architects are willing to admit. "The partisans of the 'vista' theory have arrayed themselves strongly against this position; but what lover of architectural effect, who has seen the grandly-cased

organs at Lübeck and Bruges so placed, has failed to notice how the effect of distance is improved by the line of vision being thus partially broken?" That this position is by far the best for the musical effect of the instrument in a cathedral is incontestable; it may be questioned whether it is not also in reality the best for architectural effect. Mr. Bishop is scarcely as strong against the "organ-chamber" in churches as we could wish; he seems rather bent on making the best of it, and showing how it may be most satisfactorily constructed; but nothing can make such a position for an organ satisfactory, and the organ-builders ought to combine against it. We may mention a case which came under our knowledge a few weeks since, when a very eminent German builder was invited to build an organ for a church in Lancashire, the work of a leading English architect, and containing the usual absurd closet for the organ. The builder, with equal good sense and spirit, declined the commission altogether rather than put his instrument in such a situation; and eventually he carried his point, and was allowed to place it at the west end, where it is heard with proper effect. We join Mr. Bishop in calling attention to the advantages which would result if architects "would consult an organ-builder *before* instead of *after* commencing churches or other buildings intended for organs." For want of forethought, nine-tenths of modern church-organs are placed where they can neither be properly heard nor efficiently looked after.

The book is illustrated by lithographs of various designs and forms of organ-cases, drawn, and in most cases designed, by Mr. J. Tarver; they are sufficient for the purpose of illustration, but are unfortunately in that hasty, scratchy style which is so much in vogue at present, and which has only the merit of saving a great deal of trouble to the draughtsman. The designs are mostly appropriate and in good taste, without displaying any particular novelty or effect. Sir G. G. Scott's case for the organ at St. Mary's, Nottingham (Plate II.), is very picturesquely grouped, but is done great injustice to in the drawing.

The author would have shown better taste in omitting the reprint of laudatory articles from the papers on Messrs. Bishop & Starr's organs, which is tagged on at the end as a kind of advertisement. In other respects the book will be useful to those who are about to spend money on organs.

VARIORUM.

The *Gardeners' Chronicle* sounds a note of warning to flower buyers, thus:—"Purchasers of cloves, carnations, picotees, or what is offered to them as such by hawkers, should look twice 'before they leap' at the proffered commodities, as the following incident will show. A couple of smart-looking young fellows, carrying large rush baskets, and having no lack of money in their pockets, came to a grower of market roots in West Middlesex, who, among other things, annually raises a few thousands of single cloves from seed. A wide-awake gardener selects for his seed-stock each year some of the broadest-leaved plants, and these invariably reproduce others of a like character in considerable proportions, such plants being most eagerly desired by the hawkers, and are in slang phrase called 'broad-leaved Jacks.' Our brace of smart young men purchase from 100 to 200 of these, at from 9d. to 1s. per dozen, and then, having ready some soft hay, bast, and deal labels, they proceed to carefully tie them up into pairs, furnishing each couple with a name, of which they have an abundance at the ends of their tongues, not a few having those aristocratic handles so dear to the dwellers in suburban villas; then, stowing their plants carefully in their baskets, and throwing them over their shoulders, off they set on their journey, to sell both their carnations and those who buy them."

——A correspondent of *Iron* writes as follows, concerning English ironworkers in America:—"A few years ago, the 'president' (or, as we should say, 'chairman') of one of the largest iron-working companies in the United States came to England. The object of his mission was to get skilled workmen, especially for Bessemer works. This simple fact struck me as rather remarkable. In England it is common enough for workmen to go on tramp in search of employment, but it is quite out of the ordinary course of our experience for a very wealthy and prosperous company to send their chairman on a very expensive journey half-way round the world, in order to find workmen. The terms on which he engaged these men were also remarkable. He engaged them at once, at something like double their English wages, took them across the Atlantic with him at great expense, paying their high wages while they were waiting to start and during all their journey. They were engaged for a period of years. These remarkable facts awakened my curiosity, and led me to make further inquiries respecting the condition and career of other men in the iron trade who had left South Staffordshire, Shropshire, &c., for America, and under similar engagements. These inquiries brought out some very interesting and instructive facts. In all the cases that I could follow up I learned that the men,—puddlers, mill forgemen, &c.,—fulfilled their engagements faithfully, worked through the three or five years' term as arranged, but only a minority of them, in spite of very high wages, continued to be ironworkers, and these were by no means the most intelligent and provident. The majority of the best men saved sufficient to move farther west, buy some land, and become farmers, and thus the costly operation of sending to England for first-class workmen had to be repeated."——Readers of the *City Press* will be glad to hear, with reference to the antiquarian column in this well-conducted paper for so many years contributed by "Aleph" (the late Mr. William Harvey), that arrangements have been made for a succession of "City Scraps," by various writers of known ability. Mr. John Timbs furnishes well the first of these.——Hardwicke's *Science Gossip* maintains its interesting and useful character. Of popular science journals it is the best.——The April number of *The People's Magazine* is a very good one,—instructive as well as amusing.——*Old and New London* (Cassell) is going on very agreeably. No. 4 is chiefly occupied with The Temple, concerning which and its occupants there is much amusing gossip.

Miscellanea.

Ventilation.—To this all-important subject in the matter of hospitals Dr. Demarquay has devoted an interesting chapter in his latest work, "Les Ambulances de la Presse." He fixes the quantity of air to be changed at 80 cubic mètres per hour and per bed. Behind the latter, and on a level with the floor, the mouth of the evacuation-shaft should be placed, at the rate of one for every two beds. The question as to whether these shafts should be ascending or descending is decided in favour of the latter, because in that case they are made in the thickness of the lower walls, which, being stronger, are better able to bear a diminution of substance than the upper ones, which are thinner. All these evacuating conduits open into galleries, and these into a larger one, communicating with the main shaft, where a fire producing the draught is kept up. The average velocity of the latter should not be less than 180 centimètres per second, and 2 mètres at the upper orifice. The main shaft should be provided with a door opening into the courtyard, to enable the man intrusted with the care of the fire to feed it without having to expose himself to the pestilential effluvia of the galleries.

The Charity Organisation Society.—The fourth annual report of the council of this Society has been issued in a printed form, at the Central Office of the Society, in Buckingham-street, Adelphi. "It has long been evident," says the report, "that it is not want of money, nor want of relief, which produces so much distress and pauperism in London; and the Charity Organisation Society was formed not to raise a fresh relief fund, but to attack the causes of want and pauperism in a systematic manner. To establish inquiry offices, which shall at the same time be bases of charitable operations, in each of the poor-law divisions of London, to give them necessary support and guidance, and to carry on those various functions which it is found expedient for the council to discharge as the representative of the Society, has required considerable outlay of labour and money. A considerable part of their income has again been derived from the guarantee fund which a small number of noblemen and gentlemen contributed in 1870 to assist them during the three following years. This fund is now nearly exhausted, and they will be obliged in future to rely on the public for sufficient means to carry on their work."

The Castellani Art Collections.—The question must now be decided whether the nation shall make these art works its own, together with an additional collection, some of them of higher rank. Pending the decision, the bulk of the whole is for the moment placed together in the British Museum. Among the highest examples is the bronze head of, probably, Aphrodite, and understood to have been found in Thessaly, which has only just been brought to England. This is of heroic size, with the back and crown of the head partly battered in and wrenched away, and with the eye-sockets empty; but for the rest, presenting a front view quite unimpaired, with nose and mouth perfect and uninjured. Between the two sides of the face there is a curious deviation from symmetry of which, as yet, it seems impossible to say whether it will have been due to the wrench that has once torn the statue, or to one of those subtle audacities of artistic calculation by which the Greek instinct was wont to adjust the proportions of a work for a true effect from its particular point of view. There are other bronzes in the collection, which have lain longer than this beneath the eye of experts and students. Next come the marbles, and foremost among them a Sicilian Heré. This colossal head was found at Girgenti, and is remarkably complete. There is a series of Roman imperial busts, of which the most important are a young Augustus, in singular preservation (perhaps the best extant), and a Tiberius in old age; besides a Roman sarcophagus, which is not yet in this country. Another sarcophagus, belonging to the class of terra-cottas, is one of the chief items in the whole collection, and belongs to its newer portion. Its possession would go far to make up for the loss of the Cesnola discoveries. Among the minor terra-cottas are a great many figures of the ordinary ornamental kind found in tombs, a few lamp-moulds and miscellaneous curiosities, and one unique set of figures of Roman actors, glutton, parasite, and the rest. The vases are numerous, and especially strong in the class of rhytons, or cups moulded in the shape of animals or heads of animals. There remain a variety of carved ivories, and of carved ambers from Sicily.

Reproduction of Monuments.—The list of works purchased by the trustees of the National Portrait Gallery include a cast in plaster from the upper part of the monument in Westminster Abbey. Purchased March 15th, 1872,—price, 1*l.* 11s. 6d. The above-named effigies of the earlier sovereigns, as they are placed in Westminster Abbey, being all in a recumbent position, and considerably elevated beyond the reach of the spectator, are almost useless for special purposes of portraiture. The trustees, therefore, by permission of the dean, availed themselves of a favourable opportunity, when the statues had been carefully cleaned and freed, for the first time, after the lapse of centuries, from corrosion and the accumulation of dust, to have plaster casts taken from them, with great care, by D. Brucciani. It is contemplated by the trustees that the plaster reproductions specified in the foregoing list shall be converted into bronze by Messrs. Elkington's electrotyping process, already applied with complete success to the monumental effigies of King Henry VII. and his Queen, and of Mary Queen of Scots, described in the previous report of the trustees, under the head of Donations No. 85.

Co-operative Congress at Newcastle.—The fifth annual congress of the Co-operative Societies of the United Kingdom was opened at Newcastle-upon-Tyne on Saturday, under the presidency of Mr. Joseph Cowen, jun., who delivered an address of some length to a large audience of delegates and others. A large public meeting was held in the evening under the presidency of Mr. Joseph Cowen. Mr. T. Hughes, M.P., moved, and Mr. Lloyd Jones seconded a resolution "That this meeting recognises in co-operation the most effectual means of permanently raising the condition of the people"; and Mr. Morrison, M.P., moved, and Mr. G. J. Holyoake seconded the motion, "That it is the essence of co-operation to recognise the right of labour to a substantial share in the profits which it creates." The resolutions were unanimously agreed to.

Middlesbrough Exchange.—We hear that a tower is about to be added to the Middlesbrough Exchange, to make the design of the building complete. Other arrangements, to make it more convenient, are also likely to be carried out.

The Opening of the Spencer Docks in Dublin.—On Monday the Spencer Docks were opened in Dublin by the Lord-Lieutenant. These docks have been carried out by and for the Great Midland Railway Company, for the accommodation of their outward and inland traffic in connexion with England and Ireland, and are capable of accommodating nearly 100 vessels of large tonnage. The upper dock has a spacious quay-wall on its western side, built with cut limestone, with a strong concrete backing, running the entire length, over 1,700 ft., 100 ft. wide on top, with a double line of rails. This wharf is for the convenience of the general public. On the opposite, or eastern side, the quay-wall was constructed by driving long piles, 6 ft. 6 in. below the bed of the dock, and reaching to the top of the wharf. This quay-wall is also provided with a double line of rails, similar to the other side, and is intended solely for the traffic of the Midland Great Western Railway Company. A swivel bridge connects the two docks.

Curious Relic.—A Findon correspondent of the *Sussex Express*,—Col. Margesson,—sends a sketch of a small cavity formed by brickwork, found by workmen when excavating under the stone floor of the old kitchen at Findon-place. In section it is spade or shovel shaped, point downwards, the upper part below the level of but in the same plane as the floor. The lid was broken by the pickaxe of the workmen; in its centre it has an iron ring attached, very rusty from age. Charcoal and some ashes filled up the cavity, which also contained two small flat bottles, one larger than the other, both empty, and without corks. The cavity lies in solid chalk, and cannot have been disturbed for a long period of time. It appeared to have been filled before closure full of live coals. No drain of any kind is in the neighbourhood of it.

London Cabmen's Mission-hall. — The foundation-stone of a new hall at King's-cross, Mr. Arthur Allom, architect, has been laid, adjoining to the Metropolitan Railway Station, by Mr. Samuel Morley, M.P., who contributed 50*l.* on the occasion. Many cabmen and their wives also contributed, and 100*l.* in all were collected. The new hall is to be devoted to preaching, Bible classes, prayer and temperance meetings, lectures, and a Sunday school. It is estimated that the hall will cost about 1,600*l.*, and as the work of the Mission is carried on by means of public support, an urgent appeal is made to the benevolent for help. The treasurer is Mr. W. Percy, of 35, Euston-road.

London Anthropological Society.—On the 9th inst. the first ordinary general meeting of the London Anthropological Society, which was inaugurated last January, was held at the rooms of the Social Science Association, Adam-street, Adelphi. The president (Dr. R. S. Charnock, F.S.A.), in his opening address, spoke at great length on the objects of this newly-formed society, and what gave rise to its formation, touching on the disputes between the anthropologists and the ethnologists. Thanks having been accorded to the president for his address, Dr. Inman read a paper "On certain Ancient Temples in Malta."

The Avonmouth Docks.—It is stated that a definite undertaking has been entered into by a number of capitalists to provide the money necessary to finish the Avonmouth Docks. A proposition was made to the Midland and Great Western Companies to contribute each 25,000*l.* towards the work. The companies have, however, received an intimation that no subscription from them will now be necessary. It is not unlikely, therefore, that the docks for ocean steamers on either side of the river may be finished and opened contemporaneously.

Manchester Conservative Club.—Mr. Robert Walker has been appointed architect to the Manchester Conservative Club. In consequence of notice having been given by the corporation to take part of the site for the purpose of widening St. Ann's-street, the plan and elevation of the building will have to be thoroughly reconsidered, under these circumstances.

"Sicker Safe" for Exhibition Commissioners.—Mr. J. F. Elwell, of Birmingham, is constructing one of his newly-invented "Sicker" (or sure) safes, of great strength and size, for the International Exhibition Commissioners. The safe will be prominently shown in the Exhibition, but it will not be sent there as "an exhibit."

"The Bridestones," Pickering. — The singularly placed glacial boulders, near Pickering, invested with a Druidical reputation, have changed hands. The estate upon which they stand has just been sold at Pickering. It consisted of 59 acres of cultivated land, and 219 acres of moor, on which stand the Bridestones, fringing two of the most romantic valleys of North Yorkshire. The last bid, by Mr. Frobisher, a West Riding gentleman, was 3,400*l.*

Co-operation in the Building Trade.—The operatives on strike in the building trade at Leamington have united to carry out co-operation in building, and have issued the prospectus of the Leamington United Trades Building Company, and invite public patronage and support. They state that they are prepared to undertake every description of building, and to execute work in every branch of the trade, and assert that they have the choice of the most skilled artisans in every branch.

Exhibitions.—The private view of the Society of Painters in Water Colours, and that of the Institute of Painters in Water Colours, will take place on Saturday, the 26th inst. The private view of the Royal Academy Exhibition will be given on Friday, May 2nd, the exhibition being opened to the public on the following Monday, as usual. The Royal Manchester Institution Exhibition of Water Colour Drawings will be opened to the public on Monday, April 21.

Proposed new College at Cambridge.—The designs for a new county college which it is proposed to erect in Cambridge, at a cost of 25,000*l.* or 30,000*l.*, represent an imposing pile of buildings. It is understood that a very eligible property called the Leys, on Trumpington-road, nearly opposite the Botanical Garden, recently purchased with a view of establishing a Wesleyan College, has been secured for the erection of the county college.

Testimonial to an Engineer.—Mr. H. W. Davis, C.E., in retiring from the position of engineer-in-chief to the Great Eastern Railway, to which company he has been professionally attached for twenty-five years, has been presented with a service of plate by his brother officers, and upwards of 1,500 workmen on the line. Mr. Davis has commenced business in the City on his own account as a civil engineer.

The New Organ for Gloucester Cathedral will be placed on the screen. The Dean and Chapter have entrusted the work to Messrs. Bryceson & Co., of London, and the instrument will be specially arranged so as to conduct either choir or nave service.

TENDERS

For parochial schools at Bunham, Beds. Mr. John Usher, architect. Quantities supplied:—

Foster	£1,406	0	0
Wright & Goodchild	1,387	15	0
Coles	1,386	0	0
Richards, jun.	1,335	0	0
Cunvin	1,315	0	0
Hobson & Taylor	1,297	0	0
Spencer	1,297	0	0
Dunham	1,250	0	0
Hull	1,240	0	0
Eley	1,210	10	0
Richards, sen.	1,196	6	0
Howe	1,162	16	0

For farm homestead, for Messrs. J. & F. Howard. Mr. John Usher, architect. Quantities supplied:—

Coles	£2,456	0	0
Wright & Goodchild	2,345	0	0
Hull	2,179	0	0
Dover & Co.	2,167	0	0
Foster	2,137	10	0
Potter	2,110	0	0
Spencer	2,068	0	0

For farmhouse and offices, for Messrs. J. & F. Howard. Mr. John Usher, architect. Quantities supplied:—

Coles	£1,447	0	0
Foster	1,297	0	0
Wright & Goodchild	1,266	15	0
Spencer	1,265	0	0
Dover & Co.	1,239	19	0
Potter	1,230	0	0
Hull	1,226	0	0

For the above farmhouse and homestead together:—

Hobson & Taylor	£3,648	0	0
Claridge	3,445	0	0

For sundry alterations, repairs, and decorations, 37, Stamford-street, Blackfriars. Mr. J. D. Hayton, architect:—

Baguley	£590	0	0
Bulford	561	0	0
Johnson	547	0	0
Tenfield	530	0	0
Wilkes, Bros.	519	0	0
Welham	408	17	3
Dudman	360	0	0
Pitcher (accepted)	349	0	0

For the erection of a villa at Leytonstone, Essex, for Mr. P. T. Lironi. Quantities supplied. Mr. William Mundy, architect:—

Rivett	£1,789	0	0
King & Sons	1,780	0	0
Brown	1,750	0	0
Smith	1,687	0	0
Ennor	1,684	0	0
Chapman	1,660	0	0
Forrest	1,631	0	0
Arber (accepted)	1,575	0	0

For the erection of five cottages at Chislehurst, Kent, for Mr. Edwards. Mr. William Mundy, architect:—

Grover	£1,064	0	0
Hampshire	1,038	0	0
Wentome (accepted)	750	0	0

For house at Croydon, Surrey. Mr. Richard Martin, architect. Quantities supplied by Mr. F. Sparrow:—

Bridgman, Nuthall, & West	£2,949	0	0
Ward	2,736	0	0
Jarrett	2,732	0	0
Hyde	2,713	0	0
Waller	2,637	0	0
Wright, Bros., & Goodchild	2,515	0	0

For Brecon Priory Church. Sir G. Gilbert Scott, R.A., architect:—

	Nave.			North Aisle.			South Aisle.		
Williams	£2,740	0	...	£1,080	0	...	£600	0	
Wood & Son	2,605	0	...	1,041	0	...	591	0	
Coleman	2,500	0	...	1,075	0	...	620	0	
T. Williams	2,260	0	...	1,105	0	...	582	5	
Collins & Cullis*	1,675	0	...	750	0	...	515	0	

* Accepted.

For alterations, repairs, and decorations to premises, No. 98, Gloucester-place, Portman-square. Messrs. Bird & Walters, architects. Quantities supplied:—

Newman & Mann	£1,890	0	0
Harris & Sons	1,877	0	0
McLachlan	1,869	0	0
Mark	1,847	0	0
Henshaw & Co.	1,827	0	0
Brown	1,795	0	0
Ebbs & Sons	1,770	0	0
Williams & Son	1,767	0	0
Hill & Sons (accepted)	1,740	0	0

For conservatory and garden-wall, for Mr. R. Russell. Plans and specification by Mr. J. F. Mathews. Quantities not supplied:—

Hall	£349	0	0
Cook	339	0	0
Waycott	339	0	0
Holdsworth	307	0	0

For building four houses in Grayton-road, Hampstead. Mr. Frederick Sparrow, architect. Quantities not supplied:—

Brown	£3,497	0	0
Stephens	3,390	0	0
Thompson & Smith	2,533	0	0
Bridgman, Nuthall, & West	2,399	0	0
Edgar	2,335	0	0
Temple & Forster (accepted)	2,188	0	0
Till	1,947	0	0

For alterations and new shop front to 30, Buckingham Palace-road, for Mr. Lucas:—

Wagner (accepted)	£250	0	0

Methodist Free Church and School, Vauxhall Bridge-road. Mr. W. Ranger, architect:—

Pinnell & Son	£1,960	0	0
Haynes	1,637	0	0
Smith & Allder	1,577	0	0
Burrows & Brooker	1,530	0	0
Booker	1,505	0	0
Richards	1,421	0	0
Richardson, Bros. (accepted)	1,318	0	0

For repairs to external stone and other work to Holy Trinity Church, Southwark, Surrey. Messrs. Jarvis & Son, architects:—

Reeves	£1,080	0	0
Miller	1,062	0	0
Henshaw & Co.	620	0	0
Shephard	600	0	0

For erecting boarding-house, Charterhouse Schools, Godalming, for Rev. James F. Hodgson. Mr. C. J. Hayward, architect. Quantities by Mr. Morris Evans:—

Pink	£6,997	0	0
Dove	6,845	0	0
Stimpson & Co.	6,780	0	0
Carruthers	6,246	0	0
Putney	6,168	0	0

For repairs to 121 and 123, Clarendon-road, Nottinghill, for Mr. Geo. Wadley. Messrs. Bird & Walters, architects. Quantities supplied:—

Harris & Sons	£117	0	0
Williams	108	0	0
Parkes	106	0	0

For the erection of new schools, High-street, Stratford, for the West Ham School Board. Mr. J. T. Newman, architect. Quantities by Messrs. R. L. Curtis & Son:—

Atherton & Latta	£6,040	0	0
Abraham	5,972	0	0
Gregar	5,950	0	0
Niblett & Son	5,910	0	0
Pavitt	5,873	0	0
Warr	5,823	0	0
King & Son	5,791	0	0
Wicks, Bangs, & Co.	5,694	0	0
Rivett	5,678	0	0
Hoskings	5,597	0	0
Webber (accepted)	5,441	0	0
Marshall	5,297	0	0

For new printing-office and alterations to premises, Silver-street, Bedford. Mr. John Usher, architect:—

Corby & Son	£203	0	0
Richards, jun.	201	1	0
Cunvin	171	0	0

The Builder.

VOL. XXXI.—No. 1577.

Purchase of Railways by the State.



MUCH as has been recently said and written as to the State administration of railways, we question whether the subject has yet been firmly grasped by the small of the back. At all events, there are certain considerations bearing on the case to which full prominence has been by no means given. And, although reflection comes late in the day, it may not be without practical value.

No competent person will question the truth of the abstract proposition, that the communications of a country ought to be under the direct control of the Government. The king's highway is one of the first acquisitions of a nation emerging from barbarism. But this generation has witnessed a revolution, more signal than the world has heretofore displayed, in the physical command exerted by man over nature. It was not accordant with our political instincts to call upon the Government of the country to experiment on the motive power which, more than forty years ago, was so unexpectedly shown to be applicable to locomotion, by land and by sea. Private enterprise, as in the case of the preceding great invention of the machinery for textile fabrics, seized on the new birth, as the source of private wealth. We are neither lamenting nor admiring the fact,—we only recal it. But when from the condition of experiment the locomotive advanced to that of experience; when it became evident to the foreseeing that the traffic of the future must be propelled by steam; a responsibility of an entirely new nature devolved upon the Governments of the day. It was, unfortunately, entirely ignored by foreign, although it was recognised, by foreign, statesmen. After the Liverpool and Manchester Railway had proved what the roads of the future would resemble, it was blindness the most inexcusable to throw the control of those new roads to be the sport of private speculation. It was not needful, in order that the nation might ultimately derive the full benefit from the new invention, for the Government to make the iron highways. The formal assent of the Legislature was required in each instance. The promoters of a railway were powerless without they obtained sweeping and summary powers,—powers enabling them to eject any Englishman from his traditional and hereditary castle, if it stood in the way of their line. For this exceptional legislation something should have been demanded in return beyond the general tacit engagement, so to lay out a large sum of money as (in the expectation of the subscribers) to secure the best return. Such a something was demanded by foreign Governments, but neglected by our own. Abroad, it took the form of terminable concessions. All the money raised before 1845 for our English railways would have been as freely forthcoming for a lease of ninety-nine years, as for the cession in perpetuity, improvidently sanctioned by Parliament.

It may be said that it is of no use to cry over spilt milk. Had we been provident, with even the most ordinary foresight, we should by this time have been half-way advanced towards a natural solution of the railway question. Our grandchildren, at all events, would have seen the Government of the country placed in full control of its internal communiations, and that without being weighted by any increase of the National Debt. It would then have been possible at the same time to increase the efficiency of the service, to diminish fares and charges, and to ease, both directly and indirectly, the incidence of taxation.

The shoe drawn on by improvident legislation, —by a liberality which seemed cheap, but proves terribly costly,—is now pinching. It pinches in more places than one. But the present notion is, that the original error can be retrieved by the purchase of railways by the State.

Let us see, for a moment, what such a proposal demands. The railway capital of the country is stated at 553,000,000*l.* sterling; the return for which expenditure is a gross annual revenue, which, for 1871, was hard upon 49 millions of money. It has been attempted to diminish the serious magnitude of these figures by dividing the stock into debenture, preference, and ordinary. In face, however, of any transfer to the State, such a difference would vanish. The debenture-holder who is now content with his mortgage on the line he has selected, would only part with that special security on the general security of the public faith. All the great financial operations of recent times have recognised the primary importance of simplicity. The various loans obtained by the State are most manageable, for all parties, when consolidated. Thus we can only regard the State as the possible purchaser of the railways by means of an increase of the consolidated debt to the amount of the displaced capital.

The present average distribution of interest and dividend on our railways is at the rate of a little more than 4·6 per cent. on the capital. The tendency of any improvement in the traffic is to increase the dividend of the original shareholders; the debenture-holders and preference shareholders being fully satisfied (on the average) already. To capitalise, at 3 per cent., the stock of the railway companies, so as to arrive at a *par* value of 4·6 per cent. would require 846 millions of Consols, or, in round figures, the doubling of the National Debt. But the shareholders would have their voice in the matter. They would not assent to a calculation on so low a basis. The increase would be matter of debate and of contest; for which our figure of 846 millions would be the starting-point, and the minimum.

To cover the interest on this new debt, the Government would look to the annual intake of 49 millions. But what would be the position of the new department? To say nothing of the enormous and demoralising patronage that would thus be created; to say nothing of the great difficulty of balancing the rival interests of different districts; of the immense responsibility of deciding on conflicting claims for accommodation and for extension, of the rise in price that would follow when one great necessitous purchaser took the place of numerous competing purchasers in local districts, let us see what is expected from the new arrangement.

Everything would be expected, and that at once. Better service, cheaper service, dearer service; economy and liberality; retrenchment and increased remuneration. All would be demanded together. It would be like the household of servants counselled by Swift. The public would demand more numerous trains, better carriages, greater speed, fewer stops, more stopping-places, and lower fares. The railway staff would demand better pay, certitude of engagement, and pensions when past work. The Post-office would demand mail trains, for which it is now too economical to pay. Supposing no disjointment whatever to ensue,—supposing the excellence of the management which characterises the one successful administration conducted by the Government,—the simple routine of the Post-office,—to attach to the rule of the First Commissioner of Railways (and that without any scandal as to accountability),—at whose cost would all these incompatible reforms be effected? We should either have to listen to one incessant and ever-swelling chorus of discontent, one constant query, "What are we the better for the change?" or people must be satisfied at the expense of the net revenue,—that is to say, at the cost of the taxpayer.

For these reasons, not to mention others, we decline to admit that the purchase of railways by the State can rank among the burning questions of the day. Let us rather direct our attention to such reforms as are possible, to such improvements as are only too loudly demanded. We are not yet in a position to double the National Debt by a stroke of the pen, and to place a patronage to the extent of twenty-five millions a year at the disposal of Her Majesty's ministers; with the sure alternative of either public discontent, or increase of taxation.

We have referred to the question of patronage It is one that is sufficiently grave. In extent it is enormous. The expenditure of our railway companies at the present time amounts to nearly half a million sterling per week. It is steadily on the increase; and it must continue to increase as branches and extensions are carried out, so long as the internal traffic of the country possesses a healthy vitality. This outlay mainly consists of two items, namely, the payment of wages and salaries, and the purchase of stores We neither affect any extravagant purism, on the subject of Government patronage, nor assume that all men are rogues, and that all legislation ought to be framed with a special relation to that ethical view. But, on the other hand, it is wise to avoid temptation. We are not unaware of the peculiar relations which are thought to exist between the constituencies of the great towns that depend for their prosperity on the presence of the national arsenals and dockyards, and their Parliamentary representatives. To place the entire railway expenditure of the country in the hands of the Administration would be a long step towards making a Government borough of every important railway centre. The number of the direct *employés* of the State would be enormously increased. The advantages to be derived from Government contracts would be extended to every class of supply, and to every class of tradesmen. When we see what an unprecedented amount of public corruption is fostered by the hyper-free institutions of America, we shall do well to watch with the utmost jealousy against anything that may tend to throw a large increase of patronage into the hands of any department of the Administration.

Nor are the questions which continually press for solution as to the rival interests of different localities, among the least thorny of the consequences that would attend on the unification of railway administrative power. In this respect, at least, we now possess many of the advantages of free competition. When two or more companies engage in some obstinate struggle for traffic, indeed, the public, which at first seems to be the gainer, proves ultimately to be not only the paymaster, but a heavy loser. These contests, however, are becoming more and more things of the past; and the public now, as a rule, are more likely to suffer by the combination of different lines than by their undue competition. But the healthy influence of competition remains. It is chiefly with regard to the opening up of mining, coal, and metalliferous districts that we now speak. The mine and the railway are integral parts of the same system.

They are functions of one another. The opening of a new mine, if geology point out that it is likely to be productive, will in many cases be advantageous or otherwise, in proportion to the railway facility given for the sending the produce to market. No branch, no mine. In our present condition, each great railway system is directly interested in encouraging a new industry within its district. A new colliery means a revenue of so much a year; and it is worth while to lay down so many miles of railway to earn this. The directors of lines in Yorkshire will not hesitate to take such a step, in order to open a new coal district, because a new enterprise in Wales promises to supply the London market on somewhat more advantageous terms. But if the whole management were under one central control, the principle of extensions would be altogether altered. Local advantage would always be postponed to general, or central, advantage. If a particular traffic were found to be the most remunerative, it would be the inclination, and we may even say the duty, of the new executive, to encourage that traffic to the uttermost, and to discourage any competition that would interfere with it. It is easy to see how this would tell. For we must assume that the new railway government would attempt to do its duty to the country by the most economical and lucrative management of its own special service. On any other supposition, men being what they are in the present year of grace, confusion would become absolutely rampant. If we fancy the controller of our internal communications attempting to decide, not what was best for railway purposes, but what was best for general purposes, we should arrive at an industrial Utopia such as has never yet been even ironically sketched. Just as we see that *doctrinnaire* views as to *educating* the country farmers and other local dignitaries *up to the level* of discharging the duties of sanitary authorities has entirely checked the progress of sanitary reform, so should we, at any moment, be exposed to the wildest innovations on our system of traffic, for political or *quasi*-political purposes. We should be called on to make lines, not because there was much traffic, but because there was none; not because there was an industry that needed outlet, but because there was an absence of industry, and it was thought that the creation of an outlet would tend to produce an industry. Let no one tell us that this is an imaginary case. It would be impossible for so great a power and patronage as that which would devolve on a Central Railway authority to be disconnected, in the present condition of Parliamentary government of England, from political and party objects. We know that there are men who entertain the most unpractical and visionary views as to the control of labour and the development of national wealth. It would be a hope more sanguine than any experience warrants us in entertaining to think that no such rash hand would ever grasp the reins of administration. The fact that railways would, by a central power, be used for other than railway purposes, is a danger so imminent that it may almost be spoken of as certain. It would not be more inexcusable than the actual fact that sanitary measures are now regulated on other than sanitary principles.

Then would arise the question,—What is the proper principle on which the traffic of the country should be conducted? It must be confessed that this question has, for the last forty years, been altogether unanswered. Strictly speaking, we have been engaged, during that time, in experimenting upon the subject. But our experiments have not been those of the laboratory or of the lecture-room. They have been eminently practical. They have been controlled and directed by the growing requirements of the country. Commencing with the least possible deviation from the old habits of the stage-coach and the common carriers' traffic, the modifications demanded by the increasing circulation of passengers and of goods have to a great extent developed themselves. The gauge of 4 ft. 8½ in. was determined by the simple expedient of measuring the width between the wheels of a mail coach. When the first section of the London and Birmingham Railway was opened the passengers were actually booked as by the old stages,—their names inscribed in a great folio volume, and the counterfoils torn out and handed to them. Almost the only consciously introduced novelty, in those early days, was, that at the Manchester Station the trains were started by the signal of a trumpet. That stirring note was soon silenced by the whistle.

Now, as long as we go on on the same plan, introducing, here and there, improvements which take root and spread only when they prove to be really serviceable, we may get along with some comfort. But the idea of transfering the whole control to the State, of centralising the administration, is hardly consistent with this empirical experience. If we only go on as we have hitherto done, *cui bono* the change? The need of some reform is implied by the very proposal. In what direction is it to be sought? Are we to look upon the national railways as a great source of national revenue, and as a means of lightening taxation? That they might have thus served, had we possessed the smallest amount of legislative forethought, we have already shown. But with a large revenue to be provided, how is this to be done? If experiment be made in the way of developing traffic by lowering fares, we shall enter on a transition period which no prudent minister would dare to face, whatever might be his opinion as to the ultimate result. If we seek to economise,—to restrict the number of trains, and the destructive speed of many of them, universal outcry will ensue. All those experiments, trials, partial blunders, and general improvements which are now in constant progress, bit by bit, would either be exaggerated to dangerous magnitude, or rendered altogether impracticable, by central governmental administration.

It will be observed that the opinion of all those persons who are most familiar with the actual conduct of the railway system concurs, more or less fully, with the views which we have above expressed. Nor let it be said that these men are blinded or biassed by self-interest. The contrary is the case. A man who possesses the ability and experience displayed by some of the chief officers of our great railway systems would be rather the gainer than the loser by the transfer of the line to the State. A heavy weight of responsibility,—the responsibility of earning a dividend for clamorous shareholders,—would be taken off his shoulders. His social status would be raised by the acknowledgment of his position as a public officer. If his actual salary was not increased,—and as to this, the principle of yearly increase would almost certainly be applied,—he would, at least, be sure of a retiring pension. When a man who knows what railway management means, and who would personally gain by a change of masters, tells us that a scheme is bad, he is entitled to respectful attention.

Let our readers, then, decline to attribute to the discussion of the question of the State purchase of railways, as a whole, any practical value. As to the railways of Ireland we now express no opinion. Exceptional circumstances may or may not exist, rendering action proper in part that is improper as a whole. We cannot now retrieve our past improvidence in granting perpetual rights to railway companies, by the present folly of doubling the National Debt, in order to convert private into public property. We cannot suddenly transfer to the care of a public Board, and to the arena of political jobbery, the control of numerous and highly-organised services, that spend among them half a million sterling per week. We cannot check the wholesome emulation of our different mining and manufacturing districts, by committing the decision of the great question of local extension to the sole arbitrament of a tribunal which must either decide such matters on the sole ground of the relative magnitude of the net revenue to be earned, or be guided by theoretic views which may lead to the wildest pranks. That we may do much to improve our railway administration there is no doubt. That in every fresh Act of Parliament on the subject the interests of the State should be borne in mind, we venture to urge. But it is only throwing dust in the eyes of the real advocates of railway reform to raise the "bogus" question of the purchase of the lines by the State.

Art-Union of London.—The general meeting of the members will be held in the Royal Adelphi Theatre, on Tuesday, April 29th, at half-past eleven, for the purpose of receiving the Council's report, and for the distribution of the amount subscribed for the purchase of works of art. We shall give a full account of the proceedings, as we have done for many years. In fact, a complete series of the reports annually presented to the subscribers can be found together only in our volumes.

MORE OF THE AUTOBIOGRAPHY OF AN OCTOGENARIAN ARCHITECT.

We have pleasure in noticing the appearance of the second volume of Mr. Taylor's autobiography. In this section of his reminiscences he treats of many of the same Continental buildings described in the first volume, which he re-visited in the company of his third wife, in 1856. Towards the close of his labours he lingers in the English cathedrals, giving particulars of eighteen of them, most of which he re-inspected, between 1865 and 1868, in the company of his fourth wife. A considerable number of the valuable illustrations are plates taken from his own books, first published more than half a century ago. The plans, views, maps, and details, with which he illustrated his remarks on Rome and her ancient buildings to the members of the Royal Institute of British Architects, at the commencement of the month, are here likewise reproduced. Altogether the work partakes of the character of a portfolio full of sketches, which are occasionally minutely explained, but more frequently only briefly alluded to in letters which careful friends have preserved for him. The drawings are none the less acceptable because we have seen them before; nor are the letters less readable because they are more chatty than more laboured productions would be.

"Only think," he wrote from Pisa to his friend Cresy, who was his partner in the production of the "Architectural Antiquities of Rome," the "Mediæval Buildings of Pisa," and "Revived Architecture of Italy," "only think of my sitting down to write you from this dear old place again! We arrived here yesterday afternoon about three, *en route* for Leghorn, where we have taken berths on board the *Amsterdam* for Civita Vecchia. To-morrow, Wednesday, at four, we go on board. We started at once to the cathedral, to see it before dark, and soon after entering were accosted, as usual, by the guardians, to know if we wanted to have the *Belle Cose* explained. 'How long have you been custode here?' said I. 'Above thirty-five years,' said he. 'What is your name?' said I. He saw in a moment,—'Edoardo; the same that it was when I assisted your excellency in taking the plans, which we prize so much, and of which I have copies at home;' and calling a youth, desired him to go home and fetch the Signor Taylor's works. When they came I found they were copies of our plans, sections, &c., of nearly all the buildings, engraved here, with our names and English dimensions attached." And, considering that nearly forty years had elapsed between the two visits, we cannot blame the octogenarian for recording the recognition.

Only in a letter, too, are we likely to find such amusing gossip as the remarks upon the busts and statues in the collection of the Marquis Campana:—"Among the statues are Seneca, to the life; Demosthenes, seated,—the likeness to the standing one at the Vatican stamps it true; Augustus Cæsar, speaking; Sylla, a noble statue; Vespasian, living; Titus, dumpy, but expressive; an excellent likeness of our friend Donaldson; Nero, a bust,—seems not so bad as he was; the Muses, nine beautiful statues, about 6 ft. high, each most expressively given, and all in excellent preservation;"—or as the descriptions of some of the sights, or as some of the confidential admissions of tricks upon travellers, in the way of extortionate charges.

But to give some idea of the ground traversed in this volume, we must mention that Mr. Taylor journeyed, in 1850, first to Genoa, whence, after a stay of three months, he passed on *viâ* Venice, Verona, Vicenza, Mantua, Modena, and Bologna, to Florence, where he stayed three months. Pisa next attracted him. Then he made a long stay in Rome. Perugia furnished sufficient attractions to detain him for four months, and then he returned to Rome by Arezzo, Monte Pulciano, Chiusi, Siena, Orvieto, Monte Fiascone, Viterbo, and Sutri. After this he saw Siena, Volterra, then Pisa, and Florence again. In this wide field, of course, he viewed many objects of genuine interest, and of various departments of art. He gives prominence now to minute details of the Etruscan tombs of the Tarquins and Volunni, now to the architectural antiquities of Perugia, now to the wedding-ring of the Virgin, or to the painting by St. Luke, or to the pictures of Perugino, and, successively, to other things as diverse. In Rome, as well as

* The Autobiography of an Octogenarian Architect. By George Ledwell Taylor. Vol. II. London: Longmans & Co. Margate: T. H. Keble.

old ground revisited, the newest discoveries are discussed, and the name of one temple altered to suit the newest lights on the subject. This last is the temple of Jupiter Stator, which Mr. Taylor allows must now be considered to be the Temple of the Dioscuri. As we cannot trace all his movements, we will follow him first to the tombs of the Tarquins and Volunni, and then glance at the wedding-ring of the Virgin; and at one, at least, of the paintings of Perugino. Cerevetri, the modern representative of the ancient Cære, stands on the site of the citadel or keep. "It is," explains Mr. Taylor, "a heterogeneous mass of stuff, heaped on the solid rock, the houses and walls built up to the edge, with the *débris* of the old city—square old masses of tuffo, which served originally for the walls, now mixed in with irregular construction of modern houses, all standing up as a sort of Acropolis." In the ancient city is a street of tombs, a mile long, which tombs are hewn out of the solid rock. In this place Mr. Taylor went to work, taking plans and sections. The tomb of the Tarquins is a chamber, about 35 ft. square, with two pillars in the centre. In the walls are recesses for the dead. There are numerous inscriptions painted in red and black, among which the name of Tarquin may be counted in thirty-four places. The tomb of the Volunni lies about two miles from Rome. Although one woodcut serves for a delineation of the last resting-place of the Tarquins, there are three plates filled with particulars of this chamber and its contents. These are taken from the works of Count Giancarlo Conestabile. We are shown a cell with nine others opening out of it. In one of the smaller cells are several recumbent figures, and in the centre of the ceiling is an enormous gorgon's head. In the central chamber there are other sculptures, which are also illustrated very carefully. "It must be borne in mind," points out this ardent admirer of Etruscan remains, "that this beautiful sepulchre is wholly cut out of a solid mass of tufo, the sides being elaborately carved, and ceilings recessed in panels, deeply sunk with sculptured heads of fine workmanship. It is altogether *wonderful!*" Since this tomb was discovered, in 1840, several others have been opened, and seventeen of them are figured.

The ring shown as the wedding-ring of the Virgin, in the Cathedral, Perugia, is formed of onyx. And with his mind full of Etruscan relics, it is, perhaps, no wonder that Mr. Taylor pronounced it to be of Etruscan workmanship. The little casket in which it is kept is in the form of a small silver and gold temple, in three stories. The ring hangs in the upper story, the sides of which are pieces of crystal about 10 in. square. Mr. Taylor repeats the statement that it was designed by Pietro Perugino, and executed by Benvenuto Cellini.

This is the story told of the painting of the Adoration of the Magi, executed by Perugino for the Confraternita of Sta. Maria dei Bianchi:—"He asked for this picture 200 florins, but said that as a townsman he would accept 100, and that was reduced to 75. The letters that were written on the occasion are preserved, and are curious specimens of orthography. He was to have 25 florins at first, and the rest by 25 annually, and requests a mule and a guide to be sent for him to Perugia, when he would bring his traps and commence at once. The mule was sent, and the picture painted, but the cash does not appear to have been forthcoming as it ought, as when it was nearly finished he placed a number of P.s at the bottom. The monk who held the purse, requiring to know the meaning of these P.s, after some time Pietro intimated it to him, thus,—"Pietro, Perugino, Pittore, Pinxit, Pro, Poco, Prezzo, Prete, Porco, Poltrone, Pagami, Presto."* This brought the money, and the P.s were struck out. The painting assigned to St. Luke, which represents a Madonna and Child, and is preserved in the cathedral at Orvieto, Mr. Taylor dismisses as Greek, "very early and fine." The best value of the work, however, will be found in the reproduction of the handsome illustrations of the antiquities of Rome, executed on his first visit, the plans showing the relative sizes of the chief foreign and English cathedrals, the street showing a comparison between ancient temples and cathedrals, and another giving the comparative sizes by plans and sections, of the domes of the Pantheon, Santa Maria del Fiore, St. Peter's, St. Paul's, and the Mosque of St. Sophia. These are of lasting interest. The advanced age of the author, with the old experience it yields, the peculiar fact that the labours of his youth were likely to be "clean forgotten," as the very title of his work on Rome was chosen to designate a new one on the same subject, and his gallant industry, are not without their claim. Nothing daunted, after fifty years, he is about to bring out a new edition of his work on Rome. The cost of the scaffolding and excavations for the views and measurements, and of the engravings, entitle it, he thinks, to further consideration, and he is not without hope of its finding an extended sphere of usefulness. He wishes to contribute to the welfare of his fellows, and to disseminate the information he has acquired will, he believes, be one way of doing so. We heartily wish him success in his undertaking.

* Pietro Perugino, painter, painted, for little profit. Priest, pig, scoundrel, pay me quickly.

FRENCH GALLERY, PALL-MALL.

The twentieth annual exhibition of pictures by artists of the Continental schools quite satisfactorily continues the course of acquaintance that the stay-at-home Londoner has had the means of acquiring season after season; and, so far as opportunity can assist such knowledge, foreign art production is nearly as well known, or better, than half a century ago could be said to be the case in reference to what then constituted the representation of contemporary English art.

Now all things are changed; and if an illustration of the rapidity and certainty with which supply attends demand were asked for, it might readily be found in the growth of picture-painting as a business, and the progress of the desire to possess specimens of it. A salutary check upon mediocrity and inferiority passing for something of higher worth is helped very much by the friendly intercourse of all nations; for the best of what the world can provide will have a chance of being recognised everywhere presently, and honestly-obtained precedence be amongst the victories of peace.

It may be taken for granted in the meantime, however, that when a French picture is selected to be honoured with even a second medal in the *Salon*, the right to the distinction would imply unquestionable excellence; and M. E. Castres proves this right in the admirable naturalness of his impressive scene from the late war's drama. "The Red Cross Ambulance" (71) is an unexaggerated record of the attempt humanity made to alleviate the misery of battle's victims, and it will remain one of the mementoes to tell of the trying year for France, 1870; for France will be likely to forget it soon. The *cortége*, consisting of surgeons and others who ministered the aid of the red cross to the maimed, the sick, and the wounded; the very horses as they slowly plod through the deep snow, seem conscious alike of their duty and its responsibility; sky aspect, and the monotonous white dreariness of flat country, all help to emphasize the pathos of this very cleverly-described episode. Even now, the peasant's cart that followed the ambulance wagon with a supplemental load of the suffering and the dying, may be carrying roots or seeds that have grown and ripened on the trodden ground; and corn will have waved again over hidden graves, and fresh turf covered some of those who helped to send strong men to early rest.

M. A. Anker's "Swiss Peasants attending Wounded Soldiers of Bourbaki's Division" (172) have equal claims with any officers of the red cross to be considered earnest in their compassionate care for the wretched fugitives who, ill, desperate, or half dead already from famine, seem but to have asked leave to lie down and die in peace; but the kind-hearted country folk will do more for them than grant such leave as that: they bring them warm soup or coffee; dress their wounds, and help them to such warmth and comfort as their means will allow, and watch their guests with the quiet, inquisitiveness a wish to do the very best for them they can would engender. Subjects like these require the finest and simplest apprehension of them to avoid, what is so wrongly termed, theatrical effectiveness; this effectiveness being most effective when actors seem not to be acting at all. Mr. Irving would not be so likely to be remembered and spoken of time hence as one of the most finished and powerful of actors, did he not make us forget that he is so now.

Souvenirs of war could take no better form than such as brings into the foreground its saddening results; glory and profit enough accrue to the victor to salve over to some degree such sorrow as the price of victory often makes only an unequal share of disaster; and no better delineators to point the moral and adorn the tale of such results need be desired than MM. Castres and Anker, who have contributed two of the most remarkable pictures here, where all are more or less remarkable.

M. R. Wylie's Brittany witch-wife "La Sorcière Bretonne" (18), charming to health a fever-stricken child, is the principal figure in a cleverly-arranged and brilliantly-lighted composition. Picturesque dresses pleasantly varied by colour and apt character-painting, make this a notable work. More sombre and more truthful-looking, M. Jules Breton's peasants—a young girl knitting, and a life-sized, half-length study of a man bearing a lighted taper, are conspicuous, as well from the mastery over brush and pigment as for the sentiment they convey (31, 123). M. W. Bouguereau's "Passing Thought" (128) illumines one of the sweetest and most interesting of faces; and an exquisitely rendered edition of the volumes of mother's love for her child, "The Sleep of Infancy" (14), shows the extreme care for thorough finish with which he idealizes even refined nature. Completeness, and a method of enunciating meaning enough with what would be shallow sources of it for less scientific draught, is the dominant characteristic of a numerous class in the Continental schools; but only the better members of it are best known at the French Gallery.

Judging from the wide field for selection open to those whose business or pleasure it may be to collect pictures for public exhibition or for private enjoyment, it would appear to be a far easier matter to succeed in satisfying themselves or others whom they would satisfy than really is the case, and though it would be as lamentable to contemplate that the general excellence pervading the Continental pictures now gracing the walls here entailed thrice their number of rejected ones, it would be as silly to class them with average specimens of foreign productions, leaving it to be thought that we had but the sample of a large provision. English appreciation of what is really admirable in art, as in anything else, has its own winning way of showing it and securing reciprocity; and whilst good taste is so carefully and justly administered to, few can differ from the wish that there should not remain one good artist foreign in Britain; and that the Continental schools should teach some of their best learning to our own learners.

It is only now and then that a more directly attractive French and Belgian exhibition has been offered by the managers, when some two or three renowned masterpieces have been included to focus interest; seldom, if ever, a more agreeable and convincing display of exquisite workmanship,—though often bestowed in elaborately setting forth the simplest fact with no object, putting aside the opportunity it gives of showing the means that have no other end but to show the means,—than this anniversary of it presents.

M. J. Tissot affords very delightful evidence in proof of how little beyond consummate executive skill and the refinement with which he treats modern custom and costume, is necessary to him for making a picture. In "Safe to Win" (1) a handsome brunette is improving her aim with the pistol. M. L. Goupil's lady seated at "The Déjeûner" (28), with fruit and flowers introduced by M. De Noter; "La Blonde en Bleu" (84) and "La Gantière" (93), by M. J. E. Saintin; "The Mirror" (189), by M. P. C. Comte; and "The Pearl Suite" (232), by M. F. Willems, also owe everything that recommends them to the pitch of finish they reach and the absence of common-place vulgarity that this particular dependence on mere representation,—only too common with those who are cleverest with it even,—is apt to be attended by when followed and imitated by less practised hands, guided by none of such innate taste as saves it from becoming intolerably annoying or insipid.

M. Meissonier confers as much honour as he takes when he is compared with any of the other best masters whom he may resemble in style, and his sketches would intimate that his wonderfully manipulated picture cost him less patient labour and time than would naturally be supposed from their thorough perfection. Some half-dozen studies of cavaliers and soldiers, buildings and landscape, betoken this, as certainly as in such an example as he contributes with them to this year's exhibition, "The Traveller" (63). The freshness and vitality so

often confined to the first and speediest expression of an artist's conception may be maintained through any amount of that deliberate application to positive truth, and of the technical power to imitate it, common to the performances of this great artist, and of none besides. He is so unlike any one else, and always so like himself. If there be fitness in all things, the calm astuteness of this long-headed, strong-handed traveller, who must be moving, even whilst at easy rest, for he tips his chair back and sways on his toes, for the sake of short change from stirrup fatigue,—would make him choice company in a smoking-room; would he but remove his brown pipe, and, after wetting his lips with the coffee and cognac near, for his refreshment, tell us only a tithe of what he knows. He is an emissary of Fouché, perhaps? or a Pollaky of the period? or if only bent on a mission of his own, he is extremely provoking, not to say any more than that one of the best attributes of a picture is to entice thought and invite speculation.

M. Gérôme's "Slave Merchant" (46) is a very inconspicuous figure amongst his merchandise. In the row of female slaves "for sale," may be seen the great study,—reduced in size,—that astonished some visitors to the Royal Academy the year before last. There are few who can compete with M. Gérôme, his drawing is so unexceptionable that even Frenchmen may wonder at it; and it is only by virtue of knowledge that the knowledge of virtue is saved from feeling outraged in fact; and that is the naked truth.

Mr. A. Stevens seems to play with colour, now, like a lion satiated with his food. "Presents from Japan" (55) indicates his own obligation rather than much on the part of the lady who takes count, if the catalogue be correct. There is no jar in the harmony, yet the harmony is that of a fine Japanese jar, and this would promise very fine quality. A sulphur-coloured background of beautifully painted curtain and stuffed chair tagged with just so much of blue as would serve to make a cerulean dressing-gown not a strange thing that gold embroidery should help to make preciously singular: auburn hair, with a rather stronger inclination than, perhaps, the lady would pardon a specification of; brilliant complexion and lovely hands (the lady never thought of quarrelling!), polar-bear-skin with a very vermilion lining, are the quiet surroundings of a polished case of what in the world Japan knows best! Colour, such colour! "Cherry Ripe" (22); melodious refrain, redounding always to the credit of a Vestris! and now but to point the value of a vestment: green, too, beyond all applicableness! As exercises of the resources of the palette, both the lessons are very convincing of the teacher's capability.

M. E. Frère's "Careful Penman" (37) is very pretty and nice; "A Word in Time" (11) to save a fellow schoolboy from an impending thrashing, is theme enough for M. J. Geertz to dissertate very forcibly on the effects of anticipation: the threatened martyr to a disbelief in the worth of words, and a strong belief in the force of cruel stripes, as he rubs the worst worn patch on his trousers, may be said to exhibit some feeling.

"The Fortune Teller" (15), by Sig. C. Maccari; "Street Fountain, Rome" (57), by M. L. Bonnat; "A Franc-Tireur" (66), by M. E. B. Bellecour; "The Cardinal" (67), by M. J. G. Vibert, a choice little bit, that reminds one of M. F. Heilbuth's supremacy in dealing with the same personages; "Afternoon on the Pincian Hill, Rome" (125), touched in with all his accustomed skill and sense of bright, clear colour, and the funny view he takes of cardinals' virtues generally, call for attention.

"The Arab Sentinel" (79), by M. C. Bargue, a very neatly-done and well-considered study; "The Armourer" (109), by M. A. Fabei; "Rotten-row in June" (120), a very clever sketch, by M. J. Max Claude; "The Boudoir" (167), by M. De Nettes; "A Love Token" (195), by M. P. Koch; and "Still Life" (195), by M. F. Clouet, are also to be noted.

M. Fortuny is in some respects immensely overrated. His "Critical Toreador" (43) has such feet as in their bulgy spread give no footing to the belief that drawing can be one of M. Fortuny's acquirements. Had Mr. H. M. Anthony in his very young days become pupil of M. Meissonier for three months, and madly in love with John Phillip's later work, he would have painted somewhat better "The Bull-fighter's Salute" (158).

M. C. Bisschop paints very powerfully. "The Sexton's Daughter," who must have doubled parts and done sacristan's daughter too, for here she is cleaning church-plate, and looks something more than her catalogue title implies, is a very moot subject for reflection. The picture is more like Rembrandt than many a one offered for his. So staid in colour, and so capital in the solid method of execution, it is a remarkable work that will add much to its author's reputation. Miss Kate Swift made a name that Mdme. K. Bisschop has quite superseded. "The Broken Plate" (101) adumbrates the best characteristics of the Dutch school.

"Ladies leaving Church, Rome," by Signor R. Sorbi (90), "Peasant-girl of the Apennines," by Signor Barilli, and M. T. E. Duverger's children are among the best of the good things to be seen here this season. M. F. Roybet is a splendid colourist. The cavalier is seated amidst such gorgeous hues and tones that his own voice is not loud enough to drown the painter's. "Who Comes?" seems but defiance to wielders of the brush.

There are some beautiful examples of landscape-painting to assist in making the twentieth exhibition of pictures by artists of the Continental schools a very attractive one. Gainsborough and Constable seem to have gone abroad: they never could die.

ON THE CHURCHES OF BRITTANY, NORTH COAST.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting, held on Monday last, a paper on the above subject, by Mr. H. W. Brewer, was read. Mr. Brewer said he had been assisted in his task by Mr. Goldie, who had placed at his service his sketches and notes upon the same subject. He said he should confine his remarks to a single district, and that was the part of Finisterre round and about the ancient episcopal city of St. Pol de Leon: the buildings in that district possessing the peculiarities of Breton architecture more strongly marked than those in any other part of the province.

Having first described the ancient churches of Morlaix, he spoke of the domestic architecture of that town, which has fortunately suffered far less than the ecclesiastical; some of the streets in the older portion of the town retain all their ancient gabled houses. The most perfect are the Rue des Nobles and the Grand Rue. Many of the houses in these streets date from the fifteenth century, and are wonderfully fine examples of "timber-framed" buildings of that date. The imposts, the corbels supporting the projecting stories, and the barge-boards are richly carved and adorned with little statuettes of saints and angels, animals, foliage, &c. The bagpipe is a very common device, and is frequently represented as being played by animals. The interiors of some of these houses are even more remarkable than the exteriors. This is especially the case with two which he examined. The first is situated in the "Butchers' Market," and is used as a baker's shop. There are a fine large chimney-piece on the ground-floor, and a well-moulded ceiling; nearly all the doors are old, and there is a beautifully carved staircase; the newel is terminated with a statue of St. Michael. Unfortunately the whole is yellow-washed, and the hall in which this staircase stands has been cut in half by division of lath and canvas, so that it is impossible to see the whole staircase at once, in addition to which the whole house is in a state of the greatest filth. The other house, No. 14, Rue des Nobles, however, contains a still more magnificent entrance-hall and staircase, which are quite in their original condition, and have been most carefully preserved. The carving here is really superb. The newel is composed of a single piece of timber, about 60 ft. high, and the whole is covered with carving, the various stages being marked by large statues of saints standing under rich canopies. The saints represented are St. Margaret, St. Catherine, St. Barbara, and St. Dominic at the top. The galleries, which are carried along one side of the hall, have their parapets adorned with linen panels, separated by small pinnacled buttresses elaborately carved, and the junctions of the galleries with the staircase are still further accentuated by the introduction of small statuettes seated under canopies. The lower portion of this fine work consists of a large cupboard or closet, ornamented with most elaborate tracery panels, and containing within it a stone lavatory or sink, with a finely-moulded ogee canopy over it. A portion of the hall is screened off with ancient panelling, and serves the purpose of a kitchen. The mantel-piece is old and richly moulded. The old benches and a kind of crane for hanging up meat and game exist. The timber framing is visible over the whole of this hall, and it has a roof supported by two arched principals, resting on carved corbels. This was the most elaborate piece of Gothic domestic work he had ever seen, and it probably dates from the end of the fifteenth century.

St. Jean du Doigt is a small village situated in a beautiful dell about a mile from the sea. Its church, which attracts a large pilgrimage, takes its name from a finger of St. John the Baptist, preserved over the altar. The building is one of great interest and not a little beauty. It consists of a nave and aisles under one external roof, a transept on the south side, a fine tower surmounted by a lead spire, and four pinnacles of the same material, and a very fine Flamboyant porch. Internally, the effect is very fine, from the great height of the nave, which is separated from the aisles by two arcades of well-moulded arches, resting upon lofty piers, which are alternately octagonal quatrefoil in plan. Some of the capitals are moulded, and others carved with good simple sculpture. Above the arches the wall is perfectly blank, and has rather a bald effect. The roof, however, is remarkably good: it is a Gothic barrel vault of wood, supported upon a richly-carved cornice, with a carved ridge rib, and well-moulded vertical ribs. The tie-beams are inserted into the heads of dragons, which project just above the cornice or wall-plate. The whole is decorated in brown, blue, and white. The east window is of six lights, and the upper part is filled in with a large circle containing tracery forming a star. A heavy transome cuts the lights just below the springing of the arched heads of the tracery. This is a common feature in Brittany, and to my mind, continued the writer, a very ugly one, especially when it is used as it is in some of the side windows of this church, where the tracery above it is arranged so as to accommodate itself to a four-light window; but the mullions below the transome only divide the window into three lights: a more eccentric and hideous notion could not be well conceived. When I first saw it, I directly put it down as some bungling piece of restoration of the seventeenth or eighteenth century; but I found afterwards that it was far from being an uncommon treatment. There is no chancel-arch, but the chancel is marked off from the nave by a rood beam, supporting an ancient rood and attendant figures, and a modern screen about 8 ft. high, of very good design, the upper part of which is pierced with tracery, enclosed in triangular compartments; the stalls are also modern, but are well carved. The reredos is a work of the latter part of the seventeenth century, and though in the style of that period it gives a very rich appearance to the interior, and is not without considerable merit in its way. Attached to the second pillar from the west end on either side are large and very richly-moulded responds, which were evidently intended to carry an arch, but it is equally evident that the arch was never constructed, as these responds stop abruptly at the height of the capitals, and there are no marks upon the walls to indicate that there has ever been anything above them. At the foot of one of these responds is an ancient stone altar, with three great uncharged shields on the reredos, and the piscina cut into the side of the reredos,—a very common plan in Brittany. It is a question in my mind whether originally the church was not intended to be much larger than at present, and whether this was not intended to serve as a chancel arch. It is true the choir, in that case, would have been very large, five bays in depth, and the idea is only tenable upon the supposition that the church was commenced upon a large scale, and the original plan abandoned. The details of these responds are remarkably like English Perpendicular work. The lower story of the tower is vaulted, and forms a baptistery, containing a fine double font of rather peculiar design. There are many old statues attached to the columns and walls, and the practice which is so common in maritime parts of France of hanging up little models of ships as votive offerings, adds greatly to the picturesque effect of this interior. The organ occupies the second arch of the nave on the north side, and has in front of the loft a curious old triptich. The porch is well vaulted, and the inner doorway is subdivided into two ogee-headed openings, with a niche above them, which contains an ancient wooden statue, and is furnished with panelled doors after the manner of a triptich.

The tower is a fine example of Flamboyant work, and is ornamented with open galleries marking its various stages; the belfry windows are long and graceful, and the upper story is crowned by a finely-carved cornice, bearing up a pierced parapet; the spire, although of lead, is crocketed all the way up, which is a very unusual treatment. An inscription on the porch states that the foundation-stone of this church was laid in the year 1440, and that the church was completed and consecrated in 1513. The cemetery in which this interesting church is situated is one of the most remarkable in Brittany. The village of St. Jean du Doigt is composed almost entirely of ancient houses, probably coeval with the church, and they are most interesting examples of the cottage architecture of the Middle Ages, and show that, while noble cathedrals and lordly castles were being erected, the humble agriculturist built himself his substantial comfortable cottage; nor are these cottages peculiar to St. Jean du Doigt; they are to be seen in all the villages in this part of Brittany. They are built of granite, and generally have small ogee-headed doorways, and square two-light windows, with the heads rounded at the angles, and sometimes pinched up into a kind of ogee form in the centre; the roofs are high pitched, and composed of solid beams of chesnut. They seem to me to be very superior to the cottages now erected for agricultural labourers.

The Church of Laumulr contains a very singular Romanesque crypt, with rude representations of trees or monsters on the columns. The Church of St. Thegonec, a few miles to the east of this, is perhaps the finest example of Breton Renaissance work to be found, and it stands in a churchyard surrounded with most singular buildings. The triumphal arch by which the cemetery is approached is a most elaborate structure; it is flanked by huge buttresses, carried up to a great height and terminating in open turrets, covered with domes, which are again surmounted by open lanterns, crowned with smaller domes, the whole terminating in large stone orbs and crosses. Between these buttresses is a series of niches above the arched gateway, and these are capped with three singular pediments, behind the centre one of which rises a tall obelisk surmounted by a cross. This triumphal arch has on either side of it a large stone stile, about 10 ft. wide, and these are again flanked with buttresses similar to those already described. Close to the buttress on the left hand rises the remarkable gabled apse of the mortuary chapel, crowned with open pinnacles and a large domical turret in the centre. It is singular that although this chapel is a mixture of Gothic and Renaissance work, the tracery of the windows is perfectly pure Third Pointed work. Behind these rise up the magnificent square tower of the church, crowned with five domes and a lofty open lantern, and further on still the pierced thirteenth-century spire, attached to the west gable of the church. Looking between the great buttress of the triumphal arch and the stiles, one sees the great Calvary in the churchyard, with its three lofty crosses and crowd of attendant figures, the elaborate entrance-porch, and the remarkable gabled aisles of the nave. A more extraordinary picture of architectural richness and a more perfect confusion of picturesque forms it is difficult to imagine than that presented to one's view when first coming in sight of this most remarkable church and cemetery. The church itself consists of a nave and aisles, transepts, and an apsidal chancel (the latter is rather an uncommon feature in this part of Brittany). There is a large and very grand square tower of Renaissance work, with a porch beneath it, attached to the south aisle, and an old thirteenth or early fourteenth century tower and spire at the north-west angle of the nave. Internally the church contains a finely-carved Renaissance pulpit and three rather striking reredoses of the same date. In the sacristy is a grand processional cross of the same style. The following are the dates which I saw upon some portions of the buildings. Tower, 1605; Triumphal Arch, 1587; Ossuary, 1677; Calvary, 1610. In a kind of crypt under the chapel in the churchyard, is a finely-carved group of the burial of our Lord, carved in wood; the figures are life-size, and the date is 1702. Both the church and the surrounding buildings are of granite. About three miles from St. Thegonec is another equally singular church, that of Guimillieu; it is not so large a building as St. Thegonec, but possesses a still more wonderful calvary and ossuary. The church itself has a pretty little early spire of a very common Breton type; it is a singular compromise between a bell gable and a spire, and is a kind of combination of the two. Within the church there is a magnificent Renaissance canopy over the font, and a superb organ of the same date. The calvary dates from the years 1581 and 1588; the ossuary bears the date 1648; the porch, which is a very fine one, 1605. The priest at Guimillieu, who is an agreeable man, and takes the greatest interest in the archæology of the neighbourhood, told us that some years ago the churches in this neighbourhood were full of the most beautiful Renaissance furniture and wood carving, and that just before he was appointed to his cure at Guimillieu, the stalls had been removed out of the church, and sold by a kind of local commission, who are called the "guardians of the fabrick!" and are appointed by the Government *to take care* of the churches. This good curé was only appointed just in time to save the font-cover and organ-case sharing the same fate, for they had been sold to an English gentleman, and it was only by going to Paris and making a personal representation of the matter to the Minister of Public Works, that this act of barbarity was put a stop to. In a loft in the village this energetic priest discovered a quantity of beautifully-carved panelling, and this he has had placed round the chancel of the church in the place where the stalls originally stood. Several other small works of restoration, or rather conservation, were being carried out under his direction. I am indebted to the Curé of Guimillieu for a very valuable piece of information respecting the numerous fine churches, calvaries, &c., erected in Brittany during the latter part of the sixteenth century, and the first few years of the seventeenth century. It is remarkable to find ecclesiastical buildings of this date, as it was anything but a church-building age. According to his information, and also to local tradition, these buildings were all erected by a confraternity called the "Builders of the House of God," composed of architects, sculptors, and masons, bound by vows of poverty, who went about from place to place and erected churches and religious monuments wherever they were required, upon the condition that the inhabitants of the places where they went should supply them with food and clothing, and, certainly, without some aid of this kind, it would have been impossible for the Bretons, who were a very poor people, to have erected such works as the church and triumphal arch and mortuary chapel at St. Thegonec, the church, calvary, and ossuary at Guimillieu, the calvary to church tower of Plougastel-Dowlas, the fine spire of the churches at Laudivisieu, and the porch and spire of the church at Lampaul, the church and calvary of Pleyben, and many other monuments of the same date scattered all over the country.*

* To be continued.

THE FATAL ACCIDENT SEASON TO ARTIZANS.

The metropolitan coroners and hospitals are as usual at this season of the year, getting well employed in attending to the cases of fatal accidents to the building class of operatives; and last week two occurred to painters of a fearful nature.

Dr. Diplock, the coroner for West Middlesex, held one inquest on the body of Michael Tombs, a house-painter; and Mat Burney, his mate, thus described the accident to the jury. He said he was at a job with Tombs at a house, 17, Carlisle-square, cleaning off the old colouring near the drawing-room window, on the first-front floor. His mate was on the balcony, near the bottom of the drawing-room window; the balcony was of *compo*, about 18 in. wide at the top. All at once he heard a cry of "Oh!" and then heard a brush drop. On turning round, to his horror he saw poor Burney hanging inside of the area railings by his throat, impaled. He ran to his assistance, and with help got him off, but his poor mate was then no more. (Witness was here much affected.) He was quite dead. No one saw him fall.

Mr. Fairman said he employed the deceased, and visited him two hours before the accident. He was quite sober. He found the ladder down the area. Verdict — stereotyped — Accidental death.

On the same day, Mr. Humphreys, coroner for the eastern division, held an inquest upon another painter, named Charles Howard, who lost his life through the falling of a stage in Millwall Dry Dock.

Frederick Domaine said, under his supervision a stage was erected outside a ship that was lying in the dry dock, for the purpose of painting it. The rope on which the stage hung was of the usual size, and what made it break he could not say, as it was in good condition. He had erected several stages before, and never had an accident.

John Bradley, painter, said he, with three other painters, were at work with the deceased when the stage suddenly gave way, and they were all thrown to the ground, and were all severely injured. He could give no account for the rope breaking.

William Smith, painter, said he fell at the same time, and was taken to the hospital. He did not blame any one for the accident, and could not account for the rope breaking.

Henry Puttick said he was scraping the side of the ship when the stage suddenly gave way. The only reason he could give for the rope breaking was on account of its chafing against the ship's side. Witness was much hurt.

Mr. Garrett, house surgeon, London Hospital, said the deceased died on the 12th, from fracture of the leg and inflammation caused by the injuries.

The jury took considerable pains in this investigation, and were a long time before they would give a verdict: they said they could not believe that such a piece of rope could break unless there was some defect in it; and at length brought in, "That the deceased died from the injuries received, caused by the falling of a stage by a rope breaking, but under what circumstances the rope broke there was no evidence to prove."

STATE OF FLINT CASTLE.

The disgraceful condition of the fine old ruin of Flint Castle has been discussed at the local quarter sessions, and there seems a gleam of hope that something will at last be done to render it in a decent condition, and fit for the visits of antiquaries and others who have an interest in reviewing relics of the past. It is proposed to raise a sum of 258*l.* by public subscription to carry out this object, and we have no doubt that will soon be accomplished. But it must be borne in mind that the town of Flint will benefit most by the improvements, and we see no reason why its inhabitants should not contribute to the restoration fund. There are plenty of wealthy employers of labour in the neighbourhood, and they will confer a lasting benefit on the working men of Flint by providing, as is already similarly done in Denbigh, a suitable recreation-ground within the ruins. Its historical associations, and pleasant situation on the banks of the Dee, admirably adapt the castle for such a purpose. Should the matter be taken up in earnest, the inhabitants would be able to realise the benefits of the improvements before the summer of 1873 is passed.

THE RESTORATION OF WORCESTER CATHEDRAL.

Lord Dudley having offered to defray the cost of laying the floor of the nave with marble, and to fill the great west window of the nave with stained glass, besides colouring the roof of the choir aisles, the lady-chapel, and chancel transepts, considerable progress has been made with the work. According to local authorities, about one half of the flooring of the nave has already been laid with Sicilian white and Kilkenny black marble, in squares ranged in panels, and joined by Parian cement. The painted west window is in the hands of Messrs. Hardman, of Birmingham; and the same artists are employed in decorating the roof of the lady-chapel, the transepts, and choir aisles. The lady-chapel roof had been but meanly coloured, only the tops and bottoms of the spandrels having been coloured, leaving the centre parts plain. That work is being replaced by richer colouring of a similar character to the colouring of the choir and chancel. The bare stone roof of the lady-chapel transept has been covered with plaster, and is being coloured to harmonise with the colouring of the choir and chancel roof. The roof of the aisles of the choir and that of St. John's Chapel on the south side are also plastered ready for similar decorations. The descent from the north aisle of the choir to the lady-chapel has been put back westwards

about 3 ft.; a new flight of stone steps has been built, and new light iron gates have been erected there. The same alteration will be made in the southern entrance to the lady-chapel, but that part of the work is for the present postponed. The choir aisles are being laid with alternate squares of slate and Hopton-wood stone. Considerable progress has been made in the carved oak case of the organ, which occupies two bays on the north side of the choir. The carvings are by Messrs. Farmer & Brindley, of Lambeth, the design is by Sir Gilbert Scott, and the instrument itself is by Hill, of London, who are now putting it in place.

In the choir itself little remains to be done; the restoration of the tomb of King John and Prince Arthur's Chapel has been completed by workmen sent down by the Government for that purpose. The chapel of Prince Arthur, beyond cleansing and very slight repair, has been left untouched. The oak entrance-door of the chapel has been cleansed of the thick coating of paint which formerly obscured the carvings.

In removing the stone pulpit in the choir a discovery was made. In the pulpit as it lately appeared, there were emblems on three of the panels of three of the Evangelists—Matthew, Mark, and Luke,—but that of St. John was missing. In taking down the structure, the fourth, that of St. John, was found partly hidden by other stonework. This will be restored, in the remodelled pulpit now being erected. The cloisters, which appeared very plain before they were taken in hand by the restorer, have been much altered. The stone carvings in the roof (which had been plastered over) have all been restored, the walls scraped, and the worn stone of sedilia and lavatory replaced. It was stated three months ago that the entire restoration was to be completed by Whitsuntide, but changes since decided upon have rendered this impossible.

LAYING OUT OF CITIES.

Sir,—We observe in your number for the 12th of April, a report of a paper read by Mr. J. B. Waring, at a recent meeting of the Institute, "On the laying out of Cities," and which contains a statement that we are obliged to notice. Mr. Waring is quoted as saying that after considering on what was the best principle of planning cities, "that principle I found in the spider's web, especially in the web of the geometrical spider, in which the quickest way of reaching the centre from any given point is clearly obtained."

To this principle we can have no objection; in fact, it meets with our cordial approval, and we can inform Mr. Waring where he "*found*" it, namely, in the pages of the *Builder* of the 15th of September, 1860. If he will kindly refer to that publication, he will there recognise a full statement of the nature and advantages of the spider's web system, the sole drawback being that the article setting them forth bears the initials of so obscure a name as our own. Can any good come out of Galilee? Our article was reproduced in the *Estates Gazette*, shortly after the date last quoted, and was also referred to in the *Family Herald*. We will do Mr. Waring the justice to say he may not recollect these points, but such are the facts notwithstanding; and we rely on the impartiality of the *Builder* for allowing us to mention them.

The only circumstance in which we differ from Mr. Waring is, as to the detail, where he speaks of his main plan, consisting of concentric circles. Now, we particularly pointed out in our article that the circumscribing lines were *not* circles, but polygons strictly speaking.

The circle is beautiful in buildings, but as was shrewdly observed by a contributor to your columns, it is highly inconvenient for interiors, scarce a room in the house being squared where the street is in a crescent, circus, quadrant, &c.

Any one looking carefully at a perfect spider's web, will see that there is no circle in it; the lines are all straight, though many of them arranged in a form approaching the circular.

H. & R. Powell.

St. Giles's Church, Reading.—The spire of this church is being raised 100 ft., and the work is progressing. In the original plan it was contemplated to make it 150 ft. high, but it will now exceed 200 ft. When finished it will be the highest in the town.

SIR WILLIAM TITE, M.P., C.B., F.R.S.

We restrict ourselves at this moment to mentioning, with sincere expressions of deep regret, the death of Sir William Tite, which took place at Torquay on Sunday evening last. The remains of our lamented colleague will be interred at Norwood Cemetery on this, Saturday, April 26th.

INAUGURATION OF THE SCHOOLS OF SCIENCE AND ART, GLOUCESTER.

The new County Museum and Schools of Science and Art at Gloucester, a view and plan of which were given in the *Builder* of 1871, pp. 466-67, have been inaugurated by Earl Ducie, the Lord-Lieutenant. Afterwards the committee entertained the Lord-Lieutenant at dinner, at the Bell Hotel. With the opening ceremony an exhibition for a week of a valuable loan collection of pictures, water-colour drawings, curiosities, china, antiquities, &c. (contributed by the South Kensington Museum and local possessors), students' works, scientific apparatus, &c., was commenced at the building. In the evening a grand *conversazione* at the Shire-hall followed.

The cost of the building has been 5,000*l.*, and there exists a debt of 600*l.*, towards the liquidation of which the proceeds of the *conversazione* and exhibition will be devoted.

The style of the edifice is Gothic of the thirteenth century. On the basement-floor rooms are provided for the curator, hat and cloak rooms and lavatories for the male art students, and cellars. The ground-floor consists of a general entrance, with carved work, an enclosed porch, a hall, and staircase. Entered from the hall, on the left-hand side is the museum and library, a room 60 ft. long by 20 ft. wide, and 16 ft. high. Immediately facing the main entrance is the door leading to the lecture theatre, a room 28 ft. by 26 ft., and 17 ft. high. This is to be used in common by science and art students; it is fitted with benches, and has separate entrances for each department. The remainder of the accommodation on this floor is devoted exclusively to the uses of the Science School, and comprises a class-room, 19 ft. 8 in. by 21 ft., a master's and preparation room, and a laboratory, 24 ft. by 24 ft., with an open-timbered roof. There is also a separate entrance porch, with cloak-room, lavatories, &c., appropriated exclusively to the use of the science students. The laboratory is a low building on the north side of the main block. It is placed as near as may be to the other rooms connected with the Science School.

By means of the staircase from the hall the rooms on the first floor are approached. The whole of these are devoted to the use of the School of Art. They consist of an elementary room, 34 ft. 3 in. by 20 ft., and a modelling-room 18 ft. by 12 ft., each 20 ft. high to the collar beams of the roof; a large painting and advanced class room, 60 ft. by 20 ft. and 22 ft. 6 in. high to the apex of the open roof; and a master's room, 20 ft. by 12 ft. There are also cloak-rooms, lavatories, &c., for the use of the lady students. The roof of the large painting-room was suggested by the architects in order to obtain a perfectly uninterrupted light, free from impediments which cast shadows, to the great discomfort of the students. The building has been fitted with the warming and ventilating apparatus of Messrs. Haden, of Trowbridge. The building is erected of stone of the district, lined with brick, with Bath stone dressings. The roofs are covered with Broseley tiles, and the timbers on the inside, where visible, are stained and varnished. At the top of the staircase is a Munich glass window given by Mr. J. D. T. Niblett. It was executed by Chevalier Max Ainmiller, superintendent of the Royal Glass Works at Munich under the direction of Mr. Niblett. The Rev. Herbert Haines thus describes it in his "Guide to the Cathedral Church of Gloucester." *Head.*—1. Arms of D. J. Niblett (Drake on an escutcheon of pretence). 2 and 3. Arms of R. and C. S. Niblett. 4. Arms of S. Niblett, imp. Stock and Handford. 5. Arms of J. Niblett (Whitcombe on an escutcheon of pretence). *Centre.*—Christ blessing two kneeling boys. *Left.*—A matron with infant in arms, directing her little daughter to Christ. *Right.*—Two of the disciples rebuked by the words on the scroll beneath, "*Sinite parvulos venire ad me et ne prohibueritis eos*" (St. Mark x. 14). Over the central canopy, a hand in glory, and dove below. *Base.*—The arms and names of Bovey, Stock, and Raikes."

ARCHITECTURAL ART CLASSES.

Before the meeting of the Architectural Association, held at 9, Conduit-street on the 18th inst., award was made as follows of the prizes offered to students in the classes held last year, at the Architectural Museum:—

For studies in life class, offered by the Royal Institute of British Architects, to Mr. J. Wager, Mr. W. Name honourably mentioned.

For studies from the antique, offered by the Architectural Association, to Mr. W. R. Mallett.

For studies in the ornament class, offered by the Architectural Association,—prize to Mr. W. J. Cudworth. Honourable mention made of Mr. C. R. Pink.

All the successful students are members of the Association, and were applauded as they came forward to receive their prizes.

We regret to say, that all efforts to maintain for the future these classes, from which great things were at one time expected, may now be considered abandoned.

THE DUC PRIZE FOR ARCHITECTURE, PARIS.

The biennial prize,—160*l.*,—founded by M. Duc, to encourage *les hautes études d'architecture*, this year attracted but two competitors, M. Train, the city architect, and M. Lauwrence Chapron. M. Train submitted all his drawings and details of Chaptal College, and to him the prize has been awarded. Dissatisfaction is expressed at the shortness of the time,—only a few hours,—during which the works of the competitors were open to the public. The terms of the programme are singularly vague.

THE NEW BOARD SCHOOLS, WOLVERHAMPTON.

Two new Board Schools—one on the Dudley-road, and the other in Redcross-street,—have been completed. The buildings are light and airy, with play-grounds attached to each school.

The Dudley-road Schools were the first commenced. They are situated on a plot of land having a frontage to the Dudley-road of 156 ft., the total area consisting of 2,420 square yards, the accommodation being for 200 infants, 200 girls, and 200 boys, though at 8 ft. superficial for each child the total accommodation would be 630. The boys' and girls' school-rooms, each 60 ft. by 20 ft., have each two class-rooms, 18 ft. by 15 ft.; the infant school-room is 48 ft. by 24 ft., with a class-room 24 ft. by 19 ft. For each class of children there is provided a lavatory. The play-grounds are walled in, and the necessary outbuildings are of a convenient character.

Redcross-street Schools are erected on a site having a frontage of 114 ft. to Redcross-street, and will accommodate an equal number of children to those of Dudley-road. Owing to the narrower width of frontage a different arrangement of plan from Dudley-road schools was necessary, but the rooms correspond in dimensions, and there is a similar arrangement of lavatories for each class; the play-grounds and outbuildings being similar.

The style of architecture is simple. The walls are of brick, the roof tiled, with floors to school and class-rooms of wood.

The contract for Dudley-road schools was taken by Mr. Horsman, of Wolverhampton; Mr. Clark, of the same town, being the contractor for Redcross-street schools. The architects are Messrs. Bidlake & Fleeming, of Wolverhampton.

The Professorship of Anatomy, Royal Academy.—Amongst the candidates for the vacant chair in the Royal Academy is Dr. John Marshall, F.R.S. From his acquaintance with both art and science, he is particularly well qualified to teach anatomy to artists, as his lectures at South Kensington will attest.

ON THE ART OF "SGRAFFITO" DECORATION.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

In the course of the discussion which ensued after the reading of Mr. Alan S. Cole's paper,*

Sir M. Digby Wyatt, Fellow, said:—When the student examines the condition of what remains of sgraffito in Italy, he cannot but feel that a great deal of the evidence of durability he may encounter must have been due, in the first place, to a climate of peculiar dryness, and in the second, to the excellent quality of the lime habitually used. Mr. Cockerell appears to have hit exactly upon the best kind of lime, and, indeed, of mortar, to use in connexion with this sort of work. His employment of marble-dust especially corresponded with the best traditions of Vitruvius and Alberti for finishing off the "setting" coat. He was also right, I conceive, not to make the "floated" coat, which comes upon the rough rendering of the wall, dead black. The Florentine "sgraffitisti" made it of grey (not black) by mixing it with straw or burnt wood; and by using only a thin coat of white, through which they scratched their drawing, they got a half-tint, heightened by white. To intensify the chiaroscuro, and to get vigorous blacks, they ran in dark lines in parts where the point of the scratcher had already removed the white. By this means they get a style of treatment something like that of the noble wood engravings of the period of the sixteenth century, such as some of those of Ugo da Carpi, Titian, Andreani, &c. Thus they employed three tints, and obtained a rotundity and softness which give a very beautiful effect to their work, and is a little wanting in some of the specimens to be seen at South Kensington. An active revival of cinque-cento "sgraffito" took place in Italy, dating from about five-and-twenty years ago. I regret, however, that most of the earliest specimens of this kind of revived work in that country have suddenly failed. I observed some very good attempts in Florence in 1859, particularly those specimens in the street leading to the Baptistery, which were nearly opposite the Or-San-Michele, where they at that time stood well; but on looking at them again last autumn I found that there and elsewhere many had nearly disappeared. I do not know whether that had resulted from imperfection in the working of the modern as compared with the old process, but I attributed it mainly to imperfection in the lime used to give the white, which was neither as white nor as hard as that of the older specimens of cinque-cento work. These were no doubt due to the two distinguished artists, referred to briefly by Mr. Alan Cole, and in detail by Vasari, Morto da Feltro, and Andrea di Cosimo dei Feltrini. The first of these was a contemporary of Pinturicchio's, and the earliest painter who devotedly studied the "grotesque." Having drawn all the classical "grotte" at Rome, he went to Naples, where he worked equally carefully at Baïa, Pozzuoli, &c. In fact, he studied from top to bottom the whole system of ancient stucco work, and the composition of painting and ornament, in connexion with stucco work. In the course of his investigations, Morto da Feltro must have found that the ancients habitually scratched and scraped their plastering free-handedly, much after the process of what remains in the baths and other parts of Pompeii, the Villa of Hadrian, &c. In such free-hand works the Romans often got curious results analogous to sgraffito, but in one tint; and by running floating colours and wiping them off, they rubbed in dark and tints into the lines they sketched, and the surfaces they "sank." I have no doubt that Morto da Feltro in his investigations had picked up some such process of executing white ornaments upon a coloured ground) analogous to the frequent cutting away by the ancients of superimposed layers of contrasting colours in glass working and cutting, as in the Auldjo and Portland vases, to form "camei"), as it is certain that the ancients sketched in plaster work, and then introduced different colours and probably different coloured plasters, rescraping and scratching both plastic and hardened plaster so as to approximate to real sgraffito upon their cement works. Some such knowledge, no doubt, Morto da Feltro picked up in the course of his studies in Rome and Naples. Vasari does not positively state that he kept the secret to himself, after he got back to Rome, although he passes under silence the authorship of some few peculiarly early relics of cinque-cento sgraffito which remained there, not far from the Massimi Palace thirty years ago. Morto subsequently went to Florence and sought to improve himself in figure-painting, profiting by study of the famous competition between Leonardo da Vinci and Michelangelo, which attracted artists from all parts of Italy. Being a stranger there himself, he sought naturally such of his own "paesani" as had come to Florence from Feltro, that being a district of the Venetian Republic which had acquired some little distinction in art. Amongst these Feltrine was one Andrea, who placed himself as a pupil with Cosimo Roselli, a painter of moderate merit in Florence, in order to learn to paint as a figure-painter. When Andrea, Vasari tells us, found that his countryman had come to Florence, he received him very kindly, took him into his house, and there is no doubt that, in gratitude for the kindness he received, and for the fact of Andrea's obtaining employment for him under the Signora Morto, taught Andrea the art and mystery of imitating ancient decoration and stucco work in different ways, and executing ornamental arabesques, in which the former had so fully qualified himself. I think I am justified in saying, from Vasari's text, that Morto was the first to learn, and Andrea to introduce, the use of sgraffito. There is no doubt that Morto picked up the process from his close study of the antique in Rome; and there seems equally little doubt that Andrea carried it to full perfection by means of the training he got under Morto (who himself turned soldier), while practising the art of arabesque painting. Vasari distinctly tells us that Andrea for a time gave himself up almost entirely to "sgraffito," which he,—"*cominciò a dar principio*," literally,—"began to begin," to use for decorating the façade of palaces and other buildings at Florence. His first work was that of the Gondi Palace in Borgo Ogni Santi; his second, that of the Lanfredini, on the Lung 'Arno; his third, that of the house of Andrea Sertini, in the Piazza Padella. Of three interesting drawings by the hand of Andrea preserved in the Uffizii, I am happy to be able to produce copies of two, of especial interest to us, as confidently believed to have been made by the man who was the very originator of this process, in, at any rate, its extended application. I would ask you to look at them carefully, and you will recognise, on comparing these sketches with several others by later men of the greatest merit,—such as Giovanni da Udine, Perino del Vaga, &c., which for outline and the spirit in which they are designed are of the first order of art,—that Andrea dei Feltrini's skill was at least equal to theirs. Though there may be more knowledge of nature in the arabesque of the men I have mentioned, you will find more command over antique style in the "grotesque" of Andrea, and a spirit of free conventional design, which has not been excelled by that shown by any other artist of his time. After the example set by Andrea, "sgraffito" was taken up generally by different artists in other cities than Florence, where examples of their works may yet be met with. At Spoleto, near the cathedral, there is a large palace, covered with splendid designs attributed to Julio Romano. In 1845 I went to that town, in company with a French artist, specially sent by the editor of the *Magasin Pittoresque*, to make drawings of the words executed in sgraffito "by Julio Romano," on this very palace, which affords the largest and finest examples of the process I have seen. There is but little of the old work now to be seen in Florence or Rome, but much of modern, upon a great scale, in different Italian cities. The cinque-cento revival did not last long; but as what was done was almost all of an early period, all the specimens of it I have ever seen are artistic; and I have never seen an inferior design executed in any good period of sgraffito. It was mainly ruined by the great facility with which, at less trouble, its effect could be for a time imitated by perishable paint. In fact, the Italians seem to have fallen upon the "Shibboleth" of Mr. Moody. His experiments are of unquestionable interest and importance, not only for their artistic merit. No one can question that any process of a permanent nature which enriches our vocabulary of art may enable us to speak to posterity in better language than we habitually use. "*Sgraffito*" may lead us to enrich architecture with more graceful forms than are as yet common in this country, because the facilities of the process are such that they help to engender a bold and free style of mural decoration. There is especial interest in this technical accessory to the architect, as forming a judicious combination with his simply formative or constructional architecture. One cannot but observe, in some of the drawings Mr. Cole has been so good as to exhibit, that association of pictorial art with architecture, through the medium of a facile decorated process which is generally wanting to the full success of beautiful architecture. This, under discussion, is a process which opens itself now easily to our national practice, and I hail with satisfaction the fair success and the noble scale on which these experiments have been tried, I may almost say, for our special benefit as architects, at South Kensington.

Mr. Gambier Parry.—I am afraid I shall be repeating myself if I say that art is in itself as inexhaustible as the alphabet; and I conceive such an idea as that will not only apply to it generally, but specially. There is in every phase of it, the more we consider it, an utter inexhaustibleness of expression. Mr. Cole has restricted his remarks very much to material: he has said very little about the development of the art. It was evident that Sir Digby Wyatt had one extreme difficulty to contend against, viz., the excess of his information, and that he wanted to say a great deal more than he did; but there is no time this evening to open this subject with advantage to its full extent. I will, however, venture to offer a slight sketch as it occurs to my mind now, although I came here unprepared to do so, and rather to learn than to teach. If we consider what this sgraffito work is, we must see it applies to more than the time of the Renaissance of the past, and of South Kensington of the future. It is a work capable of being developed in every possible style; and I venture to suggest, if you look upon art even from its earliest days till now, you will see that sgraffito work is an element which has intruded into it in all directions, and that has been so in all the best periods of the arts where design has received its impulse rather from architectural than pictorial inspiration. While the spirit of man is self restrained, you feel respect for it, which you could not do in its boastful liberty; and thus the old idea of familiarity breeding contempt is true in art, as it is in all other matters. There can be nothing more severe than outline illustration. If you look at what has been done in it, you will see, in all those styles and objects of art which received their original inspiration from architecture—such as Greek, Gothic, or Roman ornamentation,—that there has been, in their best periods, an attention to completeness, founded on construction as a characteristic totally distinct from the modern libertinism of picturesqueness or the sensuous ideal of beauty. If you take the best period of art of almost any place or period, such as is illustrated by the vases and wall paintings of Athens, Pompeii, or Herculaneum, or even in times and countries far more distant, you find sgraffito work in perfection; and nearer to our own date you find that Byzantine and Gothic paintings were essentially things of outline, with colour put in to fill up the spaces. Then, again, if you look to the different arts of enamel painting, especially that of translucent enamel, done upon silver, you find the basis of the design to be essentially sgraffito work. So it is also from the prehistoric scratching of the forms of extinct animals on bones to the backs of classic mirrors, and that refined kind of art upon "Henri Deux" ware and painted glass, the principle of sgraffito rules supreme, and the bulk of Oriental ornamentation on metals owes its entire charm to it. In whatever style and at whatever period you find that the simplicity of studied outline gives a dignity to art, which at once makes you respect and admire it. Now, what is sgraffito? It is simply a method of expressing an idea by abstract form. You have boundless materials at disposal, and you can use colour if you will; thus we see how wide all the opportunities in art for doing what we want to raise the ideas and command the feelings of the people. When Mr. Cole went into the subject of sgraffito as a cheap ornament, I congratulated myself that we were going to obtain a thing that was cheap, which would not end by being worthless. And so it has proved to be. He has given us that illustration of a house front which might be a house out of a street where I had the misfortune to live in my early days, viz.:—Harley-street, about which, I believe, one of our members has said, "All things have an end; happily, even Harley-street." I confess, if it had been ornamented with this cheap sgraffito the end might not have been so immediately desired; but I do not myself go in for what is

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* See p. 220, *ante*.

cheap. I think the sketch I suggested of all these different processes and materials and means of producing these outline effects, shows how we may produce the highest effects of art by this principle of sgraffito; and I venture to say it is essentially the right architectural mode of surface decoration, and I say so not only in reference to the remarks this evening or to the specimens before you, but on a general principle, because it is, more than any other style of art that can be conceived, essentially conventional. There is no such thing as outline in nature, and art is not necessarily the copy of nature, but rather the expression of ideas. The forms of art expressed by outline are of necessity more conventional than any other, and the harmonious application of it to architecture is perfectly harmonious, because architecture is the most completely conventional art that ever was conceived by man.

Mr. Henry Cole, C.B., said:—With reference to the durability of this particular kind of process, I may state that it has been tried at Kensington Museum for fifteen years. Mr. Sheepshanks made it a condition that we should have a suitable building to hold his pictures, and insisted that he would see the building himself before he gave up his pictures. A building therefore was erected, a modest and humble affair at the time. Upon the outside of these walls in 1858-9, some crude experiments were tried of this sgraffito. I had seen in Italy some of the buildings Sir Digby Wyatt has spoken of, and I was struck with the facility of this process, and Mr. MacCallum, now celebrated for his landscapes, made the designs for the Sheepshanks Gallery. Although I did not go through the train of ideas —or if I did I was not conscious of it—which Mr. Gambier Parry has expressed, and in which I concur, sgraffito certainly did strike me that it was a method which might make our houses a little less unsightly than we find them generally. Like Mr. Gambier Parry, I hate things cheap. You cannot have a good thing without its costing a good deal of money. In this country there is a great tendency in all we do to insist upon cheapness as a first condition. We do not say, "Let us have a good thing, or the best thing, and let us pay for it like gentlemen," but we cut the work down, and it must not cost above a certain sum. We do that in this country too much, and we shall no doubt continue to do so till we get wiser. If a public building is to be executed, you begin with a preliminary *dictum* that, whatever the size, or for whatever purpose it may be, it is to cost only a certain sum of money. The country, through Parliament, pledges itself that it shall cost only a certain sum. We do not begin by saying it shall be good, and cost a reasonable sum, but that it is to come down to a certain contract price, and people think they can keep to it. My experience is that they cannot. We have plenty of cases in which Parliament makes a contract, and another breaks it. It must be borne in mind that the contract made to-day is not the contract fulfilled five years afterwards. I hate cheapness as cheapness, and never take it as a first consideration for anything I am responsible for. As far as my lights go, I advocate having the right thing. But this sgraffito process is one comparatively cheap in material, and one that would rather commend itself to enterprising builders who want to make fifteen or twenty per cent. on building houses. Of course, as long as the State does not build houses, and as long as the individual builds his own house, and is only controlled by some kind of municipal and vestry law, so long will people build houses as cheaply as possible; and so it is that from Bethnal-green to Belgravia houses are built to cost as little money as possible. It does seem to me that if the outsides of houses, instead of being of ugly stock brick, could be somewhat decorated, and if, as Mr. Parry says, you can get the highest art with these simple lines and materials, you would make it more pleasant to walk through the streets. To return to the Sheepshanks building. The sgraffito is outside the Sheepshanks Gallery, and for the most part remains good. You will see it has defied the London smoke and dirt, and after fourteen years it remains nearly as distinct as it was originally. There is a large building which Parliament in its wisdom has erected for teaching science, in the Exhibition-road, which, like all things, has a back, and this back not being much seen, and being constructed cheaply, is without the terra-cotta decoration on its front. General Scott, who presided over the design, was persuaded to have the common stock brickwork treated with sgraffito, and the Lord President approved. Thus we have scratched a great deal of plaster on the Science School at South Kensington. You have heard how the early practitioners of this art were reduced into painting forms instead of cutting good lines. My friend, Mr. Moody, has been reduced in like manner to paint, and the painting will not last; still he has scratched some beautiful lines, which will probably last a hundred years. As my son has said, this is not a very good situation for the public to see it; indeed, the whole thing must be regarded as an experiment. People say it is a pity this treatment was not brought forward into the street. I think it is well it is in the background. I hope something better may come out of it. I am pleased to have had the opportunity of coming here this evening, and I am happy to have heard the discussion of a question which may eventually make it even the interest of enterprising builders to make Sloane-street and Harley-street a little more attractive than they are now.

MEDALS AND PRIZES OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The list of subjects for medals and prizes, 1872-3, is published, and may be obtained at the rooms of the Institute by those who contemplate competing.

The Soane Medallion and, under the usual conditions, the sum of 50*l.*, will be awarded to the author of the best design for "A London Residence, situated between houses of a corresponding character and plan, with a frontage of 45 ft. and depth of 120 ft., inclusive of the front area, and exclusive of the space devoted to stables; in five stories above level of street."

The Silver Medal of the Institute, with 5*l.* 5s., will be awarded for the best illustrations, geometrically drawn from actual measurement, together with descriptive particulars of any building of any importance—Classical or Mediæval,—in the United Kingdom or abroad, hitherto unpublished in that manner. The council suggest certain subjects, but others may equally well be taken, if more convenient to the competitor.

The Silver Medal of the Institute will be awarded to the author of the best essay on the Architecture of London in the Sixteenth Century.

Candidates for the Pugin Travelling Studentship are requested to send in their applications, on or before 25th January, 1874.

HYDE PARK CORNER.

In an article of the *Builder*, 5th April, reference is made to the opening of Park-lane through Hamilton-place, and its continuation across the angle of the Green Park so far as Constitution-hill; implying also that the Earl of Longford first suggested that improvement. Now, as the originator of that great and indispensable thoroughfare, the writer may be permitted to state that amongst other recently opened public improvements, he had many years back advised, through the *Builder*, the extension of Park-lane through Hamilton-place, not only to Constitution-hill, but to Grosvenor-place. There is no doubt but that a communication with Constitution-hill, across the angle of the Green Park, would be an accommodation to Members of Parliament and those privileged to visit Buckingham Palace, to whom the right of traverse by that route is *strictly limited*; but no advantage could be derived by the public unless this grand causeway were opened out for indiscriminate use to Grosvenor-place. By such an opening free and more direct intercourse would be established between Paddington, Bayswater, and the great north-western metropolitan districts, and the no less important and yet more central western and south-western districts. At present these extensive and populous districts are severed and blocked out from intercommunication for the distance of two miles; from Hyde Park-corner on the south to Kensington Church, and, on the north, from the Marble Arch to Silver-street, Notting-hill; so that for commercial purposes the more direct cut from Hamilton-place to Grosvenor-place would be of greater value to an enormously increased population, with a still growing extension of houses.

The proposed extension of Park-lane from Hamilton-place, would strike forward into Grosvenor-place by a very slight deviation from a straight line, between Halkin-street and Chapel-street. It is true that Constitution-hill is 10 ft. higher than Grosvenor-place at this point, but, by a trifling bend or serpentine curvature of the new road, that difficulty might be got over. There is, however, a greater obstacle in the way, as Buckingham Palace garden extends in an acute angle just to Halkin-street; so that without obtaining the width of the new route, say 80 ft., across that angle, it would be impossible to carry out such an improvement.

The new route could in nowise interfere with the public user of the footways and traverse road, as it should be bounded by iron railings, with openings, or gates, for continuous paths along the borders towards Hyde-park-corner.

In point of fact, the site of Buckingham Palace and offices included, with the palace gardens, occupies a space equal in extent to the Green Park, in the form of a scalene triangle, obtunded a little at the S.E. and S.W. angles, but extending towards Hyde-park-corner to an acute angle. In style and taste of ornamentation no intra-urban garden can be more effective; still, as a royal abode, even of short sojourn, it is too low. Kensington Palace advanced towards the Round Pond, with the site of the antiquated buildings and the out-lying waste grounds thrown into external park or gardens, would form an abode for royalty far more healthful and attractive, and, as being now the centre of the most aristocratic quarters of residence, might prove equally convenient for more frequent abode. It will be seen that as the termination opposite Halkin-street is in a very acute angle, the suggested new route could hardly require one acre of the nook nearest to the Wellington effigy, and could in no wise interfere with freedom of space or the effect of hortulan plantations.

As this seems to be the only assement that can be given for public traffic, it is again suggested by Quondam.

ST. JOSEPH'S CHURCH, PADERBORN.

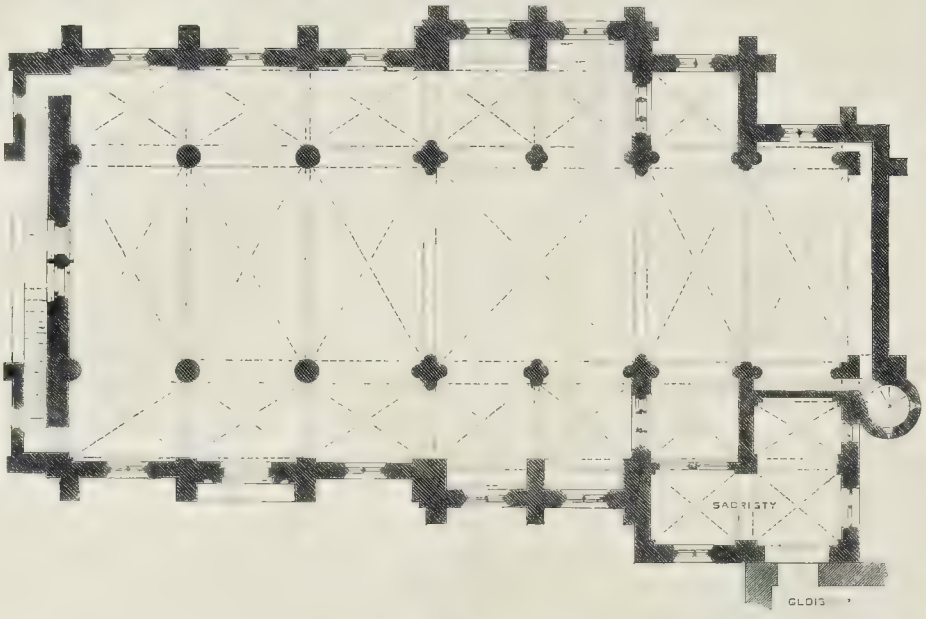
The church represented in our illustration is a new building now being erected at Paderborn, in Westphalia, from the designs of Mr. Guldenpfennig, in connexion with a convent of the Jesuits. The church, as will be seen from the plan we publish, consists of a nave and aisles of three bays, transepts, which show as such only on the exterior, but are internally treated as two extra bays to the nave, and a chancel of two bays.

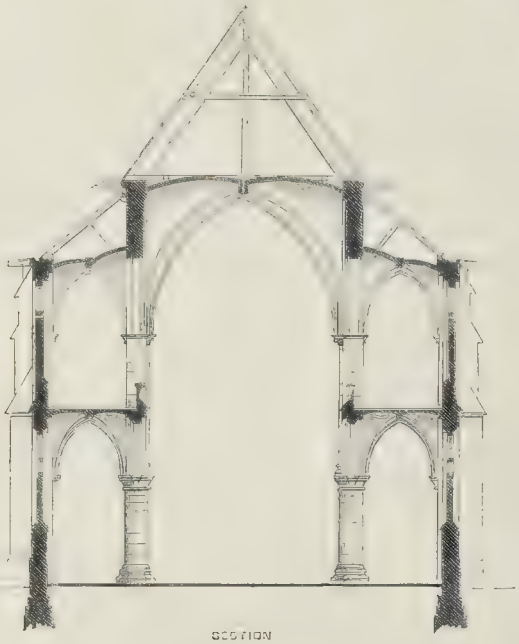
In designing this church the architect has followed the traditional plan adopted by the Jesuit order, viz., that of making the aisles in two stories, the upper one forming a gallery. This gallery is approached by means of two staircases, entered from the west end of the aisles, and ascending over a deeply-recessed arch, forming a kind of western porch, they enter the western gallery at the same point below the rose window. This is a singularly original treatment, and makes a really striking feature out of what is generally a difficulty, the staircases to galleries. Below the deeply-recessed arch which we have mentioned is a double doorway, and there is another doorway on the south side. At the junction of the nave and transepts is a well-designed flèche. The church is vaulted throughout in stone; the galleries being also vaulted underneath. As will be seen from our plan, the galleries cross the transepts, which latter project very slightly beyond the walls of the aisles. These projections in each transept are subdivided into two spaces for side altars. Chapels also occur at the ends of the aisles. To the south is the sacristy, also vaulted, and a picturesque staircase-turret giving access to a passage in the walls of the chancel, which is in communication with the galleries. The materials used are the local hard grey limestone; but externally the doorways, windows, and strings are of sandstone; and internally the columns, arches, vaulting ribs, &c., are of the same material.

The dimensions of the church are as follow:—Length, 125 ft.; across transepts, 70 ft.; nave from centre to centre, 30 ft.; length of chancel, 35 ft.; height to crown of vaulting, 56 ft.; to top of timber roof, 80 ft.

The church has progressed as far as the top of the walls of the nave, and the roof will be placed on and the vaulting turned; but owing to the notice to quit which the Jesuits at Paderborn have received from the police of the Berlin Government, the church will then be shut up and left incomplete.

PLAN.





SECTION

SCALE OF RHINE FEET

ST. JOSEPH'S (R.C.) CHURCH, PADERBORN.



ST. JOSEPH'S CHURCH, PADERBORN, WESTPHALIA.—Herr A. Guldenpfennig, Architect.

THE READING SEWAGE FARM CASE.

Mr. Bosanquet, of the Oxford Circuit, and a special jury, have been sitting at the Assize Court, Reading, in accordance with a warrant directed to the Sheriff of Berks, to determine the amount of purchase money, and also the compensation for damage, to be paid by the Local Board of Health to Mr. Richard Attenborough, of Piccadilly, and owner of the Whitley Grove Estate at Reading, in connexion with the compulsory taking, for the purposes of the town sewage, of rather more than 416 acres of land at Whitley Manor Farm, belonging to Mr. Attenborough, and adjoining his residential estate. Mr. Hawkins, Q.C. and Mr. Philbrick appeared for Mr. Attenborough; and Mr. Horace Lloyd, Mr. Bumpus, and Mr. Barber for the Local Board of Health. The witnesses subpœnaed on each side included competent valuers, chemists, and others, and the evidence given in support of the claim occupied two days. The valuation made by Mr. Clark (Farebrother, Clark, & Co.), who was called for Mr. Attenborough, amounted to 68,751*l.* These figures, however, were materially reduced by the valuation of Mr. John Clutton, of Whitehall, and by the statements of other professional men who appeared on behalf of the Local Board. When the matter was brought to a conclusion, the jury awarded to Mr. Attenborough the sum of 44,262*l.* His claim was originally 75,000*l.*

Among the witnesses for Mr. Attenborough was Dr. Letheby, M.B., Professor of Chemistry, and Officer of Health for the City of London, whose prejudice against sewage farming is well known. Examined by Mr. Philbrick, he said he had never seen a sewage farm that had not been a very great nuisance. Sewage farms were always offensive, and, at times when visits were not expected, very offensive. That which was in solution, and was used by the plant, was speedily got rid of; but a large portion, consisting of solids, rested upon the land, and produced offensive decomposition. During a large portion of the year, when vegetation was not active, and the ground was sodden with rain-water, the sewage would give off gases, and, in his opinion, render Mr. Attenborough's house uninhabitable.

In cross-examination by Mr. Lloyd, the witness said he had a strong opinion with regard to these sewage farms. The liquid sewage could be rendered so innocuous that it might be discharged into a running stream; a sewage farm would, however, necessarily become a nuisance, and it was easy to discover a sewage farm half a mile off. He could only call to mind three cases in which Parliament had sanctioned Bills similar to that which Reading had obtained.

Another witness on the part of Mr. Attenborough, Mr. Daniel Watney (of the firm of Norton, Trist, & Watney, land valuers, of Old Broad-street), deposed that he had inspected the Whitley Manor Farm, which he estimated was of the annual value of 1,300*l.* His total valuation was 53,625*l.*, including 25 per cent. for compulsory sale.

Cross-examined.—He had for two years been a member of the Croydon Board of Health. He was an advocate for sewage irrigation. At Croydon they were all firmly satisfied they purified the sewage. A cousin of his had built a mansion half a mile from the sewage farm there, but there was a river and a quantity of timber between the mansion and the sewage farm. The mansion was on a hill. Witness was aware that Mr. Quilter, jun., a stockbroker, occupied a house at about 100 yards from the Croydon sewage farm.

Re-examined.—The present case would be very different if there were hills between Mr. Attenborough's house and Manor Farm. Sewage farms must occasionally cause a nuisance. That nuisance excited a prejudice against sewage farms, which affected the value of contiguous properties.

On the part of the Corporation, Mr. James Taddy Blackburn, amongst others, was examined. He said he had been a farmer for about twenty years. He was now farming the Camp farm at Aldershott, which he leased of the War Office. He had farmed it since 1864, at which time it was a sandy waste belonging to the War Department, who leased it to witness for sixteen years. He had about 220 or 230 acres. The whole of the land there belonged to the War Department. The North Camp was about 800 yards off. Soldiers had encamped from two to four months at a time within 150 yards of the confines of his farm. He never heard of illness among them, or of ague or fever among the people who ordinarily lived near. There were thousands of acres where the troops might have encamped if that place was unhealthy. The average amount of sewage was about 1,000 tons per day. He adopted the system of sewage irrigation. Witness described the system. The subsidence tank was emptied every five months. Ninety-five acres were farmed upon the sewage irrigation process. The land irrigated per day varied from one to three acres. A horse-hoe was sent down after the dressing. The nuisance was not so great as cleaning out ordinary ditches. He lived on his farm and had good health, and his labourers were very healthy. He considered the plan adopted in Reading was the best, speaking as a farmer. He would not, as a farmer, give anything for sewage which was not supplied under the conditions contemplated in the Reading system. He did not think there would be any nuisance from the proposed sewage farm. The sewage farm at Tunbridge Wells had let lately at an increase of 100*l.* per annum. Witness had another sewage farm at Worthing.

Cross-examined by Mr. Philbrick.—Witness laid out the land as a sewage farm himself. The farm was on the Bagshot sand. He preferred not mentioning his arrangements with the War Office. He told Mr. Attenborough he would rather have Mr. Attenborough's farm at 3*l.* per annum than his own farm at nothing, after the drainage works here had been completed. Ninety-five acres of his farm were irrigated with the sewage.

Re-examined by Mr. Lloyd.—In the case of a farm such as Whitley Manor Farm there was ample room for all the sewage operations. He should be glad to exchange his own farm for it if he had the chance. He considered the feeding value of the grasses on the Manor Farm must be very small indeed. The ground was full of water-grasses. Italian rye-grass would not grow there. Everything he grew at Aldershott was sewage put into another form.

By the Foreman.—If standing over the carriers, their presence might be detected by smell, but he did not think there would be any smell at a distance of 14 yards.

By the Assessor.—The land at Worthing Sewage Farm was heavier than at Whitley, but there was not so much nuisance as at Aldershott.

Dr. Edward Frankland, F.R.S., Professor of Chemistry to the School of Mines, and one of H.M.'s Commissioners for investigating the causes of the pollution of rivers, examined by Mr. Bumpus, said he had extensive experience as regards sewage farms, and had visited most of such farms in the country. He considered that a sewage farm, if properly managed, was as healthy as any other farm. He did not think any smell could be perceived at a distance of 100 yards from a sewage farm. He had never perceived any. He had found that the soil of the Manor Farm was adapted for sewage irrigation. Looking at the situation of Mr. Attenborough's house, he did not think the sewage farm could be any nuisance to the occupants. He considered the water-logged meadows calculated to produce ague and marsh fever.

Cross-examined by Mr. Hawkins.—He was not an advocate of sewage irrigation. He was rather in favour of intermittent filtration. There was a prejudice against sewage farms—a sentimental prejudice.

Re-examined by Mr. Lloyd—The sewage was deodorised the instant it reached the ground. At Merthyr Tydfil the sewage of 300 persons was applied per acre.

Dr. Alfred Carpenter, M.D., of the London University, examined by Mr. Lloyd, stated that he was in practice as a surgeon at Croydon, and was a member of the Croydon Board of Health for twelve years. He described the Croydon sewage farms (at Norwood and Beddington), which consisted of 520 acres, and said they did not cause the least nuisance, when the carriers were in proper order as at present. A great number of houses had been built in the neighbourhood both of the Beddington and Norwood farms, and he knew of scarcely one that was vacant. There was no objection on the part of the occupants in respect of the nearness of the sewage farms. Witness recommended his patients to take a drive round the neighbourhood if they wanted to get an appetite.

Cross-examined by Mr. Philbrick.—There was a measure of health in connexion with these sewage farms, in consequence of the production of ozone, thrown out by the enormous amount of vegetation produced there. There was, however, a prejudice against these sewage-farms just as a Frenchman had a prejudice against a cold bath. He once had occasion to complain to the Croydon Board of Health of the state of things which he found on the sewage farm at Lower Norwood, when he visited it with some foreign gentlemen who were authorities on sanitary matters. That state of things, however, only lasted for one day.

Re-examined.—That was the only thing he had known in the shape of a nuisance in connexion with the sewage farms mentioned.

THE POSITION OF THINGS.

Sir,—The recent scandalous casting-away of the great steamer *Atlantic*, with her valuable freight of emigrant passengers and crew, some 1,036 in number, of whom nearly 600 are lost to us and their friends by the disaster, forcibly calls attention to a subject which, by your favour, I have on former occasions been permitted to bring under the notice of your readers, viz., the exodus of our working people. I then pointed out that in consequence of advancing prices, and greatly increased cost of the prime necessaries of life, the working-classes are worse off, notwithstanding their advanced wages, than they were in former years, and that as no escape was offered them in these islands of ours, they were seeking in other countries for that competency they were unable to find here. The emigration returns for the year 1872 show, I believe, a larger exodus from Great Britain than was ever before recorded; and it is some symptom, in my opinion, of what this present year's emigration is likely to be, that fully one month before the usual passenger season begins (May 1st) a single ship, now lost, as above, took away nearly 900 passengers. Another ship of the same line, which sailed later, had on board, I am told, nearly 1,000 passengers, bound for the same port (New York). The published list of the names of passengers by the ill-fated *Atlantic* gives their respective ages, by which it is shown in a very conclusive manner that those who leave us are in the very prime of life (except the children), mostly between twenty and forty years of age, having youth and energy, and just the very class of persons that this country can least afford to lose. In consequence of the various causes which have tended to restrict labour, the demand for it has been during the past year, and is yet, much greater than the supply,—more especially juvenile and unskilled labour. In my own personal experience, it is almost impossible to retain sufficient labourers on any important works; and I was told recently by the manager of a machine factory that he is obliged to employ men to do work which could easily be done by boys if he could get them. The result of this state of things is that boys of fourteen to seventeen earn nearly men's wages, and, as a social result, are scarcely amenable to parental control. This state of things will be intensified as the season advances by the withdrawal from this country of a very large number indeed of healthy, energetic people, who go to the United States or one of our colonies to better their positions in life; people who are quite willing to work hard, and, if need be, live hard, for a few years to enable them to obtain a position and accumulate a store, which will place them beyond the ordinary reach of want in their old age. Those who go are the workers in our great hive, if a corresponding number of *drones* could be shipped off to accompany them, those of us who are left here would have much less cause for grief than seems likely. Of course our loss is their gain; but that it is a loss, and a very serious one for this hard-working heavily-taxed country, is, I think, not to be denied. Besides the immediate loss of their productive labour, they go to countries which place a heavy tax upon our manufactures for the purpose of fostering their own, and to find the means indirectly of supplying their current expenses. The emigrant is thus completely snuffed out as a consumer and customer of ours, and if he continues to work in his new home at his old trade, he becomes a possible rival to us. We place no protective duty on our imports, and it is, I think, a very important sign of the times that we who have hitherto supplied the whole world with the best machinery for every conceivable purpose, should now be distanced both in quality and price by American productions sold in our own country. Take wood-working machinery, for example. You lately reviewed in a favourable manner a specimen of American literature on that subject, and now we are informed by your advertisement columns that the machinery itself can be bought in London in competition with English machinery for the same purpose. In the products of this machinery,

also, we are now distanced. Time was not so very long ago when we exported to our colonies and other places finished joinery, such as doors, sashes, and frames, mouldings, &c., having first imported the timber from wood-producing countries. Now the machinery goes in charge of a few skilled men to these wood-producing countries, and we ourselves become like our former customers, importers of finished joinery, from full-sized first-class mansions, as in Devon recently, down to a single architrave mould or angle bead. In the matter of railway iron or steel, also, we can no longer be said to take the lead, and we may expect very shortly to be distanced in that manufacture also, and if the price of coal is maintained to become importers of it. Most other products in metals will doubtless follow that lead, and we shall then be forced to turn our attention to the cultivation of our own soil, and the reclamation of our waste lands. We can go abroad to reclaim the land of other countries, why not our own at home? Why should a wealthy few so hold this land with an iron grip, that the great bulk of our people are denied and must perforce seek elsewhere for that area of productive soil they are determined to have. Would to heaven a statesman might arise, who, forgetting the interest of party, should be able to rise to the height of this great question, which must in the coming time force itself upon the public notice by its paramount interest. Let a new "Holy Alliance" be formed against England, and the want of men bred on the land of our country may in the end cause us to lose it.

E. G.

THE CONSTRUCTION OF TRAMWAYS.

AT a recent ordinary meeting of the Society of Engineers, Mr. Jabez Church, president, in the chair, a paper was read by Mr. H. Gore on "Horse Railways and Tramways." The author commenced by giving a brief sketch of the rise and progress of road-making in England from the time of the Roman invasion down to the period when Telford, M'Neill, Macadam, and others devoted their attention to perfecting our great highways. He then described the early attempts to construct tramways or trolleyways in the mining districts, commencing with the wooden railways of the Tyne and Wear of 1680. He then traced the history of this description of roads, and the application of iron in their construction; showing also, by reference to documents in the Patent Office, that so early as 1803 the idea was started for constructing street tramways with iron rails. The author then described some of the earlier street railways in the United States, and the attempts made by Mr. Train to introduce the system into the metropolis, and pointed out the cause of their failure. Mr. Gore here alluded to the tramway he had himself constructed in 1863 at Valparaiso, on the West coast of South America. Having concluded the historical sketch, the author then proceeded to describe the principal features of the various forms of construction adopted in the street tramways which have recently been laid. This part of the paper was illustrated by a series of diagrams, embracing all the important details of each type of construction, including the use of concrete, transverse timber sleepers, cast-iron block chairs, and continuous cast-iron girder rails.

After describing each system of construction, the author pointed out the more prominent objections observable in the several types now in use, among the chief of which was the employment of concrete, which he held to be highly prejudicial. He pointed out the effect of vibration in destroying the cohesion of the particles of cement, and the constant tendency there was for the mass to be broken up. He then called especial attention to the evils arising from the want of sufficient bearing surface or proper lateral support to maintain the gauge. Mr. Gore advocated strongly the use of transverse sleepers as the best means of distributing the load and neutralising the effects of vibration; he also pointed out the importance of thoroughly sound workmanship, both as regards the laying of sleepers and rails and in well consolidating the foundation of the road by ramming and packing. He recommended the use of a species of tar and asphalte concrete as a bed to receive the stone pavement, and also for packing round the timber sleepers. He discountenanced the use of lime or cement concrete as a foundation for tramways, and concluded his interesting paper by urging the use of thoroughly desiccated and prepared timber, so as to insure the greatest possible durability, and a system of paving or roadway which should be as far as practicable free from any material that was liable to break up into dust or mud.

The meeting was attended by a number of engineers and others connected with tramways.

STRIKING ASSERTIONS.

He that strikes first takes the law into his own hands, and loses cause for action or redress.—*A Maxim.*

A STRIKE is not a fit weapon of defence, for it has ever worked more harm to the user than the used against.

A lock-out is but a rough law of retaliation, and though it were the punishment of a crime, it is scarcely defensible.

A strike is unmanly, and unchristian, for in all strikes the innocent are certain to suffer.

A lock-out, whether it precedes a strike or succeeds it, is but the aggregation of a wrong, because it aims at coercion instead of conciliation and convincing.

A strike is seldom or never promoted by those who have really suffered by the action of one, or intend to suffer by the certainty of another.

A lock-out is not only a lock-out of men, but it is a lock-out of capital and interest.

Whether the precipitation of a strike or a lock-out be well timed or not in the opinion of those interested, the forelock that produces a dead-lock must be always ill-timed and pernicious.

Strikes and lock-outs are little better than senseless faction fights, in which both combatants not only injure themselves, but others, and who, in making peace or coming to terms, forget there is an atonement due to the society they have injured and outraged by their quarrels.

Strikes and lock-outs would sensibly diminish, and probably disappear altogether, if the parties to them were subject to a tax for the exercise of the licence.

As a means towards reform, the Registrar-General should furnish a return of the number of those in every district who have been stricken by the strike and lock-out epidemic, masters and men, and the effects in the amount of illness, deaths, unemployed, bankrupts, criminals, and emigrants produced by the same.

NEW WORKS AT BATTERSEA FOR THE LONDON GAS COMPANY.

IN consequence of the gasometers in connexion with their works at Nine Elms being unequal to the strong supply of gas required, the London Gas Company have secured a large plot of land at Battersea, situated between the two stations of the London, Chatham, and Dover, and London and Brighton Railway Companies. On this land, which is between two and three acres in extent, the company intend to erect five large additional gasometers, and two of these are now in progress, one of which is already nearly completed. The tanks of each of these gasometers are 185 ft. in diameter, and 30 ft. in depth from the coping of the bearing stones supporting the iron columns. The piers supporting the columns are twenty in number, and are 5 ft. 6 in. in thickness, and the walls enclosing the tanks vary from 3 ft. 11 in. at the base to 18 in. at the top of the coping, which is finished with Staffordshire blue brick. The floors of the tanks are covered over with concrete, 10 in. in thickness; and, in order to render the walls impervious to water, there are 2 ft. of puddling at the back of them from the bottom of the tanks to the coping. The iron columns supporting the gasometers are firmly connected with the holding bolts, which are sunk 10 ft. below the surface.

The gasometers are telescopic in construction, with a lift of 30 ft. in height, the diameter of the lower lift being 182 ft., and that of the higher lift, 180 ft., and the capacity of each gasholder is 1,500,000 cubic feet; the entire additional quantity of gas, therefore, which the whole of the five gasometers, when completed, will admit of being stored, amounting to 7,500,000 cubic feet beyond that of the company's existing gasometers at their present works. They will be supplied with gas for storage from the works at Nine Elms, pipes being specially laid in connexion with them for that purpose. One of the new gasometers will be fully completed and supplied with gas in about a month from the present time.

The works have been designed by Mr. Morton, the company's engineer, and are being carried out under his superintendence and that of his assistant, Mr. Colson. Messrs. Aird & Sons are the contractors for the construction of the tanks and other buildings connected with the works; and the gasometers and iron work are being executed by Messrs. Horton, of Birmingham.

EXTENSION OF MESSRS. PEASE'S MILLS, DARLINGTON.

FOR some time past Messrs. Henry Pease & Co. have been carrying out a large extension of their spinning-mills in Darlington. The Northgate, or the Railway Mill, has just emerged from the hands of the architect and builder, with an additional weaving-shed, erected at the end contiguous to the gasworks, and measuring 112 ft. in length by 93 ft. in breadth. The light is admitted from the roof, which is divided into bays, sloping north and south. The north slope is entirely composed of glass. Hot-air or steam pipes heat the building. Cast-iron girders and pillars of a light form support the roof and the shafting for the machinery at the same time. In this one shed about 400 additional weaving looms will be employed, giving employment to 200 additional hands, most of them women.

Extensions and improvements of a more extensive character are in progress at the Priest-gate Mills. Here Mr. Edward Pease, one of the founders of the Stockton and Darlington Railway, instructed his son, the late Mr. Joseph Pease, in fabricating "woollens." The new mill will be five stories in height, and will measure 200 ft. in length by 121 ft. in breadth. It will contain all the machinery used in the earlier processes of worsted spinning, and will comprise a warehouse, a carding-room, engine and boiler houses, and outbuildings. When completed, the machinery now used in the Low Mill will be transferred to the new building; but there will be entirely new engines and boilers. The new mill will cover the whole of the space known as the Mill Holme, situated between Priest-gate and the new street about to be opened up there to be called East-street. A covered gangway over the latter street will connect the new mill with the old wool warehouse.

There will be attached to the new mill a large chimney, which is now all but completed. This chimney is situated at the bottom of Priest-gate. It is octagon in plan, and its outside diameter at the base is 17 ft. 6 in.; the outside diameter at the top is 11 ft.; the diameter of the flue inside is 9 ft. 6 in. From bottom to top the height from the ground-level is 152 ft. The large capacity of the chimney inside has been made so that the smoke and fumes of nine boilers can be led into it, and exhaled at the same time. The number of bricks used in its erection has been 395,000. No accident to life or limb has occurred to any person employed in building it. Messrs. Michael Watson & Son, builders, erected the shaft, under the instructions of Mr. William Hodgson, architect, who has also designed the extensions to the mills.

CHALK (WITH COAL) AS FUEL.

A GOOD deal has been said of late on this subject, but nothing very explicit. Chalk is a carbonate of lime, and must yield a large quantity of carbonic acid gas, which, one would think, must carry off much heat in its production. The quick-lime left does yield a singular degree of white heat in a way not accounted for by chemists; but the main heat to be yielded by chalk in a common fire must be yielded, if at all, before the chalk can have been thoroughly converted into quick-lime, and that is the time when its carbonic fumes are flying off up the chimney, if a good going one, or into a room, if not; much worse indeed than from a coke fire, and vieing even with a charcoal one. Of what is said in favour of the use of chalk (with coal) for fuel we may quote a passage from the *Boston* (U.S.) *Globe*, which comes closer to the point than what has elsewhere been said on the subject:

"A gentleman who has made a thorough test of the matter declares himself satisfied beyond doubt of the superiority in heat-giving properties of chalk over coal. The idea is an old one, but we have never heard of any practical attempt being made to turn it to account before. With those who have ever noticed the great specific heat of chalk, or the large amount of carbonic acid contained in it, and the convertibility of that acid into carbonic oxide by means of heat (?), or with those who have merely noticed either the vast amount of heat which, generated by a comparatively small amount of fuel, is radiated from a limekiln; or, again, the effect in smelting ore of a few

hundred pounds weight of limestone or chalk; it has long been a matter of strong persuasion that the time must come when chalk, and perhaps limestone, shall be made subservient to the increase of heat and the diminution in the consumption of coal. Our late fire presented hundreds of instances of the intensity of the heat of limestone, and the length of time it was retained even by small fragments. With regard to the experiments referred to, it is asserted that, by using chalk and coal in about equal proportions, the chalk being placed at the back of the grate and the coal in front, a saving of at least 75 per cent. was effected in cost, with a more intense heat and cheerful blaze than would have been obtainable from coal alone."

DAMAGE BY LIGHTNING.

Cromer.—A severe thunderstorm recently passed over Cromer, during which the parish church was struck by lightning. The conductor on the church tower had carried the electricity to the earth, yet such was the violence of the shock, that it had torn up the earth round about for twenty yards. The lightning had also forced itself through the wall of the tower 3 ft. from the ground, where from the outside a spike is driven in to secure the conductor. The wall is from 4 ft. to 5 ft. thick. There are two old unused church-doors stowed away inside the tower. The lightning, in going through the wall, knocked some pieces off these old doors, and threw some mortar quite across the inside of the tower. Outside the church, and in the immediate neighbourhood of it, portions of the windows of private houses were knocked out, and also one square in the reading-room, which is at least two hundred yards distant from the church. It also disabled the telegraph instrument at the post-office, and did much other damage.

Martham.—The tower of Martham church was also struck by lightning. Only one flash was observed, and this struck the vane, the fluid passing from that to an iron stay, through the roof of the tower, shattering the parapet and walls, scattering the *débris* amongst the bells, and breaking the gear. Thence it travelled to the clock, bursting open the wooden casing, but without doing material injury to the works, and, passing down the connecting-rod to the outside, wrenched off the dial-plate, stripped the tower of a considerable portion of its facing, and greatly damaged the south-east angle buttresses. The force seems to have dispersed over the roof, and to have made its way along the gutters, down each of the water-pipes, into the drains, tearing up the earth for some distance. Some of the stones were hurled as far as fifty yards from the tower. A meeting of the parishioners is to be held to receive the report of the architect, Mr. J. B. Pearce, of Norwich, and to take the necessary steps for repairing the damage. The chancel of the church was re-built a few years ago by Mrs. Dawson, and the nave was also thoroughly restored.

PROPOSED ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

At Birmingham, on Saturday afternoon last, the second general meeting of engineers and surveyors to the various corporations of the kingdom was held at the Union Hotel, Union-street, for the purpose of furthering the objects and increasing the membership of the proposed Association of Municipal and Sanitary Engineers and Surveyors.

Mr. Angell, engineer to the West Ham Local Board, London, and chairman *pro tem.* of the Association, presided; and the following towns were represented: — Southampton, Coventry, Leicester, Leamington, Balsall Heath and Aston Manor (Birmingham), Stockport, Great Malvern, Redditch, Stow-on-the-Wold, Walsall, Willenhall, Ealing, Hanley, Warwick, Rugby, Oldbury, and Wolverhampton.

Mr. Edward Pritchard, surveyor to the Warwick Corporation, who has been acting as hon. secretary for the district, read the following, which had been adopted at the first general meeting held at the Institution of Civil Engineers, London, February 15th:—

"1. That the society be named the 'Association of Municipal and Sanitary Engineers and Surveyors.' 2. That the objects of the Association be,—*a.* The promotion and interchange among its members of that species of knowledge and practice which falls within the department of an engineer and surveyor engaged in the discharge of the duties imposed by the Public Health, Local Government, and other Sanitary Acts. *b.* The promotion of the professional interests of the members. *c.* The general promotion of the objects of sanitary science."

The Chairman explained the *modus operandi* of the Association. The first annual meeting of members would be held at the Institution of Civil Engineers, Westminster, London, on the 2nd of May, when the president, vice-president, and officers would be elected, and the executive council would also be appointed.* The country would be divided into districts, each district appointing its own secretary, who would be a member of the executive council. Birmingham would be the centre of one of the Midland districts, and Mr. Pritchard had hitherto acted as its honorary secretary.

A discussion followed, several matters of detail were gone into, and ultimately it was decided to agree to the rules of the Association, as adopted by the meeting held in London on the 15th of February; and the meeting also expressed a hope that as many surveyors of the country as could possibly make it convenient, would attend the inaugural meeting of the Association, to be held in London, on the 2nd proximo.

COLOUR OF TIMBER.

We should be obliged if any of your correspondents could give us any information as to preserving timber its natural colour;—the end the only part to be seen. S.

TUNSTALL NEW WESLEYAN CHAPEL AND SCHOOL COMPETITION.

Twelve competitive designs were sent in for the above, and those of Mr. G. B. Ford, of Burslem, have been unanimously selected; the buildings are to be erected forthwith. The estimated cost is about 3,000*l.*

A BUILDING CO-OPERATIVE COAL MINING COMPANY.

A co-operative coal-mining company, combining the novel feature of building dwellings for its shareholders, under certain stated circumstances, is in course of formation in South Yorkshire. The proposed capital of the company is 150,000*l.*, and the shares are 1*l.* each. The object of the society is to conduct mining on the co-operative principle of dividing profits with labourer, capitalist, and consumer; and in case the pit be some distance from a town, power is taken to build dwellings for the work-people. It is intended that each worker shall be a shareholder in the society, and that one-third of the profits (after providing for interest and reserve fund) shall be set apart as a bonus on all wages, salaries, or fees paid. It is also provided that a fair share of profit shall be divided with the consumer, and it is also intended, as far as possible, to supply the shareholders with coal in preference to the general public. The profits are to be divided into three equal parts,—one for capital, one for labour, and one for consumer. The committee appeal to the 20,000 miners of South Yorkshire, and to consumers everywhere, and they state that they have already received a considerable amount of support from miners' lodges, and from the district co-operative societies, as well as from those in Lancashire and London, and that they intend to commence operations as soon as sufficient capital is subscribed.

THE TRADES MOVEMENT.

Birmingham.—The arbitrators appointed to settle the claims of the masters and men in the Birmingham building trades have now given their award as to wages. The men claimed an advance from 7¼d. to 8½d. per hour, and the arbitrators have awarded an advance of one farthing an hour, which award, it is said, "has given satisfaction."

Blackburn.—The builders are threatened with a strike unless they either advance their men's wages 3s. a week or diminish their working time to eight hours.

Bradford.—The master builders have agreed to give the masons' labourers 23s. a week in summer, for 49½ hours' work, and 22s. a week in winter, the men working from light to dark.

Tamworth.—The building operatives are at present agitating for shorter hours, and have addressed a letter to their employers, in which they respectfully urge upon them the necessity of their conceding certain demands. They complain that they are behind their brethren in other towns, and ask to be made participators in the privileges which of late years have been obtained by their fellow-workmen in many parts of the country. They ask for a decrease of two hours a week on the present working hours, and also an increase of wages, the proposed alteration to come into operation on the first Monday in May. At a recent meeting resolutions were adopted to the following effect:—"That carpenters and bricklayers' hours of labour in the summer months be 55½, at 6d. an hour; in the winter months at 50½, at 6½d.; and that the rate of labourers' wages be 4½d. an hour for winter and summer."

Edinburgh.—Some time ago the operative masons of Edinburgh and Leith forwarded a circular to their employers, intimating that after 5th May their wages should be 7½d. per hour. At the request of the employers a conference was held consisting of an equal number of employers and employed, when the employers proposed 7d. per hour, and if the state of trade warranted a further rise, they would give 7½d. per hour on 1st August. At a numerously-attended meeting of operatives, it was unanimously resolved to adhere to their former demand.

Alloa.—At a meeting of the operative joiners of Alloa, Alva, Tillicoulty, and surrounding district, it has been resolved to accept the masters' proposal of an addition to their wages of one halfpenny per hour. The men's demand was one penny per hour.

Coupar-Angus.—The journeymen slaters in this district have been agitating for some time for an advance of ½d. per hour, which request has been granted. They are now paid 6d. per hour, and work nine hours per day.

Dunfermline.—The master masons have granted the demand of the men for an advance of wages from 6½d. per hour to 7d.

THE HOUSE OF COMMONS IN SUPPLY.

On the vote of 128,431*l.* for public buildings, Mr. Powell asked what were the Royal monuments for the restoration of which sums were taken in this vote, and also under whose guidance the restoration was taking place. Mr. Ayrton said he did not know why the hon. gentleman should assume that the person charged with superintending the restoration of these monuments was incompetent to discharge the duty. The monuments which were being restored were one of King John in Worcester Cathedral, and some monuments in Westminster Abbey, and the restoration was taking place under the superintendence of an officer of the Department of Works. The vote was agreed to, as was also a vote of 14,500*l.* for furniture for the public offices.

On the vote of 25,670*l.* for the Houses of Parliament, Mr. Bowring inquired of the First Commissioner of Works what were his intentions with respect to the light on the Clock Tower. Mr. Ayrton said that before coming to any conclusion on the subject he thought it desirable that they should have the benefit of all the experiments which persons were desirous of making at their own expense. The light recently put up was much more brilliant than the one previously exhibited. Another gentleman had got a newly-invented electric light which would be exhibited in competition with the present light in about a fortnight hence, and by comparison they should be able to see which was the most brilliant and the most economical light.

Mr. Alderman Lusk complained that the sum of 1,000*l.*, the balance of 4,000*l.* for a picture of the "Judgment of Daniel," although it had appeared in the votes for four successive years, had not yet been expended. Mr. Ayrton explained that the sum in question had not been paid because the picture was not yet completed. When it was nearly completed the canvas exhibited signs of swelling, and the artist was unwilling to put it up in that condition. The picture was the work of an artist of great eminence and genius which it was desirable they should possess, and the 1,000*l.* had been inserted in the votes in anticipation of its completion.

In reply to Mr. Anderson, Mr. Ayrton stated that steps were being taken for the preservation of the stone in the Houses of Parliament. Experiments had been made, but unfortunately the results could only be tested by time.

On the vote of 4,650*l.* on account of the Wellington monument, Mr. Goldney said this vote required some explanation. At present, if any one went to St. Paul's to look at the monument, he would see nothing but a dilapidated chapel, and something that looked like a chimney. The Chancellor of the Exchequer said Mr. Stevens

* Particulars will be found in our advertising columns.

was appointed by the First Commissioner of Works under the late Government. Mr. Stevens, though an able artist, was a bad financier, and he did not get on with the work. The Government took the matter out of his hand, and got Mr. Collmann to be answerable to complete the work, and they went on very well for a considerable time; but Mr. Stevens then became paralysed. What the Government proposed to do was to call on Mr. Collmann to complete the work, and if Mr. Stevens was unable to give his assistance to get some one else. Mr. Julian Goldsmid said Mr. Stevens always was ill when any work was required of him, and he warned the Chancellor of the Exchequer how it would be. The Chancellor of the Exchequer had put this work into the hands of a London upholsterer. The Chancellor of the Exchequer said he could only congratulate the hon. member on his prescience in foreseeing that Mr. Stevens would have a paralytic fit. The vote was agreed to.

THE PROPOSED TRADES GUILD OF LEARNING.

A CONFERENCE took place at the Artizans' Club in Newman-street, on Saturday evening last, in further promotion of the movement for giving some of the advantages of University education to working men. The idea is to form a Guild of Operative Tradesmen to arrange for the delivery of lectures in various places by lecturers provided by, and sent from, the University of Cambridge. The Rev. H. Solly, who presided at the conference, stated what had been done since last meeting. The council of trades' delegates had passed a resolution expressing great satisfaction with the progress of the proposed scheme, while in the interviews which the chairman had had with the heads of the University, every encouragement had been afforded to the project, provided that a firm organisation could be secured to deal with. In furtherance of this end Mr. Solly recommended agitation for the purpose of interesting persons in the matter; the obtaining of the active co-operation of the trades; the establishment of a permanent centre for the establishment of the Guild; and the retaining of technical teachers to aid in carrying into effect the theoretical knowledge given in the lectures. In the course of discussion it was suggested that the feeling of various trade organisations should be ascertained, but a general opinion clearly prevailed in favour of technical and practical, rather than purely theoretical and scientific education. Mr. Bebington argued that the proposed guild would combine both departments, and would to some extent supersede existing systems of apprenticeship, by which a man could only partially learn his trade. Observations on the points at issue were made by Mr. Hodgson Pratt, Mr. E. Hall, Mr. Alsager A. Hill, Mr. Savage, Mr. Dodd, and individual members of trade societies, including carpenters and joiners, sawyers, compositors, die-sinkers, goldsmiths and jewellers, cabinet-makers, zinc-workers, watch-case makers, engineers, embossers, and elastic web-makers. It was resolved,—

"That, in the present defective state of technical and higher education for the workman, no adequate provision being made for those objects, either by the State or by private endeavour, this meeting hails with satisfaction the proposal to form a Trades' Guild of Learning to co-operate with the University of Cambridge and other parties willing to aid in the education of the people."

Names were added to the existing provisional committee, and the meeting afterwards adjourned.

ACCIDENTS.

Fall of Roof at Euston Station.—Almost at the extreme end, and between the two departure platforms, a space of ground is used as a carriage-shed, or "standing," the circular roof of which was being removed, prior to re-construction, by the *employés* of Mr. Cubitt. A strange noise was heard, and directly afterwards the iron girders and pillars supporting them gave way with a loud crash. There were nearly twenty men at work under the roof, but they were fortunate enough to escape. A slater, however, who was at work on the roof, was taken to the University Hospital, as was also a labourer. Both cases are rather serious.

Fall of a Factory Roof in Birmingham.—The roof of the works of Messrs. David Jones & Co. has fallen in. About a dozen men were employed in the galvanising department, but fortunately they had quitted the works nearly two hours before the accident. The part of the works used for galvanising purposes is about 60 ft. long and 40 ft. wide. It had a slated roof, the centre of which was raised about 5 ft., and served as a ventilator.

Fall of the Gasworks Roof at Rome.—The roof of the gasworks in Rome was struck by lightning on Thursday in last week, and fell in consequence, burying forty workmen in the *débris*. Five men were killed, and seventeen others badly injured.

SOME RHYME AND REASON.

AT a general meeting in the parish of St. Dunstan-in-the-West, it was proposed by Mr. J. Preedy, and seconded by Mr. Reynolds, "That it was the opinion of the inhabitants of this parish that Temple Bar should be kept standing as long as possible, and that a memorial be presented to the Common Council to this effect." Mr. F. H. Fowler said that if Temple Bar was to come down, the sooner the better. Mr. J. Reeve said that this might be the beginning of a work of destruction which might end no one knew where. He hoped Fleet-street would not be injured by any future operations. Mr. Fowler replied by saying that there was a large amount of improvements contemplated between St. Dunstan's and St. Clement's Churches, and if they wanted a broad street, he did not know why the Bar should not come down. Mr. Butterworth said that Mr. Fowler seemed to represent the important Board of Demolitions, which must even put its battering-rams against the residence of a duke. They did not want the Metropolitan Board of Works to dictate to them, and he thought they should appeal to the City. Temple Bar admitted two carriages, and he thought a space three or three and a half carriages wide would create confusion, and that there was no necessity for removing Temple Bar. Lord Selborne had a Bill before Parliament by which one-fourth of the site for the Law Courts would not be required. The resolution was carried.

THE MARCH OF IMPROVEMENT.

"IMPROVEMENTS" now are all the rage,
From east to west there's nothing stilly;
The Board of Works, 'tis said, engage,
To drive Pell-Mell through Piccadilly.

But Cityward there's yet one Bar,
The Board points out, that stops improvement:
'Twould smash their grand triumphal car
To drive against the Strand-still movement.

PRO DOMO NORTHUMBRIÆ.

THE lion that long was a theme for the witty,
The crest of a race on a house of renown,
Will no more lionise at the Cross of the City,—
A cross-purpose now soon will cross-cut it down.

Ye public Board Sappers and Lords of Committee,
Have houses not lives worth preserving like men?
Oh! remove not the old landmarks of our City,
Unless you restore and improve them like Wren.

New roads and new buildings and "restorations," so called, are not necessarily improvements. Cities, like mendicants' coats, may be restored in such a manner that in course of time none of the original materials or features are discernible. C. C. H.

SPLITTING BUILDERS' BILLS: SINGULAR CASE.

BURTON *v.* HEDGER.

THIS was a singular claim; and had the amount been sufficient to pay for litigation, the law's "quirks" would have given Mr. Burton some trouble and expense to get his rights.

It seemed that the defendant rented a house of a Mr. Cox, and the premises requiring repair, the defendant and his landlord agreed to pay the expenses between them, and Mr. Burton was employed by the two parties to do the work, according to a specification. Mr. Cox, the landlord, had squared up his half, but the claim against the tenant, 11*l.* 6*s.* 3*d.*, could not be got. The defendant should have paid this for putting up a gateway, which it was arranged he should do, before the work was begun. When the first amount, 21*l.*, was sent in, the defendant paid 10*l.* only, saying that was all he was liable for, and referred the builder to the landlord, Mr. Cox, for the balance. Mr. Cox again referred Mr. Burton to the tenant, and as "two stools" generally repudiate "bills," the builder had to call in a referee, in the shape of Mr. M'Namara, the judge of the Marylebone County Court.

Mr. Worthington, surveyor, said he had surveyed the work done, and it was efficiently performed. According to the specification, the charges were fair and reasonable.

The defendant denied ever seeing the specification or giving any instructions to have the work carried out beyond the sum of 8*l.* or 10*l.*, which he thought was ample. He had got a number of letters from Mr. Burton and his surveyor, Mr. Worthington, on the subject of payment, but he answered every one, by denying his liability, and referred to Mr. Cox.

The judge said, supposing the defendant had not seen a copy of the specification, it was his place to have seen it, and his own fault in not doing so.

Verdict for plaintiff, with costs.

BRISTOL LIMEWASH.

SIR,—I shall feel much obliged if some of your experienced correspondents will favour me with full and explicit instructions for mixing and applying Bristol limewash, and whitening or whitewash (separately), to walls, ceilings, and other parts of the interior of dwelling-houses, so as to produce a uniformly firm, smooth, and permanent white surface.

I wish to make about ten gallons of each mixture at one time, and shall be glad to be informed of the quantity of each article to be used therein, to answer the purposes desired.

Also the best method of mixing limewash for applying to the outside of houses, &c., so as to form a firm and lasting surface, that will not be acted upon by sun-heat, rain, or frost, or other changes of temperature. B. G. E.

NOW OR NEVER.

SIR,—The work is quite half done to make the finest street in Europe. Continue westward from the site of the new Law Courts, pull down Holywell-street, and sufficient to make a wide street north of the church of St. Mary le Strand, making the Strand, as far as Charing-cross, or rather Trafalgar-square, as wide as that part opposite Somerset House.

You could continue eastward to St. Paul's, making Fleet-street and Ludgate hill as wide as that part of Fleet-street where St. Dunstan's Church and the Crown Life Assurance Office now stand.

Lose this chance, and it *never* can return. A. B.

THE LAW COURTS.

ON the vote of 68,800*l.*, in the House of Commons, for the purchase of a site, erection of a building, and other expenses for the new Courts of Justice, Mr. Solater-Booth thought some additional information should be given upon this vote, which was part of the larger sum of 750,000*l.* proposed for the construction of the new Courts of Justice, under the Acts of 1865 and 1871. He wished to know whether it was contemplated to make any addition to that sum, and what?

Mr. Ayrton explained that the tenders for the execution of the work considerably exceeded the sum authorised by Parliament, and the plans had been referred back to the architect to reconsider the designs so as to bring the expenditure within the sum authorised. At present he was not prepared to alter the estimate, because he had reason to believe that if the work was properly taken in hand it might be executed for a sum approximating to that which had been authorised. In reply to a question from Mr. Ward Hunt, he said that it was not expedient to state how much the tenders were in excess of the sum originally estimated.

Mr. Alderman Lawrence called attention to the great increase in the price of labour and material, and protested against the plans being altered with a view to bring them down to the original estimate, at the sacrifice of the building and the convenience of the public convenience.

Mr. Whitwell drew attention to the necessity of improving the public approaches to the proposed new courts.

Mr. Ayrton said that he was quite willing to postpone the vote, and

Mr. Baxter moved that the Chairman report progress.

After a few words from Mr. J. Goldsmid, the motion for reporting progress was agreed to, and the House resumed.

THE PALESTINE FUND.

THE Quarterly Statement, dated April, 1873, of the Palestine Exploration Fund has been published at the Society's office, 9, Pall-mall, and by Bentley, of New Burlington-street. It is more than usually interesting. The contents include letters and reports from Lieut. Conder, R.E., and Mr. Drake; an account of the discoveries at Mount Gerizim and Ebal, by Captain Wilson; Mr. Schick's recent work in Jerusalem; inscriptions; the royal city of Gezer, and other matters. There is a map to illustrate Lieut. Conder's letters, and a plan of the ruins on the tion from Aleppo; Mr. Wright, on the Hamah summit of Mount Gerizim, where traces exist of an ancient castle and an octagonal church, believed to have been built by Justinian, *circa* A.D. 533. The archæological explorations of Lieut. Conder are thus summed up:—

"We find 35 per cent. of the ruins 'indistinguishable.' Of Jewish remains, the rock-cut tombs and reservoirs, the tells, and a few ancient wells and cisterns, are the principal; tombs, reservoirs, temples, and traces of a town, are amongst the Roman remains. Churches and towers represent the works of Christian architects. Adding together Jewish and Roman remains, we find some 35 per cent. to be of interest in illustration of the Bible and Josephus. Were *all* the 'indistinguishable' ruins Jewish, we should have 70 per cent., the value of which future examination of the literature of the subject would show, but this proportion cannot be reasonably expected. It seems probable, however, that we have now collected in the country between Nablus and Haifa alone, at least 100 ruins, which may some day serve to throw light on the Biblical topography of Palestine."

New Conservative Hall at Boston.—The foundation-stone of a new Conservative hall has been laid at Boston. The Conservative Club has now 600 members, principally consisting of working men. A company has been formed, and shares of 1*l.* each issued. A commodious Conservative hall is to be erected, at an estimated cost of between 6,000*l.* and 7,000*l.*, the architects being Mr. G. G. Scott, jun., and Mr. J. O. Scott.

SALFORD DEATH-RATE.

Sir,—Salford now enjoys the reputation of a death-rate of 40 per 1,000. This is doubtless due in a great measure to the very fine weather we have had during the past few weeks, causing increased evaporation and exhalation of noxious vapour from open middens and other vile places attached to nearly every house. These are usually left for months together unemptied of their accumulating contents, and become in warm dry weather hot-beds of disease and death. High wages and much drinking also help largely in producing the result. The *Builder* has much work yet to do. E. G.

CHURCH-BUILDING NEWS.

Rotherham.—The Rotherham Church council propose shortly to make certain alterations and improvements in the parish church, and it is stated that the Earl of Effingham intends to put a stained-glass window in the east end. Sir Gilbert Scott has been down from London to inspect the church. It has been thought desirable that the gallery, which was erected about ninety years ago, should be removed, and that the pews should also be demolished; but as yet Sir Gilbert has not reported on the matter, and nothing has been definitely decided upon.

Bristol.—The whole interior restoration of the Temple parish church is so near completion that it has been re-opened. The work of restoration has been many months in progress. The whole area of the church will now be available for divine worship. The pillars and walls throughout have been cleansed of their many coats of whitewash, a dozen or more,—and the stones pointed. Almost as much work has been done under the floor as above it; for not only have the vaults been sealed and the ground concreted, but one of Haden's hot air and water apparatus has been laid down under the floor. The nave windows, twelve in number, have been filled with cathedral glass. The old high pews have been removed, and open seats of varnished pine, with carved oak ends and tops, substituted. These are raised about 3 in. above the aisle floors, which are laid with coloured tiles. Gas is supplied from coronæ round the pillars, and in the aisles also. The roofs of the aisles have been renewed, and the roof of the nave panelled and decorated. A stained-glass window for the west end has been promised. The space under the tower has been cleaned out, and a groined stone ceiling put in, and it is now used as a baptistery. Around the walls have been placed the tablets which were formerly scattered about the church. The restoration work in the chancel and at the east end of the building is very extensive. The chancel floor has been lowered about 2 ft., thus improving its somewhat low appearance. The pavement is of encaustic tiles. The ceiling has been panelled. The old Colston screen has been removed from the back of the communion-table, and is put up in the Weavers' chapel. The east window has been filled with stained glass, the work of Clayton & Bell. The window, which is in five compartments, represents the Last Supper. In the Weavers' Chapel are two stained-glass windows. One, at the end, by Bell, of Bristol, is put in in commemoration of the Rev. John Wesley. It is in compartments, representing the presentation of the infant Jesus, Simeon prophesying, and other scenes in the Temple. At the top are the figures of the Saviour, David, and Solomon. The second window is at the side, and is a present from Messrs. Hall, of Broadmead. It has two compartments, illustrating the properties of a virtuous woman (Prov. xxxi. 19, 24). During the progress of the work an ancient sepulchre of the thirteenth century was found in this chapel, from the position of which it would appear that the original floor of the church was a foot lower than the present one. The execution of these and other alterations will cost about 6,000*l.*; and the work has been done by Mr. Diment, under the superintendence of Messrs. Ponton & Gough, architects, with whom was associated Mr. B. Ferrey, of London, as consulting architect.

Brecon.—The committee entrusted with the restoration of the edifice of the Priory Church, met on Friday, the 28th ult. The work will be carried out under the superintendence of the architect, Sir Gilbert Scott. Five tenders for the work required to be done in the nave, north and south aisles, and porch, were received and read, viz.,—Messrs. Williams & Sons, Brecon, 4,420*l.*; Messrs. Wood & Sons, Worcester, 4,237*l.*; Messrs. Coleman, Gloucester, 4,195*l.*; Mr. Williams, Llandaff, 3,954*l.*; Messrs. Collins & Cullis, Tewkesbury, 2,940*l.* The lowest tender was accepted.

Totnes.—Gradually, and not before it was badly wanted, the work of restoration is taking place in St. Mary's parish church. Several years ago the building was inspected by Sir G. G. Scott, and the restoration having been placed in that gentleman's hands, the works then suggested by him have since been carried out in sections, according as means have allowed. The additions that have been made, as seen from the exterior, are a north aisle built of blue limestone, with dressings of Doulton stone, and a new vestry. Inside, the transformation is almost complete, by the removal of two-thirds of the old pews that choked the nave and aisles, and the introduction of low, open benches of a modern character. Beneath the new north aisle, which has a flat panelled timber roof, ornamented by carved bosses at each intersection of the various members, a gallery, under Sir Gilbert's directions, has been erected,—an addition rendered necessary to meet the demands for space by the congregation. The columns of the north and south arcades have been straightened as far as possible, and cleaned down. Three new windows have been put in on the south side of the church, and two others for the west end are now in progress. The grand tower-arch, formerly quite blocked up by the organ-gallery, the existence of which had almost been forgotten, has been opened to view, and will now be speedily restored. The organ has been removed to the east end of the north aisle. The aisles are laid with black and red encaustic tiles. The works have been carried out principally by Mr. Reeves, builder, Totnes. The stonework in the south aisle, and of that portion now in progress, is by Mr. J. Pulsford, of Barnstaple. Mr. Harry Hems, of Exeter, has, from time to time, executed the stone and wood carving.

East Orchard.—The parish church of St. Margaret's Marsh has been re-opened, after being completely rebuilt, except the tower. It has long been known to be in a very unsafe condition, and the pews were both rotten and ill-arranged. It was for some time hoped that, by underpinning the walls, renewing defective stones, and the like, the old church might have been put in proper condition at a cost of about 350*l.*; but it was eventually found necessary to rebuild it entirely. The chancel has been rebuilt, with an increase in length of 4 ft., by the Ecclesiastical Commissioners and the present lessee of the great tithes, for 235*l.*, under the superintendence of Mr. E. Christian, who has retained the old form of circular roof, and the windows have been rebuilt with the old stones in the old places. The nave has been rebuilt from the plans of Mr. Crickmay, of Weymouth, and is 3 ft. wider than the old, thus giving extra room enough to enable the gallery in the tower to be dispensed with, and showing off the proportions of the tower arch. The roof being constructed without tie-beams does not obstruct the view of it from the nave or chancel. The work was not contract work.

Northampton.—A movement is in progress for the restoration of St. Peter's Church, Raunds, under the supervision of Sir Gilbert Scott. It is calculated that the total cost of the work will reach above 5,000*l.* One half of this amount has been raised by the vicar and his friends, assisted by the inhabitants of the village generally; and they appeal for assistance to lovers of ecclesiastical architecture and promoters of the Church's work throughout Northamptonshire. The Wesleyans at Raunds are also putting forth extra exertions. They advertise for tenders for the erection of a new chapel to seat 800 persons.

Shroton.—The church here is now undergoing a restoration. A new roof will be placed on the centre and north aisles, the walls re-plastered, a new aisle added, and the porch brought forward. The chancel and other parts of the church have recently been done, and the tower is in good preservation, but needs a turret, which undoubtedly in due time will be added, and thus tend to make the edifice complete. The churchyard is to be enlarged, and the old unsightly mud wall to be removed and replaced by a brick wall, so that the church will be thrown much more open, and a better view obtained from the road and rectory. The plans and specifications have been drawn by Mr. Wyatt, the diocesan architect, and Mr. T. Miles, of Shaftesbury, is carrying out the work.

St. Asaph.—The list of subscriptions to the fund for restoring St. Asaph's Church, amounting in the aggregate to 1,825*l.*, with an abstract of account, has just been issued. The work has been designed and executed by Sir G. G. Scott.

Oxford.—The new chapel at Keble College, Oxford, is about to be erected at a cost, it is stated, of about 30,000*l.* Mr. Gibbs, of Tyntesfield, will provide the means.

Tiffield.—The parish church of Tiffield, near Towcester, has been re-opened after undergoing a restoration. It had been enlarged in 1859 by the addition of a south aisle for the use of the boys of the Reformatory School close by. This was done mainly at the expense of the late Lord Southampton, the patron of the living, the committee of the Reformatory contributing 100*l.* The church at Tiffield was in a wretched condition, and grievously needed the restoration which has just been effected. The style is Early English, of a plain and unpretentious type, entirely devoid of ornament; and the work has been carried out in conformity with the character of the edifice. With the exception of the tower, the north wall, and the new aisle, the whole has been rebuilt. One of the chief features of the interior of the church was the arcade which divides the north aisle from the nave. This it was found necessary to take down, but it has been rebuilt with the old material. A new tower arch and a new chancel arch have been constructed. Their place was previously occupied by the merest apology for an arch, lath and plaster, turned, covering uncarved stonework. The chancel arch consists of two members, each supported by corbel shafts of Caen stone. The east window is of stained glass, and is the gift of the rector and members of his family. It is of three lights, the head being filled in with two quatrefoil and one trefoil light. The centre light contains a representation of Christ as the Good Shepherd, carrying a lamb in His arms; the other lights contain the sacred monograms. The window is the work of Messrs. Jones & Willis (of London and Birmingham). The roof of the church is open and of stained timber. The seats, which are of stained deal, are new. A new screen of stained deal separates the nave from the lower chamber of the tower. The west window in the north aisle is the gift of Mr. Wm. Brown. The cost of the restoration has been some 600*l.* or 700*l.* The restoration of the chancel, costing some 200*l.*, has been effected at the expense of the rector. The work has been done from the designs, and under the superintendence, of Mr. T. H. Vernon, of London; Mr. Shakeshaft, of Ashton, being the builder. In the foundations of the south wall of the chancel was found the upper part of a cross—the stem entirely broken off, but the three limbs with floriated terminations still intact. It has been built into a niche of the chancel wall for preservation. Another relic of the past was also discovered built in the chancel wall. It appeared to be the fragment of a miniature stone coffin, and contained the broken remains of some undecipherable stone figure, the legs of which, however, were apparently uninjured.

DISSENTING CHURCH-BUILDING NEWS.

Swansea.—The opening of Libanus Chapel, or rather "Cathedral," which is situate at Morriston,—in the midst of a dense population of smelters, tin-plate workers, iron puddlers, furnacemen, and colliers,—took place on Sunday, the 22nd ult. The architect was Mr. John Humphreys, of Morriston. The total cost of the building can scarcely be less than between 8,000*l.* and 10,000*l.* The erection of the chapel is due, principally, to the liberality of Mr. R. Hughes, of Ynistawe, and of the Landore Tin-plate Works. The chapel is erected on freehold land, previously purchased by Mr. Hughes from Sir John Armine Morris, bart., for 640*l.* The building is in the Italian style of architecture, with a tower and spire 160 ft. high from the base. All the walls are built of native blue stone, with Bath stone dressings. The front contains four pairs of detached columns, and pilasters; one elliptic and two semi-arches are adopted to relieve the entablature over the columns. There are eight doorways: four in front and four on the sides; the side doorways being entered by steps and slopes so as to relieve the steps as much as possible. The balustrading and hand-rails to the steps externally are also in Bath stone. The internal arrangements include a spacious room on the basement, 15 ft. high, with class-rooms; vault for the hot-air apparatus

tea-making, and ante-room and offices. The ground is well adapted for the basement rooms, which have four entrance doorways and three staircases to main floor. The floor of the chapel is circular, and so arranged that by placing the *foci* in the pulpit all the sittings on the ground-floor are facing the minister direct. The orchestra is placed behind the pulpit, and connected with the gallery by seats, each rising 6 in. The organ is placed at the back of the orchestra. There are four sets of stairs to the gallery. The internal measurement of the chapel is 94 ft. by 58 ft. in clear, providing sittings for 1,450 adults in the gallery and ground floor,—not including the aisles and standing-room. The building will, however, accommodate, when necessary, a much greater number. Fresh air is let in by a number of wooden tubes connected with ventilators in the outer walls, let in by iron ventilators in the aisles of the ground and gallery floors. The foul air is carried off by a 9-in. iron tube from sun-burners in the ceiling conveyed to the tower. The various parties who took part in the work are as follows:—The masonry was done by Mr. Daniel Edwards; Mr. Thomas Light was foreman of the Bath stone masons; Mr. Joseph Tracey being foreman of the carpenters and joiners, and acting as clerk of works; the plastering was done by Mr. John Penry, of Llandilo; the whole of the carving, internally and externally, was done by Mr. George Houghton, of Bristol; the painting and decorating, providing and fixing hot-water apparatus and gasfittings, was given to Mr. T. W. Morgan, Swansea; the glass was supplied by the St. Helen Glass Company, Bristol; the sun-burners and gasfittings were supplied by Messrs. Hulett, London; the wrought-iron entrance-gates supplied by Mr. J. W. Dover, Manchester; the Bath stone from Messrs. Stone, Brothers, Bath. The whole was carried out under the superintendence of Mr. J. Humphrey, who supplied the plans and specifications.

West Hartlepool.—A chapel, erected by the Wesleyan community of West Hartlepool, has been opened for divine service. The new edifice is situated at the top of Church-street, immediately adjoining the Cambridge and Hart roads. The architecture is Corinthian, and the chapel is capable of accommodating 1,250 persons.

Guilden Sutton.—Five memorial stones of a new Primitive Methodist chapel at Guilden Sutton have been laid in the presence of a good number of persons from the village, and Chester and neighbourhood. The chapel is to be built in the Gothic style of architecture, from designs prepared by Mr. W. H. Ranlingston, of Sydenham, and is to be 24 ft. wide by 30 ft. long, in the rear of which is a vestry, 24 ft. by 11 ft.4 in., which will form an annex to the chapel by means of sliding doors, and thus accommodation will be made for about 150 hearers on special occasions. Messrs. W. & J. Vernon do the brick, plastering, and slating, Mr. Joseph Duckers the stone-work, and Mr. Reuben Jones the joiners' work. The site of freehold land is 29 ft. wide by 46 ft. in depth, and is the gift of Mr. Robert Smith.

Whitby.—The memorial-stones of a new Primitive Methodist Chapel have been laid at Whitby. The new chapel is being erected on land given by Mr. James Worrall. It is Gothic in style, and presents to the road leading to Ellesmere Port a gable, with a double two-light window in the centre and a circular one above. Below there will be a square porch, with stone cornice, with a two-light window in it in front, and access to the chapel can be had from either side. The remaining windows consist of three two-lights on each side, a circular one in the gable behind the minister's desk, and two smaller two-lights in the opposite end on each side of the door. The materials used are bricks principally,—blue, red, and yellow in the window-heads, and white stone sparingly introduced. The interior fittings will be of pitch-pine, stained and varnished; the seats open; and accommodation will be provided for about 120 or 130 persons. The principals and spars are up, so that the place is nearly ready for roofing in. The former, it may be remarked, rest on stone corbels, and the roof will be half open. The architect and builders are the same as those engaged on the Guilden Sutton Chapel, namely, Mr. W. H. Rawlings, Messrs. W. & J. Vernon, Mr. Joseph Duckers, and Mr. Reuben Jones.

Halifax.—It is proposed to build a new chapel for the Primitive Methodists at Halifax. The intention was reported at a recent meeting to be, first, to buy the land, which they had procured; then to build a good school and class-room, and pay for them; and afterwards to erect a chapel, at a cost of some 3,000*l.*, and pay for that. It might be a long time before this project was completed. The report was adopted.

Keighley.—The corner-stone of a new Wesleyan school chapel has been laid, at Hermithole, New-road Side, Keighley. The building, which is intended to be used both as a chapel, Sunday-school, and day-school, is from designs supplied by Mr. George Smith, architect, Keighley, and will be in the Gothic style of architecture. It will consist of a large school-room, 40 ft. by 24½ ft.; an infant school-room, 34½ ft. by 16 ft.; and two class-rooms, each 17 ft. by 16 ft. There will be accommodation for 300 to 400 scholars, and the cost will be 1,500*l.*, towards which 900*l.* have been promised.

Little Horton.—A new chapel and schools for Little Horton are to be built. A site has been fixed upon which will cost 400*l.* It is intended to erect a building of two stories, the lower one to contain a school-room and class-rooms, and the second story to be fitted up as a chapel, the cost of which is not yet ascertained. A building committee has been formed, and the working people of the neighbourhood have for some time contributed weekly sums towards the movement.

London.—The new Welsh Congregational chapel in Southwark Bridge-road has been opened for divine service. Mr. Samuel Morley, M.P., has given 500*l.* towards the purchase-money of the ground, which is about 430 square yards. The entire cost of the work is but half defrayed, so that nearly 3,000*l.* are yet required.

West Cannock.—The new Wesleyan chapel at West Cannock (or Hednesford) has been opened for public worship. The trustees have already determined to enlarge their chapel, all the sittings in the present building being taken, and others applied for. The enlargement will be under the superintendence of Mr. N. Joyce, of Stafford, the architect of the chapel.

Wellingborough.—The new Wesleyan chapel recently erected in Park-street, on the Poplar estate, has been opened for public worship. It is capable of seating about 700 persons. It is built from a plan supplied by Mr. C. Ball, architect, London; the contractors being Messrs. Barton & Peach, of Rothwell; the superintendent of the works, Mr. John Blunt, of Wellingborough. It is of the Italian style of architecture, and is chiefly of black, white, and red bricks. The front is supported by a portico of stone pillars, with carved capitals. Two lobbies lead to the galleries, the entrances to which are independent of the body of the chapel, the staircases being of stone. The interior is fitted up with open seats of varnished deal. There are three galleries, which are fitted with open seats, the front of the galleries being ornamented with open woodwork. Instead of the old-fashioned pulpit a platform is erected, capable of accommodating four or five persons. At the east end, and immediately behind the platform, is an arched recess for the choir. This was an afterthought, and was made at an extra cost of 60*l.* The place is lighted from numerous oval windows for daylight, and for evening worship there are two large star gas pendants. Attached to the chapel at the east end is a large schoolroom, 39 ft. by 25 ft., besides a vestry and numerous offices. The cost was somewhat over 2,000*l.*, the principal part of which has already been subscribed.

SCHOOL-BUILDING NEWS.

Chester.—The new school of St. Thomas, for girls in the parish of St. Oswald, has just been completed. The school is of Early Gothic character, and, next to the church, is the most conspicuous building when viewed from the lower ground of Bouverie-street. It is built of red bricks, and has a tiled roof. The entrance is through a porch at the south-east corner, and a vestibule, with a lavatory at the further end. The principal room is 64 ft. long by 25 ft. wide, and, with the class-room at the south-west corner, 16 ft. long by 13 ft. 6 in. wide, will accommodate 187 children. Above a high wainscot of wood, stained and varnished, the walls are lined with white bricks up to the eaves, and the school is well lighted by four three-light windows on one side, a three-light window in the west gable, and two single lights in the east, and ventilated both by means of windows and towers in the open timber roof.

Gloucester.—The chief stone of Barnwood new national school has been laid on a site contiguous to the new vicarage and opposite to the present school. The contract having been put into the hands of Mr. Clutterbuck, he is now busily engaged in building a school from designs by Messrs. Waller & Sons, architects. The structure will be of brick, and will consist of a school and class-room, with apartments for the teacher.

Wotton and Abinger.—The foundation-stone of Oakwood National Schools has been laid. Messrs. Colls & Son, of London and Dorking, are the builders.

Books Received.

The Thirteenth Annual Report of the Amalgamated Society of Carpenters and Joiners, from December, 1871, to December, 1872. General Office, 53, Grosvenor-street, Chorlton-upon-Medlock, Manchester.

This report congratulates the Society on the settlement of their differences, and on the registration of the Society under the Trade-Unions Act.

The following is an abstract from the report:—

"Our increase during the past year is 1,472 members and 3,020*l.* 0s. 5d.; making our total number of members 11,236, with 226 branches, and an available fund of 19,849*l.* 8s. 6d. The property possessed by the Society, at the end of last year, amounted to 22,068*l.* 3s. 6d.

The number of branches has been reduced during the year from 242 to 226. This, however, does not involve a loss, but a positive gain. No outpost has been abandoned which could be profitably retained, but in our large cities and towns a number of small branches have been united.

We have expended in relieving our unemployed members the sum of 3,458*l.*; in tool benefit, 381*l.*; sick benefit, 5,666*l.*; funeral benefit, 1,103*l.*; accident benefit, 700*l.*; superannuation benefit, 128*l.*; benevolent grants, 44*l.*; grants and loans to other trades, 80*l.* One of our largest items of expenditure, however, has been that of trade privileges, which has cost us 4,595*l.* I am not aware that the demands of the building operatives have been more extravagant than those of other trades; they have certainly been more than justified by the extraordinary increase that has occurred in the cost of living.

During the past year we have opened fourteen new branches, eight in England, one in Scotland, four in the United States, and one in Canada. From Lowestoft in the east, to San Francisco in the far west, the traveller will continually find branches of this Society. The rapid progress which the Society has made in America is very cheering."

Metropolitan Rating. By Edward Ryde. 1873. Lockwood & Co.

Under this heading Mr. Ryde publishes a summary of the appeals heard before the courts of General Assessment Sessions. It will be found of use by surveyors, solicitors, and metropolitan ratepayers generally. The author's name gives assurance as to correctness. Mr. Ryde suggests that two surveyors, of long experience and proved ability, and one barrister of good standing (as assessor),—remunerated for their services by the Government, and debarred in the future from private practice, except as umpires or sole arbitrators,—would constitute a court, whose decisions on all matters of rating, questions of light and air, and cases of compensation under the Lands Clauses Act, would be popular and satisfactory.

A Dictionary of Terms used in Architecture, Building, Engineering, &c. By John Weale. Fourth Edition. Edited by Robert Hunt, F.R.S. 1873. Lockwood & Co.

Of the first three editions of this dictionary, which originally formed three parts of Weale's Rudimentary Treatises, 20,000 copies were sold, showing it met an existing demand. We have nothing more to do on the present occasion than to mention the appearance of a new edition in the shape of a single and very portable volume, condensed in some parts and added to in others, under the direction of Mr. Robert Hunt.

Miscellanea.

The Proposed Hall and Public Buildings at Chesterfield.—It is contemplated memorialising the mayor and corporation of Chesterfield to present to the town the Municipal Hall (which will shortly be abandoned for magisterial purposes), the bowling-green adjoining, and the theatre, for the purpose of erecting, on a portion at least, of this site, the Stephenson Memorial Hall and other public buildings proposed to be built by the joint efforts of the Mining Institute, the Mechanics' Institute, and other societies. The project has been taken up so spiritedly by a few gentlemen that, without any public appeal for help, 4,000*l.* have already been promised.

Lecture at the Crystal Palace Aquarium.—Dr. Edwin Lankester has delivered a lecture at the Aquarium of the Crystal Palace, on the subject of "Fish as Food." The lecture was attended by a large and fashionable audience, who thoroughly enjoyed the humorous and interesting fare provided for them. Naturalists, the lecturer said, acknowledged no fish without a backbone, but he would for the purposes of his remarks class fishes as shell-fish and true fish. Foremost among the shell-fish was the oyster, which was one of the prettiest of creatures when in the "cherub" state. The oyster was highly digestible, even when raw. Scollops and cockles were also good food, but required cooking; and the razor-fish, which was very muscular, was indigestible in proportion to the amount of muscle it possessed. In the matter of fish, the edibility depended greatly on the cooking, and the sauce. Fish was quite equal to butcher's meat in flesh-forming matter, although, in consequence of their deficiency in oil, they were not heat- and force-forming. They contained more creatine and creatinine than meat, however; and as this was one of the most valuable constituents of food, because it partly formed the brain matter, Professor Agassiz had rightly said that fish was the food of philosophers. In conclusion, he would impress upon the ladies the absolute necessity of being able to superintend the cooking personally. The cooking of fish was done in the most slovenly manner in many households. It was necessary, therefore, that the intelligent mistress should herself be a cook, in order to be able to direct the work of the uneducated servant.

Public Improvements and Property Owners in Salford.—Mr. J. J. Aston, Q.C., sheriff's assessor, and a special jury, sat at the Salford townhall, for the purpose of assessing the value of certain property required by the corporation of Salford for public improvements. Mr. Leresche and Mr. Coventry appeared for the claimants (the trustees of the late Mr. Thomas Appleby); and the corporation was represented by Mr. W. H. Higgin, Q.C., and Mr. Addison. The property in question, consisting of about fifty shops and cottages, is situate in Broughton-road, Greenbank, Wibberley-court, Pleasant-street, Greenbank-court, and Burgess's-place; and the whole of it is required to make room for a new thoroughfare which the corporation are constructing from the end of Blackfriars-street, in Chapel-street, to Broughton bridge. Mr. John Cross, Mr. William Raby, and Mr. Frederick Beech, surveyors and valuers, gave evidence in favour of the claimants, assessing the value of the property at from 5,500*l.* to 5,700*l.* Mr. Higgin having replied, witnesses were called on behalf of the corporation. Mr. Thomas Acton, auctioneer and valuer, placed the value of the property at 3,235*l.*, after allowing 10 per cent. for compulsory sale; Mr. Samuel Kershaw, estate agent and valuer, estimated the value of the property at 3,645*l.*; Mr. John Newton, estate agent and valuer, 3,651*l.*; and Mr. John Bowden, surveyor to Sir Humphrey de Trafford, 3,661*l.* The jury assessed the value of the property at 4,158*l.* The amount claimed by the trustees was about 5,600*l.*

Archæological Lectureship in Edinburgh. The late Mr. A. H. Rhind, architect, left a bequest of the reversionary interest of the estate of Sibster, in Caithness, to the Council of the Society of Antiquaries of Scotland, for the foundation of a lectureship in archæology, the lecturer to be appointed by the council of the society, either for life or for a term of years, to deliver annually a course of not less than six lectures on some branch of archæology, ethnology, ethnography, or allied topic, and the council to determine whether these lectures shall be free to the public, or whether admission shall be by a moderate fee. The bequest will now come into operation as originally intended, and in a short time the Rhind Lectureship on Archæology will be added to the number of permanent institutions for the advancement of science in Edinburgh. Mr. Rhind also left a sum of 5,000*l.* for the foundation of two scholarships in the University, and 7,000*l.* for the establishment of an institution for the industrial training of orphan girls at Wick, which will now also come into operation. The superintendence of monuments, suggested in the memorial, is still, however, unprovided for; but perhaps the Government will agree to place this superintendence in the hands of the lecturer to be appointed under Mr. Rhind's bequest.

Unwholesome Water.—The following is an extract from the annual report of the consulting chemist, Dr. Vöelcker, to the Royal Agricultural Society, relative to the unwholesome water frequently found in villages and farmhouses:—"In my last report I directed attention to the fact that many villages and isolated dwellings are not well supplied with good wholesome drinking-water, and that as a rule the water in towns is purer than in the country. I have now to report that, during the last twelve months, as many as fifty-three samples of water were sent to me by members of the society. A considerable number of these waters I found unmistakably contaminated with sewage products, and utterly unfit for drinking purposes; and I would again direct attention to the fact that the bad quality of the water which is employed in country places for drinking and general domestic purposes is a cause of the prevalence of low fever and other disorders, in not a few localities. If a drinking-water appears more or less coloured, and at the same time has a disagreeable smell, or should it be quite clear and exhibit particles of white flocculent matter, I would urge upon those who habitually use the water to discontinue its use at once, and to have it submitted to a thorough chemical analysis without delay."

"Close" Houses.—Mr. Justice Archibald is suffering from a serious illness, "the result of miasma at his lodgings in Liverpool." The lodgings of the judges are at Newsham House, Newsham Park. It appears that during the last visit of the judges Baron Pollock perceived a disagreeable smell in his bedroom. He complained of the fact to the mayor, and the borough engineer attended with a number of workmen, and thoroughly cleansed all the drain-pipes with chloride of lime. In addition to this, orders have been issued by the Health Committee to have a searching investigation made, and the matter is to be rectified before the next assizes. It appears that a similar complaint was made by Mr. Justice Mellor during his visit last year, and it was then discovered that the nuisance had been caused by a rat making a hole through the lead pipe leading from the hand-basin in the bedroom to the main sewer.——The *Philadelphia Medical Times* reports that a student undergoing his examination was asked what was the mode of action of disinfectants. He replied, "They smell so badly that the people open the windows, and the fresh air gets in." Something more, however, seems to be wanted at the Liverpool lodgings of the judges.

Sir John Lubbock's Shop Hours Regulation Bill.—The second reading of the Shop Hours Regulation Bill, introduced by Sir John Lubbock last week, is fixed for Tuesday, the 20th of May. By it it is proposed to apply the provisions of the Workshops Act to the regulating of the hours of labours of children, young persons, and women, in the shops far the sale of goods and otherwise. The term "shop" is defined to include any building in which any article is sold or exposed for sale. As in the case of workshops, employment is to be limited in shops to ten hours and a half a-day, and it must not begin before six a.m. or continue after nine p.m. The provision with respect to the Saturday half-holiday does not apply, but Christmas Day, Good Friday, and the Bank holidays are made compulsory. The term young person includes every apprentice, male or female, between the ages of thirteen and twenty-one. The Secretary of State may sanction employment in any retail shop for fifteen hours. Premises licensed for the sale of intoxicating liquors, or in which articles of food are sold for consumption on the premises, and bakehouses, but not bakers' shops, are exempt.

Sale of Land, &c., in Bristol.—Last week Mr. George Nichols, auctioneer, of this city, offered for sale by auction, at the White Lion Hotel, a number of lots of freehold estates, fee-farm ground-rents, and building land, situated in various parts of Bristol. The prices were as follow:—Lot 1, a freehold farm, Hengrove Farm, Brislington, 43a. 2r. 36p. of land and buildings, 3,480*l.*; lot 2, a freehold piece of garden-ground, 3r. 37p., at Knowle, 300*l.*; lot 3, a freehold close of arable land, 2a. 20p., at Knowle, 200*l.*; lot 4, a yearly fee-farm rent of 50*l.*, issuing out of houses in Temple, 1,110*l.*; lot 5, two freehold ground-rents of 3*l.* 3s. each, the houses being at Totterdown, 110*l.*; lot 6, three freehold ground-rents of 3*l.* 3s. each, the houses being at Totterdown, 160*l.*

The House of Commons' Signal Light. On the north face of the upper part of the clock tower a lighthouse lantern has been temporarily erected, 11 ft. high. In this lantern is a pillar of intensely white light, which on a near view resolves itself into three steady and brilliant flames placed one above another. At intervals these three flames appear to unite in one round sun-like blaze, which throws a strong beam to a great distance. The light is the invention of Mr. John R. Wigham, who is a member of the firm of Edmundson & Co., of London & Dublin. It is produced by the combustion of ordinary gas, and is a naked light needing no chimney. A large iron pipe, however, is brought down to the top of the flame, and the oxygen of the air is so brought into immediate contact with the incandescent carbon, which is thus completely burned, with an intensely white heat. The flash is produced by passing a dioptric lens in front of the light, thus concentrating it into a single beam. The inventor claims for this method of illumination that it is cheap, and needs but little attention. We understand from the House of Commons report, that an experiment is also to be tried with the electric light, which will be exhibited from the western face of the tower, in a week or two.

A New Doomsday Book.—At a meeting of the Statistical Society, held last week in the Society's rooms in St. James's-square, a paper was read by Mr. Frank Fellows on the subject of "A New Doomsday Book." Dr. Farr, F.R.S., president of the society, occupied the chair. Mr. Fellows said the full title of his paper was

"Our National Parliamentary Accounts, with Suggestions for Establishing a Doomsday Book, giving the Value of National Governmental Property or Assets as the Basis of a Sound System of Account, by which Expenditure for Capital and Current Account shall be Separately Shown."

There appeared to him to be a great incompleteness in the manner in which our national Government finance accounts were presented to Parliament. The incompleteness was mainly in this, that the Government of this country did not and could not tell the value of their assets. We did not know what we were worth in national property, and till we knew that he maintained that we could have no thoroughly satisfactory system of national finance accounts. There was a general concurrence of opinion in the meeting as to the importance of the question, and hopes were expressed that the Government would give it their best attention.

London Parks. — The Registrar-General gives the following statement of the area of the public parks in and about London, as ascertained by the Ordnance Survey Department:—St. James's Park, 58·5 acres; the Green Park, 60·3 acres; Hyde Park, 386 acres; Kensington Gardens, 245·5 acres; the Regent's Park, 406·2 acres; Victoria Park, 226·8 acres; Southwark Park, 63 acres; Kennington Park, 19·7 acres; Battersea Park, 119·4 acres; Greenwich Park, 190·4 acres. These ten parks together containing 1,852·8 acres, are all within the registration division designated "London," which comprises 78,080 acres, including 2,718 acres of the Thames. Beyond these limits, but still within the district served by the Metropolitan Police, there are also Richmond Park, with 2,015·5 acres; Kew Gardens, &c., with 322·8 acres; Old Deer Park, with 357·2 acres; Bushey Park, 993·9 acres; and Hampton Court Park, 576·7 acres. These last five parks contain together 4,266·1 acres, which, added to the area of the ten parks first abovenamed, make a total of 6,118·9 acres of public park in or about London.

Disestablished London Pumps. — At a recent meeting of the Marylebone Vestry, a letter was read from the postmaster of the Western District Post-office asking that unused pumps be searched for missing letters, and that precautions be taken to prevent letters being deposited in them in future. It was resolved that permission be given to the surveyor to search the pumps for missing letters. It transpired that the postmaster had written the letter in consequence of the non-delivery of letters entrusted to a servant-girl; and when asked where she had posted them she took the postman to an unused pump, in which three letters were found. The new dust-shoots in the streets are not unlikely to form traps to catch letters at times, too, under similar circumstances, or when even more intelligent persons have their attention engaged, in talk or otherwise, while posting letters.

Society for the Encouragement of the Fine Arts.—Dr. Hyde Clarke delivered a lecture on Thursday evening in last week, before the members of this Society, on the "Races of Monument Builders in America,"—Major Britten in the chair. The lecturer was of opinion that, having regard to the ethnological and linguistic conditions, there was a community of origin of the several monument-building races in the Old and New World. After referring to the Pygmean and Agaw (represented in the Guarini and Amagua), as examples of common migration, he expressed a doubt whether there was any sufficient reason for entertaining the idea of a distinct or indigenous American language or grammar. The lecturer also referred to the traditional knowledge of the Americans preserved during the Greek and Roman periods in the theory of four worlds entertained by the school of Pergamus in Asia. The third *conversazione* of the session will be held at the South Kensington Museum, on May 8.

Death of Dr. Bence Jones, F.R.S.—This distinguished physician and chemist, who was Secretary to the Royal Institution, expired on the 20th inst., after a long and, latterly, severe illness. Dr. Jones, who was consulting physician to St. George's Hospital, was the biographer of Faraday, and by his many and valuable contributions to the advancement of science, amongst which may be mentioned his Croonian Lectures on Matter and Force, Animal Chemistry in relation to Stomach and Renal Diseases, Lectures on Pathology and Therapeutics; the Royal Institution, its Founders and First Professors, &c., Dr. Jones was well known. He was a member of many learned and scientific societies at home and abroad, and married some years since Lady Mellicent, daughter of the Earl of Gosford, who, it is believed, survives her distinguished husband.

The Working Men's College.—On Monday evening the summer term of the Working Men's College in Great Ormond-street was inaugurated by the newly-chosen Principal of that institution, Mr. Thomas Hughes, M.P. The old and present students of the College having been entertained at a substantial tea in the new buildings, the company adjourned to the art-room, where Mr. Hughes took the chair, supported by several of the fellows and professors, and also by several visitors, including Mr. R. W. Emerson and several ladies. The room was full to overflowing. The Principal made a short speech. The meeting was subsequently addressed by the Vice-Principal of the college, Mr. Litchfield, and other gentlemen, and the programme of lectures and the class arrangements for the ensuing term were made public.

The Channel Tunnel.—The committee of the Channel Tunnel Company has had an interview with the French Minister of Public Works, at the Ministry in Paris, for the purpose of obtaining from him an order for opening the Local Enquête, which is the preliminary legal step to granting a concession. The committee was represented by Lord R. Grosvenor, M.P. (chairman), Major Beaumont, M.P., Count M. G. de Weczle, M. Bergeron, M. de Gamond, and the secretary to the company (Mr. Bellingham). M. de Fourton assured the committee that in principle he entered heartily into the views of the company. He must necessarily consult the Council of Ministers before issuing a decree. But he saw nothing to prevent the project from being favourably considered by the Council.

Opening of the Birmingham Sanatorium. The institution at Blackwell, near Bromsgrove, known as the Birmingham Sanatorium, has been opened by Sir John S. Pakington, bart., M.P., the president. The site of the building is on an elevated part of the ridge known as the Bromsgrove Lickey, between Birmingham and Bromsgrove, and forms a prominent object on the west side of the Bristol and Birmingham Railway. In course of the proceedings, Sir John Pakington said that from 1,200*l.* to 1,300*l.* were given for that admirably chosen site, that the building itself would cost 9,000*l.*, and that it would require a further sum of 2,500*l.* or 3,000*l.* to furnish it so as to make it fit for the occupation of patients; making an aggregate sum of 14,000*l.* contributed mainly by Birmingham.

Bronze Casting.—Messrs. Young & Co. intend casting Mr. Noble's statue of the late Lord Derby at their Works in Eccleston-street, Pimlico, on (this) Saturday, the 26th.

Dangers of the Tram.—The practice of tram-conductors leaving their stations to collect payments from outside passengers is fraught with much danger, as the communication with the driver is thereby interrupted. We have recently witnessed two or three instances where the passengers, after having in vain sought the driver's attention to stop the carriage (even though the conductor had been told previously), have been induced to jump off the step, and met in one instance with dislocation of the shoulder, and in others with severe bruises, to say nothing of injured clothes and the risk of being run over. The system of collecting the fares requires amendment. The conductor has quite enough to do in assisting the passengers in and out.

The New Assize Courts, Winchester.—Workmen are now actively engaged in excavating the ground and concreting it for a foundation for the walls of the inner or connecting hall between the old hall and the new courts at Winchester. Two or three interesting objects have been discovered. A couple of Roman Bronze coins, of Licinius, A.D. 311, and Carus, A.D. 282; also an old pit, or cesspool, part of the ancient Norman Castle. This is very deep, capitally constructed of fine hewn chalk blocks, and as good as when first made. It communicated with the castle ditch, the drain being still in existence. The ancient round tower, close to this pit, is to be excavated, and its foundations will be arched over.

Valuation of Property for Rating.—Mr. Stansfeld will, on the 1st of May, propose a Bill to amend the law relating to the liability and valuation of property for the purposes of taxes and rates and the making and collection of rates. The importance attaching to this subject is shown by the fact that according to the last return the poor-rates in the year ended Lady-day last year amounted to 12,381,278*l.*, of which 8,007,403*l.* were applied to the relief of the poor; 26,196*l.* law charges; 588,213*l.* for purposes partly connected and partly unconnected with relief; and 3,750,466*l.* for purposes wholly unconnected with relief. More than one-third of the poor-rates was expended for "other purposes" than the relief of the poor.

Proposed Lecture-hall and School of Art for Leicester.—The Town Council of Leicester have appointed a committee to consider and report upon a resolution passed at a public meeting held in the mayor's parlour on the 27th January last, viz.,—"That this meeting cordially commends to public support the proposal to raise the sum of 3,000*l.* towards the expense of providing, in connexion with the Museum, a large lecture-hall and suitable accommodation for the school of art; such sum to be offered to the Corporation of Leicester on condition that they spend an additional sum of at least equal amount on the accomplishment of the two objects."

The late Rajah Brooke.—An effort is being made to raise a memorial to the late Sir James Brooke, Rajah Brooke of Sarawak, who died nearly five years ago, and of whom no memorial exists. "It is a reflection on our nation," writes General Sir G. le Grand Jacob, in the *Homeward Mail*, "that one who did such wonders in the East should be so soon forgotten. I, who lived and travelled with him in Borneo, knew his worth, and witnessed the child-like veneration of him by his people." Sir James Brooke's eminent services ought to be publicly recognised by a statue to his memory in Westminster Abbey, side by side with that to Sir Stamford Raffles, the benefactor of Java.

Statue of the late Mr. John Biggs, M.P. A marble statue has been publicly unveiled at Leicester, by the Mayor. Mr. Biggs was identified with the town for his whole life, and belonged to a family traced in the county for 300 years. Mr. Biggs died in 1871, and was awarded a public funeral. The statue has been placed in the centre of the town. It is of white marble, by Mr. G. A Lawson, of London, and is, it is said, a good likeness.

Church of the Sacred Heart, Camberwell.—This newly-erected church has been further embellished by a copy of the Madonna and Child, by Carlo Maratta. The original was designed to be executed in mosaic. The picture, the gift of a late parishioner, is placed against the pilaster adjoining the lady chapel, and was executed by Mr. Frederick Blackbourn during his residence in Rome.

The New Surveyor of Westbromwich.—A complimentary dinner has been given at Pendleton to Mr. T. R. Lofthouse, who has been appointed to the surveyorship of Westbromwich. About sixty friends were present, and the chairman, in proposing the health of Mr. Lofthouse, said that he had for the last fourteen years honourably occupied the public position of surveyor of Pendleton, under the Corporation of Salford. The handsome timepiece which he had the honour to present to Mr. Lofthouse, and a purse of gold which would be subsequently presented, had been subscribed for by over 400 ratepayers in the district. The timepiece was valued at 14*l.* 14*s.*, and the purse contained 225 sovereigns.

Alderney Harbour and Breakwater.—Government seems at last likely to arrive at a definite decision with respect to the maintenance or abandonment of the breakwater and harbour at Alderney. Colonel Sir Andrew Clarke, Colonel Jervoise, and Mr. Hawkshaw have been despatched to the island, and it will greatly depend upon the nature of their report whether the fissures in the masonry shall be made good, the breaches in the breakwater repaired, and the construction finished; or whether this work, which Earl Cowper denominated "an extraordinary monument of mismanagement and folly," be left to the mercy of the waves and to inevitable ruin.

Monumental.—A cross has been erected in the Southern Necropolis, near Glasgow, from the design of Mr. J. L. Bruce, architect. The body of the monument is of stone from Williamwood Quarry, which is of a warm yellow colour when new, turning to a rich brown on exposure to the weather. The shafts of the columns are of Serpentine marble, and a cherub's head, introduced in the base, is of a light red stone from the neighbourhood of Dumfries. The body of the monument was executed by Mr. W. Buchanan, and the head by Mr. W. Moseman. The height over all is about 12 ft.

The Fairbairn Engineering Company.—The report of the Fairbairn Engineering Company (Limited) recommends a dividend of 5*s.* per share, which will absorb 5,805*l.*, and make, with 2*s.* 6*d.* previously paid, 7½ per cent. for the year; and the appropriation of 2,000*l.* in reduction of the sum paid for goodwill, leaving 1,737*l.* to be carried forward. It is added that the "enormous rise in the values of iron, coal, and all other materials has seriously diminished the profits of the year, and given a great check to engineering enterprise which will probably be felt for some time to come."

Laying Foundation-stones with Masonic Ceremonial.—The Freemasons of Gloucestershire have offered their assistance in laying the foundation of the new hospital at Stroud with Masonic honours. Lord Sherborne, the Provincial Grand Master, with several other distinguished Masons, will take part in the ceremony. The foundation-stone of an asylum for idiots near Warwick was recently laid by the Warwickshire Masons, with Lord Leigh as their chief. During the day a sum of 1,081*l.* was contributed towards the institution.

New Building Works at Westminster.—Near Victoria-street an extensive range of premises called the Victoria Works has just been completed, and is now in full operation for carrying on the business of Mr. Henry Wagner, contractor. The works comprise offices, workshops fitted with the latest steam machinery for joinery and other work, stabling, dwelling-house, &c. They extend to a depth of 470 ft., with good light, and have a principal frontage of 50 ft. The designs were furnished by Mr. Proctor Withers, of Chelsea; the buildings being erected by Mr. Wagner.

The Ashmolean Museum and the Drainage of Oxford.—As there can be no doubt that during the excavations for the drainage of Oxford, many interesting relics of "old times" will be found, a correspondent of the local *Journal* suggests that means should be adopted for securing the deposit of them (as far as possible) in the Ashmolean Museum.

Artists' General Benevolent Institution. At the annual dinner of this excellent Institution, to be held on Saturday, May 10th, the Right Hon. Sir R. P. Collier will preside. Eighty-six applicants were relieved last year with the sum of 1,545*l.*

The Builder.

VOL. XXXI.—No. 1578.

The late Sir William Tite.



UR readers are aware of the death of Sir William Tite, which took place on the 20th ultimo, at Torquay. Sir William had suffered for many years past from bronchitis, and, in consequence, spent his winters away from London, sometimes in the South of France and sometimes at Torquay. The immediate cause of his death was congestion of the lungs, brought on by a chill caught on Easter Eve. His strength rapidly failed, and finally, after a week of painless malady, he sank from exhaustion. His remains were brought to London, and interred in his family vault at Norwood Cemetery, on Saturday, the 26th; the funeral, which was very plain, according to his express ...sire, being attended only by members of the ...mily, Mr. Edward N. Clifton, and two or three ...hers. The procession, however, was met at the ...metery gate by many old friends desirous of ...owing their respect, amongst whom were ...ofessor Donaldson, Mr. John Gibson, Mr. ...race Jones, Dr. Dalrymple, M.P., the presi...nt of the Society of Antiquaries, and several ...embers of the Royal Society, the Society of ...tiquaries, and other societies of which the ...ceased gentleman was a member, while his ...d friend the Rev. Wm. Rogers, the rector of ...ahopsgate, read the service.

Sir William Tite was the only son of Mr. ...thur Tite, a merchant who carried on the ...siness of a Russia merchant in the parish of ... Bartholomew the Great, in the City of ...ndon. According to the custom of the time ... the mercantile community, Mr. Arthur Tite ...ed in the house which contained his counting...use. In that house, long since pulled down, ...r. William was born, in February, 1798. He ...ceived his education at a day-school in ...ower-street, and was distinguished as a very ...telligent energetic lad. Amongst the useful ...ings at that day much thought of and ...ry carefully taught, but now almost entirely ...glected, was writing. Sir William was remark...le for his penmanship, an accomplishment ...hich he retained all his life. It was a favourite ...rprise of his in later days to challenge his ...mpany to a trial of writing,—a challenge ...illingly taken up, for his ordinary hand...riting was not over legible,—and Sir William ...ould then produce, by taking a little pains, a ...ecimen of writing which was usually unsur...ssed. At the age of fourteen he was ap...enticed to Mr. Laing, an architect of repute ... that time, who was engaged on the then ...portant work of building the Custom House. ...uring his apprenticeship Sir William pursued ...s professional studies with the greatest ardour, ...d acquired what was at that time rare know...dge and skill as a Gothic architect. Soon after ...e termination of his apprenticeship his father ...ed, leaving him a competency; but this, so far from having any enervating effect on his energies, seemed to strengthen them, and he had the good sense to pursue his profession, of which he was independent, and to use his fortune in furtherance of his career. He began business on his own account, having his office in Jewry-street, and soon, by means of his connexion, of his great activity, and intelligence, became known in his profession as a young man of considerable promise. While in the office of Mr. Laing, the restoration of the church of St. Dunstan in the East was mainly carried out by him. He was assistant-surveyor of the parish, and as such received, in 1821, a vote of thanks from the Vestry for the zeal and ability evinced in the restoration of the church.

The first known work in his own name was the building of the Scotch Church for Edward Irving in Regent-square, Gray's-inn-road,—a church which was at the time highly thought of, and is still considered a very fair specimen of its class considering the date of its erection.

In 1832 he was married to Emily, daughter of H. Curtis, esq., of Herne-hill, who survives and mourns him.

At this time Sir William pursued his career with unabated ardour, and was in the habit of sending designs for almost every public competition.

In 1840, when the competition for the Royal Exchange was announced, it was considered naturally a great prize, and most of the leading architects of the day contended. Amongst the many unsuccessful candidates on this occasion was Sir William, and he owed his after appointment to the circumstance that none of the premiated designs were considered suitable, whereupon the Gresham committee, who were charged with the conduct of the matter, decided to abandon the principle of unlimited competition, and to request five architects of high standing to send in designs from which the most suitable was to be selected. Sir William's influence and character were such that he was invited, in company with Professor Cockerell, Sir Chas. Barry, Sir Robert Smirke, and Mr. Gwilt. The three last-named gentlemen, however, declined, and ultimately the committee decided in favour of Sir William. His design, as every one knows, was carried out, and at once placed him in the first rank of his profession. Soon after the Royal Exchange was begun, Sir William was requested to prepare designs for new Law Courts for the City, and it will surprise some to hear that the style he adopted was Late Gothic or Tudor. He afterwards undertook but few works of an artistic character. The best known of them are the London and Westminster Bank, in Lothbury, executed by him in conjunction with the late Professor Cockerell; the original Vauxhall Terminus of the South-Western Railway, and the Terminus of the same line at Southampton; the Blackwall Terminus of the London and Blackwall Railway; the termini and most of the stations on the Caledonian and Scottish Central Railways; stations on the line from Havre to Paris; the London station of the Woking Cemetery Company; and several other buildings intended for commercial purposes. The stations on the line from Yeovil to Exeter he executed in conjunction with Mr. Edward N. Clifton, with whom he had been connected more than twenty years at the time of his death. One of his most recent architectural works was a memorial church, Byzantine in style, at Gerrard's Cross, of which a view and particulars will be found in the volume of the *Builder* for 1859.* In this he was assisted, as on some other occasions, by the late Mr. Trotman. It is a brick building; the plan, a Latin cross; with an octagonal dome at the intersection. The general design grew out of the study of the monuments of Pisa, with which were connected some associations in early life on the part of Major-General Reid, in whose memory it was erected at the cost of his sisters.

His endeavours to get the Exchange well decorated should not be overlooked. He brought in Mr. Sang to adorn the ceilings; and it was no fault of Sir William's if the pavement be not fine mosaic. It was so laid down, but failed. He desired, also, to have all the iron gates electro-bronzed; but it could not then be done. He was known as a very skilful constructor, an admirable man of business, and of untiring energy, and was thus naturally associated with the Stephensons, Locke, Brassey, and the other distinguished men connected with railway works then going on rapidly in all parts of the country. He was also largely employed as a surveyor in the valuation, purchase, and sale of the enormous quantity of land required for such undertakings. In these and other ways he added very largely to the fortune he inherited from his father, pursuing his career with unabated energy till 1851, when he fell a victim to hard work, and was brought nearly to death's door by a very severe illness, which necessitated a temporary relaxation of business. This he employed by a journey in Italy, whence he did not get back till the middle of the following year. We printed some interesting notes which he sent us from Florence on that occasion.

Sir William had few pupils. Professor Hayter Lewis was with him for two years, and then travelled abroad with his nephew, Mr. Arthur John Green. But in his office, in various capacities, were Mr. Trotman (since dead), Mr. Arthur Baker (Baker & Wadmore), Mr. Charles Bailey, now in the office of the City architect, and Mr. J. H. Steinmetz, who has since left the profession.

Mr. Steinmetz promptly came forward a few days ago in the *Times* to deny the truth of an assertion, unwisely made by Mr. Harley Grellier, that Sir William had merely adapted Mr. Grellier's father's design for the Royal Exchange to the requirements of the Gresham committee.

On the return of Sir William from Italy he resumed his career, but with less ardour, and being the possessor of a large fortune he became ambitious of taking a place in Parliament. In 1854 he unsuccessfully contested Barnstaple, but in the following year, on the resignation of Mr. Phinn, and at the invitation of the Liberal electors of Bath, he stood for that borough, and was elected. From the time of his entry into Parliament he gradually abandoned his profession, devoting himself instead to all manner of public affairs. As a governor of Dulwich College he took a very active part in its revival. As a governor of St. Thomas's Hospital his share in the work connected with the transfer of the hospital from London Bridge to Lambeth was very great. As a member of the Metropolitan Board of Works he had much to do with the construction of the Thames Embankment. At the London and Westminster Bank, of which he was a director; at the Bank of Egypt, of which he was chairman; at the Assam Company, of which he was deputy-chairman, he was a constant attendant. He was amongst the first to respond to his friend, Mr. Rogers's, call for middle-class education in London, and to give his money and advice in the founding of the Cowper-street Schools. He was president of the Architectural Society, which preceded the Institute of Architects, and twice president of the latter. Through this body he received in 1856 the Royal Gold Medal annually awarded by the Sovereign for the promotion of architecture. As a member of the Society of Antiquaries, and ultimately vice-president, he found many occasions to promote its objects. As a fellow of the Royal Society, and at times member of the council, he took a great interest in its proceedings. On the death of the Marquess Camden in 1866, he was elected president of the Camden Society, and signalised his

* Vol. xvii., pp. 588, 616, 617.

accession to this last office by presenting to the members the "Diary of John Manningham," admirably edited for him by his friend the late Mr. John Bruce, F.S.A. He was for a long time honorary secretary to the London Institution. He was also largely engaged as director and chairman of several important companies connected with the banking and insurance world; and was a trustee of the Soane Museum. He was a magistrate for Middlesex and Westminster, and also for Somerset, and a Commissioner of Lieutenancy for London. He was vice-president of the Administrative Reform Association, which was not a success, and a director of the Globe Assurance Company, of which at one time he had the management on his hands. The conduct of the secretary, and the loss which consequently fell on the company, caused Sir William much distress, and led to a serious illness.

The death of his nephew, Mr. Arthur John Green, which took place suddenly, at a family dinner party, on the 12th of December, 1855, was another and a heavier blow, and long affected him. Mr. Green, who was in his thirty-fifth year, when he died, held the appointment of architect to the East-India Company, and was surveyor to the Globe Insurance Company. A note to us from Sir William immediately after the event, shows the relationship existing between them:—

"Green [he says in the course of it], was my son in every sense of the word. He never gave me an anxious thought or a care in my life, and from the age of fourteen was always with me."

In Parliament Sir William introduced and carried the Metropolis Local Management Act, 1864, and he promoted, with Mr. Ayrton, the Metropolis Improvements Bill, 1867. He was, moreover, an active member of committees, amongst which was the committee appointed to report on the subject of the Bank Charter. He always took an earnest part in any debate on questions with which he was known to be acquainted, such as architecture and public works, and supported Lord Palmerston in insisting that the style of the Foreign Office buildings should not be Gothic. He headed a deputation to Lord Palmerston on the subject, and after the interview, wrote to us thus:—

"I am sorry you do not agree in the deputation of architects; surely they had as much right to go and know more about the matter than Lord Elcho's deputation. A great professional wrong I feel has been done, merely to push forward a style of architecture I abhor. I know as much about Gothic, and admire it as much as any man, but this Lombardo-Veneto, is 'neither fish, nor flesh, nor good salt herring.'"

Although elected to Parliament as the representative of a particular interest, he had long outlived party, and his death is mourned in Bath, for which city he sat eighteen years, and his good qualities are admitted and extolled, equally by political opponents and supporters. The last formal recognition he received in Bath was the recent presentation by his friends to the city of a marble bust which is to be placed in the lobby of the Guildhall. When his death became known there many tradesmen put up their shutters, the flag on the abbey tower was raised to half-mast, and a knell was tolled at the Abbey and St. Michael's Churches.

With general politics, on the other hand, he did not meddle, contenting himself with voting with his party. In connexion with a committee appointed by the Government to inquire as to the stone of the Parliament Houses, Sir William acted as chairman. In recognition of his public services the Government of Mr. Gladstone, in 1869, made Mr. Tite a knight, and, in the following year, a Civil Companion of the Bath: thus a life of great activity and public usefulness was fittingly crowned with public recognition.

In private life Sir William had many attached friends, who sincerely mourn his loss. Gifted with rare good sense, an extraordinary memory, and inspired with a great love of knowledge, he contrived, notwithstanding his constant occupation, to amass a great deal of learning. He was acquainted with Latin, French, German, and Italian, mostly acquired by diligent application after he had left school. With English literature his acquaintance was very great, and he had a general knowledge of most sciences, so as to be able to take an intelligent interest in their progress. As an author, he was known by his "Descriptive Catalogue of Antiquities found in the Excavations of the New Royal Exchange," and by various essays and lectures. He was a painstaking and prolific writer on archæological and architectural matters; a frequent contributor to the *Archæologia* of the Society of Antiquaries, and was the author of many "Sessional Papers," in the "Transactions of the Royal Institute of British Architects."*

He was the friend of all persons who knew anything thoroughly, and nothing pleased him more than assisting them with his influence and his purse. In his charities he was munificent, so that a public subscription without his name in the list of subscribers was rare. So great and well known was this liberality, that it was thought he would devote a great part of his large fortune after his death to public purposes. This, however, is not the case; for, content with a wide and munificent liberality during his life, he has left but one bequest by his will to public purposes, and that is the sum of 1,000*l.* to the Royal Institute of British Architects. The 1,000*l.* to the Middle Class Schools, and 500*l.* since towards a hall for the schools; 1,000*l.* towards the restoration of St. Bartholomew's, Smithfield; 1,000*l.* to St. Thomas's Hospital; and 1,000*l.* towards the Fund for the Orphans of Artists, established in connexion with the Artists' General Benevolent Fund, are donations that will be remembered. He had also founded a scholarship in the City of London school, called the Tite scholarship; a bursary in St. Thomas's Hospital, to which he also contributed an altar-piece (by Horsley), having for subject "Christ the Physician"; and contributed largely to the fund for the decoration of St. Paul's Cathedral. He had a large professional income, probably 10,000*l.* a year, for many years; and we shall not be surprised to hear that he has left behind him half a million of money.

The London Institution possesses his portrait, painted when a young man, by Mr. Renton; and his bust in marble, done in 1870, by Mr. Theed; and the Institute of Architects has his portrait, painted by Mr. J. P. Knight.

Amongst his friends he was deservedly popular. His prodigious memory enabled him to have recourse to an unfailing stock of anecdote, and his collection of old songs heard in youth was very great. We can remember him quoting as many as twenty English proverbs having reference to one particular subject, and referring to many books for others. Sir William's love for art was shown by the pictures he purchased, amongst which are works of the highest excellence: the "Interior of St. Stephen's, Vienna," by Roberts; "Dort, on the Maes," by Clarkson Stanfield; and "Raising the Maypole," by Goodall; besides many others of great merit. He possessed also a liking for old china, of which he had some excellent specimens; and for artistic silver and ivory work, some varieties of which were in his cabinets. His chief passion, however, in this direction was for choice and rare books, so that his library is one of the most interesting and valuable private collections in the kingdom, comprising, amongst other rarities, copies of most of the quarto Shakspeares published during the poet's life, and of the first, second, third, and fourth editions; also original editions of most of the early English poets and dramatists; a most valuable collection of early Bibles, including Coverdale's and Cranmer's; many beautiful and rare missals, and other illustrated manuscripts; a large and most interesting collection of autographs of distinguished historical and living personages; and many of the works of Caxton and Wynkyn de Worde.

Very early in his career Sir William manifested his interest in the study of antiquities. When the existence of remains of great value at Halicarnassus became known after the return of Mr. Fellows from Asia Minor, Mr. Tite interested himself in calling the attention of the Government to the facts. A deputation of the Architectural Society attended Lord Palmerston, before whom Mr. Tite and the honorary secretary, Mr. Grellier, laid all the authorities they had collected with reference to the existence and condition of the ruins. Lord Palmerston promised he would write to Lord Ponsonby and Admiral Stopford on the subject, and, being pressed by other bodies also, the result of the negotiation was that the remains were obtained, as every one now knows, for our national museum, where they form a most important link in the historic chain of Grecian art.

In 1863, when passing through Chester, Sir William Tite's attention was drawn to some Roman remains discovered during the rebuilding of the old inn, called the Feathers, in Bridge-street, a building supposed to be of the time of Edward III. He afterwards caused a plan of the remains to be made, attempted a restoration of the building, and read a paper on the subject at the Society of Antiquaries. He considered that public baths had occupied two sides of an open court, and that in the centre of this court was a small temple, or shrine, supported by columns and roofed.* A local antiquary, who without Sir William's knowledge had been investigating the matter, resented his interference, and differed from him in opinion with what seemed to us very unnecessary acerbity. We said then, as we should say now, "Why such an amount of temper should have been shown because of a well-meant and kindly effort, followed by a most courteous and reasonable explanation, must still remain a modern 'Chester Mystery' though no Miracle."

We have mentioned in the course of our too-hastily written memoir the election of Sir William Tite to the presidency of the Institute of Architects. This was not obtained without an effort. There were two points at issue, the question of a professional or non-professional president, and the question of Gothic *versus* Classic. The first had been a subject of long discussion earlier, and had been settled by the election of Professor Cockerell. One of the incidents on that occasion which strengthened the views of those who desired a professional president, at any rate occasionally, was the omission of a representative in the Commission for the 1851 Exhibition, which was thus alluded to by Sir William:—

"Mon cher Godwin,—I wrote you a note from the City to-day amidst many interruptions, and therefore told only half my story. It was like Hudibras's

'Adventure of the Bear and Fiddle,
Begun, but broke off in the middle.'

I meant to say further that they tell me that Earl de Grey mentioned 'that he was invited to be on Prince Albert's Commission as President of our Institute, but that he declined on the score of age and ill health.' Surely this makes for our view most strongly, because the result is most unfriendly to us as architects, and that owing to this unhappy accident we are unrepresented as a class, and but for this accidental explanation were considerably snubbed."

At the close of Professor Cockerell's reign, 1861, the question again arose, and Sir William was looked to as the professional representative, Mr. A. J. Beresford Hope (to whom the profession owes much) being put up on the other side. Sir William hesitated for some time when asked to stand, as the following letter shows:—

"I have carefully considered the question you suggested to me yesterday, as to the presidency of the Institute. It is an office of some responsibility and labour. It has been well filled, particularly by my friend's (the present president) learning and position in the scientific world. These are reasons which induce me to hesitate, particularly the demand on my time.

But I think there are occasions on which men ought not to shriuk from an obvious course of duty, and so far as I am concerned, from the part I have taken in the questions concerning this very honourable office, I think I ought not to decline.

But if I come forward, I could only do so under the condition that my appointment would be acceptable to the council and the Institute. It is an office I do not seek, and nothing would induce me to canvass for it, or to embark in any contest. I think the circumstances arising from the Great Exhibition in 1862 important in their bearing on our profession; and if I were elected, God granting me health, I would do my best to support the dignity and importance of the office at that time; but, as I said before, nothing would induce me to come forward, without feeling that my doing so would be generally acceptable."

However, he assented, a sharp struggle took place, into the particulars of which we need not go, and he was elected. On the next occasion, the same honour was very properly conferred on Mr. Beresford Hope.

We must now, however, bring our notice to a close. "I inherited a fortune, I married a fortune, and I have made a fortune," the subject of it said to us more than once. "What a lucky

* For example, in the latter will be found,—"Proceedings taken in building the Original Exchange, by Sir T. Gresham, and that built in 1666; with some account of the Antiquities discovered in preparing for the foundations of the present building."—December 15th, 1845. "Recollections of a Course of Lectures on Architecture, delivered at the Royal Academy, by Sir J. Soane, 1817."—November 3rd, 1847, and April 17th, 1848. "A Letter from Rome."—May 17th, 1852. "Remarks on the Present Condition and Future of Architecture in England."—November 5th and 19th, 1855. "Recent Discoveries of the Remains of the Mausoleum at Halicarnassus."—November 1st, 1858. "Progress of Architecture in Europe since the Establishment of the Royal Institute of British Architects."—November 7th, 1859. "Address delivered at the First Meeting of the Royal Institute of British Architects in the New Rooms, Conduit-street, November 7th, 1859."—8vo., 1860. "Stone-Preservative Processes."—January 28th, February 4th and 11th, 1861. "Some Information relating to the late Mr. Elmes, Architect of St. George's Hall, Liverpool."—November 30th, 1863. "On the Paris Street Improvements, and their Cost."—December 14th, 1863. Four Opening Presidential Addresses (November 4th, 1861; November 3rd, 1862; November 2nd, 1863; November 1st, 1869.

* *Builder*, vol. xxiii., p. 109, and p. 167.

man!" replied the Prince of Wales, at the dinner in aid of the fund for artists' orphans already alluded to, when this remark was repeated to him. And so he was a lucky man, but he was also an able and energetic one—a man of acute perception, rapid judgment, and firm decision. He was a rough diamond, at times impatient of opposition, and with little consideration for any who attempted to impose on him. On the other hand, he was munificent to a princely degree, generous to every claim of misfortune, and a real lover of literature and the arts. The profession has lost a true friend, and society a good citizen, by the death of Sir William Tite.

ARCHITECTURE AT THE ROYAL ACADEMY.

THE collection of architectural drawings hung this year at the Academy shows a very high standard in regard to draughtsmanship, while in regard to design the proportion of quality to quantity is on the whole decidedly above the average. Church architecture is in great force on this occasion, and to this branch of the collection some of the leading designs in the late competition for Edinburgh Cathedral form, as might be expected, an important contribution. Sir G. G. Scott exhibits the interior and exterior perspective views of his design (1,119, 1,156); both of them beautiful specimens of line drawing, the interior particularly so, although its excessively "conservative" character renders it, in point of design, unsatisfactory to those who look for something more in modern architecture than archæological exactness. The exterior view is more interesting as a design, mainly owing to the fine treatment of the central tower and spire; but whether this portion of the building is not on a scale somewhat disproportionate to the rest of the structure may be questioned. The angle turrets which flank the octagon stage for the tower, and which are mere accessories, dwarf every feature of a similar nature in the rest of the design. Mr. Street's interior and exterior designs are also exhibited (1,132, 1,143): the former, shown in a coloured drawing, with a wooden vault decorated in colour, offers little for remark; the latter, a fine pen-and-ink drawing, exhibits in the treatment of the admirably considered western tower a thoroughly characteristic originality. The main portion of the building is marked by that ostentation of simplicity (as we should term it) which has been affected of late by some of our architects, and which is carried to even greater excess in some other drawings exhibited. Mr. Burges's exterior design for the same building is shown in a beautiful water-colour drawing (1,133); the treatment of the spires and flèche is most picturesque, but perhaps a little too prettily piquant for the substructure. It is worth notice that the roof of the aisle surrounding the apse does not slope direct from the main work, but a flat is left at the junction of the roof with the wall, upon which the buttresses between the clearstory windows of the chancel are stopped. This is better than the usual method of letting the clearstory buttresses cut into the slope of the aisle-roof; but we question whether, in any case, a buttress ought to be brought down into a roof in this way without its thrust being visibly and externally carried across the roof to the outer wall. Mr. Burges's interior design (1,148) is a noble drawing, showing a general treatment very similar to that of his Cork Cathedral. The spandrels and piers of the nave arcade are slightly and happily decorated by colour laid upon the stone as a ground,—by far the best way of applying colour to a stone interior,—at least, in a building aiming at monumental character. Among ecclesiastical architecture, and as, in some respects, the most important contribution, we must reckon Mr. Brewer's fine drawing of Mr. Penrose's scheme for the decoration of the choir of St. Paul's (1,155). The interior surface of the dome which forms the crown of each compartment of the vault is divided into panels, varying in design in each compartment, the panels being alternately occupied by gilt arabesques and by heads of angels, as far as can be perceived (the drawing is hung too high to be fairly studied); the pendentives being occupied by entire figures. The general effect is rich and harmonious, and has the additional merit of giving (through the subdivision into panels) scale to the architecture. The organ, placed on each side of the western choir-arch, between the pilasters, scarcely appears otherwise than as an excrescence on the architecture, with which we think it might be less abruptly combined, by altering the manner of carrying in it, though in other respects this, as we have before said, is probably the best position in which the instrument could be placed, for the combined interests of architecture and music.

Among the designs for churches of a less ambitious type, we find Mr. Brooks's "St. Mary's, Wednesbury" (1,115), an unpretentious coloured drawing of a building looking wonderfully like a genuine Mediæval church, which may be taken as a compliment, or the reverse, according to the reader's proclivities. The same architect's "St. John Baptist Church, Kensington" (1,145 1,172), shows far more of his characteristic talent and temper in design, both in its merits and defects; the former consisting mainly in the bold massive treatment of the tower, with its low short spire, with curved lines; the latter consisting in that exaggerated sternness and contempt of all ornamental accessory which gives to the rest of this church the expression of a Mediæval fort or bastion rather than a house for divine worship. This stern simplicity of character is exhibited also in the "Schools and Church at Clapton" (1,185), which is, nevertheless, a very pleasing group of building; the church is decorated by a light iron belfry, which, whether by accident or intention, is shown on one side of the ridge, instead of on its centre; a whimsicality for which there can be no possible reason. We have no admiration for "cork-cutting" architecture, and the power shown in many of Mr. Brooks's designs is undeniable; but there is a medium short of absolute baldness and naked stone walls; which latter, apparently, will soon come to be considered the consummation of architectural effect. Mr. Norman Shaw's "St. Michael's, Bournemouth," again (1,170), though scarcely anything from his hand can be without interest, is literally barn-like in appearance; the "saving clause" lies in the characteristic treatment of the double-staged belfry, placed at the south-west angle parallel with the south wall of the nave; and which, moreover, looks as if the bells really could be swung in it without bringing it down, which many belfries do not show. Mr. J. P. Seddon's church of St. James, at Yarmouth, a three-aisled building successfully modelled on the type of the grand old Church of St. Nicholas, in the same town, is illustrated in a good water-colour drawing by Mr. Howard Saye, who has also executed drawings of the same architect's staircase at Aberystwith College, and of his design for the stall-work for the choir of St. Nicholas Church, above mentioned. Mr. Pearson's churches, at Wentworth, Yorkshire, and Kirk Braddan, Isle of Man (1,116 and 1,124), are scarcely up to his mark in point of design, judging from these drawings. The first-named is, for a clever architect, a very commonplace thing, with a thin, starved-looking spire. The second has more of character, but we should doubt whether either of these buildings will add greatly to its architect's reputation. Mr. Conybeare's church, in Cromwell-road, is shown by a very highly-elaborated water-colour drawing of the interior (1,127), which is in an Early Gothic (Romanesque) manner, but presents nothing new in treatment, if we accept the assiduity with which the roof is "powdered" everywhere, with three distinct "orders" of powdering; the exterior (1,152) shows some novelty in grouping. The church built by the corporation of Liverpool, from Mr. Robson's designs (1,128), looks a solid but not very beautiful building; the drawing (a pen-and-ink one) has been somewhat over-laboured; it is a great thing to know "where to stop" in this style of execution, which the great success of one or two clever draughtsmen has made popular. Mr. Pugin's "Tower and Spire of the Carmelite Church, Kensington" (1,129), is a really artistic design; ornament is applied where it will add to the effect, and not elsewhere; the basement is solid, the upper portion very gracefully treated, and the result is a very harmonious and well-balanced work. A couple of churches of the Basilica type (Italian) present themselves among their Gothic compeers, and must be noticed, if only for the rarity of such apparitions. "St. John's Church, Hull, as about to be Re-modelled," by Mr. C. G. Wray (1,122), does not present much of interest, nor can we discover from the drawing how much is original and how much is remodelling; but we must point out to the architect that he has hit upon a most unhappy treatment of the roof, in making his two queen-posts take the form of pilasters (or square columns), and apparently stand on the back of the tie-beam: they should be altered in form so as to appear as what they are, viz., pieces of timber in tension, and not as if *supporting* the roof above, and throwing an apparent cross-strain on the tie-beam. The other Basilica design is Mr. Heffer's "Church of St. Bridget, near Liverpool" (1,153), the interior of which looks well in the drawing, which has been very carefully executed. Of this, as of several other designs mentioned, illustrations have been given in our pages. Mr. Somers Clarke, jun., exhibits a large sketch of the chancel of St. Martin's Church, Brighton, which is satisfactory in general appearance, but presenting nothing for comment. The exterior (1,203), shown in longitudinal elevation, is plain to extremity, but presents in the rather short square tower and conical roof (rather than spire) a certain novelty in the treatment of this important feature in regard to general outline and fenestration, which may be characterised as consisting in an application of the Campanile type to a church essentially Gothic in most of its features. Among the ecclesiastical designs we may class the elaborate drawing representing Sir G. Scott's design for a new reredos for the grand (though "late") Church of Boston. This, like some other drawings in the room, is hung too high to be very well examined. It appears to consist of a gilt metal-work design, having a shrine in the lower portion containing canopy-work and figures illustrative of sacred subjects, and closed by doors (shown standing open in the drawing), the interior surfaces of which are ornamented by figure-subjects in bas-relief. Below the principal shrine is a bas-relief of the Last Supper, closed by a door opening downward, and covered with elaborate ornamental work on the interior in low relief. Above the principal shrine the design culminates in a glitter of mimic pinnacles and turrets. There can be little doubt that this reredos, when executed, would form a brilliant object at the extremity of the noble nave of Boston Church.

Of the larger class of buildings for public and municipal objects there are not many designs exhibited. Of those which are to be seen, the most important, as far as size and elaboration of drawing are concerned, is Mr. Emerson's design sent in competition for the Berlin Houses of Parliament, which, however, has merits beyond mere draughtsmanship. The architect (whether from a belief in its fitness for the locality, or from a wish to puzzle the judges in the competition as to his nationality) adopted to a considerable extent the feeling and character of the Gothic architecture of Germany, a choice which has led him to indulge in an outburst of "pinnacles" and an exuberance of open stone panelling in spires and cupolas, altogether at variance with the sober though rather heavy style which his drawings have usually exhibited. But there is breadth of treatment and composition in the lower portions of the design; the ground-floor story is particularly good, and the double tier of statues which form the base to his large angle tower have a fine effect at that point. The upper portion of the building sprouts into multifarious turrets, in the true style of a competition drawing. Professor Kerr's sketch for the same building (1,138) is a dignified "Classic" composition, with a lofty central dome and a large, low hemispherical cupola at each of the angles. The grand staircase of the Goldsmiths' Hall, carried out under the superintendence of Mr. Hesketh (1,113), looks well in the drawing as it does in reality; the effect, obtained chiefly by variously-coloured marbles, is sufficiently rich without bordering on vulgarity or ostentation. The entrance to New Burlington House, as seen from the interior of the quadrangle, is not happily delineated in the drawing (1,118), and certainly does not look as well here as in the reality; and the perspective of the upper angle of the centre block is faulty, the angle being too sharp. One or two fearful exhibitions of "engaged" columns and culminating "pots" of course occur among the public buildings illustrated, which we will pass over with a word of thankfulness that at least they are fewer than we have seen in previous exhibitions. Mr. Watson's "Premiated Design for St. Ann's Heath Asylum" (1,135) is about equal to most buildings of its class that are erected, but is noticeable for a somewhat original treatment of the upper stage of the tower, which, good in itself, is unfortunately quite too heavy for and out of keeping with the lighter and more ornate detail of the lower part. To treat the upper portion of a tower in a striking manner, without in any way clashing

with the substructure, is a difficult *crux* for the architect, not (apparently) very often surmounted. Mr. Green's design for the Berlin Houses of Parliament (1,163), ambitious as it is, can scarcely, we fear, be accepted as contributing much to the advancement of the art; nor can we regard the design for the Brighton Aquarium, by Mr. Nightingale (1,179), as a success: it is an unfortunate adaptation of a poor phase of Gothic architecture, and has no relation in general treatment to the object for which it is constructed. Mr. Street exhibits a view of the Central Hall of the new Courts of Justice, the general treatment of which is well known. A design sent in competition for the proposed Conservative Club at Manchester, by Mr. Collcutt, has very praiseworthy qualities, in regard to solidity and breadth of treatment of Early Gothic. It fails in regard to its object, not conveying the impression of a club-house, chiefly through want of due emphasis and importance, in regard to scale and decoration, in the window-tier of the principal floor.

As to the designs which may be classed under the head of "domestic architecture," two or three of which are of remarkable excellence, we shall have something to say in our next. We must defer also any detailed mention of the paintings in this year's Academy. In the meantime, it may be observed that while those who expected a higher general average of works than usual this year will, we fear, be disappointed (a hasty inspection appearing to reveal to us fully the usual proportion of pictures which one cannot see "any reason for"); on the other hand, some of the best of our well-known contributors exhibit works of more than usual excellence. Mr. Millais's portrait of Mrs. Heugh is behind none of his best efforts in portraiture, and even superior to one or two of those which have been most talked of in former exhibitions. Mr. Poole is even more weird and impressive than usual in his colour harmonies in "A Lion in the Path," a picture on a larger scale than is usual with him; Mr. Leslie's English girls in Greek dress look as charming as ever in "The Fountain;" Mr. Calderon's "Moonlight Serenade" is in a double sense very striking; Mr. Brett has surpassed himself in his intense realism of sea-shore colour and detail "Among the Granite Boulders"; M. Alma Tadema touches a deeper chord than his wont, though with all his wonted executive power, in the "Death of the First-born"; Mr. H. Moore has seldom interpreted the poetry of nature to us as he has in his "Storm coming on at Sunset"; and Mr. MacCallum has thrown an almost unearthly glow over the rugged countenance of the Memnon statue. Other old acquaintances—Mr. and Mrs. Ward, Boughton, Pettie, Elmore, Storey, &c.—are here "in good form"; nor must we forget our slayer of dragons, Mr. Poynter, who has contrived to render the "Dragon of Wantley" (unpromising subject as he may seem) both more interesting and more "possible-looking" (if one may be allowed the phrase) than his marine predecessor of last year; and, to jump at one bound from Mediæval romance to the most realistic modern life, M. Tissot has fairly out-Tissoted himself in his studies of character and expression, in "Last Evening" and "Too Early." The latter (No. 914 in the catalogue), commonplace as the subject may be deemed, is certainly one of the cleverest things, one of the most perfectly successful within its own range, that has been exhibited at the Academy for a good while. The first guests at a dance, an old gentleman and some young ladies, have arrived a moment or two sooner than they were expected, and find their hostess, instead of being in waiting to receive them, in the corner of the room, giving her last instructions to the musicians. The careful, earnest attitude of the hostess, the various expressions of the musicians as they look over the music or handle their instruments, the half-embarrassment, half-amusement of the early arrivals, the nonchalant coolness of the charming young girl who expects to be the belle of the evening, are given with a truthfulness and delicate perception of the humour of the "situation," for a parallel to which we must look in the novels of Jane Austen, the great painter of the humour of "polite society."

Proposed Cottage Hospital at Coleford.—The idea of erecting a cottage hospital here is at length assuming a practical form. A site for the hospital is being looked for, and it is said the liberality of one of the largest employers of Forest labour will be appealed to to furnish it.

ART-UNION OF LONDON.

THE annual meeting of this society for the distribution of prizes, was held in the Adelphi Theatre on Tuesday last, Lord Houghton, president, in the chair. There were present, amongst others, Messrs. Pocock & Antrobus, hon. secs.; Mr. Frost, R.A.; Sir Walter Stirling; Professor Donaldson; Mr. F. Bacon, engraver; Mr. Wm. Smith, F.S.A.; Mr. R. B. Batterworth, F.S.A.; and Mr. James Hopgood.

Mr. Pocock read the annual

REPORT.

The amount of subscriptions for the year now ended is 11,260*l.* 14*s.* 6*d.*

The Council cannot but feel that to have collected so large an amount, in the face of the present exceptionally high price of nearly all the necessaries of life in all quarters, is a most satisfactory proof of the interest felt by the people in the promotion of the Fine Arts, and of the perfect confidence in the good faith and earnest endeavours of this Society to carry out the principles on which it was established; notwithstanding the persevering endeavours of the managers of numerous schemes which borrow the name of the Art-Union, and improperly endeavour to avail themselves of the services of its agents, although such projects were never contemplated by those who framed the Act of Parliament by which our proceedings are sanctioned.

The plate of "Rebekah" has justified the anticipations of the Council that it would give satisfaction to the subscribers, a large proportion of whom are already in possession of their impressions, and the remainder will be supplied with all possible despatch.

Vacancies in the Council have been caused by the retirement of the Hon. Alf. Bagot and Mr. Chas. Mayhew. To fill these the Rev. Ed. Coleridge and Mr. Jas. Anderson Rose have been elected.

The warm thanks of the Society are due to the various local secretaries and agents, both at home, and in the colonies, and foreign countries. Our relations with Australia, New Zealand, Canada, and the United States, are continually increasing; eight new agencies having been established during the past year. From Australia and New Zealand the subscriptions received last year amounted to 1,088*l.*; from Canada and the United States to 433*l.* Surprise is often expressed at the large number of prizes which generally falls to members in these distant lands, but, on examination, it is not found to be larger than the amount of their contributions would lead us to expect.

On this occasion the Council would wish to mention, as having contributed largely to the funds of the year by their exertions, Mr. Wright, of Hackney; Mr. Hassé, Leeds; Mr. Sinclair, Dundee; Mr. Dicker, Dunolly; and Mr. Hanlett, San Francisco.

The accounts have been audited by three members of the finance committee, and by Mr. C. S. Cartwright and Mr. W. T. Fearis, to whom thanks will be presently proposed.

The following is an abstract of the receipts and expenditure, a detailed statement will, as usual, be given in the printed report:

Amount of subscriptions		£11,260 14 6
Allotted for prizes	£5,616 0 0	
For print of the year, almanack, exhibition, report, &c. and reserve	3,208 19 10	
		8,914 19 10
Agents' commission and charges, advertisements, postage, rent, salaries, &c.		2,345 14 8
		£11,260 14 6

The amount to be expended on prizes will be thus allotted:—

22	works at	.....	£10 each.
22	,,	.....	15 ,,
14	,,	.....	20 ,,
12	,,	.....	25 ,,
12	,,	.....	30 ,,
10	,,	.....	35 ,,
8	,,	.....	40 ,,
8	,,	.....	45 ,,
5	,,	.....	50 ,,
4	,,	.....	60 ,,
5	,,	.....	75 ,,
3	,,	.....	100 ,,
2	,,	.....	150 ,,
1	work at	.....	200 ,,

To these will be added:—

1 Cameo "The Dancing Girl Reposing."
12 Bronze Townley Vases.
6 Etty Medallions.
300 Volumes of Etchings by the Etching Club.
100 Chromos of "Bellagio."
20 Statuettes "Wood Nymph."
50 Busts of Princess Louise.
20 Small Bronze Tazzas.

These, with the prizes given to unsuccessful members of ten years' standing, will raise the total number of prizes to 887.

The reserve fund now amounts to 16,762*l.*

For the year about to begin, a plate has been engraved in line by Mr. Arthur Willmore, from a picture by Mr. E. W. Cooke, R.A.; entitled "Dutch Trawlers landing Fish, off Egmont," and the painter and engraver together have produced one of the most effective and pleasing marine subjects ever engraved. The large round-bowed Dutch fishing-vessels are lying on the shore, where the tide is so low as to allow the men and women, who are carrying the fish away, to reach the sides of the boats on foot; and the wet sand, the waves dashing into spray against the sides of the vessels, and the swirls of the spent waves as they subside on the sand, are admirably rendered. Mr. Cooke's well-known proficiency in all matters connected with natural history assures us that the various kinds of fish, and the bits of seaweed and shells scattered about the beach, are all veritable portraits. The sails of the vessels just being lowered, one in shade, and the other lighted up by a watery gleam of sunshine, are finely relieved against the black ram-charged cloud behind them.

The continued demand by the members for impressions of "Tilbury Fort—Wind against Tide," a subject of kindred character, as well as the favour with which the eight plates of coast scenery were received last year, leads to the expectation that "Dutch Trawlers" will be a favourite.

Since the last annual meeting, several noticeable events have occurred in connexion with, or bearing on, the movement now going on for advancing the art-culture of the people. The Museum at Bethnal-green, a branch of the South Kensington Establishment, was opened with much state by the Prince and Princess of Wales, on the 24th of June last.

By the self-denying liberality of Sir Richard Wallace, his fine collection of works, which was made with unflagging energy and vast expense, has been, for twelve months past, freely open to the view of all classes of the people. It would have been well, perhaps, if some steps could have been taken by the authorities of the Science and Art Department to point out by lectures or addresses, to the large number of persons who are to be found in the galleries on the free days, those points in the productions of the different schools more particularly noteworthy in each case. A few remarks of this kind, from those competent to the task, invest a picture or other work with immensely increased interest, and give to the uninstructed the requisite knowledge for selecting for himself in other cases the particular points of excellence more especially illustrated in each work.

Some amongst the pictures and drawings, works of the old giants in art, insensibly lead to the reflection that, if our workmen may profit by studying the better class of antique specimens of inlaying, carving, &c., many amongst our painters may well take a lesson from the works of the old masters here, and those annually brought together and exhibited, evincing the outcome of superior technical education, the evident result of a more earnest and painstaking study, particularly of the human figure, as shown in the exquisite modelling of the hands and feet, and in general greater completeness of draughtsmanship.

It may fairly be hoped that such an improvement in the English school may result from the ample means now provided for giving our students a thorough training in the elements of drawing.

The neighbourhood of Bethnal-green was once inhabited, to a great extent, by a colony of silk weavers, driven to seek a home in England by the revocation of the Edict of Nantes, in 1685; of this industrious population few, if any, traces now exist, and although the decay of this branch of manufacture in this quarter, as in the neighbouring colony at Spitalfields, may, in a great degree, be traced to the introduction of power-looms, and the consequent decadence of the hand-loom trade, yet it may fairly be assumed that the workmen, no longer aided by that education in art which they had enjoyed in their native land, gradually deteriorated in the artistic quality and novelty of their work, and so lost that prestige which the superior taste and beauty of their productions long preserved for them.

In this neighbourhood there is, in the present day, a large number of workmen employed in wood-carving and cabinet-making; and it is a matter of congratulation, that, in the vicinity a school of art far workmen has been established, in which those engaged in the above, and cognate branches of industry, may receive elementary instruction in the principles of design bearing on their several trades.

Amongst the efforts now making in this direction, an encouraging example is offered by the Worshipful Company of Painters, who have lately established five prizes and medals for excellence in painting and graining.

This is not a fitting occasion for discussing the vexed question of admitting females to take part in the arena of political controversy, but there can be no difference of opinion as to the clearness of their intuitive perception of the beautiful and the true, and their keen appreciation of whatever stirs the noblest and most touching emotions of the mind, give them to an equal share with the sterner sex in the advantages of education in art. Had the female schools of art which now exist been established a century ago, we should not be confined to the small muster-roll of women's names who have become conspicuous for excellence in art. At the present time there are four schools in London, besides many in the provinces, employed in giving education in art to females. At South Kensington there are 348 pupils; in the Slade class, at University College, 60; in the Crystal Palace, 25; in the Queen-square, Bloomsbury, class, 181; and others.

The prizes gained by the pupils in the last-named school were, a few weeks since, handed to their recipients by her Royal Highness the Princess of Wales, and some of your Council were officially present on the occasion. Last year, the Queen's Gold Medal was awarded to Miss Solon (now Mrs. Fennessy), a pupil in the school, for a statuette of Cimabue, the great painter,—and, the Council, feeling that one of the chief objects with which this Society was established was to encourage rising talent, wherever it might be found, have purchased the model, and it will be produced in bronze, and form a part of the prizes for distribution on a future occasion.

Keeping the same end in view, the Council have commissioned Mr. Morgan, a young sculptor and die-engraver,—who has gained many prizes and certificates at the South Kensington Museum,—to execute a pair of dies for a medal of David Roberts, R.A.

The Council also commissioned Mr. Rouse to cut a cameo, in *pietra dura*, of Mr. Marshall's "Dancing Girl Reposing," and this will be one of the prizes.

Another matter of congratulation is the opening of the new building for the Library and Museum of the City of London. Since the time when the British Institution was founded, in Pall Mall, in 1805, by several noblemen and gentlemen, patrons of art, who purchased the lease of the gallery built by Alderman Boydell, down to the present time, there has not been a year without the gathering of a loan collection of works of art, at the West-end of Town, from one source or another, and an important improvement in public taste has resulted from this, amongst other causes; but east of Temple Bar nothing of the kind had ever been attempted, and it was a happy thought to inaugurate the opening of the building above mentioned by a collection of such works, and an exceedingly valuable and interesting exhibition was the result. Specially noticeable was the fine collection of engraved portraits, made with great judgment by Mr. James Anderson Rose, remarkable, not more for the beauty of the works, regarded as specimens of engraving and etching, than for the historical interest attaching to very many of the persons portrayed. An interesting selection of engravings, comprising works by Albert Durer, Marc Antonio, and Rembrandt and others, belonging to Mr. Alfred Morison, was another feature. Mr. Cook contributed a selection from his fine gallery of oil paintings, comprising examples of Murillo, Velasquez, Sebastian del Piombo, and others.

Mr. Gardner lent a series of engravings and drawings

illustrating the buildings of London, past and present, which, though being only a small portion of his collection, filled 1,300 frames. This large store of pictures of London must be most interesting, and has been got together by unwearying search and unbounded expenditure during many years.

The third of the series of the London International Exhibitions was opened on the 14th instant, and it was a sensible decision on the part of the Royal Commission to depart from the traditional observance of Mayday for opening the doors to the public, since Easter Monday, the first great holiday of the year, gave to so large a multitude an opportunity of benefiting by the occasion.

Each year's exhibition has its special features, in addition to the attractions of the fine-art galleries. Last year there was a blaze of gems in the Eastern galleries, jewels of almost fabulous value, and musical instruments of all kinds. The machinery exhibited was chiefly that employed in printing, and in the manufacture of cotton. This year cotton is replaced by silks, satins, and velvets, of exquisite brightness and beauty. There are, too, collections of drinking-vessels of all sorts; curious old hooped cups; vast leather blackjacks; tall gilt Venetian glasses; and the fragile and dainty ornaments of the modern table; besides tobacco-pipes of all kinds, and from all countries.

There are also carriages, ancient and modern, including sedan-chairs and the state coaches before which running footmen carried flambeaux a century and more ago, in contrast with the last novelties of Long-acre; and a praiseworthy attempt has been made to improve the quality of our London street conveyances, which now contrast so unfavourably with those of some provincial cities.

The fine-art display does not represent the schools of European art to the extent of former years; but there are paintings enough to enable us to appreciate the merits of living British, German, and Italian painters; and two large rooms are occupied by about 300 pictures of eminent recent Royal Academicians, John Philip and Thos. Creswick.

One novel feature in the International Exhibition of the present year is the appropriation of one section in the picture galleries to the works of amateur artists, officers in the army and navy. Many of these works deserve especial notice, not only from their illustrating scenes in countries not hitherto reached by artists, but as showing considerable skill and knowledge of art. The collection will be doubtless received with great interest, not only by the friends of the exhibitors, but by the public at large.

The exhibition of prizes last year took place, as usual, in the Gallery of the Institute of Painters in Water Colours, and many of the notices which appeared in the public journals especially noted the progressive improvement in the quality of the works selected, and some of them were disposed to attribute this to the circumstance of a larger number of the prizeholders, from year to year, coming to the Council for assistance in making their selection. However this may be, the improvement is undeniable, notwithstanding the increasing difficulty of finding good works unsold, and to those who may be fortunate enough to gain to-day the right to select works for themselves, the Council can only say, most earnestly, "Pray take care that the improvement above noted is fully maintained by your selections."

LEWIS POCOCK,
EDMD. E. ANTROBUS, } Hon. Secs.

The president, in moving the adoption of the report, said that in doing so he was embarrassed by a course which did not frequently occur, viz., the uniformity of success in this Art-Union, and also the absence of criticism. From the position he had the honour to hold he appeared before the meeting with pleasure, and had been asked to make some remarks upon the general condition of art in this country. But he always felt impeded by the circumstance that in so doing he was delaying the meeting in the excitement it would have when the wheel in front of them went round, to know if any of those present were fortunate enough to gain a prize. The condition of art in this country seemed to him to go on in a very wild but prosperous manner, if we might judge from the enormous prices given for art productions. In the struggle between capital and labour he thought that art got its fair share of capital. The reproach still continued that in this society we gave encouragement to mediocrity, but such reproach comes from a few persons who considered themselves so far raised that they could afford to look down upon others. He could not see how there could be a progress in the art-culture of any country unless it were made gradually, and so encouraged. By "gradually," he meant that men and women were to be led up to the commonest taste of perception, rising by a gradual process of culture, till they found their ideas elevated; and this was the best means for promoting art-culture in England; and it was this education in taste which this society intended to promote. It was an interesting thing to see how greatly, not only institutions of this country, but private individuals, had been interested in the promotion of this culture. Very proper use had been made in the report of the name of Sir Richard Wallace, whose exhibition in Bethnal-green most of the meeting, no doubt, had seen, and derived advantage therefrom. He looked on that exhibition as almost a secular event in the history of art in this country, and he trusted that such an example would induce all persons having collections, at fit occasions to make them accessible to the public. He could congratulate the meeting on having such an exhibition as Sir Richard Wallace's, for it contained beautiful works of English art of the last century. The appreciation of that art, he went on to say, was growing every day. The names of Reynolds and Gainsborough rose in the hearts of men; and the best evidence of that was in the enormous prices given for their productions. He felt great interest in the fame of Sir Joshua Reynolds, because he was the main founder and distinguished member of the Dilettanti Society, the object of which was the promotion of classic art. The beautiful works of this society were in a fine state of preservation as regarded their colour, and made them at the present time, in the exhibition of the works of that artist, the most noble masterpieces of the time. On the other hand, while art was beautiful itself in this way, there occurred, in the cruel processes of nature, certain events which destroyed in a few moments the works of years and the admiration of centuries. He could not lose this opportunity of referring to that lamentable fire at Lord Ashburton's, which destroyed about thirty of the finest works of Italian art. These productions could not be replaced; and we might well look upon such a calamity with as great a dread as we looked upon earthquakes and other convulsions of nature. In conclusion, he said that such a society as the Art-Union of London was deserving of support; and the meeting should endeavour to promote its action, and so continue to develope art by every means in their power.

Mr. Godwin, in seconding the adoption of the report, said that he had not intended to take any part in the proceedings, but, for old acquaintance sake, at the request of his colleagues, he had much pleasure in seconding the adoption of the report. He remarked that, for the many years during which he had taken part in the management of the Society, he had been always struck with astonishment that, year after year, they were able to collect uniformly from all quarters of the world a sum never varying very much from about 11,000*l.* or 12,000*l.* a year, and that he thought this a most satisfactory guarantee for the firm position of the institution. He had not purposed saying more than this, but, happening, on the way to the theatre, to be reading an article in the *Quarterly Review*, just published, professing to describe the progress of art in England, which stigmatised the Art Union of London as being upheld only as a matter of greed, by those who made a gambling affair of the so-called promotion of art, he could not lose the opportunity of indignantly repudiating any such accusation. Either prejudice or ignorance had prompted this writer. He knew not and cared not who he might be. In this article he utterly ignored the fact that many amongst the first artists of the day,—Calder Marshall, Frith, Pickersgill, and others,—had over and over again stated in public the large measure of gratitude they felt towards this Association for aid in their first struggles for fame. It was with funds furnished by this Society that years ago Wyon, Woodington, and others, sought and found men and means to establish the art of fine bronze-casting, which before did not exist in England. The art of medal-die engraving was mainly kept alive by the Art-Union, which, year after year, commissions the production of a fine medal commemorative of some British painter, sculptor, or architect; and especially but for this Society there would be absolutely no demand for pure line engraving. He protested against a writer who ignored all these facts, and could see in the Art-Union only an association for gambling, being taken as any authority on the state of art in England.

Professor Donaldson proposed, and Mr. Butterworth seconded, a vote of thanks to the honorary secretaries, for their energy and zeal in promoting the best interests of the Society; and, after a prospective vote of thanks to the ladies who were to preside at the wheels, and to the chairman, the distribution of prizes was proceeded with. Warm testimony was borne on every hand to the zeal and assiduity of Mr. T. S. Watson, the resident secretary.

The following is a list of the principal prizeholders:—

200*l.*—Smethurst, H., Stafford.

150*l.*—Harris, N. H., 15, Coleman-street; Waldy, Rev. J. E., Cheltenham.

100*l.*—Haiwan, —, Maidenhead; Weinholt, Miss, Shirenewton; Parry, H. J., 19, Hanover-square.

75*l.*—Fisher, R., Highbury Park; Hall, J., 104, Forestreet; Hamilton, F., Greymouth, N.Z.; Laver, A., San Francisco; Sargeant, J. M., Demerara.

60*l.*—Bennett, C., Dartmouth-street; Humphreys, J. W., Bow-street Police; Neville, Hon. R., Maidstone; Smith, R. R. Royston.

50*l.*—Brennan, J. Maidstone; Hincks, Capt., Montreal; Hotham, C., Adelaide; Pearce, J. Chesterfield; Woodgate, A., Halifax, N.S.

45*l.*—Aberdeen, E., Boscobel-gardens; Battersby, J., 23, Coleshill-street; Burton, H., Newport, Mon.; Fuller, J., Cambridge; Hawker, W. C., 17, Cloudesley-square; Holloway, W., St. Paul's Churchyard; Pooley, C. J., Manchester; Roberts, Mrs. R. W., Kingston.

30*l.*—Akin, Mrs., Lewisham; Chiffin, Dr., Islington; Diprose, J., Kennington Park-road; Jerrard, H., Clapham; McKechnie, J., Lochee; Simpson, W., Dunfermline; Surrey, S. A. T., Newbury; Whisson, H. P., Jr. St. James's Club.

25*l.*—Anderson, F. B., Hessle; Bond, F. W., 157, Leadenhall-street; Collier, J., Salters' Hall; Friend, R. R., Hammersmith; Gell, C., Robe, S.A.; Godfrey, G. W., 142, Fleet-street; Noades, W., Goods Office, King's-cross; Stewart, Dr., Alton; Wilson, Col., Beckenham; Young, C., 29, Mincing-lane.

20*l.*—Bishop, C. W., Doctors'-commons; Brady, C., 5, Lower Berkeley-street; Brewer, J., Newport, Mon.; Drory, J. F., Lille; Hill, H., Walworth; Howitt, W., Leeds; Kinder, T. W., Robe; Scott, G. B., Robe; Mills, A., Walworth; Potter, H., Sutton, Surrey; Rainey, E., Spilsby; Warren, F., 131, High-street, Croydon.

25*l.*—Broad, G. J., Diss; Clerk, Major-Gen., 5, Hobart-place; Dixon, J., Whitehaven; Edman, F. W., Sheffield; Graham, P., Oxford-street; Griffin, F., Traffic Department, King's-cross; Hall, George, Crowhurst-road; Heagh, —, Fort Elizabeth, C. of G. H.; Littlecott, Miss, Rushall; Moss, G. W., Greymouth, N. Z.; Palmer, W., 52, Fleet-street, New-cross; Parker, T. J., Geelong.

20*l.*—Cort, W. G., Blackburn; Cruttwell, W. C., Frome; Feather, H., Pontypool; Fox, Mrs. T. S., Orpington; George, G. F., Singapore; Lobley, J., Hanley; Madorel, José, Barcelona; Mayman, J., Munster-street; Phillips, W. J., St. Peter's square; Rabbeth, J. E., Putney; Rother, C., Bingen; Tiffany & Co., New York; Wright, C., Barnsley; Wylde, R. G., South Kensington Museum.

15*l.*—Anscomb, R., Bermondsey; Booker, A., Edmonton; Coke, R. G., Chesterfield; Cruickshank, W. J., Yokohama; De Lisle, F. E., Buenos Ayres; Duns, R. F., South Kensington; Forsyth, R., 27, Stockwell-greu; Guppy, Dr., Falmouth; Hindle, F. G., Darwen; Keachington, M., 67, Lombard-street; Marner, H. G., Hornsey-road; McClean, Miss R., 16, Kent-villas, Dalston; Murray, D. G., Shanghai; Neale, J., Birmingham; Nicholl, G. W., Greymouth, N. Z.; Reece, W. H., Edgbaston; Rossiter, S., Moonta, S. A.; Smith, H. P., Sheen Mount; Talbot, Mrs. A., 103, Guildford-street; Varley, J., Leeds; Watson, E., Admiralty; Wright, Miss G., Queenstown, C. of G. H.

10*l.*—Allen, C. J., St. John's Wood; Barron, —, 40, Hanover-street; Brown, J. J., King's-cross Station; Bruton, A., 77, Belsize-road; Buckley, E., Queenstown, C. of G. H.; Cockburn, W., Kensington; Garrel, W. R., War Office; Gould, F., Kingston; Hudson, C., Greenwich; Johnson, C. W., Southport; Joyce, H., Chichesterstreet; Molineux, H., San Francisco; Myers, W., Skipton; Penny, J. S., St. John's Wood; Robertson, A., Montreal; Schofield, J., Potter's Bar; Short, Sam, Rotherhithe; Stone, W., Bank of England, Cork; Weddington, E., Skipton; Ward, R. J., Lincoln; Wright, W., Preston Bank; Yardley, D., Stourbridge.

Entitled to a Cameo "Dancing Girl Reposing."—Spurling, P., 12, Copthall-court.

Bronze Townley Vase.—Buckley & Co., Birmingham; Fell, W. H., 73, Wenlock-road; Goostadji, A., Kuracbee; Holberton, J. L., Brierly-hill; Hunter, Miss, 95, Grosvenor Park; Leedham, I. T., 418, Kennington-road; Mendey, R. S., 106, Fenchurch-street; Nairne, Mrs., Quebec; Peyton, J., 22, Pall-mall; Peacocke, C. J., Falsgrave; Playle, M., Brentwood; Sichel, G., Burgheersdorp.

An Etty Medallion. Hiscock, H., 303, Edgware-road; Kingsbury, W., Stock Exchange; Mathews, B., Kentish-town; Riles, Mrs. Redhill; Taylor, S., Leeds; Watson, C. M., Ballarat.

A Statuette "Wood-Nymph."—Barnes, G., Queenstown, C. of G. H.; Begg, A., Dundee; Bouteast, J. P., Adelaide; Bouts, D., Gracechurch-street; Bull, W. B., Newport Pagnell; Burton, J., Lee; Carr, J., Sheffield; Davidson, D., Kadina; Dunjey, J., Cranbrook; Edwards, W., 39, Rutland-street; Evans, C., Merthyr; Gasse, Rev. C., Rushall; Gumbleton, W. E., Queenstown, Cork; Milne, Major-Gen., Shanklin; Nicholson, Miss, Sunderland; Oakden, R., Hurst-hill; Rogers, J. A., Manchester; Smithers, C. J., Leadenhall-street; Soames, Mrs., Brighton; Truelove, E., Encounter Bay, S.A.

Copy of the Parian Bust of H R H. Princess Louise.—Anderson, E., Kennington-oval; Ayre, R. M., Hayley; Barwick, E., Muldmay Park; Bayley, W., Sutton, Surrey; Blamey, M. H., Charing-cross; Butt, W. A., Littlehampton; Campbell, J., Buenos Ayres; Carbonell, J., Regent-street; Muriel, V. Da De D. M., Jerez; Everett, G., 188, Strand; Fletcher, E. W., Islington; Freer, G. E., Diss; Fressungfield, C., Red Lion-square; Gegan, G., Maidstone; Hill, James, 23, Great St. Helen's; Horne, W., Quebec; Houston, A. D., Liverpool-road; Hunt, L. M., Cullum-street; Hutchings, E., Dudley; Inderwick, E. S., Tregunter-road; Ingle, John, Willingham; Kerr, J., Greymouth, N.Z.; Lake, J., Forestreet; Lansdell, H. Uckfield; Lawton, J., Uppermill; Macgregor, Miss, Fotheringtou; Mayer, H., Conduitstreet; Mash, G., Kilburn; M'Kelvie, D. B., Greenock; Parkes, A. T., Tring; Peacock, J. T., Christ Church, N.Z.; Pfiel, R. F. (per King & Co.); Pidgeon, C., Reading; Pope, G., Waltham; Perley, H. F., St. John, N.B.; Rutledge, W., Warnambool; Savill, R., Waterford; Street, G. B., Buckingham; Stearn, E., Enfield; Starr, C. W., St. Anne's Bay; Stuart, D. F., Port Elizabeth, C.G.H.; Taylor, E., 91, Cheapside; Tennant, R. B., Greenwich; Thomson, W. J., St. Helen's; Tozer, E., Southwark Bridge-road; Turner, J., Laddington-place; Webber, J. J., Herne Bay; Wilson, J. B., Melbourne; Wood, R. J., Lewisham; Wood, T., Oldham.

Small Bronze Tazza.—Bennett, C., 13, Coburn-road; Clark, S., Alexandra-road; Clarke, E. T., Lyndhurstroad; Crawford, T. S., Newcastle-on-Tyne; Golightly, J., University College, Durham; Hanbury, P., 62, Lombard-street; Helps, T. W., Dean's-yard; Kaine, Rev. D., Dunchurch; Mason, L. J., Junior Carlton Club; Moon, Miss, Addiscombe; Pritchard, A. J., West Brompton; Randall, T. W., Maidstone; Rowe, C., Coleraine, Victoria; Scott, Archibald, Lloyd's; Smith, E. R., Rotherhithe; Stephenson, W., Nottingham; Stapp, Mrs., Tufnel Park; United Club, Buenos Ayres; Wyse, A., Plumtre-road; Young, Rev. C., Brighton.

A Mansion destroyed by Fire. — The country seat of Mr. Morrison, M.P., at Malham, Yorkshire, has been destroyed by fire. The books and the pictures were saved.

NEW PUBLIC BUILDINGS.

Doncaster.—The New Corn Exchange has been opened. It fronts the old corn market, in the Market-place, occupying a position between the two wings of the existing market-hall,—a spacious building used as a meat-market and for hucksters' stalls. The external elevation is of Classic character, and in a measure corresponds with the building with which it has been incorporated. The Tuscan order of architecture is employed for the columns and entablature of the entrances, and the Doric order for the upper story. This has projecting columns of red Mansfield stone, surmounted with entablature and balustrade. The main entrance is recessed, and has columns of polished granite on both sides. Immediately over this entrance the stone front is sculptured, the subject represented being a Genius blessing the special industries of the country. To each of four circular windows are shields, supported by ornamental corbels, on which are carved the arms of the four county towns which chiefly trade at the market, viz., York, Lincoln, Nottingham, and Derby. Passing into the building, a large, lofty, decorated, and well-lighted apartment presents itself. The main room is 92 ft. long by 84 ft. wide, and spanned by six semicircular lattice ribs, without cross-ties, giving a clear and uninterrupted space, from the floor of the building to the apex of the roof inside, of about 63 ft. The lantern light runs the entire length of the building, and additional skylights spring out from this, and cover the roof, giving a lighting surface of between 4,000 and 5,000 superficial feet. The main ribs of the roof are supported on each side by coupled iron columns, having ornamental capitals, bases, and bands; and these columns are connected laterally again by semicircular cast-iron double ribs, with ornamental soffit-plates to connect the ribs. Galleries run along both sides of the building, and across the front entrance; here also under this latter gallery are offices for settling and other purposes. At the opposite end are two retiring-rooms, with the necessary conveniences adjacent, and between them a recess, which gives depth and side to the platform and orchestra. The general interior of the building is decorated, the groundwork being a bronze green, and the embellishments, such as foliage, capitals, bases, mouldings, crestings, &c., being in gold, and picked out with mauve and vermilion. The building is warmed by hot-water pipes. The lighting apparatus, which is by Messrs. Hardman, of Birmingham, is not yet fixed: it will be supplied and fitted by Mr. John Smith, Doncaster. The architect is Mr. Watkin, of Lincoln, whose plans for the extension of the Doncaster markets obtained the first prize of 100*l.* in a competition some few years ago. The builder is Mr. Athron, of Doncaster. Mr. Slater has supplied the hot-water heating apparatus; and the gasfittings for the entrance, offices, &c. Messrs. Rankin, of Liverpool, were the contractors for the ironwork; Messrs. Walker & Wright for plumbing and glazing; and Mrs. Joe Wright for the painting and decorations.

Hartlepool. — The foundation-stone of the Hartlepools Exchange has been laid. In April, 1872, the directors of the projected Exchange Buildings at West Hartlepool invited twelve local architects to submit designs, and the new Exchange Company, Limited, chose a definite scheme for the erection of a block of buildings in Mainsforth-terrace, near the railway station, to be designated "The Hartlepools Exchange." The selected design was that bearing the motto, "On 'Change," the author of which was Mr. G. G. Hoskins, of Darlington, architect. The building will have three principal frontages, in Italian Gothic, and will possess a tower, with angle turrets, breaking the line of the north façade. The materials proposed to be used are red pressed bricks, which will be relieved with stone dressings. The Post-office authorities having had copies of the plans submitted to them, and expressed satisfaction with the internal structural arrangements, negotiations have since been concluded by which the new post-office, so much needed for West Hartlepool, will form a separate department of these new buildings. The North-Eastern Banking Company will also have a branch office here, and most of the other offices in the building are already secured, on promise, by private firms in the town. The same architects also submitted designs for a club-house for the Exchange Company, to be erected on a site facing the Exchange; and in this case also, Mr. Hoskins got the prize. This building will be in the same style of architecture as the Exchange. A few shares for the new club-house remain to be taken up. The directors, before commencing this undertaking, assured themselves that both buildings could be carried out for the estimated cost. The contractors for the whole of the works are Messrs. T. Robson & Son, of Darlington.

Lowestoft.—The new public hall, situate on the London-road, Lowestoft, has been opened with a grand banquet, at which about 200 ladies and gentlemen were present. The architect of the building is Mr. Oldham Chambers.

DEATH OF M. DE CAUMONT.

M. DE CAUMONT, who a short time since received a tribute of respect in our columns, is now no more. He died at Caen, on the 16th of April. Active to the last, we find him present at the Scientific Congress of France, which opened at Pau on the 31st March, and receiving the highest compliments from the Prefect of the Basses-Pyrénées (the Marquis de Naduillac). M. De Caumont was, indeed, the originator of these congresses; and he it was who inspired the wonderful spirit and comprehensive scope of action which, for so many years, have sustained them in vigour unabated. These congresses are models for imitation: they aim at work, and do it in earnest.

As we before intimated, the *Bulletin Monumental* is now conducted by M. De Cougny; and two parts have appeared which promise that in his hands this first of all French archæological serials will be conducted with an intelligence and spirit worthy its illustrious founder nd director.

EARLS BARTON CHURCH.

THE restoration of this very interesting church is being proceeded with. The chancel has been finished for some little time, and is now being used for service. It has been found necessary to take down the south side of the nave owing to the dangerous fractures in the piers, and the very great inclination of the whole towards the south. When the bases were taken up it was found, as is too often the case, that they rested on a bad and soft bottom, while the solid rock might have been built on by going 2 ft. lower. The new foundations rest on the rock, and it is likely that those of the grand Saxon tower are equally secure, for it is as upright as when first built. Unfortunately, in Norman times, a new arch was put in on the east side, and so badly that the work near it cracked, and was thrust outwards, to such an extent that the arch had to be rebuilt in the next century, and in it were introduced the Norman billet-moulded stones in a pointed form. The unsatisfactory ruinous appearance of this arch is in great contrast with the sturdy Saxon work around it. Great care was taken during the taking down of the arches of the arcade to prevent any dislocation to the loose work near the arch, which was thoroughly secured by shores, and by a bed of concrete round it to keep out wet from penetrating downwards. When the arcade is up again and the clearstory, the new roof will be put on. They are of oak, and of fifteenth-century date. The works are being carried on under the direction of Mr. R. Herbert Carpenter by Mr. Allen, of Tithingborough, Mr. Lucas being clerk of works. The restoration is also under the care of the Architectural Society of Northampton, and to them its being taken in hand is mainly due. Much, however, yet remains to be done; the aisles, roof, and walls are in an unsatisfactory state, and reseating is also necessary.

Bristol Cathedral Nave Restoration.—The anniversary of the commencement of the work of adding a nave to Bristol Cathedral has been held. The celebration commenced by divine service in the cathedral, and the congregation was a large one. After service there was a public luncheon at the Royal Hotel, at which a large number of ladies and gentlemen were present. Mr. Street, the architect, reported that the work was progressing satisfactorily, and that in about two years, should the funds be forthcoming, the nave would be available for divine service. The secretary's report stated that the amount expended was 27,006*l.*, and 36,007*l.* in all had been contributed and promised.

ON THE CHURCHES OF BRITTANY, NORTH COAST.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

NOT far from Landernau, in a dreary and desolate situation, stands the celebrated church of Notre Dame de Folgoat; it is a fine Second Pointed building of rather singular plan, and consisting of a nave and aisles under one external roof, with two western towers, a short choir and aisles, and a long and important-looking south transept at the extreme east end. The church has three very magnificent porches, adorned with sculpture executed in the black Kersanton stone. The north-west tower is crowned by a spire of great beauty, 160 ft. high. The long double belfry windows are richly shafted and moulded, and above them is a pierced open gallery. The pinnacles at the angles of the spire are octagonal in plan, and are kept well within the square of the tower, so that they do not break the outline too much. The east window consists of a very fine large rose, with a pierced arcade beneath it, below which is the holy well, which gives the reason for the erection of this church. The interior is rather disappointing, as it is very dark and low, and the vaulting has either never been constructed, or has fallen in. This church, however, is rich in ancient furniture, and possesses one of the finest rood-screens in France: it is vaulted in three compartments, two of which contain their original stone altars, with richly panelled frontals. The high altar is old, and is of great size, nearly 14 ft. long; it is ornamented with a series of flat niches with ogee canopies richly cusped and crocketed and divided from one another by pinnacled buttresses. The mensa, which is an immense slab of black Kersanton stone, is supported upon a very richly carved cornice. There are no remains of tables or reredoses to any of the altars in this church, and it may be doubted whether they had any. There is a fine double piscina near the high altar.†

I cannot better conclude this paper than by an account of the ancient episcopal city of St. Pol de Leon. This town is of great antiquity. It appears that there was a Roman settlement here as early as the second century, called Castellum Leonensi, but it was either abandoned or depopulated at the commencement of the sixth century; for when St. Pol visited it in the year 530, he found only the remains of the earth ramparts, and the only inhabitants he could discover were a sow with a litter of young pigs, a swarm of bees in a hollow tree, a bear, and a wild bull. St. Pol, who was an Englishman from Cornwall, founded a monastery here, and died on the Isle of Batz, opposite to Roscoff, in the year 570, after having been previously consecrated bishop. The city of St. Pol de Leon was frequently in the hands of the English during the Middle Ages, and this may account for some architectural peculiarities which I shall have presently to point out. The cathedral of St. Pol de Leon is a fine church consisting of a nave and aisles, western towers, transepts, a long choir and aisles, terminating in a chevet with radiating chapels. The western arch of the crossing carries a large sanctus bell-cot of stone, and is flanked by two lofty octagonal turrets. The western towers are surmounted with stone spires of dissimilar design, pierced with many cusped openings, the belfry windows are long and shafted, the western end, not a very striking composition, has a gallery for giving the episcopal benediction from; and one of the doorways under the tower is called the "leaper's door." The clearstory of the nave is supported by flying buttresses, and a large chapel dedicated to St. Michael projects from the south side aisle. The south transept end contains one of the most magnificent rose windows I have ever seen. It is of fully-developed decorated work, and is said to be composed entirely of granite. The apse is not very striking externally. The effect upon entering this cathedral quite astonishes one. The nave is like the best English late thirteenth-century work, and very much reminded me of Wells. The length of the church is given in a History of Brittany which I have seen as 260 ft., and the height to the vaulting only 52 ft; but, to judge from the effect produced by the interior, I should have thought that the height was at least 13 ft. more, and the length greater by nearly 100 ft. It is one of the most pleasing interiors I have ever seen, and all the parts seem to harmonise most

* From a paper by Mr. Brewer. See p. 321, *ante*.

† Of this church we give a view and further particulars.—ED.

admirably. The proportions are singularly satisfactory, and although the height is ample, there is none of that exaggeration of loftiness which is to be seen in some Continental churches. The transepts are rather later than the nave, and the choir again later still; in fact, the choir is said not to have been completed before the year 1431. It is a very fine example of late Second Pointed work, with richly-moulded arches; in fact, I think that one of the features which give this interior such a thoroughly satisfactory effect is the great richness of the mouldings in every part of it. The arches of the apse are not stilted, as is the usual plan in France, but are very acutely pointed. The aisles and chapels are all simply but effectively vaulted. This church is rich in ancient furniture. The choir-stalls, which are said to date from the year 1430, are remarkably fine, and rather like very excellent German work than either French or English work. They are in a remarkable state of preservation. There are ancient stone screens surrounding the whole choir, and cut it off from the aisles; and short and very pretty little altars project at right angles from them; some of these altars are plain, and others are ornamented with arcades.

The piscinas attached to those on the south side of the church are cut in the side of the altars. Several other ancient altars exist in the transepts. They are remarkably small in size, only about 3 ft. long, and are supported upon brackets. All along under the aisle-windows of the nave are ogee-headed recesses, intended either for tombs or altars; but as they possess neither inscriptions nor sculpture, and are now quite empty, it is most difficult to conceive what they were intended for. I should have thought that they were tombs, were it not that many of them have aumbries attached to them. This church possesses few of the peculiarities of Breton architecture, and I should be inclined to think that its architects were Normans. Its architecture bears some resemblance to that of the cathedral at Constance. Another peculiarity is the fact that granite is not much used, and the Kersanton stone not at all. The whole of the interior is of a fine white stone, probably Caen stone; whereas at Dol, which is of pretty much the same date, nothing but granite is used. The apse and chevet, again, are uncommon features in Brittany; and although it is true the choir is later than the nave, there is such a harmony about the whole church, that I think the same general design was carried through from the first, only the detail varied to suit the taste of the age. A modern monument, in the Gothic style, covers the remains of William de la Marche, the last Bishop of St. Pol de Leon. He died over here shortly after the great Revolution, and was buried in Old St. Pancras Cemetery. His body was, however, removed to his cathedral church some ten years ago. The diocese of St. Pol de Leon is now united to that of St. Brieuc, where the present bishop resides. St. Pol de Leon contains another very remarkable church,—the collegiate church of Notre Dame de Kreisker. This building consists of a nave and one-aisle transepts, a rather shallow choir, and one side chapel. Over the crossing is a lofty tower and spire, 260 ft. high, and a large north porch. This church dates from the years 1345 and 1399; and it is said that Mary, the wife of John IV., Duke of Brittany, sent over for an English architect *to construct the spire!*

Now, the peculiarity of the matter is that the spire is exactly the part of the church which is entirely unlike English work; whereas the columns and arches which divide the nave from its aisle, and other portions of the interior, bear a strong resemblance to English work. The columns are octagonal, and have octagonal moulded capitals, not of the best English time, but very like what one sees in churches in the north of Kent. The east window, again, bears a strong resemblance to that of Lincoln Cathedral, except that it has only six lights instead of eight, and has an ugly transome cutting it through, about 2 ft. below the springing of the tracery. The tower and spire, about which all the guide-books rave, are simply an exaggerated imitation of St. Pierre at Caen, and are, I fancy, the work of a native architect who had seen that fine spire, and thought he could improve upon it: so he lengthened the belfry windows, increased the projection of the cornice over them, and enlarged the proportions of the pinnacles to such an extent that there is not room for them to stand upon the tower, but they overlap it in a most awkward way, and are tied into the spire by huge stone braces, having a most disagreeable appearance. The consequence is that this spire is simply an architectural exaggeration, and although rather striking at first sight, like all such works, after a little study it ceases either to charm the eye or to satisfy the mind. It is far from improbable that did the spire at St. Maria du Mur at Morlaix still exist, it would throw some light upon the history of this one, as the spire of that church was erected more than fifty years earlier than the Kreisker one, and it is possible that St. Maria du Mur may have been a copy of St. Pierre at Caen, and this a copy of St. Maria du Mur. There are two other churches in St. Pol de Leon, but I will not occupy time by describing them, or the many interesting little village churches which abound in this district. Of course the churches which it has been my pleasant task to describe to you cannot be compared to the magnificent edifices of the same class in other parts of France, but they are the modest and earnest works of a pious, industrious, and thoughtful people, who, though labouring under great disadvantages, and against nearly insurmountable difficulties, always poor, always a prey to the foreign invader, in a bare, barren, and bleak country, and with only coarse materials at hand, managed to stamp a certain character of originality and genuineness upon their work, which must commend them to our respect and admiration.

In the debate which followed, Mr. Cooke, R.A., Mr. Brooks, Mr. Paley, Mr. Phené Spiers, and others, took part.

The Chairman (Professor Kerr) complimented Mr. Brewer on his paper, and remarked that although Mr. Brewer was not a professional architect, yet he possessed a power of describing architectural works which he had rarely heard equalled in that room. With regard to the drawings which were exhibited, he could only repeat what had already been said by several gentlemen, that they were second to the works of no architectural draughtsman living with whom he was acquainted, for picturesque feeling and artistic representation of detail. He hoped that they might see them transferred to the pages of some of the architectural journals.

DUBLIN IMPROVEMENTS AND DUBLIN REQUIREMENTS.

DUBLIN has actually diminished in population during the last few years, but, in some respects, she has advanced; several of her citizens have proved themselves patriots in the real meaning of the word; they have conferred immense benefit on their city and on their fellow citizens, as well as upon the country generally.

The visitor to Dublin may see evidence of what we state in the rebuilding of the cathedrals; and in the greatly increased accommodation for shipping, obtained by the opening of the Spencer Dock, and the recent additions to the quayage, at the mouth of the Liffey, afford additional evidence that all Ireland is not engaged in political agitation, that many thinking men are expending capital to the best advantage, and that the interests of their country are rightly appreciated by some public bodies and by individuals whose energetic industry has enabled them substantially to benefit their own and future generations.

Such works have in many instances been comparatively noiselessly designed and carried out to completion, whilst other public authorities have been either at variance amongst themselves, or engaged about measures foreign to their province, instead of carrying out matters urgently demanded, either for their public utility or for the promotion of public health.

The Dublin press teems with correspondence, reports of meetings, &c., about the New Gas Bill for Dublin, by which it is sought to compel the citizens to purchase the business and plant of the present Gas Company for a sum scarcely, if at all, short of a million of money, which is more than one hundred per cent. over its valuation, according to the estimate of leading experts.

Powers of taxation, should the Committee of the House of Commons approve of the project, will be thereby conferred on the corporation, so that whatever deficiency occurs in the management of the gas business in its new form, will be at once met by increased taxation on the unfortunate citizens. This is a matter that should meet with more consideration on the part of the Imperial Legislature, for it is truly of national importance, inasmuch as the too frequent sop thrown to a body ever more ready to take up anything connected with a passing political excitement, than steadily to pursue measures of public utility, such as the enlarging or rebuilding of our bridges, the remedying the present unhealthy state of Dublin, or the carrying out of improved main drainage, for which large sums of money have been already expended on legal and other expenses.

It is not easy to see where taxation is to end in Dublin proper; at present every one who possibly can lives outside the city boundary, consequently the pressure of taxes (yearly increasing) is becoming more and more a pauperising element. Many a time of late have the clergy, the medical profession, and the visiting officers or members of eleemosynary societies of Dublin, seen the half-famished and half-starved room-keepers without a particle of fuel to cook their food or warm their wretched tenements, whose walls ran with rain or snow water, to say nothing of the impossibility of obtaining the necessary hot water for cleansing, washing, &c. It is not to be wondered at that such a state of things should exist when the price of coal, of meat, and the heavy taxation compel every one to avoid adding to his expenses by employing labour (an article also so highly enhanced in price) unless on works of absolute necessity.

Such a state of matters should therefore induce our rulers to pause before increasing the burdens of the people of Dublin by enabling a body with taxing powers to undertake a commercial concern, which has, it is said, proved so unremunerative, though it numbers amongst its most active managers some of the very best business men of the corporation who now seek to add to their other so numerous public engagements.

How would the prosperous undertakings of our Guinnesses and Roes, and Jamiesons and Pims, Findlaters, and others, be esteemed if their able and responsible proprietors sought fictitious props for their businesses? Or what would the public think of individuals or a company getting power from Parliament to undertake new lines of business when they had found their previous occupations too onerous for them to carry out? Moreover, we think the public have hardly taken the trouble to read the proposals of the Dublin Corporation contained in the new Gas Bill, which asks for pensions for the present directors and staff, whilst several of the same pensioned officials are to be retained as directors in the new *régime* if Parliament grants the powers asked for.

We were surprised to read the following in the Dublin daily papers on April 21st, 1873. Professor Haughton, in his lecture to a crowded assembly on the previous Saturday, stated:—

> "They should take time by the forelock, and before these diseases visit the country, calmly consider what would be done in an outbreak. In Dublin we were perfectly unprepared for an outbreak. It would not do to be roused now and then by the scourge of pestilence to remember the duty they owed to their neighbours. We should not only do our duty to the poor, when the poor get sick, but when they are living about our stables and back lanes, endangering our lives and the lives of our children."

In the adjoining column we read that the Public Health Committee (of the Corporation) met on Friday, and,

> "From the report laid before the committee, it appeared that but four deaths from zymotics within the city were registered during the past week, and that during that period,—through the absence of those contagious or infectious diseases in which chemical disinfection of premises is considered necessary,—no occasion occurred for the adoption of that process. In these reports the sanitary condition of the population has, during the past six years, been without a precedent.
>
> Having disposed of the business submitted, the committee adjourned at two p.m."

Turning to the Registrar-General's (Ireland) Report for the week referred to, as we thought for the moment that possibly the learned professor might have been mistaken in his remark about the state of Dublin, as surely the Public Health Committee must have accurate data to go upon, we find that seventeen persons were registered as having died from zymotic diseases, although "no return of deaths in the South Dublin Union Workhouse had been received during the week." To form some notion of the importance of the absence of the deaths that occurred in the workhouse named, we have only to quote the registered deaths of the district in which it stands, as given in the previous week and in last week (which latter did not contain any list of deaths from the workhouse):—No. 1, South City District, April 12th (without work-

house return), 19 (annual ratio) per 1,000; ditto, April 5th (with workhouse return), 60 (annual ratio) per 1,000.

The Dublin sanitary authority did not consider chemical disinfection of premises necessary in a single case, though the registered deaths from zymotic disease numbered 17, but, according to their own official report, only 4. How is it that the balance,—13 deaths,—has been overlooked; and why in the four cases was no disinfection practised, to say nothing of the other thirteen?

In the *Saunders's Newsletter* of the 2nd of January last there appears an advertisement of an auction, to take place in James's-street, Dublin,—"Highly important to capitalists, dairymen, graziers, &c. Sale of valuable leasehold interest in commodious premises, a very large number of very superior milch cows, horses, over seventy tons of hay, *upwards of* 200 *tons of manure*, churns and churning-machines," &c. Now, as the 200 tons of manure had been gathered during part of November and December, it would be an interesting subject for the consideration of the Dublin Civic Sanitary Authority to ascertain how much had been annually collected in the one dairy-yard advertised in an average season of the usual length (less than six months), when in less than two months over 200 tons had been accumulated. Moreover, it will be necessary, in the next place, to obtain correctly the number of dairies in Dublin, and the average number of cattle in each, then to compute the number of provision dealers and others holding service in Dublin city, and to add the sum of all to the number of dealers in and collectors of manure, and lastly, the number of Corporation depôts of filth, covering collectively several acres of land in the city, before we can enter into the feelings of those who declared that in the week ending April 12th there was no need for the disinfection of premises in any instance in Dublin.

Is it not matter for wonder, looking at all this, that it is found, that during 1872 there were *registered in Dublin but* 8,499 *births and* 8,973 *deaths?*

Surely if the Gas Company of Dublin has proved unsuccessful, though managed by several members of the corporation, it is not by handing it over bodily to that body that better results will be attained when such sad results have followed the improved sanitary measures administered by that body with the increased powers of the Act of 1866.

THE HUYTON QUARRY SCHOOLS, KNOWSLEY, NEAR LIVERPOOL.

THE first stone of the schools we here illustrate was laid by Lord Derby last year. Huyton Quarry, a rural village, is in the neighbourhood of Knowsley, and some six or seven miles from Liverpool. The building is in the Gothic style of the thirteenth century. It is erected on a convenient site on the main road from Huyton Quarry to Huyton Park, and at the corner of two roads. The building is approached from the public road by a large porch constructed of timber, with rustic Gothic panelling above the arched doorway and also at the sides. There is a lofty school-room, with side aisles, divided from the rest of the building by arches and columns, having a clear-story above and six large tracery windows. At the east end, and raised a few steps, is a deep recess, lighted by a large triplet window, this part of the building forming a chancel to be appropriated to the religious services of the church on Sundays. The west end of the building is lighted by two traceried windows, and a large rose-window above, while the aisles are lighted by windows of a lancet shape coupled together. Adjoining the chancel is a class-room, under a separate roof, which forms a transept to the main building, and on the opposite side cloak-rooms and lavatory will be provided. The buildings are heated with hot-water pipes, the heating-chambers being under the class-room. The dressings are of Stourton stone; the main body of the building, inside and outside, of grey brick; and the arches, quoins, and bands are of Grundy's patent moulded bricks; the whole being pointed with black mortar. All the roofs are of pitch pine,—open timbered, cusped, and curved, with principals resting at the feet upon carved and moulded corbels. The roof is surmounted by a neat open-timbered bell-turret and weather-vane, and all the gables are to have metal finials. The roofs are slated, in two shades of colour, and the ridges have crested ridge-tiles, of Gothic pattern.

The contractors are Messrs. Cassidy, Foxcroft, & Williams, and the architect is Mr. H. H. Vale, whose plans were selected in a limited competition, and under whose superintendence the work was carried out. The total cost is estimated at a little over 1,000*l.**

THE COLLEGIATE CHURCH OF FOLGOAT, BRITTANY.

ONE mile from Lesnevin, and standing in one of the bleakest and least inhabited portions of Brittany, is the fine Church of Notre Dame de Folgoat. It is not a little remarkable to find such a splendid church in such a remote and unfrequented neighbourhood, but the wonder ceases when the history of the building is related. The fact is, this church was the result of a vow made by John de Montfort that if he conquered his rival with whom he was at war for the dukedom of Brittany he would build a church over the grave of a pious idiot who had inhabited this spot. There is much beauty in the singular legend of this half-witted being, and it bears with it a moral which might well be studied in these days of intellectual pride. This is not, however, the place to relate such a history, so we will simply mention that John de Montfort in fulfilment of his vow commenced the erection of the church of Folgoat, which was completed in the year 1423, pretty much as we now see it.

Judging from the date of its erection, one would not expect to find the architecture of the church of Folgoat very pure, but it must be remembered that Gothic architecture in Brittany was nearly a century behind the same architecture in the north of France or England, and this accounts for the comparatively early appearance of many portions of this fine church.

The plan of the Church of Folgoat is very singular. It consists of a nave and aisles, under one external roof; two western towers, one crowned by a spire and the other left unfinished; a chancel of moderate length, with an aisle to the north; and a large and deep transept to the south. This transept is higher and wider than the nave of the church, and about 70 ft. long; it is placed in such a position that its side-wall forms a continuation of the east front of the church. It is, in fact, in a similar position to the eastern transepts of Durham Cathedral or Fountains Abbey, only there is at Folgoat only one transept, whereas at Durham and Fountains there are two. Leading into this transept on its western side, and attached by its side-wall to the south aisle of the nave, is a most magnificent porch, and joining this, in such a way as to fill up the remainder of the west wall of the transept, is a large sacristy in two stories. There is a shallow porch on the south side of the nave, and a similar one at the west end. The latter is, however, in ruins.

The north-western spire of this church is of singular beauty, and it is difficult at first sight to imagine that it is not a century earlier than the date given for its erection. However, upon closer inspection, the detail will be seen to be quite Flamboyant in character, of which style it is a most beautiful and charming example.

The other portions of this church most worthy of notice are the beautiful porches before mentioned and an external fountain at the east end, directly below the high altar. The porch which leads into the south transept is indeed a remarkable work. The doorway leading into it is adorned with the most elaborate carving, and the arch is finely and delicately cusped; the sides of the porch itself are occupied with large niches, containing life-sized statues. The porch is about 30 ft. deep, and is vaulted in stone. The porch leading into the south aisle has a double canopy over it,—the inner one ogee and the outer straight-sided. The arch is richly cusped. There are no statues in the jambs, but there are niches filled with statues in the large and elaborate buttresses which flank this doorway. There is also a statue in rather singular costume upon the central pillar of this doorway. The western doorway is very similar to the one last described; but the porch over it fell down some years since, and it is difficult to understand exactly how its canopy was arranged.

The holy well at the east end is a pretty piece of Gothic architecture, but has received some additions at a later period. A singular feature about this church is the way in which the parapets are carried over the gables, forming a kind of staircase over the gable walls. This will be best understood by reference to our illustration, in which the sacristy gable is represented. Near to the south porch is a Calvary, which is evidently not in its original condition. The lower portion consists of the base of a cross, which is hexagonal in plan, very similar to Waltham. The upper portion of this structure is of much later work, and has probably been brought from some other place and put here after the destruction of the upper part of the original cross.

The interior of the Church at Folgoat is very inferior to the exterior, and, owing to the want of height and the absence of the vaulting, which was never constructed, the general effect is poor. Notwithstanding these defects, however, the archæologist will find much to interest him, for the church not only contains a very perfect stone rood-screen, but as many as six of its original altars. The rood-screen consists of three richly-vaulted compartments crossing the nave of the church. The centre is pierced by a doorway leading into the choir, and the other two contain original altars.

The high altar is a noble example of ancient church furniture. It consists of a solid basement, finely moulded, and the podium is adorned with a series of flat canopied niches ornamented with tracery in their heads. Above there is a very elaborately undercut cornice, which supports the altar-slab. This altar is of very large dimensions, measuring more than 12 ft. long and above 4 ft. deep. The reredos does not exist, and it may be doubted whether it ever had one, for the great east window, below which it is placed, and which by the bye is a fine example of late tracery, the upper portion forming a noble rose of very elaborate design, comes quite down to the altar-slab. The other altars are very similar to the high altar, only rather more simple in design. There is a fine old statue of the Madonna on one of the altars under the rood-screen, and a great deal of modern glass, which is not so satisfactory as it might be, although it must be acknowledged that the great rose in the large eastern window is treated with much skill, and has a very brilliant effect when seen over the rood-screen from the west end of the church.

The Church of Folgoat, like so many others in Brittany, is built entirely of granite and Kersanton stone. Now although this latter material is highly praised for its enduring qualities (the sculpture at Folgoat is as sharp as if it were carved yesterday), and it seems to be capable of being carved into the most delicate and intricate forms, yet it has one terrible defect, and that is its detestable colour. It is so like cast iron that until one gets one's eye within a few inches of it it is difficult to convince oneself that the rood-screen and many other portions of the Church at Folgoat are not really of that most inartistic material. Nor is the granite of which this church is built of a much better colour than the Kersanton stone, and when we mention the fact that the whole building is pointed in very white mortar, and the roof covered with very black slates, our readers can realise the fact that the Church of Folgoat depends entirely upon its fine architecture for its beauty, and gains nothing from colour.

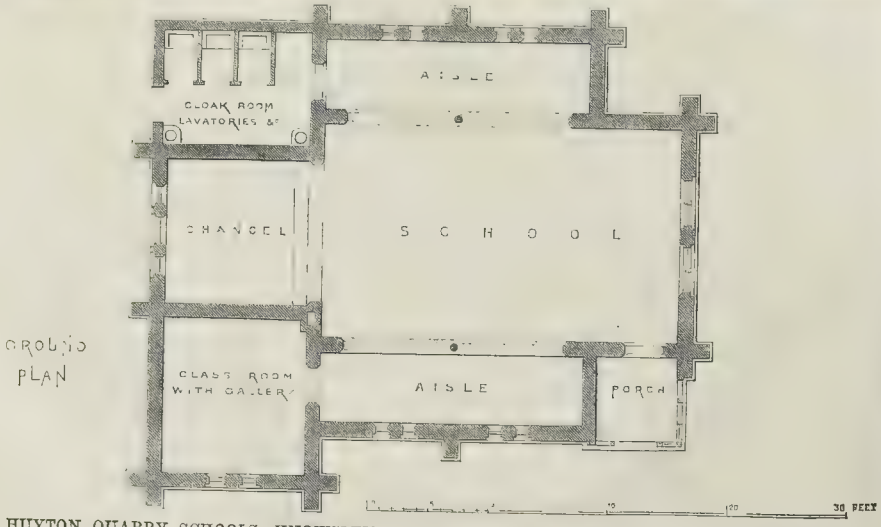
Opposite this church is the ancient college, which is a most valuable and interesting example of the half-domestic and half-ecclesiastical work of the fifteenth century; its chief ornament is a very bold and charmingly-designed octagonal turret. It is really a shame that the French Government, to whom this valuable relic of antiquity has belonged since the Revolution, does not do something to preserve it from its present state of ruin and degradation. It is positively now *let out as a cheap lodging-house for beggars!* And it stank so vilely, and was so filthy, that we were unable to explore its interior, which, if we may judge from the staircase which we saw, must be interesting.

We feel sure that if this matter were only properly represented to the French Government, which is generally so liberal in matters where art is concerned, something would be done to preserve this beautiful example of Mediæval architecture from destruction.

* Writing on this subject, Mr. Vale adds:—"The view you gave of the Hague Church has brought me a letter from America about a church required from same design. I owe the *Builder* my best thanks."

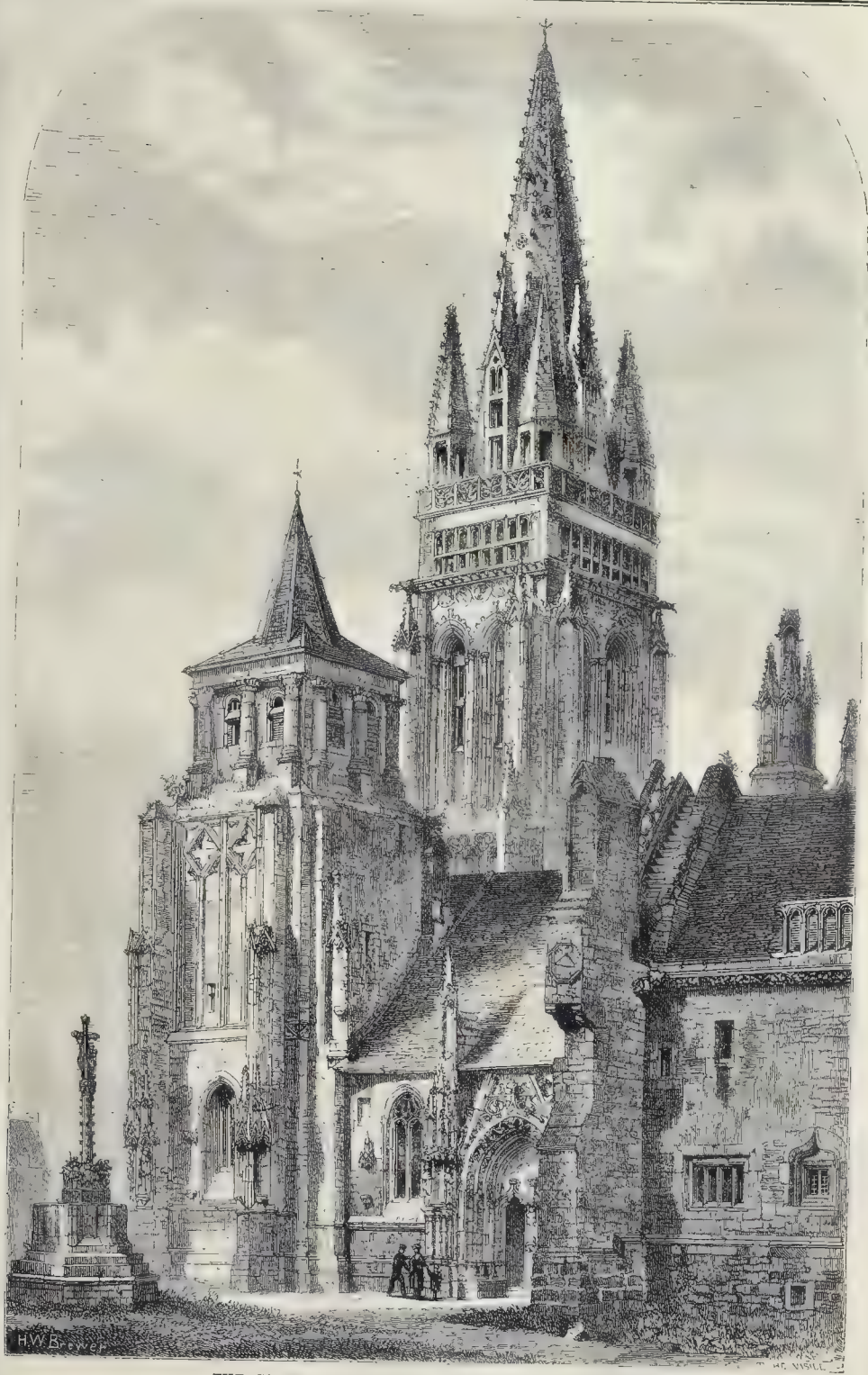
A French Inventor proposes to photograph despatches to microscopic fineness, and blow them through a tube sunk in the Straits of Dover. When at their destination, the despatches could be enlarged again.





GROUND PLAN

HUYTON QUARRY SCHOOLS, KNOWSLEY, NEAR LIVERPOOL.—MR. H. H. VALE, ARCHITECT.



THE COLLEGIATE CHURCH OF FOLGOAT, BRITTANY.

SCULPTURE TECHNICALLY CONSIDERED.

AT the Society for the Encouragement of the Fine Arts, on April 24, Mr. Cave Thomas gave a lecture on "The Technical Processes used in the Production of Sculpture." The lecturer said there appeared to be no subject on which the public generally was less informed than the mode of producing works of art in marble and bronze. The public had no idea of the material difficulties which beset the sculptor, and the losses to which he is liable by labour thrown away upon impure marble and by accidents in casting. He then adverted to the very common and erroneous impression that the transfer of the sculptor's original model to marble was the great difficulty in plastic art; whereas it was the model in clay which required all his knowledge and genius, and that the copying of this in marble was mainly mechanical, and intrusted to skilled workmen, the master merely supervising, and finishing with subtle touches of the chisel. He then explained the methods of *waste* and *piece* moulding, of *pointing* and *carving* the marble, of bronze-casting, and of the collateral processes of copying sculpture by mechanical means; of modelling in wax, of electrotyping and *repoussé* work. In the discussion which followed, and in reply to a suggestion put forward that the superiority of the Grecian sculpture was in the main due to the presence of the material, Mr. Thomas said that the materials for both Egyptian and Roman sculpture were locally abundant, and that nevertheless Egyptian and Roman sculpture were inferior to the Grecian, and that therefore the cause of the Grecian superiority must be sought deeper. That the Greeks understood the principles of education more completely than any other people; with them education was a formative and plastic art—a proportionate and symmetrical system for the development of men in flesh and blood. The Greeks did not award crowns for excessive feats of strength; but to perfect moderation, balance and beauty, intellectual and physical, and that we could never expect a grand epoch of British art till we also commenced with education, and adopted the true system. If our educational system were right, true art would follow. The lecturer stated that when first impressed with the force of this great truth, he resolved to devote himself to the enunciation of the true form which education should assume, and that he hopes to have accomplished this in a work which will soon be before the public, and entitled "The Proportionate or Symmetrical System of Education." The lecturer was frequently applauded, and a cordial vote of thanks was passed.

THE SOCIETY AND THE INSTITUTE OF PAINTERS IN WATER COLOURS.

BOTH Water-Colour Societies have a capital show of pictures this season, but, as might have been expected, they differ very little from those of former years so far as the greater number of their members are concerned. A little variety is given to the one by the superexcellence of Mr. Pinwell's drawing of "The Great Lady" (23), with its curious mixture of modern and mediæval appearance (splendid colour and the efficacy of manipulation by which so much breadth and power are attained make this quite conspicuous even here); by the clever autobiographic work "The Picture" (236) of Mr. Alma Tadema, who, the more thoroughly to identify himself with English artists, jumps at once into the front rank of water-colour draughtsmen; and by an unusually ineffective if not a weak display on the part of the figure painters generally. At the other,—the Institute,—by a regularity of the same or similar nature to Mr. Pinwell's, attributable in this case to Mr. James Linton, representing "a great gentleman" washing the beggars' feet on "Maundy Thursday"; by some wonderfully good workmanship by Mr. Andrew C. Gow's; and by the fact of Mr. E. H. Corbould and Mr. L. Haghe being in much more force than has lately occurred.

The importance of these exhibitions is only second to that of the Royal Academy, and it is a pity it should be made so much the second. The world's recognition of British productions amongst iron, coal, and calico, included from age to age some credit for a speciality in art,—the water-colour view in more senses than one, was it is of the boasted and best-acknowledged advantages of the island, and there is no fear of landscape drawing degenerating whilst there are so many able masters remaining,

> "So excellent in art, and still so rising,
> That Christendom shall ever speak *their* virtue."

A box and a brush or two with nature, and the clever landscapist at last becomes master. One half the drawings collected for this season's show are so like the moiety of what for years gone have delighted; astonished or not, "for there is nothing either good or bad, but thinking makes it so," when perfect representation ministers to taste only, and not judgment,—that it seems superfluous to give notice of their beauty.

The new school of figure painters whose aim, though too often confined to minute elaboration, now promises some better results presently; and such good means may find proper use when it numbers amongst its scholars more who indicate even to the extent Mr. E. J. Gregory, at the Institute, does originality and thought.

To speak of the elder Society first. Sir John Gilbert's ready and forcible method of depiction makes it an easy matter for him to maintain a great reputation. By the dashing, sketchy style that signalises his processional compositions, like the one illustrating the chapter in history of "Mary, Queen of Scot's Surrender to the Confederate Lords" (117); or in his emphatic pronunciation of the strong traditional colour cavalier ardour is susceptible of when "Getting Guns into Position" (254), for instance, midst the blaze of trumpets, jibbing of horses, waving of feathers—all colours but white, and the struggles of strong arms that would anatomise an enemy; or in the more settled arrangements of "A Council" (274), and picturesque composure of "A Knight arming" (279),—Sir John Gilbert is betokened to be one of the most prolific, if not one of the most inventive of illustrators. Mr. Frederick Taylor will ever be associated with hunting scenes. He is here, in "Full Cry in the Fens" (218), with hounds, horses, and red coats; with the presence of air and idea of motion, which his admirable descriptions always convey.

Mr. Carl Haag's large drawing, designated "The Swooping Terror of the Desert" (68), bears the impress of such probability as positive knowledge only gives; he dignifies by superb treatment an ordinary episode of travellers' experience before crossing the Desert became common route. An exhausted camel has attracted the insatiable vulture, and its Bedouin owner is taking careful sight to shoot the bird of prey; the wife and child, who have been to seek for water evince as much horror of the visitor as the conscious camel, so intimating that the vulture does not wait for a dead feast. Very seldom have the resources of pure water-colour painting met with a more convincing exponent than Mr. Carl Haag. With such help as sensational interest, and the rare opportunity of employing brilliant colour that Eastern fact so often offers, it might be safely predicted that this artist would turn his chances to magnificent account. A portrait, "Abdullah," one of Said Pasha's body-guard (143), corroborates the evidence of truthfulness and vigour that characterize the greater work. Mr. F. W. Topham's pencil, like Mr. Samuel Lover's pen, used to tell in pretty lines the poetry of Irish peasant life. Spain is the locality now where agreeable little phases of the wide world's behaviour are observed by him. There is something really Irish in the title of his admirable rendering of Andalusian or Valentian incident, "Listening to her Lover's Letter" (17). Did ever hallucinated damsel fail to listen to her lover's letters? Writing is a trade in Spain. Is not that singular? Mr. Topham's donna employing the old scribe and reader, knows better the meaning of the words, words, words, than any spell but hers can give them; but the incident has afforded material assistance to the making of a clever pleasant picture. It is a bold assertion, when the tender passion inspires so many an apprehension of it, when the theme has been written and drawn upon until, but for its everlasting interest, it must have been classed centuries ago with the worn-out, the thread-bare subjects to be shelved from further version by pen or brush; to say that never was the old, old story better told than by Mr. J. D. Watson. "The Meeting" (273) is just such as the refined instinct of lady authors, *years ago*, would have chosen for visible definition of what their endeavour was to describe, when heroes and heroines who ruled and reigned in village dominion, were destined to become one. It is a lovely drawing, and more by reason of its unaffected—perhaps accidental—grace than by any effort to force its appeal shown in presentment. Mr. Watson's other contributions to the exhibition are charming, by reason of their refinement, with no loss of naturalness; but there is nothing by him or others that can compete with this delightfully suggestive story of true and chaste love. "Far from Home" (9), by Mr. W. Goodall, shows a sleeping little vagabond in a favourable light: very nicely drawn, and exemplifying the effects of shared manner. It might have been by Mr. F. Goodall, R.A., judging by "La Jolie Bretonne" (180) at the Institute, if the hands were disproportionate and less well drawn. A beautiful head and some masterly adaptation of blues in the drapery make Mr. F. Goodall's drawing a great acquisition nevertheless. "From over the Sea" (108), by Mr. A. D. Fripp, a sailor with a parrot on his shoulder to astonish an easily-astonished father and astonishing mother; and "Feeding Time," by Mr. E. K. Johnson (121) will find their admirers, no doubt, if effort at finish tends to any account.

Mr. W. Goodall's "School in the Cloisters" (130) is a very tame show of learning. Mr. W. C. T. Dobson's head of "Sappho" (136), with a wreath of laurel-leaves admirably done, is far better than "The Camellia" (24), which is simply an "eyesore" for bad drawing; and Mr. E. K. Johnson's idea of "Sophia Western" (159), though admirably finished and an abstract representation of a delectable being, is no more Sophy Western than Joan of Arc. "A Child's Head" (211), by Mr. E. Lundgren, is sweetly pretty, as Mr. Lundgren's drawings usually are. Of some others we will speak next week.

COOKERY AT THE INTERNATIONAL EXHIBITION.

THERE are two main points involved in the consideration of the food question—one the food-producing resources of a country or district, and the other the capability or skill of the people to utilise its resources. It is remarkable that it is not the countries or districts that are blessed with the richest soil or the finest climate, that have always the best crops, the best cooks, or the best fed people. It has been admitted that some of the counties far north in Scotland send the finest beef that is supplied to the London market. Devonshire, Hereford, and other English counties come after Aberdeenshire with respect to produce; but the common people of these southern counties have not realised, as the Scottish people have done—so it is stated on good authority,—the economic value and nutritive virtues of well-boiled broth, or the nutriment that there is in the Scotch dishes, porridge and brose, that are only simple and inexpensive preparations of oatmeal.

The lectures on cookery given twice daily by Mr. Buckmaster at the International Exhibition are very interesting, but it may be doubted whether the practical lessons given are likely to reach or benefit the classes for whom it may fairly be presumed that they are designed. We do not offer it as an objection *in limine*, but, with the reverse of a desire to cavil, may suggest that the restrictions as regards admission under which the lectures are given must necessarily hinder their popular usefulness. This week the lecture given from twelve to one o'clock has been on "Poor Man's Soup," "Cabbage Soup," and "Omelettes." The lecture from three to four has been on "Maccaroni, with Cheese and Butter," and "Maccaroni, with Tomato Sauce." Last week, the second lecture given this week was taken first, and the second related mainly to the preparation of *Pot au feu*, with a practical illustration on the making of omelettes.

It can scarcely be expected that maccaroni, in any variety of its preparations, will become speedily naturalized amongst us, or enter largely into the domestic cookery of ordinary English life, and there is no good reason why her Majesty's Commissions should not take an admission fee from those who seek instruction as to the mysteries of preparing "Maccaroni with Tomato Sauce," or even of "Omelettes," but in providing excellent practical lessons on "popular cookery," they need to adopt a more popular course. There may be practical difficulties to be surmounted, and we certainly do not urge that there should be free admission to all Mr. Buckmaster's lectures; but we do strongly urge that, under suitable conditions and regulations, a number, as large as possible, of workmen's wives and daughters should be there to hear and see when he shows how to make "Poor Man's

Soup," "Cabbage Soup," or even *Pot au feu*. Lessons on the preparation of such dishes are not likely to be of much use to the class that can afford to pay for season tickets, and to pay, in addition, sixpence for admission to the lecture, and another sixpence for reserved seats and the privilege of tasting the dishes prepared in the presence of the company. "The proof of the pudding is in the eating," and if either Mr. Macgregor's suggestion, referred to in a former number, of admitting 1,000 girls, scholars, or, better still, pupil teachers, from the London School Board schools, to the Lectures on Popular Cookery, or any other plan be adopted likely to ensure the attendance of a number of women or girls really of the working classes, we hope the privilege of "tasting" will be graciously conceded to them.

In his interesting lectures, Mr. Buckmaster has abundant and efficient assistance, and all the materials and accessories he needs for the complete illustration of his subjects. Having mounted his rostrum, where a variety of objects have been arranged to his hand for illustrative purposes, he is waited upon by four dapper female cooks, appropriately attired, who watch his eye and hand, and hang upon his lips, suiting their actions to his words. He vindicates his mission manfully as a teacher of practical cookery, and contends that there is greater dignity in a housewife, or a woman of any class, being able to cook economically a wholesome, palatable dinner than in being able to fashion and manipulate flounces. His object, he stated, was not to show how to prepare costly, high-class dishes, but to point out defects in our domestic cookery, and to suggest remedies. He could not help it that *Pot au feu* was a French name; it was an excellent, economical dish, that could be produced in England under any name they pleased. It could be prepared either with 5lb. or 6lb. of the silver side of the round—that was the best; or of lower-priced pieces, such as half an ox-head, or pieces of flank, shin, &c., with 2lb. or 3lb. of good bones. The meat should be firmly tied, as was done by "Charlotte" and his other handmaid, who had each charge of a capacious saucepan. The vessel must be scrupulously clean and empty. The meat and bones having been placed in the pan are covered to about 2 in. over the top with pure, soft water. An onion is next peeled, and put down to roast. Another onion is peeled, and garnished with a dozen cloves, stuck round its centre. The other vegetables are then scraped and sliced, a few words being interspersed concerning their respective characters and qualities. These consisted of two carrots, a parsnip, two turnips (these can scarcely be peeled too thickly, while potatoes cannot be peeled too thinly, as far as the mere cuticle goes), half a head of celery, a leek, and, for a flavouring bouquet, a sprig of marjoram, another of thyme, a small bunch of parsley, two bay-leaves and a clove of garlic, the last being one of the most valuable of kitchen vegetables, although requiring to be used with great caution. The saucepan, which has been simmering on the cooking stove, is then carefully skimmed, and the carrots added ten minutes before the other vegetables, the other ingredients being a dessert-spoonful of salt, a tea-spoonful each of whole pepper and of allspice. The whole is then put to simmer for three or four hours, but should not be allowed to boil. An earthenware pot serves the purpose as well as a metal saucepan.

The contents of Mr. Buckmaster's pots on one day are warmed up for the company to taste on the day following. In referring again to the aims and objects of the school, Mr. Buckmaster quoted the proverb, "God sends meat," but another party "sends cooks." His numerous and respectable audience relished his soup, beef, and omelettes, and his lecture, too highly to suspect for a moment that he or his assistants were in the service of the said other party; and although all present might be in accord in applying to them the adjective clever, not one, we feel assured, could dream of attaching the substantive.

New Lighthouse on Holyhead Breakwater.—The Trinity House, London, has just given notice that the lighthouse on the breakwater at Holyhead, which is rapidly approaching completion, will be opened in the early part of June next. The light which will be exhibited will be a red flashing one, showing every fifteen seconds. The lighthouse is elevated 66 ft. above the level of high water.

AN EFFECTIVE GRATE.

THE great difficulty is solved, viz., how to get a healthy, cheerful fire, freeing the room from draughts, which will impart a genial heat with from one-third to one-fourth of the coal commonly used.

The Rev. Thos. Wolstencroft, rector of Syde, near Cirencester, has just taken out a most simple patent (No. 1,020) which can easily be applied to all open firegrates, improving the appearance of the grate, at a cost of a few shillings, and is particularly adapted to those attached to outside walls or over cellars.

The patent consists in cutting off the supply of air to the fire from within the room by putting a spring plate from the ashpit to the lower bar, under the front of the grate, and supplying the air from without by a tube 2 in. or 3 in. in diameter and 3 ft. or 4 ft. long. The portion of the tube protruding through the wall is sunk into the ground, or is otherwise protected from strong winds or currents acting upon it. The tube conducts the air to the chamber thus formed under the firegrate, and care is taken to make this chamber complete by stopping up all joints or cracks under and around the firegrate, so that the external air cannot possibly pass into the chimney except through the fire.

After the fire is kindled the back is covered with small coal, coke, or cinders, which cause the fire to burn first in front, and in a few minutes all the thin layer of small coal or cinders becomes of a cheerful red heat,—the air in the room is quickly warmed and maintains its heat on account of the fire drawing its supply of air from without. The only requisite for keeping the fire bright is an occasional poking so as to clear the bottom of the grate from ashes to allow of the action of the air upon the fuel. The bottom of the grate must always be covered with fuel but only a thin layer: the grate bars in front are, in fact, unnecessary, for a fire can be kept burning brightly as small as the palm of one's hand.

JAMES D. CURTIS,
Commander Royal Navy.

SAXMUNDHAM CHURCH RESTORATION.

THE parish church of St. John the Baptist, Saxmundham, has been partially restored under the superintendence of Mr. Phipson, the architect, and re-opened for divine service. The galleries and pews have been swept away, and the latter are replaced by benches made entirely of New Zealand Kaurie wood, which is very hard, of beautiful grain and colour, and free from knots. The gallery at the west end has also been taken away, and the tower arch is opened to view. The organ, which formerly stood upon this gallery, is now removed to the south aisle. It has been repaired by Mr. Walker, of London, and a new pipe, "Keraulophon," has been added. Both the aisles are divided from the nave by arches, four in number, on either side. The columns are octagonal. On the south side, the columns, formerly surrounded with pews, have been cleaned down, and in one or two cases renewed. Space has been saved by the removal of the south porch, and the main entrance to the church is now through the tower which faces the entrance to the churchyard, and the doorway is led up to by a broad flight of stone steps. An oak screen separates the tower porch from the nave. A further saving of space has been effected by the removal of the vestry from the west end of the north aisle. A new vestry, of Decorated work, is now placed on the north side of the chancel. The removal of the vestry and south porch has the effect of lengthening the church. The south chancel aisle has been thrown more open to the chancel by the introduction of two Decorated arches with circular piers, caps, and bases. A new three-light window has been inserted in the west bay of the south aisle, recovered by the removal of the porch. The walls are faced with wrought flint work, and the buttresses are all restored; the tower has also been restored. The south aisle has been newly roofed; the timbers are of pitch pine, varnished. The spandrels in the knees, next the wall of the nave, are filled with tracery characteristic of the Perpendicular style, which has been followed throughout the nave and south aisle. The windows are all of a late period, and both in the south wall and in the clearstory have elliptical heads with tracery. Most of these windows had to be entirely renewed.

The chancel had been shockingly defaced by the cheap repairs of the last century. A four-light window in the Decorated style has been fixed in the east end, and the wall has been refaced in the same manner as that on the south side. The reredos is not yet finished. It is presented by Mrs. Crampin, and will be from the hand of Mr. Thurlow, sculptor, Saxmundham.

The church is warmed by one of Goldsworthy Gurney's radiating stoves, which is placed in the south aisle, near the organ. The lighting with gas is by means of jets round the capitals of the columns in the nave. There is also a corona light suspended from the roof.

Several stained-glass windows now appear in the church: one, a two-light window, on the north side of the chancel; another at the east end of the south aisle; a third is the east window in the south wall of the chancel aisle; and a fourth, geometrical, is the one next it. Besides these, there is a two-light window in the east end of the north aisle, with figures of angels. This was painted and presented by Mary and Bessie McKean, and is a thanksgiving offering for the recovery of a relative from illness.

The outlay, including that of the chancel, was 1,700*l*. The contract was taken by Mr. Grimwood, of Weybread. Mr. Vine, of Eye, was the sub-contractor for the stone work; and Mr. Gibson, of Fressingfield, for the plumber's work.

READING GRAMMAR SCHOOL.

THE old Tudor Grammar School of Reading seems doomed. It is the only architectural domestic example left remaining to the town of the olden time, when it formed part of the hospital of St. John, and in the time of King Henry VII., being empty, was apportioned and endowed as a free grammar-school for the sons of tradesmen in the town.

Owing to systematic neglect and mean patchwork repairs, those in authority considered it not sufficiently grand or extensive enough for the requirements of this age, and accordingly a new and extensive one has been built a mile distant, the old one now being occupied in various tenements by a dingy-looking species of the working classes.

In this age, when the revival of the Gothic style throughout the length and breadth of the country is causing the owners of ancient buildings to do their utmost to preserve them, it seems mysterious that in an increasingly prosperous town like Reading there has not been aroused that spirit of regard for the memory of the many ancient men who received their education within its walls as to cause them to make an effort to uphold their time-honoured school, instead of seeking to hasten its demolition.

It is fifty yards from the town-hall, near the centre of the town, and any projected improvement of the latter need not in the least interfere with the restoration of the school, for any purpose that the Town Council can readily find for the public benefit, instead of being regarded as a disfigurement which it now is. The situation is such as few public buildings possess. The north and south fronts have an extensive open area beyond them, while the outline of the building, with its octagonal bell-tower on the north side, is sufficiently interesting to a stranger as to cause regret that one of the few links connected with the past is to be removed through the want of a leading spirit to stir up the inhabitants to preserve, at a comparatively small cost, what may prove a public benefit in the end.

J. B. WATTS.

DECAY OF IRON ROOFS.

SIR,—I have as yet seen no explanation of the cause of the scale of paint and iron falling off the roof, as mentioned by Mr. Raymond. Will you allow me to give you the result of my experience and observation during seventeen years I have designed and carried out railway works? The matter is very simple: in both wrought and cast iron a skin is formed upon the surface in the process of manufacture into the shape required. In wrought iron this skin will come off sooner or later in scales, even if the iron is painted. In cast iron it is thrown off in a granular rust.

This skin is of no material value, and would be better removed as soon as manufactured, if it was not for the cost of doing so; when it is removed and the iron is painted, there will be no recurrence of the scaling, as far as I have observed.

Lead paint should not be used; an iron oxide paint being cheaper and in every way preferable.

WM. PEACHEY.

MANSIONS OF OLD ROME.

AT the last meeting of the Architectural Association, a paper was read by Mr. R. P. Spiers, on this subject, illustrated by a large number of sketches, drawings, photographs, and engravings. The title given to the paper, "The Palace of Scaurus," indicated the intention to take as a guide the well-known work of M. François Mazois,—"Le Palais de Scaurus, ou Description d'une Maison Romaine." The convenience of the form into which this author has thrown his information, and the exact and peculiar nature of his studies, were noted. The form,—letters from an imagined prince of the Suevi, the son of the Ariovistus defeated by Cæsar (De Bell. Gall., lib. i.), to a friend remaining in Gaul,—is, of course, one of the many ingenious adaptations of the Abbé Barthelemi's idea of sending (350 B.C.) the Scythian Anarchasis to travel and observe in Greece (Barthelemi's work was first published in 1788). Mazois had projected an extension beyond the Roman residence,—the only part treated of in the work published in 1819,—to the forum, theatre, arena, and the temple. This, up to his death in 1826, he had not found time to execute. The exact and peculiar nature of his studies make his "Ruines de Pompéi" the finest work on that subject yet published. The details of the private life and of the arts of Rome were, by living for years among their relics, thoroughly realised by him,—not merely treated with laboured detail derived from old, even if contemporary, writers. The illustrations from the Scaurus of Mazois, copied in the section on "Roman Architecture" in Gwilt's Encyclopædia of Architecture, and elsewhere, and thus made known still more widely, owe some of their charm to this fact. Mr. Spiers exhibited to the meeting the plan of the so-called restoration by Mazois of the Palace of Scaurus, enlarged to a scale of 16 ft. to an inch, and called attention to it, as one of the completest expositions to be found anywhere of the general plan of the palace of an immensely rich man in the last days of the republic and later. Of the actual palace of the real Marcus Scaurus, mentioned by Pliny, nothing is known. Its site even is doubtful. Mazois placed it, after discussion of authorities, on the Cœlian Hill. The splendour of its decoration, incidentally alluded to in Roman writers,—notably the 38 ft. high Lucullian black marble columns,—led Mazois to conceive a palace on the grandest scale of size and finish. In all he followed actual examples at Pompeii as far as they would carry him, and added the special details from different sources, mainly from the precise descriptions of luxurious arrangements furnished in abundance by the ancient authors.

After treating each part of such a house in detail,—the public section, the family section, rooms for the master, for his wife, halls for games, baths, picture-galleries, libraries, servants' dwellings, stables, and the rest,—Mr. Spiers drew the attention of students to the value of the study of Roman architecture,—of what is known as Classic architecture generally,—in training the mind to properly appreciate symmetry and regularity in the disposition of buildings in which the expression of dignity or of refined elegance is to be produced. The arrangement of the courts of a Roman house, capable as it is of modification to suit climate and varied conditions, might usefully be kept in mind by English architects designing modern residences. In the houses in Paris and its neighbourhood, the effect of the careful study of Roman building shows itself to the instructed eye in a certain dignity and ease and finish in general idea as well as detail, never out of the aim of French architects in their most vivacious works.

Treating of the decorations so specially associated with Pompeii, but discovered in Rome and elsewhere in Italy, when excavations strike the ruins of early buildings, Mr. Spiers said:—

"In the construction of vaulted halls, centres would seem to have been placed under the chief ribs. Boards were laid from centre to centre. The ribs were formed of the Roman bricks, which, being not more than from 1 in. to 2 in. in thickness, and 2 ft. square, were more like tiles. Between these and on the boards were laid thick slabs of wood, which formed the moulds for the coffers, and then the whole was filled in with concrete. On the removal of the centres and boarding, the soffite of the vault was coated with stucco, and painted. Sometimes when there were no coffers, and when the vault was going to be painted or enriched with mosaics, a layer of tiles was placed on the boards, which formed a more solid and better constructed ceiling.

The paintings with which the halls and rooms were adorned may be divided into three classes: the first and highest being the pictorial representation of groups of figures, which I would call the ideal based on nature; 2nd. The representation of animals, foliage, plants, &c.,—*i.e.*, the real based on nature; 3rd. The representation of imaginary perspectives of imaginary architectural features,—the ideal based on conventionalities, fantasies, and conceits.

The first are of the most importance, and an inspection of any good engravings of those formerly existing in Herculaneum (a second-class Roman town) will give some idea of the standard of art which was reached by the Greeks at this time. It must be remembered, 1st, that they were executed in fresco,—a style of painting which demands celerity in execution, and the drawing of which cannot with facility be corrected; and 2nd, that they were drawn by men esteemed only second-rate artists,—for provincial clients. The second class of paintings rank quite as high in their own particular style of work. The imitation of nature is perfect, and the freedom from the conventionalities of limited powers remarkable.

Both of these classes of painting, however, exist in our own day. It is in the third class that we find a style of decoration peculiar to the Greeks and Romans, which has never to any considerable extent been attempted since. The walls above the dados of halls and rooms were often painted with representations of porticoes and courts, so arranged that at first sight they seem as if one could look out of the room into them. They have the effect of large mirrors, and give great effect of size. It is true that in the sixteenth and seventeenth centuries the walls and ceilings of great halls were painted with columns and balustrades, and figures disporting themselves beyond; but the eye is rarely deceived by these and the imagination carried beyond the wall or ceiling on which they are painted, as it is by these Roman pictures. Besides, the knowledge of perspective possessed in later days enabled the Italian and French painters (who generally executed these works) to establish one point of sight and work everything from it, with the consequence that there was only one point of sight from which the pictures ought properly to be viewed. But in Pompeii and Herculaneum the architectural perspectives seem to have been done instinctively, perhaps without plan of any kind, and have many points of sight; the lines converge to these various points, and curiously enough do not always seem to do so until after critical examination. Of the exact meaning of such perspectives I have no definite knowledge; they would seem to be based on some recognised frequently recurrent architectural objects, and probably the ornamental features of the solaria or open terraces, with gardens (hanging gardens) common in such mansions,—forming a great portion of the roof space,—supplied the chief subjects. I cannot but think, however, that the necessity for rapid execution in fresco has sometimes led to the execution of forms of such wild fantastic kinds as in more sober and reasoning moments would have been discarded at once."

STEAM LOCOMOTION ON COMMON ROADS

A PAPER has been read at the Institution of Civil Engineers, Mr. T. Hawksley, president, in the chair, "On the Rise and Progress of Steam Locomotion on Common Roads," by Mr. John Head, Assoc. Inst. C.E. It was divided into four parts:—1st. On road locomotives for conveyance of passengers, also locomotives for use on tramways; 2nd. Road locomotives for conveyance of goods, heavy weights, &c., also steam rollers; 3rd. Locomotives for use in agricultural operations, steam ploughing, &c.; 4th. Locomotives for military purposes. The author commenced by reviewing the history of the road locomotive from the time of its introduction, about the year 1827, up to the present time, showing the energy and talent which had been displayed by Gurney, Hancock, Scott, Russell, and others of the early inventors, and the great difficulties which appeared to beset them in their endeavours to introduce steam on common roads. It was stated that there were only two feasible ways of applying steam power to tramways,—first, by means of a self-contained steam car running upon four or more wheels; and, secondly, by a detached engine, drawing one or more cars.

We may here remark with reference to an application from Mr. C. Gilpin, M.P., addressed to the Metropolitan Board of Works for permission to try a new steam tramway car on the line of rails between Vauxhall Bridge and Victoria Station, that a committee of the Westminster District Board of Works, by whom the subject has been considered, report that they have grave doubts as to the power of the Metropolitan Board of Works to make a special bye-law or order under the "Locomotives on Roads Act, 1865," sanctioning the use of steam locomotives, and are further in doubt whether any permission from the Metropolitan Board of Works would override the Tramways Act, by which the use of steam cars on tramways is prohibited; and being, moreover, of opinion that running locomotives through the streets of London in the daytime is dangerous to the public, they decline all responsibility in regard to the proposal to run steam tramway-cars along the Vauxhall-bridge-road. At the meeting of the District Board on Friday, this report was adopted.

Mr. Cawley has withdrawn his Locomotives on Roads Bill, which was on in the Commons for second reading, and has announced that he will move for the appointment of a Select Committee to inquire into the whole subject.

POROUS TILE ROOFS.

IN reply to an inquiry in our pages as to the best mode of rendering porous tile-roofs waterproof, three separate correspondents recommend the use of the composition patented under the name of enamelling paint, and sold by T. Griffiths, of Liverpool. The letters exhibit a little too much friendly feeling, if not concert, but we have reason to believe nevertheless that the material named might answer the purpose.

EWELME AND CHAUCER.

IT seems a sort of profanity, if one may excuse the term, to visit Ewelme and ignore Chaucer.

The founders of the alms-house described by Mr. Watts were, in their day, great people—viz., the Duke of Suffolk, whose tragic end is so graphically recorded by Shakspeare in his "Henry VI.," part 2, and Alice, his wife, believed to have been Chaucer's granddaughter. This couple lived at Ewelme in great splendour, and their benevolent plans for founding and endowing the old charity in question were most efficiently carried out by themselves, and respected, if not augmented, by their successors.

The sight-seer's lion of Ewelme, however, is the church, which contains two of the very finest tombs in England. They were the work of Duchess Alice in her last and long *third* widowhood. She was the daughter of Mr. Thomas Chaucer, landowner, M.P., envoy, or ambassador, and court official, but nevertheless a *parvenu*, for we cannot really prove who was his father. He married a lady named Burghursh, of an old baronial family, with whom he acquired his estates at Ewelme and elsewhere. His mother's name was Rouelt.

Tradition and every probability make him the son of Geoffrey Chaucer, poet, courtier, envoy or ambassador, and landowner *in a very small way*. He married a lady named Philippa, whose surname we do not know.

These tombs illustrate the whole subject. They show the arms and alliances of Burghursh, Duchess Alice's family on the mother's side; they show the arms and alliances of an Earl of Salisbury who was the duchess's second husband; ditto, ditto, of the Duke of Suffolk, her third husband. These tombs prove nothing whatever about Chaucer, but they say a good deal about Rouelt, the name of Thomas Chaucer's mother, and of her family alliances.

Sir Payn le Rouelt was a king-at-arms; that is, he was a professional herald of very high standing, with two daughters, one of whom, named Philippa, was mother to Thomas Chaucer, above named: thus the duchess would have all this love of heraldry in her very blood. The other daughter, Catherine, became a governess in John of Gaunt's family; eventually Duchess of Lancaster and mother of all the Beauforts. This was a great alliance, connecting plain Alice Chaucer collaterally with the Lancastrian monarchs, Henry IV., Henry V.,

and Henry VI.; while through the Beauforts she was related in blood to the rival Yorkist line. Her son, the second Duke of Suffolk, married a sister of Edward IV.; her grandson, the Earl of Lincoln, was recognised heir to the English crown, and this tie of blood endeared him to the Tudor line, for Henry VII. also was a Beaufort.

It has been objected, if Duchess Alice was of kin to Geoffrey Chaucer, why does the fact not appear, when she had so evidently the opportunity to prove it? I fear that she was too pious, and preferred to ignore one whom the priests condemned. We have a similar case with Shakspeare's granddaughter, who, from Puritanical motives, ignored her progenitor.

Briefly, the case stands thus:—

Geoffrey Chaucer. = Philippa, (name unknown), maid of honour to Philippa, Queen of Edward III.

Philippa Roulet. = Chaucer (name unknown).

Thomas Chaucer= Burghursh.

1. Alice Chaucer=Philip.

2. Earl of Salisbury.

3. De la Pole, Duke of Suffolk.

It is to be hoped that some Record-search may yet supply the missing link.

A. HALL.

THE CHURCH OF ST. CLEMENT, BOURNEMOUTH.

ON Tuesday in last week this church was consecrated by the Lord Bishop of Winchester. The plan of the building consists of a nave, with one broad aisle on the north side; a chancel, 40 ft. in length, separated from the nave by a lofty stone rood-screen. On the south side of the chancel are the sacristy, organ-chamber, and choir-vestry, each of which communicates with the other, and with the adjoining clergy-house by means of a covered cloister. On the north side of the chancel is a chantry chapel, having open stone screens at the west and south sides. The style of architecture adopted is of the latter half of the fourteenth century. On the oak choir-stalls are representations of the Annunciation and the Nativity, and the figure of the founder, Mr. Edmund Christy, offering the church "to the glory of God and in honour of St. Clement."

The Communion-table is approached by a flight of white marble steps, with encaustic tiles designed by the architect for this work. Both here and elsewhere in the church the emblem of St. Clement appears.

The church cost 6,000*l.*, and holds about 500 persons. Mr. Sedding, of Bristol, is the architect; Mr. Toogood, of Bournemouth, the builder; and Mr. Green, of Manchester, executed the carving.

KING EDWARD THE SIXTH'S GRAMMAR SCHOOL, SOUTHAMPTON, RE-OPENED.

THE ancient Grammar School at Southampton has been re-opened, after the re-building of the main portion of the institution, and some renovation of the rest. The Mayor and Corporation were present officially, as well as the Bishop of Winchester, Mr. Cowper-Temple, M.P., and a large party of ladies and gentlemen.

The new school buildings and cloisters have been erected by Messrs. Brinton & Bone, from designs furnished by Mr. R. Critchlow, of Southampton, architect. On the site of the old school-room, which was dark and ill-ventilated, being only 9 ft. high, there has been erected a room 15 ft. high, and with arrangements for ventilation. These include the fitting of the windows on a principle invented by Mr. Critchlow, by which the opening of the lower sash opens the higher also, though the former may be in effect closed, and at the same time leave the upper one so far open as to provide ample means of egress for fetid air. There are sliding ventilators in the lower walls, and open ones near the ceiling, and the fireplaces have been built of a height equal to that of an ordinary boy. The room built in 1860, which was a mere well, with a light on the top, has been improved, windows having been put in the walls, and fireplaces for the purpose of ventilation introduced. The lantern has been removed, and a perpendicular window inserted in the eastern wall, light being obtained through it from French-street. A class-room in connexion with both the rooms has been built, as well as a porch common to both rooms, and a new hat and coat room. The latrines, too, have been rebuilt, as hitherto nothing could be worse than the sanitary arrangements in this respect; an air passage, fitted up, and to be used as a lavatory, separates them from the schoolroom. The walls are of glazed brick, set in cement. The floors are paved with slate, and they are to be fitted up with the best self-acting sanitary appliances at present known. Some new and commodious dormitories have been fitted up in the upper part of the new buildings, where, too, the paramount necessity of proper ventilation has not been forgotten, the partitions dividing the sleeping-place being entirely open at top, and fire-places are fixed on both sides. The cloisters at the east end of the quadrangle are 45 ft. by 25 ft., the width being here extended to admit of the place being used as a hand fives-court. The south cloisters are 126 ft. long, and 10 ft. wide, and are terminated at the west end by a perpendicular window of three lights, containing iron stanchion bars, with *fleur-de-lys* heads. The cloisters are formed by a succession of arches, piers, and buttresses, built of red brick. The roof is constructed with beams, to admit of gymnastic appliances being fitted, and the floor is of Bishop Waltham glazed red diamond tiles. The quadrangle has been levelled and drained, and will be gravelled when funds admit, and the dwarf wall at the west end completed.

THE EMIGRATION OF WORKMEN.

THAT some better idea may be formed as to the extent of emigration of a given particular trade from this country, I quote from a return, very recently issued, of the number of miners and quarrymen who have left this country in passenger-ships in each year since 1861:—

Year.	Number.
1862	1,720
1863	3,220
1864	3,266
1865	5,643
1866	6,030
1867	5,641
1868	8,500
1869	9,913
1870	4,769
1871	5,272
1872	5,569
Total in eleven years of	59,543

These are the sort of men that England can ill afford to lose, at any rate in such large numbers as above.

I may add, that of my own knowledge numbers of the most skilful persons are quitting Manchester for the United States, several of them having left during the past week, from the Royal Exchange, Ellis & Hinchcliffe's, &c.

E. G.

CHESTER WORKHOUSE COMPETITION.

MR. CULSHAW, architect, of Liverpool, in his report as referee in the workhouse competition, placed the design bearing the motto "Castrum" first, that with the motto "Alpha" second, and "Cestria" third. The design "Castrum" is by Messrs. W. Perkin & Sons, architects, of Leeds. The guardians have not confirmed Mr. Culshaw's award, and there is much sharp writing going on in consequence.

THE TRADES MOVEMENT.

Oxford.—At a meeting of master builders, held in the Town-hall, to consider the request of the operative masons for an advance of wages and other privileges, it has been unanimously agreed that they were not in a position to comply with the request, owing to their having taken contracts and entered into engagements upon the understanding that the last arrangements would settle disputes for a reasonable time. They also expressed an opinion that the masons were adequately paid for their labour, and condemned the practice of making repeated and unreasonable demands, which, they considered, tended to stop and even banish trade, and injure the relations between employer and employed.

Rotherham.—A meeting has been held by the masons of this district to consider what course should be pursued in order to obtain the reduction in the hours of labour which some time ago they demanded. The reporters were excluded from this meeting; and on the same evening the master builders held a meeting, at the White Hart Inn, to consider the demand of the men, which was for a reduction in the hours of labour from 55½ hours to 50½ hours per week. The masters considered that for the Rotherham district, which, for many reasons, is not on an equality with Sheffield and other places, this was an unreasonable demand; but their meeting was adjourned in order that the matter might be further considered.

Liverpool. — An aggregate meeting of the operative house carpenters and joiners of Liverpool, Birkenhead, and vicinity, was held on Thursday in last week at the League-hall, Whitechapel, "on business of importance to the trade." The week's working hours of the men are at present fifty-five, the rate of payment being 6¾d. per hour. The men sought to reduce the hours to fifty, and increase the rate of wages to 8d. To this the masters would not agree, and at a meeting in Hope-hall a resolution offering, on the part of the men, to agree to 52½ hours, at 7¾d. an hour, was passed. To this the masters declined to agree, but renewed a previous offer of an advance of a ½d. in summer and ¼d. in winter. It was then resolved that the masters should be seen individually on the subject; but this did not lead to any satisfactory result, and the meeting was to consider the best course to adopt under the circumstances. Mr. Sutherland occupied the chair; and there were nearly 1,000 persons present. The Hope-hall resolution was almost unanimously negatived. The chairman expressed his gratification at this result, as he said there was no telling what the end of a strike might be. From what he could learn he thought the masters, although they would not concede the diminution of hours, would be perfectly willing to give a rise in wages. A resolution to the effect that the meeting, in order to finally settle the dispute between the employer and employed, agreed to withdraw their demand for a reduction of hours, and to ask only for an advance of 1d. an hour in the rate of wages was carried, only one hand being held up against it. It was then resolved that the meeting determine to cease work on Wednesday, April 30, if their demand be not acceded to on or before that date! The resolutions to be communicated to the Builders' Association.

Darlington, Stockton, and Middlesbrough.—The Darlington joiners made another demand for 3s. additional wages per week, and have intimated that unless their requirements are complied with by the 20th of May, they will take other steps to secure them. The masters are unwilling to grant the required concession. They consider that they yielded a trifle too easily to the reduction in the hours of labour, from 56½ to 50 hours, asked for last year, and they are now taking steps to resist the present demand. In Stockton, failing compliance with their demand for 3s. per week additional, and an hour's less work on Saturday's,—that is, to enable them to knock off at twelve o'clock instead of one—the joiners have already come out on strike, and there is a general suspension of building operations, which will probably become still more widely diffused unless a settlement is effected. In Middlesbrough, also, there is a prospect of a rupture arising out of similar causes. Indeed, the present demand appears to be only the initiative step in a general movement on the part of the building trades, in the north of England, for additional wages, or failing that, shorter hours of labour. Houses are in great demand throughout all the North of England, but more especially in the Tees-side towns. In Middlesbrough alone something like a thousand new houses were erected last year, and the demand for house accommodation remains unabated. In Darlington and Stockton the domiciliary requirements of the population are equally urgent. Work is, therefore, plentiful, and wages are better than they have ever been before.

Edinburgh.—At a joint meeting of the Edinburgh and Leith operative masons held in St. Mary's-street Hall on Wednesday in last week, a letter, which had been received from the Master Builders' Association, was submitted, stating that at a general meeting of the Edinburgh and Leith Master Builders' Association, it was unanimously agreed to accede to the operatives' demand, namely, 7½d. per hour, to commence on 3rd May. It was unanimously resolved to return thanks to the Master Builders' Association for complying with the demand. As there are a number of employers not connected with the Association, the meeting autho-

risedthe committee to take immediate steps to get them also to concede the increased rate.

Strikes at Vienna.—A correspondent of the *Eastern Budget*, at Vienna, says, writing on April 18th,—

"The workmen here seem to be taking advantage of the extraordinary demand for labour caused by the International Exhibition, and by the enormous extension which has taken place of late in the size of the capital, to claim an increase of wages. Hitherto strikes have been almost unknown in Austria, which is, to this day, chiefly an agricultural country, with a large population of peasant proprietors. There are only a few places which can properly be called manufacturing districts, and the production of the country is, on the whole, insufficient for its wants. The industrial development of Austria, however, has of late years become so great that the demand for labour far exceeds the supply: moreover, the quality of the labour differs very much according to the nationality of the workman. Skilled labour is almost entirely confined to Germans. The Slavs are, as a rule, employed on the commoner kinds of work only. The German thus earns considerably more than the Slav; but he is more exacting, as his wants are greater. But as national questions are all important in Austria, and social questions almost insignificant, any coalition of workmen became impossible, and strikes were avoided. A strike has taken place in the machine-factory of Herr Sigl, where there are 2,600 workmen, with wages rising from 4s. to 14s. a day. Herr Sigl, however, shut up his factory directly the men began to strike, and they have now all returned to their work."

EMPTY HOUSES IN ISLINGTON.

FROM a return prepared by Mr. Layton, vestry clerk, for the use of the general purposes committee of the vestry of Islington, it appears that there are at the present time 2,131 empty houses in the parish, of which 1,011 are in Upper Holloway ward, 423 in Highbury ward, and 694 in the other six wards. The assessed value of such empty houses amounts to 70,383*l.*

THE VENTILATION QUESTION.

SIR,—It is now many years since the question of warming was ventilated without showing satisfactory progress. It seems to me that a solution might be arrived at, if only a small amount of goodwill could be dug out of certain competent quarters.

The means of warming are simple and well known; only one difficulty meets them all, and that is the following question,—Should the eduction of the vitiated air be made from the ceiling or from the floor? Let this be answered and the rest will settle itself. I have seen a costly dining-hall where the air was educted by shafts from the floor. And in the *Builder* of the 19th of April, p. 315, Dr. Demarquay proposes this method for hospitals. Certainly this is the way to get a genial, quiet warmth in the room. On the other hand, it cannot remain unnoticed that in a theatre the vitiated air is at the ceiling. Hence the puzzle! for an eduction from the ceiling attracts a direct current from the mouth of induction, and no heat will remain in the room. Hence the question, the room being considered like a gas-holder, will an eduction from the floor leave the air sufficiently pure for breathing? An affirmative answer implies economy, a negative is perplexing.

It only requires a few easy experiments, say at the barracks, and who can make them better than the Society of Architects? Why are they motionless? Is the question beneath their notice, or too easy, or too useful or philanthropic!

T.

REPUDIATION OF AN ARCHITECT'S CERTIFICATE.

HILL AND OTHERS *v.* THE GUARDIANS OF THE POPLAR UNION.

THIS important case, the trial of which, in the Court of Exchequer, at the last sitting in the Guildhall, was fully reported in the *Builder*, when a verdict was found for the plaintiff's for 7,000*l.*, with leave to the defendants to move for a new trial upon a point of law, came before the full Court on Thursday, the 17th, in sittings in Banco, before the Lord Chief Baron Kelly, and Barons Bramwell, Pigott, and Pollock.

The plaintiffs, it may be remembered, were the builders and contractors for the new Poplar Workhouse, and sued the guardians for the balance of their account, and obtained judgment in their favour.

Mr. Prentice, Q.C., now moved for a rule to enter the verdict for the guardians; or for a rule for a new trial on the ground of misdirection to the jury; and also on the ground of rejection of evidence by the Lord Chief Baron at the trial.

The contract, which was under seal, was to build the house for the sum of 32,000*l.*, and the architect had given his certificate for that sum, and large sums had been paid, but the 7,000*l.* unpaid the guardians disputed despite their architect's having also given his certificate for that sum for extra works, which the guardians had not ordered in writing or given orders for.

Mr. Prentice now informed the Court that the guardians were most anxious to pay to the contractors all that was right and just, but they considered that their architect had acted imprudently in giving a certificate for some thousands of pounds more than he ought to have done, and that they were justified in repudiating it, and at liberty to re-open the question as to the amount due, by a new trial.

Long arguments between the learned judges and the defendants' counsel led to the defendants obtaining a rule *nisi* (*i.e.*, a rule that will eventually be made absolute, unless the plaintiffs shall show sufficient cause why it should be discharged, or a new trial refused), on the ground that the certificate of the architect was not conclusive on the defendants, as it included the value of works and sums for which the guardians were not liable; that some of the extra work was not ordered in writing by the architect, and that the learned judge misdirected the jury on the above point, and in telling them that the certificate was binding and conclusive on the guardians, and that they could not contradict the same.

It next remains for the plaintiffs' counsel to argue the points referred to; but the impression prevails that a new trial will take place. The 7,000*l.* are paid into Court, but the contractors cannot draw them out until the matter is finally disposed of.

PROJECTIONS BEYOND LINE OF FRONT.

AT Southwark Police Court, Mr. Lilley, a corn merchant, 19, London-road, was summoned before Mr. Partridge, by order of St. George's Vestry, for obstructing the pavement in front of his premises, by the erection of a pent-house.

Mr. Arnold, solicitor, appeared for the defendant.

Mr. Hiscoke, the surveyor to the Vestry, said the defendant had a pent-house erected on wooden supports, and covered with corrugated iron, which was beyond the line of frontage indicated by Mr. Vulliamy, the superintending architect of the Metropolitan Board of Works. He had neglected to comply with the order of the Vestry, and hence the present proceedings.

Mr. Arnold contended that his client had not infringed the rules laid down or the line of frontage indicated by the superintending architect of the Metropolitan Board of Works. The magistrate had inspected the locality, and had seen that the adjoining houses on either side of Mr. Lilley's had pent-houses strongly built, and projecting further on the footway.

Mr. Hiscoke informed his worship that they were erected before the passing of the Act in 1852, consequently the Vestry could not interfere with them.

Mr. Arnold considered it was a great hardship on the part of his client to have to pull down his pent-house, while his neighbours on each side were allowed to retain theirs.

Mr. Hiscoke observed that Mr. Lilley should have applied to the District Board of Works before he erected the pent-house. Instead of that, he set the law at defiance.

Mr. Arnold denied doing that, and regretted that his client had not in the first instance applied to the Vestry. He trusted, however, that his worship would not compel him to pull down the pent-house.

Mr. Partridge observed that it might seem hard that the defendant should be compelled to pull down his pent-house while his neighbours had theirs; but it was clear he was wrong, as he was of opinion his pent-house was beyond the general line of frontage laid down by the superintending architect. He accordingly ordered it to be taken down.

COLOUR OF TIMBER.

SIR,—In reply to your correspondent asking for information respecting the preservation of timber, we beg to inform him that Sir William Burnett's process, which has been in successful use for upwards of thirty years, does not alter the natural colour of the wood in any way.

BURNETT & Co.

OPENING OF THE NEW PUBLIC HALL AND LIBRARY, LOWESTOFT.

PERHAPS few towns in the Eastern counties have progressed more than Lowestoft in building operations, which fact is mainly attributable to its position as a fashionable watering-place. Entire districts have, during the past six years, been transformed from pasture and arable to streets and houses. The Local Improvement Commissioners have just determined to lay out a People's Park on the North Common. To supply the want of a library and public hall, a few months ago a company was formed. A plot of freehold land was purchased on the London-road, and Mr. W. O. Chambers undertook the architectural arrangements. Contracts for the building were entered into, and the commencement of the erection has just been celebrated by a foundation-stone being laid. The style of architecture selected for the front elevation is Italian, faced with white brick and stone dressings. All the windows are semicircular; but the principal features in the façade are pilasters, with Corinthian caps, supporting a projecting cornice of stone and brick, over which is placed an ornamental parapet, relieved with finial terminations. As the building is divided into two portions, a large open porch extends over the two entrances, one half being devoted to the Freemasons, who have, independent of the company, erected at their own expense a spacious hall for the meetings of the Masonic lodges of the district, with ante-rooms, kitchen, and other accommodation for the craft. The other half of the building contains a large library, amusement-room, committee-room, &c. The public hall is in the rear of the library. Pilasters are introduced in the side walls, surmounted by plaster caps. Ribs divide the ceiling into recessed panels, in which are placed two patent sunburners, to light the hall, of forty-two jets each; into the ascending shaft of the sunlights are connected ventilating trunks in the roof. At the west end of the hall is a gallery, and at the east end an apsidal termination, in which is placed the platform, raised about 30 in. from the floor, the latter having a rise of 15 in. from end to end. Accommodation is provided for about 800 persons in the hall. The entire cost of the library, public hall, and Masonic hall is about 4,000*l.* Messrs. Gibbons, of Ipswich, were the builders. Mr. J. G. Balls, of Lowestoft, was the sub-contractor for the stone work, and Mr. Scarlett for the plumber's work. The gas-fittings were executed by Mr. J. W. Ling.

CHURCH-BUILDING NEWS.

Scarborough. — Christ Church is to be extended eastward by the erection of a chancel, which the church does not at present possess. The contemplated improvements include a uniform system of sittings. A new tesselated flooring will be laid down. Out of the three stained windows required two have already been promised by parishioners in memory of departed friends, and it is hoped the third one will be forthcoming. The entire cost of the improvements will be 1,200*l.*, and of this 800*l.* have already been promised. It is also hoped to be able to erect a good organ at some future day.

Hanley Castle.—St. Gabriel's Church, Hanley Castle, has been consecrated. The site for the new church was presented by Sir Edmund Lechmere. It consists of about an acre of land in Robertsend-road, is adjacent to the high-road leading from Hanley to Malvern, and is very suitably situated as regards distance for the scattered population of the parish. The architect is Sir Gilbert Scott, R.A.; the contractor, Mr. Wm. Porter, of Malvern Wells; and Mr. Burlinson, clerk of the works. The church is built in the Early English style, and consists of chancel; nave, with aisles separated therefrom by four obtuse pointed arches, and clearstory above; tower and spire at the north side of the chancel. It is built of Cradley stone, with Bath stone dressings and facings. The lower stage of the tower will serve as a vestry, underneath which is a chamber for the hot-air apparatus. The tower is of three stages, supporting a broach spire, with gables and duplicated lights. The roof of the church is steeply pitched and slated, with foliated crosses at the gables, and open timber work of Memel deal supporting the roof internally. There are three entrances to the church,—at the west end, at the north-west angle, and in the east wall of the tower. In the great east window are five lancet lights under one drip-stone, with quatrefoil tracery in the head. The west window has four lights,—two and two. Along the clearstory are cinquefoil windows, and in the aisles duplicated lights. Godwin's encaustic tiles adorn the pavement. There are about 400 sittings, all free and unappropriated. There is a small peal of six bells. The reredos is from a design by Sir Gilbert Scott. It is of alabaster, and is formed of three compartments, the centre one bearing in inlaid work a Latin cross, elevated on degrees, and surrounded with the emblems of the Crucifixion. The side compartments bear figures of St. Gabriel and St. Michael. A retable, also of alabaster, forms part of the reredos. There are carved oak sedilia, and a credence niche, on the right of the altar. The altar-rails are of brass and iron, and by a telescopic arrangement of the upper bar the entrance to the altar may be closed or opened. The font occupies a position in the south-west of the building. It is carved in Bath stone, stands upon a cluster of Purbeck stone columns, and is surmounted by a carved oak canopy. The church is lighted by four pendent coronæ, three equi-distant in the nave, and the fourth in the chancel. The chancel floor is laid with encaustic tiles of a suitable pattern. The cost of the edifice will probably exceed 5,000*l.*

Bath.—The foundation stone of St. Paul's Church, which is intended to replace St. Mary's Chapel, Queen-square, and is built nearly on the site, has been laid by the Hon. Maria Brodrick, sister of the late Lord Midleton, a former rector of Bath. The church, we are informed, is to be in the Gothic style of an early type. It at present consists of a nave, with circular-ended chêvet, but provision has been made for future extension, with organ-chamber and temporary

vestry. The entire length of the nave, including chancel, is about 97 ft.; the width, 38 ft. (internal dimensions). The height to the top of the cross is 63 ft. 6 in., and 28 ft. 9 in. to the wall-plate, and it is arranged to accommodate 700 persons. The exterior of the walls will be finished in hand-dressed freestone; the interior will be clean-worked ashlar, relieved with strings of red stone from the Bishop's Lydiard quarries. The passages are to be laid with Godwin's encaustic tiles, those of the sanctuary of a superior description. The trusses to the roof will be curved and moulded, and supported on ornamental carved stone corbels. The roof is to be covered with the best Bangor countess slating, with terra-cotta ridges. The doors are to be of oak. The principal entrance will be from the Bristol-road, where a double-ordered doorway will be approached from steps on each side. Over this doorway is a group of windows. The other entrances are,—one from Chapel-row, on the south side, and one to the vestry from the north. The south elevation towards Chapel-row is divided into five bays, and the church will be lighted from this side by five two-light windows. The east end, that facing towards Queen-square, has five lancet single-light windows, each with two columns with ornamental caps and bases, with arched stones composed of Bath and Bishop's Lydiard stone alternately. There will be an ornamental stone cornice running round this east end, as also along the Chapel-row elevation. There will be five nave arches, and the columns supporting the same will be of blue Pennant stone, with ornamentally carved caps and bases. The whole of the work is being carried out from the designs and under the superintendence of Messrs. Wilson, Willcox, & Wilson, architects; and the contract has been taken by Mr. Joseph Bladwell, at a sum of 3,240*l.*, but this does not include any of the internal fittings, such as the pulpit, font, choir-benches, seats for the congregation, &c. It is proposed, when funds permit, to erect the aisles and a campanile tower, with an entrance from Queen-square.

Hastings.—It is proposed to enlarge the new church in St. Andrew's-road, by the addition of a north aisle; and the board of directors of the Gas Company are willing to facilitate the proposed enlargement by giving up a small piece of ground for the north-east corner of the new aisle.

Cheveley.—The church has been reopened, after restoration, under the superintendence of Mr. J. D. Sedding, of Bristol, architect. The works have been completed by Mr. R. Tooley, of the Church Restoration Works, Bury St. Edmund's. The cost will be about 3,000*l.* The greater part of this is borne by the rector. The Duke of Rutland, who is the principal landowner of the parish, offered to restore the south transept, which work will cost 300*l.* The chancel has been taken down and entirely rebuilt, with an open-timber hammer-beamed roof. The stonework of the east window has been restored, and the triple-lights are partly filled with stained glass, which, in the completed form, will represent the Crucifixion. At present, the centre light is wanting. The reredos is of alabaster, having in the centre a Decorated Latin cross of white statuary marble, with dove-coloured marble for a back-ground. On the left there is a representation of the Expulsion from Eden, and on the right the Nativity. The flooring is laid with tiles of ancient design, from Godwin's, of Lugwardine. On the south side of the chancel a new organ-chamber and vestry, in keeping with the rest of the structure, have been attached, whither the monumental slabs from the chancel have been removed. The side-walls of the south transept had to be rebuilt, and a new open-timbered roof put on. The plaster on the walls of the north transept has been removed, and the old oak roof restored. The tower has been restored. It was found necessary to thoroughly underpin one of the piers. The belfry has been supplied with new windows. The plaster on the exterior of the walls has been knocked off, and the plinth-work pointed up. The seats will be open benches, in oak, with carved poppy-heads. The flooring of the aisles of the church consists of Peak's Tunstill tiles (black and red), worked in patterns; and new oak doors have been provided throughout. The windows have been principally glazed with cathedral glass. The church will be warmed with heated air, when necessary, by an apparatus supplied by Mr. Gidney, of Dereham; and to prevent the walls being affected by damp, the earth has been cleared away from the foundations, and a drain inserted to take away the surface water. The contractor was Mr. Tooley.

Glossop.—An elaborate memorial-stone, of ecclesiastical design has been placed in the parish church over the family vault of the late Rev. Christopher Howe, who died September 15th, 1849, and was the oldest vicar of Glossop of whom there is any record. He held the living for upwards of half a century. The inscriptions, made in black and red letters, are surmounted by a cross, on which appear the Latin words, "For in heaven there is rest," whilst in the centre is placed the sacred monogram of *Jesus Hominum Salvator*, first engraved, and afterwards gilded, with ornamental emblems grouped around. The railings are of Sheffield manufacture, and terminate in the pattern of a mitre, on six of the bars, which will subsequently be gilded, in order fully to complete the design. Mr. W. B. Clarke, of Strangeways, was the sculptor.

Putney.—The ceremony of laying the foundation-stone of the new church of All Saints, at Putney, has been performed by her Royal Highness the Princess Christian of Schleswig-Holstein. A large company, numbering upwards of 1,500, had assembled on the spot, within the area, covered by a circular tent. Messrs. Adamson are the builders, and Mr. G. E. Street the architect. Baron Pollock, chairman of the committee, stated that the site was the gift of Earl Spencer, the lord of the manor. The church was to be free and open. The amount subscribed was 3,200*l.*, and 2,000*l.* more were required.

Nunburnholme.—The parish church of Nunburnholme, at the foot of the Wolds, a few miles distant from Pocklington, has been reopened, after restoration, by the Archbishop of York. The church was in a deplorable condition before its restoration. The roof of the nave was of post-Reformation date, flat, and poor in character, and ready to fall, from decay. The chancel had a miserable shed-roof, covered with pantiles. There was no chancel arch. The seating and fittings were of the meanest description. A chancel-arch has been put up, and new tie-beam roofs have been erected. The walls and windows have been restored, and the steps arranged so as to give elevation to the holy table. The church has been reseated with oak benches, with carved poppy-heads. The chancel is seated stall-wise, in oak, with desks for the clergy against the jambs of the new chancel-arch; these are arranged so as give the suggestion of a low screen, without obstructing the view. A pavement of Minton's encaustic tiles has been laid down in the chancel. The chancel is hung all round with diapered hangings, and the altar-cloth, of red damask silk and velvet, is richly embroidered: the work has been designed by the architect, and is being carried out by Miss Dawkins, of Oldfield, Hampshire, a skilful amateur embroidress, who offered her services. It is the gift of Miss Rose and Miss Laura Morris. Seats for children are placed in the tower. A new south porch and doorway have been added, in place of a wretched hovel of brickwork, which used to serve as a porch. The whole of the exterior has been placed in repair, and the ground levelled where it needed it. The external effect is improved, but it still suffers from the plain and unsightly tower. It is a part of the scheme to carry up this tower to a proper proportion to the dimensions of the church, and to finish it with a belfry and an embattled parapet surrounding a low tiled roof, which will be surmounted by a cross and vane. This work is delayed for want of further funds, about 170*l.* being still required. The total cost of the restoration, if fully carried out, will be 1,100*l.*, towards which Lord Muncaster has contributed 400*l.*, and further has promised an additional 50*l.* towards completing the tower. The architect is Mr. G. G. Scott, jun., of London. The contractor and builder is Mr. Thomas Grant, of Pocklington, and those who have worked with him are Mr. George Grant for the woodwork, and Mr. J. Richardson for the stonework and masonry.

Fall of a New Bridge.—Ford Bridge, situated near Titley, on the Presteign Railway, has fallen. The bridge has been some time in course of erection, and was an immense structure. Great damage has been done by the fall, the river Arrow having, in consequence, overflowed its banks and inundated the country for a considerable distance. The houses in the neighbourhood were greatly flooded, and a large number of fish were killed by the lime from the bridge.

STAINED GLASS.

St. Luke's, Liverpool.—An addition has just been made to the painted windows which are gradually taking the places of the ordinary glass in this church. A new window of stained glass has been put up on the north side of the church, to the memory of Mr. John Rimmer, who for several years held the position of church-warden. The subjects depicted in the window, which is divided into six lights, are illustrative of the Christian graces, Faith, Hope, and Charity, and the virtues, Justice, Mercy, and Meekness. The figure of Charity occupies the centre of the upper light, with the words "Charity never faileth;" on the one side of her is Hope, and the legend, "Be not moved away from the hope of the Gospel;" and on the other Faith, and the words, "Without faith it is impossible to please Him." Underneath each of these figures there is an appropriate group, representing works in harmony with the graces. Under Faith is the sacrifice of Isaac, the youth bound on the altar, the angel staying the hand of the patriarch, and the ram which was ordained as the substitute; below Hope is Noah's first sacrifice after leaving the ark; and beneath Charity is Dorcas distributing garments to the poor. The three lower lights are also occupied with representative figures,—Solomon in his regal robes, the loving Shepherd bearing a lamb in his arms, and Moses with the tables of the law. The corresponding tableaux underneath these are the famous judgment of Solomon; the charge to Peter, "Feed my sheep," and the refusal by Moses of the crown of Egypt. Messrs. Lavers, Barraud, & Westlake, of Bloomsbury, were the artists.

Woodditton Church.—The west window of this church has been filled with stained glass, by the directions and at the expense of Miss Dobito, of the Woodditton Church Hall. This gift is a memorial of her late father and mother and two brothers. The window is of the Perpendicular era, and has three lights, divided into six openings, and the historical subjects are the Six Acts of Mercy, enumerated in Matthew xxv. 35, 36. The work was designed and executed by Messrs. Faveli & Ellis, of Cambridge.

Cirencester Church.—A window has been placed in this church, given by Sir Cecil Beadon, K.C.S.I. It is intended as the first of a series with which it is proposed to fill the windows of the church, the idea being to illustrate the life of our Lord in the large windows of the nave, in the same manner as the life of St. John the Baptist is being illustrated in St. John's Chapel. The window now given consists of four lights, illustrating the infancy of our Saviour. The first light represents the Annunciation (St. Luke i. 26-38). The second light represents the salutation of Elizabeth by Mary (St. Luke i. 39-45). The third light portrays the Virgin Mary worshipping the Infant Saviour (St. John i. 14). The last light is the announcement of the birth of Christ to the Shepherds (St. Luke ii. 8-14).

St. Paul's, London Docks.—Messrs. Cox & Sons, of Southampton-street, Strand, have recently placed a large three-light window in St. Paul's Church, Dock-street, London Docks. It has been erected by the vicar, in memory of Sir John Franklin, who was one of the founders of the church; and as the church is principally attended by sailors, nautical subjects from the Bible have been chosen. The subjects are illustrations of the following passages:—"He rebuked the winds and the sea, and there was a calm"; "He that hath ears to hear let him hear"; "Fear not, from henceforth thou shalt catch men"; "O thou of little faith, wherefore didst thou doubt?" The centre light is about 23 ft. high. A portion of the window was exhibited in the late International Exhibition. The style is thirteenth century.

Canterbury Cathedral.—A stained-glass window, by Clayton & Bell, has been placed in the south-eastern transept of Canterbury Cathedral, to the memory of the late Dean Alford. Its main features consist of three large circles, each containing five others, one concentric, and four smaller ones disposed around it. Each of these larger circles is devoted to scenes of our Lord's Temptation, the actual Temptation occupying the principal inner circle, and illustrative or contrasted subjects being represented in the four subordinate circles.

Christ Church, Oxford.—After the murder of Mr. Frederick Vyner, by Greek Brigands, in 1870, his friends and contemporaries at Christ Church, Oxford, determined, with the permission of the dean, to put up a painted window as a memorial

to him in Christ Church Cathedral. The committee appointed with that object,—Lord Rosebery, Mr. E. W. Hamilton, and Mr. J. R. Dasent,—state that the window has been completed by Messrs. Morris & Co., and put up in its place in the cathedral. The position selected was the second window northwards from the altar, where four large lights have been filled with the figures of Samuel, David, St. John, and Timothy, a subject from the early life of each being represented beneath the figures. A suitable inscription has been placed on a tablet on the adjoining wall.

Miscellanea.

Coal Supply.—At Monday's sitting of the House of Commons' Committee of Inquiry into our Coal Supply, Mr. Booth, manager of the Claremont Collieries, Ashton-under-Lyne, gave evidence at some length. He stated that in his district the men would work only when they pleased. They would play on Monday and Tuesday, and then it was impossible for them to make up the loss during the remainder of the week. Witness attributed the recent great rise in the price of coal to the demand suddenly overtaking the supply, to the increase of colliers' wages, and to the much less quantity of coal produced. The Mines Regulation Act too had caused greater expense in getting the coal. In the majority of cases, notwithstanding the higher wages, the condition of the colliers had not improved, either in the matter of clothing, habitations, or general mode of living. It is consolatory under present circumstances, to find it said that never in the history of the coal trade were so many new collieries opened out in South Yorkshire as at the present time, and that the high wages and luxurious indolence of the colliers are causing a rush of stout youths from other employments to the coal diggings.

Piercing the Pyramids. — A party of American scientists are still worrying the poor Sphynx, and pegging and digging away inside of the Pyramids in search of the toenails of more of the Pharaohs and other articles of interest. A letter from Cairo says :—"Our next bore will be through a peculiarly placed stone in the floor of the entrance passage, which may be corking up another passage, as it has been found that the coffer in the king's chamber could not be introduced by the present known passage. [Was it ever "introduced" at all by any passage? Was not the Pyramid built around it,—layer by layer, year by year, of the life of the Pharaoh, as was the ancient practice, till he died, when the Pyramid was completed, and the sarcophagus, or rather its duplicate below, became his tomb?] . . . . We have spent many nights at the Pyramids, and have made many important discoveries. We have opened up two small passages leading from the Queen's chamber to—we do not now where. These will have to be explored further. We have also discovered in the ascending passage to the 'Grand Gallery' some very strange Masonic symbolism, which still remains a mystery to 'Pyramid students.'"—*Sacramento Union*.

Cornish Industry developed.—About three years since a company with a heavy capital, knowing of the deep beds of good fire-clay which abound in the locality of Hingston Downs, purchased a sett, erected kilns, and commenced fire-brick burning. Since then other companies have been formed, one of which, with a capital of 200,000*l.*, is combining with brick-burning general smelting, the extraction of mineral oils from shale, and the manufacture of bitumen, asphalte, and other substances; extensive works for this purpose being in erection. There are now, says our authority, the *Cornish Telegraph*, four fire-clay firms in full work, manufacturing the clay into fire-bricks, gas retorts, tiles, crucibles, and various other articles; while a fifth company has nearly completed the erection of a large Hoffmann's kiln on their own estate for the same purposes. The total number of operatives already employed at these various works amounts to nearly 400. The celebrated Stourbridge clay gradually becoming exhausted, great demand is being made on the Cornish fire-clay.

Competition, Walthamstow. — A limited competition has just taken place for schools at St. James's Walthamstow, to accommodate 400 children, four architects being invited to compete; one declined. Ultimately the plans by Mr. John Ladds were accepted, and will be carried out.

Mr. Plimsoll and our Seamen.—It is to be hoped that Mr. Plimsoll's Bill for the protection of our jolly tars from rotten ships and overloaded cargoes will be supported by memorials in its favour from all quarters and in every available form—from congregations of every denomination; from corporations, chambers of commerce, and associations of our countrymen of all sorts; and, above all, from our countrywomen; praying Parliament to lose no time in passing a short Act to prohibit deck-loading, and over-loading in general, and to prevent ships in disrepair, or otherwise not sea-worthy, from going to sea. In the promotion of this important movement, a noble example has been set by the working "Miners' Association of South Yorkshire," who, without any capital to speak of, any lands, any special interest in favour of our seamen or against our ship-owners, but clearly from generous and brotherly feeling, have made the princely grant of 1,000*l.* to the Plimsoll Defence Fund.

Report on Works executed in the City.—The annual report of Mr. Haywood, engineer and surveyor to the City Sewers Commission on the works executed during the year 1872, has just been issued in a printed form. The setting back of frontages, the various trials of asphalte in different forms, and wood pavement, the improvement of footways, and the widening of the public way on the western front of St. Paul's Cathedral, are prominent items in the list of works in progress or completed. Val de Travers asphalte appears to maintain its good position among the forms of asphalte in course of trial. A hope is expressed that when the western front of St. Paul's is open to traffic it will lead to the removal of the remainder of the iron railings from around the Cathedral.

Discovery in Furness. — For some time past a number of men have been engaged removing the earth from the limestone which exists at the Butts, Dalton, about two miles from Furness Abbey, with the view of quarrying it. While thus engaged recently, they came upon a large square block of stone, weighing nearly a ton; and on removing this they found a vault or grave about 6 ft. long, 4 ft. wide, and rather more in depth, with bones, some human, others those of an animal, probably a horse, and a bronze pike-head and double-edged sword. A large slab of stone, completely covering the landward side of the vault, having been removed, this revealed a small semi-circular-shaped crevice, running inwards, but it was too small to admit of its then being explored.

The Royal Society.—The president (Sir George B. Airy) and council of the Royal Society had their customary *conversazione* on Saturday night last, at Burlington House. There was an unusually numerous attendance of the fellows of the Society and of other learned and scientific bodies of the metropolis. Seven rooms belonging to the Society were thrown open, and abounded with scientific instruments of the newest invention, besides some recently-obtained antiquities, and many objects of interest, among which was an elevation of the external façade of the Palace of Chosroes, at Mashita, in Moab, restored and exhibited by Mr. James Fergusson, F.R.S. The suite of rooms thrown open were lighted by Messrs. Gardner, of the Strand, with oil-lamps, fitted with Silber's burners.

Coal on Lord Houghton's Estate.—The Hon. Robert Ashburton, son and heir of Lord Houghton, has turned the first sod of an intended coal pit, situate upon the Fryston estate, which is the nearest pit to the port of Hull and the German Ocean. The company present to witness the ceremony was very large, including Lord Houghton, who delivered a speech upon the coal question. The Fryston Coal Company have rented some 2,000 acres from his lordship, on the North-Eastern Railway, about two miles from Pontefract. The coal, it is supposed, lies 150 yards from the surface, and is 5 ft. in thickness, and the proprietors hope that, by means of excellent machinery, 300,000 tons of coal will be brought to the surface per annum.

Hop Offices and Show-rooms in Denman-street, Borough.—A building for these purposes has been completed under the superintendence of Mr. J. W. Reed, architect, for Mr. G. Gibbons, at a cost of about 3,500*l.* The building is a similar one to that to be built adjoining to it, and for which tenders appeared in the *Builder* of April 26th.

Russian Lighthouses. — It is intended, according to a plan prepared by the Russian Admiralty, to build successively lighthouses in all the Russian seas. A commencement has already been made in 1872, and the whole of the projected number will be finished by 1885. During the first three years, lighthouses are proposed to be completed in the Baltic, Black Sea, Sea of Azov, and the Caspian Sea. In 1875, the works will be begun in the White Sea. A yearly credit of 100,000 roubles for five years, for the erection of lighthouses in the North Polar Sea and the Pacific, has also been asked for. Altogether, the sums to be expended for this purpose are said to be very considerable.

Tramways in London.—The Committee of the House of Commons appointed to consider the Bill for confirming the provisional orders granted by the Board of Trade for several proposed lines of tramways in the metropolis have met under the presidency of Sir F. Goldsmid, and passed the following resolution :—"The committee are of opinion it is inexpedient that a construction of tramways in the City (including Blackfriars Bridge) or over Waterloo Bridge, should be sanctioned by Parliament, more especially having regard to the fact that no consent has been given to it by the corporation of the city of London or the trustees of Waterloo Bridge."

Schools for the London School Board.—On the recommendation of the Works Committee, it has been resolved that the following tenders for the erection of schools be accepted :—Of Messrs. Henshaw & Co., to erect for 7,840*l.* 10s. a school to provide accommodation for 1,062 children on the Walworth-common site, a further expenditure of 900*l.* being sanctioned for the necessary boundry walls and tar paving; of Mr. G. S. Pritchard, of 103, Paul-street, Finsbury, to erect for 5,919*l.* a school to provide accommodation for 833 children on the site in Central-street, Finsbury; of Messrs. W. H. & J. Mansbridge, of Bangor Wharf, King's-road, to erect for 9,915*l.* a school to provide accommodation for 1,355 children on the site in the New North-road, Shoreditch.

Proposed New Building for Airedale College.—At a special meeting of the constituents of Airedale College, to consider the report and recommendations of the Airedale section of the Yorkshire Colleges Amalgamation Committee, it has been resolved "That in accordance with the recommendation of the Airedale section of the Colleges Amalgamation Committee, supported by the General Committee, the said General Committee be requested to take immediate steps for the erection of a new college, with power to purchase land for the purpose, if necessary, and to report to the annual meeting." The meeting regretted that the scheme for amalgamating the two Yorkshire colleges had failed, and thanked Sir Titus Salt for his generous aid.

An Ancient Glass Cup.—An interesting archæological discovery has just been made by a peasant while ploughing in the neighbourhood of Arles, Bouches-du-Rhone, consisting of an ancient glass cup. It is composed of two portions: one in simple ordinary glass, forming the vase, whilst the second is an ornament in red glass superposed. This latter forms a series of ovals, united by knots curiously interlaced. On one of the sides is a Latin inscription, which has been deciphered, "Divus Maximianus Augustus." This object, therefore, belonged to the Emperor Maximianus Hercules, who resided in Gaul for a considerable time. As was rather usual, the cup has no foot.

Screws in Plaster.—It sometimes becomes desirable to insert screws in plaster walls, without attaching them to any woodwork; but when we turn them in, the plaster gives way and our effort is vain. The plan suggested is to enlarge the hole to about twice the diameter of the screw, fill it with plaster of Paris, such as is issued for fastening the tops of lamps, and bed the screw in the soft plaster. When the plaster has set, the screw will be held very strongly.

A Testimonial to an Assistant Engineer.—Mr. J. G. Warner, assistant engineer, on his retiring from the services of the Metropolitan Railway Company, was presented by the officials, *employés*, and friends, on Thursday, the 24th ult., with a gold watch and chain; also a purse of twenty-five sovereigns. The chairman presented the testimonial with a few appropriate remarks, to which Mr. Warner made a suitable reply.

Keble College Chapel.—The foundation-stone of the new chapel of this, the most modern of Oxford colleges, has been laid, in the presence of a large and distinguished gathering of the friends of the institution. When the college was formally opened in 1870 a temporary chapel formed part of it, but it was understood that a fitting edifice would take its place as soon as the funds were forthcoming to erect it. These have now been supplied by Mr. W. Gibbs, of Tyntesfield, who has taken the entire expense of the work upon himself, devoting no less than 30,000*l.* to worthily carrying out his intention.

The New Police Station at Swindon.—This new station is almost completed. The building is constructed of local stone, ornamented with Bath stone dressings. The residences of the superintendent and inspector are on either side of the entrance. The west portion of the building is composed of three constables' dwelling-houses, and in the centre is a large Petty Sessions Hall, with raised bench for the magistrates and a dock. Connected with the hall are retiring-rooms, also guard and waiting rooms, and superintendent's office. The cost of the building is about 3,500*l.* The contract has been executed by Mr. H. Dyer, of Ramsbury.

The Derby Memorial Statue at Preston. Active preparations are now being carried on for the erection of this statue in the Miller Park, Preston. The belvedere, which stands on the site on which it has been decided the statue shall be fixed, is being pulled down, and in a few weeks the work of erection will be commenced. There are many persons in Preston who protest against the razing of the belvedere, and contend that it would be far better if the statue of Sir Robert Peel, which stands in the Winckley Gardens, was placed at one side of the belvedere and the statue of the late Earl of Derby on the other.

Election of a Borough Engineer and Surveyor for Halifax.—At a special meeting of the Halifax Town Council in committee, held for the purpose of selecting a suitable person for the office of borough engineer and surveyor, there were three candidates, viz., Mr. Escott, borough engineer, Burnley, who obtained fourteen votes; Mr. Hardwick, assistant borough engineer, Bradford, ten votes; and Mr. Bryson, borough surveyor, Newcastle-on-Tyne, four votes. This result was afterwards made known to an open council, and the choice of Mr. Escott was confirmed. The salary is 400*l.* a year.

Her Majesty's Opera.—The annual transformation of Old Drury into an opera-house was carried out for Mr. Mapleson this year, as previously, by Messrs. Bracher & Son, builders, under the directions of Messrs. Nelson & Harvey, architects. The stage has as usual been cut back, which much improves the "acoustics" of the house. The auditorium is fitted with the usual tiers of boxes, and the pit is transformed as stalls: the whole is draped with the amber satin hangings which formed a well-known feature at Her Majesty's Theatre. The house has a very handsome appearance.

Spring Drains and Gas Tar.—Mr. Mechi writes to the *Agricultural Gazette* as follows:—An agricultural friend assured me (when discussing the filling up of drain-pipes by the roots of trees or plants) that where the drain-pipes have been well coated with gas tar there is no risk of choking with roots, for the roots turn away from the tar, evidently sensible of their danger. I hope this hint may prove useful, for I know that no spring drain is safe near trees, fences, or even strong-rooted weeds.

Practical Surveying.—A professor in an American college had taken his class out, on a pleasant afternoon, to exercise them in practical surveying. The next morning they were to be examined on the same. The first pupil was called up. Said the professor, "How would you go to work to survey a lot of land?" (Deep thinking but no answer.) "If a man should come to you to get you to survey a lot of land, what would you do?"—"I think," said the student, thoughtfully, 'I should tell him he had better get somebody else."

New Bridge at Leith Harbour.—A new iron swing-bridge is in course of construction at Leith Harbour, at a cost of about 30,000*l.* The bridge, which is to extend from the West to the East Harbour, will have a total length of 214 ft. The structure weighs about 700 tons, and will be worked by hydraulic power.

Accident through the Falling of a Brick. A serious accident has happened to a boy whilst playing in Elm-court, Elm-street, Gray's Inn-road. Some houses in the court were in course of repair, and a pail of cement which was being drawn to the top of one of them by a pulley, struck against the coping, causing a brick to fall upon the boy's head, fracturing his skull, and severely lacerating his scalp.

Institution of Surveyors.—The next meeting will be held on Monday evening, May 5th, 1873, when a paper will be read by Mr. W. Hope, entitled "Sewage Farming," and the discussion on Mr. Menzies's paper entitled "Arterial Drainage Works, Water Supply, and Sewage Drainage Works executed at Windsor, between the years 1867 and 1873," will be resumed.

The Shakspeare Oak on Primrose-hill.—It has been resolved to inclose the tree planted by Mr. S. Phelps, on 23rd April, 1864, or Shakspeare's day, within an ornamental iron palisade, and erect a tablet in connexion with it. A design is in preparation, the estimated cost of which will be about 200*l.*, to be raised by subscriptions of 2s. 6d. and upwards.

Nature and Value of Prisoners' Labour. A Government return, in reply to an address of Mr. Kennaway, dated August of last year, to the House of Commons, has just been issued. This document gives the nature and value of prisoners' labour and other interesting information, from each prison in Great Britain during the year 1871.

New Board-room for the Holborn Board of Works.—A committee of the whole Board having recommended that a public hall should not be erected, but that a Board-room should be built, at a cost of 500*l.*, and that the surveyor be requested to prepare plans, the Board have adopted the report of the committee.

TENDERS

For new offices, at Basford, near Nottingham, for Messrs. Charles Cox & Sons. Quantities supplied by Messrs. Hovenden, Heath, & Berridge:—

Fish & Son	£1,395	0	0
Hopewell	1,387	5	10
Synam	1,370	0	0
Deanett & Co. (accepted)	1,359	0	0

Tenders for new roads, Camberwell:—

Blake's-road.			
Cole	£645	0	0
Harriss	590	0	0
Batch	549	0	0
Hare	450	0	0
Riley	417	0	0
Canterbury-road.			
Harriss	£220	0	0
Batch	153	0	0
Hare	145	0	0
Cole	138	8	0
Riley	125	0	0
Clifton-crescent.			
Cole	£193	5	0
Batch	167	0	0
Harriss	150	0	0
Hare	129	0	0
Riley	124	0	0
Gloucester-road.			
Cole	£227	0	0
Harriss	195	0	0
Hare	190	0	0
Batch	169	10	0
Riley	160	0	0
Nutfield-road.			
Batch	£175	0	0
Harriss	172	0	0
Cole	172	0	0
Hare	125	0	0
Riley	108	0	0
Wood's-road.			
Batch	£160	0	0
Cole	157	14	0
Harriss	144	0	0
Hare	135	0	0
Riley	129	0	0

For new clergy and school house (Quebec Chapel), in Upper Berkeley-street, Portman-square. Mr. Clarke, architect. Quantities by Mr. Sydney Young:—

Brooker & Son	£2,359	0	0
Browne & Robinson	2,120	0	0
Wright (Brothers) & Goodchild	2,115	0	0
Wicks, Bangs, & Co.	2,100	0	0
Dove, Brothers	2,073	0	0
Messrs. Roberts	2,059	0	0
Harris & Sons	2,056	0	0
Morter	2,023	0	0
Cooke & Green	1,930	0	0
Marsland & Son	1,876	0	0

For the erection of the new church of St. James, at Welland. Mr. J. West Hugall, architect. Quantities supplied:—

Warner	£3,678	0	0
Coleman	3,548	0	0
Hawkins	3,260	0	0
Griffiths	3,189	0	0
Everal	3,188	0	0
Wall & Hook (accepted)	3,086	0	0

For new club-room, &c., at the Sir Colin Campbell Alderashott. Mr. Henry Peak, architect:—

Martin, Wells, & Co. (accepted)	£187	0	0

For additions to the Railway Tavern, Liphook, Hants. Mr. Henry Peak, architect:—

Trigg (accepted)	£267	10	0

For large room, and other additions, at the Onslow Arms, Cranleigh, Surrey. Mr. Henry Peak, architect:—

Holden & Son (accepted)	£365	0	0

Accepted for Chorley Town-hall. Messrs. Ladds & Powell, architects:—

	If Brick Facings.	If Stone Facings.
Warburton	£16,200	£17,160

Vaults under Market-hall, fish-stalls, and other works for the corporation of the borough of Birmingham. Mr. W. Hale, architect. Quantities supplied:—

Jeffery & Pritchard	£5,618	0	0
Hardwick & Son	5,425	5	0
Davies, Brothers	5,207	0	0
Holmes	4,785	2	9
Corbett (too late)	4,745	9	5
Messrs. Webb	4,741	0	0
Briggs & Son	4,559	0	0
Mountford	4,543	0	0
George	4,547	0	0
Garlick	4,514	0	0
Horsley, Brothers	4,441	0	0
Edwards	4,420	0	0
Wilson & Son	4,388	0	0
Cresswell & Sons	4,275	0	0
Moffatt	4,088	0	0
Matthews	4,008	0	0
Surman & Son (accepted)	3,994	0	0

For the erection of new Board School, at Linslade, Leighton Buzzard. Mr. J. T. Laurence, architect. Quantities by Messrs. Paice, Brothers:—

Edwards	£2,011	0	0
Mead & Osborn	1,945	0	0
Snell	1,870	0	0
Smith & Fincher	1,788	0	0
Wright, Brothers, & Goodchild*	1,775	15	0

* Accepted.

For Overton-cum-Fyfield Schools, Marlborough, Wiltshire. Mr. C. E. Ponting, architect:—

Mullings	£1,100	0	0
Barrett	1,028	0	0
Nightingale (accepted)	1,008	0	0
Pope	955	0	0

For new premises, Bury-street, St. Mary-axe:—

Patman & Fotheringham	£3,300	0	0
Killby	3,240	0	0
Enuor	3,207	0	0
Perry & Co.	3,200	0	0
Brass	3,187	0	0
Williams & Son	3,174	0	0
Newman & Mann	3,136	0	0
Haynes	3,120	0	0
Conder	3,097	0	0
Ashby & Sons	2,968	0	0

For villa residence, at Underhill-road, Dulwich, for Mr. E. Brown. Mr. R. Peters, architect. Quantities by Mr. A. J. Gate:—

Watson, Brothers (accepted)	£1,275	0	0

For repairs at the Plough, High-street, Notting-hill. Mr. H. J. Newton, architect:—

Shurmur	£179	0	0
Taylor	167	13	0
Mears	160	0	0
Brindle & Co. (accepted)	160	0	0

For additions to a warehouse, in Watling-street, City. Mr. Herbert Ford, architect:—

Henshaw & Co.	£1,398	0	0
Meyers & Sons	1,380	0	0
Lawrence & Sons	1,374	0	0
Brass (accepted)	1,332	0	0

For schools and master's house, at Beulah-road, for the Croydon School Board. Second contract. Mr. Charles Rutley, architect. Quantities supplied:—

Hearle	£3,034	0	0

For external repairs to thirty-nine houses, City-road, for Mr. John Murray. Mr. Rutley, architect:—

Kerrage	£639	0	0
Hearle	409	0	0
Johnson	385	0	0
Haynes & Co.	356	0	0

For alterations to No. 78, Norfolk-terrace, Westbourne-grove, for Messrs. Chapman. Mr. C. Rutley, architect:—

Hearle	£495	0	0

For additional workrooms for the American Leather Cloth Company, at their North Woolwich Works. Mr. Charles Rutley, architect:—

King & Son	£450	0	0
Hearle	409	0	0

For mansion and stable, at Dulwich, for Mr. A. Bessemer. Mr. Chas. Barry, architect. Quantities supplied:—

	House.	Stable.
Lucas, Brothers	£8,126	£2,166
Stimpson & Co.	7,886	1,597
Colls	7,398	2,033
Peto, Brothers	7,409	1,999
Brass	7,390	1,976
Downs & Co.	7,338	1,959
Browne & Robinson	7,249	1,953
Perry & Co.	7,150	1,847

For Harrow Public Hall. Mr. C. F. Hayward, architect. Quantities supplied:—

	Minus, if tiles used.	Tender.	Plus, if tiles used.
Patman & Fotheringham	£38	£5,633	—
Stimpson & Co.	24	5,290	—
Dove, Brothers	17	4,875	—
Saunders	—	4,750	—
Woodbridge	—	4,550	£25
Lander	—	4,536	18
Kendell	—	4,521	18

The Builder.

VOL. XXXI.—No. 1579.

On the Determination of certain Ancient Architectural Terms.



THE exact import of ancient architectural terms is a matter of no small importance. The interest of the subject is by no means confined to the professed student of archæology. Few persons realise how far we owe to the elegant precision of the Greek language many of the words that are daily current in our workmen's mouths. The term "triglyph," for instance, at once betrays its origin and denotes its meaning. It is one proper to classic style. The kindred word "architrave" is constantly used by every joiner. The bricklayer who sets back a plinth is not aware that the word he thus employs is applied by Xenophon to denote the materials used in the military walls of Babylonia, and that "plinths toasted in the sun" were the predecessors of the small wire-shaped, well-burned, bricks of the great Roman builders, as well as of our own more shapeless and less enduring "stocks."

The interest, and indeed the utility of the research is enhanced by the fact that, in our own, and probably in most other, languages, our technical terms are partly native and partly imported. In the former or vernacular words the derivation is generally to be traced. In the foreign terms, on the other hand, it frequently suffers dislocation in the process of time. The word "plinth," which we have just cited, is a good example of this change of meaning.

In speaking of any of those technical terms in which we may think we trace a direct link between Oriental and European languages, we are not unaware that the general set of philological opinion in the present day tends to discourage any attempts to show the existence of such a connexion. A couple of centuries ago men who were erudite, if not scientific, attempted to derive many English words from Hebrew sources, and great nonsense they wrote accordingly. Nothing is more established in language than the fact that similarity of sound does not denote identity of meaning, of root, or of structure, but a scepticism of this kind may be pushed too far. Even without resorting to the possible hypothesis that some ancient and extinct tongue was the common parent of the 200 Turconian, the 100 Aryan, and the 9 Semitic languages, when we find similarly-sounding words, in very different dialects, denoting the same architectural element, we can hardly doubt that, however it may have come about, there is some mutual relationship between them.

Of all ancient architectural descriptive writing there is no example that is at the same time so detailed and so obscure, from the want of clear definition of terms, as the account of the Temple at Jerusalem, which is contained in the last few chapters of the book of the Prophet Ezekiel. We shall confine our remarks exclusively to the architectural inquiry; but it is necessary to remark that the idea almost universally entertained that the dimensions given in this description are so vast as to be inapplicable to any actual building, is entirely founded on mistranslation. We are not asking our readers to accept this statement on our own authority alone. The Greek writers of the ancient Alexandrine translation of the Old Testament, called the Septuagint version, the Latin translators of this same version made under the auspices of Pope Sixtus V., and, to some extent, the Latin Vulgate, fully bear us out in the assertion.

The first thing done in this most ancient specification is to fix the unit of measurement, which is the cubit, called *Ameh* in Hebrew. This dimension is the length from the elbow to the end of the middle finger, and the English word is taken from the Latin name for that part of the body, being probably derived from the habit of leaning on the elbow. Like most ancient measures which are derived from the dimensions or movements of the human body, the cubit varies in length among different people. It is one-fourth of the height of a well-proportioned man. With the Greeks, the unit of height, at the best period of art, is such as to make their orguia, toise, or human height, very closely correspond with our own fathom, being only ½ in. longer than 6 English feet. Thus the Greek cubit is hard upon 18 English inches, or in exact decimals 18·13125 in. The Russian fathom, or sajene, is equal to 7 English feet. It is divided into three arschenes, so that if the cubit were a Russian dimension, it would be 21 in. long. Egyptian cubits, marked on the Nilometers, have been measured by Mr. Greaves at 21·847 in., and by Sir Gardner Wilkinson at 21·4 in. The derah, or land measure, now in use in Egypt, gives a cubit of 20·7 in. The ordinary Egyptian cubit is stated at 1·719 ft. English. The Roman cubit is 17·406 in. The Jewish cubit is defined by the writers in the Talmud as being equal to the length of 48 barley-corns. If we take these grains as they are taken for the starting-point of English long measure, that is to say, in an average ear of barley, from the heel of one grain to the top of the third grain, on the same side of the ear, we find the Jewish cubit is equal to 16 in. English. All the dimensions taken within the precincts of the noble sanctuary at Jerusalem are, in point of fact, commensurate with English feet and inches. In the measurements given in the book of Ezekiel a half cubit is added to every six, giving a great cubit of 17·33 in., or ·063 in. shorter than the Roman *cubitus*.

The first architectural term which meets us is one which we must represent in English letters as *Rehb*. In Greek it is called *proteichisma*, in Latin *antemurale*, the exact English of which would be "forewall"; a good word, but not one to be found in our dictionaries. As to the meaning of the original expression we are not left in doubt. It designates what we should call a superb plinth; a step or footing to the great external wall of the temple inclosure 104 in. in height, and with a set-back of the same dimension. As an architectural feature, the effect must have been very grand. There is some reason to conjecture that this colossal plinth was made of whole stones. At all events, there actually exist several hundred feet of a master-course in the south wall of the great inclosure, the thickness of which varies from 70 in. to 73 in. There is reason to believe that this course is not now in an undisturbed condition. If its upper and lower arrisses were destroyed by violence, and the stones afterwards reworked and reset, on the restoration of the wall (which was evidently the case with much of the masonry), the loss of depth would be accounted for. There are two colossal monoliths in the entrance to the eastern or golden gate of the Haram which present a similarity to the great course on the south wall, and are at the same level; but their full depth has not been ascertained.

It may be observed that a plinth of this description, but only 3 cubits in height and in set-off, is described by Josephus as surrounding the tower Antonia.

The next word of a technical nature is one of very ordinary occurrence,—"Shor,"—which is translated *Pyle, porta,* and *gate*, but which is better represented by the English word "gateway." In the present instance a word which we have borrowed from the Greek, to denote a large and architecturally imposing gateway, such as those so often met with in Egyptian temples, namely, "pylone," would not be inappropriate. The entire structure of the gateway, including an internal vestibule, three recesses on each side, and an inner, as well as an outer, doorway, is comprehended under this term.

The next word which we have to determine is one involving some difficulty. It is by no means sure that we have an exact equivalent for it in either English, French, or Italian. It may be represented by the word *yol* or *iol*, and it appears in the Hebrew to be the root of the next term, *iolam*, or *alam*; for it is spelt both ways. As to the latter, there can be little doubt that it is best rendered by the Latin word *vestibulum*, which literally means an apartment within or before a door, where the outer garments, worn in time of cold or rain, are taken off by the wearer. As the *jol*, wherever it is mentioned, is spoken of in the same connexion with the *alam*; it is perhaps best rendered by the word "doorway," which we regard (with Viollet-le-Duc) as essentially consisting of threshold, jambs, and lintel. Threshold alone might perhaps be a correct equivalent for the word; but the idea of a narrow division forming the boundary of the gateway is certainly implied.

The second word, *alam*, is applied to the vestibule of the gate, to the lofty portico or pronaos of the temple, and to the peristyle or cloisters, of two bays wide, which surrounded both the sanctuary, or raised platform, and the great outer court. On the south this cloister was three bays wide, as is described by Josephus. It is spoken of in the Book of Kings as composed of three *thurim*, ranks or rows, of stone pillars, with a roof on cedar beams.

The next technical word that occurs is *Tha*, in the plural *Thaim*. This the Greek translators, and those of Pope Sixtus V. have left untranslated. St. Jerome renders the term by the word *thalamus*, which is Anglicised by "little chamber." The feature in question was a recess on the side of the vestibule; but there is no mention of any side-door. The entire structure described seems to have resembled, to some extent, an entrance-gateway, with a carriage-road in the centre, between two footpaths. But as carriages and horses were not to be admitted, the central road was the common entrance. It led through a long vestibule, and the side-walks were divided into recesses, preventing thoroughfare, and adding to the strength of the entire gatehouse, which, as we know, from the account of the siege, was eminently adapted for the purpose of defence.

The word *ail*, which next occurs, is probably another form of that which we have before spelt as *iol*. It is translated "*frons*" by St. Jerome, and "*sub dio*" by the Papal writers. It distinctly implies a landing, or small platform, immediately outside the gate. We have thus all the terms which are necessary to describe the plan of a gateway (irrespective of the elevation) distinctly fixed. As to the latter, we find the word *seph* to be the equivalent of door, the *valva* of the Romans, here given as *ostium* in Latin,

and as *thuroma* in Greek. This word has a wide and altogether unsuspected currency in our language, in the form borrowed from the Arabic, of *cypher*; a name given to letters in the ancient cabbalistic books, with reference to their numerical and transcendental value, as the doors of knowledge.

In the *alam* we can hardly be in error in recognising a connexion with the Greek word *aule*, the Latin *aula*, and the English *hall*. Whether a similar connexion may be traceable between the Latin *atrium* and the Hebrew *etser* is more doubtful, but the signification, at all events, is the same. Each of the four courts of the Temple, which had, Josephus says, according to the Jewish law, a peculiar degree of separation from the others, is designated by this term; the special word *nazireh*, or sanctuary, being restricted to the court of 100 cubits square in which the holy house itself stood. This was surrounded by a separate boundary, called *canon* in Hebrew, and *diorizon* in Greek. No exact Latin equivalent exists.

The four courts exterior to the sanctuary were (1), the court of the priests, in which stood the great altar. In the Temple of Herod the division between the temple court and the altar court does not appear to have been maintained. The limit of the priests' court was defined by the *gisus*, or ledge, a dwarf stone wall of a cubit in height.

Without the court of the priests was (2), the court of Israel, which Maimonides calls the *atrium principium*. These two courts are not to be confounded with the ambulatories, paths, or troads respectively occupied by the priests and representatives of the whole body of Israelites, in the performonce of the ritual service. These latter were each only 11 cubits wide, and extended across the altar-court to the east of the altar. On the first was a *suggestum*, or bench, on which stood the priests who blew the trumpets at appointed intervals in the sacred rites. The chief court was surrounded by a peristyle, or double cloister, and was raised 7½ cubits above the outer court which surrounded it.

Below and around the chief court was (3), what Josephus, reckoning from without, calls, in his work against Apion, "the second court," and, elsewhere, "the court of the women." It was an area into which, he tells us, both sexes were admitted. The men passed through it, into their own court within. The women were provided with a *podium*, or ramp, called by the Talmud *Chil*, and in the Bible, by Jeremiah as well as by Ezekiel, *Chel*, around the second court, which was 10 cubits wide, and protected by lattice-work. It is not stated whether this *podium* was roofed; but, as the peristyle around the chief court, and also that round the great court, were roofed, it is probable that this women's gallery was likewise protected, like the slaughter-blocks in the altar court, by a roof, "from the sun and from the rain."

(4.) The exterior court, the first court of Josephus, and the great court, outer court, and court of the Gentiles of the sacred and rabbinical writers, was that which was immediately within the peribolus or fortress-wall of the great Temple enclosure. It was surrounded by a peristyle or cloister. The north, west, and south cloisters were rebuilt by Herod; the latter being the famous Royal Portico, of which Josephus gives such a distinct account. It is by no means clear that its dimensions, before the time of Herod, were so magnificent as those determined by that splendid builder. This great cloister had three walks, of which, at all events, the central one extended from the deep valley between the Temple mountain and the city on the west, to the precipitous ravine of the Kedron on the east. Josephus is clear and distinct on this point, as well as on the fact that the north cloister also reached to the verge of the profound Kedron ravine; though he speaks of the side-walk of the royal porch as if it were of less length. The reference is somewhat obscure (Ant., xv., 11. 5), as to measure, but as to the features of the ground there can be no mistake. Megalithic masonry, of the very oldest type, and marked in some places with Phœnician letters, is bedded on the live rock at a depth of 103 ft. at the north-east angle, 108 ft. at the south-west angle, and 158 ft. at the south-east angle of this colossal peribolus.

No measurement of the area inclosed by this great wall is given by any ancient writer. It is spoken of in terms of awe, which its actual height, notwithstanding the veil of more than 70 ft. of *débris* poured around its base, impresses on the mind. Before the second, and still more before the first, destruction of the Temple, the great height must have been prodigious. The writer of the book of Ecclesiasticus speaks of it as "the sublime elevation." Josephus says, "the depth was frightful." In fact, the bed of the Kedron is 100 ft. below the lowest point which we have mentioned, so that the height from the pathway of the cloister to the bottom of the ravine, at the south-east angle of the inclosure was 258 ft.; and the roof of the centre aisle was yet 100 ft. higher, giving a clear depth of 358 ft. to the torrent. As to the length of the latticed wall called *Sorey*, in Hebrew, and *Thringos* or *Truphax*, in Greek, which separated the first from the second court, we have ample testimony. The length of 500 cubits on either side is attributed to it in the Middoth. This same distance is probably indicated by Josephus by the round term of a stadium. In the book of Ezekiel this length is given no less than six times, "500 cubits east and west, and 500 cubits in width, to divide the holy places from the antemurale, which is in the order of the House." That last phrase is added to distinguish the antemurale within the peribolus, to which frequent reference is made in the Talmud, from that portion without the great wall to which we called attention at the beginning of this notice. Bearing on this part of the question, is a passage cited by Constantine L'Empereur, in the preface to his version of the Middoth,—"The mountain of the Temple was to the north of Jerusalem; and the mountain indeed was much larger than the space of 500 cubits square, but beyond that its sanctity did not extend."

The determination of architectural phrases which we have above attempted has been somewhat algebraical in its method. That is to say, by putting untranslated words in their proper places, and then comparing the different passages, we arrive, with considerable certitude, at the real sense in which they were employed by the writer. But comparison is of the essence of this method. One word exists which only, so far as we have discovered, occurs once. We hesitate to make even a suggestion as to its import. The Greek translators have not translated it. The Papal translators have not translated it. They have simply written IHRAEL in Greek or Latin characters. If we turn to St. Jerome for light we find darkness. For what the other translators have regarded as a noun, he treats as a verb. He says, *vidi*, I saw. "I saw, also," says the English Vulgate, "the height of the house round about." This is consistent with our copies of the Hebrew, but the writers of the Seventy had evidently another text before them. With the bare suggestion that a clear-story may be meant, we commend this verse,—the 8th of the 41st chapter,—to Oriental scholars.

The words denoting door-posts and lintel do not occur in the description we are citing, but they are too important to omit. *Phliai* is the word used by the Septuagint to denote door-posts; and the importance of inquiry is illustrated by the interpretation given of this word by Dunbar, who makes it, in the singular, "the vestibule, the threshold, or lintel," as if these terms were equivalent; and in the plural, "the posts of folding-doors." *Hyperthurium* is the Homeric word for lintel. *Superliminare* is the Latin term used by Pliny. *Limen, postes*, and *superliminare* are classical terms for threshhold, jambs, and lintel. The idea conveyed by the Hebrew word translated "jamb" or "door-post" is that of a division, as if between the inner and the outer, or between indoors and out-of-doors, as we have it. The word translated "lintel" in the Middoth bears a relation to that used by Amos (ix. 1), similar to that which obtains in the Latin. No difficulty is likely to arise from the use of these terms.

We may thus, by the careful determination of the exact sense of the ancient technical terms used by a writer 2,330 years ago, comprehend a remarkable passage in ancient and sacred literature, which has been long considered unintelligible, but which, by this guidance, comes out with all the detail of a specification. It is the most ancient record of the kind, going at all into details, with which we are acquainted. Our mode of determination, which is simply the comparison of each passage in which the same technical term is used, from which its import necessarily becomes apparent, fails with reference to the word which only occurs once. It is a subject for future investigation to determine whether there is not here (Ezek. xli. 8) the earliest reference to a clearstory.

The close correspondence between this ancient description of this unrivalled building and the results of the recent Ordnance Survey is close and striking. Maimonides, the great Jewish writer of the twelfth century, tells us that the description given by Ezekiel was used for the guidance of the rebuilders of the Temple in the reign of Darius. We do not venture to hope that the very obscure language of the English Vulgate will be made perfectly intelligible by our explanation. But we do believe that those who can read the Greek version will understand it readily by means of the above given determination of terms. It would be a useful service to many if the managers of the Palestine Exploration Fund were to publish a good translation of the Septuagint version of this passage, which often differs from the Hebrew.

The colossal and unique ruin of the great peribolus of the Sanctuary was unknown at the time when Dr. Lightfoot wrote his account of the Temple. It is one of the most prodigious discoveries which has been made in modern times. What sort of builders were those who ran around their fortress wall a master-course of 72 in. in depth, and who raised into place stones one of which attains the measured length of 38 ft. 9 in. English!

ARCHITECTURE AT THE ROYAL ACADEMY.

SECOND NOTICE.

AMONG works at the Academy which may be considered under the head of domestic rather than of civil architecture, may be classed the designs,—of which there are two or three,—for new offices for the London School Board. Mr. Bodley's design (1,158), which is to be erected on the Thames Embankment, is a production in the Jacobean style, or what may be called a Gothic architect's version of that style. The architect, it must be presumed, has been drawn aside from his usual style by considerations of locality and association, unless we are to regard this as part of the movement in favour of the Jacobean and Queen Anne fashions, of which there is other evidence in this room. The building will not be without a certain picturesque character, but it is pierced with large windows to such an extent as to leave a somewhat thin and weak aspect. The building wants unity, too, and we feel obliged to say that a good architectural opportunity has not been made the most of. Mr. J. O. Scott's design, for the same object, is a rich and solid-looking front in Early Geometric Gothic, with a large use of deeply-moulded foliated arches; some of the details a little overpower the rest, the façade wants combining more into one whole. And what are we to say to Mr. Norman Shaw's "New Offices, in Leadenhall-street" (1,167)? The first impression is, "What a capital drawing!" and our admiration is thus enlisted at once in favour of a design showing much boldness of treatment, especially in the manner in which the two massive piers which give stability to the whole are carried up unbroken through the whole of the stories, affording a *point d'appui* for the indulgence of fantastic fancies in window-frames between them. There is the picturesque in this design in a high degree; but why sacrifice everything to the picturesque? Why should the main piers stop in such an awkward manner against the curve of the principal cornice, as if the building was erected by some one who did not know how to do that kind of thing without making a botch of it? Why place all the ornament, in a comparatively narrow, crowded street, in the upper part, and leave the ground story so pointedly plain? And why affect so unnecessarily the manner of a bygone age? Mr. Shaw is an architect of genius; he is one of the few who appear to know wherein lies the "poetry" of building; yet we feel sure that, with his talents, he could give us this poetical and picturesque element without so entirely contradicting the tone and feeling of his own day. We feel bound to admit, nevertheless, that such a building is a welcome contrast to the average respectabilities of "office" designs. In the "Premises in Ludgate-circus," by Messrs. Woodzell & Collnitt (1,136), character and picturesque expression have been obtained without sacrificing strictly architectural effect. The treatment of the centre portion of the front, in one lofty 'arch rising from the ground and terminating in the centre gable, is very bold, though not original; the several stories of windows included under this arch are

sufficiently varied and contrasted in design; the setting back of the upper story by a railed balcony, at the springing of the main arch, gives opportunity for a deep shadow at this point, which will add materially to the effect. The whole design is a very satisfactory instance of the application of true Gothic principles to modern street architecture: we will only point out that the system of running one large arch through the whole design as described, though almost ensuring a good effect, is to be used with caution, as too frequent a use of such "large" treatment would result in destroying the scale of a long street. The "New Carriers' Hall" (1,169), by Messrs. J. & T. Belcher, is a simple and suitable domestic Gothic building, in a manner which is more effective, however, in a line drawing than in execution,—a fact which is sometimes forgotten; great part of the expression of such a building must depend on the mere treatment and bond of the masonry, which is often manipulated in drawings in a manner not realised in the actual building. One of the most singular whims of architectural archæology we have seen is exhibited in Messrs. Stevenson & Robson's three designs for London Board Schools (1,200), which seem to be intended to keep up the *genius loci* by adopting the old London architecture of the locality they happen to be built in,—a view of the matter which has committed the authors to reproducing in one case a somewhat grim type of eighteenth-century building.

Among designs for "domestic" architecture, in the stricter sense of the word, we have a small villa at Bexley by Mr. Edis (1,125), which is very pretty, but which we should say we had seen several times before; perhaps its author is adopting the type as a desirable one for repetition in the district. His competition sketch for proposed schools at Battersea (1,126) is a good and suitable design, picturesquely grouped; and the "Hotel at Boscombe Spa, Bournemouth" (1,159), is interesting as an instance of the application of the simple domestic English style to a hotel, a class of building which, even when on a comparatively small scale, is too often as complete a combination of pretentiousness and dulness in aspect as can be accomplished. The design referred to here really looks an inviting home-like place, with its brick and tiled walls, and the timber and plastic work in the upper story. Perhaps the expression verges too much on the farm-house type; but it is, at all events, a desirable variation from the regulation hotel. The "Devonshire Laboratory, Cambridge" (1,149), is a very nice drawing of a most uninteresting-looking building. Mr. Pearson's "View of House near Crickhowel, South Wales" (1,147), should be looked at, both as a drawing and as a happy example of the combination of something of the stern castellated outline suitable to a hilly situation, with an entirely domestic aspect and expression in details—in the treatment and placing of the windows. Mr. Cockerell's "Mansion at Ballards," built for Mr. Goschen (1,178), is a characteristically treated house, somewhat heavy, in that early eighteenth-century manner again, with heavy gables in reversed curves. Perhaps the style is the taste of the client rather than of the architect, which we all know is the case sometimes in the designs of dwelling-houses. Mr. Gibson's "Interior of Hall and Staircase, Nutfield Priory" (1,177), is a remarkably good water-colour drawing of a late Gothic interior, satisfactory, but presenting no marked characteristic. Mr. I'Anson exhibits a drawing of his new building for the "Merchant Taylors' School" (1,180), a red brick building of a plain Gothic type, with white stone dressings; and Mr. Street, who seldom exhibits designs in domestic architecture, sends a drawing of the new parsonage at Wigan: a house with a stone lower story very solidly treated; the upper story, slightly corbelled out, being formed mainly with brick and timber, the brickwork arranged at various angles between the posts. The general effect is satisfactory. We must regret the freak of corbelling out the chimney-stack directly over the opening of the garden entrance; it may look better from the other side, but in this view the effect is most annoying to the eye. The large "Building for Messrs. Cox & Sons, in Maiden-lane, Strand" (1,186), by Mr. Nicholl: an elaborate Gothic design, shown in a good pen-and-ink drawing, fails in effect from want of any grouping or leading motive in the composition. It is merely so many windows in a wall, ornamentally treated. We may conclude our remarks on the class of domestic buildings by a reference to Mr. Brooks' "Schools, Parsonage, &c., St. Columba" (1,211), concerning which, whatever may be thought about some of the details, no one can dispute that it is a remarkable evidence of an eye for effective and picturesque grouping and outline.

The few drawings which illustrate decorative and ornamental work, include a carefully executed water-colour drawing of the "Interior of a Pompeian House" (1,154), by Mr. Longfield, from sketches made on the spot, and in the Museo Nazionale, Naples: the effect is very cool and pleasant to the eye, and might furnish hints for interior treatment in our own residences, with modifications necessary for our inclement summers. Sir M. D. Wyatt sends the original working drawing for the chimneypiece in Clare College Hall; and Mr. Moyr Smith two studies for wall decoration, "Homeros" and "Epithamios" (1,150 and 1,160), consisting of figure subjects in white, slightly shadowed, on a gold ground; but the drawings, which are small, are hung too high for the figures to be fairly judged of. Mr. Talbert's "Entrance to a Vestibule Hall" (1,198), is an excellent specimen of decoration of the classic type, perhaps a little sombre, or it looks so in the drawing; the effect is produced largely by low tertiary tones, little real colour being used. Over this is a "Design for a Fountain" (1,199), by Mr. Armstead, the subject from "Comus;" a square centre block of marble, is occupied by a small and very spirited bas-relief, representing the moment when "Comus" presses the enchanted cup on the lady: the centre is surmounted by a bronze figure of Sabrina, with swans at her feet, and holding her vase of magic ointment; two lower oval pedestals on each side support bronze figures on sea-horses (not a very novel conception), and from a deep surbase moulding in these pedestals the water issues forth in a wide circular sheet, the pedestal below the surbase being treated with a kind of reminiscence of aquatic vegetation, in a regular series of tall leaves. This would have a very good effect; the bronzes are perhaps the least happy portion of the design which, as a whole, is a very pleasing one. The designs for wall decoration by Mr. Newman and Miss C. S. Newman are mere reproductions of Mediæval crudity of form and colour. It is really astonishing that such a design as No. 1,209 should seriously be offered to us as an adequate illustration of the solemn associations raised by the words, "The harvest is the end of the world, and the reapers are the angels." Much of what is called "religious," or "church" art, certainly degrades the Bible rather than exalts it. Mr. Spiers exhibits almost the only sketches of architectural remains in this year's collection; the north portico of the Erechtheum, and the monument of Lysicrates, in his well-known style. It is sad to contemplate the sketch of the last-mentioned exquisite monument, in its present state, battered and defaced, the beautiful finial a shapeless lump, sordid-looking buildings intruding close upon it, and girls hanging clothes to dry, as a background to the most typical remnant of the beauty and refinement of Greek architecture. This is what we must all expect to come to, however, modern Greeks, or modern Gothics, even our modern "Queen-Anists;" fortunate shall we be if 2,000 years hence there is enough of interest left in any of our buildings to furnish the barbarians from foreign shores with matter for a sketch.

ROYAL ACADEMY EXHIBITION.

THE first essential towards securing favourable opinion of a Royal Academy Exhibition is, decidedly, fine weather: the perplexity of parasol proprietorship in the bright, genial days when the sky is clearest and the sun not quite at its warmest, only so far checks the easy access through passages to the realms of pictured delight as to remind the happy anticipator that there is never sunshine without sunshade; that there never can be bright happiness for some unless it sometimes carries a parasol with it. But on a wet day, to wait one's turn for giving into custody your lately best friend, *pro tem.*, when every one else is engaging the attention of the civil officers who take the charge, all hope of placid enjoyment is left behind with your umbrella, and your patience has been too much tried to allow of fair play for a happy disposition to be pleased, however winsome the sight of pretty things may be, when so much of the time allotted for special pleasure has been absorbed by this particular vexation in arriving at it.

However, the passages are considerably shortened since the handsome building unmasked its entrance, and a cab fare to the doors of it might encroach on the extra mile since last year. The realms remain, and will remain, a dominion of British art. Year after year the mimic presentation of whatever the sun lightens and shadows darken is to be found amongst the hundreds and hundreds of pictures the walls display and will display; and yet, with such a vast amount of learning visible, too little is taught or recorded by the painters of to-day, simply by reason of their having or showing so little sympathy with to-day. Pictorial newspapers and photography have, in a measure, cut the ground from beneath the feet of those who would tread the old course of illustrating the times in which they live, so far as depicting actual events as they pass: raw facts to dispute an artistic apprehension and treatment of them are likely to deter when the object is to give all possible truth to them, but in picturesque form; for divergence ever so slight from what is known to be truth would belie any attempt to adapt it, and make the result worthless, compared, perhaps, with that, when speculation and appropriate use of probabilities have been left at disposal; and in giving with all possible truth a probable version of what is exactly known to nobody, the doubtful becomes clothed with positive fact enough to hide it: and all doubt that tends to good in pointing for painting a moral, or adorning moral precept in tale, should have the benefit of doubt shared by worse delinquents, no doubt, than itself.

Pictures at the Royal Academy are past all doubt of goodness with the multitude. Let all be said that may be said of this year's show, ten of every dozen visitors who see it will derive the same pleasure and belief in its being a thoroughly good one, as usual, though the nature of its charms may vary: sometimes great pictures may have concentrated this recognition; at others, as now, the best of the year's production is seen in a diffused form of excellence; but the fact remains all the same, that in its recurrence the Exhibition of the Royal Academy is only to be judged *per se*.

A cursory view of its 1,600 constituent items would lead to the belief that no great demand could have been made on half their catalogue's motto "*Ingenium*;" the hard work necessary to furnish the supply of so many hundreds of instances is far more apparent, and less deniable. "*Labor et Ingenium*," mulcted of some of its classic and sonorous meaning, very well designates respectively those who find it hard work to paint, and those whose ingenuity makes it easy business. Long since it was part of the painter's task to find and grind colour, to make preparations of oils and gums (now but the shopkeeper's share of art profit), and cunningly to devise means by which he could tell in outward show the worth of his thoughts and learning that, like hidden jewel-mines' wealth, needed but implements to be made known. The means were found, the treasure divulged, and set, to become precious for ever. Paint, more than purpose, is ascendant now, and how to apply rich means is the question of to-day, as opposed to the old yearning request for means to apply.

Executive skill, based on such acquirements as knowledge, taste, and the sense of what is delightful and beautiful, marks the production that many hands have helped to sign, in deed that conveys great property, but with a spendthrift's carelessness, a blindfold liberality. English art now is equal to any demand on its appliance, and yet fritter may make small things of it. It is this very demand that, influencing the supply, cramps whilst enlarging it, the nature of this supply.

Fashion is exacting, and in its tortuous course and binding influences must ever have much to answer for in what effects it may impose on art; portrait-painting inevitably illustrating its real temporary status for after-opinion more than any other practice could, whether portraying the time or its people,—whether, as in the case of Mr. W. P. Frith, it takes the comprehensive view, and faithfully represents "Derby Day," "Railway Station," "Foreign Gambling Resort," or when applied to convincing delineation of individuality, such as Mr. Millais, Mr. Watts, Mr. Wells, and others are handing down for posterity's knowledge and consideration, with the present benefit of allowing some of us, at all events, "to see ourselves as others see us."

One of the most striking characteristics of the portraits Mr. Millais paints, is their freedom from all appearance of trick or adoption of

recipe in his method of working; his faculty for imitating anything and everything paintable makes observation very independent of rules and regulations, of prescribed flesh-tints and favourite shadow-colour, and of this hue's employment for another's contrast. The little child seated in the garden nursing her kitten, with spring flowers, gay crocuses, for quiet company, which certainly suggests likeness to Reynolds's children, more from the mob-cap and Dolly Varden costume of "Early Days" (29), than from any real resemblance, is intended for contrast, no doubt; but there is little need to add such to prove the perfect realisation of very great age that the picture "Mrs. Hengh" (21) presents; nor to typify old-fashioned rusticity by the charming portrait of the young lady who is collecting the "New-laid Eggs" (260), in order to emphasise the gay magnificence of brocade, lace, and jewels, that fails to interfere with the predominant attractiveness in another beautiful head splendidly copied, "Mrs. Bischoffsheim" (228). There are more portraits than ever this year, including some fine specimens; and though there are not many works illustrating history, poetry, or romance, there are numerous instances of the pleasing or otherwise affecting class of narrative pictures. The portraits, as exhibiting the current chief claim on painter's time, would need separate consideration; but for the present,—had we a wife, we would thank Mr. G. Pope to paint her picture, if she were at all like "Mrs. Hartwell" (209), but then we should crave, on our own side, to be something like "The Hon. Francis G. Baring" (328), one of the most admirable portraits ever painted; and if Mr. H. T. Wells were fortunate in his sitter, the sitter was fortunate in his painter. Never was gentleman and soldier better presented: it is a jewel of a portrait. Having already, however, given space to a special department, we are obliged to stay our say of Royal Academy pictures until next week.

THE GOVERNMENT AND IMPROVED DWELLINGS FOR THE POOR.

THE Special Dwellings Committee of the Charity Organisation Society have been engaged at their last two weekly meetings in discussing the question whether the State ought not to undertake the erection of improved dwellings for the industrial classes. The discussion arose out of the following resolutions, brought forward by Mr. J. S. Storr, a member of the committee:—

"1. That as the very extensive clearances of late years in London, whereby overcrowding has been so much aggravated, have been conducted under compulsory powers conferred by Acts of Parliament, it is incumbent upon the Legislature to provide the necessary facilities for the reconstruction of dwellings.

"2. That the committee recommend that Parliamentary application be directed to the appointment of Improvement Commissioners, or otherwise, under and in connection with, the President of the Local Government Board, or the Home Secretary, with power to purchase buildings (within the Metropolitan district), that are unfit for human habitation, or otherwise eligible as sites for dwellings for the poorer classes, and to proceed to erect such dwellings. The Commissioners to have limited borrowing powers. The buildings erected under the authority of the Commissioners to be managed by them, and sold, under appropriate restrictions, from time to time, and the proceeds realised on such sales to be reinvested by the said Commissioners in like manner as before; any ultimate profit or loss on the sale of the said buildings to be carried to the account of the Metropolitan Board of Works, or of any existing charitable fund which may be deemed by Parliament to be available for this purpose."

At the meeting of the Committee on Wednesday week, when the subject was first brought forward, Lord Napier & Ettrick presiding, there was a numerous attendance of members, including Lord Elliott, the Hon. W. Cowper-Temple, M.P., Sir Charles Adderley, M.P., Sir Charles Trevelyan, Sir Leighton Baldwin, &c.

Mr. Storr had forwarded copies of his resolutions to a number of Peers, members of the House of Commons, and others, known to be interested in the question, and the replies of several were read previously to the commencement of the discussion. The various opinions received are of interest from the position and standing of the writers.

Among other letters read was one from Sir John Lubbock, M.P., who states that he is not convinced that it is the duty of the Government to provide dwellings for the working classes."

The letter of Mr. Thomas Brassey, M.P., was emphatic in its condemnation of the Government being called upon to undertake the erection of such dwellings. He remarks,—"The intervention of the State in matters of local government is not popular in the present day. I should, however, be glad to see the Government invested with compulsory powers to condemn overcrowded dwelling-houses unfit for the poor. I am also of opinion that State loans for the purpose of building workmen's dwellings might be granted, but I should hesitate to give my support to a comprehensive scheme for rebuilding the houses of the working classes being undertaken by the Government. I cannot believe that it would be an advantage that the State should be the universal landlord of the working men of England, and I should oppose such a proposition as I should oppose the proposal that the State should purchase and work the railways of the United Kingdom. I quite agree with you, however, that Parliament may have given its consent too readily to Acts empowering railway companies to pull down the dwellings of the poor without securing for them adequate accommodation in lieu of the houses thus destroyed."

The Marquis of Salisbury in his reply says,—"I shall be happy to consider any scheme which you have to suggest for the purposes named in your letter, but I need hardly say that the practical difficulty of entrusting to Government the duty of providing houses for the working classes is very great."

Earl Russell writes to say that he cannot give an opinion on so complicated points of law as those involved in the resolutions; but he quite agrees with the spirit of the resolutions, that the law on the subject requires material alteration.

Archbishop Manning says:—"I am much obliged to you for the copy of your resolutions on the compulsory destruction of dwellings. Having had experience of this in many parts of London from which the poorer classes have been swept out, I am convinced that, though in the main beneficial, such wholesale destruction has caused both loss of life and hardships to many who from poverty have felt it very sensibly. Some such provisions as you propose I believe to be necessary. Enough has not yet been done to provide fitting houses for our working classes. The efforts of individuals have done much, but some more public and adequate provision ought to be made. Your resolutions seem to me to go far to meet the case."

Mr. Storr introduced his resolutions in a speech of upwards of an hour's duration, remarking in the outset that, year by year, in the metropolis, we were expending from the public treasury many millions sterling in pensions, workhouses, hospitals, and reformatories, and sanctioning a still further expenditure in Thames embankments, railways, sites for law courts, and other large public improvements, which were driving out and rendering houseless hundreds of thousands of the poor classes, who had either to go into the suburbs, scattered and removed far from their work and their employers, or otherwise to pack themselves still closer in the already over-crowded districts. Lord Shaftesbury estimated that 50,000 poor persons had been so disturbed for various public works in London yearly since 1853, which gave a total of 1,000,000 up to the present year. Having complained that the Government were inert on the subject, and that large numbers of the labouring classes were being destroyed year by year by diseases which could be prevented by the Government if they had but the nerve to grapple with the question, he alluded to what had already been accomplished by the several metropolitan associations for providing houses for the poor, showing that up to the present time the Peabody trustees had erected buildings for 847 families, consisting of 3,407 persons, occupying 3,328 rooms, at an average rental of 1s. 10d. per room per week; the Metropolitan Association for Improving the Dwellings of the Industrial Classes had erected six blocks, accommodating 507 families; the Improved Industrial Dwellings Company had provided accommodation for 9,000 persons, which had caused an expenditure in buildings of 250,000*l.*; and by these efforts, aided by those of other societies, houses had been found for about 20,000 persons; but, notwithstanding these efforts, and however much it might be agreed that reliance could be safely placed upon the law of supply and demand, supplemented by intelligent beneficence, the conclusion was, he thought, absolute that the difficulties connected with the housing of the poor, and of the working-classes generally, in the metropolis, were of such magnitude, and the case was of such great urgency as to be beyond the reach of private enterprise, and to call for the interference of the State, or Municipality, if London had one. The population within the metropolitan district was rapidly approaching four millions, and they had as yet only erected new houses for 20,000 persons since the year 1854, when the first two associations for the purpose came into being. In continuation, he observed that, during his interview with Archbishop Manning on the previous Monday, the Archbishop took pains to make clear to him his conviction that the minds of the lower orders were becoming more and more impregnated with a sense of the indifference of both the Government and the upper classes to much that concerned their material well-being, and that they laboured under a feeling that injustice had been done to them, especially in the matter of their houses being taken from them. He (Mr. Storr) regarded the condition of the houses of so many of our people in London as a disgrace to our profession alike of Christianity and civilisation, and a common danger to the public health, and the security of the State. The legislation of recent years had on the one hand intensely aggravated the great evil of over-crowded dwellings, and on the other provided but permissive, tentative, and comparatively futile means towards the condemnation of houses unfit for human habitation, and the re-building of lofty houses in their stead. He then proceeded to suggest the only remedy that could, as he thought, prove adequate to the vastness and urgency of the case. This consisted of the sketch of an Act of Parliament, with clauses, appointing commissioners with powers as set forth in the resolutions. Under such an Act he believed that all the evils of the present condition of the people's homes would, in a few years, be remedied, and the multitude would not be slow to feel that they were living under a Government that concerned itself practically in matters that lay at the root of their social state. We should have stronger men and women, and in the long run less to pay for prisons and prisoners, hospitals and sick, workhouses and paupers. Whilst as for education, with good houses to go to when the day's work was done, the people might learn the greatest lesson which any education could teach them, that home was sweet, and that home influence was the best foundation on which to build the proper training of both body and mind.

The Chairman, at the close of Mr. Storr's remarks, said the committee must feel greatly indebted to him for the pains he had taken in laying before them the interesting statements which he had made upon such a vitally important question.

A prolonged discussion followed, in which several members took part, but it appeared to be the opinion of many of the speakers that before urging the Government to take any such steps as those indicated by the resolutions, they should make themselves thoroughly acquainted with the results of what had been done by the local authorities in Liverpool, Edinburgh, and other great cities with the view of preventing overcrowding and promoting improved dwellings.

Sir Charles Trevelyan had great doubts whether the duty of providing improved dwellings should be thrown on the Government or Parliament.

Sir Leighton Baldwin was also opposed to the Government being asked to undertake the proposed duty. What, however, he thought might be done in the way of legislation was to give to local bodies more legislative powers than they at present possessed, not to destroy, but to restore dwellings. He thought the actual work of building better houses for the poor must be left to private enterprise and beneficence.

The Rev. G. M. Murphy thought that all the requirements of the case would be met by Government being asked to give every possible encouragement to private individuals disposed to erect dwellings for the large numbers of those whose houses had been destroyed by public works.

The Hon. W. Cowper-Temple, M.P., said they were all agreed as to the existence of the great evils which had been so ably laid before them by Mr. Storr, but he doubted the soundness of asking the Government to undertake the remedy. All he thought they could do was to stimulate the local authorities, and continue to rely on the efforts of private bodies and organisations. The commission which Mr. Storr proposed would not have either the power or the authority to carry out the gigantic work involved in the question under discussion. Moreover, he believed that,

as a rule, all the existing local authorities would raise their voices against the creation of such a commission as that proposed. He could not bring himself to believe that the State would be willing to undertake the suggested duties, nor indeed did he think it was competent to do so. As to the work being imposed upon the Government, how could they think that a minister whose time was so much occupied in subjects of grave imperial importance could be expected to undertake or to be responsible for all the details and minutiæ involved in such a complicated social question as the one under discussion? He felt that the wisest and most prudent course was to enlarge the powers of municipal and local authorities, so as to give them a greater scope for the erection of the required buildings, and to trust to those beneficent organisations under the influence of which so many dwellings for the industrial classes were being erected.

The discussion was continued for some time longer, and was ultimately adjourned until Wednesday last, when it was resumed by Dr. Ross.

At the meeting on Wednesday last, when the discussion of the subject was resumed, Lord Napier, of Ettrick, again presided, and amongst those present were the Lord Provost of Glasgow, and Mr. Carrick, the city architect, with Mr. Marwick, the town clerk of Glasgow, who attended as a deputation to explain to the committee the steps which had been taken by the corporation of that city to improve its sanitary condition, and promote the erection of better houses for the working classes.

Dr. Ross, the medical officer of health, having opened the adjourned discussion, and stated his opinion to the effect that the proposed Improvement Commissioners should not be Government officers appointed by them, but should be appointed jointly by the Metropolitan Board of Works, the Corporation of London, and the Local Government Board;—

The chairman called upon the Lord Provost of Glasgow to state to the committee what were the powers possessed by the corporation there with regard to the destruction of houses unfit for habitation and the building of dwellings for the industrial classes.

The Lord Provost then went into the history of the population of Glasgow for some years past, when, in different portions of the city, the inhabitants were huddled together in dwellings not fit to live in. This led to an Act of Parliament being obtained enabling them to expend 1,250,000*l.* in purchasing property unfit for human habitation, and to pull it down, and either to build upon the sites themselves or to sell the sites for others to build upon. They had already purchased property and sites to the extent of 1,000,000*l.*, and resold to the extent of 400,000*l.*, and on what they had resold they had made a considerable profit. The result was that whole streets had been widened and improved, and large numbers of improved dwellings had been erected for the labouring classes. Hitherto they had not gone on the principle of building themselves, although they did build a number of lodging-houses at once, immediately on obtaining their powers. They adopted the principle of selling the sites to builders upon certain restrictions, letting it be known that certain houses would be required, and the consequence was that whole streets of new and comfortable houses and rooms had been erected. According to the arrangements in the new blocks or flats of buildings, one room was let at an average of 3*l.* a year, and two and three rooms at 10*l.* and 12*l.* a year. Under the terms of their Act, in taking down houses which they had purchased for improvements, they did not dispossess more than 500 persons at once, and this was not done until they were assured that new dwellings for that number had already been built, and were ready for occupation. The most satisfactory results had already been shown in the altered condition and sanitary improvement of the City; and their calculation was, these improvements would not cost them more than from 150,000*l.* to 200,000*l.*

Mr. Carrick, the city architect, Glasgow, corroborated the Lord Provost's statements, and Mr. Marwick, the town clerk, and who had formerly held the office of town clerk of Edinburgh, explained what had been effected in a similar manner in the last-named city.

The chairman then suggested an adjournment, as they had been favoured with most valuable information upon which they might profitably reflect before coming to a decision on the resolutions, and the discussion was then further adjourned to Wednesday next.

OPENING OF THE VIENNA EXHIBITION.

THE Emperor of Austria opened the Exhibition at Vienna on the 1st of May. The Prince of Wales was in the place of honour on his right, and the Crown Prince of Prussia on his left. The Crown Prince of Austria was with the German Crown Prince's son, and the Princess of Prussia with the Empress. The Archduke Charles Louis, the "protector" of the Exhibition, addressed the Emperor his brother. There was a brilliant assemblage, and the ceremonial was accompanied with music, led by Strauss. The actual ceremony of the opening occupied less than twenty minutes, and the whole proceedings were over in less than two hours.

FROM VIENNA.

May 1st.

SIR,—I am here in Vienna, and having a few minutes to spare, it has occurred to me to write you from this very beautiful city, where expectation on tip-toe waits the events of to-day,—the opening of this mighty Exhibition,—in which men, who are men with willing hands and active brains, will exhibit to the world all the varied results of human skill, thought, and imagination, and who, desiring to earn something more than "daily bread," labour not "nine hours" only, but often the long night through, to secure that which money cannot purchase, nor patronage bestow.

Having been associated with every Exhibition since 1851, I am able to compare the present with those of the past. The novelty of 1851 took the world by surprise, and the utilisation of iron and glass on so grand a scale secured public favour for the building, which, when filled with the varied contributions of the whole world, made this, the first of Exhibitions, a great success.

During the past twenty-two years the world has not been idle, and all connected with the present building deserve great praise for the efforts made to meet the requirements of all nations. Passing through the building as I do daily, I am more than pleased. All approve the *plan* and *arrangement*.

The exhibits are all good, many of them truly magnificent. The statuary and pictures in the Fine-art Court, as also within the Exhibition, are *alone* worth a journey to Vienna to see, apart from the surroundings.

The Machinery Hall runs the entire length of the building, and is filled with very beautiful machines, small and large, all tending more than ever to prove that science is the providence of man, and that the day will come when the fulfilment of his duties will consist in simply guiding the mechanical and chemical forces of nature, while providing those necessaries, and even the luxuries, his condition of life may require.

I once held the opinion that there were no men like Englishmen, and no place like England. I have a notion that many of my countrymen are of the same opinion still. It would be well for those who think so, to work a little overtime, saving the extra money for a trip to and from this place: the whole distance may be done in forty-eight hours. A month since I worked here, all the Saturday, and left the same afternoon, or rather evening, about 6 o'clock, and on Monday night at 8 o'clock I was at Victoria Station.

Last Saturday night I left Charing-cross at 8·15; at 7 o'clock the next morning I was in Paris, where I spent the day seeing poor Paris, the Louvre, &c. I left Paris at 8·35 Sunday night, passing through Nancy, Luneville, and other places, still bearing evidence of the struggle between the Prussians and French.

At Strasbourg I had plenty of time for refreshment, and to see this quaint old place, with its wonderful clock; yet with all this I was in Vienna soon after 9 o'clock on Tuesday morning, having lost but one working day. It is wonderful what may be done in a very short time if we only try, and I do hope many of my countrymen will try to visit Vienna during the summer.

I think a certain sum should be voted to assist foremen and others having charge of works in the United Kingdom to come out here. Knowledge is power, and the knowledge they would gain would make our common country more powerful to hold her own in the struggle for manufacturing supremacy that will surely come.

The Germans, working with pipes in their mouths (a thing I decidedly object to), may look a heavy listless race, wanting the energy to impulsiveness so common to our people; but their productions are not to be despised. They are steadily gaining ground, and are even now competing with us in manufactures that, a few years since, the English alone supplied.

I advise those of my friends who can spare the time to run direct to Cologne, *viâ* Brussels, stop at the Hôtel Disch, or any other good hotel for the night, and the next morning take the steamer up the Rhine to Mayence, then on to Vienna by way of Salzbourg, the scenery there being very grand.

As regards lodgings, they are not so difficult to obtain, neither are they so dear, as they are represented to be. We *had* our Exhibition prices, the Viennese have theirs. As I shall be much here during the Exhibition, I shall be pleased to be useful to those of my countrymen who may come, or desire to come. If you approve, I shall be pleased to write to you occasionally on Exhibition matters. Meantime, I trust you will accept this hasty communication in the spirit in which it is offered. The drums are beating and I am warned to prepare for the opening.

GEORGE JENNINGS.

ANNUAL MEETING OF THE INSTITUTE OF ARCHITECTS.

THE report of the council read to the meeting, May 5th, shows that since the last annual meeting, "fifteen Fellows (five of whom had passed from the ranks of the Associates) have been elected, whilst the list of Associates has been increased by thirty new names. Four gentlemen have been admitted as contributing visitors, and five passed candidates in the preliminary architectural examination have been enrolled as students of the Institute. These additions are, on the whole, above the usual average; while in the case of the Associate class, the accession has been greater than any which has occurred for many years." The report continues:—

"To prevent any future excess of disbursements over receipts, the council propose that an annual budget shall be prepared, giving an estimate of the income and expenditure for each year. It has also been arranged that henceforth the conference and the architectural examination shall take place in alternate years, that the conference shall be open to the public press (by which means the expense of publishing papers read at the conference may be saved), and that the architectural examination shall only be held when an adequate number of candidates present themselves, so that the examination may be made as far as possible self-supporting.

The labours of the Professional Practice Committee have been chiefly directed towards the consideration of a proposal revived during the discussion which followed Mr. Banister Fletcher's paper, 'On Arbitrations,' read in January last, and which pointed to the advisability of establishing a professional court of arbitration, 'presided over by one or more members of the architectural profession, for the purpose of adjudicating on questions arising out of disputed cases in professional practice.'

Concurrently with this suggestion, the measure proposed in Lord Selborne's Bill, for the constitution of a Supreme Court of Judicature, attracted the attention of the council, who, after taking the opinion of Mr. F. Ouvry, hon. solicitor to the Institute, came to a conclusion that the real object aimed at by the profession would be virtually and effectually secured if Lord Selborne's Bill should pass into law.*

This being the case, a petition to the House of Lords was drawn up by the Council, pointing out the inconvenience and expense which, under the existing administration of justice, attend the investigation and settlement of questions affecting the practice of architects and surveyors, and advocating the expediency of establishing such tribunals and powers of reference as are contemplated in the Bill. At the request of the council the Lord Chancellor himself has kindly consented to present this petition, which it is hoped may have the effect of supporting his measure, in regard to that department of law, at least, which most directly affects professional interests.

The Committee for the Conservation of Ancient Monuments and Remains have met, on several occasions, when their assistance has been required to promote the objects for which that committee was formed. At the instance of Mr Beresford Hope, M.P., Past President, their attention has been specially directed to the proposed destruction of certain churches in the City of London (designed by Wren, Hawksmoor, and others), which seemed likely to be removed under the provisions of the Union of Benefices Bill. The Committee felt that these interesting examples of national architecture should not be condemned without an effort to save them. A memorial has therefore been drawn up and presented to the Parliamentary Committee appointed to consider the subject, which, while it admits the important objects of the Bill, and the pecuniary considerations involved, expressly urges the advisability of preserving such churches as St. Mary's Woolnoth, St. Michael's, Cornhill, St. Mary-le-Bow, St. Mary Aldermary, and St. Bride's, Fleet-street, or (if their removal be inevitable) of re-erecting them elsewhere. Finally, the memorial prays that before either of these churches is removed, the President of the Insti-

* See Clauses 56 to 59 and 81 to 83 inclusive, as well as Clauses 34 and 35 in the schedule of the Bill.

tute, for the time being, may be permitted to attend and lay before the Commissioners, in person, such reasons as may be adduced for its preservation or re-erection. Professor Donaldson, Past President, has already given evidence before the Parliamentary Committee on this subject, and the value of his testimony will no doubt be duly appreciated."

"In his opening address for the present as well as the previous session, the President has taken occasion to urge the claims of the Architects' Benevolent Society on the attention and assistance of our individual members. The Council regret to find that this appeal has, either from inadvertence or some other cause, failed to earn that response which the charity deserves from followers of a profession for whose benefit it was organised. A proposition has recently been made which, it is hoped, will promote the objects of the charity, while it realises another project that has more than once been entertained. It is proposed to hold an annual dinner, at which members of the Institute and their friends, including amateurs and patrons of architecture, shall be present. The social character of such a gathering will no doubt be appreciated by many who have few similar opportunities of meeting their brethren in art, and may tend to encourage that *esprit de corps* which is as valuable to architects as to men of any other profession. It will also afford an occasion for enlisting subscribers to the charity by the same means which are adopted in the case of other benevolent institutions. The 11th of June has been appointed for the dinner this year, and the President of the Institute will be requested to take the chair."

We will give on another occasion a list of the office-bearers elected at the annual meeting.

INAUGURAL MEETING OF THE ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

ON Friday, the 2nd inst., the inaugural meeting of the newly-formed Association of Municipal and Sanitary Engineers and Surveyors was held at the Institution of Civil Engineers, Westminster, London, Mr. Lewis Angell, Mem. Inst. C.E., of London, and engineer to the West Ham Local Board, as chairman *pro tem.*, presiding. There was a large attendance, including engineers and surveyors from the following places:—Ealing, Grindley, Portsmouth, Bristol, Southampton, Kingston-upon-Thames, Hornsey, Oldbury, Tranmere, Warwick, Leamington, Maidenhead, Boston, Sheerness, Birkenhead, Lancaster, Wellingborough, Tottenham, Basford, Loughborough, Congleton, Eton, Barnsley, Maidstone, Hanley, Bromley, Macclesfield, Stockport, Cheshunt, Hereford, Ramsgate, Woolwich, &c.

The chairman gave a brief history of the formation of the society. He had felt for years past the need there was for some organisation amongst sanitary engineers and surveyors serving under local authorities; and a few other members of the profession being of the same mind as himself, a meeting was held at the Institution of Civil Engineers, London, on the 15th of last February, when it was decided to form an association, the objects of which should be "the promotion and interchange among its members of that species of knowledge and practice which falls within the department of an engineer and surveyor engaged in the discharge of the duties imposed by the Public Health, Local Government, and other Sanitary Acts; the promotion of the professional interests of the members; the general promotion of the objects of sanitary science."

A meeting was afterwards held in Birmingham, where a number of additional names, as members of the Association, were obtained, and the number of members stood at present at over 100, and that day they were assembled for the purpose of holding the inaugural meeting of the Association. He also reminded the gentlemen present that although town clerks, medical officers, and others, serving under local authorities had their various associations, engineers and surveyors had, up to the present time, been disunited, and had now banded themselves together for their own and the public benefit.

The proceedings of the previous meetings having been confirmed, it was decided that the Association should be managed by an executive council, composed of the engineers and surveyors of West Ham, Reigate, Ramsgate, Ealing, Hertford, Kingston-on-Thames, Southampton, Portsmouth, Brighton, Tottenham, and Boston; and also a representative from Middlesbrough, Shields, Hull, Manchester, Salford, Leeds, Birkenhead, Leicester, Bristol, Derby, and Barrow-in-Furness, to which would also be added the secretaries of the various districts of the Association, when they are appointed.

The chairman, in reply to a question by Mr. Marshall, of Tottenham, said he would suggest that the Association should also take in the engineers and surveyors from Scotland and Ireland.

It was decided that one-third of the council should retire annually, and that it should be determined by ballot who should retire, and by whom their places should be filled. Retiring members of the council would be eligible for re-election.

The London and County Banking Company were selected as the bankers of the Associaton.

Mr. Jones, of Ealing, who has been acting as hon. secretary, was elected secretary.

As to whether or not assistant surveyors should be eligible for membership in the Association, the council were left to decide.

Mr. Angell was unanimously elected president for the ensuing year, on the proposition of Mr. Lemon, seconded by Mr. Thornburn; and Mr. J. Lemon, of Southampton was unanimously elected vice-president, on the proposition of Mr. Pritchard, seconded by Mr. Thornburn. Both gentlemen suitably acknowledged the compliment of election, Mr. Angell also receiving a hearty vote of thanks for his efforts in promoting the Association.

Mr. Robert Rawlinson and Mr. J. T. Harrison were elected vice-presidents, letters of concurrence having been received from them.

It was decided that the first annual meeting should be held in Birmingham in May, 1874.

The Chairman then read an inaugural address on professional and sanitary subjects, and the meeting shortly afterwards terminating, the members repaired to the London Tavern, where they dined together. The Association promises to be useful.

THE PROPOSED REMOVAL OF NORTHUMBERLAND HOUSE.

WE understand that the Select Committee appointed by the House of Commons to consider the provisions of the Bill promoted by the Metropolitan Board of Works for making a new approach from Charing-cross to the Thames Embankment have agreed to the preamble declaring it desirable that the road should run through Northumberland House. A clause has been introduced referring the approval of the elevations of the houses on the line of the new street to the Royal Institute of British Architects,—a step which will doubtless lead to discussion. Mr. T. H. Wyatt, who was present as a witness, accepted the duty on the part of the Institute, should the recommendation become law. If this be a good step in respect of the Metropolitan Board of Works, our informant remarks, why not for the Corporation of London? and if for the Corporation, why not for the Government? We shall be curious to know more of this arrangement. The Gothic or Classic tendencies of succeeding Councils may be made to have a curious effect on the architecture of London.

WITHINGTON CHURCH, GLOUCESTER.

THE parish of Withington, situated in the county of Gloucester, in the Cotswold Hills, and about seven miles from Cheltenham, contained at one time a nunnery founded in the Saxon times, about the eighth century, and connected with the see of Worcester.

The present church, dedicated to St. Michael, was founded at a later period, and contains several interesting specimens of various styles of Gothic architecture from the Norman to the Perpendicular,—the Norman of which the north and south doorway in the nave are good examples, as are also the arches and piers supporting the central tower; the Transition period from Norman to Early English exemplified by the north and south chancel windows, the lower window in the tower, and some remains of arches in the west front; the Geometric by windows in the south transept; and the Perpendicular by the clearstory and south windows of the nave, and the east and west windows of the nave and chancel. The church consists of a long and lofty nave, and central tower dividing it from the chancel, with a transept on the south side only; the tower is 74 ft. in height, and contains a peal of six bells. Encased in the south wall of the nave was found an elaborate canopied monument for a recumbent statue of fifteenth-century work, but the figure had disappeared. There were also found entrances to a rood-loft and other remains of antiquity, including a piece of Roman tesselated pavement.

The walls and roofs having become in a very dilapidated condition, especially those of the tower, it was determined by the rector, the Hon. and Rev. G. G. C. Talbot, to undertake the restoration of the building with the aid of subscriptions from the Incorporated Society for Building Churches, the Diocesan Society, Dr. Warneford's fund, and from private friends. Designs were obtained from Mr. David Brandon, which have since been carried out at a cost of about 3,000*l.*, and the church was reopened for divine service on Tuesday, the 15th ult. The Earl of Eldon, to whom the south transept belongs, subscribed the sum of 300*l.*

The chancel has been taken down except the east wall, and rebuilt as it originally was, including Early open-timbered oak roof, and a vestry, with space for the organ, has been built on the north side. The nave roof, of Perpendicular work, which was ceiled underneath the tie-beams, has been thrown open to view, and the boarding covered with new lead. The plastering has been removed from the internal faces of the walls, and the masonry cleaned down and repointed. The dilapidated stonework of the windows, doorways, and strings, has been repaired, and made good with new stone. A font of Caen stone, a new pulpit, and a reading-desk, have been substituted for the old ones, and the whole area of the church has been re-seated. Nearly the whole of the work has been executed by the local workpeople of the village of Withington; Mr. W. H. Knight, of Cheltenham, having assisted in superintending the carrying of it out.

The organ, originally built by Mr. Nicholson, of Worcester, has been considerably enlarged by him, and a heating apparatus has been constructed by Messrs. Marshall, of Cheltenham.

THE ANTIQUITIES OF ROME.

MR. J. H. PARKER says these are in danger, and makes a fresh appeal for help to save them. The cost of sites now would be moderate, as compared with what it will be a few years hence. Upwards of 2,000 houses are now building in Rome, and many more will be wanted, as well as manufactories and warehouses: the price of land is therefore pretty sure to rise.

PROPOSED RESTORATION OF GATESHEAD PARISH CHURCH.

A MEETING of the churchwardens and parishioners of Gateshead has been held in the vestry of St. Mary's Church, for the purpose of considering the desirability of making certain alterations in the interior of the church. The rector of Gateshead, the Ven. Archdeacon Prest, presided, and informed the meeting that the question of restoring the mother church had been taken up by the churchwardens. The alterations which it had been suggested should be made were the removal of the present closed pews, and the substitution of open seats, but retaining the carved oak bench-ends; and the entire removal of the galleries over the south and north aisles. The roof of the aisles were so low that, with the galleries at present existing, it was often very uncomfortable and unhealthy for persons sitting in them and below them, on account of the vitiated air, especially at evening services, when the congregation was large. It was also contemplated removing the organ-gallery at the west end of the church, and placing the organ in an organ-chamber to be erected on the north side of the chancel; the chancel, in the event of this alteration being carried out, to be occupied by the choir. The transept-galleries would also be removed, and the whole area of the ground floor opened out as far as the tower, whilst the arches and pillars would be cleared of the paint, plaster, and other colouring, and restored. Mr. Crichton said he thought they would require from 3,000*l.* to 4,000*l.* to carry out these suggested alterations. Mr. R. W. Hodgson said the first step for them to take was to get an architect of taste and ability in such matters to report upon what was necessary to be done, and to give an estimate of the cost of carrying out his recommendation. Mr. Ralph Carr-Ellison suggested that they ought to have some alteration of the exterior of the tower in order to convert it from its present nondescript appearance into a good fifteenth-century tower. They need not carry out this part of the scheme at the present time, but it was best when they were about to restore the church to have a plan that should be harmonious throughout. After some conversation, a committee was appointed for the purpose of consulting Messrs. Austin & Johnson, architects, as to the alterations that may be desirable.

THE MARYLEBONE SQUARES.

Two large and historical mansions in the north of London are now in the hands of the builders, and being enlarged, viz., Montagu House, in Portman-square, and Manchester House, in Manchester-square; and the present, therefore, seems a good opportunity to set down a few notes about the neighbourhood in which these houses are situated. At the beginning of the eighteenth century Marylebone was a village entirely separated from London, and the ground to the north of the Oxford-road was chiefly occupied by fields. The manor of Marylebone was granted by James I. to Edward Forset in 1611, and afterwards passed into the family of Austen, by the marriage of Arabella Forset to Thomas Austen. In 1710, John Holles, Duke of Newcastle, purchased the manor of John Austen, afterwards Sir John Austen; and his only daughter and heir, Lady Henrietta Cavendish Holles, marrying Edward Harley, second Earl of Oxford and Mortimer, it passed into that family. The only daughter and heir of the Earl and Countess of Oxford, Lady Margaret Cavendish Harley, married William, second Duke of Portland, on July 11, 1734, and took the property into the Portland family, where it still remains, the present duke being lord of the manor. The various names of these noble families are all represented in the streets of the neighbourhood. Lady Henrietta Cavendish Holles gave her names to Henrietta-street, Cavendish-square, and Holles-street; her husband to Harley-street, Oxford-street, and Mortimer-street; and their daughter, Lady Margaret, to Margaret-street. Bentinck, Duke, and Duchess streets, and Portland-place, take their names from the Duke and Duchess of Portland. One of the titles of the Earl of Oxford was Baron Harley of Wigmore, after which place Wigmore-street was named. Welbeck was an estate of the Duke of Newcastle, and Bulstrode the family seat of the Duke of Portland, and both places are represented by Welbeck and Bulstrode streets.

In the year 1715 Cavendish-square and the neighbouring streets were planned out, but they were not completed until several years after. There is an engraved plan (dated 1719) "design'd and delineated by John Prince," and "ingraven by Sutton Nicholls," which is entitled "A Design of y^{e} Buildings already begun in y^{e} Parish of St. Mary la Bonne, belonging to the Right Hon^{ble} Edward Lord Harley and y^{e} Right Hon. Lady Henrietta Cavendish Holles Harley." In this plan the whole of the north side of the square is marked as to be occupied by one mansion, which was to be built by the magnificent Duke of Chandos, called by his contemporaries the Grand Duke and the Princely Chandos. The scheme was not, however, carried out, for the duke died of a broken heart, caused by the death of his infant heir while being christened, in the midst of the greatest pomp and magnificence. This side of the square was still unfinished in 1761; for at that date, we read in Dodsley's "London and its Environs," "In the centre of the north side is a space left for a house intended to be erected by the late Duke of Chandos, the wings only being built; however, there is a handsome wall and gates before this place, which serve to preserve the uniformity of the square." It was at first intended to place a statue of Queen Anne in the centre of the square, and in the plan above referred to this statue is marked; but the scheme was not carried out, and the site remained vacant until 1770, when the leaden equestrian statue of William Duke of Cumberland, "the butcher of Culloden," which has lately been taken away, was erected by General Strode. The statue of Lord George Bentinck, some time leader of the Conservative party in the House of Commons, at the south side of the square, opposite Holles-street, was set up soon after his death, in 1848. The square was formerly enclosed by a dwarf brick wall, surmounted by heavy wooden railings, and these were allowed to decay, so that in 1761 they made "but an indifferent appearance."

Harcourt House, the large mansion on the west side, was built by Lord Bingley, the foundation-stone being laid in 1722, and was purchased after his death by the Earl of Harcourt, who had previously built a house on the east side of the square. It was afterwards bought by the Duke of Portland, whose descendant still inhabits it.

Among the celebrated inhabitants of Cavendish-square may be mentioned Lady Mary Wortley Montagu; Princess Amelia, daughter of George II.; George Romney, the painter of such exquisite portraits as to become a dangerous rival to Sir Joshua Reynolds; Marshal Beresford; Matthew Baillie, the fashionable physician; and Thomas Hope, the author of "Anastasius." The Princess Amelia's was the large house at the corner of Harley-street, afterwards inhabited by Hope and Watson Taylor. Romney was always referred to by Reynolds as "the man in Cavendish-square." The house he lived in had been previously inhabited by Mr. F. Cotes, R.A., the portrait-painter, who built it, and was subsequently rented by Sir Martin Archer Shee, P.R.A.

St. Peter's Chapel, in Vere-street, the fame of which must ever be associated with the late lamented Frederick Maurice, long its minister, was designed and built by Gibbs about 1724. It was for some years called Oxford Chapel. William, second Duke of Portland, was married at this chapel, on the 11th of July, 1734, to Lady Margaret Cavendish Harley. Rysbrack, the sculptor, lived and died (1770) in Vere-street, on the right-hand side of the street going from Oxford-street. Gibbon lived in Bentinck-street: Martha Blount; Edmund Hoyle, of whist celebrity; Mrs. Piozzi; and Lord George Gordon, in Welbeck-street: Turner, the painter, in Queen Anne-street: and Sir Philip Francis in Harley-street, previously to his taking a house in St. James's-square. Lord Byron was born in Holles-street, and a tablet has been placed on the front of the house (No. 24) by the Society of Arts, to record the fact.

In the view of Hanover-square by Sutton Nicholls, dated 1754, Cavendish-square is shown as standing almost alone to the north of Oxford-road, and surrounded by fields, with an uninterrupted view of Hampstead and Highgate. At this time Harley-street extended very little way to the north, and Harley-fields were resorted to by thousands who went to hear Whitefield preach there. Soon, however, more streets were built, and about the year 1764 Portman-square was laid out and commenced. The north side was first built, and it was nearly twenty years before the whole was finished. This square takes its name from that of the proprietor of the land upon which it was built, viz., William Henry Portman, of Orchard Portman, in Somersetshire, who died in 1796, and was the ancestor of the present Lord Portman. Orchard-street and Somerset-street retain the memory of the seat of the family.

The Portmans were a family of distinction in Somerset, as early as the reign of Edward I., but its most distinguished member was Sir William Portman, Lord Chief Justice of England, who died in 1555.

Portman-square was built on high ground, with an open prospect to the north, which gave it a name as a peculiarly healthy part of London. Mrs. Montagu called it the Montpellier of England, and said she "never enjoyed such health as since she came to live in it." It is one of the largest and handsomest squares in London for its general effect, but the houses have no architectural character. They were, however, built with due consideration for the requirements of the wealthy, and were inhabited by a large number of the "quality" at their first building. In 1822 the following members of the nobility were living in the square:—Lord Clifford, Lord Teignmouth, Earl of Beverley, Lord Lovaine, Lord Kenyon, Lord Petre, Earl Manvers, Earl of Scarborough, Duke of Newcastle, Countess of Pomfret, Lady Owen, Earl Nelson, Dowager Duchess of Roxburghe, Earl of Cardigan, Dowager Countess of Clonmell, Dowager Countess of Harcourt. In this same year the model fox-hunter and country gentleman, Thomas Assheton Smith, lived at No. 5, and the Right Hon. Hugh Elliot at No. 40. Lord Garvagh, the possessor of the celebrated "Aldobrandini Madonna" of Raffaelle, now in the National Gallery, lived at No. 26 for many years.

The square still keeps up its distinguished character, for it appears by the "Directory" that in the present year eleven titled persons live in it.

M. Otto, the French ambassador, was living in Portman-square at the time of the short-lived Treaty of Amiens. Peace had long been wished for by the people, and the preliminaries were signed at Lord Hawkesbury's office in Downing-street on the 1st of October, 1801. On the arrival in London of General Lauriston, first aside-de-camp to Napoleon, with the French ratifications, he was greeted with enthusiastic cheers by a vast concourse of people. Some of the men took the horses from his carriage and drew him to M. Otto's house with tumultuous expressions of joy. A general illumination took place on the evening of the same day. The chief interest of Portman-square centres in the dark brick house standing by itself in a garden at the north-west corner, which was built by the once celebrated Mrs. Elizabeth Montagu (Dr. Doran's "Lady of the Last Century"), and inhabited by her and her nephew and heir, Matthew Montagu. The house has remained in the family up to the present time, when the lease, having fallen into the hands of the ground landlord, Lord Rokeby has had to vacate it. It was built by Mrs. Montagu, who watched its progress with much interest. In the year 1781 she moved into what Mrs. Boscawen called her *Château Portman*, just six years after the death of her husband, Edward Montagu. Mrs. Montagu was a woman of great note in her day, but her fame had died away, until Dr. Doran a few months ago revived it by the publication of some of her letters under the title of "A Lady of the Last Century." With the help of this interesting book we will now note a few particulars of Mrs. Montagu and her home. Elizabeth Robinson was born at York in October, 1720. She was a lively girl, loving fun and pursuing learning, so that the Duchess of Portland nicknamed her *La petite Fidget*. In August, 1742, she married Edward Montagu, M.P., a mathematician of eminence, and a coal-owner of great wealth, after which event she became more sober, and told her friend the Duchess that her fidgetations were much spoiled. She became a power in the literary world, and was one of the chief leaders of the Blue Stockings. Her house in Hill-street became a favourite resort of statesmen, poets, and wits, and the young aspirant for fame felt that he had his foot on the first rung of the ladder when he was invited to her table. Dr. Johnson thought Mrs. Montagu exerted more mind in conversation than any person he ever met with, and he said that in conversing with her, "you may find variety in one." The great Lord Bath thought there never was a more perfect being than Mrs. Montagu, and Edmund Burke was inclined to agree with him. Hannah More describes her as having "the sprightly vivacity of fifteen with the judgment and experience of a Nestor"; and Cowper, when he had read her "Essay on the Genius of Shakspeare," no longer wondered that she stood "at the head of all that is called learned." Edward Montagu left his wife a widow, after thirty-three years of married life, well provided for, with 7,000*l.* a year, and she soon afterwards entertained thoughts of leaving her old house in Hill-street. The building of the new house in Portman-square was a constant source of pleasure and interest to its owner. In one of her letters Mrs. Montagu says, "I will get the better of my passion for my new house, which is almost equal to that of a lover to a mistress whom he thinks very handsome and very good, and such as will make him enjoy the dignity of life with ease"; and in another she writes, "It is an excellent house, finely situated, and just such as I have always wished, but never hoped to have." The satisfaction did not wear off, for we find her afterwards writing, "I am a great deal younger, I think, since I came into my new house, from its cheerfulness, and from its admirable conveniences less afraid of growing old. My friends and acquaintances are much pleased with it." In this last particular she was quite correct, for Walpole, who was not over-prone to praise the hobbies of others, wrote as follows to Mason:—"On Tuesday, with the Harcourts, at Mrs. Montagu's new palace, and was much surprised. Instead of vagaries, it is a noble, simple edifice. Magnificent, yet no gilding. It is grand, not tawdry, not larded, embroidered, and pomponned with shreds and remnants, and clinquant like the harlequinades of Adam, which never let the eye repose an instant." In 1781 Mrs. Montagu moved her furniture from Hill-street, and three years previously she had "bought a large glass at the French ambassador's sale, and some other things for my new house, pretty cheap." One of the rooms in the new house was ornamented in a novel manner with "feather hangings," and Mrs. Montagu begged all sorts of birds' feathers from her friends. She tells one correspondent that "the brown tails of partridges are very useful, though not so brilliant as some others," and another she asks for "the neck and breast feathers of the stubble goose. Things homely and vulgar are sometimes more useful than the elegant, and the feathers of a goose may be better adapted to some occasions than the plumes

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of the phœnix." Cowper wrote some lines in 1788 on this unique room where Mrs. Montagu held her court, commencing as follows:—

"The birds put off their every hue
To dress a room for Montagu;
The peacock sends his heavenly dyes,
His rainbows and his starry eyes;
The pheasant, plumes which round infold
His mantling neck with downy gold;
The cock his arch'd tail's azure show;
And, river-blanched, the swan his snow;
All tribes beside of Indian name,
That glossy shine or vivid flame,
Where rises and where sets the day,
Whate'er they boast of rich and gay,
Contribute to the gorgeous plan,
Proud to advance it all they can.
This plumage neither dashing shower
Nor blasts that shake the dripping bower,
Shall drench again or discompose,
But screen'd from every storm that blows,
It boasts a splendour ever new,
Safe with protecting Montagu."

The Blue-stocking gatherings did not much thrive in the new house, for many of their chief supporters had passed away; Mrs. Montagu's breakfasts, however, were continued, but they became more sumptuous and the rooms were often overcrowded. In 1788 Mrs. Montagu adopted a fashion introduced from France by the Duke of Dorset of giving teas. Three years before Cumberland had written an essay in the *Observer* on the assemblies at Montagu House, in which he lightly satirizes the hostess as Vanessa, and her assembly as the Feast of Reason. Cowper afterwards more politely wrote:—

"There genius, learning, fancy, wit,
Their ruffled plumage calm refit."

In 1800 Mrs. Montagu died, and many mourned the loss of "an affectionate, zealous, and constant friend, as well as a most instructive and pleasant companion." She was succeeded by her nephew, Matthew Robinson, who, on being made her heir, took the name of Montagu. There is an amusing anecdote in Wraxall's "Memoirs of his own Time," relating to the confusion as to this gentleman's name after he entered the House of Commons. There was some difficulty in distinguishing between Matthew Montagu and Montagu Matthew until "General Matthew himself defined the distinction. 'I wish it to be understood,' said he, 'that there is no more likeness between Montagu Matthew and Matthew Montagu than between a chestnut-horse and a horse-chestnut.'"

We have hitherto only mentioned the house; but the garden that surrounds Montagu House has a history as well. Mrs. Montagu made a practice of collecting together the little chimney-sweeps of London every May-day, and giving them a treat in her grounds, as she said they should at least have one happy day in the year. After her death the Turkish ambassador occupied the house for a time and erected a kiosk in the gardens, where he smoked in state, surrounded by his suite. The house itself has just now been enlarged in the very worst style of London street architecture.

The two squares to the north of Portman-square do not deserve the name, as they are mere oblong slips with houses built in dreary uniformity. They are fortunately out of the way, and few people see them. Mrs. Montagu's name survives in Montagu square, street, and place; and Bryanston-square takes its name from Bryanston, near Blandford, the seat of the Portman family. In 1820, Queen Caroline, on her return to England, took up her residence for a short time in Portman-street as the guest of Lady Anne Hamilton, her lady of the bed-chamber. Orchard-street owes some lustre to Sheridan, who made it his first London residence after his marriage with the beautiful Miss Linley. Here he wrote the "Rivals" and the "Duenna."

Manchester-square was built soon after Portman-square, on a site that had previously been proposed for a square with a church in the centre, to be called Queen Anne's-square. The ground, after lying waste for a time, was purchased by the Duke of Manchester, who commenced building the large house on the north side of the square in 1776. In 1788, on the sudden death of the duke, Manchester House was purchased by the King of Spain as a residence for his ambassador. It afterwards became the property of the Marquis of Hertford, one of the friends of George IV. when Regent, and that prince made a daily practice of calling at the house in his *incog.* carriage, a practice to which Tom Moore refers in his "Diary of a Politician":—

"Through Manchester-square took a canter just now,
Met the old yellow chariot, and made a low bow."

The marchioness was the great attraction, and Moore, in another place, introduces her into his verse:—

"Or who will repair
Unto Manchester-square,
And see if the lovely Marchesa be there?
Or bid her come, with her hair darkly flowing
All gentle and juvenile, crispy and gay,
In the manner of Ackermann's dresses for May."

Manchester House was for a time occupied as the French embassy, and Talleyrand lived there. It is now being enlarged for occupation by Sir Richard Wallace, the son of the late Marquis of Hertford. William Beckford, the magnificent, once notorious as the proprietor of "Fonthill," and author of "Vathek," lived at No. 12 in the square in 1829.

Duke-street takes its name from the Duke of Manchester, and Hinde-street from Jacob Hinde, a lessee of part of Marylebone Park in 1765 and 1772.

Here we must bring to a close our notice of three of the eighteenth-century squares, which on their first building were considered to be at the extreme limit of the town, but are to-day in the very centre of London.

PERSEPOLIS AND THE PERSIAN KING OF TO-DAY.

It may often have occurred to some that the history of the world might be, not a little instructively, divided into two eras or divisions; the one, wherein each separate nation or tribe with a distinct language, manners, and individuality, did its own work in its own way; and seemed to be bent on resisting to the uttermost all attempts at amalgamation with other nations, or, as we should say, to protect itself against all help and reciprocity of ideas. In short, to keep itself to itself, and to be its own inner world. It was this idea of *isolation* that made the nations in past times what they were, and such as history has recorded. In these modern days those old ideas are being completely reversed. The nations of to-day, however isolated, seek, as a general rule, to give and to take; and there is hardly now left a single nationality, not excepting even Japan, that is not seeking to interchange with the whole world, both *goods* and *ideas!* A sort of universally levelling process is at work all the world over, and a system of things, the absolute reverse of the old way of work, from which all our art "precedent" is taken, is and must be the final and inevitable result of it. The subject is well worth a little cogitation, and a few words about it may interest a reader here and there. In a few weeks' time there will come to see London, for the first time in the world's history, the living representative of, in old barbaric times, the greatest potentate on earth. Talk of historic fame and ancestral lineage in these modern days! Why they are nothing to it; all are comparatively of yesterday: we know all about them, where they come from, and can more or less vividly realise to ourselves what they once were, and their place in the then system of things. But here, with this appearance of the dead past in the very present, we are utterly at a loss to conceive how such things could be. Nothing, it is certain, in the antique history ever surpassed the strange position of the great monarch of Persia. To see him was to catch sight of a present deity, to fly from him was impossible, and to resist his power equally impossible. It was the very romance,—far more so than in old Egypt, or Imperial Rome,—of concentrated power and empire. But we must not dwell on these fancies without a practical and architectural purpose. For so peculiar a state of things as existed in the old Persian monarchy it was necessary that there should be the material and artistic means of working them out, and of displaying them; and it is here that the subject becomes practically interesting.

In these modern days, when to come and to go is so easy, it has come to pass that the same sort of "apparatus" is common almost everywhere. A king's throne, for instance, is at best but a state armchair, pretty much alike everywhere. In London, Paris, Vienna, it is the same thing, a grand piece of furniture, and which might have been made in either of these cities in any workshop; for, wherever manufactured, it would equally answer its purpose. And the same may be said of the building, or *room*, in which it is placed. All is in process of being made alike after one pattern,—even kings' thrones, and the rooms they stand in. But in ancient Persia it was necessary to do something special for the purpose, and it was this necessity that gave birth to the vast masses of architecture which are yet to be seen in the ancient capital, Persepolis. It is not a little to be regretted that we have but feeble records of these great works, and but little idea of what they were, or looked like, when in their primitive and perfect state. In Sir Ker Porter's book, and in the more elaborate work of M. Coste, may be gathered a good deal that is interesting, but not enough, by a long way, to enable any one to realise the old idea. These ruins, almost like a scene raised by the wand of a magician, stand on a vast platform, level, and raised from the general surface of the surrounding country. They consist of tall columns and remains of walls and doorways, not a little difficult to make out and to *restore* in the mind's eye. The whole of the *roofing* is utterly gone. It was probably of wood. The main supporting beams, from column to column, certainly were; but in all probability the main and leading idea was that of vast tents, wherein *hangings* of some kind or other were a most important and striking part of the work: indeed, it was the idea of a tent solidified, so to speak, and made "architectural." The central idea of the whole was to provide a *throne*, and its covering, and a platform on which it might stand, so that this throne and its surroundings might be *visible* to the multitudes gathered together before it and at the foot of it on the surrounding plain, and so that these multitudes might be visible to the great king when crowded together before him. It is this peculiar architectural arrangement which enables us to realise, to a certain extent, the idea of the vast multitudes which at times were gathered together before the throne of such mighty potentates as Xerxes and Darius, when the individual was everything, the multitude nothing,—a position now, fortunately, much changed. All that we have spoken of is, indeed, to a certain extent, *proved* by the sculptures which remain, and of which specimens brought here by Sir Ker Porter may be seen in the British Museum. These sculptures are not fanciful and invented things, be it observed, but simple copies in stone of the real men and their ways, as they were visible at the time to the eye of the copying sculptor. The solemn and immovable guards portrayed in stone on the sides of the great flights of stairs which led up to the platform on which the throne stood are really nothing more nor less than the portraits of the men who stood, on state occasions, on those stairs, so that we may yet see a little into the mystery of this great act of state and visible empire, as it once existed. All this may be realised, with no little clearness and vividness, in the pages of M. Coste's book, and will be found not a little striking and suggestive, when compared with some other of the plates representing things *as they yet are* at Ispahan, once the modern capital city of Persia, and wherein the throne arrangements are almost a copy, although on a smaller scale, of the grand and magnificent works at Persepolis,—Istaker, in the land of dreams! The visit of the modern Persian king, the successor of the great king of a remote antiquity, makes these things of poetic interest. That such things as these should have at the present hour any *living* reality at all is not a little to be wondered at. Modern thought and doings are leaving all such ways far behind them. To-day *reads* and dreams of them, but "improves" them well out of existence.

It may be useful to give a few details of this unique palace, and its arrangements, bearing in mind that the central idea of all was to provide a platform for a *throne*, and a suitable tent-like covering for it, and fitting space for guards and a brilliant court. But the main thought was,—and it is necessary to bear this in mind,—to provide a *throne*, so placed that the greatest possible number of human beings might see it and its occupant at the same time. For this purpose it was raised on an artificial, or partly artificial, platform, three sides of which are constructed in masonry of long blocks. Each separate block of building on it would seem also to have had its separate, though lower, platform on which it stood. There were two distinct flights of steps or staircases, the first leading to the lowest platform, and to an entering colossal gateway, flanked by the well-known winged human-headed bulls. This arrangement is extremely ingenious, for those ascending the great double-flighted staircase must need have turned to the left, and then again to the right, before finding themselves in front of the gateway, and with the second staircase, with its double flights of stairs, before them. These

stairs led to the second great platform whereon the throne itself stood, in a hall, or pavilion,—a sort of tent-like arrangement, fancifully restored by M. Coste, supported by thirty-six columns, six on each side. In the centre of this columned hall the great king's throne was placed. It would be impossible to devise anything more thoroughly well adapted for its purpose, or more artistically arranged. It may help to show what architecture can do when it has to *meet an idea*, and to supply a practical want, that want being first well defined. In these days kings must go forth to meet their people; in old Persia, the great king came to the door of his palace, literally, and his people in their multitudes came to him.

We have not space to describe ever so shortly the rest of the buildings on this strange and romantic spot of the earth's surface; it must suffice to say that they are the remains, without doubt, of a vast palace, all at one time connected together, each with a separate purpose, to accommodate the king and his multitudinous court. But *the* idea was, and it is that which guided the whole arrangement, to provide a raised and *visible* throne for the "King of kings," as he named himself, "and Lord of Asia." And what makes all this more than ordinarily interesting at the present moment is, that it is not a mere dead antiquity, a thing wholly of the past. It is in truth more or less yet living, not a little altered in details, but still a living reality. In the Print Room of the British Museum may be seen, by the very curious prints and evidences on paper, the persistency with which things in the East continue and repeat themselves from age to age. In these records may be seen representations of the court of the great king's successor in the last century, before Western influences and curiosity had done more than discover the existence of matters so remote from itself. In these records may be seen the *Sophi* of Persia surrounded by his court, by the princes of his family, his prime adviser, his captain of the guard, and a whole multitude of retainers, diminished as to numbers when compared to the Darius and Xerxes days, but still there in form and idea. It is in all probability the same to this day, and the fact makes the coming of the Persian Shah to London city a subject of no small interest. At home he in very truth, though on a reduced scale, and with many short-comings, acts out the part of the antique Persian of the past. Here in London he will see what it is to be removed so many centuries from himself and the things which belong to him. Never before, it is certain, did two ideas more opposite meet together.

GLASS MAKING IN THE MIDLANDS.

THE glass trade appears to have been introduced into Stourbridge as early as the year 1557, by a little band of Hungarian refugees, who established themselves on an eminence just outside the town, known to this day as Hungary-hill. Hennezel, Tyttery, and Tyzak were among the leaders of these enterprising exiles, and it was doubtless owing to their ingenuity that the existence of abundant fireclay, adapted for glass-pots, together with the liberal supply of mineral fuel then known as "sea-coal," first suggested the advantages offered by this district as an important centre of glass manufacture. The descendants of the first-named Hungarian, who adopted the name of Ensell, established, and for some years maintained, a monopoly of the trade in the vicinity of Stourbridge. A local historian, writing in the last century, remarks,—"Broad glass has been made here for several generations, ever since it was first brought into England from Lorrain; and crystal glass has long been made here; but the art of cutting and engraving it was not long since brought from Germany to London and from London hither."* In the year 1688 there were twenty-eight furnaces in operation at Stourbridge; but in the reign of William III. there were only seventeen, although the produce of glass at the latter period was nearly equal to that of the former.

In the year 1760 the glass manufacture of the Stourbridge district was in the hands of the following producers:—Broad glass and bottles, Pidcock, Hill, Rogers; smooth enamel glass, Grazebrook, Denham; flint-glass, best ordinary, Grazebrook, Denham, Bradley, Barrar, Rogers, Honeybourne, Russell, Little; phials, Pidcock, Grazebrook, Denham, Barrar, Rogers,† Russell, and Honeybourne. In the year 1789 the names of Bradley, Ensell, Grazebrook, Hill, Waldron, Scott, Kier, and Jones were mentioned in Tunnicliff's survey of the principal manufactures. The name of Bradley was associated with the Stourbridge glass trade as early as the year 1691, and there is little doubt that Bradley Hall, an ancient half-timbered mansion, near Kingswinford, was originally the homestead of this family. The production of glass, however, up to a comparatively recent period, lacked the advantage of scientific enterprise which had long before been applied with success to other leading industries in the neighbourhood.

About the year 1830, Mr. Benson, of Dudley, and Mr. Dovey, of Stourbridge, successfully introduced the application of steam power to the cutting and grinding of glass. The repeal of the glass duty in 1845, produced for a time a considerable increase in the number of the smaller flint-glass houses known as "cribs"; but the present tendency is in the direction of concentrating the business in the hands of a few extensive factories.

In the Stourbridge district (which includes Amblecote, Wordsley, and Dudley) there are now the following glass-works:—Flint-glass, 10; bottle-glass, 2; plate-glass, 1; total, 13. These establishments at present afford employment to 1,200 men, 150 women and girls, and 350 boys. The sand used in the manufacture is almost exclusively obtained from Fontainebleau.

Cast plate-glass is produced at Smethwick at the works of the Birmingham Plate-glass Company; crown, sheet, and rolled plate-glass at the gigantic establishment of Messrs. Chance, Brothers, & Co.; and at Stourbridge, by the Stourbridge Glass Company (Limited). In 1838, Mr. Robert Lucas Chance successfully introduced the manufacture of Bohemian sheet-glass into this district. The process of grinding and polishing sheet-glass was perfected by Mr. James Chance, and the glass thus manufactured became known as patent plate. We are indebted to a report by an eminent member of this firm for the following record of improvements in the glass trade of Smethwick during the last fifty years:—

1. The substitution, about the year 1830, of carbonate of soda as the alkaline ingredient in glass in the place of kelp, and subsequently for crown and sheet glass of sulphate of soda in the place of carbonate.

2. An increase in the size and improvement in the workmanship of the plates, sheets, and tables produced.

3. An improvement in the colour of the glass by the use of purer materials and modifications in the process of melting.

4. Numerous improvements in the flattening of sheet-glass, resulting in the removal or diminution of many imperfections.

5. The use of the diamond in the process of splitting cylinders in the place of a red-hot iron.

6. An increase in the size of the melting-pots and furnaces, with the view of economising coal and labour.

7. The adoption, in the casting of plate-glass of various mechanical contrivances. The origin of some important improvements of this class is due to the present manager of the Birmingham Plate-glass Company.

8. The use of the same pot for the two processes of melting and casting plate-glass, superseding the old method of transferring the contents of the melting-pot into the vessel used for casting.

9. The substitution of small coal or slack in the melting processes in the place of the large coal or lumps.

10. The application of Siemen's regenerative process to the melting of glass, by which the amount of smoke is greatly diminished, the colour of the glass is improved, a greater control is obtained over the furnace, and a saving of fuel is effected wherever by this process slack can be substituted for large coal or lumps. These advantages are to some extent counterbalanced by the increased cost of the furnace and its increased liability to get out of order. The process, however, as applied to glass-making, is so new that there has been scarcely time as yet to overcome the difficulties which have presented themselves.

Messrs. Chance are widely known for the production of dioptric apparatus for lighthouse illumination. Mr. Alan Stevenson remarks:—"Nothing can be more beautiful than an entire apparatus for a fixed light of the first order. It consists of a central belt of refractors forming a hollow cylinder 6 ft. in diameter, and 30 in. high; below it are six triangular rings of glass ranged in a cylindrical form, and above a crown of thirteen rings of glass, forming by their union a hollow cage composed of polished glass 10 ft. high and 6 ft. in diameter. I know of no work of art more beautiful or creditable to the boldness, ardour, intelligence, and zeal of the artist." More than 150 of these dioptric lights have already been produced by Messrs. Chance, for almost all parts of the world.

With reference to the three firms mentioned, the following statistics may be given to show the extent of their aggregate business:—Wages paid yearly, 120,000*l.*; coal used, 165,000 tons; sand, 10,000 tons; alkali, 4,500 tons; chalk and limestone, 3,500 tons; glass produced, 17,000 tons; workmen employed, 2,500.

The industry is and has for some time been steadily increasing in this part of the country. With reference to the various qualities of production, it may be well to quote from the official report of Mr. George Wallis (South Kensington Museum) on the glass shown in the Wolverhampton Exhibition of last year:—"The productions of the original seat of the glass trade in England,—Stourbridge,—were so thoroughly represented by Messrs. T. Webb & Sons that it is scarcely a matter of regret no other manufacturer contributed, since this firm carried out the representation of decorated and table glass in a most effective manner. The forms of the articles were all well considered, and thoroughly adapted to the use of the vessels. The details and decorations, whether engraved, cut, or blown on, give evidence of the most perfect mastery over the material, and a distinct perception of the best art qualities, as well as when to stop in the matter of decoration,—always a most difficult point to attain. Some of the specimens of 'flashed' glass were very delicate, alike in form, colour, and detail of ornamentation. It would be very difficult to particularise, were it desirable to do so, where everything presented commendable features, and it is sufficient for the present purpose to say that in no previous Exhibition has there been so perfect a display made by any one house. It is needless to remark on the quality of the metal or its purity of colour, since in these respects it is all that can be desired." Mr. T. C. Barnes, in his report to the Society of Arts, on the glass at the Paris Exhibition, remarks on the products of Alderman Copeland, that his dessert-dishes are beautiful in colour and richly cut. His claret-jugs and wines are executed in a very fine style of workmanship, and of a superior colour, which is much enriched by cutting. This practical authority further adds:—"We in England are making straw-stemmed wine-glasses from 1 oz. to 1½ oz., whereas the foreigners make their lightest wines about 3 oz., using twice the weight of metal that the English workman does. I myself (working on the borders of Staffordshire) have made an antique jug 10 oz. in weight, which is capable of holding an imperial quart. I have seen no French or foreign work so light as this, but it has been far exceeded by other English makers." The Staffordshire glass-makers have undoubtedly shown of late considerable progress in the design and execution of their wares. In the pure crystalline clearness of material they are certainly unsurpassed. The Venetian style is ably executed, and denotes a clear conception of the original, although it must be confessed that in the minute details it is all done by hand. In the subtle combination of the *utile* with the *dulce*, the Staffordshire and other English glass-makers are foremost in the race of rivalry.

* Schinner, a foreign artist, was the first successful engraver of glass at Stourbridge, A.D. 1660.

† This was a grandfather of Rogers, the poet.

Property in London.—A large block of property, having a frontage of 110 ft. in St. Mary Axe, and 81 ft. in Camomile-street, has been laid out for the erection of five warehouses, of which four will be at present built, covering an area of about 8,800 ft. This has been taken of the Skinners' Company by a City merchant, who intends to develop a class of building specially convenient for trading purposes. Mr. Chatfeild Clarke is the architect. The following tenders have been submitted:—Messrs. Myers & Sons, 12,987*l.*; Mr. Higgs, 12,378*l.*; Mr. Brass, 12,365*l.*; Mr. Conder, 11,993*l.*; Messrs. Williams & Son, 11,874*l.*; Messrs. Axford & Whillier, 11,700*l.*; Messrs. Ashby & Sons, 11,559; Mr. Hart, 11,470*l.*; Messrs. Downs & Co., 11,290*l.*; Messrs. Merritt & Ashby, 11,099*l.*; Mr. Pritchard, 11,094*l.*; Messrs. Newman & Mann, 11,066*l.*; Messrs. J. & F. Coleman, 11,037*l.*; Messrs. Browne & Robinson, 10,880*l.*

VILLA RESIDENCES, CRYSTAL PALACE PARK ESTATE.

IN the session 1868-9, the Crystal Palace Company obtained an Act of Parliament authorising them to grant leases, for a period of ninety-nine years, of certain outlying portions of their freehold estate for the erection of villa residences.

That portion of the estate abutting upon Laurie Park and Sydenham, on the south-east, has already been let, and a number of good residences are now in course of erection upon it.

Our illustrations show three of these already finished, as fair specimens of the whole, the others being of similar character. When complete, they will form a picturesque fringe of gabled houses bounding the freehold estate of the Company.

The houses are all faced with red brick, the windows and other dressings are of Bath stone, roofed with green Whitland Abbey slates or Staffordshire tiles.

The examples illustrate (No. 3) a house built for the late Dr. E. L. Bryan, at a cost of 3,550*l.*; a smaller house (No. 2) built for Mr. James Hendrey, at a cost of 2,200*l.*; and a third, built for General Bayly, at a cost of 3,346*l.*

These have been designed and superintended by Mr. John Norton, the architect to the Crystal Palace Company's Estate.

CHURCH OF HOLY EVANGELISTS, BAVENO, ITALY.

ON May 1st, a church erected at Baveno, on the Lago Maggiore, at the sole cost of Mr. C. Henfrey, was opened for divine service by the Right Rev. Dr. Nixon, lately Bishop of Tasmania. It is in the late Byzantine style, with a few Lombard features. The plan is octagonal, like that of San Vitale, at Ravenna, with an eastern apse and north and south porches. These porches have granite columns, resting on lions sculptured in white marble, as at Genoa, Ancona, and Trent. The walls are constructed of grey marble and reddish granite, in alternate courses. On the sides of the octagon not occupied by the porches or the apse there are triplet windows, with black marble colonnettes, the base and capitals being of white statuary marble. The same arrangement exists in the clearstory.

In the interior there are eight monolithic columns of granite, with grey marble capitals and bases. Every part of the interior is covered with rich decoration, the roof and upper part of the walls with elaborate patterns in positive colours, executed in tempera and oil, the lower part being lined with slabs of green serpentine, rosso di Levante, and grey marble, from Carrara. The pavement is of that sort of mosaic known in Italy by the name of "Veneziano," and a tolerable imitation of the pavement in Byzantine churches.

In semicircular spaces over the doors there are two mosaics, representing the Nativity and the Crucifixion. These and the reredos, which has geometrical patterns, were executed by Salviati, of Venice.

The windows are all filled with stained glass, by Messrs. Clayton & Bell, in their best style. The lectern is of brass, by Messrs. Cox & Co., of Southampton-street. The church and its decorations were designed by Mr. R. P. Pullan, and carried out by Italian workmen, with the two last-named exceptions.

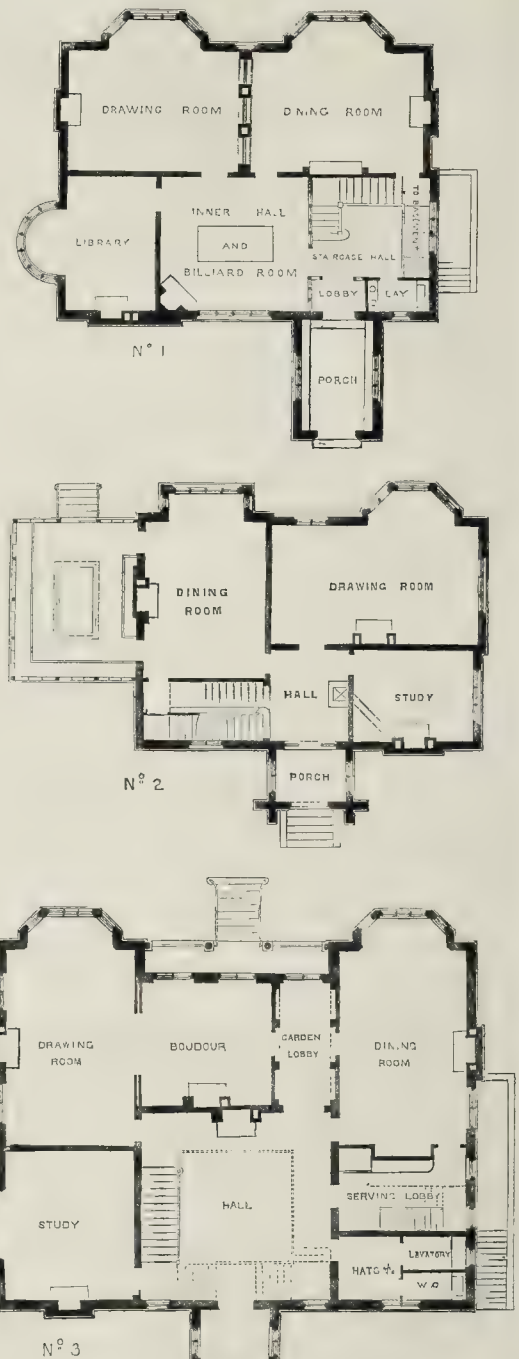
The church, the dedication of which is to the Holy Evangelists, is situated in the grounds adjoining Mr. Henfrey's mansion, on the finest part of the lake, opposite the Isola Bella, and is a conspicuous object in approaching Baveno from Pallanza or Stresa.

ARCHÆOLOGY IN FRANCE.

THE general assembly of delegates of the learned Societies of France recently met at the Sorbonne, under the presidency of M. Jules Simon, Minister of Public Instruction. Assistance to Archæological and Historical Societies was rendered as follows :—

Pour la section d'histoire et de philologie, un prix de 1,000 fr. a été décerné à la Société archéologique de Montpellier; 1,000 fr. à la Société archéologique de Touraine; 1,000 fr. à la Société de l'Histoire de Normandie.

Pour la section d'archéologie : Société archéologique de Lorraine, à Nancy, 1,000 fr.; Société d'Émulation du Doubs, Besançon, 1,000 fr.; Société éduenne, à Autun, 1,000 fr.



RESIDENCES ON THE CRYSTAL PALACE PARK ESTATE, SYDENHAM.
Ground Plans.



VILLA RESIDENCES, CRYSTAL PALACE PARK ESTATE.—Mr. John Norton, Architect.

THE ARCHITECTURE AND ART OF THE PRESENT.

SIR,—It is a singular anomaly of our existing modes of art that our artists—especially our architects—should possess so little confidence in their own inventive capabilities, and, with a questionable devotion to art, pin their faith to precedents and types. This very indirect means of acquiring success, if it were not also the most fashionable, being pursued by the leaders of architecture of the day, conspicuously our church architects, would be looked upon as a very strange procedure if applied to any other scientific pursuit or art. The medical practitioner would little dream of referring to past methods of cure without knowing the diagnosis of the patients, nor would he consult old doctrines on pathology or therapeutics in preference to modern experience. The engineer is not satisfied with the condition of his science at a remote age. He demands the latest results and experience. Again, ancient models of the poetic art exist and excite our admiration; but what would be the result if our modern attempts were but the reproduced thoughts and sentiments of them? Translations and copies are known and appreciated as such; we do not demand originality in them, but in our modern *art* we ask for at least such a measure of skilful adaptation, if not invention, as will at any rate place our works in the rank of a fine or liberal art, and not a mechanical one, which is simply skilled reproduction or repetition. Do our works of architecture meet this demand? The answer is obvious to all candid observers. Take our church architecture: what is it but the art of reproducing, if not the letter, the types, examples, and sentiments of a Mediæval period? Our most costly churches are, with few exceptions, Mediæval in their idea, their arrangement, and their ritual. They are simply modelled after our old cathedral types, in which the avenue system of arrangement, with all its drawbacks, prevails.

There is no notion of altering this plan so long as a fictitious ritual is required, though it is manifestly false throughout,—false for the purposes of a Protestant church, false to the idea of congregational worship in the present day, and lastly, false in character and design. The most simple, and certainly the noblest mode of meeting the requirements of our day in the matters of church accommodation, namely, that in which a large central hall, or area, domed or otherwise, forms the leading idea,—is utterly rejected as unorthodox, if not heretical, and any architect who proposed such a plan would be condemned to ecclesiastical censure or quietly ignored. Church architects are, however, not alone to blame. Their clerical supporters are tied hand and foot to traditional custom. As an able writer in the *Spectator* observes, the clerical body, as representative of the modern Church, is distinguished for its super-conservatism of the past; and there is an immobility characteristic of the Church of the day which rejects all advances, even at the risk of losing its prestige. This spirit, however, is sadly out of accord with that which animates the Christian Gospel, which looked forward to a future, and everywhere ignores the past and its crystallisation (if I may so term it) of prejudice and custom. The immobility of ecclesiastical art is only a reflex of this stubborn opposition to progress; though, as a class, by no means uninfluential, our church architects for their own sake would do well to lead the van to a more truthful and progressive condition of their art.

Let us for a moment turn to secular architecture. Here a different aspect is presented. We discover a great deal of confusion, it is true, yet amid all the discordant elements there are indications of thought and invention. In no other branch of constructive art do we find more originality than in our large railway stations, factories, and hotels. However unpleasing they may often be through their requirements and size, or however wanting in the agreeable blending of the useful and ornamental, there is yet to be found in them traces of contrivance and design which indicate a thoughtful working out of the problem yet to be learned by our conventionally trained artist,—namely, how to utilise our scientific knowledge, or how to adapt, with economy and our sense of the beautiful, the materials at our disposal?

Sir Gilbert Scott's great work at the Midland Station, for example, is an illustration of this, and our modern engineering works show the true spirit of art, though they sometimes lack its charms.

Another fact is forced upon us, that our most successful works in secular art have emanated from minds least trammelled by custom, or the conventional training of an architect's office; and frequently, where professional men are engaged, much of the success or originality may be traced to the ideas of the employers, or their interference in matters of necessity. Every practical architect knows the value of many such a suggestion, however he may have spurned it at the time.

It is not difficult to adduce instances of this both in ancient and modern practice. Our Middle-age builders were ecclesiastics, engineers, masons, smiths; in fact, were not tied to an architect's drawing-office; while some of our foremost modern buildings, such as the Albert Hall, and other works at Kensington, which attest both originality and adaptation of means, are the works of military men. Not a few of our greatest inventions in building and art appliances are the work of men least trammelled by modern art notions or customs.

There is unquestionably a tendency among every professional class to run into grooves; the bias of class interest is strong, and it requires some courage and more mental superiority to overcome class prejudices. The prejudices of fashion also hinder a truthful following of art. It is this which has operated so powerfully against original thought in every calling, but more especially among architects. Their education, however, has done much to encourage a sentimental rather than an intellectual regard for their art. The writer does not underrate the value and importance of a studious course of historical example and precedent, from which a useful generalisation may be drawn. Like reading, such study may become a stimulus to thought; but, like a course of reading, it should also come *after*, never precede, the acquirement of fundamental knowledge, and a due exercise of the faculties. The mistake made is in the relative value to be attached to experimental and scientific and historical studies. The proper order is reversed,—the accidental or the mere *sign* and *symbol* of knowledge, being ignorantly placed before the actual facts and meaning. As at present pursued, the student must be a proficient in all the logical processes of thought,—which is an impossibility,—and he therefore becomes a mere pedant,—a smatterer in a few styles, or an expert delineator of examples and detail. His office training is confined to drawing and copying, as a rule, and his pupilage is passed before a knowledge of the natural properties of materials, or their connexion structurally and practically, is acquired.

The consequence of such an irrational mode of training is obvious. The mind, unacquainted with actual and practical knowledge of materials and modes of construction, resorts to those types and forms which have been crammed into it regardless of any test or principle. Hence the designs which he makes are invariably the results of an ill-regulated process of combining the conventional types of a past age, aided by the imperfect experience he has gained of actual requirement. The traditional custom and routine of his office,—which are generally his master's predilection,—are accepted without proof as an article of faith. From first to last an implicit and unquestioned faith is placed in precedent, and the architect who has the largest and most accessible store of precedents is the most successful, at least in one field of practice,—the ecclesiastical.

It must be noted that this conventional training leads to "draughtsmanship," or copyism, rather than to "design." Like school education, which insists on classical attainments, the student is crammed with *signs* or *forms* before he understands the properties and uses of things —a species of *book learning*, or the medium of words and names becoming to be regarded as the *ultimatum* of knowledge. Instead of beginning with the "facts" of knowledge, and the exercise of the perceptive faculties, the student is hurried through a series of generalisations, or symbolic language, without the required preparation.

Nature and philosophy, as well as the evolution of civilisation itself, point to a *law of progression*, or a process of education which must be accepted, which Comte, Dr. Spurzheim, Herbert Spenser, and a host of our foremost thinkers of modern times have laid down and are elaborating; a process to which modern art and religious thought curiously stand, forsooth, in strange and direct opposition; but which process indicates a gradual evolution from the empirical to the scientific, the metaphysical to the positive, and from the simple and abstract to the complex and concrete.

So long as it advanced in conformity to the above law, art was pre-eminently original and truthful; but directly it accepted the traditions of men, and an indirect appeal to nature, it failed. Ever since it has been a dead and obsolete art. G. HUSKISSON GUILLAUME.

EMIGRATION OF WORKMEN.

SIR,—My anticipations as to the extent of the emigration of our working people during the present season have already received a striking confirmation from the returns just issued by the Emigration Commissioners for the port of Liverpool. From these it appears that the numbers and nationality of those who left that port for the United States and Canada during the past month of April, under Government supervision, were as follow:—English, 14,846; Scotch, 750; Irish, 6,232; foreigners, 11,025; total, 32,853. Of this number only 1,603 were cabin passengers, leaving 31,250 as steerage passengers, all of whom may fairly be assumed to be working people. In addition to these, there sailed 561 passengers in "short ships," making a total of 33,414 emigrants, being an increase on the corresponding month of last year of 3,897 from this one port alone. Towards this total Great Britain and Ireland contributed 21,828, and of these I find that Miss Rye sent out to Canada a party of seventy-three young girls from the workhouse of St. George's, Hanover-square, and other places, there to be drafted off into the families of settlers, who very gladly receive them, as a part of their families. Ladies who find great difficulty in obtaining good servants here, or, as in the neighbourhood of manufacturing towns, any servants at all, are objecting very strenuously to this action on the part of Miss Rye; but that lady has very graphically shown, in a recent letter to the *Times*, that the fault, if there be any, lies rather with the mistresses, who for the most part neglect to train such servants as they have. In any case, the girls are well provided for. But large numbers of boys are being sent out also from our town refuges, &c. A short time since I had a conversation with an employer of labour on this matter. He was excited. "Sir," he said, "I have just received an application for a subscription from the managers of a boys' refuge, for the purpose of sending a number of them away to Canada; and here I am unable to get juvenile labour in sufficient quantity to do my work, and most of my neighbours are in the same condition. To send working people out of the country is almost equivalent to commercial suicide." Throughout the manufacturing districts the same cry is raised everywhere, with little result. The emigration goes on, but, doubtless, with advantage to the boys, who join the girls in their new homes in the backwoods, and in the end become respectable citizens of their adopted country.

Another and much more important section of the great total must be mentioned. A second party of English tenant farmers from the south and midland counties to the number of some 180, have gone out to join the pioneer party on the Pacific railroad, at their new settlement of Yeovil, in Nebraska. A notice of the departure of the pioneer party is to be found in the *Builder* of last year, and the circumstance is, to those who can see, a "sign of the times." These emigrants are farmers of land who are dissatisfied with their prospects here, and have, in the first instance, deputed their clergyman to select a spot for a new colony of English farmers in the midst of the prairie. This has been done, and the settlement is taking place.

But why are these people dissatisfied? Surely there never was a time when prices of all farm produce ruled so high as now. With beef and mutton at 1s. to 1s. 2d. per lb.; butter, 1s. 6d. to 1s. 8d.; corn and hay above the average, farmers ought to be making money. But such is not the case with those who occupy small holdings. Why? Because rents are exorbitant. Twenty-five to thirty years ago, in the south of England, land of fair average quality let at a rental of 30s. per acre per annum, even at a short distance from towns; but now, in the neighbourhood of some towns in the West Riding of Yorkshire, 4*l.* to 4*l.* 10s. is the sum paid. In Lancashire it is even more. I have recently had a case reported to me of a small farmer in the neighbourhood of Manchester paying 8*l.* per acre for his land, but being unable to make both

ends meet, has recently given it up, and the land is absorbed in a larger holding. This state of things is doubtless the condition of the majority of those who have joined this colony, and many more besides, who are leaving their native soil for our colonies and the United States, where they can become the possessors in fee simple of their own farms with even less capital than it has required to work rented farms in England. Surely this system of grinding depression is one of national suicide, when it has for its result the depopulation of our country.

"Far, far away, our children leave the land."

If ever there was a time in our history, when those heart-rending lines of Goldsmith were applicable, surely it is now :—

"Ill fares the land, to hast'ning ills a prey,
Where wealth accumulates, and men decay;
Princes and lords may flourish or may fade;
A breath can make them, as a breath has made;
But a bold peasantry, their country's pride,
When once destroy'd, can never be supplied.
A time there was, ere England's grief began,
When every rood of ground maintain'd its man.
For him light labour spread her wholesome store,
Just gave what life required, but gave no more.
His best companions, innocence and health,
And his best riches, ignorance of wealth.
But times are alter'd, trade's unfeeling train
Usurp the land, and dispossess the swain!"

And trade, in spite of present appearances, will, unless properly regulated, lead on to the ruin of our country. The people must be called back to the land. The very root and foundation of all permanent national prosperity lies in agriculture. That fact history abundantly attests. Are we, then, to become so blind to our national interests that we shall permit the tillage of the soil to wane and decay, while our farmers are deported to other lands, there to obtain that fructification for their labours denied to them here? Surely we have men of influence who will forget for a time their own self-interest, and urge upon the Government and the country the paramount importance of this great subject. E. G.

PROVERBS FOR GENERAL CIRCULATION.

As great ability may be dissipated in the elaboration of error as would, by more fortunate direction, have enunciated the truth.

Men may be perfectly competent to search after truth, and yet strike into the wrong path.

It should not be forgotten that the discovery of error is as necessary as that of truth, and that we perhaps owe as much to the fault-finders as to the truth-seekers.

Men would be quite right in worshipping gold if they only knew gold from glitter.

Alternation will decrease as moral and physical rectitude increases.

Who is our neighbour now that the electric wire has made us next-door to the antipodes?

We shall fill the world with antiquities if the mania for collecting continues.

Society is frequently more criminal than the criminal.

Detectives are poor substitutes for preventives.

Few know the superhuman power of real sanctity, but it is ever in imminent danger of martyrdom.

There is yet night in the world into which the sun of truth has not dawned: nevertheless, what wise men have foretold will come to pass.

Men with the weightiest brains are not always the best swimmers in the sea of life.

A man must carry a good deal of cork if he would make sure of always keeping afloat.

If men in general were liars, *in vino veritas* would be an argument for drinking.

He is scarcely a desirable friend whom you must make drunk to make truthful.

One of the great misfortunes of the present day is that the public will only hear *him* upon it, and no one else.

You may take the altitude of a man's tastes by his stories and his wit, and of his understanding by the remarks which he repeats.

A man who finds new arguments often has to wait for new understandings.

A quick surrender saves much battery.

No money is better spent than what is laid out for domestic satisfaction.

Self-censure is often oblique praise.

Tell a man of any handsome thing which has been said of him by another, but do not repeat the unhandsome.

If a man talks of his misfortunes, depend upon it they are not altogether disagreeable to him.

If the world be altogether adverse, lie down before it throws you.

Do not throw up the game upon losing a trick.

Do not talk from a desire of distinction, but either to please or to instruct.

He who is accustomed to throw for thousands will scarcely count his dice for sixpence.

Look out for the best aspects of a man, as you do for fine views in the country.

Do not neglect doing a thing immediately good for fear of remote evil.

Remember that you can never tell where deviation from truth will end.

There is more mischief from carelessness about truth than intentional lying.

Do not endeavour to render children prematurely wise, for it is useless labour.

Men who are angry upon one ground will often accuse upon another.

Let him be content who holds a middle place.

Professional success depends upon a man concentrating his whole mind upon a particular subject, but to study this *per se* is isolation, not concentration.

Exaggerated praise does a man more mischief than violent censure.

A man is fortunate if his enemies too violently censure, and his friends moderately praise him.

Rare talents require uncommon opportunities for their display.

If you have talent, and wish to try the readiest way to offend, display your superior ability in conversation.

Of all government, that of the tongue is the most difficult.

Beware of the man who is fond of pitting people against one another.

Avoid a contest if possible, for you can never be sure how a contest will end.

The parts of a truth often lie so wide asunder that it is difficult to attain to a full view.

There would be a marvellous reformation if the world would only throw open its iron gates to Love.

Accuracy is the foundation of all good art.

Art has little power to teach, but it is a faithful index of what has been taught.

There is wrong nature as well as right, but nothing in the universe can be unnatural.

The best art selects the best nature for its model.

The highest as the lowest art aims to be natural, but only at the naturalness of the ideal, the perfect, the beautiful.

LONDON STATISTICS.

FROM the annual summary of births, deaths, and causes of death in London, and other large cities, 1872, we condense the following abstract:—The great cities of the world are every year growing greater. Vienna and Berlin have increased rapidly. Paris, for reasons too obvious and deplorable, has remained nearly stationary since the war; but the population amounted at the last census to 1,851,792, and the capital of France is, after violation by a mob in the face of her enemies and of her own citizens, still the queen of continental cities. Rome is to be no longer a city of ruins for poets to sigh over, but the living capital of the Italian nation, in sisterly union with Florence, Naples, Turin, Milan, and Venice. In no land, however, are the cities greater than in the English empire. The cities of India are flourishing. The United States are emulating the land of their origin. But England maintains its ascendancy; and her capital is the greatest the world ever saw. Babylon, Thebes, Rome were never so populous as London, which has now within its widest boundary upwards of *four million* souls; and had in the middle of 1872, within the limits of the weekly tables, 3,311,298.

Cities are the radiating centres of civilisation. And in English cities many economical as well as social advantages are enjoyed; these advantages, too, have undergone no diminution in recent years, otherwise the increase could not have gone on, without their inhabitants exhibiting signs of deterioration, of which no trace exists in the returns. But there is a limit to the growth of every city. Some of the canons of the law of limitation are self-evident: a city, for instance, is limited by its water-supply, by its supply of food, by its supply of fuel, by its security from enemies within or without, by its powers of purchasing various requirements, by the attractions it offers in competition with the attractions of other places, and the prices at which these attractions can be purchased. London, in the midst of other centres, attracts and repels various kinds of population in various degrees, and its resident population at a given moment is the result of the equilibrium established at that moment between the various conflicting forces.

The estimated increase of population in the year 1872 was 44,839; and the registered births exceeded the deaths by 46,307 in registration London.

London, with impure wells and without sewers, was a city of plagues up to the seventeenth century, and was called in the eighteenth century one of the graves of the nation. The removal of impurities is now carried out to some extent, with the best effect; but difficulties increase, and new engineering agencies have to be brought into the field. The demand, in truth, for new methods of saving and invigorating life is as urgent as the demand for new implements of human destruction.

There is, physically, a limit to the number of people that can live on a given space; in crowds they are in each other's way, and in crowded homes poison each other. The limit varies. London, unlike Venice, has no practical limit of area. As far as houses are concerned, by adopting the system of vertical superposition in stories, so prevalent in the Continent and even in some towns of Scotland, the cubical dwelling space on the same area may be augmented; but happily that system has not hitherto prevailed in England. Lofty houses, throwing dark, damp shadows on the streets, each with a common staircase, by which impurities are distributed to many families, however grand to look at, can scarcely fail to be unhealthy to live in.

The population in England is less than one person to an acre of ground; in twenty of the great towns of the United Kingdom the population to an acre is 29; in London within the limits of the weekly tables it is 42. But the population is unevenly distributed over the London area of 78,080 acres; for while, in the large districts, the persons to an acre are in Lewisham, for instance, 5, in Woolwich 10, Wandsworth 11, the proportions run up to 200 in Holborn, 219 in St. Giles's, and 237 in Westminster. In some of the sub-districts the density of population is still greater: in Berwick-street, Westminster (St. James's), in St. Andrew Eastern, and Whitecross-street, Holborn, there are 429, 410, and 418 persons to an acre. 150 persons to an acre in London is, however, a limit beyond which the density of population has not been extending during the last ten years; and in denser districts there has been a tendency of the population to decrease.

The population has decreased in St. George's, Hanover-square, in Westminster (St. James's), and in Marylebone; in all the central districts about the City, in Holborn, the Strand, and St. Giles's; in Shoreditch, Whitechapel, and St. George's in the East—where the density, if we exclude the river area and the parks, exceeds the above standard of density.

That the London area is not yet covered is evident from the fact that if the whole area except the river had a uniform density of 150 persons to an acre, the population would amount to 11,304,300. That such a limit will ever be touched is not probable, as the difficulties of healthy habitation increase with the numbers.

It is a well-established law that, other things being equal, the insalubrity of a place increases with the density of its population, and that the fevers generated in crowded dwellings have a tendency to spread among the whole of the population. The State, therefore, while it has no right to prevent people in any numbers settling in or near London, has a right to prescribe such conditions of residence as are required in the interests of Public Health.

What is at the present hour especially wanted is the breaking down of the restricted barriers of London, and the extension of municipal organisation to the well-considered boundaries laid down in Sir Robert Peel's Metropolitan Police Act, which seems to have taken the prospective increase of population into account. Any narrower boundary, while the population is increasing within the great circle at the rate of 75,000 annually, could only be temporary, whereas it is desirable to make the change once for all, or for at least the next hundred years. And it is evident that within this limit the water supply, the drainage, the lighting, the house regulations, and all other municipal regulations, should be under the supreme control of one municipality, with a great administrator at its head.

If the whole of the people, amounting in 1871 to 3,885,641 on a circle with a radius of fifteen

miles, can be administered for police purposes from Scotland Yard, can they not be associated together in one community for the purposes of local government, with the City for the central point of its administration? A city is a co-operative society for the supply of common wants; and as the police now discharge the duties of defence which were formerly left to householders and to parish constables, as common sewers carry away impurities which were formerly got rid of by each householder, so water, light, and perhaps heat, and force, to a certain extent, may be provided by a sound municipal organisation.

STRIKES IN GERMANY.

At Westend, Berlin, the entire body of masons and bricklayers have ceased work. They demand shorter hours, and, including the so-called "blue Monday," two thalers (6s.) per day.

In Sachsenhausen, near Frankfurt-on-the-Maine, the bricklayers employed on railways now constructing have likewise struck.

On account of a refusal to raise wages, the bricklayers of Harburg, and the carpenters of Zürich, have refused to work any longer at the old rates.

The strike of the joiners at Hanau has been settled.

On the other hand, the journeymen joiners at Graz demand an increase of 20 per cent., and threaten to cease work in case of non-compliance with their desires.

ACCIDENTS.

Fall of a Chapel in Whitechapel.—The German Church of St. Boniface, situate in Union-street, close to Whitechapel church, has been destroyed by the falling in of the copper dome which covered the building. The chapel is now a complete wreck. The building was formerly a circus, after which it was turned into a Baptist chapel. It was purchased for the German Catholics about eight years ago.

Breaking of an Iron Casting at Oldham.—An accident attended with fatal results has occurred near Oldham. Some workmen were making alterations in a cotton-mill at Butler Green, when an iron casting snapped in two and caused the floor of one of the rooms to fall in, carrying with it the workmen, two carding engines, and other machinery. One man was killed, and another was severely injured.

Falling of a Bridge and Temporary Inundation at Presteign.—On the 20th ult., the railway bridge over the river Arrow, at a place called the Forge, fell into the river. For a year or more a branch line has been commenced to connect Presteign with the Knighton and Great Western lines. The railway at the Forge crosses the river at right angles, and the abutments of the bridge giving way through a heavy flush from the previous rains, and possibly other causes, fell into the river, and suddenly interfered with the course of the stream, thus causing an inundation over a considerable district. The water surmounted the *débris*, and making new courses on each side, flooded the cottages, gardens, and lands in various directions. Cartloads of trout, grayling, and eels of large size were spread over the fields, gardens, and roads. Several days elapsed before the material could be removed from the river bed so as to bring the stream into its usual course.

Fall of Quay Wall at Bristol Floating Harbour.—The foundation of about 60 ft. of the quay wall, between Guinea-street Lock and Prince-street Bridge, Bristol, has given way, and an immense mass of masonry slid down into the harbour. For about a week the water had been out of the Float, and the wall thus lost a support. The breaking extends from the junction of the new and old wall right to the corner of Guinea-street Lock. The huge mass of masonry seems to have fallen in one great block, scooping up its clayey foundation and the bed of the harbour in its descent, and it now lies in a slanting position, with a mound of mud and clay over its base. The mass looks strong and compact, with only one or two fissures in it, and the coping stones are scarcely disturbed. The masonry varies from 4 ft. to 6 ft. in thickness, and in its fall has taken with it from 20 ft. to 30 ft. of the earthwork at the back. About 100 workmen are employed, under the superintendence of Mr. Howard, the city dock engineer, in removing the *débris*, and taking measures to prevent any extension of the damage. A coffer-dam will be constructed, and the wall rebuilt on a more secure foundation.

Fall of a Scaffold in Dundee.—An accident has occurred in Dalfield Walk, Dundee, by which a number of workmen have been somewhat seriously injured. A house in that street is at present undergoing repair, and, to enable the workmen to point the walls, a scaffold of planks was placed on what are technically called "figures." About half-past eight o'clock the centre "figure" suddenly gave way, and the whole scaffold, with four men sitting on it, fell to the ground. The men fell on the pavement, and were very seriously bruised.

Oldham.—On Tuesday a chimney of a new factory belonging to Messrs. Henthorne, which had partially given way, was being repaired, when it suddenly fell, killing one of the workmen. Two others had a narrow escape.

THE PURIFICATION OF SEWAGE AT BRAMLEY WORKHOUSE.

The Poor-law Guardians for the Bramley Union having, a few months ago, decided to adopt the process patented by Mr. Fulda, of Leeds and Harrogate, for the treatment of the sewage at their new workhouse, at Armley Hill Top, the works considered necessary by the patentee have just been completed, and inspected. The apparatus required for the process seems to be very simple. It has also the merit of being inexpensive, the cost of the plant, including three brick reservoirs or tanks, an agitator, and a two-horse engine, being under 320*l*. The plant has been constructed under the direction of Messrs. C. S. & A. J. Nelson, of Leeds, the architects of the workhouse, and in accordance with Mr. Fulda's recommendations. The building has about eighty inmates, and the whole of the sewage is passed along drainage-tubes into a receiving-tank about 30 ft. long, 6 ft. wide, and 6 ft. deep, at a point about 150 yards from the south-west corner of the infirmary. From this tank it flows into a well, where, by means of an "agitator," worked by the engine, which is in an adjoining shed, lime and sulphate of soda in certain quantities are mixed with it. The sewage thus prepared flows into a second long and narrow tank, and again into a third. In both these tanks the process of precipitation is carried on, and the effluent water is passed off into a watercourse at the corner of the estate, whence it flows through a neighbouring farm. At present there are not more than two or three water-closets on the workhouse premises, the building being principally fitted up with earth-closets. As it flows into the first tank the workhouse sewage is objectionable enough, however, but a sample of the effluent water taken from the second tank was almost equal in appearance to the water supplied for daily consumption to the people of Leeds. Mr. Fulda and one or two gentlemen present drank of it without hesitation; but, although bright in appearance, a faint smell could be detected.

RAILWAY ITEMS.

The Midland Hotel.—The Grand Midland Hotel forming the frontal to the extensive terminus of the Midland Railway system in Euston-road, is now on the point of completion, and is so far ready to receive visitors, that it has been opened for use. The main walls have been erected for some years, and all traces of dampness, are said to have long since disappeared. There are 250 public and private sitting and bed rooms. The principal apartments are decorated in a costly and artistic manner. Sir G. G. Scott is the architect.

Fares on the District Railway.—Large printed placards have been posted at the various stations on the Metropolitan District Railway announcing that a revision of many of the fares on the line had come into operation, the directors having been compelled to take this step owing to the high prices of coal and materials and the "rigid manner in which the Inland Revenue-office enforced the passenger duty on third-class trains." The suddenness of the announcement has taken the public who travel on the line by surprise, and a great amount of dissatisfaction has been expressed. The fares now charged for single journeys are in many cases the same as those previously charged for the double journey. The company, it may be remembered, last year, took advantage of the opening of the Exhibition, at South Kensington, to raise their fares, and this seems just to be a repetition of the dodge, notwithstanding what is said about the rise in coal which has been a stalking-horse to all sorts of greedy raisers of prices.

A Ship Railway.—General Hutchinson of West ward Ho! has designed a carriage for transporting ships by railway across the Isthmus of Panama. The railway would connect Puerto Caballos on the Atlantic with the Bay of Fonseca on the Pacific, a distance of 168 miles. It has already been proposed by an eminent engineer to transport ships across the Isthmus on carriages requiring curves of at least 2,000 ft. radius, which large circle would necessitate costly cuttings. General Hutchinson improves upon this plan by inventing a carriage which would admit of 300 ft. radius, and thus enable any Company to utilise the sixty-seven miles of railway already existing. The general's invention embraces also an engine of immense tractive power, as the load to be moved might frequently weigh 2,000 tons, and a novel method of fastening the rails. The engine would be furnished with numerous driving-wheels, worked by piston-rods projecting from both ends of each cylinder. Would not toothed rails and wheels in this case really be required?

IMPROVEMENTS IN VICTORIA PARK.

Several improvements of an important character have just been completed in Victoria Park. The great lake has been cleansed and refilled with water, and advantage has been taken of this opportunity to erect a new concrete wall, with granite coping around it. All the unprotected portions of the lake have also been furnished with wireguard netting which, amongst other advantages, will prevent dog-washing and swimming, a nuisance which has for several years past been considered a great source of annoyance. A further improvement consists in the islands on the lake having been re-covered with new green turf, as well as all the surrounding slopes. A number of new shrubberies have been planted, as also the erection of several ornamental rockeries, producing a very pleasing effect.

COMPETITIONS.

Choulton-road Congregational Church, Manchester.—The design submitted by Mr. H. J. Paull, of Manchester and London (Paull & Bickerdike), in a limited competition for this church, has been selected by the committee for execution. The site adjoins the present church, which was erected twelve years ago; and the two buildings will be connected by an open arcade. The new church is to accommodate 1,200 adults, and the present building is to be converted into Sunday schools. The style is English Gothic of the Geometrical period.

Great Malvern.—In a limited competition for the proposed memorial church at this place, the plans of Messrs. J. D. Barry & Sons, of Liverpool, have been selected. Mr. Middleton, of Cheltenham, was consulted by the committee, to advise them in the matter.

THE LATE SIR WILLIAM TITE.

Sir,—I have read with much pleasure and interest your memoir of the life and active career of my valued friend and preceptor, the late Sir William Tite. Having been a school-fellow, and afterwards fellow pupil with Sir William's nephew, the late Mr. Arthur Green, and with Mr. Steinmetz, whom I regret to have lost sight of for many years, I can confirm, from personal recollection, the account given by the latter of Sir William's authorship of the designs for the Royal Exchange. The design was in a very incomplete state when I first joined the office; and while I was there the working drawings and details were prepared with the able assistance of the late Mr. Trotman.

You have omitted to mention (except as the resting-place) one important work of Sir William's, viz., the Norwood Cemetery, of which my father, the late Colonel Gant, was the originator and chairman. Sir William was also engaged in the valuation and surveys of all the property taken by the Blackwall Railway Company, and, if I recollect rightly, of the London portion of the Eastern Counties line. He also held the office of surveyor to many of the City companies, for whose estates he was largely concerned.

With respect to the late Mr. Trotman you have scarcely said enough; and I am sure Sir William would have been the first to do justice to his memory. He was for many years our friend's "right hand," not only on the Royal Exchange buildings, but on the Southampton Railway station; also the Vauxhall and Blackwall termini, the Norwood Cemetery, and, in fact, every work of importance which Sir William had in hand, for many years, and in many of which I also took a humble part, being many years junior to Mr. Trotman.

Of Sir William's long-continued and warm friendship, few, I think, can bear more ample testimony; for, although my absence from London, and residence abroad, prevented our meeting, except at long intervals, for many years; still, the letters which I have received from Sir William within the last two months display the warm-hearted and genial kindness which he always evinced when we were daily together *thirty years ago*.

SAML. CASTLE GANT, C.E.

STATUE OF THE LATE LORD DERBY FOR WESTMINSTER.

THE bronze statue of the late Earl of Derby, by Mr. Noble, destined to be placed in Parliament-square, Westminster, has been cast at the foundry of Messrs. Young, in Eccleston-street, Pimlico. The statue, including its plinth, is 9 ft. 6 in. in height, and represents the Earl in his robes, as if addressing the House of Lords. His left-hand holds a despatch, and his right-hand and arm are outstretched. The portrait is considered satisfactory by the late Earl's friends and family.

The preparation of the mould had been a work of much time and labour; it was buried, in an inverted position, beneath the floor of Messrs. Young's casting shop, so as to be cast in a single piece. A large trough was placed over the base of the mould, and in the bottom of this trough were three holes, stopped by plugs which could all be raised by one movement of a lever handle. When all was prepared, a huge cauldron was taken to the furnace, filled with four tons weight of melted bronze, and then conveyed by a travelling crane to the side of the trough. The cauldron was then titled, and the glowing metal poured into the trough. Lady Constance Stanley then ascended upon a platform prepared for the purpose, and, with the assistance of the Duke of Richmond, depressed the lever by which the plugs were raised. The metal rushed down from the openings through those prepared to give it entrance into the mould, from which the air was driven out in flaming streams, and, in a few moments, the casting was complete, save for the time required for the cooling of the metal.

When completed the statue will be placed upon a quadrilateral pedestal of granite, each side of which will bear a bronze bas-relief, in commemoration of some leading incident in the career of the deceased statesman. The subjects selected are,—a speech in the old House of Commons, on the slave question, in 1833; a meeting of the Cabinet; a meeting of the Lancashire Relief Committee; and the inauguration of the Earl as Chancellor of Oxford. In each bas-relief the principal figure will be surrounded and thrown into prominence by those of fellow-workers whose names, like his, will live in history.

AMERICAN ARTISTS.

AT the Royal Academy dinner, last week, the American Minister, General Schenck, made a delightful speech, and in the course of it he said,—

Although as a young and new people it has been mainly our task thus far to clear the forest, to build railways, to dig canals, and to develop, in a thousand other ways, under our free institutions, our abundant natural resources, yet it is true that, even from the beginning, something also has been done for those fine arts which it is the object of this institution to cultivate and encourage. You have remembered that, in Benjamin West, we had the honour to furnish an early president of this Royal Academy. In that time, and after, we gave to painting the eminent names also of a Copley, a Gilbert Stuart, a Newton, a Leslie. Later still we have had a Church, a Bierstadt, a Cropsey, a Leutze. On your walls here now, among the beautiful works which surround us to-night, are pictures by Tilton, Benson, Broughton, and Miss Lea. In sculpture, we have had Powers, Clevenger, Storey, Hill, Connelly, Hosmer, and Rogers. And others there are too—not a few,—some of them known abroad as well as at home, but whose names do not at this moment come into my mind. In remembering these, our candidates for art fame from the New World, while you are doing homage to your own great and successful artists, and to the many who have distinguished themselves in countries with an older civilisation and refinement than ours, you do but justice to the universality of art. Art has really no country, but is of the world. And yet there are reasons why the alliance in everything should be, and naturally is, closer between Great Britain and America than any other two nations. It is not identity of language, a common literature, similarity of institutions alone which must constitute the ties between us. These are strong. But a stronger and more uniting influence, springing in part out of these, is to be found in that common sympathy with which we reach forward into the future, seeking in the career to be run by each of us much the same hopes, the same improvements, the same arts, the same progress. It is these mutual sympathies, interests, and hopes which are to do more for friendship between us than anything else—more, if we will only cultivate them.

THE WAKEFIELD PARISH CHURCH RESTORATION.

AN effort is now being made to complete the restoration of the ancient parish church of Wakefield. Commenced in 1857, under the superintendence of Mr. G. G. Scott, architect, the work so far has been carried out in sections. First the tower was re-cased, and the spire rebuilt, at a cost of 6,600*l*.; next the chancel, including the filling up of the east window with stained glass, the renewal of the carved oak screen, the laying down of a tile floor, and the erection of a reredos, at a cost of 4,000*l*.; and recently, when it was decided to complete the restoration of the interior, 4,200*l*. were readily subscribed, but 2,000*l*. more are yet needed; and to contribute towards the raising of this sum, a bazaar and exhibition were projected which have been opened by Lord Houghton, and are to last for a fortnight.

The site of the old Saxon church at Wakefield has not been found, but it is thought to be at the north end of the town. The present edifice stood on the site of the old Norman church, which was built by William, Earl of Warren, dedicated to All Saints or Hallows, and given by him to his convent of Lewes. On the site of the old Norman edifice a second structure was erected by William de Melton, Archbishop of York, in the year 1322 or 1329. This church was also dedicated to All Saints or All Hallows. The church had four altars. The great altar was dedicated to All Saints, the south altar to St. Mary the Virgin, the north altar to St. Nicholas, and the altar in the middle of the church to St. Peter. The tower of the present building, now encased in stone, was the only remains of that structure. 1469-70 the body of the church was rebuilt, but no reason was given why the erection of 1329 was taken down. In 1724 the south side of the church was entirely renewed, and the north side and south end had also been rebuilt within the last eighty years.

AN OPINION ON COMPETITIONS.

ARCHITECTURAL ASSOCIATION.

AT the last meeting of the Association, on the 2nd instant, a letter was read from Mr. Edmund Sharpe, presenting ten copies of each of his published books to the library, in order to afford fuller provision for the calls of country members for these works, in consequence of the recent altered regulations. Mr. Sharpe also promised to contribute a similar number of copies of any works published hereafter by him. The thanks of the Association were very heartily voted for this splendid contribution in aid of the serviceableness of this, the only architectural lending library.

The rest of the evening was occupied in a discussion on "Architectural Competitions." Mr. T. Blashill opened the debate, maintaining that such competitions cannot be made beneficial to art, the public, or the profession. This view of the case was combated by Mr. Ridge, who held that competitions afford special opportunities to young men possessed of ability and knowledge, for making their mark at the proper time in their professional life,—for obtaining actual practice and important works that would not come otherwise to unknown men. The value of accurate study and hard work, and of sustained interest in real fine architecture and similar considerations, were also enforced by him and by succeeding speakers. On the other hand, the corruption of judges, the mean incidents of an fair contest, the neglect of genuine serviceableness to employers, owing to indisposition to attend to the minutiæ that make up real architectural success, were urged; and all the other accepted arguments against the practice with its delusions, and disappointed hopes, and wasted energies.

Mr. R. P. Spiers, Mr. Bell, Mr. Banister Fletcher, Mr. T. H. Watson, and others, took part. Mr. Blashill replied before the vote was taken, pressing for the sake of his argument the case a little farther, and contending that success in architectural competition, notwithstanding that examples may be adduced of men who seem to owe much to it, has rarely been in any case an unmixed good,—a good sufficiently unmixed with ill to render it in any proper sense beneficial. Every occupation he contended, was best pursued steadily and high honours had better be slowly won. Few young men, just launched into practice, are able to take charge of a very large and important and complicated building, with its almost endless calls for special construction, and for knowledge and management of men and things. Fewer still can undertake such a task and have only moderate success in it; and thereafter win lasting recognition by the sober industry which must underlie every valuable architectural practice of the average type. And in the case of older men, no isolated success in competition, however seemingly (or really) brilliant, can make up to a man for years full of disappointments, and for the lost opportunities of obtaining in actual conduct of business the training in the real work of an architect's life which is not to be dispensed with wisely or safely.

On the vote being taken, the anti-competition side was not found well supported; and the views of junior architects, as far as the majority of this meeting could express them, seemed to be that, with all their faults, competitions are not hopeless;—that they might be reserved for monumental and similar buildings and might be properly conducted;—and that then they would be useful "to art, to the public and to the profession."

THE TRADES MOVEMENT.

London.—The first of a series of meetings organised by the carpenters and joiners of London was held on Thursday night in last week at the Earl Grey, Mile-end-road, Mr. Davis in the chair. The Chairman said the agreement with the masters last summer which acceded to under protest, and the carpenters' committee were pledged to the trade to carry out to a successful issue the original terms of their memorial, namely, "nine hours and nine pence." It was moved:—"That in the opinion of this meeting the memorial forwarded to the Master Builders' Association for an advance of wages of one-halfpenny per hour, to come into operation on the first Saturday in June, is a fair and just demand; and, further, that this meeting pledges itself to support the committee pecuniarily and otherwise in carrying out the same." The two carpenters, Tamplyn and Pile, who are at present out on bail in relation to the case of reputed intimidation and violence that took place at Messrs. Smith & Taylor's at Pimlico, next addressed the meeting in refutation of the charges brought against them.

Bristol.—The carpenters and joiners have struck work for an advance of ½d. per hour in their rate of pay. The determination to resort to this extreme measure for enforcing their demands was arrived at by the men at a large meeting on the previous Tuesday night, and on Wednesday morning they gave a day's notice to their employers. Several small firms granted the concession, but all the large employers resisted the demand, and on Wednesday night the men left off work. The masters held a meeting at the Athenæum, to consider what course should be adopted. Mr. Brock, of Temple-mead, presided, and there were present between 30 and 40 builders, who employ from 400 to 500 hands. It was stated by several that they had

men at work who had not struck, and who were so satisfied with the present rate of pay that they did not intend to strike at all. After some discussion, it was unanimously resolved that nothing had transpired to alter the decision at the meeting held on March 13. It was also resolved to advertise in the West of England and the district for men to fill the places of those out on strike. It was stated in the course of the discussion that there are still 190 men at work who have not gone out, and that the number of those on strike did not exceed 250 or 260. The masters generally seemed to think that it was useless to entertain the thought of arbitration, for it was only nine or ten months since the last arbitration, and no sooner had Mr. Lewis Fry given his award than the men again became discontented, and wished to have some other changes made. The meeting was the largest that has been held in the trade for a very long time, and much unanimity prevailed.

Swansea.—The stone-cutters and masons of this district having some time ago given notice to their employers that they would require an increase of three shillings a week in their wages, the masters, when the notice expired, intimated their willingness to concede the men's demand. Work has therefore continued without interruption.

Liverpool.—Between 2,000 and 3,000 joiners have come out on strike, in consequence of the refusal by the masters to agree to their demands. The advance demanded by the workmen was 4s. 6d. per week, but the employers would only concede half that sum. The men had originally demanded a reduction in the hours of labour, from 55 to 50; but they had abandoned that claim.

York.—The progress of the works in connexion with the restoration of the south transept of York Minster has been brought to a sudden stop by a strike of the masons, upwards of 20 in number, who are demanding an advance in the rate of their wages. The strike has not come upon the Dean and Chapter as a surprise, inasmuch as there were probabilities early in the year of such an unfortunate event occurring at the present time.

Rotherham. — The stonemasons who struck work in consequence of the masters' refusal to grant them the reduction in the hours of labour which they demand, from 55½ hours to 49½ hours per week, have held a meeting at the Black Horse Hotel, High-street. It was reported that no communication had yet been received from the general body of employers, and it was determined to continue firm in the demands made. It was also reported that two firms,—Messrs. Holt, Parkgate, and Messrs. Dobbs,—had decided to accede to the demands of the men, and in consequence of this about eight men resumed work at once. It has been alleged by some of the employers that the men working in Rotherham are inferior in ability to those of Sheffield and other towns in the district. This the men deny; and they state that their wages are 30s., while the men in Sheffield receive 32s. per week. They, however, do not ask for an increase of pay, but merely wish to be placed on the same basis as the men in Barnsley, Sheffield, Attercliffe, Wakefield, and the district generally, with respect to working hours. The men belong to the union of Operative Stonemasons. It has branches and lodges in all parts of the country, and they are now being supported out of its funds.

South Shields.—The builders' strike has terminated, the masters conceding the men's terms.

St. Andrews.—The masons' labourers applied for an advance of wages from 4d. to 5d. per hour. An advance of ½d. per hour has been mutually agreed to.

Perth.—The fitters, blacksmiths, joiners, &c., at the Caledonian Railway engine-sheds, Perth, have memorialised the directors for an increase of ten per cent. on their wages.

Anti-Trade Union Movement.—It is stated on good authority that a movement is on foot amongst the employers of labour throughout the country for opposing the trade-unions. A conference of employers held at Westminster Palace Hotel, London, was attended by the representatives of firms employing a million workmen. The proceedings were private, but resolutions were passed for carrying out the main object, to organise for the protection of the interests of employers against the adverse action of trade-unions.

A Result of Increased Wages.—According to the stipendiary magistrate at Longton, the present high rate of wages leads to greater drunkenness. Addressing one of the men brought before him, he said drunkenness had increased fifty per cent. since wages had advanced. Men were earning a great deal of wages, but instead of saving money and investing it, they spent it on drink, and in paying fines in police courts, while if they were careful they would soon become rich men. In another case the defendant caused some amusement by intimating, as the result of illness, a decreased capacity for the innocent absorption of drink. He said, "If I get three or four quarts now it makes me tipsy," and he spoke in a tone of regret.

A QUESTION AS TO SEWERS.

SIR,—I shall esteem it a favour if some of your correspondents will say,—1st. Whether the lofty ventilating shafts to the sewers in Liverpool are a success, where I may find any account of them, and if any such are used in London, where, and with what results? 2nd. Whether the charcoal filters introduced by Dr. Stenhouse for deodorizing sewer-gas as it escapes from air-shafts, are still considered a success, and if they are used in London? My experience has been, certainly in elevated positions, that the foul gas escapes as freely with as without them.

A. B.

SPECULATIVE HOUSE BUILDING.

SIR,—There is a great question that I hope will soon be taken up by some of the societies,—that is, the present system of speculative house building, as there is scarcely a week passes but some of your correspondents give cases of "scamping." The comic and other journals often hold up to ridicule the houses and suburban villas of this speculating age, which ought to be looked upon as serious. One of the officers of health in a very great district,—I forget which, but I think in the neighbourhood of Manchester,—was of the opinion that the corporation or its officers did not use sufficient energy and condemn half the property that was being erected even in Nottingham. Three times this winter in the lower part of the town, and near the Trent, although they are "villas," the waters have risen to a great extent; and in the part of the town called "The Meadows" the refuse from the ashpits and the excrement from the closets were floating about the back premises; and two or three times every year the kitchens in nearly every house are uninhabitable, as there are often 4 ft., or even 5 ft., of water in them, as was stated at a recent meeting of the town council to alter and amend the Enclosure Act, which is undoubtedly very faulty.

L.

THE PROPOSED NEW SCHOOLS AT OXFORD.

THE delegates appointed to procure a design for new schools, to be erected on the site of the Angel Hotel, have issued their report. They state that in the instructions issued by them to the architects they enumerated among other requirements—(1), five rooms for paper work, each containing space for 100 examinees, with 30 square feet for each person, giving a total of 15,000 square feet; (2), fourteen rooms for examination *viva voce*, each with an area of 1,000 square feet; (3), covered space, as colonnade or cloister, to accommodate 400 or 500 persons, assembling at the same time for examination; (4), private rooms for examiners, an office for the clerk of the schools, residence for the custodian, &c.; (5), the chief entrance to be in the High-street, with another from Merton-street. The architects whom the delegates invited to send in designs were Mr. Blomfield, Mr. Deane, Mr. John O. Scott, Mr. Street, and Mr. Waterhouse; but the last two of these declined. Designs from the other three were received in January last, and were shortly afterwards submitted to the surveyors for valuation; and, at length, after careful examination both of the elevations and of the internal arrangements, the delegates unanimously determined to recommend to Convocation the adoption of the design sent in by Mr. John O. Scott. The cost of executing this design, as first sent in, was estimated at 49,000*l.*; but on the suggestion of the delegates Mr. Scott has made certain alterations, which will probably reduce the cost of his work by 1,500*l.* or 2,000*l.* The delegates, in conclusion, recommend the approval of Mr. Scott's design.

SCHOOL-BUILDING NEWS.

Jarrow-on-Tyne.—The new schools erected by order of the Hedworth, Monkton, and Jarrow School Board, on the Grange estate, have been opened. The Grange Government School is said to be the first in the north, which has been erected specially under the provisions of the Elementary Education Act passed by the present Government. The school is designed to accommodate 400 boys, 300 girls, and 300 infants—a total of 1,000 children. The contract for the whole of the works, except the fittings, has been carried out by Mr. Richard Wylam, of Jarrow, who has had associated with him as sub-contractors, Mr. Place, of North Shields, for slating; Mr. Collie, of Newcastle, for ironwork and plumbing; and Mr. Holmes, of South Shields, for painting and glazing. Mr. Bowman, of Newcastle, has supplied the woodwork of, and fixed, the fittings, the standards being supplied by Mr. Somerset, of Newcastle. Mr. J. J. Lish, of Newcastle, is the architect. The cost of the whole, exclusive of site, has been 5,000*l.*

Liverpool.—The sites and buildings committee have recommended the acceptance of the amended plans of Mr. Cook for the proposed enlargement of the North Corporation Schools; and the acceptance of Mr. Bell's terms for negotiating for the purchase or the temporary use of sites or buildings, at the rate of 10*l.* 10s. for each site purchased, and 2*l.* 2s. for each site or building temporarily hired: the acceptance of the tender of Messrs. Burroughs & Son, amounting to 8,083*l.*, with 320*l.* additional, if the building be faced with stone, for the erection of the schools in Chatsworth-street; the acceptance of Mr. Joshua Henshaw's tender, amounting to 7,430*l.*, for the erection of the Queen's-road Schools, the building to be faced with stone; the acceptance of the tender of Mr. Thomas Ray, amounting to 5,797*l.*, less 484*l.* 15s. for furniture, for the erection of the Roscommon-street School. The recommendations were agreed to.

Reigate.—The foundation-stone of St. Luke's National Schools, South Park, has been laid. The erection of this school for 150 children, will complete the educational accommodation of the borough according to the standard of requirements of the Elementary Education Act, 1871. The contract has been taken by Mr. Grutchfield, of South Park, for 520*l.*, from plans gratuitously prepared by Mr. Marshall, of Mr. Clutton's office. The school will be a mixed one at first, but will be so built that it can be subsequently divided, if found necessary, to form separate schools for boys and girls.

Salisbury.—The new Free School at Salisbury has been opened. The building was designed by Mr. Harding, surveyor, of the Canal, the contractor being Mr. Plowman, of Barford Saint Martin. The style is plain Gothic, the material used being red brick, with stone windows and dressings. It contains two school-rooms one above the other, capable of holding 263 children, with class-rooms, lavatories, and other offices, two square playgrounds inclosed being at the rear of the premises. The cost has been about 1,500*l.*

Norwich.—The new schools in St. Miles's, built by the City School Trust, are now completed and in full working order. They consist of a school on the ground-floor for 200 infants, with a class-room adjoining. On the upper floor there is a school for girls, and a class-room for the same number. There are separate lavatories and offices in every respect well fitted. The rooms are heated with hot water. Internally, the walls are clad with matched boarding and plastering; book-closets are provided for each class, and there are desks and galleries by Mr. Hawes. Externally, the schools are built of red brick with stone dressings, and there is a bell-turret over the principal entrance. Mr. J. W. Lacey, of this city, was the sole contractor; Mr. E. Steward, the clerk of the works; and Messrs. Boulton & Co. supplied the heating apparatus. The total cost of the building, including architect and clerk of works, was 1,630*l.*, being at the rate of 4*l.* per child. The original estimate of the architect, Mr. J. B. Pearce, Norwich, was 1,640*l.*

London. — Lord John Manners has laid the foundation stone of new schools in connexion with All Saints' Church, Kensington Park. His lordship said the Duchess of Teck was unable to carry out her intention of being present to perform the ceremony.

Blackburn.—A new school has been opened at Blackburn, in connexion with All Saints' (Rushton Memorial) Church. During the last three years school extension in Blackburn has been notable. In that period five new schools have been erected, and one school enlarged, at a total cost (including sites) of 15,670*l.*, 11,500*l.* of which have been raised by subscriptions from churchmen, and the major part of the remainder has been given by church societies. In the same period one new church (All Saints') has been built at a cost of about 5,000*l.*, and two churches (Livesey and Sleckgate) are now in course of erection, towards which, including sites, 5,600*l.* have already been raised by private donation from churchmen, and 1,450*l.* have been promised by church societies. Thus the church people of Blackburn, during the last three years, have subscribed a round

sum of 20,000*l.* for school and church extension. In addition to this we may mention that Mr. Thomas Dugdale, of Witton, has built a school in that township, at his own expense, which he allows to be used for church day and Sunday school purposes. Exclusive of this, extra accommodation has been provided for 2,900, and every church in the town has now good schools in connexion with it.

West Felton.—The foundation stone of a new school has been laid here. The school, which is to be built from the designs of Mr. W. H. Spanll, architect, Oswestry, will accommodate 130 children, and, with the master's house, will cost 960*l.* Messrs. Morris & Chaplin, builders, Oswestry, are the contractors.

VARIORUM.

CONCERNING the frescoes in the Houses of Parliament, the *Art-Journal* says:—"Repeated visits to the Poets' Hall would show the walls, under certain conditions of our variable climate, streaming with water; and this has been of very frequent occurrence in spring and autumn. In all the reports and notices that we have seen of these frescoes, this great fact has been ignored, or, being known, has not been considered; and, independently of all other causes, how much further need we search for a source of destruction to a delicately-coloured wall, than its suffusion by moisture, supposing even the water entirely free from chemical admixture? Thus, allowing the absence of compound chemical action, what delicately painted lime-surface could withstand the destructive effect of the continuous operation of damp? The question has been the subject of much inquiry, both by individuals and committees. Some years ago a committee was appointed to investigate the causes of the injuries to these paintings, but we could never learn that any satisfactory conclusion had been arrived at. Indeed, it is a curious fact that the theory of damp is generally repudiated by many artists who profess perfect faith in the acclimatisation of fresco."——The *Gardeners' Chronicle* writes as to the removal of soil from building land,—"In these days, when small estates are constantly falling into the market as eligible building sites, there is much need for an energetic protest being entered, in the interests of horticulture, against the common practice of certain speculating builders. During the past quarter of a century many small properties of this character, which formed a portion of the suburbs both of the metropolis and of thriving provincial towns, have, in consequence of the rapid increase in population, first been built close up to, as increased house accommodation became necessary, and then gradually absorbed as building sites. As soon as the builder takes possession of one of these, he resorts to practices inimical to the best interests of horticulture. He first of all disposes of the surface turf, which is always in request; next he sells a spit or two in depth (sometimes more) of the fine fibry loam which invariably underlies the turf; and then, if gravel forms the subsoil, this is excavated and sold likewise, or rather all the best of it, the refuse being kept for the formation of paths, &c. Should clay form the subsoil, this is dug out till the gravel is reached, and the latter removed, and the excavations are filled in with any rubbish that may be obtainable, and the clay, or other unsuitable article becomes the upper surface or garden ground. Such is the history of the formation of many a suburban garden in the neighbourhood of London, as well as elsewhere,—a history so well known that it has given rise to the proverbial saying,—a bricklayer's garden."——The Dean of Canterbury, in the *Bible Educator*, for May, has these observations:—"The art of writing is of the very highest antiquity among the Semitic nations themselves. All the words connected with the art, 'to write,' 'book,' 'ink,' are Semitic, and not Egyptian, and, as Ewald remarks (*Gesch., Isr.*, i. 77), are common to all branches of the family, so that they must have been their common property before the original stock broke up into distinct branches. The names of the letters, too, are Semitic, and were carried by Cadmus,—*i.e.*, the Oriental,—and the Phœnicians to Greece, whence all European nations have received them. Weber has even shown that the Hindoos borrowed their alphabet from the Semites, thus carrying back the invention of letters to a most remote antiquity. But though the Phœnicians taught the art of writing to the nations of Europe, they did not invent the alphabet; for the names are all derived from pastoral occupations, and not from maritime affairs. *Aleph*, the Greek alpha, is an ox; *Gimel*, a camel; *Vau*, a tent-peg; *Cheth*, a cattle-fence; *Lamed*, an ox-gond; and though *Nun* is a fish, and *Trade* a fish-hook, no letter is named from any part of a ship. It is certain, too, that the Canaanites at a very early age possessed the art of writing. The Kheta, generally understood to be the Hittites, appear in Early Egyptian monuments as a nation of scribes. In exact accordance with this we find a Hittite town, captured by Joshua, callld Kirjathsepher, 'Book-town,' or, as the Seventy render it, 'the city of scribes' (Josh. xv. 15). In verse 49 it is called Kirjath-sannah, which Fürst renders 'city of writing'; whilst its other name, Debir, probably means 'parchment,' or the city where that material was prepared. There is little doubt that the Canaanites, as far as civilisation and the arts which minister to refinement and luxury are concerned, had attained to a far higher level than the Israelites; yet the latter carried with them into the wilderness the art of engraving on jewels, of embroidery, and of working in gold and silver. Settled in the land of Goshen, on the confines between Egypt and the Semitic races, and aided at first by all the influence of Joseph, the powerful minister of a monarch of the twelfth dynasty, when Egypt was in the very height of prosperity, it is unreasonable to supposé them destitute of arts which undoubtedly flourished in both the regions between which Goshen lay."

Miscellanea.

National Health Society.—At a meeting of the National Health Society, held at the rooms of the Association for the promotion of Social Science, Mr. Edwin Chadwick in the chair, Dr. Carpenter read a paper on the "Causes of Infant Mortality." He said the wholesale destruction of infant life in the manufacturing districts was worse than the slaughter of the innocents by Herod. Near a large sewage farm, where the sewage of 45,000 people was used in manuring the soil by irrigation, the mortality of infants was not one-twelfth, and this showed that the development of vegetable life, together with pure milk, tended to preserve life. The densely-populated area of the metropolitan district was more healthy than were many other places. Mr. Chadwick said the paper was one of the greatest importance. In Croydon, by rough sanitary regulations and improvements, the mortality had been reduced from 28 to 17 per 1,000. He thought Dr. Carpenter would have done well to have noted the infant mortality among the Society of Friends, which was extremely small. The duration of life among that body, owing to temperance and other causes, was nearly double that of the country at large. It was also a noticeable fact that the deaths of women in childbirth were but one in 700 among the working classes, while they were one in 70 among the higher classes. Dr. Bikkers read a paper by Dr. Coronel, of Friesland, a member of the sanitary Council of Holland, and secretary to the Sanitary Council of Friesland, "On the Origin and Progress of the Ladies' Association for Promoting the Sanitary Condition of the People" in Holland.——A pamphlet has been issued by the National Health Society (9, Adam-street, Adelphi), on the "Effectual Prevention of Epidemic Diseases: an Account of Means adopted by the Sanitary Aid Association of the Borough of Hastings. By a Member of that Association. Read before the Society, 6th March, 1873."

Proposed New Hospital for Skin Diseases. A movement originating with the authorities of the useful but very restricted Hospital for Diseases of the Skin, in Leicester-square, has been got up for the erection of a proper hospital for such diseases, capable of containing beds for at least 100 in-patients. The want of such a hospital, it appears, is most urgent, and the sooner supplied the better. Indeed, a separate hospital of sufficient dimensions, to which the various loathsome and contagious diseases of the skin can be confined, is absolutely essential; for general hospitals are not proper places in which to treat such diseases, and indeed, as a rule, they do not receive them; and the hospital in Leicester-square, started by Mr. J. L. Milton, and carried on for ten years by him and other unsalaried medical men, has become far too restricted in its dimensions, although 20,000 patients have been treated in it since it opened.

Working against Time.—The writer of a paper on "Louis Napoleon" in the *Cornhill* gives the following anecdote:—"Wednesday, April 19 1854: I called early this morning on Madame R. Her brother is the architect who superintends the work at the Elysée. His story to her was that at seven in the morning of Good Friday the Emperor and the Empress met him at the Elysée, and she told him that she must give a ball on Monday to the Duke of Cambridge; that there was a difficulty in doing so at the Tuileries and that he must get ready the Elysée for it. 'But,' he said, 'there are 3,000 cubic yards of stone in the court, there is no staircase, the walls are mere wet stone and mortar; nothing, in fact, is finished except the roof; it is impossible;' and he looked towards the Emperor for protection. '*C'est un caprice de femme*,' said the Emperor. 'I am sure,' said the Empress, 'that nothing is impossible to you.' So he promised it. The workmen who had gone home were sent for, and 400 of them were kept at work from that time until Monday evening, when the ball began. They were well fed, and a little brandy was added to their wine. When they left off they had been at work for nearly eighty-two consecutive hours; that is, from the morning of Good Friday until the evening of Easter Monday. In that time, besides fitting up the existing rooms, they had built three kitchens and a new ball-room in the garden, 90 ft. by 35 ft. and 30 ft. high. All night they had 700 lamps, and thirty men carrying torches. One of their difficulties was the presence every day of the Empress, ordering, interfering, and not understanding technical objections. On Monday morning the Emperor came. He looked with dismay at the court, still covered with the 3,000 square yards of stone, and at the gap where the staircase was to be. Lacroix then explained to him that he meant to employ these vast masses of stone in building up a vast straight outside staircase, from the court to the first floor, protected by a roof of glass. This was done by seven o'clock that evening, and while it was doing 400 loads of rubbish were carted out. The poor architect was nearly killed by the incessant worry, want of sleep, and fatigue. 'He seemed to me yesterday,' said Madame R., 'to have grown ten years older in four days.'"

Interesting Discovery at Stoke Bishop. Mr. J. F. Nicholls, of the Bristol City Library, states, in the *Bristol Times*, that an interesting discovery has recently been made at Little Sneyd in the parish of Stoke Bishop, on the hill overlooking Sea-mills Station. Beneath the ancient Scotch firs that crown the eminence, men in the employ of Mr. J. Evens have found (about 6 in. beneath the surface) a stone, pentagonal in shape, having on it some rude sculpture and a Roman inscription. Together with this they discovered a portion of a skeleton, the bones honeycombed by lapse of time.

"At the apex of the stone is a rude star, beneath this a semicircular line, within which is the head and bust of a human figure, cowled, with either a rayed glory or a crown on the upper portion of the head, and eardrops in each ear, the lower portion of each drop being an open ring. On the right of the bust is the figure of a dog, rampant, with his paws against the semicircle. On the left, on the same level, is a cock. A few inches beneath each animal is a leaf (cordate), with its point towards the centre of the stone, on which is sculptured in Roman capitals the word SPES: beneath this are the following letters: C SENTI. The whole is enclosed in an incised lined pentagon."

At the first glance the figure might be taken for the head of the Virgin; but from the supporters Mr. Nicholson is inclined rather to look upon it as meant for Æsculapius, to whom both the dog and cock were sacred: this god is also represented with a crown. The ear-drops, he thinks, do not militate against this theory. It is a well-established fact that costly and handsome ornaments of this kind were worn by the men in the luxurious decline of the Roman empire. The inscription remaining, he thinks, meant "Spes Consenti."

Building Prospects at Dumfries.—At present there is not much prospect of the building trade in Dumfries being brisk this summer, after the buildings in course of being erected are finished. For some years past at this season there were usually a number of villas, dwelling-houses, and other buildings to be contracted for, but nothing of any consequence has yet been heard of this spring. Owing to the increased prices of materials and high wages, building on speculation is not profitable; and, moreover, the masons' strike last year put a stop to preparations for building at the Lovers'-walk, and probably has deterred building speculations elsewhere.—*Dumfries Standard.*

A New Building for the Medical School at Owens College, Manchester.—A meeting of the subscribers and friends of the medical school in connexion with Owens College has been held in the mayor's parlour of the Town-hall, for the purpose of receiving a report from an executive committee on the progress of the subscriptions for the new building to be erected for the convenience of the medical students in connexion with the college, and to inspect plans and consider future proceedings. The report stated that the building contract has been let for the sum of 12,018*l.*, to which must be added 2,500*l.* for extras and fittings, so that 4,000*l.* at least are still needed to complete the work. Professor Roscoe said the council of the college had chosen a site for the building which he thought a very excellent one: it was on the north-western boundary of their land facing Copeland-street. Some time ago some of the committee went round to all the medical schools in London where there was anything worth seeing, and with the hints thus obtained they had succeeded in producing plans which he believed would turn out to be very satisfactory. The meeting expressed its satisfaction at the completeness of the building plans, and heartily recommended the scheme to the support of the public.

Grosvenor Club for Workmen.—The new Grosvenor Club for workmen has been inaugurated by the Marquis of Westminster. Among those present were the Earl of Ducie, Lord George Hamilton, M.P., Sir Charles Trevelyan, Sir Harcourt Johnstone, M.P., Mr. W. H. Smith, M.P., Mr. Brassey, and Mr. Hodgson Pratt. The working men of the south-western district have already a building in which amusement and information are provided for. On the ground floor are a large reading-room, dining, and supper rooms; on the basement, a billiard-room; and on the first floor a hall or concert-room, in which 300 persons can meet; and a library. On the second floor are three class-rooms. The institution was, in fact, opened on the 23rd of November last, and has already nearly 1,000 members, who subscribe 2s. 6d. per quarter. The site for the building, which is at the end of the Buckingham Palace-road, was given by the late Marquis of Westminster at a nominal rent, and the building has been erected principally by subscriptions, to which the working men themselves have not contributed very largely. The Marquis of Westminster before leaving informed Mr. Pratt that he would contribute 1,000*l.* to the fund for the erection of a large hall for the club.

Trains and House-Vibration.—The Court for the consideration of *locus standi* sat in a committee-room of the House of Commons, under the presidency of Mr. Bonham-Carter, chairman of Ways and Means, when the Metropolitan and St. John's Wood Railway Bill came before them in objections to the *locus standi* of the following petitioners against the Bill:—238 inhabitants of St. John's Wood, Madlle. Titiens, and Mr. A. H. Crowther. The main object of the Bill is to give power to widen the line from Baker-street to St. John's Wood for heavy traffic. The fifth clause provided that the company should underpin or strengthen any building within 100 ft. of the railway. The inhabitants near the line alleged by their counsel that already they were shaken in their beds by the vibration of the railway, and in their petition state:—

"Your petitioners are seriously annoyed and disturbed and the property of many injured by the vibration caused by the passing trains. The conveyance of heavy goods would be positively dangerous to their dwellings, and so disturb them with increased noise as to make it impossible for them to sleep in their beds."

The case of Madlle. Titiens against the Bill was that she bought, on a part of the surplus land, a house from the company, and that it was part of the contract that the company should not carry heavy traffic on the line. The Court allowed the petitioners *locus standi* against clause 23 of the Bill, and as much of the preamble as related thereto.

Oxford Main Drainage.—On the 1st and 2nd inst. Major Tulloch, R.E., one of the inspectors of the Local Government Board, held an inquiry at Oxford upon a petition from the local Board for power to take lands for the purpose of irrigation, &c. Mr. Bailey Denton, C.E., Mr. S. W. Leach, C.E., and Mr. W. H. White, C.E., Engineer to the Board, were examined on behalf of the Oxford Board, and Dr. Odling, Dr. C. C. Pode, Rev. J. C. Clutterbuck, and Dr. Sankey, on behalf of the visitors of the Littlemore Lunatic Asylum, who are the principal objectors.

The Assyrian Expedition.—Mr. George Smith, of the British Museum, who has gone to Assyria as the special correspondent of the *Daily Telegraph*, for the purpose of making explorations, has sent a telegram from Mosul, in which he says:—"I am happy to inform you that my researches up to the present time in Mesopotamia have been crowned with much good fortune, and that I have obtained results of real value and interest. . . . I have recovered part of the series of tablets containing most curious and ancient Babylonian legends, as well as syllabaries of great utility, a bilingual collection of proverbs, and some astrological and mythological tables. . . . I excavated at Nimroud for seventeen days, and explored there the North-west Palace of Esarhaddon, the Temple of Nebo, and also some entirely untouched portions of the South-east Palace. I found spacious halls and fine chambers, the walls of which were ornamented with bands of plain colours. One of my most recent discoveries is that of a perfectly new text of the annals of Tiglath-Pileser. I am at present digging hard to obtain, if possible, the remainder of this highly important piece of history."

Leicester-square.—A committee, consisting of the leading tradesmen in Leicester-square, was some time ago formed for the purpose of improving the present condition of Leicester-square. The fifth annual dinner in connexion with the committee has been held at M. Vargues's Paris and Europe Hotel, at which a large number of gentlemen interested in the movement were present. Mr. J. C. Pawle occupied the chair. He referred to the difficulties of the improvement of the square, and mentioned the plan proposed by the Metropolitan Board of Works of bringing a street from Tottenham-court-road to the square. Another project for its improvement was that of building a large Continental hotel in the present open space. He was glad of any scheme of improvement. The Board of Works had not proved able to deal with it, and it was necessary that most energetic action should be henceforth taken by the committee. It is expected that the lawsuit in progress with regard to the hoarding erected by Mr. Tulk will soon be concluded, when a radical alteration in the aspect of the square is expected.

Society of Engineers.—At the ordinary meeting of the Society of Engineers held on Monday evening last, Mr. Jabez Church, President, in the chair, a paper on charging and drawing gas retorts by machinery, was read by Mr. John Somerville, of Dublin. Working the Best & Holden's machine at his gas works, gave the author an opportunity of seeing its defects. He therefore designed another machine, embodying improvements upon the other. He uses two separate machines, one for drawing, and another for charging, the retorts being served at both ends, and the machines following each other up in their work. The author gave the results of working by these machines, which showed that the cost of carbonising coal was 6d. per ton with the machines, and 1s. 1½d. by manual labour. This was taking the price of labour in Dublin, but by adopting London rates of wages in the calculation, the saving effected would be much greater.

Restoration of Chester Cathedral.—Since a new impulse to the work of restoring this cathedral was given at the beginning of last year considerable progress has been made, but two great tasks remain to be accomplished. First, the internal repairs and decorations of the choir, and the bringing of it into visible architectural combination with the great south transept; and, secondly, the external restoration of that transept. This latter work has now been begun on both the east and west sides. The total subscription list at the end of 1872 realised 47,000*l.* To this must be added a recent supplemental grant of 5,000*l.* from the Ecclesiastical Commissioners for substantial repairs. In addition to this total sum of 52,000*l.*, it is estimated that 18,000*l.* will still be required.

Baths and Washhouses at Bedminster.—The new baths and washhouses, built by the Corporation on the Mayor's-paddock, New-cut, Bedminster, have been opened without any formal ceremony. The entire cost is between 15,000*l.* and 16,000*l.* The charges will be, in summer-time, 2d. first-class and 1d. second-class; and in winter, with tepid water, 4d. and 2d.; the only difference being that first-class bathers are supplied with two towels, whilst the second-class bathers have only one.

Physical Geography.—Eton and its masters may be congratulated on the award of the Prize Medals of the Royal Geographical Society for the present year. The Gold Medal, for Political Geography, was awarded to S. E. Spring Rice (16); and A. C. Cole (18), and R. C. Reade (19), are honourably mentioned in Physical Geography: all three being of Eton. The Gold Medal, for Physical Geography, has been given to W. C. Hudson (18). We observe with surprise the absence of Westminster, Charter House, Merchant Taylors', Christ's Hospital, &c., in the list of the selected; and, worse still, we believe there was no candidate from any of them. Are these schools disregarding the signs of the times?

A Rothschild's Hospital at Geneva.—Baron Adolphe de Rothschild, who lives occasionally in a villa near Geneva, intends to endow and build there, at his own expense, a hospital for diseases of the eye. He will give about 20,000*l.*, 8,000*l.* for the ground, buildings, and fittings, and the revenue of the remaining 12,000*l.* for its yearly support. Suitable grounds have been purchased, and the new building will be completed and opened in the middle of next summer. The hospital is to be fitted for twenty in-door patients, with rooms for out-patients, and for clinical demonstration.

Proposed Park for West Ham.—At a meeting of the London Common Council, a petition has been presented from the inhabitants of West Ham and Stratford, Essex, praying the Court to contribute 12,000*l.* towards the purchase of a park at West Ham, owned by Mr. Gurney, in order that it may be dedicated to the use of the public. That gentleman and his family are willing to give 10,000*l.* towards the purchase; 3,000*l.* more had been promised by different gentlemen, and the balance was sought to be obtained from the Corporation. The memorial was referred to the City Lands Committee.

Baths for Marylebone.—The Commissioners of St. Marylebone Baths and Wash-houses have instructed Mr. H. Saxon Snell, architect, to prepare the necessary working drawings for the construction of a new first-class swimming-bath adjoining their present premises, but fronting the new street which forms the continuation of Seymour-place. The bath will be 74 ft. long and 26 ft. wide. The roof is to be partially of glass, and supported on elliptic cast-iron ribs. The estimated cost is under 4,000*l.*, and tenders will shortly be invited for carrying out the work.

Restoration of Kirkstall Abbey.—The *Yorkshire Post* says that a scheme is at last in contemplation to remove some of the vandalisms which disfigure the noble pile of Cistercian ruins at Kirkstall. The representatives of the late Earl of Cardigan, who own the monastery, having evinced a desire to dispose of the place, the lessees have resolved upon purchasing the property, and they purpose to restore the abbey to some extent. Sir Gilbert Scott has been instructed to report upon what should be done.

Selenitic Mortar.—On Wednesday evening last, at the invitation of the members of the Provident Institution of Builders' Foremen and Clerks of Works, a lecture was delivered by General Scott on the "Method of Treating Lime by the Selenitic Process." The lecture was illustrated by experiments which demonstrated the peculiar action of sulphate of lime in counteracting the slaking of lime and the valuable results which this produces when utilised in the preparation of mortar for building purposes. The lecture was largely attended.

New Hospital at St. George's.—The foundation-stone of a new hospital for pit accidents, to be erected by the Lilleshall Company, has been laid at St. George's in presence of a large company. The hospital will be erected from a design partaking of the Elizabethan and Tudor styles of architecture, and will accommodate six beds in its present form, with provision made to add another wing if necessary. There will be thirteen rooms in all, and the cost of the building will be about 3,000*l.* Mr. J. Fogarty, of London, is the architect; and Messrs. Millington & Son are the contractors.

Proposed Church, Hornsey.—The *Rock* informs us that the Rev. Canon Harvey has announced that he has been offered 2,000*l.* and two acres of ground for a new church in the vicinity of the Green-lanes.

Ancient Monuments Bill.—Sir J. Lubbock's Bill has been read a second time.

The Fire in Blackburn.—An appeal is being made to the public on behalf of the family of the late W. P. McCallum, engineer, who lost his life at the fire which took place at the Canterbury-street Works, in this town, recently. Mr. McCallum was heroically assisting Mr. Superintendent Joy to extinguish a fire which threatened to be extensively disastrous, and was killed, along with him, by the fall of a portion of the building. Contributions may be forwarded to the Manchester and County Bank, Blackburn; or to Mr. J. Thompson, the mayor.

Caterham Asylum for Imbeciles.—For some weeks past rapid progress has been made with the additional blocks in connexion with the above asylum. During the last few weeks, however, one of those difficulties now so commonly known as "strikes" has been threatening, but last week, on assembling at the Asylum Tavern, it was intimated on behalf of the contractors that no alteration would be made, and those that were discontented could take their money, and seek employment elsewhere. With the exception of some eight or ten, all resumed their work.

Opening of Greenore New Harbour.—The Dundalk line of railway and harbour have been opened. The guests at the opening numbered 1,000, and included the Lord Lieutenant and Countess Spencer, Lord F. Cavendish, Lord R. Grosvenor, Lord Newry, Lord Crichton, with several members of Parliament, and of the nobility and gentry of Ireland. The Lord Lieutenant expressed a strong opinion in favour of the new route, as it could not fail to develop the resources of the north-western counties of Ireland.

Rev. Dr. Hannah's Chapel.—The chapel which the Wesleyans intend to erect in the parish of St. Peter-at-Gowts, as a memorial to the late Dr. Hannah, is about to be proceeded with forthwith. The committee invited designs from the following architects, viz., Mr. Watkin (Lincoln), Mr. Botterill (Hull), and Messrs. Bellamy & Hardy (Lincoln), and, after a careful consideration, have selected those submitted by Messrs. Bellamy & Hardy.

Proposed Public Hall for Ripley.—A company has been formed for the purpose of purchasing certain freehold land (already secured) in Ripley, and on the site of which it is proposed to erect a Public Hall and Temperance Hotel, with British Workmen Public-house, baths, and suitable rooms for Good Templar Lodges, &c.

Bath Abbey Church Restoration.—A meeting of the committee has been held at which it was stated by Mr. Gill that something like 3,000*l.* would still be wanted to complete the third and last portion of the work, and a discussion took place as to the best mode of realising the sum required, and appropriate resolutions as to it were passed.

National Hospital for Incurables at Oxford.—On Wednesday his Royal Highness Prince Leopold performed the ceremony of laying the foundation-stone of a National Hospital for Incurables, dedicated to St. John the Evangelist, at Cowley St. John, near Oxford. At present about 50,000*l.* have been raised.

Irish National Monuments.—Mr. Gladstone has informed Mr. Agar-Ellis, in the Commons, that the Irish Church Commissioners were now making inquiries with the view of taking steps for the preservation of the Irish national monuments. When those inquiries had been concluded, the information procured would be laid on the table.

Testimonial for Opposing the Chelsea Waterworks Bill.—A handsome marble timepiece has been presented to Mr. A. Marks, and a purse containing about 70*l.* to Mr. Watts, by the inhabitants of Long Ditton and Thames Ditton, in acknowledgment of those gentlemen's services in opposing the Chelsea Waterworks Bill.

New Gasometers at Battersea.—Five new gasometers, with 7½ million additional feet of storage space, are being planted by the London Gas Company at Battersea, between the two stations on the railway-lines crossing the York-road. One is completed, and a second is in progress.

American Institute of Architects.—We have before us the Proceedings of the Sixth Annual Convention, and will take an early opportunity to refer to them.

Obituary.—We regret to see the death of Mr. G. L. Taylor, eighty-four, and that of Mr. S. S. Teulon, sixty-one, announced.

TENDERS

For rebuilding the Portman Arms, Edgware-road, for Messrs. Combe & Co.; and fittings to ditto for Mr. Richardson. Mr. H. K. Cotton, architect. Quantities by Mr. A. J. Gate:—

	House.	Extra if Portland Stone.	Fittings.
Newman & Mann	£4,336	£16	£514
Cross & Son	4,177	33	467
Brass	4,100	40	618
Thompson & Smith	4,066	30	450
McLachlan	4,045	19	555
Manley & Rogers	3,999	34	709
Scrivener & White	3,975	38	625
Patrick	3,873	35	575

For alterations to the Angel and Crown, Edward-street, Bethnal-green, for Mr. Writer. Mr. Edward Brown, architect:—

Aldous	£478	0	0
Impey	467	0	0
Blackmore & Morley	368	0	0
Marr	368	0	0
Higgs (accepted)	317	0	0

For alterations at Messrs. Tattersall's stables, Knightsbridge:—

Wagner (accepted).

For proposed house and stables at Shooter's-hill, Kent. Messrs. Drury & Lovejoy, architects:—

	House.	Stables.
Gerrard	£6,979	891
Bullivant	6,905	877
Sabey & Son	6,833	933
Nightingale	6,825	920
Kirk	6,795	920
Macey	6,790	897
Axford	6,695	869
Hayes & Ramage	6,655	866
Dove, Brothers	6,615	850
Gibson, Brothers	6,511	862
Tongue	6,480	810

For block of administrative offices, &c., at St. Luke's Workhouse, City-road. Mr. H. Saxon Snell, architect. Quantities supplied by Messrs. Lansdown & Pollard:—

Bridgman & Nuthall	£10,429	0	0
Patman & Fotheringham	9,590	0	0
Perry & Co.	9,585	0	0
Newman & Mann	9,535	0	0
Manabridge	9,517	0	0
Henshaw & Co.	9,497	0	0
Perry, Brothers	9,477	0	0
Brass	9,355	0	0
Sawyer	9,339	0	0
Elkington	9,195	0	0
Howard, Brothers	9,010	0	0
Mann	8,975	0	0
Chappell	8,625	0	0
Wall	7,994	0	0

For villa residence, with studio, Steele's-road, Haverstock-hill, for Mr. Edwin Hayes. Mr. T. Batterbury, architect:—

Linzell & Son (accepted)	£1,700	0	0

For additions and alterations to Greenside Villa, Parkroad, Haverstock-hill, for Mr. W. Milner. Mr. T. Batterbury, architect:—

Kelly, Brothers	£1,486	0	0
Manley & Rogers (accepted)	1,448	0	0

For repairs at the Prince Albert, St. Martin's-lane. Mr. H. J. Newton, architect:—

Brindle	£179	10	0
Shurmur	174	0	0
Taylor (accepted)	119	0	0

For finishing mansion, and building stables, &c., at Crookham, Hants, for the Trustees of the late Mr. Ware. Mr. Mason, architect:—

Dimond	£1,018	0	0
Bird	908	0	0
Boyce	890	0	0
Pettigrew & Moyes	888	0	0
Blackmore & Morley	848	0	0
Martin & Wells	700	0	0

For additions to premises, High-street, Margate, for Mr. R. Mannings. Mr. F. Warburton Stent, architect:—

Bushell	£684	0	0
Paramour	660	0	0
Cook & Green	659	0	0

For the erection of the Duke of York Tavern, Rotherhithe, for Sir Henry Meux & Co. Mr. F. Warburton Stent, architect:—

Colls & Sons	£1,851	10	0
Turner & Sons	1,847	0	0
Ebbs & Sons	1,838	0	0

For repairs to twelve houses, Elm-grove, Hammersmith. Mr. J. Watkins, architect:—

Sharp	£292	0	0
Warr	244	0	0
Biggs	200	0	0
Buxton	193	0	0
Watling & Bolton	192	0	0
West	175	0	0
Roome & Barton	150	0	0
Surridge	145	0	0
Johnson	137	0	0
Jaques	135	0	0
Williams	120	0	0
Sill	111	0	0
Bulford	86	0	0
Norriss (accepted)	57	0	0

For the erection of twenty-two almshouses in Bath-street, St. Luke's, for the Gift Estate Committee of the parish of St. Luke. Mr. Thomas E. Hill, architect:—

Stephenson	£4,790	0	0
Garrad (accepted)	4,474	0	0

For the erection of a swimming-bath at Isleworth, for the Isleworth Swimming-Bath Association (Limited). Mr. R. C. Brown, architect:—

Wiles	£1,344	0	0
Brunsden	1,312	0	0
Webber	1,200	0	0
Hiscock & Son (accepted)	1,130	0	0

For repairs and painting on the late John Marter's estate, Merton, Surrey. Mr. D. Haylock, architect:—

Picking	£135	0	0
Juster	123	0	0
Adkins	120	0	0
Cooper (accepted)	105	0	0
Jewell	40	0	0

For restoring and enlarging warehouse at Millwall. Mr. Wm. Eve, architect:—

Heiser	£973	0	0
Galt	890	0	0
Nightingale	827	0	0
Sheffield (accepted)	765	0	0

For enlarging counting-house at 107, Leadenhall-street. Mr. Wm Eve, architect:—

Parrett	£275	0	0
Nightingale	257	0	0
Sheffield	188	0	0
Heiser (accepted)	162	0	0

For new show-room at 107, Leadenhall-street. Mr. Wm. Eve, architect:—

Colls	£204	0	0
Heiser	172	0	0
Parrett (accepted)	165	13	0

For new stables at Derwent Lodge, Addison-road, Kensington. Mr. T. Laurie, architect. Quantities by Mr. H. P. Foster:—

Hibbins	£842	0	0
Foster	816	0	0
Postlethwaite	737	0	0
Bird	694	0	0

For new Catholic Church, Workington, Cumberland, for the Rev. Cuthbert Clifton. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Nicholls	£12,200	0	0
Hughes	10,800	0	0
Yates	9,900	0	0

For restoration of chancel, parish church, Barton-le-Coggles, near Grantham, for the Rev. T. S. Sandys. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. Barber:—

Farmer & Brindley	£660	0	0
Jackson	425	0	0
Rudd & Son	415	0	0

For new chancel, Catholic Church, Dover, for the Rev. James Laws. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Fitt (accepted)	£390	0	0

For new church, Farnworth, near Bolton, for the Building Committee. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. Barber:—

First Design.

Shepperton	£6,700	0	0
Hughes	6,300	0	0
Watts	6,350	0	0

Second Design (reduced).

Quantities supplied by Mr. R. O. Harris:—

Haigh	£5,600	0	0
Horton	5,030	0	0

For repairs, &c., at 24, Gloucester-road, N.W. Mr. W. Paice, architect:—

Bangs & Co. (accepted)	£172	0	0

For works at 1, Gloucester-road, for Dr. Blackstone. Mr. W. Paice, architect.

Ponsford	£325	0	0
Bangs	320	0	0
Cook	310	0	0
Yarberry	295	8	0
Shaw	283	0	0
Heltbrunner (accepted)	278	0	0

For three carcasses on the north side of the Viaduct, for Mr. Richard Tress:—

Deards	£9,111	0	0

For Contract No. 1, Oxford Main Drainage. Mr. W. H. White, engineer. Quantities supplied:—

Bulmer	£26,984	0	0
Chappell	26,281	0	0
Shaddock	24,400	0	0
Marriott	24,300	0	0
Ambrose	22,600	0	0
Dover	22,433	0	0
Nowell	22,000	0	0
Nowell & Robson	21,750	0	0
Winter	21,244	0	0
Munday	20,378	0	0
Morris	19,676	18	6
Jones	18,000	0	0
Vickers & Crane	17,980	0	0
Furniss	17,800	0	0
Pearson	17,777	0	0
Neave & Son	16,995	0	0
Ritson	16,500	0	0
Neave	16,485	0	0
Reynolds	16,442	0	0
Moore	16,200	0	0
Marshall	15,930	0	0
Trehearne	14,750	0	0
Acock (accepted)	14,750	0	0
Fry	12,916	0	0
Thompson	12,579	14	0

For erection of additional printing works and chimney-shaft at Kirby-street, exclusive of engineer's work; also for additional story on No. 5, Kirby-street, Hatton-garden, W.C., after allowance for old materials upon present site, for Messrs. Watson & Hazell. Mr. J. W. Reed, architect:—

	If in Sections.	If all at one time.
Stains & Son	£5,096	£5,006
Downs & Co.	4,996	4,936
Bamford	5,030	4,900
Henshaw & Co.	4,902	4,882
Hoare & Son	4,851	4,851
Axford	4,787	4,737
Kirk	4,948	4,700
Scrivener & White	4,578	4,526
Carter	4,470	4,440
Hawkes	4,453	4,403
Niblett & Son	4,320	4,270

The Builder.

VOL. XXXI.—No. 1580.

Another Visit to the Royal Academy Exhibition.

QUITE true it is that the dearth of great things gives all the more value to what comes next in estimation; and if the scarcity of what may be taken for superlative examples of the work of leading members of the Academy, or of those most capable of supplying leading pictures, be too apparent to leave doubt of it, it produces a result of partial good fortune in the prominence of comparatively remarkable pictures that would take but second rank in more exalted society. For these have the chance now of a memorable distinction in the absence of anything better worth remembering, and thus will advance the position of their painters. Extended opportunity of arguing what the real attraction may be is another delightful advantage. Splendid landscapes by Messrs. Linnell, P. Graham, Vicat Cole, H. Moore, and others, seem to suggest an increased consideration for this section of depictors. Mild imaginative work, forcible realization of character-study, pathetic and humorous; and general excellence of workmanship throughout, must be amongst the prevalent causes for impressions left upon the observer of this summer's treat at Burlington House, and the fact of its being so really enjoyable, with no help or little from previous sources of similar enjoyment, should gratify, and to some degree qualify, the disappointment that the feast should consist more of *entrées* than removes,—light dishes in lieu of more solid food.

There are some few of the Royal Academicians who remain faithful to a belief in the dignified purposes of art; and whatever difference of opinion the definition of "high art" may involve, there can be little doubt that its noblest exemplifications exist in furthering the lessons and direction of Scripture, so well done formerly when the church gave the painter his chief employment. It would be saying too much to assert that any one of the illustrations of Holy Writ to be found in the chief gallery (III.) now would obtain a very wide acceptation as thoroughly satisfactory examples of their class. Eve would be so, but the artist's ideal (and Mr. A. Elmore's is a very beautiful one) has more of earth's than heaven's association; the more defensible, perhaps, as it is "After the Expulsion" (282). Mr. E. Armitage enlists the respectful attention of all for his earnest and clever representation of "Christ Reproving the Pharisees" (187) when they would have had thought that the day of rest should be one of deprivation; Mr. G. F. Watts is not so fortunate as to secure great interest for his version of "The Prodigal" (281). Mr. J. R. Herbert and Mr. C. W. Cope have each a "Mary Magdalene" indicative of their respective power and different styles (302–309), but to this department the present exhibition owes no very great share of its strength, though it helps to vary and contrast the numerous instances of less oftily applied talent.

Whatever may betide for varying Royal Academy exhibitions, it may safely be predicted so far as Mr. E. M. Ward is concerned that historical painting will be represented so long as he contributes to them. Britain and France are one to him; and in less time, and with fewer qualms,—not only of conscience,—it is to be hoped, than it costs some others; he is naturalised, and as much at home on either side of the Channel, with no sign of having suffered by the journey. It is in France on this occasion that Mr. Ward sets up his easel, trims his palette, and succeeds in interesting, by his recall of old stirring incident, those who have read of it: and even with the fact to his disadvantage, that the history of France that stirs most just now dates from 1870. But historical incident may be like wine, and requires the rest of many years before its value becomes matured for judgment and fit for draught: if it be so, the thought is father of the wish that there may be a Mr. E. M. Ward ready at the right hour. It reflects ill on humanity that violence, treachery, ingratitude, and any evil passion that possibly forms part of its deepest shadow, should have a fascination for visual recognition that the show of sweetest virtue can never claim; and it is not to be denied that the best and kindest of people who can never see or hear of anything dreadful without shuddering, really enjoy a shudder sometimes. The dramatic painter's occupation would be gone if there were no pleasure in being shocked occasionally, and the pages of history most thumbed were not the horrid ones.

Were it not for this unacknowledged affection for strong facts that invite the deepest colouring of imagination, who would not, if it were possible, forget the "Eve of St. Bartholomew?" Who can care very much for such a vacillating impotent as Charles IX., whose royalty alone,—and that was but a name,—saved him from being a thief of halfpence,—mean, in honest estimation, as the meanest; or Catherine de Medicis, unless for her traditional beauty and love of the fine arts? She would have had less latitude in modern times, or have killed urbane, clever Mr. Mills before his time had she left him room to talk of the rights of women according to her views of them; for no man was more conscientiously actuated and led by honester conviction than Mr. John Stuart Mill. Mr. Ward has painted a very striking picture (207) of the caitiff king's visit to the old hero after his attempted assassination, directed by the amiable Catherine or Catharine, who now accompanies her sons, the King and Duc d'Anjou, to condole. The figure of the royal puppet is admirably expressive: looking askance at the unbuckled sword that has done the State so much service, he seems to say, and it is almost possible to hear the words,—"My father, you have the wounds, but I the pain." This he said at the moment when the massacre of the Protestants was arranged and impending. Two days after the poor old admiral was stabbed to death and his body thrown out of window, that the mob, who loved him not, might do as they liked with it. Mr. Calderon painted, some years ago, a very fine picture of the same epoch, of wide stage-room for dramatic effect. It is scarcely necessary to say, that to look back indicates a stoppage on the road of progress; it tells, too, by finger-post, that little progress has been made. Mr. P. H. Calderon painted and paints admirably: he draws carelessly sometimes: witness the ponderous arms of his charming lady-mother, who is saying "Good Night" (44) to a darling, with a summer seven o'clock's glow to qualify her notion of time for her baby-boy, who has kept awake to see how mamma looks before stepping into her brougham, that is to convey her to a dinner-party. Moonlight was never better painted, seldom better imitated, than in the clever narration of funny incident, to those not immediately related, of guardian, husband, or father disagreeably surprising a guitar-tinkling, bouquet-offering admirer of barred attraction, by present chase and promised chastisement for his "Serenade" (181). Half the point of the story is lost in the complete habiliment of the angry pursuer, for it does not tell of the hour, and in the certainty of his catching the donkey, who has already dropped a shoe, to say nothing of the poor attractiveness of the attraction, the caged bird of song. An ordinary opportunity for the use of such good means as are undeniably possessed by Mr. Calderon should not suffice for his application of them, any more than mere method should be trusted for right meaning generally. Such splendid acquirements as "Victory" (215) shows should get for him who has got them more than the triumph of a temporary success. Reduced to the level of a present day's apprehension, this demonstration of a play on the gamut of female sensibility proper to the occasion is but precedent, and its like may be found in more civilised times. Noble dames of ancient story, who were awfully fond of fighting,—and may the shade of Dr. Watts reduce and again reduce the light of such pleasure for ladies,—are witnessing from a grand stand the athletic sports of the period. From the battlements of a castle a bevy of fair women and children, well composed as well as discomposed, wait the issue of a sortie to repel an attack, such as in feudal times was as common as an application for settlement of a butcher's bill is now. Some are glorying in the prowess of their lovers; others fear for dear lives; the widowed dame, who knows of old the cost of chances, contrasts the carelessness that certain young heroes show,—long-haired, fringed-browed, fifteenth-century specimens, who think it a lark that their fathers should have to fight for their home, whilst swallows are quietly making nests in its embrasures, to typify, perhaps, the grateful recognition of help that small and poor dependence sometimes gives with the selfishness of a gratitude that would make the most of the benefit, and the least of the benefactor. There is nothing in common between the splendidly-dressed dames and maidens—fair samples of tournament times, when amongst the recommendations of a husband was the number of widows he had made,—no likeness at all shared with the soft, dreamy dears that bask about "The Fountain" (72). Mr. G. D. Leslie's ladies are lovely if lazy, ineffable beings of languor, who live and breathe in perfumed atmosphere, and whose diet must be vegetarian, rose-leaves probably, for beef would be their death. The interested interesting lioness who waits the issue of the deadly combat of Mr. H. Hardy's fierce lions (129) before fixing her affection, gives a better idea of the spirit that rules the more heroic of the heroines that wait and watch for "The Victory." "After the Victory" (91), by Mr. J. Faed, tells with great pathos of a soldier's death, an item in the cost of battle lost or won. A letter has just arrived that tells of the loss to mother, wife, and bairns. The elder woman bends over the hearth made desolate, and is silently giving way to her grief, inattentive to the inquisitiveness of the grandson, a little fellow, too young to guess the cause of it, and even to the demonstration of misery's bitterest visitation to the loved and loving one, wife once, now widow, who, in paroxysm of lamentation, seems lost to all sense but that of overwhelming sorrow. The orderly room, has such show of frugal comforts as makes it clear prosperity had given some promise of a happy return for the soldier; and the evidence of housewifely care helps to convey the sentiment and point the force of the affliction. It is so good and unaffected a rendering of matter-of-fact text, that if the story of the picture be a painful one, it is so well told as to release it of all other influence than a very wholesome teaching of war's exaction, and that let death come when and in what form it may, there are those

to be left, perhaps, who can never be prepared for it. Even the bravest, who voluntarily face death in stern acceptance of a known duty, and are willing to face it to the last, are turned by the consciousness of its cost to others—the dread they can appreciate, though they have it not. Mr. J. Pettie's three warriors with "The Flag of Truce" (401); the old burgomaster, young captain, and scarlet-cloaked officer, are wonderfully expressive of readiness to die; but the clamour of starved women and wailing of infants have quite persuaded them as to the right direction their valour should take; no better fed than the most attenuated of the sickly garrison, the last to complain, the first to be blamed for failure they least account for; these and such like heroes make a greater sacrifice than loss of life could be, with but the embers left for the fire of their courage to keep aglow. Elected by their fellow-sufferers to carry deed of capitulation, they are leaving the besieged town, attended to the gate by a troop of women, who are loud in their thanks and blessings for salvation from further experience of a siege's horrors. This is certainly one of the very best pictures to be seen this year, and will add very much to Mr. Pettie's reputation,—evidently a growing one.

"Le Roi est Mort; Vive le Roi!" (663), is the quack cry of remedy,—of substitute,—for many blessings gone, that may be replaced. Mr. Marcus Stone gives a literal and artistic presentment of the proverb: for an old king lies dead on stately couch; and those who courted him, followed his beck, and kissed the strong hand so long as it could lift or fell, turn their backs to dead majesty, and cringe to the successor, a timid little boy, who, "if every inch a king," can be but a small one after all, for whom toys and toffy are riches; and the right of appointing his own hour for going to bed is the acme of his known power. The trite story is very well told, down to the warrant of the noble hound's superiority compared with the human cur's; for the last regard paid to royalty's cold clay comes from a dog in Mr. Stone's clever picture. It is relief to accompany Mr. J. C. Hook, and under clear sky watch the waves that move or sleep; inhale the best breath for voice of thankfulness, and see that out of doors lives The Majesty. Mr. Hook's pictures are the most natural possibly; he should never step beyond the agreeable; cormorant-fishing is not in his way, and is in his way if he would remain free naturo's disciple.

The next best thing to finding a remarkable picture by Mr. W. P. Frith, of the class that may be denominated "Episodical History," or Historical Episode, is to perceive in the lighter and slighter views he takes of life's course his relaxation,—recreation between the whiles of more exacting study. Such pleasant, pretty work as ladies playing at billiards, with gentlemen looking on, secures success for "The Winning Hazard" (221), though, as many a dancing dandy knows, the impulse of the ball does not always meet the pocket: and, then, archness and archery had, long ago, affinity, before Shakspeare's lover made "woful ballad to his mistress's eye-brow"; so no wonder Mr. Frith's "English Archers, Nineteenth Century" (99), pull the long bow, if they assert anything that beyond showing the charms their pretty faces, graceful attitudes, and unexceptionable "get up" present, their aim can be other than dreadful to those who cannot afford to be targets. Poor, impressionable young men have no business to look at them. It was national and natural and nice to represent "A London Flower-Girl" (276) as far more handsome than one of Boulogne (271), though they both carry evidence of earth's summer favour. In the actual art of painting few can rival Mr. Frith. It may be judged of Mr. T. Faed, too, that he is busy at something great, his contributions here being of small account to the summing up of his fame. "A Lowland Lassie" (222) blithely tramping it with a basket of vegetables on her head, accompanied by little brother and sister,—one on either side,—is deftly done. Her hands, though, are very big. "A Skye Lassie" (247) is less striking, but more natural still. "Happy as the Day's long" would betoken that coolish weather and no walking have made this lassie, -or youngish "mither,"—temporarily unconscious of her bunnions: her boots are horrid story-tellers else. She must suffer in the opinion that is particular with regard to pretty feet.

Mr. A. Moore shows the value of good feet. "Follow my Leader" (146) would be poor bidding without. It is quite in conventional string that Mr. Moore's damsels run: sense of artistic adaptation has outstripped all natural appearance, and the artist's chief aim is at originality,—he out-Leslie's Mr. Leslie, and his ladies are not half so lovely.

Mr. G. A. Storey paints after Dutch example, and capitally well, too. "Scandal" (158) gives the school of its belonging, that taught the method of producing its day-light effect. This is a very clever picture, and, with other evidence besides, tells that Mr. Storey is not at his best yet.

Mr. E. Nicol contributes several "studies"; but his pictures are so good usually that his slighter work, if it bears his name, must be thought less of than it really deserves. Mr. H. S. Marks seems to have devoted all his energy to close imitativeness. "What is it?" (195), that his spectators behold from the bridge that crosses clear river's run, suggests that he with them halts to ask the purpose of his art: he paints so nicely that it must be wished his capability being shown,—that his next year's picture shall bring proof of "what it really is." "The Ornithologist" (380) is an ornithological wonder, and it would be a clever bird that could top the flight of this, to show exactly the stuff of birds, and how well they can be stuffed.

We have promised ourselves more half-hours at the Royal Academy Exhibition.

A PROVINCIAL VISITOR IN LONDON STREETS.

To the occasional visitor to the capital, desirous to note what changes or improvements (if any) have manifested themselves in the more familiar thoroughfares during the last year or two, the completed façade of the Burlington House extension, now first cleared of contractors' hoarding and scaffolding, will naturally be the first point of interest. Any expectations that may have been formed as to the realisation of a high architectural ideal in a building specially connected with science and art in their higher forms, will, however, meet with a little disappointment. The one striking feature in the Piccadilly front is the large entrance-archway in the centre, which is a success. The panelling and general treatment of the soffit of the arch is satisfactory, and to a certain extent original; but here the originality of the structure ends. In regard to general style, no doubt, the architect was tied to follow, to a great extent, at least, that of Old Burlington House forming part of the northern side of the quadrangle. But in such a building something of novelty and effect in the combination at least of the well-worn architectural features might have been realised. Wishing to see architecture vindicate her place among the living arts, one would have preferred to find in a building erected as the home of our leading artistic and scientific bodies, more of the picturesque or poetic element in architecture than is here observable.

The large building nearly completed, at the corner of Piccadilly and the Haymarket, which is to be the head quarters of our leading *restaurateurs*, and the "criterion." (it may be supposed) of excellence in all that relates to the fine arts of eating and drinking, is a stately composition enough in its way; the centre entrance seems to have been to some extent inspired by the archway in the Burlington buildings above mentioned; the attic is somewhat heavy for the rest of the building. It is not difficult to imagine why this design should have been selected in the competition: the establishment is a vast advertisement, and the building exactly carries out the idea. It was a happy thought to indicate externally the special purpose of the building by covering it with a profusion of ornament of the kind usually found on wedding-cakes; and the London soot will before long bring out the points of the work in a piquant manner. The best portion of the ornamental detail is in the panels under the third-floor windows; these are boldly treated with pierced scroll-work of good and free design. The portrait statues of the proprietors, affixed to the front, with the names "Spiers and Pond" over them, in gilt letters, form an interesting addition to the architectural design, and it is gratifying to find so much of the nobler and ideal type of humanity preserved in the persons of those employed in a somewhat prosaic trade in the nineteenth century.

Crockford's Auction Hall, in St. James's-street, also nearly completed, is one of those solid, heavy buildings with big columns, in the Roman style, which seem to say in so many words, "See how much solid masonry we can afford to indulge in!" If the characteristic of too large a portion of modern society be, as some cynical people say, wealth without intelligence, such buildings as this at least reflect the spirit of their day, and are, so far, truthful architecture. This kind of architectural expression is too often found in buildings erected as banks, and it is on that account the more gratifying to find, in the small front of the National and Provincial Branch Bank in Piccadilly, a design totally free from vulgarity or ostentation, and in which the details are treated with no little refinement and originality. The design is of the Classic variety, with columns running through the first and second stories, the angle portions of the wall treated similarly as pilasters; both columns and pilasters encircled by a broad band in the centre. A peculiar character obtained by the use of sharp straight lines and square edges, is kept up throughout the ornamental detail, which is both refined, and for the most part effective. The treatment of the capitals of the ground floor columns is worth notice as novel and elegant. Altogether this is a very nice little bit of work.*

Turning our steps Citywards to note what has been done in the regions more strictly devoted to business, we recognise in the new "Ludgate Circus" an admirable site for the effective grouping of street architecture. At the north-east angle a pretty good Gothic building has been, some little time since, erected; and the north-west angle is now newly occupied by the large building for "Cook's Tourist Offices." Any hope that such a site may be adequately treated is much dashed by the aspect of this most recent contribution to the architectural *ensemble*. How much is suggested by a building for such a purpose: how much of foreign architectural association and detail might be suitably worked in, as expressive of the purpose of a structure in which the business of "touring" to all parts of Europe (or of the world) was to be arranged! And this noble site, with three frontages, and all these associations, could inspire its architect with nothing better than a tame collection of pedimented windows and wreaths of stone festoonery; the one detail in which any significance is attempted being in the plum-pudding shaped lump meant for the "globe" over the door, flanked by two cherubs, Cupids, or some such cattle. It really is deplorable. Next to this architectural effort is the building by Messrs. Woodzell & Collnitt, the drawing of which was noticed in the review of architecture at the Royal Academy, and which quite bears out, in execution, what was there said in commendation of it. Opposite to this an inhuman block of "hole-in-the-wall" brickwork lies heavy on the soil, a further contribution to the new architecture of the London streets. On the west side of Bridge-street, near the river, the Economic Life Assurance Company are going into an economical building, which, however, is by no means in the "cheap-and-nasty" style. The materials are mostly brick and terra-cotta, treated in a kind of Lombard-Gothic manner; the brick reveals showing bold roll mouldings at the angles. The terra-cotta is chiefly applied in quoins and in ornamental archivolts of a somewhat too exuberant description. There is rather a lack of refinement, but the whole intention is praiseworthy. Further up, on the east side of Farringdon-street, is a great development of Geometric Gothic of the orthodox type, in the shape of a large block of building at present only half-way up, and therefore not to be rashly criticised. The sense of satiety which one experiences, however, in coming across this now well-worn type of Gothic, so admirable a style in itself, is instructive, as indicating how surely every style, good or bad, must pall upon one in the end, when used merely archæologically. Ludgate-hill presents nothing to the visitor for comment, except the front of Messrs. Trübner's publishing-house, and an interesting specimen of the cork-cutting style of architecture at the corner of Old Bailey. It is in the east end of Victoria-street that the tug of war comes. Passing over a large block of half-finished building between this street and Bucklersbury, we come at the corner of the latter to a just completed façade of French Gothic type, which has considerable merit, so far as the scaffolding still remaining at the time these notes were made would allow a fair view. The pointed arches over the windows are deeply

* The premises erected in Piccadilly for Messrs. Sotheran, Baer, & Co., have been before fully described and illustrated in the *Builder*.

recessed, but with square window-heads under them, the space over the window decorated with carved rosettes cut into the stone; wall-diaper is used in the outer spandrels; the arches are carried on dark marble shafts. An interesting comparison may be instituted between this and the building adjoining it,—a long row of shops and offices, also refined and original, though in a different type. This is a palatial Italian building, the main story consisting of a deep arcade of circular-headed arches, carried on semi-octagonal piers, panelled on each face. The window-heads are again square, and the spaces over them filled in with flat ornamental carving, showing much grace and variety of design; in the story over this the pilasters are well and piquantly treated; the attic dormers are somewhat heavy, and the elaborate iron railing running from one chimney-stack to another, looks very odd and out of place. This is a building, however, characterised by much refinement and good taste, and taken, as it is now, in the bloom of fresh-hewn stone, may very well be preferred to its Gothic neighbour just referred to: the question is, how will it be when a few years of smoke have done their work? The details are too delicate, the projections too slight, to stand against that for long. We should suggest to the architect to gild the centre portion of the spandrel ornament over the principal windows; it is in the style of flat conventional ornament, which will very well bear such treatment. It is unfortunate that no attempt has been made here to contend against our enemy plate-glass, upon which the whole structure will apparently have to stand, as usual in shop architecture. Opposite to Bucklersbury is a long line of harmless architecture, apparently all by the same hand, exhibiting the stock features of pilasters, pediments, and wreaths, without a suggestion of anything further being necessary to make a respectable street building. The building at the corner opposite the Mansion House (erected some time ago), shows that the architect appreciated the opportunity afforded for a salient feature at this angle; but the type of Gothic exhibited is by no means very refined. Among the narrower time-honoured thoroughfares of "the City" *par excellence*, there are few new architectural features, the most noteworthy being Mr. Norman Shaw's offices, which are so well illustrated in his drawing in the Academy. The building scarcely looks so well in execution as in the drawing; a greyer brick would surely have been preferable for the piers, or, at all events, a brick with more tone and texture than those somewhat raw-looking "patent red." There is an awkwardness in the carved stone panel in the upper portion of the centre, which follows the plan of the window, curving outwards in the centre portion, and as the stone thus has no straight bearing between the brick piers, and no visible support but the wooden framework below, there is a certain air of instability about it not satisfactory to the eye. This building, however, will certainly make a feature in the street, and one which every new-comer, probably, will turn to look at. No. 149, Leadenhall-street, is a neat design, a kind of mixture of modern French and "chamferesque," well dominated by a strong cornice across it, with attic over; a mere strip of building, but showing sensible and careful treatment. No. 74 is a work of the same class, with much more decisive aim at originality, and into which colour as well as form enters. The design is in that hard straight-lined manner, rather resembling cabinet-work, which is affected by a certain school of modern architects; it is a mannerism to a great extent, and wants dignity and truly architectural character; but it is in this instance well treated, and has a consistent effect. The polychromy consists in the employment of red brick and two tints of stone—a drab and a very delicately-tinted blueish-grey stone. The effect is exceedingly good now that the building is new; but it certainly cannot last very long. The small square granite sticks, upon which the whole design stands, are an unsuccessful compromise between architectural effect and the demand for light; the building could not really depend for all its support on these, although it is made to appear as if it did. The bands of grey stone across the piers of the middle story are decorated with fluting and rosettes; the attic and dormers are rather heavy. There is, however, distinct and definite character in this building.

Returning along Victoria-street, and past the terrace of "harmless" buildings before mentioned, one may notice in the block called "Albert Buildings" (south side of the street), a somewhat picturesque treatment of a character based on French Gothic. The shops on the ground-story are divided by pilasters which give a solid bearing for the superstructure; the first-floor story, with its wide segmental arches, including two smaller openings under them, has a not unpleasing air of "Viollet-le-Duc" about it. There are two cantilever cornices on the face of the building, and in the raised centre portion the cantilevers of the main cornice are continued through, and a similar cornice is repeated as a crown to the raised story, so that here there are three rows of cantilevers one over another; this is too much, and overweights the design. The treatment of the string over the ground-floor, with an overhanging curved moulding curved on the under side, is good, and suitable to street architecture, where there should always be some ornament near the eye to attract the passer-by on the pavement. The attic is heavy, a defect which the new town buildings seem generally to run into. Near this building, a few steps from the main street, the new premises for the Mutual Co-operative Society, present an example of a well and broadly-treated classic (Roman) design, of more than average merit. A large "order" of two columns, upon a simple rusticated basement, flanks the centre portion, running through the second, third, and fourth stories, the fifth story of the design being occupied by a large arch springing from the architrave over these columns; the space between the columns is treated as a bay with a flat segmental curve on plan. The wings of the design are flanked by pilasters, connected with the centre by a tolerably heavy cornice, which is stopped over the columns. The ornamental detail is not novel in type, but is executed in a manner to retain its effect, depending rather on plain sinking than on surface work. The front is further enlivened by ornamental iron balconies *à la Français*. Though in an old style, this deserves to be called an original design, and is treated with a pleasing breadth and simplicity.

In the western portion of Victoria-street, buildings are at present springing up, but slowly and separately, and in the main there is no high average of architectural merit among them. The most noticeable is the building standing alone on the north side, with the monogram, "P. R. P. and S.," over the door; and the heads of a lion, a bear, a wolf, and a ram, carved in the space over the ground-floor windows: the meaning of which mysterious animals the deponent did not gather. The building is a very good solid-looking construction, of brick, stone, and terra-cotta, with heavy square stone pillars on the ground story; brick piers are run through the two next stories, and terra-cotta wall-diaper introduced in the spaces between the windows. The heavy bracketed cornice, abruptly stopped in the centre under a dormer, has rather an awkward look; but in the main this is a very satisfactory "front," and the carving, especially the conventional foliage of the upper capitals, is exceedingly good and suitable to its position. A warehouse fronting to Earl-street, but at present seen from Victoria-street, in which considerable use is made of moulded brick and terra-cotta diaper, looks very well, has been carefully studied, and is worth attention. Further down on the south side is a sample of what to avoid, in the shape of a fearful buff brick building, with yellow brick dressings,—a combination odious to the eyes, even as regards tone, let alone design; a scraggy griffin and a couple of garlands adorn the pediment at the top, with the date, "1873," carefully placed over, as if it would interest posterity to know the precise year when such a thing was erected. Next to this is a brick building apparently prepared for cement decoration at salient points; this may prove a good idea; the use of cement, rightly treated as a partial decoration, is quite worth experimenting upon more than has been done at present. Next comes another yellow brick affair, with white stone dressings, and a mighty development of keystones; and next, again, a very "streaky" building of parti-coloured brick is getting into shape, and is faced on the opposite side by a collection of pilasters and consoles in the orthodox manner. On the whole, things in this neighbourhood are not very encouraging to future architectural prospects, and it would seem that some at least of the dregs of architecture have settled at the lower extremity of Victoria-street. There is apparently, however, a new epoch just started in modern architecture, which as yet has scarcely got beyond the drawing-paper stage of development; but on some future occasion the "Visitor" may find his occupation in chronicling and characterising the developments of the Jacobean and Queen Anne styles, which are apparently to form the next chapter in English nineteenth-century architecture.

MACHINES AND HARDWARE IN THE INTERNATIONAL EXHIBITION.

WHEN the opening of the Exhibition was noticed in the *Builder* of April 19th, it was stated that a good many finishing touches still remained to be given in certain departments, and more serious arrangements had yet to be made in others. The machinery-in-motion department in particular was in an unready condition, but may be said to be now in complete working order, several important exhibits having been added since that time, and now all that is to be expected in this important department may be seen at work throughout the day, or partially at intervals.

In Room V., western side, a powerful, beautifully-made machine, by Greerson, Ormerod, & Co., of Manchester, has been erected to show the working of Beaumont & Appleby's Patent Diamond Prospecting Machine for deep bore holes, capable of boring, by a "crown" studded with eight or ten *real* diamonds, a hole in granite 1,000 ft. deep in three months; with two single drills, forming part of such a set as is used in tunnel-driving machines. The machine has been shown in motion, and works very smoothly, but its capabilities can no more be judged of, under the circumstances, than the quality and flavour of the preserved meats, fruits, &c., of which such an enormous variety is displayed, can be determined from the labels, or from examining the outsides of the tins. The drill-head, however, is to be shown in operation, as used in mines, quarries, and railroad-cuttings.

Harris's Disintegrating Machines, one for grinding flour, the other for pulverising ores, minerals, clays, manures, &c., can only be shown in operation partially and at intervals, an insuperable difficulty existing in the impracticability of either conveying enough of raw material to satisfy their rapacious maw, or of carrying off their produce. Mr. Marsden, of Leeds, avoids the practical difficulties just referred to by exhibiting *models*, with the latest improvements, of Blake's stone-breaking and pulverising machines. A full-sized machine was exhibited at the International Exhibition of last year, which was attended, in showing it at work, with the inconveniences named. The models now exhibited are well made, and of sufficient size to show clearly the working and capabilities of the machines without producing an embarrassing quantity of *detritus*.

In the same room Tilghman's machines for carrying out the sand-blast process for engraving glass, stone, &c., by steam-power, is also at work at intervals. In the engraving machine sheets of almost any length can be dealt with; the sand-blast in it is directed from above upon the glass. In the perforating machine the blast is sent upwards by the action of a vacuum. In engraving, some beautifully delicate specimens, from lace, &c., are executed in the presence of the visitors. In the perforating machine, roses, stars, Maltese crosses, and a great variety of complex geometrical designs are cut out with the greatest rapidity and precision.

Next the sand-blast machine is the maccaroni-making machinery, which was put to work for the first time on Monday week. The attendants are picturesquely dressed in the Neapolitan costume, in which white and scarlet are the prevailing colours, the nether extremities of the workmen being encased in tight-fitting buff lacing boots, with patent leather tips. The mill in which the dough is worked is a ponderous machine, being a circular trough in which a heavy grinding stone attached to a vertical shaft, and itself placed vertically, revolves and works the moistened semolina into a thoroughly homogeneous plastic condition. The prepared dough is then pressed through tubes, and converted into pipes, after which it is dried and cut into any length that may be desired.

The machinery of the sugar bakers and boilers is now in active operation, some of the rotary and eccentric movements of the copper pans effected by very ingenious mechanical contrivances, producing motions admirably adapted for the purposes they are designed to serve. The same may be said in so far as the excellence and suitability of the machinery employed is concerned, of the exhibits of the manipulators of

chocolate, coffee, cocoa, and the makers of aërated and soda waters, and lemonade.

The machinery and apparatus for mustard-making of Messrs. J. & J. Colman, are now in full operation, and are, in the character of the workmanship and materials of the fittings, the ingenuity of the machinery, and the excellent taste displayed in the entire erection, highly creditable to the firm, who do not need to be referred to any Continental exhibitors as patterns of taste, but rather set an example to them. The mechanical appliances employed in the successive processes of bruising, pounding, sifting, &c., are well worth attention. The firm does not claim or exercise the right to sell goods in the building.

In Room I., west galleries, the most attractive objects are the marvellous Jacquard loom of Mr. T. Stevens, of Coventry, and his artistic productions, which are among the highest triumphs of textile art, and probably unequalled for the delicacy and perfection with which they are executed. We can conceive of collectors, bibliographers, or others, of future ages, glorying in the number and beauty of their specimens of this department of art manufacture. The great loom was employed, when we saw it at work, in the production of sashes, of rich and elaborate design, that required the use of no fewer than 16,000 cards!

Among the specialties in the present Exhibition, the cooking-stoves, and other culinary utensils, of which there is a large show and a great variety exhibited, are well worth careful inspection. Mr. Sidney Leoni, who makes an extensive display, publishes a very important letter, in *fac simile*, from Mr. Nixon, House Governor and Secretary of the London Hospital, who testifies that the saving from a year's working of Mr. Leoni's cooking arrangements at the hospital was 10,000 lb. of meat, and about 88,000 cubic feet of gas, together about 313*l.* 12*s.* This was in the first year of its use, in the second year, the 1872–73, the saving has amounted to 500*l.* Several practical demonstrations have been given of the capabilities of the family kitchener. In twenty minutes, and with a consumption of 12 ft. of gas, a breakfast was prepared for five adults and three children. It consisted of two pints of coffee, 1 pint of tea, ½ lb. of bacon, ½ lb. of oatmeal for porridge, and six rounds of toast. In one hour and a half, with an expenditure of 48 ft. of gas, a dinner was cooked for twelve adults and three children. It consisted of 6 lb. leg of mutton, 4 lb. sirloin of beef, 5 lb. potatoes, 6 large cauliflowers, and 2 large fruit-pies. To 100 ft. of ordinary gas, from 35 to 10 parts of air are added by the process: reflectors are also employed to take the utmost value out of the heat evolved. In the same class Messrs. Billings & Co., of Hatton-garden, have a variety of cleverly-contrived, well-made cooking stoves for roasting, baking, boiling, grilling, and toasting. From a stove, 36 in. by 18 in., with a hot-plate, 22 in. by 16 in., the following results have been obtained:—A joint weighing 9 lb., a large family pie, two ducks, two sorts of vegetables, fish and soup, have been cooked in two hours, with a consumption of 10 ft. of gas, costing from 1½d. to 2½d., according to the rate per 1,000. J. Wright, of Birmingham, also shows a number of excellent round and square gas-cooking stoves for use, with atmospheric gas and atmospheric burners. Mr. Wright has also numerous other useful contrivances for culinary operations of different kinds. Among other exhibits of stoves and ranges, is a very good display of handsome stoves, heated by coal or wood, by Messrs. Murdock & Co., of Cannon-street; the Treasure Range, by T. Constantine, of Kingsland, in which coal seems to be economised to an important extent; and Messrs. Bailey's, of Holborn, compact, cheap, and useful cottagers' stoves. Among the more imposing exhibits, in Room XXIII. well worth attention are,—the superior improved ranges of Brown & Green, of Bishopsgate-street; the cooking apparatus of Benham & Sons, of Wigmore-street; and of Edwards & Son, Great Marlborough-street; the Eclipse Range of T. Nock, Birmingham; the Devon Tor Range of J. W. Gray, Torquay; and the Worcester Range of Messrs. Jones & Rowe; with numerous others, of which limited space prevents mention.

If Room XXIII., with its appliances for cooking, marks, as it does, great progress, during the last quarter of a century, the evidence of progress in the East and West Quadrants is no less marked, and impresses the visitor with a sense of the magnitude and importance of new branches of industry that have sprung into existence during that period. In the West Quadrant, the Exhibition may be said to commence with Professor Frankland's valuable illustrations of the ingredients contained in water taken from various sources of supply, and his illustrations of adulterations of food, that are worth fuller comment than can now be devoted to them. The exhibits of preserved meats, fish, poultry, soup, fruits, vegetables, &c., are quite bewildering in number and variety. The number of exhibitors is also large, and, curiously it may seem, some of the largest exhibitors hail from Scotland, and even from as far north as Aberdeen.

Passing on to the Albert Hall, it will be found that, in the interesting display of steel and cutlery goods, that part of the Exhibition has been finished by the filling up of the cases and the wall-space appropriated to Mr. Wm. Mitchell, the eminent pen-maker of Birmingham and London. There the visitor is again reminded of a distinct and new industry that has sprung into existence in the lifetime of the present generation. Mr. Mitchell's exhibits show steel pens of numerous kinds in all stages of progress, from the crude steel to the polished, finished pen. The case containing examples of the various sorts of pens has about 100 varieties, varied alike in price, shape, and capability,—one or other fit, and more than fit, to execute any kind of calligraphy that was ever done by either the best-dressed and finest-pointed crow-quill or by the most flexible barrel ever taken from a swan's wing. The well-known Perry, and a firm from Boulogne, make also good displays of steel pens of various kinds.

In this room the trophy of the Husquarna Small Arms Manufacturing Company, Jonkoping, Sweden, is well worth attention, as an excellent piece of cabinet-work,—excellent alike in design, material, and workmanship. The collection of swords, as used in every branch of the service, of chain-armour, &c., by Messrs. Wilkinson & Son, of Pall-mall, commands attention, as do also the swords, lances, javelins, fencing-foils, &c., displayed by Messrs. Mole & Sons, of Birmingham.

In locks, keys, and safes, Chubb & Son are conspicuous for the exquisite beauty of the workmanship shown. Messrs. Hobbs, Hart, & Co. and Mr. S. Chatwood also make good displays of their work. Messrs. Spear & Jackman, of Sheffield, have a case and space so filled with saws, files, edged tools, agricultural, horticultural, engineers', smiths', and mining tools, as to gratify a degree of interest in their inspection far beyond what is likely to be awakened by the catalogue entry. Messrs. Unwin & Rodgers, of Sheffield, hold their own, which is saying a good deal, in the fine display they make of table cutlery, armour, dirks, and knives of all sorts. Messrs. Howell & Co., of Sheffield, show well in files, in "homogeneous" cast steel for boilers, tubes, circular cutters, &c. W. Gilpin, sen., & Co., of Cannock, Staffordshire, have an admirable display of beautifully-finished garden tools, choppers, augers, hatchets, axes, adzes, with other carpenters', shipwrights', masons', platelayers', and other tools. Although a prominent and excellent display, we do not find Messrs. Gilpin's exhibits entered in our edition of the official catalogue. Messrs. Pearce, and Messrs. Taylor, Brothers, of Sheffield, have each admirable displays of files, the latter firm showing saws also, and machine and other knives. Messrs. Stevenson, Mawhood, & Co., of Sheffield, are great in joiners' tools, in mortising irons, gouges, chisels, &c., with smiths' and other tools, very artistically prepared and arranged, and forming groups of really beautiful as well as useful objects.

Time would fail to tell of all the effective displays made in this department, chiefly by London, Sheffield, and Redditch firms. Kirby, Beard, & Co. show largely in fish-hooks, harpoons, and needles of various kinds, and some exquisitely beautiful needle-cases. W. Bartlett & Sons, of Redditch, show a great variety of hooks, harpoons, eel and trout spears, and needles, of almost all sorts. Thos. Newton, of Walsall, takes the lead in his display of bridle-bits, stirrups, bridoons, spurs, curbs, and what may be called equestrian cutlery, or metal furniture. Messrs. Mappin & Webb show a variety of good cutlery for domestic and private use; and Mr. J. Neal, of Edgware-road, makes an excellent display of table cutlery, spurs, &c.

Whatever may be asserted of other departments of the Exhibition of 1873, it may not be said with truth,—so we feel,—that the exhibition of steel and cutlery is a failure, or that the department is feebly or inadequately represented.

THE THEATRE IN THE ALEXANDRA PALACE.

The stage for dramatic and operatic performances, which is situated in the north-east transept, is of very large proportions. It is 60 ft. in depth, while its extreme width is 85 ft. The proscenium-opening is 36 ft. in width by 37 ft. in height.

Above the stage are the flies, consisting of two tiers, and above them again is the gridiron floor, from which are worked the various cloths, borders, gas-battens, &c., used in the different representations. The height from the stage-level to the gridiron-floor above is 77 ft., and the extreme height to roof 90 ft.

A spiral iron staircase, 5 ft. in diameter, communicates from scene-dock to upper flies, affording the quickest possible access to all the working machinery of stage and barrel-loft, as also for the development of large transformation and other scenic effects.

Beneath the stage is a large cellar, capable of receiving the heaviest set scenes that may be required. The depth is 22 ft., and, in connexion with the machinery for the requisite working of the stage, it may be noticed that for its safe working, and in order to prevent accidents by persons falling through the stage when the traps are opening, what is termed a "lock-iron," the invention of Mr. Walford Grieve, has for the first time been introduced. For this invention, and for some other contrivances in connexion with the same, Mr. Walford Grieve has obtained a patent.

Great care has been taken that the stage of this theatre should be unexceptionable. In order to arrive at this result, the machinery and appliances of theatres, not only in England, but on the Continent, have been studied and examined. The consequence is that there are many features in this part of the building which have not been seen before in this country, and the whole economy of the scenic art will here be carried out, it may be hoped, without that confusion, noise, and delay which so disfigure the drama, even in many of our principal theatres.

The dressing-rooms, wardrobe, lavatories, and other conveniences, are situated at the rear of the stage, from which they are divided by a partition wall and corridor extending across the entire width. They consist of basement, ground floor, and story above, approached by spacious staircases, the number and size of the apartments on each floor being uniform.

The front of the stage on each side of the proscenium has been handsomely decorated. Ornamental pilasters and mouldings, with carved capitals, from which spring an archway extending over the proscenium, and which is filled by a large painting executed by Mr. J. Absolon, of the Society of Painters in Water Colours. The designs for the modelled ornamentations and coloured decoration have been supplied by the architects of the Palace themselves.

The auditorium space in connexion with the theatre will be that portion of the main avenue immediately in front, with the south-east transept opposite, thus forming one huge parterre for spectators, with reserved stalls situated directly behind the orchestra, which is slightly sunk below the ground floor of the theatre, doing away with the usual obstructions to the view of the audience. The galleries immediately adjoining will also be thrown into the theatre. While the theatrical performances are taking place, the theatre will be screened off from the rest of the Palace, and during the afternoon performances it will be darkened by an ingenious contrivance, thus allowing the various scenes to have their full effect.

The whole of the drawings for the construction of the stage have been supplied by Messrs. Thomas Grieve & Son, and the works have been carried out under the personal superintendence of Mr. Walford Grieve. The theatre has been stocked with scenery quite sufficient for all general purposes, and which has been painted by Messrs. Grieve & Son.

The opening of the Palace is fixed for the 24th inst.

The Frescoes in the Royal Gallery. In answer to Viscount Hardinge, in the House of Lords, the Duke of St. Alban's said that a report on the state of the frescoes had not yet been received from Mr. Abel. That gentleman was testing Mr. Wright's process, which would necessarily take time. As soon as the report was received it would be laid before their lordships.

THE MIDLAND HOTEL, ST. PANCRAS.

THAT portion of the costly Gothic structure in the Euston-road known as the Midland Grand Hotel, which has been in course of erection for some years past, and which is from the designs of Sir Gilbert Scott, has been opened, as we have said, for business. The architectural character externally of this building is well known, and has already been described. It is the eastern portion only which was opened, but this alone contains between 250 and 300 apartments, including ladies' and gentlemen's coffee and reception rooms, dining-rooms, billiard and smoking rooms, and private sitting-rooms and bedrooms. The principal dining-rooms, coffee-rooms, and other public rooms will be in the western portion of the building, now in course of erection, and when this is completed this hotel will be one of the largest of its kind in the United Kingdom, and have accommodation for upwards of 800 visitors. The wisdom or otherwise of the expenditure incurred we will not now discuss. The interior of the structure partakes of the same strictly Gothic character which distinguishes the exterior. This is specially observable in the spacious corridors, upwards of 330 ft. in length, which run the whole length of the hotel on the several floors. These several corridors contain handsomely-sculptured arcades, with marble columns. The sides of the floors of the corridors are laid with encaustic tiles in rich and varied colours and patterns, and the ceiling of the first-floor corridor is richly decorated in panels on a pale blue ground in gold and varied colours. The whole of the interior is most elaborately and lavishly decorated, apparently without the slightest regard to cost. The spacious and massive staircases, of which there are three in number, are not the least striking in their structural arrangements as well as in their decorative and ornamental character. All these several staircases are painted and enriched. They are all open to the top of the building. A description of the principal circular staircase in the centre of the building will apply to the other two so far as regards both their structural features and ornamentation. The area of this staircase is 20 ft. by 15 ft., and on the first-floor landing there are two circular marble columns, with bold capitals, from which spring three massive arches in Portland stone, whilst on the floor above there are also open Gothic arches springing from blue and Devonshire marble columns, and in their general character being uniform with the columns on the first-floor landing. Around an ornamental lantern-light over the staircase at the top of the building there is a richly-painted and gilt ceiling, and in angular compartments, with the figures of griffins at each angle. The whole of the rooms, on the first-floor more especially, are luxuriously decorated and finished, but the principal state-room, as it is designated, otherwise the ladies' large coffee-room, must specially be noticed as the most gorgeous apartment in the entire building. This splendid apartment is divided in the centre by two ornamental metal and gilt arches springing from double marble columns, surmounted by richly-gilt capitals. On each side of the columns are Gothic canopies supporting allegorical painted figures, representing music, poetry, and the chase. The walls are decorated with dark green tapestry, with enrichments in gold and red diaper. The ceiling is divided into geometric combinations of a circular form, and the gilding and decorations are on a pale blue background. The ladies' small coffee room, or reception room, adjoining the last-named apartment, is also most luxuriously decorated, the walls being enriched with ornamental woodwork, gilt and relieved in varied colours. The ceiling is painted in arabesque, with figures representing the seasons. It is unnecessary to say more of the rest of the apartments in the hotel, than that they are all very highly decorated.

The contractors for the building are Messrs Jackson & Shaw; the decorations, of which we have spoken, have been executed by Mr. Frederick Sang. The cost of the building, when finished, is set down at something more than 300,000*l.* irrespective of the furnishing, which, it is said, will amount to about 100,000*l.* more. It is confidently stated, however, that practically the company will obtain a fair return on this large outlay by the rentals of vaults and other premises on the site originally purchased by them in Somers-town. This, however, is yet to be seen. It is understood that, in the first instance, they purchased the site and property at a comparatively low figure, a considerable portion of it consisting of back land and inferior street cottages; and that the new thoroughfares which they have constructed in the neighbourhood, and the large and spacious vaults under the whole of the station area which they have erected, have for some years been producing a very large annual rental, thus contributing towards the erection and completion of the building which has been inaugurated.

THE HOUSE OF THE LATE THOMAS HOPE.

A BRIEF forgetfulness led, in the article in our last number, on "The Marylebone Squares," to the error of reckoning Thomas Hope, the author of "Anastasius," among the celebrated inhabitants of Cavendish-square. The house (now divided) at the corner of that square and of Harley-street, occupied during the last century by the Princess Amelia, and in the present one by Mr. Watson Taylor and Marshal Beresford, was, during an intermediate period, the property of his kinsman, Mr. Henry Hope, also belonging to that branch of the Scotch family of Hope which settled at Amsterdam in the earlier part of the seventeenth century. Hence the mistake. Mr. Thomas Hope's own house, however, stood within a stone's throw. It was a large mansion, *entre cour et jardin*, facing Duchess, Mansfield, and Queen Anne streets, originally built during the last century on a fireproof plan by a Countess of Warwick. Afterwards it was enlarged with picture and sculpture galleries by Mr. Hope at the beginning of the present one, and by its contents became a veritable museum; while its fittings and furniture,—designed by its owner in the revived Classical style, of which he was then the devoted votary,—were the first formal protest in recent ages in favour of the application of art to domestic use. This mansion has long been replaced by small, common-place street-houses, and its memory chiefly survives in its proprietor's sumptuous folio on "Household Furniture and Internal Decoration," in which it is described and figured in illustration of the principles of industrial art.

THE GOVERNMENT AND IMPROVED DWELLINGS FOR THE INDUSTRIAL CLASSES.

THE adjourned discussion, before the Special Dwellings Committee of the Charity Organisation Society, of the resolutions proposed by Mr. Storr, with respect to the Government being called upon to undertake the erection of dwellings for the industrial classes, was resumed on Wednesday last, Lord Napier in the chair.*

The discussion was renewed by Dr. Liddell who stated in the outset that he could not agree with the resolutions of Mr. Storr. A Board of Commissioners, appointed as suggested by the resolutions, would not obtain the confidence of the ratepayers, and he was convinced that no Government whatever would undertake the formation of such a commission. He contended that the required work was altogether for local Boards and private and beneficent enterprise But he was of opinion that the Legislature might advantageously be called upon to bring into existence an additional sanitary power with reference to the demolition of uninhabitable houses. The several private associations had done much in the building of improved dwellings, but they had done nothing as regarded the removal of houses not fit to live in; and he held that the Legislature might fairly be asked to give further powers to local and other Boards for this purpose. With reference to the condemnation of uninhabitable dwellings, too much power was now centred in the hands of the medical officer of health of a district, who had a disinclination to condemn houses totally unfit for human habitation, for fear, on the one hand, of giving offence to the ratepayers, and, on the other, of coming into collision with the local Boards themselves, who in many cases placed themselves in opposition to the views of the medical officer. What was, therefore, wanted, was the constitution of a central Board of Health, whose aid should be called in in the cases of houses not fit to live in, and the rebuilding of better dwellings. It was true that we had already the Local Government Board and the Metropolitan Board of Works, but neither the one body nor the other had powers at present of dealing with the subject. His proposal was that the Metropolitan Board of Works should be armed with the same powers as to the demolition and reconstruction of dwellings as the guardians and local bodies, and that one or more medical officers of health should be appointed, who shall give their assistance to the existing medical officers, and that the medical officers to be so appointed should be constituted a court of appeal.

The Rev. Mr. Denton was opposed to Mr. Storr's motion, on the ground that it would lead the community to rely upon the Government rather than upon themselves. He attributed one of the evils under which the industrial classes in the metropolis were suffering to the demolition of their dwellings and overcrowding, to the evasion of a standing order of the House of Lords, that in all railway and other Bills of a like character, the promoters should state the exact number of houses and persons they intended to displace within a given area. The reason why so many of the poor had been removed and rendered houseless by public works within the metropolis, without the slightest compensation, was, that they had no rights in their holdings like leaseholders. It was worthy of remark that railway companies in the metropolis avoided, as a rule, going through the property of those who were entitled to compensation, and carried their lines, even by a circuitous route, through districts in which the poor resided, who were thus turned out without the slightest compensation. He strongly urged the importance of the standing orders of Parliament being complied with, and of railway companies being compelled, even at the threshold, to declare in all their Bills for new works, the number of houses which they proposed to remove, and the number of persons they intended to dispossess.

The Rev. R. J. Simpson was under the impression that in the face of existing evils as to housing the industrial classes, it was unwise any longer to leave the subject in the hands of local Boards and private associations, and that some such resolutions as those proposed by Mr. Storr, asking the Government to interpose, were highly desirable.

Dr. Greenhill suggested that Mr. Storr's object would be attained by the Legislature extending the borrowing powers of existing building associations, accompanied also by their being armed with compulsory powers to purchase and take down inferior property, and build new dwellings for the industrial classes. He moved an amendment to that effect.

Mr. Freeman, member of the Metropolitan Board of Works, forcibly urged the desirability of some great central authority being constituted in the metropolis for the carrying out of the required work. The Metropolitan Board of Works had not power to grapple with the evil. The Corporation of London ought to open its arms, and he saw no remedy but in legislative sanction being given to a comprehensive measure appointing a great central authority, with corporate and municipal powers over the entire metropolis. Liverpool, Manchester, Glasgow, and other great communities had already these powers, and he did not see why the metropolis should not have them also.

After some further discussion the chairman said he was strongly in favour of Mr. Storr's resolutions, that the Government should be called upon to take action; for the evil, which had been clearly laid before them, was beyond the power of local bodies or private efforts to remedy. There could be no doubt that some such great central municipality as suggested by Mr. Freeman was desirable; but what security had they that such a central metropolitan municipality would obtain Parliamentary sanction within a reasonable period? And in the mean time immediate action and some temporary measure were necessary, and he looked upon the Government appointment of Commissioners, as proposed by Mr. Storr, to be highly desirable.

Mr. Kaye Shuttleworth, M.P., was strongly opposed to Mr. Storr's resolutions, which he was sure Parliament would never sanction, and he (Mr. Shuttleworth), as a member of Parliament, would never vote for any such measure as the resolutions indicated. It had been suggested that the Government were not prepared to deal with the reform of the municipality of the metropolis; but he had only to refer them to the speech of Mr. Gladstone the night previously

* The resolutions, together with the discussion upon them, appeared in the *Builder* of Saturday last.

to show them that the Government were prepared to deal with this great London question, and he advised the committee, before coming to a decision on the resolutions, to defer it until a deputation which was about to wait upon Mr. Bruce on the question of a reform in the municipality, on Saturday, had heard the Home Secretary's statement.

A conversation of some length followed, and ultimately Mr. Storr consented to adjourn the discussion of his resolutions, as suggested by Mr. Kaye Shuttleworth; and in compliance with a request from the committee, the Chairman consented to accompany the deputation to the Home Secretary on Saturday (this day), and communicate to Mr. Bruce what had taken place before the committee during the discussion of this question.

Before the meeting broke up, the following resolution, moved by Mr. Bosanquet, and seconded by Mr. Storr, was unanimously carried:—"That it is desirable, in the interests of the labouring classes, that extensive improvements, such as have been carried out in other cities under local improvement Acts, should be made in London."

SCHOOL BOARDS.

Driffield.—Mr. Henry Adamson, the clerk of the works at the new schools, attended, and reported that the contractor for the bricklayer's work was not doing his work satisfactorily. He was not building the corners and angles solid, according to the specifications, but was leaving them hollow. He had remonstrated, but to no effect. This had been going on for three weeks. He stated that Mr. Gage, the bricklayer, said he had been told by Mr. Crouch, an architect, that if he left the angles hollow the Educational Board would not find fault. He had deferred communicating with the architect in order to save expense. The chairman advised him to communicate with the architect immediately, and lay a full statement of the case before him.

Leeds.—The new schools which the Board propose to build on Saville-green, and the plans for which were approved, will comprise two departments, viz., one for boys and girls (mixed), and the other for infants. The entire accommodation will be for 469 children. The plan is in the form of the letter L, with principal infants' school-room, 50 ft. by 26 ft., and three class-rooms, fitted up with galleries and desks; and boys and girls' school, 50 ft. by 30 ft., and three class-rooms. Separate entrances will be provided for boys, girls, and infants, and each entrance will be fitted up with lavatories. Each department will have a covered playground, with out-offices, the latter being fitted up with Moule's patent earth-closets. There will also be large playgrounds at the front, and at the back will be yards. The building material will be red brick, with stone dressings and moulded brick strings and labels. The several gables and tympana arches will be filled in with patent brickwork. The roofs will have framed principals, with curbed braces and hammer-beams ceiled on the upper side of the collar, and covered externally with dark Westmoreland slates. The building will be lighted with sash-windows, filled in with Hartley's fluted plate glass. The walls around the schools and class-rooms will be boarded to a height of 4 ft. 6 in., and will have a moulded top-rail. Ventilation will be secured by means of flues running up alongside the smoke-flues in the chimney-shafts. There will also be air-trunks running transversely across the several rooms, with valved openings, and communicating externally by means of gablets, filled in with louvre boarding. The whole of the site will be enclosed in boundary-walls and palisading, with entrance-gates to each department. The plans are by Mr. Adams (of Messrs. Adams & Kelly's), architect to the Board.

Leicester.—The clerk said he had received the specifications for the Elbow-lane Schools from Mr. Tait, and he wished the Board to give him authority to advertise for tenders.—Mr. Barrs moved that the matter stand over for the present, on these grounds, that the Board had not taken any steps to fill the present schools. There evidently required a school for the North Bridge District, but as to the school in Elbow-lane, he had a doubt as to its ever being filled at all.—The chairman observed that in looking over the *School Board Chronicle* he found, to his surprise, that the schools which the London School Board were building did not exceed in cost those which were being built in Leicester. They seemed to run parallel, or, if anything, a trifle lower, and he was astonished that such should be the case. If in London they could build at the same cost as they were doing in Leicester, he thought that Leicester ought to be somewhat lower. He did not think it was the fault of the builders, but it was possible that their designs might require a little closer looking into.—Mr. Barrs said the secret of the matter was this,—the specifications were laid on the table, and not gone into before the committee at all. In the present instance, there were twenty pages of matter, and they slipped through them in ten minutes.—The Rev. A. A. Isaacs said the whole matter had been before the architects' committee, and fully gone into.—The motion was then put and carried.

FALL OF A FACTORY CHIMNEY IN OLDHAM.

AN accident, unfortunately attended with loss of life, has occurred at the new works of Messrs. Abraham Stott & Son, Osborn Mills, off Featherstall-road, Oldham. In connexion with this mill a large chimney 165 ft. high had been built, but it was found necessary to straighten the pile, which leaned considerably over on one side. The owners therefore entered into a contract with two brothers named Gradwell, who were chimney-builders living at Newton Heath, to "saw" the chimney. Mr. Stott, on observing the two men at work, saw that, instead of merely sawing out some of the mortar, a whole course of bricks had been taken out, and one of the men was on a scaffold about a third of the distance from the ground engaged in this work. The owner at once remonstrated with the other man, but he declared the one plan to be as safe as the other, and took Mr. Stott to a rising ground to observe the safety, when, as if in ridicule of his assertion, the whole chimney toppled bodily over, except about 30 ft. at the base, and the poor fellow on the scaffold was buried under thousands of bricks. Adjacent to the chimney was the boiler-house, a large new building, and a portion of the bricks falling on this, it is now a complete wreck. It was some time before the workman's body was recovered. The chimney was a "cavity" chimney, and was seven bricks thick at the bottom. The cavity was thirty yards high and a yard in thickness. The chimney was 16 ft. in diameter at the base and 7 ft. 6 in. at the top.

An inquest was held, and, according to the evidence adduced, the deceased and his brother had persisted in doing the work by cutting a hole in the side of the chimney, where the bend was most marked, and removing a layer of bricks on the highest side, temporarily supplying its place with a series of wedges of wood and iron. In this way they had sapped the whole of the upper two-thirds of the erection. Mr. E. Whittaker, a builder and contractor of great experience, gave it as his opinion that the chimney was built on sound principles but in a faulty manner. The material, too, was decidedly inferior, the bricks being many of them soft and the mortar improperly mixed, consisting too largely of sand. The fall of the chimney he attributed solely to the conduct of the men themselves in cutting so large an aperture through the brickwork, and removing a course of bricks, perfectly needlessly.

After hearing this evidence, the jury intimated that they were satisfied, and returned a verdict that the "Deceased was accidentally killed by the fall of a mill chimney."

A NEW CHURCH AT LORDSHIP LANE, DULWICH.

ON Thursday, 1st inst., the memorial-stone of a large and handsome new church now in course of erection in Lordship-lane, Dulwich, was laid, with much ceremony, by Mr. Richard Thornton, of Sydenham-hill, in the presence of a very numerous body of spectators. Mr. C. Barry is the architect for the building, which, in its architectural features, is Gothic. The materials used in the erection of the edifice are, externally, white patent brick, with Kentish rag stone for facings and dressings, the walls of the interior being faced with ornamental and varied coloured bricks, arranged in different patterns. The church, when completed, will consist of a chancel, organ-chamber, and vestries, together with nave and aisles, with a tower and spire 172 ft. in height. The church will have an open roof, the interior being of pine, stained and varnished, and the exterior of ornamental coloured slate. There will be prominent columns in the chancel, consisting of rouge royal marble, whilst the walls of the nave and other parts of the interior will be ornamented with Pither's patent bricks. The seats (which are to be open), stalls, and general interior fittings are intended to be in harmony with the architectural character of the building, and there is also to be an elaborately-carved pulpit in Caen stone, ornamented by marble columns and capitals. The total length of the church, when finished, will be 120 ft., but it is not intended to complete the whole at once, the present contract comprising the erection of the chancel, organ-chamber, portion of the tower, and the principal part of the nave, and the west end will be temporarily closed by brickwork. The builders are Messrs. Downs, of Union-street, Borough, and the amount of their present contract is 7,800*l.*

At the close of the ceremony, Mr. Thornton, who had laid the memorial-stone, and who takes a deep interest in the building, gave a banquet at his residence, the Hoo, Sydenham-hill, the company numbering upwards of 200. Mr. Barry, the architect, was amongst the guests on the occasion, and, referring to the pulpit, stated that he should be disappointed if the church were not provided with a handsome one. The cost of such a pulpit as he contemplated would be about 60*l.*, half of which sum he would give himself, provided a gentleman could be found to give the other half. Upon this, Mr. Crocker, a gentleman present, signified his intention of sharing the cost of the pulpit with Mr. Barry. During the festive proceedings, a contribution of a thousand guineas was announced from Mr. and Mrs. Thornton, and the amount towards the object subscribed during the day was 1,500*l.*

A DESERVED TESTIMONIAL.

MR. MARSHALL FOWLER, who will in a few days complete his eighty-fourth year, has been an active magistrate for the North Riding of the county of York for forty-five years, and chairman of the petty sessions of that district since its formation. He has been a magistrate of the county of Durham, and chairman of the Stockton bench for thirty-five years. He has been chairman of the Board of guardians of the Stockton Union, including the large town of Middlesbrough, for thirty-five years. He has been Admiralty Commissioner of the river Tees since it was formed. He has been an acting trustee of the Stockton Savings Bank for fifty years, and chairman for the last twenty years. He has presided over various other Boards and trusts with the utmost regularity, and given his gratuitous services and benevolence to every local institution for the public good, and has been the unwavering friend and unvarying counsellor of rich and poor over three-score years past. He has fought a hard fight against the causes of disease, crime, and intemperance. His purse, like his breast, has been open to the calls of distress, and he has blushed to hear his good deeds recognised.

The time has now come for his northern friends and admirers to perform an act that might more properly have been relegated to the Crown, and before this good old English squire is gathered to his forefathers the Durham and Yorkshiremen, rich and poor, have determined to recognise the merits of their friend by a public testimonial, and Marshall Fowler has agreed to it, on condition that the subscriptions shall be devoted to the building of a wing of the new Stockton Hospital. The Marquis of Londonderry and Mr. Farres have each put down 100 guineas, and large sums are being added daily. The miners, tradesmen, and artizans will supplement the testimonial offering, so that this good old English gentleman's wish to add a wing to the hospital shall be carried out in his lifetime.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, May 5th, a paper was read by Mr. W. Hope, entitled "Sewage Farming." A discussion ensued upon Mr. Hope's paper, and upon that read by Mr. Menzies at the last meeting, entitled "Arterial Drainage Works, Water Supply, and Sewage Drainage Works executed at Windsor." After a long debate, the discussion was adjourned to the next meeting. A vote of thanks was unanimously given to Mr. Hope for his paper.

THE PRESENT POSITION OF GOTHIC ARCHITECTURE.*

IT must be a matter of a very considerable difficulty for those engaged in a combat to form a clear perception of what its ultimate issue will be. The circumstances of the case, the din and excitement of the battle, are altogether opposed to any calm and collected exercise of the judgment. In like manner it is difficult for architects practising at the present day, amid the confusion caused by many rival styles and schools, to predict with any degree of certainty which of the antagonists will come off victorious in the strife.

It is one thing to assert that the particular style of our adoption is sure to become the architecture of the future: it is quite another to stand aside from the throng and then calmly and dispassionately mark the course of each of the various streams of thought that are flowing past us, to estimate accurately the relative strength of each so as to arrive at a sound judgment as to which is destined to become the main river, absorbing the rest, and making their waters contribute to swell its own mighty current. This is no easy thing to accomplish; but it behoves us now and then to make the attempt, so that we may ascertain whether we are pursuing the true path of progress.

After describing the principal circumstances which have been the means of moulding a revived architecture, and of bringing it to its present state of development, the writer continued,—

Other minor causes have been at work, but I am compelled to leave them unnoticed, and to turn to the more immediate consideration of our subject. The important question will here naturally suggest itself: has our revived Gothic realised in any great degree the high hopes and bright anticipations which in its earlier days were formed of it? Is it in a fair way of becoming in due time our national architecture of the future, a fit exponent of the expansive culture of this nineteenth century? This is the great question, but it is one which there appears to me to be much difficulty in answering decisively.

There can be no doubt but that the confluent streams which have joined the main river of our English Gothic, have materially deflected its original current, and given to it a direction which its earlist advocates neither intended nor foresaw. It is by no means certain, however, that this strange mixture of styles is a necessarily evil thing for the future of our art. Many noble lessons, and many fresh and exquisite combinations of form may be drawn from the magnificent examples of Pointed architecture with which most portions of the Continent abound. It would be folly to reject these, and to confine our studies to our own insular type of Gothic. Such a course, even if practicable, would prove fatal by its exclusiveness.

But if the prevailing system of eclecticism in architecture has its uses, it has also its abuses, and it must be confessed that the latter are making themselves very apparent just now. The frequent and capricious changes which have characterised Gothic work of late years do not augur well for its future supremacy. We see on all sides a restless craving for novelty and sensation. New phases appear quickly upon the scene, live their little day, and are then cast aside for no better reason, apparently, than to make room for something more fresh and striking.

Our very advantages are apt to become a snare to us. Modern science has placed the art-treasures of the world before us, and, like children, we turn from one beautiful plaything to another, unable to be content with either.

The fact is, as it appears to me, architecture is in great danger of becoming merely a thing of fashion and caprice, much in the same way as millinery is. Unfortunately, the results are widely different. Our creations will survive the transient fashion of the day, and will, if designed upon no higher principles, remain only as monuments of the rage or folly which happened to obtain at some particular date. If our architecture aspires to something more noble than this, it must rest on a more enduring foundation. It must be founded on, and must express in its features, the immutable principles of truth, fitness, and beauty, if it is ever to become a living art to us in the same deep sense that both Greek and Mediæval art were to their founders.

* From a paper read by Mr. W. M. Mitchell, at a meeting of the Architectural Association of Ireland, April 24th, 1873.

PAINTERS IN WATER COLOURS.

CONTINUING our notice of works exhibited by the two societies, we would add to our observations in the Old Gallery that Mr. F. Walker contributes a very choice little study of what must be a choice nook in "The Village" (230). It is so exquisitely done that, small as it is, it conveys a notion of space and reality that many a larger drawing fails to give. Space and real appearances are the leading characteristics of Mr. J. W. Whittaker's magnificent drawing, "A Misty Morning among the Welsh Mountains" (6), and of Mr. Thomas Danby's equally fine and clearer view of "Merionethshire" (127). The poetry of closing evening effect gives the chief charm to Mr. A. W. Hunt's principal landscape, the title "Working Late," applying to carting hay (120); but the mastery of the effect of soft shadows from the high hills that submerge and half-hide, betokens that Mr. Hunt must have worked early *and* late in his observation of nature to become so able to express his knowledge. It would require a knowledge, indeed, nearly equal to that exhibited in their production to expatiate on the merits of the many superlative specimens that this collection numbers in the landscape portion of it.

To change ground here, it must be allowed that if not so strong as the senior society in making land, sea, and sky; mountain, plain, and dell show some of their natural aspects within doors, the Institute of Painters in Water Colours nevertheless includes some superlative practisers of the art.

Perhaps it is to celebrate his inauguration as President of the Institute of Painters in Water-Colours that Mr. Louis Haghe makes an extra display,—eight drawings, and all of size and importance. Interiors of "St. Mark's, Venice" (43), of "St. Bavon's [misprinted in catalogue], Ghent" (89), showing a tomb; of "St. Peter's, Rome" (166), the transept; and some of his well-accoutred, real-looking soldiers and citizens, in "A Flemish Cabaret" (126), or shooting at butts, "Cross-bow Practice" (215), are of the best. No one can beat Mr. E. H. Courbould at stippling; applied to flesh-painting it is really marvellous. The precision and pink purity with which features, fingers, and so on, are made out, the rich spread of splendour that purple and gold colour for the substantial part of it, and cerulean and crimson and emerald for what is supposed to be visionary, invest this version of "Enid's Dream" (86) with a share of the very best peculiarities of a style that, in spite of some extravagance, does not appear to be easily imitated. A fusion of the manners that mark Mr. Jozef Israel's somewhat slight though heavy method of colouring such subjects as a Dutch frau, with no pretension to any good looks beyond what light and shade would give to the ugliest; and the interesting anticipation suggested in its title, "Preparations for the Future" (196), would help; and the brilliantly bright prettiness that permeates everything belonging to or surrounding "La Jolie Bretonne" (by Mr. F. Goodall, R.A.), would seem to be perfectly impossible; and yet how desirable would it be if such demarcation were not so absolute. Mr. H. Carter's study, "Contemplation" (32), and again, "On the Sands, Scheveningen" (76), have much in common with Mr. Israel's works.

Mr. J. D. Linton's row of mendicants undergoing the "Maundy Thursday's" proceedings, already alluded to, gives a series of physiognomies that he must have searched for in many a casual ward; each is a distinct and marvellously well-defined character: the lady—queen, duchess, or dame of other high degree,—affords very strong contrast, by her loveliness and magnificent attire, to the sorry, sordid group her husband is tending. There is a beautiful tone pervading this composition which subdues, without affecting, too much the richness of colour that quaint Mediæval costume, cloth of gold, jewels, damasks, &c., offers employment of. It is a very exceptional production, and will keep Mr. Linton's name in memory until one surpassing it shall take its place.

In "Norse Pirates in the Mediterranean," revelling after a victory that has brought rare spoil to compensate slight wounds, one of the leaders is having his arm dressed by an old woman, whilst his Thais lolls amongst valuable trophies of the robbers' success, admiring the glittering splendour of a bracelet, part of her share in it. Another female is stretching forward to regain a scarf displaced by the wind; and these, with the figure at the tiller, putting out all his strength to alter the vessel's course, are the chief components of a very attractive and original picture, by Mr. E. J. Gregory (52), with beautiful colour and finish to lend interest and probability to romantic circumstances. It is rather puzzling to make out the size and shape of the boat, and where they could stow the women in case of a scrimmage, nevertheless.

Mr. Andrew C. Gow could scarcely carry elaborate finish further than in "The Laboratory" (237). The experimentalist in Vandyck dress stands the general minute completeness of every item surrounding him, without losing a tithe of his proper significance. The drawing of the head, hands,—in fact, of all,—is so good, so thorough, that by natural result the man is quite the chief object, where every other object is as clearly visible. A larger work, introducing six or eight figures, in last-century dresses and habits, a soldier son or nephew relating his experiences of battle to his wondering friends, is just as remarkable, or more remarkable, for the manipulative skill exhibited. "The Attack Described" (62), with wine-grouts spilt on the polished surface of the table, and broken tobacco-pipes and paper matches to map out forts and advancing brigades, is a well-lighted and nowhere-slighted picture.

Mr. C. Green's workmanship is always very careful and effective. The quiet, unassuming presentation of a seated female figure, bringing back the fashion-book idea of "Ninety Years ago" (188), is very agreeable, and very dexterously done. There is more evidence of his cleverness in apprehending character with as much of the nice method of delineating ordinary incidents that adds extraordinary interest in "A Deputation," perhaps to resent co-operative movement. A string of busybodies is about to be ushered into the presence of a bothered authority, and the variously-expressed importance of each member of it, so far as each member's opinion of himself goes, provides ample room for capital depiction of individuality (257). "Facing the Storm" (10), is a Swiss mother, with her child at her back, in a creel, clinging to the rocks, in spite of the wind, by Mr. J. Absolon. Mr. Absolon's pleasant little personages, of an orange and pink complexion, that makes them so easy of recognition and of welcome appearance when interspersed for a difference from weightier things, are of frequent occurrence on this occasion, *vide* "Italy" (19), "Going to Bed" (29), "A Waif" (68), one of the best, and "Morning" (236), for instances; and Mr. J. H. Mole's natural transcripts of country and coast scenery, with pretty peasant children for habitants, are as numerous and nice as ever. Mr. Hubert Herkomer's peasants are unlike these, as far apart as miles and miles can leave nationalities to be unlike. The poor old country folk at their scant meal, "Abendbrod" (233), or such as are the customers of "An Alpine Cheesemonger" (252), however powerfully and well sketched, cannot count prettiness amongst their attractions.

"A Wallachian Girl" (23), by Mr. A. Bouvier; "A Wounded Comrade" — cavalier soldiers rescuing the drummer-boy (78), by Mr. C. Cattermole; "The Convalescent" (82), unnecessarily more ill-looking than ill-favoured, by Mr. H. B. Roberts: "Washing Casks at St. Malo," by Mr. R. Beavis (99); "Italian Shepherd Boy" (160), and "Vesper Bells" (204), by Mr. Guido Bach; and "Joan of Arc at her Trial," a life-size study very powerfully coloured, by Mr. J. M. Jopling, indicate the variety that exists here.

Mr. Carl Werner sends two of his interesting studies of Eastern fact (34 and 72); and of Mr. C. Vacher's drawings, the most imposing is "The City of Tombs, Desert, South of Cairo" (143), with the Pyramids of Memphis in the distance. Mr. H. G. Hine has painted the sea with a gradation of beautiful tints that look very exactly copied. "Durlstone Head, Dorset" (18), is one of his best examples. Mr. W. L. Leitch is seen to great advantage in his noble drawing "Ben-y-Gloe—Early Morning" (56), and Mr. E. Warren in "Epping Forest," with big beech-trees casting dark shadows on ferny ground (66).

Mr. J. Mogford, Mr. J. Orrock, Mr. P. Mitchell, Mr. Harry Johnson, Mr. J. G. Philp, and Mr. J. C. Reed, are now amongst the best-known members of the Institute who paint landscape, and, like the older helpers, Messrs. McKewan, Fahey, D'Egville, Telbin, Rowbotham, and Whymper, do much to maintain its reputation for excellence in this department.

St. Gabriel's Church, Hanley Castle.—The tiles used in this church were manufactured and supplied by Messrs. Minton, Hollins, & Co.

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PRIVATE GAS-MAKING.

Numerous inventions have been patented, if not perfected, to enable consumers of artificial light to produce their own supply, independently of gas companies; but, for one reason or another, these projects do not seem to have ever made much way with the public, or to have got extensively into use. Another of these sets of apparatus has been fitted up since the opening, in a space adjoining Room XXVI., Western Galleries, of the International Exhibition at South Kensington, that is well worth attention. It is a portable apparatus for making gas in connexion with an ordinary kitchen-range.

The essential feature of this gas-making apparatus is the utilisation of the raw material in gas that, under the ordinary system, is now wasted by passing up the chimney; it is, in fact, an instrumentality for the consumption, or rather the conversion, of smoke, from a noxious and offensive, into a useful agent. The dense columns of smoke that ascend from the funnels of steamers, from the chimneys of factories, and from new-laid household fires, are so much wasted carbonaceous matter. The principle of Mr. Fearnley's invention is to seize this matter and to convert it into gas, fit for either illuminating, cooking, or heating purposes. This is accomplished by first baking the coal in a retort placed over the open fire, which is supplied with fuel by the coke from the retort.

It is stated by the inventors, Messrs. G. B. Fearnley & Son, of West Brompton, that the apparatus may be constructed with range, oven, boiler, &c., or may be adapted to an ordinary kitchen-range. It can be made quite portable, constructed of wrought and cast iron, or may be permanently set in brickwork. The retort and purifier are of a novel shape and arrangement, and such, it is stated, as to generate the gas quickly, and to purify it thoroughly. The retort-door is made secure by screwing up without luting or packing. The space available for cooking purposes is not impaired by the gas-making apparatus. The range has an oven at one end and a boiler at the other. Over the oven there is a hot-air chamber, into which the fire can be passed by an arrangement of the dampers. Saucepans may, of course, be placed on the hot plate over this chamber, and the flat top of the retort may be applied to the same uses. Uncomfortably high temperature in the kitchen we should suspect as a possible result from the use of the apparatus. It is stated that any domestic servant may manage it without interfering with ordinary duties; that the apparatus emits no smell; and that the safety-valves provided render accident impossible. It is further stated that, at a small extra cost, an addition may be made to the apparatus by which a stream of pure heated air may be sent, by simply turning a tap, into any room of the building in which it is fitted up, and the temperature regulated, without fires or hot-water apparatus, to any degree desired. For greenhouses and conservatories this use of the apparatus would seem to be peculiarly well adapted. It may also be applied to the distillation of water by self-acting apparatus.

In the exhibit that Messrs. Fearnley show at South Kensington, the gas generated in the retort over the fire of a kitchen-range is passed along to the condenser, in line with the range; it descends through that to the gauge-tap beneath, where the tar is deposited; thence the gas passes upwards through the purifier, from which it is carried to the gasholder in the rear. The apparatus is stated to be capable of producing a sufficient quantity of nineteen-candle gas daily, to supply ten lights for six hours. The cost of the gas, if the apparatus is fitted to a kitchen-range, is stated to be *threepence* per 1,000 cubic feet; when constructed for the manufacture of gas alone, without range, &c., the cost of the apparatus will be less, but the cost of the gas produced will be 2s. 2d. per 1,000 cubic feet.

We do not insinuate that the inventors "protest too much," but venture to think their apparatus well worth the inspection and scrutiny they challenge.

Increase of Surveyor's Salary.—The salary of the surveyor of Clerkenwell was increased from 300*l.* to 350*l.* per annum at the last meeting of the vestry. Some objection was offered to the proposal on the ground that the surveyor, when he applied for the previous rise, promised never to apply again, but the opposition was defeated.

THE LATE MR. S. S. TEULON, ARCHITECT.

Mr. Samuel Sanders Teulon, whose death we regretfully mentioned in our last, was the eldest son of Mr. Samuel Teulon, of Greenwich, where he was born on March 2nd, 1812. He was of French descent, an ancestor of the family having settled in England after the revocation of the Edict of Nantes, which drove so many of the Huguenots out of France. Mr. Teulon was articled to Mr. George Legg, and afterwards was for some time in the office of Mr. George Porter, of Bermondsey. About the year 1840 Mr. Teulon received the first premium in a competition for some almshouses for the Worshipful Company of Dyers, which were afterwards erected under his superintendence, and from this time may be dated the commencement of the large and important practice which he rapidly obtained. Among the new churches built by him may be mentioned those at Battle (Netherfield), Sussex; Berwick, Cambridgeshire; Birch, Essex; Birmingham (Edgbaston and Ladywood); Burringham, Lincolnshire; Croydon (Christ Church), for Archbishop Sumner; Fosbury, Wilts; for Mr. R. C. L. Bevan, Hastings (Holy Trinity); Lincoln (St. Michael's on the Mount); Riseholme, near Lincoln, for Bishop Kaye; Sutton (Benhilton), Surrey; Watford (St. Andrew's); Wells, Somerset (St. Thomas's), for Mrs. Jenkyns, as a memorial of her husband, Dean Jenkyns; Woodchester and Uley Churches, Gloucestershire; and in and near London,—St. Paul's and St. Stephen's, Bermondsey; St. Andrew's and St. Thomas's, Lambeth; St. Mark's, North Woolwich; St. Paul's and St. Peter's, Greenwich; St. Thomas's, Camden-town; St. Paul's, Hampstead, and St. Stephen's, but just completed, close to his own residence at Hampstead.

Amongst many church restorations, the most important have been Horsham, Sussex; St. James's, Colchester; Littleport, near Ely; South Weald, Essex; and Sandringham, Norfolk. Of churches of comparatively modern date which have been re-cast by Mr. Teulon, in which he was particularly successful, we may mention Holy Trinity, Leicester; the parish churches of Windsor; Sunbury and Ealing, Middlesex; St. George the Martyr, Queen-square; St. Andrew's, Holborn; and St. Mark's, Kennington, the last only formally re-opened a week before his death.

The mansion at Tortworth Court, Gloucestershire, for the late Earl of Ducie, was one of Mr. Teulon's largest domestic buildings, erected about 1850-52; and more recently Bestwood, Nottingham, was erected from his designs, for the Duke of St. Alban's. He also made very extensive alterations and additions at Shadwell Court, Norfolk, for Sir R. Jacob Buxton, bart.; at Elvetham, Hants, and at Perry Hall, Staffordshire, for the late Lord Calthorpe; and at Woodlands, Ryde, Isle of Wight, for his son, Col. the Hon. Somerset J. G. Calthorpe.

Mr. Teulon carried out various farm buildings, cottages, and other works, under the direction of the Office of Woods on her Majesty's Sunk Island and Windsor Park Estates, and has built many schools and parsonage-houses in almost all parts of England. He was an early member of the Royal Institute of British Architects, of which he had been a Fellow for more than a quarter of a century, and had served on the council for four years. His health had been for some time failing, and for the last three months there had been no hope of his recovery. His death occurred at his residence, Tensleys, Hampstead, on the 2nd inst., at the comparatively early age of sixty-one years and two months. He was buried on Tuesday, the 6th inst., at Highgate Cemetery, the first part of the funeral service having been said in his own remarkable church,—St. Stephen's, Hampstead.

Illustrations of several of his works will be found in our volumes.

British Department of the Vienna Exhibition.—The Prince of Wales, Prince Arthur, and the Crown Prince of Denmark attended the celebration by the English workmen held in honour of the completion of the British Department of the Exhibition. The Prince of Wales, in replying to a toast, especially dwelt upon the good conduct and sense of order displayed by the English workmen, and thanked Mr. Owen for the care he had exhibited on their behalf. The expense of the entertainment was borne by the Prince.

THE NEW BUILDINGS ON THE HOLBORN VIADUCT.

The vacant land on the north and south sides of the Holborn Viaduct will shortly be covered with several new buildings of an imposing character, and a number of these are now actively in progress. The new station and hotel on the south side of the viaduct, for the London, Chatham, and Dover Railway Company, has been commenced, and at the east end near the Old Bailey, the elevation has already been carried up to the first floor. When completed, it will be one of the largest railway hotels in London. The Viaduct elevation will be 85 ft. in height, while pavilion towers at each end will be carried to a height of 110 ft. above the street level. The extreme length of the viaduct frontage from east to west will be 240 ft.

Amongst other structures in progress one of the most prominent and extensive is the large block on the north side, nearly opposite to the railway station and hotel, which has for some time been in course of erection for Messrs. Jenks, Holt, & Co., cabinet makers and upholsterers, and which has this week been covered in. This building, which has three frontages, occupies an area of nearly 10,000 ft., or about a quarter of an acre in extent. The viaduct elevation is 55 ft. in length, the west frontage, which runs immediately parallel with the London, Chatham, and Dover, and Metropolitan Railways, is 133 ft. in length, whilst there is another frontage to Snow-hill 110 ft. in length. Architecturally the principal elevation is that facing the viaduct, which is 65 ft. in height to the top of the dormers. The frontage from the ground-floor to the first-story windows is of Portland stone, on polished granite bases. Immediately above the ground-floor is a massive carved cornice, and at the east end is the principal entrance to the offices. On each side of the entrance there are broad fluted pilasters, and the key-stone of the circular-headed doorway consists of a colossal sculptured figure-head. There are also double pilasters at the south-west angle of the ground-floor uniform with those at the south-east angle. There are eight double windows with circular heads in the first floor, with panels in Portland stone between them, ornamental iron columns dividing each window. The second-story windows vary from those in the first story, having quadrant corners instead of being circular-headed, but are otherwise uniform with the story below, having double pilasters between each window, and also ornamental iron columns. The third-story windows are uniform with those in the second. Immediately over the third story there is a cornice supported by trusses, and above these are lofty dormers carried into a mansard roof. The elevation from the first story to the top of the building is of white Suffolk brick with Portland stone facings and dressings. The west frontage, running parallel with the railway from the Viaduct to Snow-hill, though not so imposing as the Viaduct elevation, is nevertheless a prominent feature in the structure. Large windows for the display of articles are carried along the ground-floor, whilst in the several stories above there are eight clustered windows in the centre, and four windows of a similar character on each side. The ground-floor of the Snow-hill frontage consists of five lofty divisions, intended for shops or warehouses, whilst the three several stories above each contain twenty continuous circular-headed windows. A considerable portion of the building will be occupied by Messrs. Jenks & Co. as their show-rooms and workshops, whilst the rest of the premises are intended to be let as offices, &c. Messrs. Tress & Innes, of Queen-street, Cheapside, are the architects; and Mr. Edward Conder, of Kingsland-road, is the contractor.

Considerable progress has been made with the foundations of the new City Temple, which is in course of erection on the south side of the Viaduct, adjoining St. Andrew's Church. This edifice will have a frontage to the Viaduct 75 ft. wide, and will extend 150 ft. southward in depth. The foundation walls are between 3 ft. and 4 ft. in thickness, and are nearly 40 ft. below the level of the Viaduct. They are now nearly completed, and ready to receive the superstructure. The edifice will have a tower rising to a height of 130 ft. above the level of the Viaduct. We understand that the foundation-stone of the building is to be laid on the 19th of May. The estimated cost of the building is about 30,000*l.*

There is also another block of buildings at the corner of Snow-hill, adjoining St. Sepulchre's Church, in a forward state, and preparations are being made for the erection of the buildings on both sides of the Viaduct.





THE LITTLE SEMINARY, PADERBORN, WESTPHALIA.—Herr Guldenpfennig, Architect.

SEMINARY AT PADERBORN.

We have on several occasions called the attention of our readers to the works now being carried out in Westphalia from the designs of Mr. Guldenpfennig, of Paderborn. To those we have already illustrated we now add another. The subject of our illustration is the "little seminary," or preparatory theological school, erected some six or seven years ago in Paderborn. In this building Mr. Guldenpfennig has closely adhered to the old traditional domestic architecture of the neighbourhood. As will be seen from our illustration, this school is built in a very simple but picturesque and effective style. It is chiefly of rough stone, and the roof, which is broken up with many dormer windows, is covered with common pantiles. In plan, the building consists of two portions placed at right angles to each other, and thus forming the letter L. The designs of the two wings, or limbs, are not similar, as one has only a single story above the basement, whilst the other possesses two. The lower or basement in each case forms a large and well-lighted schoolroom, while the upper story is used as a dormitory.

WESTMINSTER ABBEY: ITS DARK SIDE.

This ancient structure, renovated on the north and west sides by Sir Christopher Wren, in a style not accordant with the grandeur of the true Gothic, has been lately embellished by the restoration of its majestic chapter-house on the south side, so that now the whole south range, unmutilated by the intrusion of different styles, presents the most perfect aspect to those who may take the trouble of viewing it from an upper floor in Great College-street, or some other lair of the dismal surrounding cathedral closes.

The wretched condition of all the vicinal slums, from Millbank to Strutton-ground, is perhaps not inconsistent with the state of chapter property, as it stood about thirty years back in great cathedral towns; but since then extensive clearances have been made in most English cathedrals, and most notably in Dublin, where St. Patrick's was restored by the munificence of Sir A. Guinness, and Christ Church by the Dean and Chapter.]

If there is any quarter of the metropolis worthy of improvement, surely it is this locality, which includes within a small area the majestic Houses of Parliament, the Abbey, Westminster Hall, and St. Margaret's Church.

To open out the Abbey there is comparatively but small outlay needed. The continuation of Victoria-street from the end of Strutton Ground (where it diverges towards Westminster Bridge) through the still vacant plot of building ground, and onwards through Great College-street, straight into Abingdon-street, would issue out clear of the Victoria Tower, striking in upon the open plot on the river embankment, and giving direct access to the Millbank line of traffic. This open route would not exceed 600 yards in length, and might pass chiefly through church property, needing but the purchase of five or six old houses and back yards, besides a little of the dean's *country* garden, with a rectification of the wall-line upon the new street, which here ought not to be less than 90 ft. wide.

By thus clearing away the old slums, a splendid view of the best side of the Abbey could be attained, and at the same time an open and more direct route to the Houses of Parliament, while this change would give free intercourse with the new river embankment, tending towards Chelsea, and give a stimulus to buildings of a better order in the dull and morbid triangle between Millbank Penitentiary, Bridewell, and the Houses of Parliament.

There is no other quarter of London so sacred and so illustrious, from its advantages of river scenery,—the venerable Palace of Lambeth, the bridges, and the *seven palaces* of St. Thomas's Hospital,—nor is there any other improvement which, at so small an outlay, and within so short a period, might be effectuated to beautify our City.

Quondam.

ROYAL ALEXANDRA THEATRE, PARK STREET, CAMDEN TOWN.

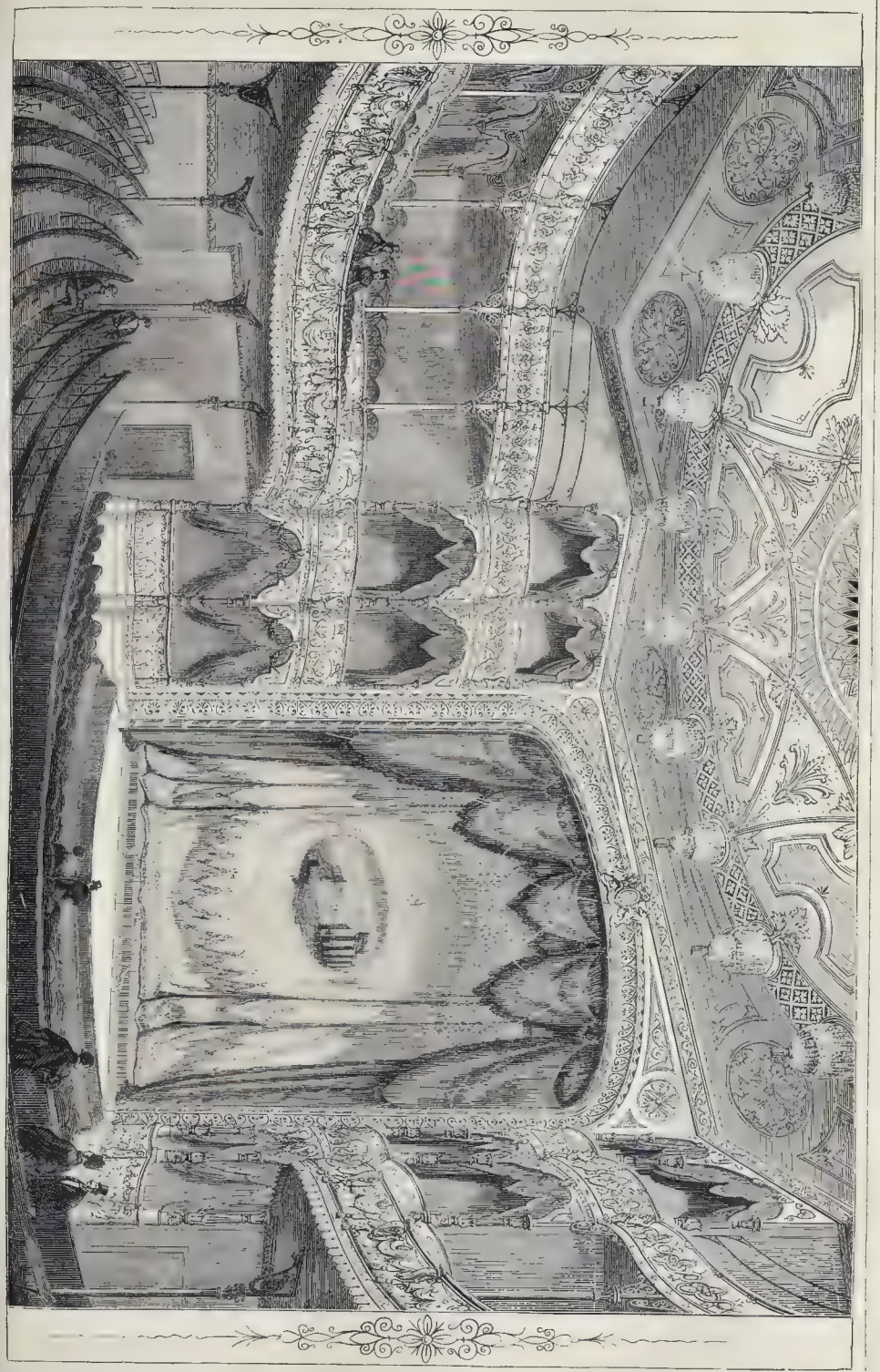
The north-western district of London is now about to have a theatre of its own, and it seems strange it has not had one before this.

The site of the Royal Alexandra Theatre is close to the great thoroughfares, Park-street, Regent's Park, and the High-street, Camden-town; and is, moreover, contiguous to the main roads to Hampstead, Highgate, and Holloway, to each of which places there is constant communication by omnibus, rail, or tramway.

The front of the theatre is very simple, and is in Park-street, and has entrances to the boxes, stalls, and pit. These are approached by two long corridors, floored with tiles in geometric patterns. Above these corridors are two conservatories, with refreshment-bar and other conveniences.

The interior of the house has a light and tasteful effect; the tints are so delicate as to appear almost white. All the ornaments are raised and gilded. There are sixteen pendants or baskets of cut glass, within which the gas is placed; these drop from a broad border composed of a band and leaf pattern, perforated so as to admit of ventilation, as is also the centre ornament of the ceiling. As these lights are placed, no obstruction can possibly occur to mar the effect of the scenery. The fronts of the dress-circle, private boxes, and balcony, are white, with raised gilded ornament. The height of the proscenium is 37 ft. by 32 ft. wide. The height of the house from the pit to the ceiling is 44 ft. The auditorium is 66 ft. by 63 ft. The stage is 35 ft. deep.

The contracts for the various parts have been carried out by Mr. Vaughan, builder; Messrs. Pashley & Newton, decorators, Red Lion-square; Messrs. Audas & Leggott, upholsterers, Hull; Messrs. Berry & Son, Regent-street, Westminster, gas-fitters. Mr. J. T. Robinson, of Haverstock-hill, is the architect. Mr. T. Thorpe Pede, responsible manager. Mr. J. H. Watson is clerk of the works, and undertook the construction of the stage.



THE ROYAL ALEXANDRA THEATRE, PARK STREET, CAMDEN TOWN.—Mr. J. T. Robinson, Architect.

PNEUMATIC FOUNDATIONS.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

At a meeting of this Society, held at the rooms in New York, February 19th, a paper by General W. Sovy Smith, of Maywood, Ill., on "Pneumatic Foundations," was read.

The first two bridges on pneumatic pile foundations erected in the United States were, one over the Santee River, on the North-Eastern Railroad, built in 1855; and the other over the Great Pedee River, on the Wilmington, Columbia, and Augusta Railroad, built in 1857.

The air-lock used in sinking these piles was invented by Alexander Holstrom. It was a cast-iron cylinder, 6 ft. in diameter and 4 ft. high, closed at top and bottom by cast-iron plates, through which were man-holes opening downward for entrance, and bulls'-eyes of glass for light; two goose-neck pipes passed through the sides and bottom,—one for the introduction of air, and the other for the discharge of water when it would not escape through the material underneath the pile. A windlass was attached for raising the earth within the pile, all of which was removed by hand. There were four air-pumps, set in a single frame, of such excellent construction that they served for the sinking of their foundations,—those of the Third Avenue Bridge, New York, across Harlem River, and of the Leavenworth Bridge, across the Missouri River,—and are now being repaired for use for sinking the piles for the Little Rock Bridge, across the Arkansas River.

Construction of the pneumatic pile piers for a bridge over the Savannah River, on the Charleston and Savannah Railroad, was begun in the fall of 1859. The air-lock used was 6 ft. instead of 4 ft. high, and, to save weight, the cylinders were of wrought instead of cast iron. Two defects were soon apparent,—one, practically no natural light was admitted into the pile through the bulls'-eyes in the air-lock plates, those in the bottom being covered with dirt most of the time; another, the air-lock was too small to stow the material raised, so that, when discharging the same, work in the pile was much delayed. To overcome these defects, an air-lock was made of less diameter than the pile, so that an annular space was left between the two, in the plate crossing the top of the latter, in which bulls'-eyes were introduced. Through the side of the air-lock was a pipe or trap, inclined at an angle, to discharge readily any material put into it, and arranged for closing at either end. The outer end being closed, the trap was filled with material, the inner end was then closed, the compressed air thus cut off from the air-lock liberated, and the outer end opened, when the material would pass out. By reversing the process, the trap was made ready to receive material again. By this modification, no artificial light was required during the day, and at night it could be reflected into the pile, without the inconvenience of candles or lamps burning in a compressed atmosphere. No detention occurred from this, or from voiding the material raised, and nearly thrice as much work was done in the same time as with the Holstrom air-lock.

It was soon found that the sandy material through which these piles were sunk could be raised by the escaping compressed air through a discharge pipe, and delivered outside in a continuous stream. For this the mouth of a flexible tube, fitted to the lower end of a fixed pipe, was thrust into the wet sand, and moved from place to place, as the material disappeared. The ratio of work done to that with the old air-lock, which before was as 28 to 10, now became as 28 to 1. The improvements thus introduced have been generally used since, by Gen. Smith, in sinking foundations by the pneumatic process. For the flexible tube, one iron pipe sliding into another, with a hempen gasket between, has been substituted with still better results,—thereby seven men have excavated six cubic yards per hour for several hours; by hand, two-thirds of a cubic yard per day per man is about the rate.

The late war interrupted this work, and also prevented consideration of a plan submitted to the United States Lighthouse Board in 1860, for the erection of a lighthouse on Frying-pan Shoals, or a similar position on the coast,—embracing the sinking of a caisson, from 30 ft. to 50 ft. in diameter, to any required depth, less than 100 ft., inside of which a masonry foundation of dove-tailed stones was to be laid.

Soon after the war, the plan was adapted to the repairing of Wangoshance Lighthouse, located at the western entrance of the straits of Mackinac, upon a rocky reef two miles and a half from shore. It is a brick tower 24 ft. in diameter, 84 ft. high from water surface to focal plane, and stands upon a foundation 24 ft. square, consisting of a crib, filled with concrete and rubble masonry; this crib was surrounded by others filled with loose stones, all framed together into one pier 100 ft. square.

At this time the timbers, put in place in 1848, were decaying under the action of seas, as heavy as any upon the northern lakes, and the ice; the utter destruction of the pier was threatened. It was proposed to protect the tower from waves and ice by surrounding it with a strong sea-wall, 66 ft. long and 48 ft. wide on the outside, 8 ft. thick, and semicircular at the ends. An annular pneumatic coffer-dam of boiler iron was built up in place around the tower, large enough to inclose the wall. It was provided with two air-locks, each having a rectangular trap, through which material and workmen passed; and a windlass driven by steam. The dam was suspended by chains from beams resting upon the woodwork of the old pier, and, with stones, loaded somewhat in excess of its buoyancy. For 6 ft. below the water surface, the crib timbers of pine, 12 in. by 12 in., built up solid, and strongly drift-bolted with round 1-in. iron bolts, had to be cut through. The reef then reached was made up of boulders varying in size from a hen's egg, to 10 tons weight: the large ones, when found under the edge of the caisson, were first split with plugs and feathers, or undermined, drawn into the caisson, and then split. In some instances where large stones rolled against the dam, and kept it from sinking, the dam was allowed to rise, and the stones were rolled inward. The dam was sunk to a depth of 12½ ft. below the water surface, and 6 ft. below the foundation of the tower, which, though not upon bed rock, as expected when the work was begun, was where the boulders (which had lessened in size as the depth increased) were most perfectly compacted together, and below the scouring action of the waves, from which the dam was protected by the remaining portion of the cribs. The bottom of the dam was then sealed with two successive layers of the quickest setting Louisville cement, each 6 in. in depth, and set under water, which, when the air pressure was reduced, entered through holes left for it in the layers.

It was found the 12 in. of cement thus laid would not, after four days' setting, resist the pressure of water outside: hence the first three courses of masonry, each 2 ft. thick, were laid in a compressed atmosphere. The stones were dowelled together with iron pins, 2½ in. in diameter; the end of each pin was drilled 1 in. in diameter, 3 in. deep, and sawn, so that when in place, and a taper bolt was driven therein, the dowel was permanently enlarged.

When the wall was finished, the space between it and the tower was filled with concrete, and covered with flagging. The coffer-dam, which might have been removed for use elsewhere, was left in place.

Work could only be done in the six months, beginning with May, and frequently it was interrupted by storms. During the first season, the chamber to receive the dam was excavated, the machinery was put in place, the dam built, and sunk 4 ft.; during the second season, the sinking was concluded, and seven courses of masonry laid; and during the third season, the work was entirely finished. An average force of forty men was employed. The entire cost, including a new dwelling for the lighthouse keeper, was less than 200,000 dollars. This is the first instance of the sinking of a pneumatic coffer-dam or caisson, in this country.

After the completion of this work, General Smith, in 1869, proceeded to put down at Omaha, for a bridge across the Missouri river, the first pneumatic piles sunk west of the Alleghany mountains, and to a depth greater than ever before reached—82 ft. below the water-surface. The material was very difficult to penetrate. It consisted of a fine silt, stratified with layers of coarse sand and tough blue clay, the latter not more than 2 ft. deep, and with a stratum of pebbles or gravel 1 ft. 6 in. to 2 ft. deep next to the bed-rock. The first pile went down vertically. The second, after sinking 27 ft., took an inclination which could not be corrected in the next 20 ft. by the various means applied; which, although they failed here, in many other cases have succeeded at a depth of from 40 ft. to 50 ft. Generally the most effective method is to excavate the material under the pile, and, with heavy wooden wedges, firmly wedge up the lowermost edge; then, by letting the air escape suddenly, bring the atmospheric pressure and the weight of the pile to bear like a blow. In this case the silt came in so rapidly as to carry the wedges before it. Another cylindrical section was put in place, thus adding 10 ft. to the length of the pile, making it 16 ft., and, with the air-lock, 22 ft. above the earth-surface. A strong frame of 12 in. by 12 in. timbers was laid down for a fulcrum; blocks and falls were attached to the air-lock, and a severe strain was put upon the pile. The material was again excavated, and instead of the wedges, a strong beam, cut to the segment of a circle, put down. The pressure was let off, and the pile descended, but without any correction of the inclination, although the timbers of the fulcrum were broken. A pine strut, 8 in. by 8 in., 11 ft. long, was set at a slight angle, its top against the leaning pile, and its foot against the pile already in place, without avail; and at last the cylinder broke off 27 ft. below the surface, where there was a "cold shut" in the metal. With 15 ft. of sand in the cylinder, 45 lb. air-pressure to the square inch did not lift the piece broken off; but 27 lb. were sufficient after the sand was removed.

This is the only opportunity he has had to measure approximately the friction on a cast-iron pile. The friction per square inch of surface in contact, before the sand was removed, was greater than 1·77 lb.; and after, it was less than 1·39 lb. This friction must vary with the depth of material, and is diminished when the earth is loosened by the passage of air-currents through it. The case instanced differs from that of a pile in place, under a load. An important subject of inquiry is, what should be taken as the safe resistance of such a pile, in sand, to sinking alone, where no bed-rock can be reached, as along the lower Mississipi, and on the Gulf coast, it may be desirable to sustain structures upon piles or caissons, resting wholly in and on sand. The next two piles were put down without great difficulty,—one at the rate of 10 ft. per day. To cause the piles to sink, they were loaded by filling the cylinders with stones, except a central passage or well-hole. Frames built within the cylinders kept the stones in place. After reaching a certain depth, it was necessary to increase the downward pressure on the pile, by allowing a portion of the compressed air to escape. The pile would then sink from 2 ft. to 4 ft. at a time. The top of the bottom cylinder was covered with a cast-iron diaphragm, through which there was a man-hole, closed by a valve opening inward, which, when shut, prevented more sand from entering the pile while sinking, than would fill the lower cylinder,—thereby the tendency to "lurch" and the disturbance of outside material was lessened.

At this stage of the work Gen. Smith was succeeded Mr. Theo. E. Sickles, who successfully employed levers in forcing the piles down, and corrected the inclination by drilling holes through the higher side, at different heights, through which the compressed air escaped, loosened the outside material, and thus lessened the friction against the pile. Gen. Smith then sank the piers for the railroad-bridge across the Missouri river, at Leavenworth, Kansas, three in number (two in the river and one on the east bank), upon which, and a stone abutment, three spans, each 340 ft. long, were erected. This was finished in two years after its commencement. The difficulties encountered were similar to those at Omaha.

The following conclusions are deduced from an experience of fourteen years, in sinking pneumatic pile foundations:—

1. The greatest difficulties to be overcome are:—1. In keeping the pile vertical. For this it should be made to follow the excavation, without a reduction of air-pressure; and, 2. In righting the pile when inclined: for this, wedging under the bottom, or propping the top on the lowermost side, and drilling through the uppermost side, are the best means yet tried.

2. The "air-lift," as described, is the cheapest and most efficient method of removing sand or mud from within a pneumatic pile or caisson.

3. A strong and reliable pier can be always built of pneumatic piles, their number, diameter, and the thickness of metal being determined by the conditions of the case.

4. In cold climates, these piles may be fractured by frost; to prevent which a filling below the frost line, from 2 ft. to 5 ft. deep, of asphaltic concrete, is recommended.

5. Where suitable timber and stone are to be obtained at reasonable prices, a single pneumatic caisson can be sunk with greater certainty, and

at less cost, than a pier of three or more pneumatic piles, where it has to be sunk for a considerable depth through a soft material to a hard one. A pier of masonry on such a wooden caisson, cellular, with its walls well drift-bolted, and its interior carefully filled with concrete or rubble, is the cheapest and best bridge foundation yet devised.

6. Concrete does not "set" well under air-pressure; the water was let in through a pipe inserted therefor in the cement, to cover the successive layers as put down; usually, cement 5 ft. in depth would seal the pile; the remainder was added in the open air.

THE LONDON SCHOOL BOARD.

Mr. C. Reed, M.P., brought up a report of the works committee on the 21st ult., which was received. It contained the following as to tenders:—

1. The committee have invited tenders for the erection of a school to provide accommodation for 1,062 children on the Walworth-common site. [We gave the respective amounts on the 5th ult.]

The committee, as in some previous cases, thought it necessary, before recommending the acceptance of any tender, to make such modifications in the plans as would reduce the cost of the building, and a second tender has now been sent in by Messrs. Henshaw & Co., amounting to 7,840*l.* 10s., based upon the plans as altered. This sum is exclusive of a further provision of 900*l.*, which it will be necessary to make for boundary walls and tar-paving; but as the great cost of these latter items is caused by the unusually large area of the site (over three-quarters of an acre), the committee are of opinion that they should be considered distinct from the building itself. They therefore recommend that the amended tender of Messrs. Henshaw & Co., of the wharfs, City-road Basin, N., amounting to 7,840*l.* 10s., for the erection of these schools, be accepted, and that a further provision of 900*l.* be sanctioned for the necessary boundary walls, and for tar-paving the site. Total cost of site, 4,365*l.* 7s. 8d. Cost of building per child, 7*l.* 7s. 8d.

2. The committee have also invited tenders for the erection of a school to provide accommodation for 833 children on the site in Central-street, Finsbury. [The respective amounts were given in our lists of 12th ult.] The committee recommend the acceptance of the lowest tender, that of Mr. G. S. Pritchard, of 103, Paul-street, Finsbury, E.C., amounting to 5,919*l.* Total cost of site, 4,370*l.* 5s.; cost of building per child, 7*l.* 2s. 1d.

3. The committee have also invited tenders for the erection of a school to provide accommodation for 1,355 children on the site in New North-road, Shoreditch. Subjoined is a list of the amounts: F. and F. J. Wood, 11,983*l.*; J. B. Axford, 10,910*l.*; Dove Brothers, 10,825*l.*; J. Hearle, 10,672*l.*; W. Henshaw & Co., 10,343*l.*; J. Perry & Co., 10,339*l.*; G. S. Pritchard, 9,993*l.*; J. High, 9,965*l.*; T. Ennor, 9,930*l.*; W. H. & J. Mansbridge, 9,915*l.*

The committee recommend the acceptance of the lowest tender, that of Messrs. W. H. & J. Mansbridge, of Bangor Wharf, King's-road, N.W., amounting to 9,915*l.* Total cost of site, 4,132*l.* 1s. 6d.; cost of building per child, 7*l.* 6s. 4d.

4. The Board have already accepted the tender of Mr. W. Webster, amounting to 617*l.*, for the necessary excavation for the foundations for the Board offices. In order that no time might be lost, the committee have further invited tenders for putting in the concrete foundations, 5 ft. thick, over the whole area of the site, and also for getting in the footings and building up the external walls to a height of 6 ft.

The amounts of the tenders for this work we have already given.

As it was necessary to give seven days' notice before a tender could be accepted, and the commencement of the work would thus have been delayed for three weeks, till after the adjournment, the Board, on April 9th, as a matter of emergency, authorised the committee to instruct Messrs. Dove, Brothers, to commence this part of the work without waiting for a formal vote, and they now ask that the sanction then given should be confirmed in the usual way.

Mr. C. Reed also moved resolutions in accordance with the recommendations in the report.

The committee reported that Mr. W. G. Doolin, who was appointed a tracer in the architect's department by a resolution of the Board of the 12th February last, has now resigned, and they therefore recommended that Mr. Thos. Chandler be appointed in his stead, at a salary of 25s. per week, subject to one month's notice on either side, such appointment to date from 28th [April].

THE NEW MUNSTER BANK, DUBLIN.

The new building for the Munster Bank in Dame-street, adjoining Palace-street, is progressing, and will be ready for occupation in September. The plans and drawings selected were those sent in by Mr. T. N. Deane, and the works were commenced in the October of 1870, and had advanced considerably, when a much-desired corner-house became the property of the company. This rendered it necessary that the entire plan of the building should be altered. During the necessary alterations in the plans, the works had to remain in abeyance for a considerable time, but were resumed in March, 1872. The style is Italian. Externally it bears a likeness to the new museum buildings in Trinity College, also erected from designs by Mr. Deane. The west wall does not square with Palace-street, but this could not be avoided without the sacrifice of much valuable space. The architect had not to provide a dwelling-house in connexion with the banking office, or to provide for kitchen, pantries, &c. The edifice is principally built of finely-chiselled limestone from the Ballinasloe quarries. The upper cornices are composed of Drogheda limestone. The east front faces Dame-street, and consists of two stories. On the lower story there is a triplet of arched windows, flanked with clusters of pillars, with carved Portland stone capitals on polished Aberdeen granite shafts. In the upper story there are four arched windows similar in character and decoration. The upper cornice is enriched with carved panels, corbels, and string-courses in Portland stone; and the piers are adorned with medallions in the same material. The principal entrance and vestibule are at the north-west angle at the corner of Palace-street. The arched doorway is supported by clustered pillars, with foliated capitals, and there is an arched window above it. At the west end is a triplet of windows similar to those in front.

The cash office is 75 ft. long by 37 ft. wide, and 42 ft. from the floor to the ceiling. It is lighted by the five great windows in front, and by four at the back, in Trinity-lane. An arcade of arches, resting on pilasters of Caen stone, with carved capitals, surrounds the apartment. Besides the windows above mentioned, there are two in a southern apse, from which is approached the strong-room, built of granite, fire-proof, and furnished with massive iron doors. From the apse is also the entrance to large vaults in the basement story, lighted with gas, and supplied with heating apparatus. These vaults will be used for keeping plate or other valuables entrusted to the bank. The cash-office ceiling is being executed by Messrs. Hogan & Son, who have contracted for the entire stucco work required in the building. The furniture and fittings of the cash offices are being made by Messrs. Strahan. The directors' and manager's rooms are situate at the Palace-street side, and will be approached by a stairway in Portland stone. The stone carvings on the several capitals, panels, string-courses, &c., are being executed by Messrs. Good & Sharp.

Mr. Thomas Butler is the clerk of the works.

HOMES IN AMERICA.

The system of living in hotels and boarding-houses in the great cities of America will strike an English visitor as antagonistic both to health and comfort, as well as generally unnecessary; and the renting of furnished houses or apartments by the wealthy part of the community as tending to recklessness and restlessness in habits of life. In these curiously-crowded abodes, where there is perpetual coming and going, he will meet everywhere the same dried-up society, warped, mentally and physically, with sitting over stoves, passing from one furnace to another, until the time shall come for burning. Delicate, refined, and over-heated ladies, suffering much from the claims of "society"; and nervous, excitable men, rushing from business to pleasure, ever ready to lend a helping hand to some one or something,—but never at rest.

The dwellings themselves will strike any one coming from England as very home-like, and in many respects more admirable than his own. The beautiful doorways, the massive woodwork and carved panellings, which give a sense of solidity and repose on first crossing the threshold, will always be remembered; the unusual depth and length of the reception-rooms in streets where the frontage is necessarily narrow, giving of itself a feeling of retirement and removal from the outer world which is often found inconsistent with the habits of the occupants. The absence of the pretentious wall papers that disgrace so many English houses, and the arrangements for heating and water supply, and the domestic appliances for saving labour, are as remarkable as they are enviable.

But how is it, one is inclined to ask, that, with all these charming accessories and comforts, the home is so readily deserted for the lecture-hall, and that the inhabitants of the most comfortable modern houses in the world seldom live in them. The answer seems to be that "they are not their own property," and that a nomad habit of life is growing up in our cities, of which an Arab would be ashamed. He is a restless, moving creature, but he has at least a house or a tent of his own from which he can dispense hospitality. The New Yorker seems instinctively hospitable and chivalrous in bearing, but he displays these noble qualities under unfavourable conditions; how, for instance, can a man dispense hospitality, in the true sense of the word, who is numbered and lives in a pigeon-hole; and how can he display that gracious ease of bearing that he inherits from his Celtic fathers, when he has to plough his way daily to Wall-street in a pair of rubbers!

It is a curious reflection that the majority in New York have no home, and no time to enjoy it if they had one; but surely the day is not far distant when a reaction will take place even here, and the feeling and the wish to possess something to hand from father to son will be an eager an ambition as a "salary grab."

With reference to the facilities that exist (outside the schools) for the study of line-drawing, I saw the other day at Boston some specimens of the reproduction of etchings and engravings by the heliotype process, which will do more to aid students than anything yet produced in this country, giving facilities for examining fac-similes of the best masters at moderate cost. If, with such aids, they do not shortly excel in line-drawing, the reason must be far to seek.

At Boston they were not only studying the works of Albert Dürer, but at the Lowell institute Professor Waterhouse Hawkins was exhibiting the "shorthand of pictorial art" in a wonderful way. Drawing on the black-board the outline and anatomy of a whale 20 ft. long, the speaker, in explaining the structure of the creature, made half his remarks pictorially, and showed the power of the pencil as a means of expressing ideas quickly to the mind. It suggested, too, the possibility of a method being some day established of expressing form in a less clumsy way than by syllables and words, a subject too prolific of suggestion to do more than hint at here.

The value of appealing to the imagination in a pictorial form is only half understood, and there is an opportunity for its development by American artists which should not be lightly thrown away. Henry Blackburn.

BEGIN AT THE BEGINNING.

In these days of novelty, a practice has become popular of beginning a note at the *end* of the paper. The sheet is folded as heretofore, but instead of the writing commencing on the right-hand page and continuing overleaf consecutively to the fourth page, the sheet is opened out, and the left-hand page is made the first, and the fourth page the second, so that when it is refolded the connexion is cut off. Then, turning the paper inside out, the writing goes back to the third page, and finishes on the second. Could confusion be better planned? Consider the waste of time, when the sheet happens to be cut up the back, or, as frequently occurs, into smaller divisions, for the convenience of printing, and the difficulty of connexion especially when the note is closely written on thin foreign paper, and in a hand at best of times not very legible. Confusion worse confounded is the result. Common sense demands a stop to such a backward, crab-crawling progress, and a return to the straightforward course, which will relieve many a puzzled, time-driven Transcriber.

A NATIONAL HOSPITAL FOR COWLEY, IN OXFORDSHIRE.

THE foundation-stone of St. John the Evangelist National Hospital for Incurables has been laid by Prince Leopold, in the presence of a large number of spectators. The objects of the proposed hospital are to offer a well-regulated Home, with suitable attendance and sympathy, to those afflicted with incurable and it may be lingering disease, and unable to find elsewhere the comforts they require, and also, and especially, to assist the relations of those who can contribute small payments. It is further intended to attach to the hospital a chapel-of-ease for the district of Cowley St. John. A convenient site of four acres has been given, situate near the Magdalen Cricket-ground. The hospital originated in a gift by a gentleman, who placed 1,000*l.* in the hands of Miss Sandford for the purpose. Probably not less than 50,000*l.* will be required for its completion, but the building will be carried on gradually, as the funds may allow. The edifice will consist of a large quadrangle surrounded by a cloister, with rooms for the accommodation of single patients and patients in pairs, with wards allowing them to look into the church which is to be built in connexion with the hospital. By this arrangement the helpless patients will be enabled to hear and see a religious service conducted when they are unable to leave their rooms. There will be every facility for the extension of the building, which will be in the Early Perpendicular style, while the church will be in the Early Decorated style. It is proposed to accommodate 150 patients, with a large staff, and the church will be spacious enough to contain 1,000 persons. The architect is Mr. C. Buckeridge, of London and Oxford, and the builders are Messrs. Honour & Castle, of Osney.

PREVENTION OF FIRES.

SIR,—A fire (of no great importance) occurred in Oxford recently, at which, excepting the occupants of the house, I was the first, and for a time the only, person. The fire broke out in an outhouse, with no means for communication, by staircase or otherwise, with the rooms above it, and, when waiting for the fire-engine, I was much astonished by the volume of flame which issued from the doorway while the fire seemed to make but little or no progress into the rooms above. At the time I thought the place must have been arched over with brick or stone, but on examination after the fire, I found that the space between the plaster of the ceiling and the flooring above it, had been filled with sawdust, and this, I believe,—by preventing for a time an upward draught, and perhaps also the flaming of the timbers when they did ignite,—seemed to have held the fire in check, to some degree, for a time, although the ceiling was not more than 7 ft. from the floor, and therefore fully exposed to the fire which raged below it.

Perhaps some of your readers will test my opinion on this subject by experiments on a smaller scale; but at present I feel certain that filling-in with sawdust between the joists of the upper floors would materially check the burning in a house on fire, especially at the first outbreak; and this would be far more effective if the sawdust was sprinkled with alum-water, and dried before used. The sawdust would add but little to the weight on the ceiling; it would be useful; and is often used for deadening the sound between room and room; it would prevent the harbouring of mice or rats beneath the floors; and often prevent effluvia from the kitchen, &c., finding a way to other parts of the house. In ground-floors or places liable to damp, such a check to ventilation might be injurious.

G. A. ROWELL.

THE EXTINGUISHMENT OF FIRE.

SIR,—In the latter part of the summer of the year 1838, being then in New York, I was a witness to the trial of a steam fire-engine, built in Philadelphia, said to be the finest steam fire-engine made in America. The occasion of the trial was a fire in a large block of buildings in the Bowery, and the superiority of the steam over the hand-engines soon made itself manifest. Since that time steam fire-engines have come into use in England. On Sunday, the 27th ultimo, I was witness to one of the greatest fires which has ever occurred in Manchester, when the workshops of the Lancashire and Yorkshire Railway at Miles Platting were completely destroyed, together with their contents, consisting of new and running locomotives, carriages in more or less forward stage of completion, valuable tools, timber, oils, &c., said to be of 150,000*l.* value. Here, again, I witnessed the performance of one solitary steam fire-engine, the superiority of which over its hand assistants was very marked. But why, I should like to ask, does Manchester allow itself but one steam fire-engine? Why, in fact, should all not be worked by steam power? In fires of any magnitude, the small stream thrown on the fire by the hand-power engines serves mostly to increase the flames, instead of quenching them, as is really the case with the water thrown by the steam-engine. In my opinion, if half a dozen steam fire-engines had appeared upon the scene at an early stage of the fire, with the plentiful supply of water there to be obtained, the value of the property saved would have been equal at least to the value of the engines themselves, and a great industry would not have been dislocated, men's tools destroyed, and the usual appeals made to the public to reinstate in the name of charity. Cannot we get a law passed, compelling all factories to be built in smaller compartments, with good substantial party-walls, and iron doors of communication where necessary, and then urge corporations and insurance companies to adopt the best means and adequate to extinguish fires at an early stage of their growth. Surely half a dozen steam fire-engines would not be too many for Manchester and Salford. E. G.

CAUTION TO BUILDERS.

SIR,—The contract for the restoration of the parish church, Kirbystephen, Westmoreland, was let to Moffet Little, Builder, of Penrith. Mr. R. J. Johnson, of the firm of Austin & Johnson, Newcastle-upon-Tyne, was the architect. It was commenced in May, 1870. In December, 1871, the architect gave the builder a certificate for 200*l.* on account of work done, which the builder gave to the Rev. Dr. Simpson, the vicar, who declined to pay it. The architect gave a statement to the vicar, showing what was due, which he made to about 400*l.*, with 200*l.* to complete. The contractor finished the whole in May, 1872, and sent in his detailed account in June. In the meantime the vicar gave the contractor 100*l.*, but declined to pay more. The architect also refused to give any account or statement; therefore the builder took proceedings to recover his account of 816*l.* 3*s.* 6*d.* In the latter part of September the architect gave a statement certifying for only 160*l.* It came before Justice Quain, at the Court of Queen's Bench, where the architect by affidavit claimed to be the sole arbiter under the agreement. The judge said he could not act as such; he was only architect, and ordered it to be referred to arbitration, and Mr. T. C. Forster was chosen (mutually), who appointed it to be heard at Manchester on the 18th of March last, where the same technical point was raised, that the architect was sole arbiter, which Mr. Forster decided in his favour, thus reversing the decision of Justice Quain, and saying he had no power in the matter. Council argued that there were four accounts, which were signed by the builder and clerk of works, for 165*l.*, which formed certificates; but the architect had for upwards of twelve months, after being signed, altered without consulting the builder. He had also altered the whole of his own account given to the vicar, Dr. Simpson, in 1871, and takes refuge under the clause in the agreement that he is to have power over all things in regard to the work, and his decision is to be final. Thus the builder has to do whatever the architect orders, and he decides that nothing is to be paid for it, but admits it is not shown on plans, or specified. Having myself been the victim of an agreement, I think I am in duty bound to publish the circumstances as a warning to others. It is monstrous that a builder should be compelled to do work which is not in his contract, and the proprietor to be able coolly to tell him he admits it is done, and in a proper manner, but by a technical point in the agreement he can get clear of paying for it.

MOFFET LITTLE.

CURE OF SMOKY CHIMNEYS.

SIR,—I noticed an inquiry, a short time ago, from a correspondent, who desired some information as to the best treatment to adopt for a smoky chimney. It is almost needless to observe that there is no complete and universal remedy for this evil any more than for the other physical ills which afflict mankind. Everything depends upon the exciting cause, and it is absolutely necessary that this should be discovered before applying any means of relief. I have, however, lately made use of an invention called an *injecteur* by its author, a Frenchman (M. Papier, of 7, Polygon, Somers-town), which is constructed on a scientific principle, and appears to answer its purpose remarkably well. Its chief recommendation is, that unlike most inventions of the kind, it is not an unsightly object; it stands only 5 in. above the top of the flue, so that it is scarcely visible from the ground; it is fixed readily and is not expensive. It is difficult to explain the principle without a model or a diagram; but it may be briefly said that it consists in creating a strong upward current at the top of the flue. The *injecteur* has been fixed at the Tower of London, St. Bartholomew's Hospital, and other places, I understand, with entire success. The circumstance of the inventor being a foreigner, and that he is unacquainted with our language and the English mode of business, will, I trust, be sufficient excuse for you to depart from your usual practice by publishing this letter. J. H.

OAK.

SIR,—Can any of your readers who have floored houses with oak tell me what are the best sizes, and what is the best way to cut oak timber? I want to cover some 3,000 square feet or thereabouts of flooring (ordinary wood deal stuff), with a thin layer of polished oak, in the same fashion as many of the French and other foreign floors are; and I had the timber all ready cut this time last year, and lying in block. What am I to do with it? for I wish to floor my own rooms with my own timber, and do not at all care to order a lot of the parquetrie advertised. What sort of pattern should I use?—the simpler the better. Would not herring-bone do? and if so, what size must the trunks of the trees be cut into? Should the stuff be all cut out at once—say ¼ in. thick, or left in plank, or what should I do? Also, ought nails or screws to be used to tack it down with; and how about polishing the upper surface?

Can I use a common circular-saw for sawing paling, or will it require to be cut in a finer manner? Pray excuse these numerous questions; but, being quite ignorant,—and my architect too,—about such matters, I request information from those who are really competent to advise. J. R. HAIG.

THE WAY TO VIENNA.

SIR,—I am very much obliged to your correspondent Mr. George Jennings, and he has as well the cordial thanks of many others connected with the building trades, and with whom I am acquainted, for his letter in this week's issue replying to the query asked through the medium of your excellent paper a few weeks ago.

The further favour of future letters, written from Vienna and concerning that city and its Exhibition, will be perused with much interest by a very large class of your readers, especially those to whom Murray is a stranger, and whose general knowledge concerning Austria is naturally limited.

No doubt Mr. Jennings will inform us whether a passport is necessary or not?. Of course we know that, theoretically speaking, an Englishman can travel in many continental countries without one. But, practically, he can only do so on *proof* of his nationality, and the rub at times is *how* to prove oneself a Britannic subject, if unprovided with a passport and no British consul happens to reside in the place.

Awkward things happen sometimes, and although I flatter myself that I look the very opposite to "a conspirator," yet I shall not readily forget how a few years before the late war I was apprehended in one of the markets at Lyons on suspicion of being one, and how, after being marched a mile or two between four secret police, I was thrown, or rather pushed, into prison.

Fortunately, I had in my possession a passport for use in another country, and after a good deal of humming and hahing over this I at length got off, but not wi hout much delay and some little trouble and annoyance.

Perhaps, too, Mr. Jennings will be so good as to tell us how long the journey takes from London to Vienna, supposing that the Cologne, Rhine, and Salzburg route be taken; and also as to how letters and papers should be addressed for strangers at Vienna. Those who experienced the inconvenient delays that were daily occasioned at the "Poste Restante" during the two Paris Exhibitions, caused altogether by the inability of that office to cope with the extra pressure made by the immense influx of strangers, would be glad if another such edition of that sort of thing could be avoided. Can English people have their correspondence addressed to some other place? HARRY HEMS.

THE BRITISH MUSEUM PURCHASES AND COLLECTIONS.

ON the vote, in Supply, of 102,161*l.* for the British Museum, in the House of Commons, Mr. Walpole, who was imperfectly heard, said the collection of Roman coins was now complete, and was, he believed, the finest in the world. The trustees had lately, with the sanction of the Treasury, purchased one of the finest collections of works of art that had ever been brought into this country. Amongst them he might mention a beautiful bust of Juno, a bronzed head of Venus, and an Etruscan sarcophagus of terra-cotta. Mr. Bowring remarked that there was a general impression that from the crowded state of the Museum the accommodation for the Natural History collection was very insufficient. Mr. Mundella suggested that the trustees of the Museum should lend duplicates of works of art and of books to the museums of large provincial towns. Mr. Walpole said, with respect to the Natural History collection, they were taking an increased vote this year for buildings in South Kensington. With respect to the suggestion of the hon. member for Sheffield, the trustees had again and again considered that question, and, apart from the difficulties of unequal distribution, they were of opinion that, so far at least as regarded duplicate copies of books, it was of the highest importance to have all the editions under one roof. The vote was agreed to.

THE COAL SUPPLY.

IN the Select Committee of the House of Commons on Coal Supply, Mr. Pease, M.P. for South Durham, and a member of the committee, has been under examination. The honourable member, who said he had been connected with the trade for the past twenty years, furnished some elaborate statistics of the coal-production of his district, and the more recent rise in price and wages. Wages had risen from 60 to 75 per cent., and the cost of materials from 30 to 40 per cent., and the latter, he said, must have the effect, as much as anything, of keeping up prices. As in other districts, demand had exceeded supply, and the rise of wages followed the advance in price. High wages had a tendency to induce the men to work less time, but the Mines Inspection Act coming into operation at the same time as the increased demand, had to some extent retarded production. From his own observation, he could say the rise of wages had greatly improved the comfort and position of the men. The condition of their houses was improved, and their little gardens better looked after. In some of their homes which he had recently visited he found books and other evidences of the occupants applying their money to a good use. One man kept him half an hour to look over his collection of insects, and everywhere he saw signs of great improvement. The

deposits in one of their building societies, consisting of 268 members, amounted in 1872 to 3,900*l.* Most of the men, too, belonged to co-operative stores, and were subscribers to the Hartley accident Fund. From 1866 to 1872, his firm had built 525 houses for their men, and they had now 206 on hand. In order to make provision for a considerable increase in production, they must now have more workmen, and the only way to get them was to provide comfortable residences. Two-roomed houses were not a sufficient temptation: they must be four-roomed, two upstairs and two down, and those they were providing. He did not think there would be much difficulty in getting men as long as the present rate of wages was kept up, or it maintained the same relative proportion to that of agricultural wages. There was a decidedly improved desire amongst the colliers for elementary education, though the adult evening schools had not quite succeeded, owing to the distaste of the men to grapple with the difficulties of learning to read and write after a hard day's work. The average attendance at the children's school, however, had increased from 1,482 in 1870 to 1,740 in 1872, and everywhere the desire to educate the children was increasing. As far as he could see, there was no wish on the part of the unions to prevent the men from working full time if so disposed, nor was there the remotest disposition on the part of the Masters' Association to limit the output, or keep up prices by any such methods.

STORING RAIN-WATER.

SIR,—In reply to the query of your correspondent, "G. M.," on the above subject, there are thousands of instances in Southport, Lancashire (where rain-water seems to be highly valued), where all the rain-water from the roofs of the houses and other buildings is collected and conveyed by means of down-pipes and earthenware pipes into water-tanks formed *underground*,—say, under a pantry or portion of scullery,—which, from my observation, appear to act very satisfactorily in preserving the water cool during summer months and from frost during winter, and purify it some way, so that, when filtered before use, it can even be used for drinking purposes. I have myself been deceived, thinking I had been drinking spring-water. I think they are constructed as follows:—The ordinary foundations of the pantry (sunk in the ground 5 ft. or 6 ft. for the purpose) are lined inside with brick (4½ in.), built in cement; the bottom puddled, if the ground requires it, and paved with brick on edge, or two flat courses in cement. The bottom and sides are then plastered with a ¾-inch coat of Portland cement, carefully finished. The whole is arched over with brickwork, leaving a man-hole, of course, in the top or the side-wall, as may be most convenient, for access. Ventilation must be provided for, also overflow connected with trapped drain. The water is to be raised by means of a pump in the scullery for supplying slop-stone or forcing up to a cistern in attics for supply of baths, &c. The water-tanks can easily be constructed with two or more chambers for filtering purposes,—the suction-pipe to pump being in one chamber and inlet from down-spouts in another.

A WATER-DRINKER.

THE LABOURERS' COTTAGES BILL.

THE Labourers' Cottages Bill, introduced by Mr. Whitwell and Mr. Wren-Hoskyns, has now been printed. It provides that land vested in corporations of boroughs may be laid out in sites for dwelling-houses suitable for the occupation of artizans and labourers. The plans drawn up by command of the Council of a borough must be submitted to a public meeting of burgesses. If approved, they have to be sent to the Home Secretary, who shall have the right to confirm or reject them, or to suggest such alterations as may seem good to him. After the approval of the Home Secretary, the land is to be offered for sale, either by public auction or by private contract, in separate parcels, the Council determining the conditions of price and payment, and the class of houses to be erected. The purchaser of a site must have a house built and ready for occupation within three years. The time may be extended by permission of the authorities; but if the house is not completed within the extended time, the site may be forfeited by resolution of the Council. A schedule contains a form of conveyance by which a site, when sold or disposed of by the registered owner, shall be transferred. It is expressly provided that any married woman who shall be owner of a site may sell and dispose of it in all respects as if she were unmarried. Sites are not to be subdivided; but several persons may become joint owners. If passed with the necessary modifications, the measure will be of real service to the class for whose benefit it has been drawn up. Fairly comfortable dwellings are the first condition of success in any attempt to improve the circumstances of artizans and labourers. This Bill greatly facilitates the acquisition of such houses without undermining the self-respect and independence of the occupiers.

POROUS TILE ROOFS.

A COATING of the following mixture, namely,—equal parts of finely-sifted Portland cement and finely-powdered brick or pieces of tile, well mixed together to the consistency of paint, and laid on the tiles with a brush, in dry weather, care being taken to damp the tiles, to promote perfect adhesion, would render them impervious to rain, and last a long time, for small cost.

P.

LONDON ROADWAYS.

THE Westminster District Board of Works have decided to recoat the carriage-way of Victoria-street, at a cost of about 450*l.*, and apply to the Metropolitan Board for permission to stop up the thoroughfare for four days, in order that a steam-roller may be used in the work. They have likewise decided to recoat Parliament-street, at a cost of about 300*l.*, and ask for permission to close Parliament-street and the streets abutting thereon for three days during the Whitsuntide recess of Parliament in order to use the steam-roller in the work, the traffic to be diverted by Whitehall-place along the Thames Embankment.

WINCHESTER GUILDHALL.

ON Wednesday last, the new guildhall for Winchester was opened by the Lord Chancellor. The building was designed by Messrs. Jeffery & Skiller, of Hastings, and built by Messrs. Bull & Son, of Southampton, at a cost of between 11,000*l.* and 12,000*l.* It is to serve also as an assembly-room for the citizens, as a local museum, and as a reading-room. The style adopted is Geometric Gothic; the heads of the principal windows contain bas-reliefs of six principal events in the history of the city, and a sculptural group in the clock-tower represents Henry I. presenting the charter of incorporation to Florence de Lunn, the first mayor in the year 1184. Florence de Lunn is also the subject of one of the four statues supported on granite columns on the face of the building. The others represent King Egbert, King Alfred, and Henry III., of Winchester. The building is not regarded locally with unmixed satisfaction.

CHURCH-BUILDING NEWS.

Folkestone.—Cheriton Church, Folkestone, has been re-opened after a restoration and enlargement, during which operations the tomb of the granddaughter of Sir Walter Raleigh was discovered, the date being 1716.

Nottingham.—The new Church of St. Thomas, on Park-row, has been consecrated by the Bishop of the Diocese. The edifice was formerly a Presbyterian chapel. It recently became unused, and it was obtained and adapted as a church. To form an idea of the transformation, we may state that it was a large oblong room with square walls, 14 in. thick, pierced by a double row of windows on three of its sides; a flat plastered ceiling; a boarded floor, fitted with square pews breast high; a large square pulpit in the centre, and a gallery at one end. With the additions of a north and south aisle, moulded arcades, an apsidal chancel, with elevated tiled floor and low screen, open benches, an inlaid mosaic reredos, and draperied communion table, and a painted ceiling and some stained glass windows, the gift of Mr. G. Sparrow, the interior now presents to view something like the appearance of a church of the Basilican type. The windows will be filled with painted glass, and colour and gold will decorate the walls of the church. The ceiling of the nave is divided into a series of square and circula panels, fitted with combinations of fruits an flowers mentioned in Scripture, and divide from each other by painted and gilded border From the centre of this ceiling hangs a ga corona. As the building has been enlarge externally to the extreme limits of the ground and will sooner or later be blocked out fro view by erections on the adjoining land, n attempt has been made to ornament the dea walls on the three sides of the same, but i the street façade a row of new stone window has been inserted. The architects are Messr T. C. Hine & Son; the contractors, Messr Marriott, Wartnaby, & Scott; gasfitter, M Rhodes; stained-glass artists, Messrs. Heator Butler, & Baynes; makers of the clearstor windows, Messrs. Wheeler & Co.

Great Hormead.—The little village church St. Nicholas, Great Hormead, has been r opened, after having been closed for near twelve months, in order that it might underg restoration and repair. The architect for th restoration was Mr. A. W. Blomfield, th diocesan architect. All that he thought nece sary has now been done, except that the tow remains as yet untouched. On account of th dilapidated condition of the chancel, it w found necessary to rebuild it entirely, and th nave has undergone an extensive restoration. fact, the exterior of the church, with the exce tion of the tower, has a new look about it. Th plaster which formerly disfigured it has be removed, the flints refaced, and the stonewo renewed. The whole work has been done Mr. Gibbons, of Buntingford, who was the co tractor for the restoration of the churches Anstey and Barley, and is now carrying out t reparation of Aspenden Church, all four church within a few miles of each other. The c chancel and vestry, which were in a very dila dated condition, have been taken down, and new chancel, 24 ft. by 16 ft. 6 in., with an orga chamber and vestry attached, has been erecte The general walling is built with local flin Bath stone being used for the windows and dressings. The east window is in three high with tracery of geometrical design. An op roof of stained deal plastered between t rafters, and covered with red tiles, finished wi an ornamental ridging, has been put upon t chancel. New leaded roofs are provided for t nave and aisle, the old slates having be removed and the timbers repaired, so as retain their original appearance as far as p sible. The roof on the north aisle is new, in o A new porch, with an entrance doorway, a with an open roof of stained deal, covered wi lead, is erected on the south side. The whole the walling throughout the church is rebuilt refaced where necessary. The brick buttress cement repairs, and all other unsightly work recent date, are removed. New windows ha been inserted in the aisles and clearstory-wal their design being copied from those previous existing. All the windows are glazed wi rolled cathedral glass, and are fitted with slidi iron casements, for the requisite ventilatio New parapet walls, with moulded stone copin and string-courses have been built to the na and aisles. Internally the walls are re-plastere and the stonework to the arcades and elsewhe throughout the building is cleansed and restore The chancel-floor is laid with Maw's encaus tiles, and a reredos has been supplied by t same manufacturers. Peake's 6 in. red a black Staffordshire floor-tiles have been used f the passages in the nave and aisles, and new d floors are laid throughout the body of t church. The old square high-backed pe are replaced by carved choir seats executed wainscot oak. All the sittings in the chur have been re-arranged, the seats near t tower being new, and accommodation is p vided for children by seats in the tow New oak doors are hung to all the entranc with wrought-iron hinges of foliated desig For heating the church a Porritt's stove h been fixed in the centre passage of the nav the iron grating of which is level with the pav ment, and the flue from the same is carried t in the north-east angle of the tower. T restoration of the tower is to be proceeded wi at once. The cost of the restoration has be about 1,900*l.*, and 250*l.* are required for t repair of the tower.

Knesall.—The restoration of this church w commenced a year ago by Mr. H. Clipsham, Norwell, under the direction of Mr. Ewan Chri tion, of London, and a sum of 900*l.* has be expended upon the nave and south aisle roo

walls, paving and flooring, heating, &c. This work has been accomplished through the liberality of Earl Manvers, supplemented by the vicar, parishioners, and others. The chancel was undertaken by the Ecclesiastical Commissioners, at a cost of about 205*l.*

Wakefield.—The mayor has laid the corner-stone of a new church about to be erected at Wrenthorpe. The inhabitants of this rapidly-growing village have heretofore worshipped at the old church at Alverthorpe, and at a school which stands in their midst. A vicarage has already been built, and the ground secured for the church is in convenient proximity. The edifice is to seat 300, and it will cost about 1,200*l.* The architect is Mr. T. W. Micklethwaite, of Westminster; and the contractors are Messrs. Thickett, of Horbury.

Weekley.—St. Mary's Church, Weekley, within the past twelve months, has been restored, and is now reopened. The total cost of the work has been nearly 2,000*l.*, and the whole sum has been defrayed by the Duke of Buccleuch, the owner of the parish. The restoration has been carried out with a view to re-using as much of the old material as possible, and in conformity with the ancient character of the edifice. The south porch and vestry have been rebuilt. The plastering which defaced the exterior walls has been removed, and the masonry has been re-pointed with black mortar, parapets strengthened, and the interior walls replastered. A new east window is placed in the chancel, and generally that part of the church is renovated. In cleaning the north chancel wall an Early English window was discovered, and it has been retained. There is a similar window at the west end of the church. The floor of the chancel is laid in Godwin's encaustic tiles. The church is reseated throughout in oak, and the floor laid in black and red tiles. For warming the church Porritt's system of heating has been introduced. The work has been carried out under the direction of Mr. A. W. Blomfield, M.A., architect, London; and by Mr. J. Thompson, contractor, Peterborough. Mr. Buckley, of Kettering, executed the plumbing work.

Steeple Gidding.— On Easter Tuesday this church was reopened, after having been restored at the sole expense of Mr. J. M. Heathcote, the patron of the benefice. The work has been carried out by Mr. J. Thompson, of Peterborough, from the plans of Mr. A. Blomfield, architect. The east window has been filled with stained glass, the work of Mr. W. H. Constable, Cambridge Stained-glass Works.

Southend. The new chancel of Southend church has just been opened. It forms another instalment of the rebuilding of the old church (which is, however, of comparatively modern date, and in the quasi-Norman style). The work was commenced some years ago by the addition of a wide-gabled north aisle of three bays; then a similar aisle was built on the south side, with the foundations of a tower, leaving between them the old low, flat-ceilinged nave. Recently a large chancel has been added, with chancel aisles, vestry, and organ chamber. The work has still a singularly unfinished effect, for, in addition to the low nave, there are low transepts between the chancel and nave aisles, which are only high enough to admit of the springers of new transept arches being built. But it is to be hoped that before long these defects may be remedied. The walls are of coursed Kentish rag, with Bath stone dressings. The work has been executed by Mr. Saunders, of Maldon, under the late Mr. W. Slater, and under Mr. R. Herbert Carpenter.

Hemington (Northants).—St. Peter's Church has been reopened. It was chiefly interesting as having been, with the exception of the tower, rebuilt in 1666 with the old materials of Bewley Hall, the residence of the Montague family. A portion of the hall still remains, near the church, cut up into three tenements, in one of which is a magnificent chimney-piece, described in the county histories. The nave windows are square-headed, mullioned and transomed. The roof is open, with arched principals, having pendants at the intersections. The old chancel had disappeared; but on taking down the east wall of the nave, numerous moulded stones were found, of Norman and First Pointed work, including capitals and bases of columns, thus leaving no doubt that a church with aisles had previously stood here. The new chancel arch is designed in harmony with the fragments, and rests on the ancient capitals and portions of base which are inserted in the new jambs. The chancel is of new design, of Second Pointed date, and is built in Ancaster stone ashlar-work, with richly-moulded windows, priests' door, piscina, &c. Under the east window is a reredos, of three recessed arches, in which is represented the Crucifixion,—Our Lord, St. Mary and St. John in the centre arch, with the two Marys and Salome and St. Joseph, Nicodemus, and the Centurion on either side. It is painted on slate, in oil-colours, on a diapered gold ground, by Mr. Daniel Bell. The chief features of Hemington are, however, its stalls, which were brought from Fotheringhay, but whether from the chancel of the collegiate church when it was destroyed, or from the castle chapel when pulled down by James I.'s order it is now not easy to say. The ends are highly carved, and the tops end with a great crocketed curl, like the head of a pastoral staff. In the ends and on the *misereres* are carved the badge of the ducal family of York,—the falcon in a closed fetterlock, a single boar, and coupled boars, &c. These were in a deplorable state, cut and broken, and whitewashed, and used to make up the sides of the common square pews. They have been carefully restored, under the architect's inspection, by Messrs. Pepper & Son, of Brighton. Somewhat similar stalls, also from Fotheringhay, are at Tansor Church. The expense of the restoration has been borne by the Duke of Buccleuch, and has been carried out by the late Mr. W. Slater and by Mr. R. Herbert Carpenter, the builder being Mr. Margetts, of Kettering, and the clerk of works Mr. Lucas. The stone carving is by Mr. Harry Hems, of Exeter. The neighbouring church of Luddington will now be restored by the Duke of Buccleuch, under Mr. Carpenter.

SCHOOL-BUILDING NEWS.

Halifax.—The new school connected with Harrison-road Independent Chapel has been opened. The building, the foundation-stone of which was laid on the 17th of August, 1872, is adjacent to the chapel on the lower side, and has a frontage to Ormerod-street. It is of stone, and the idea of the architect has been to make it uniform in external appearance with the chapel: there has not been much expenditure in ornamentation. The building is in two stories. On the ground-floor are ten class-rooms. The school-room, measuring 75 ft. by 35 ft., will accommodate 500 scholars. A terra-cotta fountain will be placed in the middle of the room, both as an ornament and for use. Such fountains, we are informed, have been introduced in some schools in America, and have proved a remedy for boys who leave the school to get a drink about once every ten minutes. A gangway has been erected from the school to the chapel, so that the scholars can pass from one to the other without going into the street. On the same floor as the school are a library, superintendents' vestry, and a hoist, the last-named being intended for use between the kitchen and the school-room when tea-parties are held. The various works have been executed by the following firms:—Architect, Mr. Dearden; masonry, Mr. J. W. Wilson; joining and carpentry, Mr. Hy. Dearden; slating and plastering, Messrs. Taylor & Firth; plumbing, Mr. Joseph Barker; whilst the hot-water apparatus has been supplied by Mr. E. Lumby.

Upper Tooting.—Some simple school buildings for the district of St. Mary Magdalene's, Trinity-road, have just been completed. The main materials used are grey stock bricks, with a few bands of red bricks, and no stone has been used, except where necessary for stability. The roofs are ceiled with lath and plaster at the back of the collars and rafters, which are stained. Externally the covering is of Bangor slating with plain red ridge tiles. The plan comprises two schoolrooms arranged in the shape of an L, with a lean-to porch. There is a small bell-turret, formed by carrying a portion of the roof on brackets to serve as a canopy to the bell. The cost of the school has been about 400*l.* The works have been executed by Messrs. Dove, Brothers, Mr. Edmund B. Ferrey being the architect.

Bala (North Wales). — The Bala schools have recently been completed, and have been built from the designs of Mr. Ferrey. In plan they consist of a boys' school, 50 ft. by 20 ft.; girls' school, 32 ft. by 15 ft., with class-room, 17 ft. by 12 ft. There are gabled porches to the two first-named rooms. A master's residence is immediately attached, comprising, on the ground-floor, parlour, kitchen, scullery, and pantry, with three bedrooms on the upper floor. The walls are built of rough limestone, procured in the neighbourhood, and, in the case of the boys' and girls' schools, are plastered internally. The roofs are of stained deal, and of open construction. Externally they are covered with Portmadoc slating, the ridges being formed of terra-metallic ridge-tiles. The windows are principally square-headed, with stone mullions and transomes, and are fitted with wrought-iron casements, moving on centres. The dressings are of Wrexham sandstone. There are spacious playgrounds to the boys' and girls' schools, with the necessary offices. The total cost, exclusive of fittings, has been about 1,200*l.* The clerk of the works was Mr. R. Woodcock, and the builder, Mr. David Roberts.

Newchurch (Lancashire).—The new schools here were opened on the 10th inst. The building is in the Gothic style of architecture. The foundation-stone was laid on the 31st August, 1872, by Mrs. Patrick, of Cloughfold, when there was a procession and meeting. The school has cost 1,400*l.* exclusive of site, which was given by Capt. and Mrs. Patrick, of Cloughfold. There is accommodation for 250 scholars. The schools are built of stone, and the building is open-roofed. There is a large general school, 59 ft. by 19 ft., and an infant school, 30 ft. by 18 ft. There are two class-rooms, 10 ft. by 12 ft.; two large lobbies for stores, hats, &c.; two large rooms below the infants' school and lobby, for boilers, tea, stores, &c. Two large playgrounds are to be fitted with gymnasium and swings, well fenced with wall and railings. The whole of the work has been done under the personal superintendence of the architect, Mr. Harry Percival, of Newchurch. The contractors for the various works are as follow:—For wood, slate, plaster, iron, &c., Mr. James Roberts, of Rawtenstall; stone and brick labour, Messrs. G. Parkinson & Son, of Newchurch; hot-water apparatus, William Henson & Co., Blenheim Works, Pendleton; gas, Mr. Homer Maxwell, Waterfoot; boundary walling, &c., Messrs. Rostron & Rothwell, of Newchurch.

Creech (Somerset).—The new parochial schools at Creech St. Michael, which have cost 800*l.*, are now open. Of the total cost of the building, 200*l.* have been raised by small contributions in the parish and neighbourhood. Mr. J. H. Spencer, of Taunton, was the architect, and Mr. J. Dinham, the contractor. The site was given by Mr. Foster. The style of the building is an adaptation of domestic Gothic, and the material Monkton stone, with grey brick dressings. The walls are lined internally with coloured brickwork, and the roofs open-timbered, varnished. The accommodation is for 170 children.

STAINED GLASS.

Ripon Cathedral.—A stained-glass window has just been placed in this cathedral to commemorate the recovery of his Royal Highness the Prince of Wales. The subject of the window is the restoration to health of a nobleman's son at Capernaum. Messrs. Ward & Hughes, of London, were the artists. There are three medallions. In the upper one is represented the sick chamber; in the centre one, the meeting of our Lord and the nobleman; and in the lower one, the recovery. Beneath the medallions is the text, "Thy son liveth." (St. John v. 50). The window is the gift of the Rev. Henry Mildred Birch, one of the canons residentiary, who was formerly tutor to his Royal Highness.

Llandrillo Church.—A stained-glass window has just been placed in the east end of Llandrillo Church, Colwyn, North Wales. The window is one with five openings and tracery, the subject chosen being that of the Crucifixion, which occupies the compartments of the three inner lights; in the centre is the figure of our Saviour on the Cross, with the weeping Magdalen embracing the Cross beneath; on one side are the two Marys; on the other St. John the Centurion. Above and around the Saviour is a cloud of glory and angels adoring. The two outer lights are filled in with ornamentation of fifteenth-century character. The window has been designed and executed by Messrs. Heaton, Butler, & Bayne, of Garrick-street, and presented by Mr. Edward Brooke, of Caen Wood-towers, Highgate, on recovery from a painful illness, which compelled him to resign the office of Sheriff of London and Middlesex, to which he was elected last Midsummer-day.

Wotton Church.—The window which surmounts the chancel arch at the east of the nave of the parish church of Wotton-under-Edge has been filled by stained glass, the gift of Mrs.

Adey, as a memorial of her late husband. The window consists of three lights: the centre is 9 ft. by 3 ft., and bears Christ as the Good Shepherd; that on the right, St. John the Evangelist; and that on the left, the Virgin Mary; these are 7 ft. by 5 ft. each. The work has been done by Hardman & Co., of Birmingham, under Mr. C. P. Pritchett, architect, Wotton-under-Edge.

Christchurch and Bournemouth. — The east window of the Priory Church has been filled with stained glass by the Shute family, in memory of Mr. Thomas Deane Shute, late of Burton, near Christchurch, and Bramshaw, in the New Forest. The window is of five lights, filled as follows:—

Espousals of the B. V. M.	The Visitation	The Ascension	The Purification.	Marriage at Cana.
The Presentation in the Temple.	St. Joseph warned by Angels.	The Crucifixion.	The Adoration of Kings.	The Dispute in the Temple.
The Birth of the Virgin.	The Annunciation.	The Nativity.	The Adoration of Shepherds	The Flight into Egypt.

The tracery is filled with souls ascending, angels receiving, angels with palm branches, angels with harps, vigilia, ora, the dove, the paschal lamb, the myrtle, and pomegranate. The lights have a border composed of the crown and the *fleur-de-lis*, and the whole of the medallions are surmounted with a white lily, emblematical of the "pure Virgin." The colour of the ground-work of the window is blue. The work has been performed by Messrs. O'Connor, of Berners-street, Oxford-street. The greater part of the old stonework has been removed and replaced with new by Mr. John Preston. One of the four "obtusely arched dwarf-looking windows" in the north choir aisle has been filled with stained glass by the Rose family. The design is by Lady Rose, and the window is a memorial to the late Sir George and Lady Rose. The window is of four lights, which are filled thus:—

An Angel.	St. George.	St. Elizabeth of Hungary.	An Angel.
Blessed are the dead.			Which die in the Lord.
I was an hungered and ye gave me meat.	I was a stranger and ye took me in.	Naked and ye clothed me.	I was sick and ye visited me.
To the glory of God and in memory of	The Rt. Hon. Sir George Henry and Lady Rose.	By their surviving children Frances Countess of Morton,	Lord Strathnairn, Sir W. Rose, K.C.B. A.D. 1873.

There are representations of the Scripture texts. The tracery, which consists of eight divisions, is filled with red and white roses in the three divisions right and left. The work has been performed by Messrs. Burlison & Grylls, of Newman-street, Oxford-street, assisted by Mr. John Preston, stonemason, and Mr. C. Burry, plumber, Christchurch.

Kippen Parish Church.—The two large windows on either side of the pulpit in this church have been filled with stained glass. Each window has two upright lights and a central top shape. In the four lights are represented, "The Announcement of the Angel to the Shepherds," "The Baptism of Christ," "His Crucifixion," and "His Ascension." The portions over and under the illustrations consist of geometric and foliated bordering and ground-work, all of deep colouring. In the centre of the lower panels are Scripture texts alluding to the scenes depicted; and in the top central shapes the Lamb and Banner and the Pelican are represented. Messrs. Ballantine & Son, Edinburgh, were the artists by whom the work has been designed and executed. These windows have been erected by Mr. James Scott, of The Hollies, Tunbridge Wells, in memory of his wife, and her father and mother.

Cavendish Church. — Two windows in the south aisle of this church have just been filled with stained glass, at the sole expense of Mr. George Bocock. The windows, which are in juxtaposition, one facing the east, the other the south, have been designed and executed by Messrs. Cox & Sons, of London. The one facing the east,—a four-light Perpendicular window,—has received much more elaborate treatment than the other. In the two centre lights are represented the Resurrection and Ascension, and on the dexter and sinister sides of these two lights are figures representing St. Barnabas and St. Stephen respectively. The bases below these two figures are composed of ornamental glass, bearing a shield with cross and monogram of the saints defined; and the whole of the subjects are surmounted by rich canopies, under which are cherubim and seraphim holding scrolls, on each of which is inscribed *Alleluia*. The tracery of this window introduces very sacred emblems. The window facing the south is Geometrical in design, and consists of three lights, which are filled with grisaille glass, containing medallions. The medallion in the centre light contains the "Agnus Dei," surrounded with the passion-flower; and on the top of the light is a diadem, on the sides of which, a few inches below, are the Greek letters, *Alpha* and *Omega*. Each of the side-lights contains two medallions representing the Evangelists. The work of fitting in the windows has been executed by Mr. Jacob Rice, plumber and glazier, Cavendish.

FROM SCOTLAND.

Edinburgh. — A deputation from the city waited upon Mr. Cardwell, at the War-office, with regard to the new dwellings for married soldiers now in course of construction on the Castle Rock. The Lord Provost stated that there was a very strong objection to these buildings in Edinburgh, which would grow if nothing were done to remove the evils complained of. The buildings were at once unsightly, spoiling that splendid view painted by Turner in his picture of "Edinburgh" from the Grass-market, and they were deficient in a sanitary point of view. He hoped the Government would do something in the way of adornment of the dwellings. Mr. Councillor Gowans remarked upon the want of sanitary appliances, and submitted some alterations recommended by the town, which would at once make an improvement in that respect, and would materially improve the aspect of the dwellings. The cost would be about 2,000*l*. Mr. Cardwell said the matter had been referred to the Dean of Guild Court before commencing the buildings, and no remonstrances had been made. Mr. Bailie Tawse said that the present considerations did not come within their province at all to decide upon as a court, but as individual members they had objected to the proposal. Mr. Cardwell, replying to the deputation, said that the Inspector-General of Fortifications would meet them on the spot at an early date to receive any suggestions they might make, and to see what could be done. Since then, Sir Frederick Chapman, inspector of hospitals, has gone to Edinburgh, and, accompanied by the Lord Provost, Sir George Douglas, and the colonel of Engineers, has made a long inspection of the site and the building itself. He expressed great regret that the town had not spoken soon enough, and stated, that if it had done so when the buildings were first proposed, they would not have been put up, and others would have been substituted. Sir Frederick is to send down to Edinburgh the plans of such ornamentation and improvement as he thinks may be added to or made upon the buildings, on the understanding that the Government will pay a part, and the city another part, of the expense of the alterations and additions, as he thought that perhaps both the Government and the city were to blame in the matter.

VARIORUM.

MESSRS. PARTRIDGE & Co. have sent us a packet of smart little story-books,—"Never Give Up" (by Nelsie Brook), "Puffing Billy" (by Mrs. H. C. Knight), "Two Christmas Days and the Christmas-box" (by Mrs. Balfour), and several others. These all have a good purpose, seeking, while they amuse, to indoctrinate the young mind with a horror of the vice of over-drinking. The more widely they are read the better. Nothing but good can can come of their circulation.——A new edition has been published of the two parts of Weale's Rudimentary Series, devoted to "The Elements of Euclid" (Lockwood & Co.) Part I. contains the books 1, 2, and 3; Part II., books 4, 5, 6, 11, and 12.——Mr. George Browning has published a salient little "Memoir of the late Emperor Napoleon III.," and a poem, entitled "Rip Van Winkle," which bears upon it (Croft & Co., Paternoster-row). —— "Porcelain," observes *Cassell's Popular Educator* for May, "differs from glass in the great preponderance of silicate of alumina in its composition. It consists mainly of clay, which is infusible, and some alkaline silicate, which fuses and binds the clay together, rendering it impervious to moisture. The fineness of the ware entirely depends on the purity of the clay, &c., from which it is made. The glaze which covers porcelain is produced by dipping the "biscuit" ware into water in which is suspended finely ground felspar; the porous mass absorbs the moisture, leaving the surface covered uniformly with the felspar. It is then exposed in *seggars* to a very high temperature, by which the felspar is melted and the glazed produced. Stoneware and common "pottery-ware" are glazed by means of common salt. The ware is dipped in sand and water, placed in the furnace, into which has been thrown moist salt. The heat quickly converts the salt into vapour. In the presence of the steam, the silica on the ware decomposes the salt, forming a silicate of sodium, which glazes the article, and hydrochloride acid, which escapes."——*Iron* tells the following interesting story: — An English gentleman, travelling (near Sinai), was struck with the small blue stones he found in the dried-up water courses which in the rainy season convey the thousand streams that hurry to the sea, and having the curiosity to bring some home, he soon discovered that they were turquoises of no common order. This determined him to make further researches. Eventually he has built a house near the junction of the Wady Kenuc and the Wady Makatteb, or the written valley, and the Wady Megham. Here, aided by the friendly tribes he has taken into his pay, he has discovered the old turquoise mines of the ancient Egyptians, the rocks that they worked for the stones, the very tools they used, and the polishing and grinding places. Being a man of much energy, he has brought to bear upon the fortunate discovery the advanced knowledge of our times, and he is obtaining and sending over to this country some of the finest specimens of turquoises that exist. In such a lonely spot, naturally has not confined his attention to the subject only, but has traced out the system of fortifications by which the Pharaohs protected their works and workmen, and, what is still more wonderful, has come upon the remains of vast ironworks,—so vast, indeed, that many thousand people must have been employed upon them, unless the plant used was on quite a grand a scale as that of our largest furnaces in the North of England."——The *Leisure Hour* for May contains six hitherto unpublished poems by George Herbert, recently discovered by the Rev. A. B. Grosart, an authority on early English literature. Three of these, "Euen Song," "The Knell," and "Love," are equal to most of his published pieces. The *Sunday at Home* includes a memoir of the late Sir Donald Macleod, C.B., by another old Indian, Major-General Edward Lake, R.E.

Miscellanea.

New Working Men's Club Buildings for Walsall.—The memorial-stones of a building in Freer-street, intended for the Walsall Working Men's Club, have been laid by the Mayor and Capt. Coath. The funds for the erection of the building are to be provided by a limited liability company, in 2,500 shares of 1*l*. each, and, in addition to a concert-hall capable of affording accommodation to between 400 and 500 persons, rooms are to be provided for reading, refreshments, billiards, and smoking, together with a bowling-saloon 50 ft. by 8 ft., a bath-room, three bed-rooms for the manager and family, and kitchens, sculleries, cellars, lavatories, and the necessary offices. The erection is to be of red brick, with Penkridge stone dressings, the front being relieved in effect and construction by Pointed Italian brick arches. The contract price is 1,949*l*., and the cost of the site 275*l*. The architect is Mr. Reynolds, of Preston, late of Walsall, who has supplied the plans and designs gratuitously, and the builder is Mr. J. Adkins.

Almshouses for Wolverhampton. — A Wolverhampton lady is willing, it is said, to provide six houses as almshouses for aged people, if thirty-four other such houses can be provided, so that together, or in different parts of the town, there shall be forty houses, in which aged people may live rent free.

Report on the Sanitary Condition of Doncaster.—The Doncaster Town Clerk has received from Dr. Simon, of the medical department of the Local Government Board, the report of Dr. Thorne on the prevalence of infectious diseases in Doncaster, and on the sanitary condition of the borough. In a letter accompanying the report, Dr. Simon requests the town clerk will, in a short time, acquaint the Local Government Board with the steps which the Town Council propose to take to carry out the recommendations of the report. Dr. Thorne comes to the conclusion that the large infantile mortality is generally explained by the imperfect sanitary arrangements; the prevalence of enteric fever and of epidemic diarrhœa by the conditions favouring excremental pollution of air and water; and the spread of scarlet-fever and small-pox by the absence of means of isolation and of proper disinfection. He recommends (and first of all) that the town should be provided with a proper water-supply, which should supersede all polluted and doubtful private sources. The public wells should not be used for domestic purposes, and if utilised for watering the streets, they should be kept locked. All public sewers not ventilated should be ventilated at once, and ventilated sewers with offensive odours examined. To prevent the escape of sewer-air into dwellings, all connexion between the house-pipes and the sewers should be cut off, and the waste water allowed to flow over a properly trapped drain inlet. Efficient means should be adopted to dispose of the excrement and refuse, and action should be taken to prevent the numberless nuisances due to pig-sties. Appended to the report is Dr. Letheby's analysis of the Doncaster well waters, the London waters, and the proposed new supply. The latter is said to be in every respect well suited for a town supply.

St. Peter's, Wolverhampton.—A considerable portion of the intended decorations of the chancel of this old collegiate church has just been completed, and the result is said to be satisfactory. The subjects painted on the panels, commencing from the west, and their donors, are as follows. The names marked with an asterisk are those of prebendaries of the Collegiate Church:—*North Side.*—"The Sower," the Rev. the Earl of Buckinghamshire;* "The Tares," Mr. Thorneycroft; "The Hid Treasure," Mr. A. Sparrow; "The Pearl of Great Price," Mr. C. Mander; "The Draw-net," Mr. Herrick; "The Lost Sheep," Rev. William Birkett;* "The Charge to Peter,"—St. John, xxi., the late Mrs. Cooke and Mr. Kettle. *South Side.*—"The Talents," Mr. George Ward; "The Great Supper," Mr. Henry Ward; "The Labourers in the Vineyard," Mr. Twentyman; "The Prodigal Son," Miss Neve; "The Lost Piece of Money," Miss Hinckes; "The Triumphal Entry into Jerusalem," Mr. Griffin. The apse roof has been gilded and decorated at the expense of Mr. Parke; and the figure of "Our Lord in Majesty," on the west wall, is the gift of several contributors. The artists are Messrs. Heaton, Butler, & Bayne, of London, and the sum of 450*l.* will be about the cost. A stained-glass window will be placed in the chancel, by Mr. A. Staveley Hill and his sisters. The new decorations have, it is generally remarked, rather thrown into shade the east end of the chancel, and the next step will be to improve it. One donation has been offered towards providing a new reredos.

Labour Sentences instead of Time Sentences.—The adoption of a system of sentencing prisoners to perform a given quantity of hard and useful labour instead of a fixed term of detention, irrespective of their industry and reformation, has recently been advocated by Colonel Angus Croll, late sheriff of London and Middlesex. The principle is, indeed, partly being acted upon under the "mark system" of penal servitude sentences. But Colonel Croll proposes its extension to the inmates of county and borough gaols. The ratepayers, after being robbed, have to pay nearly 30*l.* for a year's board and lodging of every prisoner on the average. Therefore, as well remarked by Mr. Tallack, in the *Daily News*, if a thief can make boots, chairs, coats, cloth, or other useful articles, let him be compelled to do so by all means, both for his own benefit and as some compensation to the injured ratepayers.

Association of Municipal Engineers and Surveyors.—We are asked to mention that Messrs. Rawlinson & Harrison were elected honorary members, not vice-presidents, as stated in our notice last week.

The Ryde and Newport Railway.—A disagreement has arisen between the Ryde borough surveyor, Mr. G. H. Stayton, and the Ryde and Newport Railway Company, as to the manner in which the company are diverting the water-main at the Whitefield crossing on the Ashey road, rendered necessary by the construction of the new line. Mr. Stayton required the company to make and lay down the new main in lieu of the present one, also the 2-in. branch main, and to have the same ready for use, as required by the 19th section of the Railway Clauses Act, before the existing main is disturbed. This the company, objected to do. Mr. Stayton also required the company to construct and maintain a good and sufficient culvert (4 ft. by 3 ft.) over the main, so as to leave the same accessible for the purpose of repairs, as contained in the 22nd section. The case was brought before the county bench of magistrates at Newport, and after the examination of Mr. Stayton, Mr. J. E. Greatorex, borough engineer of Portsmouth; Mr. H. C. A. Timins, the resident engineer of the company; Mr. A. M. Bell, the contractors' engineer, and others, the bench gave a verdict in favour of the corporation on all the points in question.

Unfit Houses.—At the Surrey Sessions, the chairman (Mr. Hardman) and a bench of magistrates were engaged all day in hearing an appeal against an order of the Vestry of St. Giles, Camberwell, for the demolition of two houses in Alpha-street and sixteen houses in Bexley-place, the same being unfit for human habitation and incapable of repair. Mr. Crawford, M.P., and Mr. Laxton were for the appellant, and Mr. Besley and Mr. Lyon for the respondents. This is the second time that "Torrens's Act," as it is called, has been put in force in this parish. On the former occasion the owner of the condemned houses appealed from the decision of this court to the Court of Queen's Bench, but her Majesty's judges unanimously confirmed that decision. In the present case, after hearing much evidence on both sides, Mr. Hardman dismissed the appeal with costs. The houses will, therefore, be demolished, as it was agreed beforehand that the decision of this court should be final.

Associate Institute of Highway District Surveyors.—The annual meeting of this association was held last month at the Railway Hotel, Wells, Somerset, to transact the ordinary business of the association, and also to receive the report of the delegates as to their interview with Mr. J. Stansfeld, at the Local Government Board, in February last. It was proposed by the chairman (Mr. James Bateman), and carried unanimously, that a meeting be held in June next, at Swindon, Wilts, to take into consideration the present position of highway district surveyors. A cordial vote of thanks was passed to the secretary, who was again elected. Due notice of the place and time of meeting will be given, and the attendance of all district surveyors is earnestly requested. Information may be had of the secretary, Mr. E. White, Chew Magna, Bristol; or of Mr. James Bateman, Kingston-on-Thames, Surrey.

The Dudley Town-hall. The extensive alterations which have been carried on at the Dudley Town-hall buildings, under the superintendence of Mr. Isaac Barradale, of Leicester, architect, approach completion. Accommodation is now provided under the same roof for all the public offices. A staircase from the magistrates' clerk's corridor leads to the police-court and witnesses' room adjoining on the first floor. The public entrance to the court is from Priory-street, where there are spacious waiting-halls and stone stairs. The magistrates have a separate entrance and staircase. The council-chamber is in the new wing, and is lighted by large traceried triple windows, and two single-light windows at the end, filled in with diamond-shaped cathedral glass, and in each quatrefoil head there is a wizard's pentagram in different colours. The roof is open-timbered, stained and varnished.

Subterranean Fire.—A fire has been raging underground in Holborn, South Shields, over an area of 300 square yards, amongst the pan-ash and small coal, beneath valuable properties, several of which have fallen, causing the death of three persons lately. The fire has now burst through the surface, spread to a builder's warehouse, burned it down, ruined other properties, and is still burning.

The Steam Road-roller.—The Kensington Vestry have received a report from the Committee of Works, stating that the steam road-roller had been at work for 196 days, during which time it had rolled 147,113 superficial yards of granite, and 22,273 yards of flint, in all 169,386, giving an average of about 864 yards per day. The cost was as follows for the twelve months ending 14th February, 1873:—Repairs, 15*l.* 11s. 4d.; oil, &c., 22*l.* 7s. 7d.; fuel, 74*l.* 5s.; wages, 232*l.* 15s. 10d.; watching, 52*l.* 17s. 7d.; incidentals, 12s. 1d.; total, 398*l.* 9s. 5d. In addition to these expenses there are 46*l.* 0s. 10d. for a spreader; labourer, 36*l.* 18s.; ditto, 5*l.* 2s. 11d.; watching (say half), 26*l.* 8s. 10d.; total, 111*l.* 10s. 7d. The Committee finding the expense of watching the roller to be nearly 10 per cent., recommend that arrangements be made for housing it.

The Municipal Museum, Paris.—This new Institution, Rue Sainte-Catherine, will be opened to the public, it is expected, in July next. One compartment comprises fragments of architecture and sculpture coming from the excavations made at all the points of Paris by the city engineers (antique altars and statues, relics of temples, triumphal arches, and other monuments of the Gallo-Roman period). There is also a museum of decoration and furniture, consisting for the most part of articles obtained from the demolition of old Paris edifices, such as doors, windows, panels, sign-boards of trades and corporations, street-knockers, weather-cocks, and other details of Mediæval and Renaissance architecture; and a technological museum, comprising the tools and utensils employed by the different classes of Parisian society during the Middle Ages.

Mr. W. Bragge.—Mr. William Bragge, C.E., F.S.A., who has just given to Birmingham his rare and costly Cervantes Library, has been appointed a Knight Commander of the Order of the Rose by the Emperor of Brazil. When Mr. Bragge was engaged in various engineering works at Rio Janeiro, he had frequent interviews with the Emperor, and was appointed a Chevalier of the Order of the Rose in 1851. When the Emperor recently visited Sheffield, he honoured Mr. Bragge with a visit to Shirle Hall, carefully examining every part of an English private mansion, and has courteously acknowledged the hospitality of Mr. Bragge by the special honour mentioned above.

Destruction of Bricks.—The brick croft of Messrs. Benton & Woodiwiss, railway contractors, Gorton, is a very extensive one, and is worked by Mr. G. Foster, brickmaker, who does not employ any "union" men. On Saturday afternoon there were about 50,000 finished bricks on the croft, and these were laid out to dry. They were all in good condition at six o'clock in the evening, but at eleven o'clock nearly 40,000 of them had been spoiled by having been trampled upon. Information was given to the police, and three men, all members of the Brickmakers' Union, have been apprehended by Inspector Bourke, of the county constabulary, on suspicion of having been concerned in the outrage.

Catoptric Street Lamps.—The terrace of Trafalgar-square has had its old lamps replaced by the catoptric street lamps invented some time since by Mr. Skelton, and which are now fast coming into general use. Three of these lamps have also been put up in St. Martin's-place, to the improvement in the lighting of this usually dim part. The bottom of the lamp is closed in by four segmental panes of glass; one of these is fixed to a hinge, and has a stout wire projecting at the opposite part beyond the lamp frame. This one pane is pushed aside by the torch-pole when the lamp has to be lighted, and closed up again by the pole when that has been done.

The Mortar of the Great Pyramid.—At a recent meeting of the Chemical Section of the Philosophical Society of Glasgow, Dr. Wallace read a paper "On the Mortar of the Great Pyramid." This mortar consists almost wholly of gypsum or hydrous sulphate of lime; a specimen, analysed by the author containing as much as 92·83 per cent. of this hydrous sulphate.

Builders' Benevolent Institution.—An election of four pensioners (two males and two females) will take place at Willis's Rooms, King-street, St. James's, on Thursday next, the 22nd inst. There are four male and eight female candidates.

Street Architecture in Leicester.—A pile of new business premises, erected for Messrs. Jacobs & Kennard, in Horsefair-street, Leicester, has been opened. The design is by Messrs. Millican & Smith. From the front pavement the interior has the appearance of a bazaar; and from a distance it looks much like a public hall. The building is said to be one of the most costly contributions which private enterprise has made to the Leicester street improvements.

Local Improvements.—Mr. Stansfeld, in reply to Sir J. Bailey, in the Commons, has declined any Government responsibility for local works undertaken in compliance with the Public Health Act, 1872. Government advanced small loans in furtherance of these works, but declined any responsibility as to their construction.

Restoration of St. Michael's Church, Dawlish.—At a committee meeting held at the School-room, on May 8th, the Rev. O. Manley, vicar, in the chair, the plans submitted by Mr. St. Aubyn, architect, were highly approved of, and passed. The work is to be carried out by a public subscription, about 1,000*l.* having been already promised.

Election of Surveyor, St. George's Union. The Board had three candidates, viz., Mr. R. H. Burden, No. 307, Oxford-street; Mr. H. Saxon Snell, 22, Southampton-buildings, Chancery-lane; and Mr. E. Power, district surveyor's office, southern division of the City of London, 1, Walbrook-buildings. A ballot was taken, which resulted in the election of Mr. H. Saxon Snell.

Crewkerne Cemetery Competition.—The Board have selected the designs for new chapels and lodge furnished by Mr. George Nattress, of Great James-street, Bedford-row, London, subject to the instructions furnished to the competing architects. There were thirty competitors.

Society of Engineers.—Arrangements have been made for a visit of the members on Monday, the 19th inst., to the works of the Albert Bridge at Chelsea, the Thames Embankment at the same place, and the Wandsworth Bridge.

Fall of a Bridge in America.—A bridge in Illinois has given way while crowded with persons looking at a baptism in the river beneath. Fifty persons were supposed to have perished, and twenty-four injured.

Gas used in New York.—The amount of gas consumed by the city of New York alone each year is estimated to be not less than 4,000,000,000 feet.

TENDERS.

Misleading Correspondents.—With reference to lists of tenders for new roads, Camberwell (p. 356, *ante*), the surveyor to the Camberwell Vestry obligingly informs us "that the said tenders were received by the Vestry on the 24th of June last, and that the whole of the works comprised therein are, with one exception, completed." We do not hesitate to say that the lists were sent us by Mr. Riley, the contractor for the work, who ought to have known that he was misleading.

For works at the Nottingham Arms, Nottingham-street, Marylebone, for Mr. Bull:—

Gorvin	£170 0 0
Heslop & Pollard	160 0 0
Sherman	142 0 0
Langmead & Way	130 0 0
Moultrie (accepted)	115 0 0
Lockington (too late).	

For alterations and additions to No. 11, Finsbury-place, City, for Messrs. Roberts & Sons. Mr. W. P. Griffith, architect:—

Yardley	£697 0 0
Lidstone	598 10 0
Bamford	547 10 0
Hunt	400 0 0

For repairs and painting Nos. 111 and 112, Stoke Newington, for Mr. Harrison. Mr. W. P. Griffith, architect:—

Baldwin	£198 10 0
Bamford	180 0 0
Devereux	147 0 0
Cornwell	130 0 0

For the erection of public baths and washhouses, for the parish of Paddington, on land situate in Queen's-road, Bayswater. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Riddett:—

Aitcheson & Walker	£25,018 0 0
Bowles	23,577 0 0
Crockett	23,260 0 0
King & Sons	22,237 0 0
Chappell	22,229 0 0
Thomson & Smith	21,987 0 0
Elkington (accepted)	21,300 0 0

For school, Old Castle-street, Bethnal-green. Amended tender recommended to be accepted:—

Parsons, Brothers	£4,920 0 0

For the erection of warehouse, for Messrs. Henry Brace & Co., Walsall. Mr. Ralph Chamberlain, architect. Quantities supplied:—

	Less old Materials.
Adkins	£6,437 0 0 ... £ 40 0 0
Rowley & Co.	6,280 0 0 ... 200 0 0
Rowley, sen.	6,268 0 0 ... 60 0 0
Stockton & Son	6,213 0 0 ... 50 0 0
Trow & Sons	5,650 0 0 ... 100 0 0
Moore	5,509 0 0 ... 200 0 0
Taylor (accepted)	5,277 0 0 ... 150 0 0

For re-building Nos. 424 and 426, Edgware-road, for Mr. Henry Phillips. Mr. R. H. Moore, architect:—

Brass	£2,577 0 0
Manley & Rogers	2,516 0 0
Patrick & Son	2,498 0 0
Cress & Son	2,470 0 0
Scrivener & White	2,440 0 0
McLachlan	2,336 0 0
Thompson & Smith	2,379 0 0
Merritt & Ashby (accepted)	2,338 0 0

For new conservatory, bath-room, &c., at No. 86, Maida Vale. Mr. P. Wilkinson, architect:—

Stimpson & Co.	£567 0 0
Thompson & Smith	536 0 0
Cordwell	425 0 0

For first portion of engine-factory, for Rotheroe & Bastin, at West Drayton, Middlesex:

Crockett	£1,050 0 0
Mercer	953 0 0
Vaughan	900 0 0
Woodbridge	900 0 0
Reavell	895 0 0
Fassnidge (accepted)	889 0 0
Trevena	867 0 0
Blackmore & Morley	848 0 0
Gibson, Brothers	845 0 0
Riches	745 0 0
Hook	710 0 0

For the erection of sewage works at Whitley, Coventry, Warwickshire, for the General Sewage and Manure Company, limited:—

Marriott (accepted)	£7,416 0 0

For cottage hospital, Prior's Lee, Salop, for the Lilleshall Co. (Earl Granville). Mr. Joseph Fogerty, architect:—

Ashby	£2,896 4 0
Nevett, Brothers	2,577 0 0
Marrion	2,390 19 5
Millington (accepted)	2,295 17 6

For stables, groom's residence and outbuildings, approaches, and boundary walls, Eden Park, Beckenham. Mr. J. Fogerty, architect:—

Foster (accepted)	£1,850 0 0

For vineries, &c., Brixton, for Mr. W. McArthur, M.P. Mr. J. Fogerty, architect:—

Andrews	£1,323 0 0
Lascelles	1,072 0 0
Candler (accepted)	1,020 0 0

For house, Moore Park, Surrey, for Rev. Dr. Rogers. Mr. J. Fogerty, architect:—

Dabbin	£1,200 0 0
Smith	1,150 0 0
Dunsmore & Knight (accepted)	1,025 0 0
Watson, Brothers	977 0 0

For schools, &c., for the district of All Saints', Newington. Mr. Robert Parris, architect. Quantities by Mr. T. Nixon:—

Newman & Mann	£5,082 0 0
Mitchell	4,966 0 0
Sharpington & Cole	4,921 0 0
Morter	4,873 0 0
Crockett	4,847 0 0
Marsland & Son	4,833 0 0
Nixon & Son	4,558 0 0
Downs & Co.	4,429 0 0
Cullum	4,396 0 0

For new schools, Odessa-road North, Forest Gate, Essex, for the West Ham School Board. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Son:—

Trevena	£9,980 0 0
Read & Son	8,783 0 0
Abrahams	8,748 0 0
King & Son	8,695 0 0
Wicks, Bangs, & Co.	8,649 0 0
North	8,625 0 0
Niblett	8,592 0 0
Rivett (accepted)	8,403 0 0

For mansion and offices at Warren Corner, near Farnham, Surrey, for Mr. George Wilkin. Mr. Shoppee, architect. Quantities by Mr. Sidney Young:—

Henshaw	£5,990 0 0
Brass	5,927 0 0
Macey	5,650 0 0
Conder	5,633 0 0
Birch	5,578 0 0
Jackson & Shaw	5,422 0 0
Goddard & Son	5,384 0 0
Crossley (accepted)	5,378 0 0

For general repairs, painting, &c. to the New Corn Exchange, Mark-lane. Mr. G. E. W. Barnes, architect:—

	General Work.	New Lobby.
Howell	£865 0 0	87 15 0
Mansfield	850 0 0	78 0 0
Hayward & Son	659 0 0	72 13 0
Pitman & Cuthbertson*	548 0 0	71 10 0

* Accepted.

For the erection of a block of ten cottages at Cwmbran, near Newport, for the trustees of the Cwmbran estate. Mr. Capel N. Tripp, architect.:—

Clutterbuck	£2,000 0 0
Bolt & Co.	1,999 19 0
King & Godwin	1,968 10 0
Coleman, Brothers	1,942 0 0
Sprung	1,925 0 0
Christopher	1,475 0 0

For the erection of vagrant wards at the Union Workhouse, Bromley, Kent, for the Guardians of the Bromley Union. Mr. Martin Bulmer, architect:—

Ginham	£1,217 10 0
Masters	975 0 0
Payne & Balding	929 0 0
Haisman	880 0 0
Capping	850 0 0
Lacey	848 0 0
Ritson	833 0 0
Blake & Ramplin	799 0 0
Gill	782 0 0
Booker	750 0 0
Laurance (accepted)	725 0 0

For new Catholic church, Greengate, for the Rev. H. Beswick. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Jackson	£6,560 0 0
Haigh & Co.	6,210 0 0
Southern (accepted)	5,850 0 0

For new Turkish and vapour baths, Buckingham Palace-road, London, for Mr. Ross. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Allen	3,408 0 0

For new Catholic church, Workington, for the Rev. Cuthbert Clifton. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—
Estimates of reduced design.

Nicholls	£8,700 0 0
Hardwick	8,550 0 0
Watts	8,532 0 0
Wilson	8,500 0 0
Watkin	8,450 0 0
Jackson	8,300 0 0
Yates (accepted)	8,275 0 0
Smith	8,250 0 0

For a mortuary chapel, for Mr. W. J. Walmesley, Westwood House, Wigan. Mr. E. Welby Pugin, architect:—

Hardwick	£2,200 0 0
Williams	2,050 0 0
Jackson	1,999 0 0

For proposed vagrant wards, Woolwich Union. Mc Church & Rickwood, architects:—

Elliott	£4,998 0 0
Blake	4,700 0 0
Lacey	4,100 0 0
Kirk	3,793 0 0
Lonergan (accepted)	3,790 0 0

For alterations and repairs to No. 18, Clare-street, Clare Market. Messrs. Ebbetts & Cob, architects:—

Carmody	£160 0 0

For Walsall Tube Works. First section, exclusive of iron work, chimney stack, furnaces, &c., for Messrs. Gill, Hilditch, & Co. Mr. Ralph Chamberlain, architect:—

Rowley, jun. & Lynex	£1,460 0 0
Trow & Sons	1,269 0 0
Taylor (accepted)	1,220 12 0

For alterations and additions to 19, Addison-road, Kensington, for Mr. H. L. Harper. Mr. T. Lawrie, architect:—

Sharpington & Cole	£3,513 0 0
Stimpson & Co.	3,470 0 0
Scrivener & White	3,317 0 0
Foster	3,140 0 0
Rankin	2,900 0 0

For alterations and additions to 26, Belmont-hill, Lewisham, for Mr. J. Ford. Mr. T. W. Cutler, architect:—

Stimpson & Co (accepted)	£530 0 0

For erecting a new rectory and offices at Ewhurst, near Cranleigh, Surrey, for the Rev. Mr. Barlow. Mr. W. H. Fletcher, architect:—

Green & King	£4,050 0 0
Sherborne	3,874 0 0
Stimpson & Co.	3,805 0 0
Browne	3,650 0 0
Wellicome & Oakley	3,266 0 0
Pink	2,996 0 0

For stable at Woodthorpe, Beulah-hill, Upper Norwood, for Mr. Berrall. Mr. G. F. Fry, architect:—
Stimpson & Co. (accepted) £375 0 0

For repairs to 1, Hinde-street, and 58 and 59, Marylebone-lane, for Mr. Berrall. Mr. G. F. Fry, architect:—
Stimpson & Co. (accepted) £542 0 0

TO CORRESPONDENTS.

E. Z. A. (no).—S. H. (in type)—Architectural Competitions (in type) A. & C. H. (we shall be glad to know result). S. & Sons.—C. J. S. K. & Son. L. A.—H. H.—J. W.—Old Subscriber.—E. F.—J. B. R. F. Mr. S.—W. P. G.—F. R. W. R. L. A. B. H.—J. L.—G. W.—S. A.—R. & B.—J. F.—E. B.—R. G.—E. L.—H. & C.—M. T.—P. & C.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

SITUATIONS WANTED.—Advertisements of this class are inserted at the following rate, viz.:—

Six lines (about fifty words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Halfpenny stamps accepted for amounts under 5s.

The Builder.

VOL. XXXI.—No. 1581.

*Brilliant Architectural Discoveries in Eastern Syria.**

BOOK of real travel, adventure, and discovery, bearing the rich fruits of culture and study in natural history, geology, local history, topographical description, and architecture, illustrated by the aid of the camera, written in good English, and perfumed by a rare and delicate modesty,—such a book as this does not often do credit even to the press of Mr. Murray. It is, we know, against all rules of general criticism thus to commence a notice of a book on which it is not intended subsequently to fall foul. But we confess to writing under the charm of a perusal at a single sitting, and we may be allowed for once to speak before the impression has had time to evaporate.

It is not in the present year that Canon Tristram has to win his spurs, either as an explorer or as an author. It is fourteen years since he first visited Palestine, and his "Land of Israel" is no doubt known to many of our readers. We have been of late rather over-dosed with the Holy Land. A subject of essentially unrivalled interest, it has been selected as a theme by writers who possessed no special fitness for the task of its description; or who, at all events, have not displayed much ability either to satisfy the intelligent curiosity, or to fill and warm the imagination, of their readers. On hearing of a new work on Palestine, one is apt to become conscious of a faint scent as of a sermon; and, whatever may or may not be the value of sermons under their natural circumstances, they are, at all events, generally intolerable in print. The difficulty experienced by the reader in their perusal leads to the reflection of the ease, or at all events the absence of skilled labour, which must have attended their production. Though a Doctor of Laws and a Canon of Durham, Dr. Tristram has not by any means given us a volume of sermons on Eastern Syria. Nor can we fail to pay a respectful tribute to the admirable taste of the few simple passages in which he has reminded us of the academic hood.

One main reason of the charm of the book we take to be that the writer is a practical naturalist. Unless Solomon, Æsop, and Lord Bacon are all terribly mistaken, there is no such training, for the man who seeks a higher culture than schools can give, as the study of natural history. It has at once the advantages of a hobby and of a curriculum. It teaches eye and hand, awakens industry, and stores the memory with golden wealth. For an exploration of an unknown, or almost unknown, country, such as the pages in question have so graphically brought before us, it is, perhaps, the first qualification; for it inspires a research that can never absolutely fail, and rarely be without valuable result. It tends to keep up the interest, the courage, and thus the health of the explorer. It assures him, day by day, that something, however small, is secured for our common stock of knowledge, by his toil and patience. And it not only leads to the record of zoological and botanical details that are in themselves of use, but it further tends to the more thorough comprehension of the geographical and architectural features that may be committed to the portfolio or the note-book; and, above all, fills the mind of the traveller with a wonderful appreciation of the picturesque.

The points which make Dr. Tristram's work a subject for comment in our pages are, of course, principally those which relate to the architecture of the country, a portion of which he is the first European with eyes in his mind who has trodden. We may add those which relate to its engineering. As to this, we have a new proof of the wonderful energy and enduring skill of that mighty race who made Syria the frontier when their empire marched with that of the Parthian monarchs. From south to north through the land of Moab, on the map which is inserted to show the route taken by Dr. Tristram and his companions, runs the well-defined double wall of the paved Roman way, connecting the fortresses, or central points, of Kerac, Rabbath, Diban, Beth Meon, and Elealeh. The pavement still exists, as it does on well-known portions of the ancient Roman roads in Italy; but it is broken up, and the flag-stones often stand on end. The width between the parallel walls is five yards. Across level country the road stretches as straight as an arrow. About eight miles to the west of this great military road a parallel line, also Roman, has been traced by our travellers for about a mile and a half, leading to an interesting and extensive ruin, known by the name of Um Weleed.

Next to the Roman roads, the chief engineering features of the country are those which are connected with water storage and distribution. To understand the importance, as well as to account for the extraordinary number, of ancient cisterns, we must bear in mind the physical features of the country. It is not, like the valley of the Nile, a land "watered with the foot," or by the use of the *n'aura*, or water-raising wheel. Like Palestine, it is a land of hills and valleys, and "drinketh water of the rain of heaven." But it is not fed by that rainfall, as it gushes from springs and trickles in brooks. When the needful supply comes down, it is with such violence that it sweeps through the country, delves deep clefts in the marl, and rushes through ravines to the Salt Lake, that receives the entire drainage of the district. Thus the construction of cisterns was an essential provision for the supply of the dense population that once tilled and fertilised the now deserted district. On the Moabite stone, if we can rely on the translation of M. Clermont Ganneau, is inscribed the memorial that the king of Moab ordered every man to build a cistern for himself. Dr. Tristram gives us a view of a tank at Ziza, a town which, under the later Empire, was one of the most important places of Roman Arabia: this is constructed of solid masonry, and measures 140 yards by 110 yards, or more than three times the area of the Great Birket Israil, at Jerusalem. The depth does not seem to have been ascertained, but the surface of the water was 17 ft. 6 in. below the edge of the tank. The masonry is magnificent. The courses run about 2 ft. thick, and many of the stones are 6 ft. long. This tank has been excavated at the angle of a wide shallow valley, just below the rising ground occupied by the town. At its north-east angle, above the top, are very perfect openings for sluice-gates, in massive masonry. In a line with these gates, and also at right angles to them, are great walls, each supported by a solid earthen embankment. The wall at right angles extends for some distance, beyond which the embankment is continued in the same line across the plain, so as to dam back any floods that might come down the valley. Higher up, in the middle of the embankment, was another set of sluice-gates for letting off the surplus water when the tanks were full. Stone breast-works, backed by embankments, are found further up the valley, constructed so as to turn the rainfall into the central channel.

As to architectural remains, Dr. Tristram is to be congratulated on discoveries of unusual importance. The long period of time during which this once fertile country has been inhabited may be divided into well-distinguished historic chapters, of almost each of which some distinct illustration has been secured by the labours of the expedition. To commence with the most ancient,—the non-historic if not pre-historic period,—we are told of a region of dolmens and megalithic remains. The dolmens consist invariably of four stones, three set on edge, at right angles to one another, and the fourth, from 6 ft. to 10 ft. square, fixed as a roof. In Moab they appear to be confined to the district between Heshbon and the Callirrhoe, although many similar structures are found in the bare parts of Gilead. They always occur on the sides, never on the tops, of hills. Irby and Mangles observed a group of twenty-seven dolmens in their route from Es Salt to Nablous. These consisted of two parallel upright stones, with one flat roof. Mr. Fergusson cites another considerable group at a place called Kafr er Wâs, not far from Tibneh. Dr. Tristram remarks that the three great classes of pre-historic monuments, viz., dolmens, stone circles, and cairns, exist in great abundance in three different parts of the country, but are never found together. The cairns are found exclusively in the east, on the spurs of the Arabian range; the stone circles, south of the Callirrhoe; and the dolmens, north of that valley. The existence of contemporary tribes, distinguished by different religious or funereal customs, living near to one another, is inferred from the observation. In our own country the co-existence of a burying, dolmen-building race, and of a barrow-raising incremating race, who paid small respect to the monuments of one another, seems even more distinctly indicated by the anomalous relations between these two distinct forms of funereal memorial.

Advancing to historic, though still very early times, we find traces of the Amorite inhabitants of the country in the sites and names of some of the cities, and in the use of basalt as a building material; the large blocks of which were fitted together in mortarless walls, as in the uncoursed Cyclopean work of better-known regions. Thus on Jebel Shihan, the highest point of the mountain plateau, from which the Roman road descends to cross the valley of the Arnon, a spot which Dr. Tristram identifies with the city of Sihon, the Amorite king, are found numerous inclosures walled with blocks of unsquared basalt, selected and fitted with extreme care, and resembling the Cyclopean remains in the Hauran or Bashan. They cover many acres. The side walls of the road are constructed of the same material; the use of which is more remarkable from the fact that limestone is the native rock of the country, and is used in all buildings which can be referred to the last 2,000 years. A fortress on this hill is built chiefly of limestone, although blocks of basalt, taken from more ancient buildings, have been intermixed. A Roman temple near the fortress, of which broken shafts and Ionic capitals remain, was built of limestone. It is very interesting to trace back the dim and half-shrouded links that connect, in this region, the earliest Semitic records with the relics of prehistoric times. "The Remnant of the Giants," at the time of the invasion of Palestine by Moses and Joshua, was found lingering in the neighbourhood of Cyclopean walls and megalithic tombs.

Ar of Moab, or Rabbath, Kir-Kores or Kerak, Dibon, Heshbon, and Elealeh, are other ancient cities of which the sites seem clearly

* The Land of Moab. Travels and Discoveries on the East Side of the Dead Sea and the Jordan. By H. B. Tristram, M.A., LL.D., F.R.S., Hon. Canon of Durham. Murray, 1873.

determined. Great interest attaches to anything which may throw light on the situation of the four cities of the plain, which were overthrown by the great geological convulsion in the time of Abraham. The contribution which Dr. Tristram brings to our knowledge on this subject, is a proposed identification of Zoar, the fifth of the confederate cities, with Ziara, a large pile of ruins on a bold headland, "overhanging the head of the Dead Sea." Although this identification cannot be said to be absolute, it yet has a good *primâ facie* value. We are the more inclined to accept it from considerations which seem to us as yet to have been disregarded by most investigators of this interesting district.

Bela, or Zoar, is spoken of as the least of the cities of this ancient pentapolis. It was above the plain, in which the other four were situated. Of these four more important cities, no shadow of a trace has been found. We must keep in view their designation, "cities of the plain;" which does not altogether preclude the idea that, like every other city in this region, they occupied "tells" or eminences, although they may have been comparatively low. But the plain itself is now sought for in vain. The plain of Jordan, "as thou comest to Zoar," that was "well watered everywhere, before the Lord destroyed Sodom and Gomorrah, as the Garden of the Lord, like the land of Egypt," is looked for in vain from the mountains of Moab. A small fringe of oasis, or fertile pasture, skirts the salt tide in places. To the north of the Dead Sea, beginning to widen at about four miles' distance, and rapidly expanding to a width of some fourteen miles eastward of the Jordan, lies Es Scisaban, or the Plain of Shittim. South of the same lake lies an area of similar country, covered first by cane brake, then by a belt of rushes, then by a strip of tall, reedy grass, next by a belt of scrub, affording only browsing for goats; then by a zone of rich, park-like land, yielding under cultivation, barley, wheat, millet, tobacco, and indigo; and, immediately on the gravel *talus* of the hills, by a scanty undergrowth, in which the osher, an asclepiad, is most conspicuous. At some period of time, no one doubts, before the Ghor, or valley of the Jordan, had sunk to its present abnormal and unique depression of 1,300 ft. below the level of the Mediterranean, the gulf of Akaba, the eastern of the two horns of the Red Sea, was the *embouchure* of the waters of this great line of drain. The plain grammatical sense of the book of Genesis, no less than Moslem tradition, implies the existence of a valley, now nowhere to be found, before the great convulsion that overthrew Sodom. It points in plain terms to a difference in the physical condition of the district before and after that overthrow. The vale of Siddim, *vallis Salsa* of the Septuagint, contained *putei bituminis*. No asphalte pits or wells are now known. The translation of St. Jerome is precise: *in vallem silvestrem, quæ nunc est Mare Salis*. The term Shaveh, translated "dale," only occurs in this passage of the Old Testament, and is applied first to the depression running from Kuriyat, or Kiriathim, down the vale of the Arnon, towards the Dead Sea; and again, apparently, to the prolongation of the same feature on the opposite coast. If Sodom was situated on or near the spot where Arnon on the east, and Kedron on the west, fell into the original course of the Jordan, the whole description is perfectly clear. But if either the Persian invader, or the patriarch Abraham, had to make a detour round the actual north or south extremity of the Dead Sea, the passage cannot be readily explained. There is thus good reason to suppose that in the overthrow of "*omnem circa regionem*" we have the account of a phenomenon such as that which, on a smaller scale, but with not less awful surprise, occurred at Lisbon in the earthquake of 1755; when the quay, covered with terrified fugitives, sank to an unfathomed depth below the Tagus.

From this ancient date of Syrian cities, the stride to the most clearly-indicated period, that of the Idumean dynasty, and the Roman protectorate, and subsequent direct rule, carries us over a period of 2,000 years. Dr. Tristram has discovered and described Machærus, the famous fortress of Herod, built to guard the Arabian frontier. Masada, the stronghold on the western shore of the Dead Sea, has been previously known. Machærus, now called M'Khaur, stood on the summit of a cone, which is the apex of a long flat ridge, running, for more than a mile east and west, nearly half-way between the valley of the Arnon and the Callirrhoe. The whole of the ridge was fortified; but the key was an isolated and impregnable circular work, of exactly 100 yards diameter, on the very top of the cone. The peribolus can be clearly traced, its foundations standing several feet above the surface. There exist a well of great depth; a large and deep oblong cemented cistern, with the vaulting of the roof still remaining; and two dungeons, one deep, and with its sides scarcely injured. The absence of any traces of cement on the walls, and the existence of holes in the masonry, fitted for the reception of staples of iron and wood, show that this was a dungeon, and not a cistern. Dr. Tristram has added a most important identification to the very small number of sites that can be certainly connected with the events recorded by the Evangelists, in thus visiting and describing the spot where the messenger of Herod Agrippa "went and beheaded John the Baptist in the prison."

Under protection of the fortress lay a city, the ruins of which cover a larger area than any visited by our travellers,—a square mile of undulating hillocks. A small Doric temple faced the sunrise, and an old Roman road wound from the city to the castle. This prodigious pile of stones stands at a height of 3,800 ft. above the Dead Sea, and the distant walls of Jerusalem, and the hill country of Judea, are plainly visible across the valley. With this fortress, in the fourth year of Vespasian, fell the last fragment of the independence of Judea.

Of Roman rule and influence the traces are numerous. We have mentioned the Doric temple at Machærus. Similar fanes exist at Um Weleed and at Zebib, of the first of which Dr. Tristram gives a plan. We have mentioned an Ionic temple at Jebal Shihan. A fortified temple, of the Corinthian order, forms part of the ruins of Kustul. At Medeba a round temple seems to have been converted into a Christian church, and many Corinthian capitals strew the ground. Two columns are yet standing among the wide-spread ruins of this ancient Moabite city, which seem to have undergone an attempted restoration by the Saracens; for here, as in the dome of the Rock at Jerusalem, capitals of different forms, each far too small for the column on which it is placed, have been fixed on the shafts, and a block of stone has been laid across them, which yet maintains its place.

From Roman times we thus come down to those of the Khalifate, and of the Latin kingdom of Jerusalem. Chief among these may be named the virgin fortress of Kerac, where Dr. Tristram's party were imprisoned by the savage Mudjelli, or Turkish ruler of the place; and had the honour of occasioning the march of the Pasha of Jerusalem, with horse, foot, and artillery, to a rescue that was happily effected, in consequence of the wise precautions of the valued friend of the expedition, Mr. Klein, of Jerusalem, before his arrival. The walls of the double Castle of Kerac are more massive and imposing than those of Avignon, which they recall to the mind. The arch that faces the tunnelled entrance to this rocky hold is of the elliptical form used in some of our finest railway tunnels. Dr. Tristram makes one of the very few slips we have noted in saying that this fine castle was built under King Fulk, and strengthened under Godfrey of Boulogne. Kerac was the *seigneurie* of Réné de Chatillon, in right of his second marriage; and the lions rampant which flank an Arabic inscription built into the wall of the castle, no doubt recall the golden lion of the Chatillon escutcheon. Of work of the Christian times, we can only further notice the wide-spread ruins of Um Rasas, of which a photograph is given, as is the case with regard to the square, solidly-built tower, standing up to the height of six times its width, near the same spot, which is the scene of a legend of the Jinns and the Ghoules.

We have reserved to the close the discovery which, to the architect, is the crown of the whole successful expedition, and a tacit reproof to the Palestine Exploration Society. Near the eastern limit of the plains of Moab was said to exist a ruined khan, which no one had visited, and which was not worth the trouble of a visit. Dr. Tristram had no idea of accepting Arab *dicta* as to matters of the kind; and a sharp canter of an hour and a quarter from Ziza brought him within view of a magnificent ruin, unnamed in the maps, and unknown to history. What a moment for him! We envy him the thrill it must have caused him. A square quadrangle, 170 yards long on each face, rose with round bastions at each angle, and five demi-bastions between; the curtain being 18 ft. high. On the south face was the only entrance, a gateway, flanked by two octagonal towers, with a fretted façade of 52 yards long in the centre. On the wall is wrought a bold pattern of vandykes, or, as Dr. Tristram puts it, "like a continued W, with a large rose boss between each angle," above and below. The cut we are kindly enabled to reproduce will show the nature of this ornamentation.* "These patterns stand out boldly from the plane of the wall. Every side of their surface, and all the interstices, are covered with fretted work, representing animals, fruit, and foliage, in endless variety." The birds and beasts are correctly drawn, and do not die away in arabesque. Upwards of fifty animals are represented, in all sorts of attitudes, enclosed in cornices and mouldings of conventional patterns, and the interstices filled in with very beautiful adaptations of foliage. The quadrangle was divided into three courts, the central parallelogram being 66 yards wide. Seventeen or eighteen chambers on either side of the entrance served for guard-rooms. A large open hall, flanked by chambers with vaulted brick roofs, formed the chief apartment of this noble palace, for the further details of which we refer our readers to the work itself; and to the admirable woodcuts which give plan, elevation, and details, of this long-forgotten work of Oriental magnificence.

We are disposed to agree with Mr. Fergusson in attributing this unique relic to the Persian sovereign Chosroes II.,—a determination which gives the date A.D. 614 627. It appears never to have been entirely finished. There is no trace of Christian symbol in the enrichments. The presence of the animal forms shows that it is not Saracenic. It is different from anything Roman. Unlike the capitals of the Kubbet es Sakhrah, and of the Masjid el Aksa at Jerusalem, those of the inner palace have been wrought for the places they occupy; indeed much of the ornamental work has been carved *in situ*, that is to say after the stones were set. Thus the value of the discovery, as supplying an example of the architecture of an age and a style hitherto unknown, is of the first importance. The exquisite details of the fretwork are well displayed by woodcuts from the photographs taken by Dr. Tristram's party. They will suggest to many the origin of architectural forms to be found in India, Venice, and elsewhere, and ought to lead to some dissertation. We reproduce a restoration of one front of this hitherto unknown Persian palace, made by Mr. Fergusson.

Dr. Tristram deserves the thanks of the architect, the naturalist, the geologist, the historian, and the geographer, and we lay down the pen only to glance afresh over his most interesting pages.

ROYAL ACADEMY EXHIBITION.

AMONGST notes to be added to those already made is one to tell of the present positive attractiveness of what may be seen at Burlington House; for the crowds that fill the spacious galleries are more than three-fifths of the fairer sect of those who love pictures,—it need scarcely be said how composed the remainder may be; and although it is a weak trust for judgment to be led by what a pretty critic says of less pretty faces that are to be found in the pictures than her own,—"She never saw anything so lovely!"—it would be a mistake to think the Royal Academy Exhibition this summer not a very attractive one.

A seated figure of a Grecian maiden wreathing bays for some happy victor's head is exquisitely indicative of Mr. F. Leighton's art, that in its best form idealises without destroying nature and probability: the girl is very beautiful,—with such classic graces more often to be found epitomised in cold marble than in the warmth of genial colour,—that it must be guessed she is the Victoria of him for whom she is "Weaving the Wreath" (261), being laurel-crowned herself this highly-finished study is the single picture Mr. Leighton contributes, but a design for mural decoration,—an allegory of "The Industrial Arts of Peace" (1,270), companion to the already exhibited "Arts of War," forming part of a projected adornment at the South Kensington Museum will fully account for this. Of all things in the world, — excepting dragons and comets,—allegories are the most contentious in the many-minded apprehension of their meaning and purpose. Taken as a display of academic learning and inventive adaptation of various

* See p. 403.

attitudes in the several models that go to its mould, this composition deserves all praise: the ladies who are engaged to adumbrate the peaceful arts that help them to give no peace; the hair-dressing; dressmaking,—looking-glass worship that make women idols and men idolaters, are charmingly expressive and arranged (what a feast they would make for Mr. Poynter's dragon before More had left not much of him), but the hard work of factory-mill lessened by art; the great head-work that has reduced hand-labour's difficulties in mining; weaving; printing; ploughing—the earth and ocean; holding friendly converse with those from whom hundreds of miles of deep sea divide and do not divide us: the bread-making, in fact, to feed mind as well as body, should bear some part in an exposition of the industrial arts of peace.

Mr. Leighton's Monochrome is a notable work, though music, poetry, and perfume are made uppermost in his idea of peaceful art: of industrial, he is one of its best expositors; to no better example could those who ask for combination of the real and ideal refer, so far as the refinement a classical refinement gives, than to Mr. Leighton's best pictures. Many stories have been told about dragons, beasts of insatiable and epicurean appetite, and these have been swallowed so generally, and enjoyed so much, that Mr. E. J. Poynter must be considered quite kind to provide a new one for all who are fond of the marvellous: besides, the dragon is a national institution with Britishers, who know it to be more than the coin of the brain, if the head of the sovereign does give currency to the tale of the dragon St. George put a finis to. Mr. Poynter, no doubt, has found some very black-letter precedent to the popular edition, by which the true and particular account of the "Fight between More, of More Hall, and the Dragon of Wantley" (541), comes down to later date, for there is nothing at all burlesque in this relation: the dragon is real enough to vitalise the report of the deadest cracker ever told to verify fights of fable, and, had it been a very old representation, such a portrait of the period would put a full stop to any sentence condemning it to disbelief, further than would imply just a little doubt, if half a dozen Life Guards of more degenerate days would get the better of such a little difficulty as the dragon of Wantley, in less time than it had taken this concentrated force of a phalanx—the champion More, of More Hall. Mr. Poynter's genius has given breath to the concatenations of crocodile, Chinese fireworks, and lion's paws, and shown how to invest them with life,—as well as with and to his best knowledge, of the best method in killing them. The picture is painted to fill a panel at Wharncliffe Park, near Wharncliffe Chase, the scene of the legend, and to serve as a *pendant* to the same artist's "Perseus." There are curious animals enough left in Egypt, bases for exaggeration to make monsters of, to account for the boast of Crusaders begetting Mediæval belief in dragons. Even cattle and sheep, and such harmless things, are ugly there; and Mr. F. Goodall is a more trustworthy authority than the first-class traveller of former days, who took toll with a vengeance.

"Subsiding of the Nile" (292) leaves such a view of blank promise of pasture for gaunt herds, such a show of what inundation has hidden for a time, and killed to regenerate; the damage that no dam of any age could prevent; that the pyramids, best monuments of such stability as the world can show, and the wide expanse of calm, smiling sky, that would seem to smile the more if any vaunt could be made of this same stability—in Mr. Goodall's noble picture are quite a sermon on the text "Faith." Landscape, native figures, camels, and cattle are all so well depicted here that it would be quite a question as to the category of denominational professorship Mr. Goodall's name should come under. He asserts a right to all, but more widely, that the true artist, like the true author, can tell thoroughly well of all he observes. The thorough system adopted by parent passes to son, and if the "Capri Girls Winnowing" (372) is early show of it, the promise of great distinction for Mr. H. Goodall is more than half performed. It is a lovely picture, and not nearly so easily to be identified with the source of its style as Mr. C. Hunter's seascapes are with Mr. Hook's. "Trawlers waiting for Darkness" (386) is an extraordinary instance of example's dictation; not but what the power must have been ready, waiting its direction. How often is power misspent through the want of this guidance.

That pity which is akin to love has done more for many an object of it than would be possible to other regard, excepting that of love. Genius, eccentricity, and a sad end to them, with the pity it excites, do for the marvellous boy Chatterton what the amber does for the substance, fly or moth or accidental matter, that it surrounds and beautifies. Mrs. E. M. Ward's admirably studied and painted pictures are always looked for at Royal Academy exhibitions, and she has never painted better, nor studied more thoroughly, than in adding to the interest felt for the "Bristol Wonder,"—

> "The marvellous boy who perish'd in his pride."

Mrs. Ward shows him at work in his study, an attic he had appropriated under his mother's roof, where, in solitude, he delighted to lock himself up with his books, papers, parchments, paints, and drawing materials, to be surprised sometimes, having, in his eagerness to become busy, forgotten to turn the key. The church of St. Mary Redcliff, seen through the window, fixes the locality, and makes the story unmistakable. "Mrs. Edkins (his foster-mother) relates:—When she could get into his room she would. Once he put his foot on a parchment on the floor to prevent her taking it up, saying, 'You are too curious and clear-sighted; I wish you would bide out of the room. It is my room.'" This is the moment of Mrs. Ward's illustration, that, by capital personations of the angry, sullen boy, and good-tempered inquisitive Mrs. Edkins, and with the brilliant skill with which interior effect and carefully selected articles of still life are imitated, is a perfect realisation of the incident. Sun-rays from a rift in the storm-laden sky stream light through the window that seems to betoken the gleam of promise that dark clouds smothered so soon. As well harness Pegasus to a Pantechnicon van as attempt to curb genius. So think many. If genius were the uncontrollable gift that some of its appearances leave room for supposing it to be, it is beneficially ordained, indeed, that the gift should be a rare one; but the supposition is about as absurd as would be ingratitude for the brightness and warmth of glorious sun-light that occasionally burns a house down, through a knot in the glass that admits it. From Tycho Brahe's time to now, comets have defied all opinion of their purpose, their use, their intended influence. Short record of astonishing appearance, disturbing effect, and sudden exit, is the tale of all comets, and of Chatterton among them. Mrs. Ward will find numerous admirers of her very interesting subject amongst those who think more of the mind than of its warp; of its error being more induced, perhaps, than innate; and whilst deploring its wrong turn, deplore as much its want of that kind help for right direction,—and, for the rest, who would think—

> "The painting is almost the natural man;
> For, since dishonour traffics with man's nature,
> He is but outside: these pencill'd figures are
> Even such as they give out:"—

If they thought ever so severely of Chatterton, the artist's "pencill'd figure" is worthy of better consideration, and they will like him better now; and let their displeasure go "not a frown farther" than yesterday's thought tempered by to-day's consideration will allow.

Looking at just such pictures as polite behaviour, in company of many who are looking too, will permit, we come to a nice one.

Mr. J. Tissot has devoted much patient labour to the exquisite elaboration he exhibits connected with genteel sailor-life, and the attractive effect a smart lieutenant or first mate uniformly has on lasses or young ladies who love sailors (by "uniformly" it is not to be inferred that more than due allusion is made to the becoming wear of true blue; though it goes without saying, and is the most natural thing in the world, that many of its wearers are manly, handsome gentlemen). Mr. Tissot's scenes are as puzzling to some as the second act of a French comedy would be to any one who had not seen the first and did not know the language. The "Last Evening" (108) most certainly affects the damsel who is looking at nothing, but taking binocular view of a separation from the good-looking officer seated with her father, who sails to-night, and is hearing stipulations for her happiness and advantage. She is wondering how Walter will bear losing sight of her. She knows she never can live without him: the sea and ships are horrors to her, and her mother thought the same before her. Walter thinks the governor hard but reasonable, as he listens to the old adjuration to patience; and memorandum, that "if a girl is not worth waiting for, she is scarcely worth the thinking of." This is as clear for one reading as all the very cleverly represented adjuncts that form the descriptive locality for the story.

A commoner mind would have depicted the need for a sea voyage more plainly to "The Captain's Daughter" (121), but it is thought wise to keep her in ignorance that her health is a cause for anxiety, and Mr. Tissot only whispers this. How long that intensely-loving lover will manage to keep the secret, his worship knows or does not know. The girl is lovely: not only by reason of the face bringing the knowledge, but of the knowledge the face and the action of the beautiful hands express; for she knows better than she can be told how vague are the hopes entertained for her. It was not for the sake of painting intricate rigging, masts, and spars, and many other things, and giving such value to matter of fact—that, for the vulgar, is the great charm of the picture—the picture was painted at all. Old experience in black is the doctor, and he is giving a very honest opinion. Mourning still a similar loss, he adjures the stout captain to care for prevention. Mr. Tissot's interesting story is too pleasantly told not to leave it a sure thing that the dear girl will be so benefited by the voyage that next year we may see her married to her handsome lover, and just in time for the ball that will be given on the occasion.

ARCHITECTURE AND DECORATIVE ART IN THE INTERNATIONAL EXHIBITION.

To make an Art-Exhibition every year, on so large a scale as the galleries of the International Exhibition building demands, is, as we have duly pointed out before, scarcely possible. In regard to the higher branches of art especially, it is useless to expect that picture galleries of this extent can be filled annually with modern paintings of at all a high average. But although a first hasty walk through this year's Exhibition will convey the impression that there is in the art department a mass of things not worth looking at, a more careful inspection shows that there is enough of good art to be discovered, of one kind or another, to furnish matter for much enjoyment and some study, though intermixed with much of an inferior kind.

The collection of architectural drawings in the gallery of the Albert Hall, though not numerous, is good in point of quality, so far at least as draughtsmanship is concerned; and includes, with some well-known works, some which we have not seen illustrated before. Mr. Worley's "Interior of Exchange Hall" (2,904), part of a competition design for Stockton Exchange, is a good water-colour of a rather fine room, with no very special character about it. The "Wesleyan Chapel, Tunbridge Wells" (2,905), by Mr. C. Bell, is a very good design of its class, Early Gothic, with a side entrance and stair turret to gallery, treated in an original manner; the drawing a line one, in sepia for the main building, and the background and accessory buildings in black ink. Captain Mant's (R.E.), "design for High School, at Kolhapur" (2,908), is better than many engineering designs we have seen; it is an adaptation of Moorish architecture. Mr. Rowland Plumbe's "Bryant and May testimonial Fountain" (2,913), if not *match*less, is certainly not below the ordinary merit of drinking-fountain designs. Messrs. Satchell & Edwards's "Wesleyan Chapel, Stoke Newington" (2,915), looks, perhaps, rather better in the drawing than in reality, but it is a building of considerable merit and originality; the treatment of the tower, with its heavy, almost unbroken, brick buttresses, and the high narthex roof forming a kind of transept to it, realises a solid and dignified effect. A pretty bit of domestic architecture (half timber) is shown in "Roselands, Millbrook" (2,917), by Mr. Young; and Mr. Hall's church at Dorchester (2,918, 2,925) will bear inspection. Mr. Weir's "Wesleyan Chapel, Clapham" (2,928), is a fine drawing of a very weak design. "A Cottage Residence," by R. A. Came (2,929), is very good, both as to drawing and design. Mr. Howard Saye's beautiful drawing of the Aberystwith College (2,934) is much better seen here than at the Academy last year, where it was hung too high. It is quite a study in pen-and-ink drawing of this type. There is also a coloured drawing of Victoria-terrace at Aberystwith. Mr. Morrison Marnock's drawings (2,931-5-6) should be looked at as beautiful specimens of elevation line drawing, rather in the French style of

execution. The "Sketch of half-timbered House with Shop" is in every way praiseworthy. Messrs. George & Vaughan's "Entrance-lodges, Rousdon, Devon" (2,937), are a little too ostentatiously rustic and "cottagey." "Design for Suspension-bridge between Putney and Fulham" (2,945) is entirely spoilt by the bird-cage erections on the top of the piers, intended to give "lightness," no doubt, but only resulting in clumsiness. Such things as the piers of a suspension-bridge cannot be treated (architecturally) in too broad and solid a manner. "Design for a Gentleman's House" (2,944), by Cole A. Adams, is good in its way: a strongly-coloured red-brick structure, with angle-tower decorated with sgraffito work in its upper stages: and "Chorley Town-hall, 1872" (2,949), by Mr. A. Bickerdike, is a successful attempt at what may be described as Gothic grouped and composed in a Classic manner. A "Design for a Town Church" (2,930), interior perspective, by Mr. E. Mount, is a good monumental-looking interior, with double pier-columns, and a "blind" triforium decorated with wall-paintings.

In stained glass there are only a few contributions this year. The window by Messrs. Gibbs, on the south-east staircase, "The Consecration of Solomon's Temple," is one of the usual patch-works of coloured dresses and architectural canopies, without a single suggestion in treatment other than what has been done a hundred times before. On the north-west staircase three domestic windows, by Messrs. Cox & Sons, suggests some originality of treatment in a simple manner. The upper one, of a Renaissance type, shows refined treatment of floral ornaments in panels on a light diaper ground; the two lower ones, in the Gothic manner, exhibit small figure subjects from Chaucer, Shakspeare, Milton, and Tennyson, with medallion portraits of the poets, the greater part of the space, however, being occupied by geometrical diaper in small squares, and with a happily-toned border of conventional leaves in low green tints: the whole effect is very pleasing, though the figure portions are not the most satisfactory part. A window adjoining, illustrating the "Good Shepherd," is a total failure in the heads (life size), which are coarse and inexpressive to a degree, illustrating once more the unsuitability of stained glass to represent any but the most conventional and unornamental type of figure. Some panels of ornamental diaper adjoining show a tolerably rich, but not refined, effect of colour. The window for St. Peter's College, Cambridge, by Messrs. Morris & Co. (south-west staircase), claims more special notice, as marked by an individuality of style and treatment, and as the work of an artist who is put forward as the one new light in stained-glass art by a school who are much given to praise one another. This is a triplet window, containing full-length portrait figures of three benefactors, or former "heads" (we presume), of St. Peter's College, in red furred gowns, and standing on a strip of flowered carpet, crossing the window over the transom. All the glass, excepting the figures and their armorial bearings in the spaces below, is left (after Mr. Morris's recent manner) in quarries of nearly white glass, with a very slight grisaille diaper. This method, by which the figures stand out in a blank space, must be designated as a whim, which may or may not have a good effect, according to circumstances. In the present instance it is, perhaps, the best way in which the window could have been treated, if the colour of the dresses of the figures is obligatory; for it is difficult to see what colour accessories could harmonise with them, without rendering the whole design very sombre and heavy. The faces of the figures are better drawn and delineated than in most similar cases, though the exaggerated stoop forward of the right-hand figure is not happy; the effect of the mass of dull red in the dresses is anything but pleasing, and it would surely have been better to have idealised the costume a little. If the window is to be placed at some distance, and high up, it may look better than here; as it is, we cannot regard the effect as very happy. The centre figure, with the big cowl over the head, seems even studiously ungainly, but the design is at all events free from vulgarity, which is a good deal to say as stained glass designs go. A curious contrast to this is a German window, on the N.E. staircase, commemorative of the late Teutonic successes in arms: a mailed figure leaning on a shield bearing the Prussian eagle, and holding a battle-axe; a crimson drapery forms the background, but the head is relieved against a kind of blue lattice work. Everything here is purely conventional; the colour is better than in many German windows we have seen (we intend no very extravagant commendation); and there is a certain dignity in the design. Placed at a proper distance, and in a good *prononcé* scroll-and-wreath modern Renaissance building, it would fall into its place well enough.

All the decorative furniture, &c., worth speaking of is collected this year in Room XIX., and a very nice collection it makes, the average quality of the work, in proportion to quantity, being better than in either of the two previous years. In regard to the furniture proper cabinets, and so forth), there is more elegance of form and less of that stiffness and angularity of line which has previously characterised so much of the Gothic furniture. Among good things in this style, are one or two small angle cabinets (2,639 and others), of good and somewhat new design. A sideboard by C. Bevan (2,620), of plain wood, with polished shafts, and bas-reliefs illustrative of corn and wine carved on the cupboard doors, is a piece of work in very good taste, and well executed, without any show or glitter; the only mistake is in the rather coarse blue and white flowered tiles at the back, which do not at all harmonise with the tone of the wood, or with the style of the whole thing. We call attention to this, because tiles are inserted into everything just at present, and more judgment ought to be exercised in the selection of them, otherwise this source of effect becomes a mere trick. A dining-room chair, by the same hand (2,621) is equally praiseworthy, simple and yet effective, and thoroughly suited to its purpose. A chair and cabinet of inlaid marble (2,623–4), by F. Dalan, are very well executed, but the material is quite out of place in a chair, which ought always to appear, though solid, easily movable, and with a certain elasticity. The ebonised cabinet (2,631) is not improved by the introduction of Mr. Moyr Smith's tile-paintings. A small standing oak fire-screen (2,631 *a*) exhibited by Messrs. Cox & Sons, is really a new idea and a pretty one. It consists of a centre-piece and two unfolding leaves, each framed with sash-bars, and filled with three panes of stained glass; the finish at the top is not good, but otherwise it is a very pleasing thing. The oaken sideboard (2,638) designed by Mr. Talbert, is a very good solid architectural-looking object; the effect of the inlaid conventional flowers is excellent; but here, again, the tiles are out of keeping with the rest, and injure the effect. Messrs. Cox exhibit some brass church furniture in their usual style, and with their usual excellence of execution, but presenting nothing for comment. An ebonised cabinet with canopy, by S. J. Nicholl (2,630), is the most original piece of furniture design exhibited; the "composition" and outline are very good; it is decorated with conventional leaf patterns on a gold ground, somewhat resembling in freedom and flow of line the ornament often found in Persian porcelain. Among articles of furniture of the Renaissance type, the cabinet by Fourdinois (2,625) is the most elaborate, with numerous delicately-carved figures; the mixture of inlay with carving (a light wood for the flesh-tints of the figures, and a darker one for the drapery) is, however, a questionable expedient. The large oak bookcase (2,640), by Venter, of Brussels, is a good piece of oak carving, mostly guiltless of sandpaper, in the Brussels taste, with panels carved in relief, somewhat in the Grinling Gibbons manner; the decoration has little reference to the object of the article. The inlaid marqueterie cabinet, by Saleur and Vanderschuren (2,632), is a good specimen of a class of work in which the labour is very much out of proportion to the artistic result. Some wise person has taken the trouble to paint two tables, one in imitation of inlaid wood, and another in imitation of inlaid marble (2,621, A and B); they are really wonderfully well done, and quite cheat the eye at first glance; their author must have spent much time and labour over them, which it is to be hoped he will learn to employ to better purpose in future. With these, in artistic value, may be classed the inlaid marqueterie table (2,622), by N. Corpataux, a most elaborate piece of work in the worst possible taste as to design and colour. The Duke of Edinburgh lends a Cingalese cabinet and chair (2,635–6), the former curious from the effect of the mottled wood of which it is composed, and both for the oddly "Classic" character of some of the ornament; and an Indian chair of pierced ivory, silver mounted: this latter is an odd instance of the utterly wrong application of ornament; the whole of the framework, and even legs of the chair, are composed of thin ivory, pierced in an almost gauze-like perforated pattern. It is to be presumed there is some solid substructure to give the required support, but the look of the thing is as if it would crush like an eggshell if any one were venturous enough to sit down on it. The terra-cotta chimney-piece, by Doulton & Co. (2,624 A), is a very good piece of terra-cotta work, so sharp and defined in the frieze of birds and flowers under the shelf, as to suggest the idea that it must have been tooled up afterwards; but it is a great pity that manufacturers cannot get better designs to lay their material on: the present, as a design, is simply worthless. Under this chimney-piece is a specimen of damascened work, by Zuloaga (Spain), whose work of this kind we noticed last year, in the shape of a large salver (2,675), of really splendid workmanship and design; and four brass trays (2,666), with flat incised ornament, by J. W. Singer (Frome), are very good specimens of this kind of work; and a brass enamelled salver, with a radiating pattern of somewhat Moorish character, by Lepec (France) (2,664), is a very beautiful piece of work.

There is too great a run, as we have hinted, on tiling. It seems to be accepted now that we may do anything on tiles; for instance, there is a series of designs here, by Mr. Marks, for the "Seven Ages of Man," executed on tiles, in which one feels that the design is quite thrown away on a material in which its merits cannot be realised. Then, Messrs. Simpson & Sons exhibit great panels of painted tiles, with extraordinary depictions of animal life in fearful and wonderful colours,—things utterly abhorrent to any rightly-constituted artistic mind. Mr. Coleman, whose painted plaques, with female figures, we admired in last year's Exhibition, sends a similar one on a larger scale (2,466), but the figure is not so successful; it is too large in the body, and too small in the extremities. Mr. Moyr Smith's design "Homeros," the drawing of which is in the Academy, is here executed in tiles, and is, at all events, in a manner and execution, suitable to tile painting, which cannot be said of much of the work of this kind. The contributions from Minton's art-pottery studio seem more marked by good execution than good art. Two small vessels (2,624*a*, 2,657), carved in *stone* by Lieut.-Col. Pollock, present a novel effect from the subdued silver-grey lustre of the surface, which is carved with birds and flowers on a small scale in low relief. They would be valued by artists as accessories in a still-life painting.

Two mosaic life-size figures, designed by Mr. F. W. Moody, and worked in the Kensington School of Art by F. H. Cole and others, are exhibited,—"Raffaelle" and "Blondel" (2,560-1). Of these the latter is the best in pose and composition, and has most character. The drapery in the Raffaelle is somewhat stiff in line, and the face is hardly a success, but would probably appear better at a proper distance; these are almost too near the eye to be fairly judged of as mosaics. The specimen of artificial mosaic pavement, by Messrs. Rust & Co., in the Albert Hall gallery, should be looked at by all architectural visitors who have not yet employed or noticed this very beautiful manufacture, which gives a tone and texture of surface for floors and dados much richer than tiling. Some of the geometric colour designs in this are very good.

We may mention in this place the remarkable *fac simile* (produced by the aid of photography) of the Bayeux tapestry, which is hung round the gallery. In the way of illustrative manufacture this is quite an achievement, giving the texture as well as the lines of the original: the interest of the tapestry itself, as an example of early attempt at the portrayal of human figures in action, is well known, and the intention and grouping is full of spirit in many places, in spite of the childish character of the drawing; as a study of tone in colour it is suggestive enough to the decorative artist of the present day. From tapestry to lace is an easy transition; and we may conclude our jottings on decorative art by mentioning that there is some pleasing lace-design to be seen in the Gallery and in Room XIX., among which we are glad to see examples of more studied and geometric design than is common in this kind of work; much of what is called good lace appearing to consist, in point of design, merely in a kind of aimless mingling of forms to produce a pretty and intricate *ensemble*. Exceptions to this are the designs marked 2,722–3–4 (in Room XIX.), which are very systematically worked out; the last-

named, however, is a copy of old French lace, made at Lady Molyneux's school. This, which is in squares of alternating geometric patterns, very much resembles in style of treatment the lace which is now made by the native Brazilians, and which in point of real good taste and artistic effect is much superior to "Brussels," though a far less delicate manufacture.

We reserve some remarks as to the foreign pictures that are worth looking at; which really are not "few," though certainly somewhat "far between."

PICTURES BY PHILLIP AND CRESWICK.

The idea of making the International Exhibition an opportunity for collecting together the works of deceased painters of the British school is a good one, and has resulted in giving an interest to the picture-galleries this year which they would scarcely have possessed otherwise. In regarding the collected works of any one artist, we are able often to form a far better idea both of his strength and his weakness than from acquaintance with a comparatively small number of specimens which accidental success has popularised; and even practised art-critics may find their judgment of a painter materially modified, for better or worse, by a study of all his principal works in juxtaposition. In carrying out in future exhibitions the idea thus started, the selection, we are told, is to be made with care, and the choice of a painter's name for this kind of illustration is to be regarded as a testimony to the real posthumous value of his works. It may also, however, have the effect in some cases of exploding a reputation which has been insufficiently based.

The paintings by Phillip and Creswick collected in Galleries XVI. and XVII. number about 330 (including sketches and unfinished pictures), of which considerably the larger proportion are by the former artist. The juxtaposition is an unfortunate one for the landscape-painter, for his quiet brown tones are quite killed by the bright colouring and "full" painting of the Spanish scenes of Phillip. In a general way, the mixture of landscape with figure subjects is not disadvantageous to either; but where one painter has worked in such comparatively quiet and delicate tones, the manifest injustice of placing his pictures amid a number of others painted in a much higher key ought to have been avoided, and the landscapes placed separately. The collected works of Phillip exhibit to a remarkable degree the change which may come across the tone, style, and predilections of the same painter in the course of an artistic lifetime. The earlier works of Phillip,—mostly scenes and incidents of Scottish life,—are a kind of faint echo of David Wilkie, with a truer feeling for colour, certainly, but also a feebleness of character and humour remarkable in one who could afterwards paint works characterised by so much vigour of style and point in composition. These earlier works, therefore, we cannot regard as "John Phillip," but only as the preparation for him. He found his real powers and capabilities, both as to execution and expression, when he made Spain the land of his artistic adoption. But in his Spanish pictures there are, again, two distinctly-marked periods, the point of change being almost precisely referable to the year 1860. The Spanish pictures painted before that year include some of those by which the artist has been most popularised through exhibition and engraving,—such as "The Gipsy Sisters" (1,217 in the Exhibition Catalogue), "The Letter-writer of Seville" (1,223), and others. In these and kindred works the painter seems merely to have seized on the outward materials which are presented to the painter in Spain, the glow of dark cheeks and bright black eyes, the colour and picturesqueness of dress; and his style of manipulation is of that kind of hard and brilliant polish and finish which takes the popular eye, and leads to a demand for engravings. It is only in the pictures painted since 1860 that the artist shows evidence of having penetrated into the national character to such an extent as to throw the inner spirit of it, as well as the outward form, on the canvas. His manner of execution too, subsequent to the above date, is much altered; the colours become richer and more harmonious, but less bright; the manipulation changes from the polished smoothness of the earlier works to a manner rougher in appearance, but with far more richness and variety of texture. The one exception in point of character, perhaps, among the earlier pictures, is the admirable "La Carita," painted in 1857, the result of careful studies from the reverend father depicted, and who is related to have been surprised and scandalised at the result of the sittings he gave, till the artist explained that it was his "prudence" which was intended to be illustrated. Of the later series one of the earliest and cleverest as a study of character is "Doubtful Fortune" (1,203), where a young Spanish lady is having her fortune told from cards held by a sturdy half-savage-looking gipsy girl, with matted black locks, who screws up her eyes, and fairly grins in her endeavour to decipher what is "on the cards." Among the larger compositions, the fine one (perhaps his best work) "La Gloria" (1,311), should be compared with the first sketch for the work on the opposite wall (1,229); the manner in which the composition has been altered is interesting. In the sketch the perspective of the composition is sharper, the foreground group occupies a larger part of the canvas, and the gay scene in the courtyard beyond is backed by an arched gateway so placed as to seem a kind of triumphal arch over the principal background figures. In the finished picture the dancers are more fully shown, and the work is probably more taking to the popular eye; but breadth and effectiveness of composition as well as feeling have been somewhat sacrificed. The large picture of "The Early Career of Murillo" (1,329), is not altogether a good subject for the painter; there is some want of concentrated interest in it. As a composition it is very carefully worked out, and the figure of the "Gitana," who has probably been acting, with her little boy, as a model, is very characteristic, with her sensuous exuberance of form and stupid gaze at the picture. Certainly superior to this, however, in point and expression, as well as in power of execution, are the two scenes at the State lottery, "Loteria Nacional," "Reading the Numbers" and "Buying the Tickets" (1,212 and 1,235; the order should have been reversed in hanging). The contrast in the former, between the look of the fierce, desperate man who has drawn nothing, and the evil-looking female who lowers from behind, and on the other side the gay, thoughtless couple who have been lucky, is finely given; and in "Buying the Tickets" there is a fine stroke of satire in the action of the little girl devoutly kissing the hem of the priest's garment, while that worthy is at the same moment carefully inserting his ticket between the leaves of his breviary. The figures on the left in this picture scarcely explain themselves sufficiently, or else are insufficiently connected with the subject. Among the smaller works a conspicuously excellent one is "A Chat round the Brazier" (1,307), where the priest, demonstrating an argument by the help of his pipe, and the fat, jovial-looking dame opposite to him, form a contrast full of genuine humour; the rest of the figures find their place well in the composition, and help out the point of it. "The Wine-drinkers" (1,313) is a perfect picture of luxurious indulgence; and among the single figures a somewhat similar success is achieved in "El Cigarillo" (1,400), representing a portly damsel reclining lazily back, and slowly puffing out the smoke between her fat lips, in a kind of languid intensity of enjoyment. The unfinished pictures, which are all together in Room XVII., are of much interest, and show that the artist's talent and power were improving to the last. The large picture, "Selling Relics at the Church-porch," is one of the best and most carefully composed in the collection, both as to grouping and colour; the woman contemplating her purchase with a smirk of satisfaction at the bargain, and the pomposity of manner in the stout old lady struggling into the church-door with her back to the spectator, are excellent items in this work; not less so the beggar's dog, unpainted, and merely indicated by a few masterly strokes. "Off Duty" (1,458), "Mendicants receiving Relief at a Convent" (1,461: the child's face exquisite), "The Seamstress" (1,451), an admirable composition of two figures, are all worth attention; and one of the cleverest things in the gallery is the rough sketch called "Winnowing Corn" (1,462), a simple but most effectively grouped composition of three figures; the action of the young woman winnowing, the sway and movement of her body under the dress, are given in a most masterly manner. "Dear me, what a wretched daub! Some amateur, I suppose," was the comment vented in our ears by two respectable persons of broadcloth variety, at the moment of making our note. Will it ever be any use letting the British public into a picture-gallery? Before quitting Phillip it may be mentioned, that the artist is represented also by a fair proportion of portraits, most of which, however, are early works, and decidedly weak in treatment. That his subsequent neglect of portraiture was not from want of power to treat it in later years, is evident from the simple but striking likeness of "Sam. Bough, A.R.S.A." (1,287), who is shown sitting, palette in hand, before his easel, a figure full of character, and looking certainly about as wild and untrimmed as the bleak northern moors which he has illustrated in his powerful water-colour drawings.

Of our late distinguished landscape-painter, it is more difficult to know what to say, in reviewing an exhibition of his collected works. While we observed that Creswick suffers by immediate juxtaposition with Phillip's pictures, it may be doubted whether the collection of his pictures in a separate apartment would not have exposed him to a disadvantage of another kind, resulting from their comparative sameness of tone and treatment. There is, in fact, scarcely enough in Creswick to sustain our interest through a large number of his works. That there is a beautiful feeling in nearly all of them is unquestionable; the reason they do not affect us more we take to be the lack of what may be called intensity of aim in any direction. He seldom rises to the poetry of landscape, to any expression of its metaphysical sense and beauty; the interest of his pictures is mostly realistic, and yet it is not realistic enough to impress us powerfully from that side. This is what causes the comparative failure in effect of such landscapes as "A Place to Remember" (1,197) and "England" (1,209). The latter is a realistic representation of an every-day English country scene; but, for a realistic representation, the tone and texture of foreground, water, and trees is not sufficiently wrought out and discriminated. It is possible to affect the mind strongly by such minutely finished realistic study as Brett's "Among the Granite Boulders," in the Academy, or by such a powerful grasp of the broader elements of light, shadow, and tone in landscape as is to be seen in the magnificent works by Dupré and Corot at present in Old Bond-street; or by such comprehensive conventionalism as that of Cox and De Wint. But it is not possible to do so by representations which evade the ultimate range in both directions, and which are a compromise between poetry and realism. And this is the case with a large majority of Creswick's works. In "A Place to Remember," the details of colour and tone are subordinated to the general effect; a system adopted by Turner in many of his grandest works,—but then with Turner the general effect is always broad and powerful enough to compensate for this; with Creswick it is not so. That he could on occasion rise to the poetry of nature is evident from such works as "Evening" (1,390), and, so far as composition is concerned, "On the Clyde" (1,248), and "On the Greta" (1,260), two of his most individual works as to motive and tone. But it is equally certain that he did not often rise to it; and a majority of his pictures convey the idea of being landscapes composed according to a rule, and marked by a mannerism of treatment which is broad indeed, but is not the less a mannerism, evident enough when a number of his works are brought together; which, indeed, extends itself in some degree to details, as in the "inevitable dog" with his tail on one side, which forms a foreground object in so many of his pictures. The works of Creswick, in short, are monuments of a very refined taste, a great love of the natural scenery of England, and a power of embodying very pleasant reminiscences of its quieter and milder aspects. But this does not make a great landscape-painter; and the reputation of Creswick must be held to be rather impaired than enhanced by this collected exhibition of his works.

The Development of Persia. — Baron Reuter, says the *Echo*, has obtained great powers for the development of Persia. To him belongs the power of making railways, of remitting import duties, of mining [and utilising the forests], of making canals, a bank, gas-works, telegraphs, posts, &c., &c. We can hardly see, indeed, what is left to the Shah. We should be very sorry to lose Baron—we had almost written Shah—Reuter; we hope he will administer the realm of Persia from the capital of the country upon which his energy has already conferred much benefit, and in which his name is a household word.

LONDON GOVERNMENT.

An influential deputation was introduced to Mr. Bruce, Home Secretary, on Saturday last, by Lord Ebury, with the view of renewing the interest felt by the Government in the great question of Metropolitan Government. Lord Napier and Ettrick followed, and the Lord Provost of Glasgow afterwards gave some interesting particulars of the improvements which had been effected in his city. Mr. J. A. Storr spoke of the neglect experienced by the lower classes for want of a central body; and Mr. James Beal presented a memorial signed by 700 owners of property in London, and reminded Mr. Bruce that the Administration were really pledged to deal with the question.

Mr. Bruce, in his reply, fully admitted this, and regretted that the opportunity had not yet occurred. The Government considered that when the question was taken in hand it should be the leading question of the Session. The question was novel, for it was one of the creation of a municipality which would constitute a government in itself of great importance; and the institution for the first time of a municipality for a city of more than three millions of people,—a municipality which should fairly represent the intelligence and wealth of London,—was a work of no ordinary character. This would be an institution of immense power, if it fairly represented London, and it would be in the highest degree unwise not to create a body equal to the task. Of course, there would be difficult questions, and matters of great anxiety, and the subject could not be dealt with by Parliament without ample time being given. The Government had not yet found the time to make this a foremost question of the Session, but he was not without hope that it might be made the first measure of the next Session, for he was bound to say that he did not know of any other more important subject which could arise.

Much credit is due to Mr. Beal for continued perseverance.

THE VIENNA EXHIBITION.

The rotunda of the Exhibition building in Vienna is over 240 ft. high; each pillar supporting the heavy ceiling is large enough to contain a small summer-house. Seen from the floor, people in the first gallery appear like dwarfs; the Victories decorating the panels of the jute lining of the ceiling, which, seen from below, appear like half-grown girls, are in reality figures 21 ft. long, and are consequently four times the natural size. During the opening ceremonies, at the moment when the imperial and princely personages made their appearance, over 7,000 persons were assembled in the rotunda, but notwithstanding this, there were empty spaces of from 120 ft. to 180 ft. long, and 30 ft. to 36 ft. wide. The colossal lion, sent for exhibition by a Parisian firm, which, with the pedestal, is of the height of a middling-sized house, does not look at all imposing, but has merely the appearance of having been expressly made for the decoration of the rotunda. The extraordinary dimensions of the greater, and those of the smaller, lantern, as well as the imposing light arcades with the gigantic windows, all of which must be seen to be appreciated, are sufficient reasons for the fact that, even during rainy weather, it is so light in the rotunda that pencil-notes may be read easily, and without straining the eyesight. With all this grandeur, these gigantic proportions have no heavy and oppressive effect.

At the dinner given to the British exhibitors, Mr. Scott Russell, when his health was drunk, claimed a tribute of admiration and gratitude for his colleagues, Herr Engert, the engineer, and Herr Hasenhauer, the architect. When everybody had said his building would tumble down, Engert made it solid as a rock; and when everybody declared it hideous, Hasenhauer stepped in and made it beautiful.

At present, things do not look very bright in Vienna, either inside the Exhibition or out. The foolish inhabitants, by putting on preposterous prices, have aided other less avoidable causes in frightening strangers and keeping them away. Gradually, however, we have little doubt, the attractiveness of the Exhibition will overcome these obstacles. A great mistake, however, has been made at starting.

The house of the British Commission, a corrugated iron building, has been fitted up in charming style by the wise liberality of various manufacturers and decorators. Behind this is the "Exhibitors' Club-room," a building constructed by Mr. Hemming, and for which the British exhibitors have to thank the private liberality of the Commissioners, who subscribed to pay for its erection, out of their own pockets, as they have done in many other cases. The lavatories are the work of Mr. Jennings, and excite as much admiration amongst foreign visitors as any part of the Commission House. An Imperial personage who inspected them, observed, on leaving the Prince's lavatory, every detail of which is really admirable, "It is in arrangements like these that the English are unapproachable by any other people—ils sont absolument sans rivaux à l'égard de tout ce qui concerne le confort et la propreté." The handsome iron railing environing the whole of the Commissioners' domain has been presented by the Coalbrook Dale Company.

EDINBURGH ARCHITECTURAL ASSOCIATION.

The closing meeting of this Association was held in the Rooms, 37, George-street, on Wednesday evening, the 14th inst., the president (Mr. John Paterson) in the chair. After the admission of new members and the consideration of financial and other arrangements of the council, the following office-bearers for next session were elected:—Mr. John Bryce, as president; the retiring president and Mr. Thomas Henderson, vice-presidents; Messrs. Dick, Heron, Macpherson, and Somerville, members of the council, in room of those retiring.

The secretary reported that fifty-six new members had joined the Association during the session, and a valuable addition of books had been made to the library, including gifts of their works from Mr. Fergusson and Mr. Sharpe, also donations of books, drawings, and casts from friends interested in the Association, among them a number of original drawings and trial sketches of the Scott Monument, by Kemp.

The president then read his valedictory address, in the course of which he congratulated the members on the number of papers read and the interest which had been maintained throughout the session. The remarkable circumstance of the restoration of one cathedral and the fixing of the design of another for this city in one year was interesting to them, showing an advance of the public taste which promised well for the future prospects of architecture.

Mr. Shiells moved, and Mr. Henderson seconded, a vote of thanks to the president for his address, and votes of thanks were also accorded to the retiring office-bearers.

GUNTHORPE BRIDGE, NOTTINGHAM.

The foundation-stone of a long-desired bridge, to connect the villages of South Notts, has been laid. This bridge is situate at Gunthorpe and East Bridgeford, about half-way between the Trent Bridge, Nottingham, and the bridge over the Trent at Newark, there being at present no intermediate bridge between those two points in the river. The bridge is being built by a private company, composed of the principal landowners, gentry, and farmers of the neighbourhood.

The construction of the bridge is simple, and will afford a good example of a cheap bridge, considering the great width of the river and its liability to floods, on a very large scale.

The abutments will be of stone, carried down to the red rocks and marls which underlie the bed of the river, and will rest upon a concrete foundation. The stone used is to a large extent derived from the old Trent Bridge, Nottingham, which has lately been taken down and removed by Mr. Smart, the contractor for the Gunthorpe Bridge. Much of the old stone has been sold for the restoration of churches and other similar work, and has been brought in most opportunely for this new bridge, it being of a character suitable for bridge building.

The approaches to the abutments from the roads on both sides of the river will be earthwork embankments, pitched with stone, and properly fenced. All the rest of the bridge will be of iron. The total span of the bridge between the abutments is 350 ft., and this large opening is crossed, in the first place, by a pair of iron girders, 100 ft. span, on the bowstring girder principle, resting on the north abutment at one end, and on a pair of cast-iron cylinders at the other. These cylinders are each 6 ft. in diameter, sunk into the rock in the deepest part of the stream, and filled with Portland cement concrete. After this are five other pairs of iron girders, each of a length or span of 50 ft., making, with the first bay, a total length or waterway of 350 ft. These latter girders are supported by cast-iron piles or columns. The lower parts of them are 2 ft. in diameter, and screwed through the gravel bed of the river into the rock. The upper parts are 14 in. in diameter, and are braced together transversely with wrought-iron struts and girders. All the girders are formed of wrought iron, and so secured together as to form a continuous girder, bolted down fast to the large 6 ft. cylinders, and lying loosely upon friction rollers, fixed to the upper ends of the intermediate pile-supports, and upon the stone abutments. The roadway is formed of two layers of bitumenised timber, bolted down to transverse wrought-iron girders, which are riveted up at both ends to the horizontal main girders. The bridge has been designed by Mr. M. O. Tarbotton, M.Inst.C.E., who has been the consulting engineer to the company from the commencement. The resident superintendent of the works is Mr. Phillips, of Carnarvon. Mr. W. Smart is the contractor for the masonry.

IMPROVEMENTS AT THE HIGH-LEVEL RAILWAY STATION, CRYSTAL PALACE.

A new entrance to the High-level Station of the London, Chatham, and Dover Railway Company has been for some months in progress, and will be opened to the public in about a fortnight. The entrance is from the Farquhar-road, by a flight of steps, leading to a light iron bridge. This is covered by a galvanised iron roof, and the whole forms an important addition to this extensive terminus, which may now be said to be equal to any local station in the completeness of its arrangements. The new entrance will prove a great boon to the residents in the Farquhar and other roads on the south side.

BUILDERS' BENEVOLENT INSTITUTION.

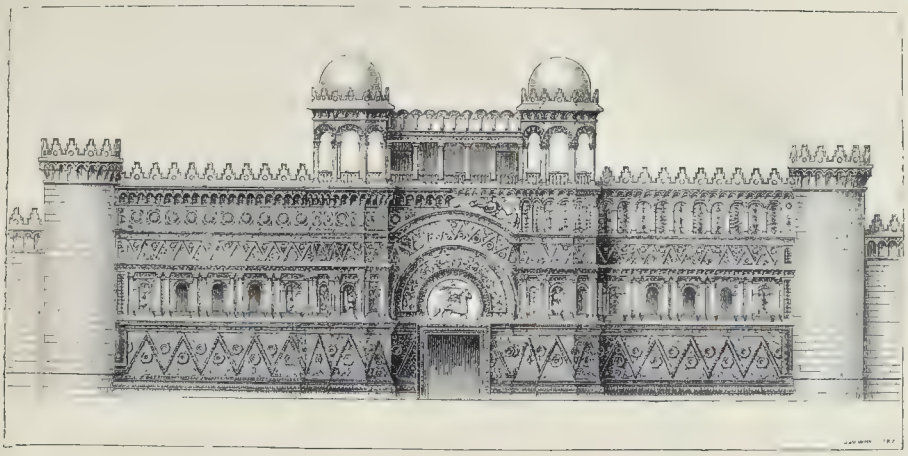
An election of four pensioners (two men and two women) on the funds of this institution took place on Thursday, at Willis's Rooms, St. James's, the president, Mr. Edwin Lawrence (Lawrence Bros.), in the chair. There were eleven candidates—four men and seven women. There were eight female candidates up till within the last few days, but one of them (Mrs. Ann Williams) is dead. The poll opened at twelve o'clock, and closed at three p.m; when the scrutineers (Messrs. Stirling & Hall) announced the result of the voting to be as follows:—Males—Francis Sandon (7th application), 2,378; Daniel Thomas (6th application), 1,186; Richard Grove (1st application), 112; John Thomas (1st application), 940. Females—Elizabeth Trevethan (6th application), 2,656; Eliza Lambert (5th application), 1,720; Arabella Hambrook (4th application), 3,153; Sarah E. Bear (4th application), 625; Elizabeth Silcock (2nd application), 2,752; Jane Rumens (1st application), 1,282; A. M. Williams (1st application), 618.

The chairman therefore declared the successful candidates to be:—Francis Sandon, Daniel Thomas, Arabella Hambrook, and Elizabeth Silcock. This makes a total of forty-seven pensioners now on the funds of the institution, twenty men and twenty-seven women; the males receiving 25*l.* and the females 20*l.* a year.

Votes of thanks were passed to the president, the scrutineers, the treasurer (Mr. George Plucknett, of the firm of Cubitt & Co.), and the secretary (Mr. A. G. Harris), for the interest they severally take in the welfare of the Institution; and the president expressed his regret that Mrs. Trevethan was unsuccessful, it being her sixth application. He trusted that she would be successful at the next election, which does not take place, however, till six months hence.

Check to the Tramway System.—The Select Committee on Metropolitan Tramways have refused their sanction to the laying down of tramways in Marylebone-road, Euston-road, George-street, Tottenham Court-road, and Farringdon-road. The committee have sanctioned a line over Westminster Bridge, passing, by way of the Thames Embankment, to a terminus in Whitehall-place.

ARCHITECTURAL REMAINS ON THE EAST SIDE OF THE DEAD SEA.*



Façade of the Palace at Mashita, Restored by Mr. James Fergusson.

A NEW MASONIC HALL IN CAMBERWELL.

A COMPANY of Freemasons has been formed for the purpose of erecting a new Masonic hall in Camberwell, specially adapted to the requirements of the craft, in connexion with the lodges of the south metropolitan district; and the plans of the building also include a large hall for the general use of the public when it is not engaged for Masonic purposes. A favourable site has been secured for the erection of the building, in the Camberwell New Road, between the post-office and county-court, close to the station of the London, Chatham, and Dover Railway Company. The site possesses a frontage of about 70 ft., with a depth of 150 ft. The plans have been prepared by a well-known architect, and member of the craft.

The front of the building, in Camberwell New-road, will be of red brick, faced with stone dressings. The large hall will be approached by a corridor leading from the vestibule. It will be 54 ft. in length by 37 ft. in width, and at one end will have a raised platform, and at the back of this a small room, where there will be every accommodation for dressing, so that the hall will be well adapted for dramatic performances, concerts, and other entertainments of a similar character. The lodge-room, which is 28 ft. by 22 ft., will be fitted in the most approved Masonic style, and in strict accordance with the rules of the craft. In communication with the lodge-room there will be a reading-room, 18 ft. by 13 ft., fitted with a library, and well supplied with newspapers and magazines. On the opposite side of the building there will be a dining-room, 32 ft. by 18 ft., in connexion with which there will be a Board-room, 19 ft. by 12 ft., for the transaction of purely Masonic business. The basement story will contain the modern cooking appliances, as well as a range of wine-cellars and larders. The hall will be capable of accommodating about 700 persons, and the estimated cost of the building is about 3,000*l.*

The Newspaper Press Fund.—The dinner on Saturday, the 17th instant, in aid of this valuable Institution was a great success in every way. Mr. J. A. Froude, M.A., who presided, made an admirable speech, and the contributions from the 210 gentlemen who supported him on the occasion, amounted to something over 1,200*l.* The other speakers were the Hon. E. Ashley, Col. Birchall, Lord Houghton, Mr. A. Trollope, the Marquis of Lansdowne, Mr. Newdegate, M.P., Sir Erskine Perry, Mr. Godwin, and Sir Julius Benedict. Considerable prominence was given to a concert in the course of the entertainment, in which Mr. Maybrick and Miss Blanche Cole particularly distinguished themselves.



One Compartment of Western Octagon Tower of the Persian Palace at Mashita.

* See p. 393, *ante*.

OFFICE-BEARERS AND NEW LAWS: ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the annual general meeting the following office-bearers were elected:—

President.—Sir G. Gilbert Scott, R.A.

Vice-Presidents.—Messrs. Horace Jones, John Gibson, and G. Vulliamy.

Ordinary Members of Council.—Messrs. G. Aitchison, B.A.; J. Belcher, T. Talbot Bury, T. C. Clarke, H. Dawson, C. H. Cooke, E. H. Martineau, Harry Oliver, W. Papworth, E. A. Grüning, W. M. Teulon, R. J. Withers; and W. M. Fawcett, M.A., E. G. Paley, E. Salomons, country members.

Honorary Secretary.—Mr. F. P. Cockerell (foreign correspondence).

Secretary.—Mr. C. L. Eastlake.

Auditors.—Messrs. Joseph Jennings, Fellow, and Thomas Morris, Associate.

Hon. Treasurer and Banker.—Sir W. R. Farquhar.

Hon. Solicitor.—Mr. F. Ouvry.

Attendance of Past Vice-Presidents at Council. The following resolution was come to:—"That the council be empowered to invite past vice-presidents of the Institute to attend the meetings of the council, and to take part in the deliberations, but without a vote."

In reference to the proposed grant in aid of the art classes, which the committee of management have been compelled to abandon for the present, it was explained that the classes, if resumed, would be conducted on a different system, and that no further application would be made for pecuniary assistance from the Institute. On this understanding it was resolved "that the sum of 30*l.* be granted out of the funds of the Institute, towards liquidating the liabilities incurred by the art classes committee in their endeavour to carry out the scheme originally proposed."

An annual budget is to be prepared and circulated previously to each annual general meeting.

A dinner (for architects and amateurs of architecture) is to take place at Willis's Rooms, on Saturday, June 21st, Sir Gilbert Scott in the chair.

THE WANT OF ART CULTURE.*

To those who look on art as the embodiment of a principle which is deepest in our nature—as the grand medium by which the sublimest ideas and most exquisite sensations are conveyed to us, and through which we hear most distinctly the eternal truths which have their archetype in nature, and their answering chords in the human soul—the full recognition by the authorities of Liverpool of its dignity and value, and the successful revival of the annual exhibition after so long a slumber, will appear as an important event, more especially if they consider that art-education is the great mental want of the town, and that there is, perhaps, no place in the civilised world that needs its refining and elevating influence more. "Indeed!" I fancy some one exclaiming, "Liverpool in especial need of a refining and elevating influence—Liverpool, the second city in the empire, and so renowned for her progress from almost nothing, within the memory of man?" Yes, I repeat it—there is no place that needs the spiritualising influence of art more than Liverpool. The progress for which she is remarkable has been a material, not an intellectual progress; and her chief features at this hour, despite the efforts of Roscoe and others to educate and intellectualise her, are not her literary or scientific institutions, but her commercial. This is stamped upon her form and aspect, as is a low, unintellectual character of a man on his head and face; and may be seen from an external view of the town as you approach it from a distance, or walk through its chief thoroughfares.

Such a view shows at once that the chief features of Liverpool are those generated by her commercial development, viz., her docks and river-wall, her warehouses, enormous custom-house, railway sheds and hotels, and a thousand other objects of great utility: these are the material embodiments of her yearnings and desires—the symbols and expression of her most earnest aspirations; her heart and soul are in them, her life-blood flows through them, and they are among the wonders of the world.

Of London, the most remarkable building or architectural group in the distant view is St. Paul's Cathedral; in Paris it is the Church of St. Geneviève or Notre Dame; in Rome it is St. Peter's and the Vatican; in Venice and Florence and Pisa it is some church or palace or baptistery; in Spanish and German cities it is cathedrals, as, indeed, is generally the case at home; in Constantinople and Mahommedan lands the most remarkable buildings are either mosques or tombs, and even in China and Japan they are pagodas. But in Liverpool, unlike all other places I can recollect, the chief features are commercial and municipal edifices—custom-house, town-hall, exchange, public offices, blocks of mercantile houses, and last, but not least, lines of warehouses, which form a sort of western wall to the town, and which, for size, had they been built on the banks of the Nile instead of the Mersey, would have dwarfed the Pyramids. A church dome or two and a few spires are visible enough, but they are nothing compared with those objects I have named, and to which may be added the tall chimneys of manufacturing works, which, of all objects that break the sky-line and soar into the welkin, are the most remarkable. By these the spires are not only rivalled, they are totally eclipsed in dignity and power. I could point to some of these—to one, more especially, in the neighbourhood of Vauxhall-road—which must raise greater emotions in most minds than any of our steeples or monumental erections.

We are in the nineteenth century in regard to physical science and to literature; and in regard to some other things perhaps in the twentieth; but in art we are in the tenth; nay, there were cities in Italy, if not throughout the Continent, that were in a much better condition with respect to art in the tenth and eleventh centuries than what we are now in; and there was no place of the population and importance of Liverpool, at any period either in the ancient or modern world, in this state. We consider ourselves in the zenith of civilisation; but there were communities not far removed from the time called the Nadir of the Human Mind in the West—the darkest point of the period during which took place what modern philosophy has termed the sleep of the human intellect—in which art developed itself, and, in spite, not only of the general ignorance, but of actual persecution of art by the iconoclastic rulers of the Eastern Roman Empire, under the belief of its corrupting Christianity. In the eighth century, under the auspices of the Popes and of Charlemagne, great stir and progress were made in the arts, which exhibited the germs of those original and sublime conceptions that distinguish the schools of the Middle Ages and the sixteenth century.

Bear in mind that the soil from which sprang these great schools must have been, not merely the love of art in a few isolated artists—men before their age,—but the love of art in the people, and the interest they felt and manifested in art matters. What must this interest have been in Florence in the thirteenth century when the people walked in procession to conduct Cimabue's picture of the "Madonna" to its place in the Church of Sta. Maria Novella, where it was afterwards visited by Charles of Anjou, and with such rejoicings that, says tradition, they changed the name of the street to *Borro Allegri* (Merry Borough)? How fertile must the mental soil have become a generation or so later, when it is said that pictures painted by Giotto in different cities of Italy became the seeds of so many schools of painters? So arose some of the greatest schools the world ever saw. There was more art-life and art-stirring even among the people of the old city of Cologne, remote from Roman traditions, and not long after the irruption of the barbarians upon the Roman empire, than we find among us at this day. About a thousand years ago an early German or Germano-Christian School of Painting arose there, and continued distinct till the thirteenth century—a school with which the contemporary Italian and Byzantine Schools, it is said, would not bear comparison.

It is true we have the highest form of art in the highest form of literature in our libraries,—I mean that eldest sister of painting and sculpture, poetry, which is but the same spirit of the beautiful in our life—the same expression of human affections, sorrows, and aspirations breathed through another vehicle; but it must be confessed that the poet on canvas or in marble is a more interesting teacher to the general mass of mankind than the poet in song: perhaps he is the most interesting and attractive of all. Art is more tangible than poetry, and better adapted to act upon the ordinary mind, and will operate upon minds incapable of following the flights of the poet. Painting and sculpture are probably necessary as stepping-stones, along with music and architecture, to lead the mind to the highest form of art poetry, and prepare it for her highest ministrations. And, if the mission of art is not superseded by poetry, it cannot be by any other branch of literature or by physical science, which latter alone, and without the aid of art, leaves a greater number of faculties in the mind unexercised. Besides, its influence comes lower down—reaches a lower stratum of society, than the teachings of philosophy; and, if it did not, it would still be an indispensable means of education, considered in its full significance: it appeals to and refines the lowest, and is necessary to the highest ranks, which, without it, would remain comparatively rude and savage. The fine arts have been truly said to be to a highly commercial and opulent state of society what chivalry was to the feudal system: they wear down its asperities, correct its selfishness, relieve the sternness of its action, enliven the dulness of its repose, and mitigate the fierceness of its enjoyments. Where the arts are well understood fashion cannot be so monstrous or fantastic as where they exert no salutary dominion over the fond love of variety.

I feel it would be only just to say that the desideratum I am complaining of is not confined to the good old town of Liverpool: deficiency in art-culture on the part of the public, including the highest ranks, is the great characteristic of our country, which has been behind all her Continental neighbours,—not only Italy, but France, Spain, Germany, Belgium, Holland,—in her patronage of and devotion to art,—behind all the great European nations except Russia; though her intellectual soil is rich enough to produce individual men who might compare with Michelangelo or Raffaelle. In fact, the union of art and philosophy so much boasted of in the schools of ancient Greece and modern Italy, and which is essential to the highest prosperity in both, has yet to be consummated in England. Many of our highest names in literature have been deficient in art-culture and ignorant of art.

Man, the Scripture tells us, walketh in a vain shadow and disquieteth himself in vain; which he does when in search, for their own sakes, of wealth, of fame, of power; more especially when he employs his entire faculties upon them. But he walks in no vain shadow, I think, when in search of the beautiful, either in nature or art; all is not vanity and vexation of spirit under the sun to him who can hold communion with these, and enjoy their simplest offerings. Of no branch of art,—painting, sculpture, architecture, poetry, music,—can we grow weary. These, inasmuch as they partake of the infinitude of nature, on which they are based, can never lose their charm while we are true to them, or pursue them in a right spirit, in earnest love and confidence. The pleasures they bestow are the most exalted, as well as the most enduring, of all that was ever called pleasures in this world; which neither disappear with the bloom of youth, change with the vicissitudes of fortune, nor sink with our frail bodies to the dust. The bright dreams of youth, of an Eden and Elysium laid up in the womb of the future, must fade into the clay hamlets of reality; but those reared by imagination from the bright pages of truth and nature are a perpetual solace to the heart, and spread a continuous and pervading charm over the whole of existence. They are the great objects to which all else should be made subservient; they are not means or an instrument of life, but an object of life with something divine in them. There never was a true artist but what might say, at the close of life, in reference to art, what Coleridge said of poetry, that it had been to him its own exceeding great reward; that it had soothed his afflictions, multiplied and refined his enjoyments, and given him the habit of seeking the good and the beautiful in all that met and surrounded him. Nay, it is worthy of note that, while many favourite pursuits of men,—as shooting, hunting, fishing, horse-racing,—are unworthy of men, since they involve the torturing and destroying of creatures which have as much right to life and happiness as ourselves, and which, as lords of creation, we are bound to protect, the pursuits of art, as of literature, are worthy not only of men, but of the greatest men,—of superhuman beings, of angels, of demigods; and it is not difficult to conceive that such pursuits will be renewed in a future and higher state of existence.

* From a paper on "The Late Revival of Art in Liverpool," by Mr. Samuel Huggins, read at a meeting of the Liverpool Architectural Society.

THE PRESENT POSITION OF GOTHIC ARCHITECTURE.*

ONE of the most prominent defects in our present system of working is the want of some united action between us. Every architect now doeth whatsoever seemeth good in his own eyes (provided his clients allow him) in the matter of style, and too often indulges in what is fantastic and eccentric, in the hope of being original. In the case of men of great ability, this unlimited freedom is not so objectionable, as they have the faculty of seeing what is appropriate and in harmony with the spirit of their designs. With less skilful designers, however, the results arising from this condition of things are too often glaringly crude and incongruous. Now, if some recognised agreement existed amongst us as to the best path to pursue, this condition of things could not exist, and we might entertain a reasonsonable hope of seeing a general movement of progress all along the line, and not, as at present, fitfully and in various directions. Although it is undesirable, if indeed it be possible, that the individuality of the designer should be lost; nevertheless, there exists among certain schools a pernicious habit of placing the artist before the art in the case of a few favourite men. This is manifestly wrong: the elevation of the art should be our first consideration, the individuality of the artist second. We need, therefore, I think, some generally accepted code of laws and precedents to govern and direct our efforts. Let us, for example, agree upon some particular phase of Mediæval art; and taking that as our point of departure, extend and develop it until it becomes capable of answering all the numerous requirements of our time. Let us, as the style expands, engraft upon it such features from other sources as we may see fit, carefully keeping them subordinate to, and in harmony with, the ruling principles of the master style.

There is another point in which the Gothic school runs into extreme, and that is in the quality of what I must term "quaintness" for want of a better title. That this quality is possessed in a very large degree by most Mediæval buildings, is unquestionable—indeed, appears to be inseparable from them. It must be remembered, however, that this is mostly the result of accident and of the mellowing effects of time; and that, do what we will, we can never impart to our new buildings the picturesqueness of the old work.

Quaintness has a constant tendency to degenerate into mere ugliness, and it is to be feared there is much truth in the accusation that there exists an incredible worship of the ugly amongst us. Just at present, too, to the best of my judgment, this strange mania is rather on the increase than otherwise. The "old china style," if I may so term it, is spreading amongst us, and we see men search every quarter of the globe for examples of quaint, curious, and ugly objects to copy from. The present attempts to introduce the long, square-headed windows and broken pedimented gables of Queen Anne's reign, the lumpy furniture of the Cromwellian era, and the ingenious but semi-barbaric ornament of China and Japan, indicate the extravagant lengths to which a certain school is inclined to go in its search after novelty.

While the progress of the revived style has been, on the whole, continuous and well marked with respect to ecclesiastical architecture, it must be confessed that we have not made nearly so much advance with our secular buildings. Here we are more left to our own resources, not having so many examples to guide us, and being obliged to initiate buildings in the new style of a type and for purposes unknown in those more primitive times. In some of the country mansions recently erected, however, the style has been adapted to the requirements of the case with the utmost felicity. It is in our civic architecture that our failures have been most conspicuous. Too many of our hotels, railway stations, club-houses, &c., are but shells of the type of ordinary town-house, with a thin outward veneer of Gothic detail altogether wanting in the true sentiment of the style. It is here, too, that those vagaries of which we have been speaking are to be found in the greatest abundance, and where there is most need of some more settled and acknowledged art-authority to direct it.

In one very conspicuous instance our revived Gothic has not been found equal to the occasion. I allude, of course, to Mr. Street's designs for the new Law Courts. If ever there was a signal opportunity for displaying the capabilities of the style, this was the one; and I think I speak the general verdict of the profession when I say that the result is a failure. The building, if executed as designed, will be feeble and disjointed, lamentably wanting in that grandeur of conception and unity of parts which should characterise a great public edifice. I say this with regret, and with a high respect for Mr. Street's great talents, and for the eminent services he has rendered Mediæval art. Let us not, however, be too much discouraged by this failure: it does not prove that the revived Gothic is unsuited to modern wants, still less that it is worked out. I believe the style to be still young and full of vigour; but we must look around us and note our shortcomings well, so that we may rise through our very failures to higher things. The most urgent need of the style at present, then, appears to be more uniform and combined action on the part of its professors, guided by a recognised and accepted series of art-canons, with sufficient influence to curtail the vagaries and eccentricities that at present disfigure it. Thus we shall form a common platform on which to work in the development of that ideal architecture which earnest men strive for in the hope of seeing it realised in the fulness of time.

* From a paper read by Mr. W. M. Mitchell, at a meeting of the Architectural Association of Ireland. See p. 383, *ante*.

NOTES FROM AMERICA.

THE writer, a few years back, might have been seen attired in his broadcloth, neatly gloved, and with glossy hat, wending his way to Charing-cross, and anxiously looking for the omnibus to take him to his domicile, where a delicate meal had been prepared for his appetite. What a contrast! Now he is suitably attired in a good strong pair of grey woollen pants, with a warm woolly hat, and a stout heavy pea-jacket, booted in a manner worthy of O. Smith, late of the Adelphi, and accoutrements to match, viz., a good Spencer rifle, a revolver, and a tomahawk axe. His worldly goods consist of a blanket, sundry pairs of socks, and two shirts, home-made, and, what is more, never requiring any starch. These, done up in a knapsack, and safely strapped to his back, comprise his outfit for several months. His companions are of various nationalities. The boss surveyor is English by birth, Americanized by education; your humble servant is a pure unadulterated Cockney; the four chainmen seem to be half Dutch and half Irish; the cook is a French Canadian; and two others,—I do not think I could tell where they were born, for they speak the Canadian French, know a little German, and can "gab" the Indian tongue. So we set off with a couple of tents, a few iron pots for cooking, and our surveying-apparatus, and start for Kansas and Missouri,—places that have a tough name, but really do not deserve it. Both places are now rapidly filling up, and will eventually become important states in the American Union. Before I proceed further, perhaps a few words to intending settlers might not be amiss; for I have seen, and that with great pain, many heart-rending scenes of the useless class of my countrymen coming out as clerks, shopmen, &c., and who are looked upon and treated with a great deal of contempt. What is wanted, and will be sure to do well, are muscle, sinew, and a will to do hard laborious work. I have met colonies of poor wretches from various cities of the eastern states, who have come out with all sorts of murderous weapons, women with fancy dresses and gilded earrings, who have thought of taking up land as a sure road of heaping up "piles" of stamps (or money, as you English folks would say), but alas! with no knowledge of farming. Instead of that useless kind of *trash* (hard word, you say, but it is really used among the settlers), the things wanted are, agricultural implements, with a little ready cash, provisions to last for a few months, and a real good sound constitution: one which does not mind catching the ague, and can bear up even if it does have a touch of the malarial fever,—occurrences of no unusual character.

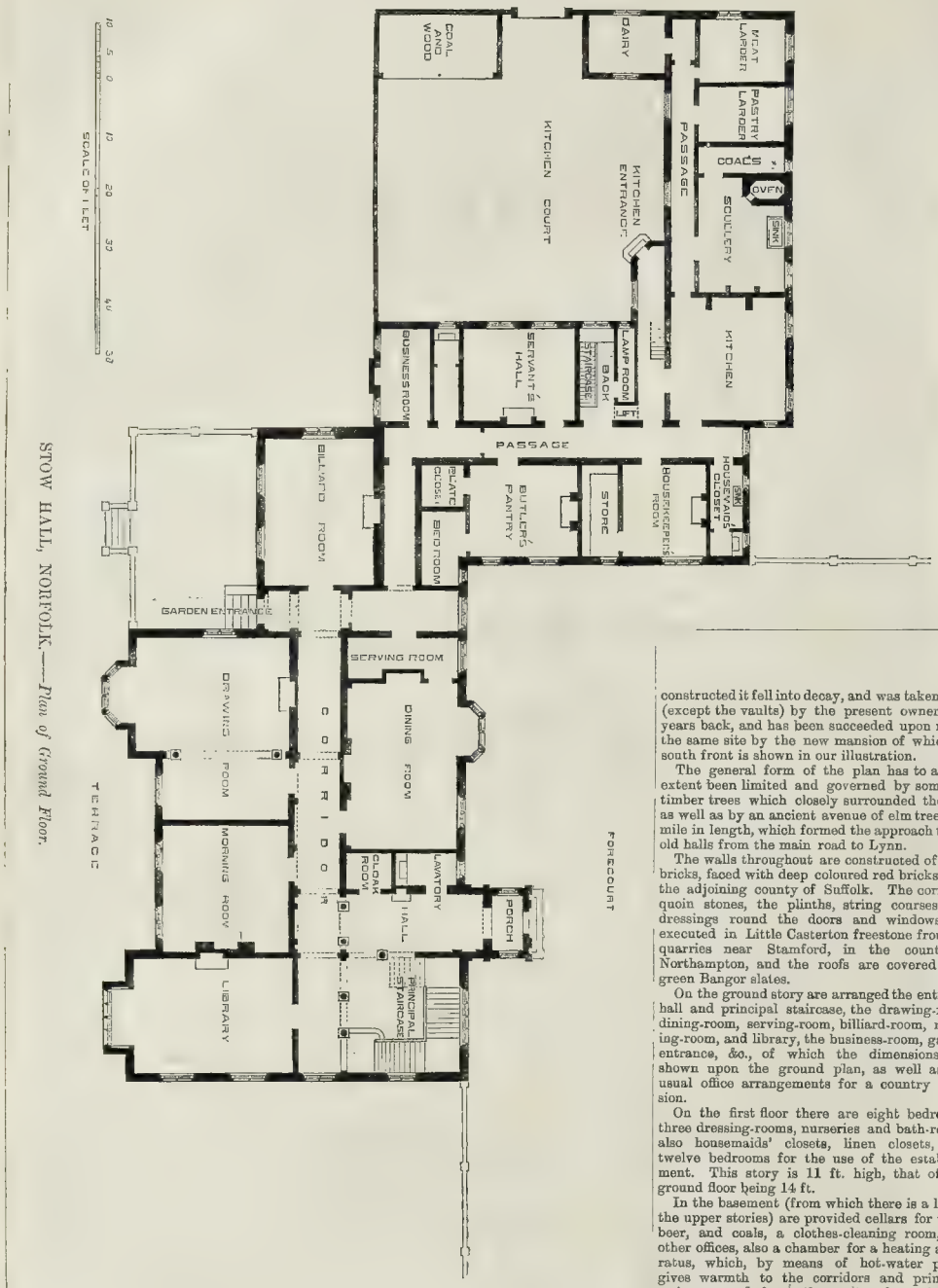
Kansas is a prairie country; thickly studded with buffalo herds, though settlers seem to be driving the animals further west. To read of the fearful exploits of a buffalo hunt (in my experience, which is limited), and to see one in reality, are two very different things. Killing a good stout, fiery buffalo with a Spencer rifle, is about the same sport as one would see in "fixing" a savage bull on Woking Common—a good deal of riding, lots of prancing, pawing, and bellowing, but with a good level aim, it is a great deal less excitement than what I was used, years back, to witness in Old Smithfield Market. The true Kansasian is a fine, noble, free-hearted fellow; his pride is his horse and his little "land claim." True, he is ignorant of books, knows nothing of a city life, but he thoroughly understands the country in which he lives and is a pretty good judge of character, and, for the information of a rowdy, is a dead shot. But a word as to the Kansas girl: reared on the borders, having never seen as many as fifty people together, and unknown to a "dry goods" (linendraper's) shopman, while her knowledge of the world scarcely reaches beyond the humble cabin and the surrounding prairie, her privileges and rights are to be truly happy, chew gum, and go barefooted. She never shudders or starts at the name of Indian, for she has been handled and caressed by the brawny arms of the "red brave" when a baby; and the howlings of the wolves and bellowing of the stampeding buffaloes are as familiar to her ears as "mother's songs." With all this rough-and-ready kind of life, there is a line where modesty commences, and must be respected. If her Jim is not in the way, she can herself sling an axe or sight a rifle with very little compunction or hesitation; so hunters and sportsmen know how to govern themselves accordingly.

You may travel for days in the prairie without the sight of a single tree, hill, or the appearance of a single human being. Now and then a herd of a hundred buffaloes tramping along the monotonous plain, shaking the earth like an earthquake, with their roaring and trumping; but occasionally a valley is seen, mostly between two hills, and then the sight of true border settlement is had to perfection,—the little log cabins here and there dotted in the perspective; the occupants toiling miles and miles away from a neighbouring settlement, in the hope of providing a home for their children (in many cases, it might truly be said, for their grandchildren). The sight of a surveying party is about as sensational an affair as a circus in a far-back country village. The news of their arrival spreads like wildfire; hospitality is offered; farmers, hunters, and scouts wait on you; and the tales of some of the early settlers are not only interesting, but show the hardships of a pioneer life,—the scalpings, murders, and robberies by the Indians making one shudder at the recital. The "scout" is an individual not to be passed over lightly. With the cunning of a detective, hardy in constitution, and the bravery of a lion, he ferrets out and traces up the Indian robbers, who go in largely for stealing horses and cattle. The profession is not an enviable one, and, making due allowance for a *little* exaggeration, it is in reality a calling most dangerous to life; for the crack of an Indian rifle may settle a knotty question of "lawful apprehension" without the aid of a judge.

Kansas and Missouri occasionally engage "Judge Lynch" to try and settle sundry little acts of abstraction, and the horse and cattle copers (*i.e.*, cattle-stealers) are generally taken to a free "full-dress necktie social." The border settlements are usually guarded by the United States cavalry and artillery, and the Indians just now, though not in Kansas or Missouri, are giving them a deal of trouble. Humanity desires them not to be killed and hunted like wild beasts,—the settlers go in straight for a general annihilation. The contrast with the Indians of Canada and those of the United States is so wide, that there must be a leakage somewhere in the governing powers of the United States, which should be repaired. The ministers, particularly those of the Episcopal Church of England (with the forms altered in accordance with the United States governing powers), declare the Indians can be civilised, but do away with post agents, &c. The settlers, on the other hand, declare them to be a cunning, lying, thieving, and murderous class of beings, who should be swept from the face of the earth.

QUERCUS.

The Columbia Fish Market Tramway Bill.—All opposition having been withdrawn against the scheme for the extension of the rails of the Great Eastern Railway into Columbia Market, the Bill will now proceed as an unopposed Bill of the Corporation of the City of London.



STOW HALL, NORFOLK.—*Plan of Ground Floor.*

STOW HALL, NORFOLK.

WE give a view and plan of the new mansion now being erected for Sir Thomas Hare, bart., on his estate, near Downham Market, Norfolk, from the designs of Mr. David Brandon. The first hall on record was built in 1589 by Mr. Nicholas Hare, and was a structure of considerable dimensions, the ground plan being in the form of the letter **E**, one commonly adopted at that period; it is also recorded that it cost 40,000*l.*, a very large sum in those days.

This hall seems, from a letter to be found in the "Pastor Letters," to have become in his time, about 200 years later, in a very ruinous condition, and was taken down and replaced by a new hall; this building had but little architectural character, and not being substantially constructed it fell into decay, and was taken down (except the vaults) by the present owner some years back, and has been succeeded upon nearly the same site by the new mansion of which the south front is shown in our illustration.

The general form of the plan has to a great extent been limited and governed by some fine timber trees which closely surrounded the site, as well as by an ancient avenue of elm trees, one mile in length, which formed the approach to the old halls from the main road to Lynn.

The walls throughout are constructed of local bricks, faced with deep coloured red bricks from the adjoining county of Suffolk. The cornices, quoin stones, the plinths, string courses, and dressings round the doors and windows, are executed in Little Casterton freestone from the quarries near Stamford, in the county of Northampton, and the roofs are covered with green Bangor slates.

On the ground story are arranged the entrance hall and principal staircase, the drawing-room, dining-room, serving-room, billiard-room, morning-room, and library, the business-room, garden entrance, &c., of which the dimensions are shown upon the ground plan, as well as the usual office arrangements for a country mansion.

On the first floor there are eight bedrooms, three dressing-rooms, nurseries and bath-rooms, also housemaids' closets, linen closets, and twelve bedrooms for the use of the establishment. This story is 11 ft. high, that of the ground floor being 14 ft.

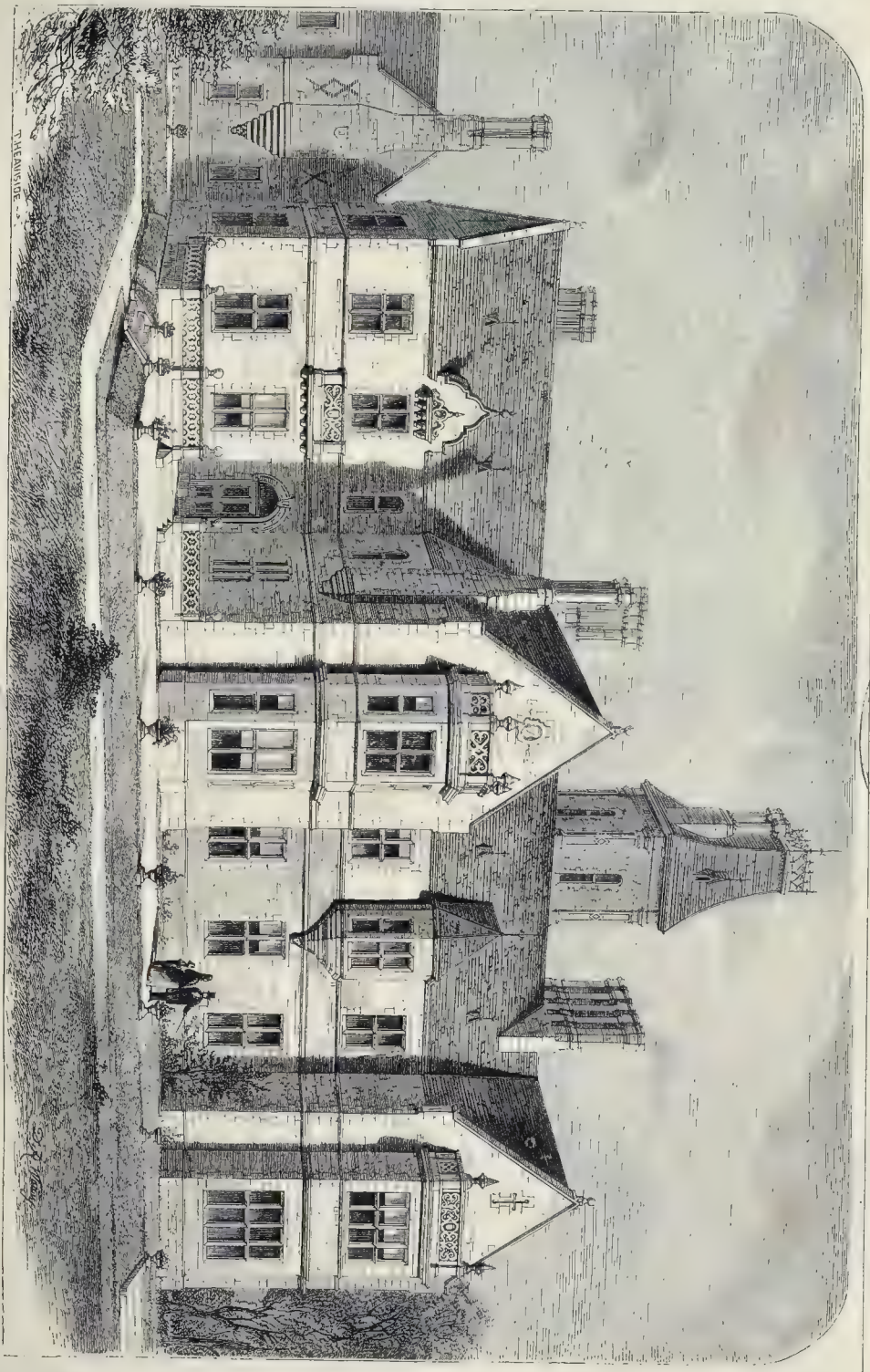
In the basement (from which there is a lift to the upper stories) are provided cellars for wine, beer, and coals, a clothes-cleaning room, and other offices, also a chamber for a heating apparatus, which, by means of hot-water pipes, gives warmth to the corridors and principal staircase, and from thence to the principal rooms, by means of ventilators in the skirtings.

The warming arrangements have been carried out by Messrs. Feetham & Co. of London.

The floors of the corridors throughout are of fireproof construction.

In the upper part of the tower, whence extensive views over the surrounding country can be obtained, are placed large cisterns for rain and well water, to supply the house and the fountains in the gardens.

The works are being carried out by Messrs. Trollope & Sons.



STOW HALL, NORFOLK.—Mr. David Brandon, F.S.A., Architect.

FIREPROOF CONSTRUCTION.

IN the course of the evidence given before the committee on the means of protecting the metropolis against conflagration (Society of Arts), Mr. William Swanton, of the metropolitan salvage corps, expressed the following opinions :—

Q.—What structural arrangements for large warehouses does your observation suggest as the best for the prevention of the spread of fires ?

A.—I have never doubted the advantages of brick piers, groined brick arches, and concrete floors, as the best description of incombustible and fire-resisting construction for any building, especially those containing large bulks of produce and manufacture; still the space required for this kind of construction is such an objection that it is seldom met with except in vaults. The next best description of fireproof construction is that where, though the floors are supported by iron columns, these columns are filled in with concrete, and surrounded by the same material and cement, to a thickness of about 6 in., so that the protection afforded to the iron prevents its being affected by the heat to so great an extent as it otherwise would be, and if the joists are of T-iron, ordinary hoop-iron taking the place of old-fashioned laths, the space between the joists being filled in with concrete, though timber flooring may cover the whole. This I consider a thoroughly good and incombustible mode of building, and one which would prove fire-resisting to a very great extent, even in ordinary private dwellings. If the spaces between the joists were filled in with concrete, say 6 in. thick, instead of shavings and sawdust, as is now generally to be found, very much protection would be provided, and it would not only prevent a building burning so rapidly as is now the case, but at the same time it would allow far more opportunity for the inmates to escape than now, owing to the rapidity with which a building burns when once on fire.

Q.—What do you consider the best materials for the construction of staircases ?

A.—The question as to what material staircases should be constructed of I have long since considered, and I cannot agree with many who approve of stone staircases, except for external purposes. Of course there are warehouses and other buildings where a massive stone staircase leads to landings in the centre of a block, on which are good iron doors leading to the various rooms or floors filled with goods, and perhaps occupied with workpeople, the entrance being from the street and ending at the roof. Nothing can be better than this kind of staircase, where it is perfectly independent of the floors and their contents, because the probability is that any of these floors might be burnt out, and the staircase by no means affected by the heat on account of the protection afforded to it by the iron door; at the same time I am strongly opposed to stone staircases under almost any other circumstances for internal purposes. And I fully believe that if the ordinary timber staircases, as at present constructed, were filled in with good concrete before the tread is fixed, they would form about the best and most fire-and-water-resisting description of staircase that has at present been devised, and would, in my opinion, be the next best to brickwork itself. I know well how nice a good stone staircase looks, and is for use, when no fire happens, but I also know the fearful consequences of a nice-looking stone staircase suddenly giving way without any warning when it is heated and water is thrown upon it in extinguishing a fire.

Q.—What do you consider the best materials for the construction of roofs ?

A.—The best description of roofs I can conceive are those covered in with stout slate, with about 1 in. of fine concrete between the laths and the slate. This would not only resist any fire from an adjoining building, but would, under most circumstances, withstand any use to which the roofs might be subjected by firemen and others.

Q.—What precautions do you recommend as respects the flues of furnaces ?

A.—I cannot conceive that any difference of opinion ought to exist as to heating furnaces, or the precautions necessary to avoid accidents by fire from them, so long as all timber is kept well clear of the heated parts, and properly-constructed flues only used. Furnaces are as safe as any other description of heating apparatus.

Q.—What precautions do you recommend as respects open fireplaces ?

A.—So far as open fireplaces are concerned, there is no doubt that, with ordinary care, nothing can be more safe, and accidental fires should not occur from anything in respect of them, so long as the hearth-stones are not placed upon timber, and no such material is allowed within a reasonable distance of the fittings and flues; and no question ought to arise as to the advantage of open fireplaces in reference to ventilation over every other description of heating.

Q.—What precautions do you recommend as respects gas lights ?

A.—Respecting gas and the risk of fire from its use, I have no doubt that it is the most safe mode of lighting, so long as proper care and attention are given to it. Having every light safely fixed, and properly protected from contact with any inflammable article near it, and having every room in which it is used fitted with a ventilator into the flue of such room, there need not be any apprehension on that head.

Q.—What do you mean by concrete ?

A.—It may be made of many kinds of materials. What I refer to is that made with ordinary fine ballast and lime.

Q.—Would it not be better adapted to resist heat if made with clinkers or things of that kind, which had been burned ?

A.—I am not so sure about that. It might be more binding, but I believe the small ballast I speak of would not be greatly affected by heat any more than that made of clinkers. It simply introduces the idea of using a new description of material we know little or nothing about, instead of using that which has been proved to answer the purpose so well.

Q.—What would be the effect of a great fire on concrete ?

A.—The effect of fire on concrete is scarcely perceptible in ordinary fires, especially where the ceilings and floors consist of this material, but in seriously large fires it would, under great heat, split into irregular forms, but not until being nearly red-hot, and subject to the action of cold water being thrown upon it; even then the result cannot be compared to ordinary stone.

Colonel Beresford.—At the great fire at Cotton's Wharf it terminated in a floor in Alderman Humphrey's premises, termed Hay's Wharf. The floor was full of bamboo canes, which were burning with an intense heat, but it had no effect on the roof, which was filled in with concrete. The roof was perfectly lurid, but the fire did not pass it.

Q.—With regard to the construction of buildings, are there not some sandstones which will stand fire, and not split like granite ?

A.—I do not think buildings constructed entirely of granite would be specially susceptible of fire beyond those of any other stone. I consider stone in general exceedingly objectionable, and inclined to split when a fire occurs; almost any description you can name.

Q.—It is said that in Paris, where, during the Communistic incendiarism, they had a good many fires, some of them, particularly that at the stables of the Omnibus Company, were stopped by asphalte. Is it a fact that there are two sorts of asphalte in use, the bituminous or inflammable, and one that is not inflammable—the Val de Travers ?

A.—I believe it is difficult to find any asphalte that is not somewhat inflammable. I know of none; but I think a great deal of the immunity from fire which Paris enjoys is due to their system of building, and many other arrangements we have not in London. They have no hydrants, but almost every soldier understands extinguishing fires, so that there the means of putting out a fire at once are far preferable to ours in London, without taking into account the services rendered by the military generally in respect to fires. Then, again, in the buildings they use iron "winches," filled in with concrete, so that every floor is comparatively fireproof. As a rule, in English buildings, as the work progresses, the space between the flooring and the joists is made a sort of dust-hole, or receptacle for shavings, sawdust, &c., arising from the work; therefore, if once a fire happens, you have all the materials ready introduced and thoroughly prepared ready for a very rapid combustion.

Q.—Some time after the large fire at the City Flour Mills it was noticed that many of the iron joists were still in their places, not twisted. Do you know whether they were filled in with concrete, which had dropped out ?

A.—They were, I know, fitted in with stone, not concrete. A great deal of the action of a fire upon iron materials of that kind depends upon the cubic contents of the building and the length of the iron in use. The shorter the iron the more likely is it to remain in its place without twisting. Had that building been divided into two, as it should have been, the action of the fire on the girders and rafters would have been very much less than has proved to be the result.

ARCHITECTURAL COMPETITIONS.

ONE or two of the points made by Mr. T. Blashill, in his carefully-prepared paper on this subject, read at a recent meeting of the Architectural Association,* may perhaps with advantage be given in his own words :—

I.—*As to the System of Competitions generally.*

"No doubt, architectural competitions have been invented as a means of escape from the evils and uncertainties attending the distribution of patronage. A perfectly fair competition should ensure the selection of the best man in each particular case, and of course the best man would have a right to the employment. Now, judging by what we see in ordinary life, does the public want or expect to get in each case the best,—that is, the most able man ? and has such a one a right to expect that each work shall, after proof of his superiority, be given to him ? I believe nothing could be more monstrously absurd than the position into which such ideas would lead us.

In ordinary transactions between the professional man and his client, it is found convenient to treat the matter of remuneration as being fixed beforehand, the question being as to the quality of the services, which are always in a great measure uncertain, to be rendered in return for it. Now, a client does not seek out the greatest genius available; he goes to some one whom he knows, or whom a friend may have employed; to a neighbour, or to the nearest person of good repute. But he is almost certain to prefer before all these a person whom he has already himself employed, if even with something short of perfect satisfaction. It may be difficult to say how far he is influenced by the talent or the merit of the candidate, and how far by mere whim or liking, but everybody worth knowing is greatly influenced by the latter, and I believe the terms of confidence created by this mode of selection are on the whole beneficial to both parties, and to the work. They are certainly so far satisfactory, that people in general prefer to act upon grounds of preference rather than upon strict measure of capacity. They know that ordinary business is quite within the range of ordinary men, and they trust people whom they like and know to be fairly trained and practised.

Fancy a man making every fresh business transaction the occasion for a cold-blooded selection of the best man within reach, disregarding old associations,—honest, but perhaps ineffectual efforts to excel,—the struggles of moderate capacity,—the sentiment of neighbourhood,—in order to put his work into the hands of the brightest practitioner he can hear tell of, and getting ever such a little bit more for his money. You cannot imagine a more detestable animal than this, or one more likely to be robbed through thick and thin.

Now, a committee man will generally be allowed to have done his duty in his public capacity, if he does as well for his constituents in the matter of patronage as he would do for himself. There are, however, influences brought to bear which complicate this question. Privately a client might go to a friend, or the relation of a friend, and (blood being thicker than water), even a relation of his own, knowing nothing of his capacity, while one could not defend his acting in the same way in a public matter. But even in cases of the grossest favouritism or bribery, the check is not generally sought in any system of competition like our own, but in publicity if the nature of the transaction admits of it, and in the dangerous character of the business, if it is secret and corrupt. In any case a disappointed rival can have little right, except in his quality of ratepayer, to meddle in the matter." . . . . .

"I believe we shall never effect any improvement in our own condition, until we see the necessity of treating matters relating to architecture on the same principles as we would treat any other matter of business. Indeed, nothing but the firm conviction that all the world outside our own circle is in the wrong, can make it prudent to neglect this rule. By

* See p. 372, *ante*.

adopting it, we place ourselves in proper relation with the people with whom we have to deal; by neglecting it our position becomes exceptional and therefore false. We lay ourselves open to misconception and suspicion, and our conversation and literature become encumbered with complaints and accusations against our clients and our brethren, to an extent unparalleled in any other profession." . . . . . .

II.—*As to some Results of Competition not beneficial to Art.*

"We have seen ideas adopted which, from looking well on paper, have taken the public fancy, to a degree not at all warranted by their effect in actual execution,—ideas of the draughtsman merely as distinguished from those which are developed in the mind of one who has to study materials and construction, and to think of the purpose of each part of the building he has to design. I commend this question particularly to those who may advocate the competition system, because it is one somewhat difficult to decide; but it is worth our consideration that while in former times progress was made by study of buildings actually erected, we now study pictures of buildings never to be erected, and the effect of this must be prejudicial to that form of art which is practised by ourselves." . . . . . .

III.—*As to the Selection of Architects by Public Bodies.*

"Our public bodies have no idea of giving up their patronage, which, in the eyes of the worst of their members, is a legitimate source of influence, and in the eyes of the best of them is a duty which they are elected to *do*, and not to delegate to an assessor. Indeed, apart from competition, there is no doubt that our public bodies are able to choose their architects with as much fairness and discretion as they exercise in the choice of other persons whom they employ. Will any one say, for instance, that the Government, which can make peace or war, or select the Viceroy of India, could not be trusted to select the architects of the offices where the bookkeeping part of their business is conducted? And this applies with equal force to the case of a burial board, with their pair of cemetery chapels and lodge. Nepotism is an evil which the public understands and can guard against, so far as it wishes to do so; but nothing favours it so much as a competition in which the nephew can use in secret that influence which he would not venture to use openly. If, however, this system continues to prevail, we must still hear of people manœuvring for nominations to compete, with the subsequent finessing, and the canvassing of committee-men, and the squabbling over the award, till at length parties withdraw from the contest, some of them with reputations (or perhaps only tempers) so ruffled that they cannot settle down into their normal shape without letters and pamphlets more or less damaging to everybody concerned. Vastly more dignified, as it seems to me, is it to have a short and sharp quest after a job if you are younger, or to have the job come to you if you are older; after which most of your brethren not only let you carry it out in peace, but would, if needful, give you (at least in London) their cordial sympathy and help."

CONCRETE BUILDING UNDER WATER.

AT a meeting of the Institution of Civil Engineers, May 13th, Mr. T. Hawksley, president, in the chair, a paper "On the Delta of the Danube, and the Provisional Works executed at the Sulina Mouth," by Sir Charles Augustus Hartley, was read. The provisional piers consisted of three rows of piles, the outermost rows being of close piling, on either side of which stones of less than a cubic foot in size were thrown from barges and allowed to take their natural slope up to the water-line. During the five years which succeeded, the waves broke down the ridge of stonework to the level of from 3 ft. to 4 ft. below the water-line, and the sea and inner slopes were reduced to 2½ to 1, and 1½ to 1, respectively. The problem was, how best to build in an open sea-way a solid wall 1½ mile long, 10 ft. thick, and of nearly the same height, from an irregular foundation of *pierre perdue* to the level of the fast-rotting timber superstructure. At first, the wall was built on a roughly-levelled foundation, by lowering masses of unset concrete, within movable timber dams fitted, in lengths of from 15 ft. to 30 ft., to the framework of the piers. The earlier trials were unfortunate, from the proportion of cement mixed with the sand and gravel being insufficient to insure the stability of the blocks under water, and some 35-ton blocks at the pier-head, where the proportion of cement to gravel was only 1 to 4½, succumbed to the force of the winter gales. Ultimately, by the end of the summer of 1868, a length of 2,791 ft. of the north pier was successfully completed, the proportion of cement to the sand and gravel being 1 to 3 in the immersed portion of the wall, and 1 to 6 in the part above water. But although the progress of the works had been hitherto satisfactory, increasing difficulties and expense were met with in the rougher water seaward, and this induced the author, in the spring of 1869, to adopt an alternative plan for consolidating the seaward end of the piers, by carrying up the wall from a foundation on the rockwork carefully levelled by hand. Accordingly, a perfectly level bed at the depth of 5 ft. over a width of 12 ft. on the river side of the sheet piling, was executed by Russian divers for the next 1,247 ft. of the north pier. To afford greater security to the foundations, four 3-in. oak planks were spiked to the open piling which formed the inner row of the provisional piers, the lowest plank being fixed at 7 ft. 6 in. below the water-line. On the foundation thus prepared, blocks weighing 18 tons each, composed of one of cement to seven of sand and gravel, were lowered from the timber platform above to their destined site by powerful "goliaths." As each block was 5 ft. wide, and the distance between the quintuple rows of piles was 7 ft. 6 in., the interval between the blocks along the line of works was 2 ft. 6 in. The blocks were lowered when ten days old, and the spaces between them immediately filled up with newly-made concrete, which ultimately consolidated the whole mass. In 1869 the consolidation of the north pier was carried out to 3,200 ft. from the shore, and the south pier was consolidated for a length of 699 ft. on the plan first adopted at the north pier. In this year steam machinery was erected on shore for the construction of blocks of from 10 tons to 20 tons each, which were afterwards thrown from pontoons at random on the outer slope of the rock-work adjacent to the head of the north pier, where the waves were found to level down the ordinary *pierre perdue*. In 1870, the remaining length of 1,438 feet of the north pier was consolidated, and a new iron lighthouse was erected and fitted with a fourth-class dioptric light. The consolidation of the south pier was also completed up to the high-water line in 1870, but its crown-work was not finished till the summer of the following year.

The total sum expended on the Sulina piers, of which the north was 5,332 ft. long, and the south 3,457 ft., amounted to 185,352*l.* on the 30th September, 1871, when the works were entirely finished.

THE CHANCES OF ANOTHER BUILDING STRIKE.

THE building operatives of London, particularly the carpenters and the masons, though not acting in concert, are acting with a view to enforce another increase of wages, if possible this season. Some time since the master builders received a notice that a demand would be made upon them for compliance at a date not many weeks distant. Meetings are being organised and held weekly, for the furtherance of the object, under the name of the "Advance of Wages Movement"; but the word "strike" is as yet kept prudently in the background. To speak plainly, the *dernier ressort* cannot and will not be attempted by the building operatives of London unless their present organisation assumes a far different complexion, and shows a greater vitality and tone than what it seems capable of at present. The chances are all against the success of another building strike in London this year. A partial attempt might take place; but such another strike as that of last year is impossible. The demoralisation and the hardship that the last contest worked to the operative ranks is too fresh in the minds of both union and non-union men, and they will not be moved to action by any mere call on the part of those or a section of those who led them before, and would be likely to lead them again, in the event of another strike. The provinces would give little or no support to a second strike, and the distinct trade societies of the carpenters, joiners, and masons would not sustain by their funds any strike which was attempted without their approval. Any struggle precipitated in London at present would have to be carried on by voluntary aid external to society funds, and by the levies of those workmen making common cause with the strikers.

The building trade is somewhat better at the present moment than it has been for some months past; but though this fact might afford an encouragement, it would at the same time afford no guarantee that fresh demands could be enforced at a lapse of eight or nine months after a settled agreement had been concluded, and a proposition acceded to that any future dispute should be referred to arbitration. What did the building operatives of the metropolis gain by their last struggle? Less time and less wages. They are now offered by the master builders the option of making more time, and consequently more wages; but this they decline, on the plea that "overtime" is one of the greatest evils of the building trade. Now it is an incontrovertible fact that there are hundreds of carpenters, joiners, masons, and other workmen, even among the society-hands, working nightly in London overtime, for regular and what are called irregular firms, or non-society shops. The societies are powerless to abolish overtime; they wish to see it put down, yet they prudently allow their own members to work it. Overtime will always exist for workmen who desire to increase their income; and no matter how trade societies may attempt to control it, the exigencies of modern life and public wants will necessitate overtime being worked. Let our building operatives be wise in time, and avoid strikes for even when successful, the gain is but temporary. A few may be benefited, but the many are certain to suffer, and the future of trade and the prosperity of the nation feel the evil effects. Trade-unions are not evils in themselves,—they have their great use; but, unfortunately, their abuses have more than counterbalanced the good they have accomplished for the benefit of their members. How many carpenters or joiners are there who lived through the forced idleness of last year's protracted strike can conscientiously say that they have made good since or recovered what they lost? Idleness ruins, drink ruins, strikes ruin, and the last is a species of intemperance which commonly embraces all and works ruin to many.

We wish the artizan classes of this empire every good they can fairly and honestly attain; and as to setting class against class, it has never and will never find any favour at our hands. We cannot look with any other feeling than regret upon the occurrence of either a lock-out or a strike; for we believe both to be unnecessary. Whatever obstructs or retards the industries of a country, and tends to beget an ill-feeling between the employer and the employed, cuts at the root of all social good and is cumulative in disaster.

Our monition to-day to the workmen of this metropolis is a kindly one. Let them take it in the spirit with which it is offered by those who have known their position long and well, who have gauged all their resources, and who wish to save them from inflicting a suicidal wound of a dangerous kind to their own and the nation's most vital interests.

SCHOOLS OF ART.

Lambeth.—There was a large gathering of the friends of the students of the Lambeth School of Art, in Miller's-lane, Vauxhall, on the occasion of the yearly distribution of prizes and certificates. The Rev. Canon Gregory presided. In the course of his opening remarks, as reported by the *South London Chronicle*, he said it was eighteen years since the school was founded. In their early days the school encountered many difficulties, until they were fortunate enough to secure the services of their friend, Mr. Sparks, as head master. Since that time their history had been one of progress and development. They were then met for the second time in that second room, their old premises having become too strait for them; and even with this increased accommodation, he must say that the art-school was well used as well as well taught. But they had not quite got rid of the housing difficulty, for, although the money had been paid, some 200*l.* had been advanced by himself and others. They were anxious to raise this 200*l.*, and were endeavouring to raise funds by way of lectures and concerts. In conclusion, he said that none had taken away the gold medal this year,

but several had gained silver medals. Mr. George Leslie, A.R.A., then delivered an interesting address upon the spirit which should animate artists in their work. Opening with a criticism by Mr. Redgrave upon the lecturer's remarks on art at the St. Martin's-lane school recently,—that these schools of art were not to make artists, but to produce in the people who attended them a taste for art,—Mr. Leslie deplored the division of labour whereby artists were confined to one branch of art, and which tended to destroy that unity of design in buildings and other undertakings which was the distinguishing feature of many ancient works. In conclusion, he said, with all due deference to Mr. Redgrave's opinion, he must beg to consider the students as artists in the true sense of the word,—artists of the same family to which it had been his pride to belong; and when he saw such drawings as they had before their eyes, no one could say that those capable of such performances were not *bonâ fide* artists.

Sheffield.—The annual *conversazione* of this school, and the opening of the exhibition of pictures in connexion therewith, have taken place at the school. Amongst the company were the Mayor and Master Cutler, the Mayor of Rotherham, Mr. Cole, C.B., Mr. A. Robertson (President of the School of Art), Mr. B. Wake, Mr. Cox (Pall-mall), &c. Mr. Sounes, the Head master, in his annual report thus speaks of what the students had accomplished:—

"An idea of the successful working of the school during the past year will perhaps be formed best by quoting from the report made by the examiners at South Kensington, upon the works of the students sent to London for adjudication as usual in April last, and by comparing the prize list with that of last year. The report says, 'considerable versatility in the range of subjects, which were pursued generally with a success above the average, has secured for the schools an increase in the number of awards. The prizes, compared with last year, are:—In 1871, 33 prizes, 2 national prizes, 4 free studentships; in 1872, 36 prizes, 7 national prizes, 9 free studentships. In the second grade examination in 1871, the number of passes was 85, and prizes 17; in 1872, passes 100, and prizes 32. There has been a better competition than usual for the local money prizes, and for the first time since 1865 they have all been awarded. The number of local prizes is 6, in 1865 it was only four."

At eight o'clock most of the company proceeded to the large studio beneath the "cast" room, to witness the presentation of prizes to the successful students by Mr. Cole. The chair was occupied by the president of the school, who briefly introduced Mr. Cole, who said the president had asked him to give an opinion upon the state of the Sheffield School of Art. He should attempt to do so from a somewhat superficial view. It would be agreeable for them to know that the school of art had earned more State money in 1872 than in 1871. In 1871 it received from Government 267*l.* upon the results of the work, and in 1872 it had received 321*l.* There had been a slight decline in numbers: last year there were 272 pupils, and in 1871 there were 274 pupils. But there had been a much larger decline in fees. From some mysterious reason the fees had declined about 100*l.* last year. In 1871 they amounted to 900*l.*; and in 1872 only reached 800*l.* With respect to their position with other schools throughout the country, that was shown by the prizes received by the headmaster. There was a system by which one prize of 50*l.*, two prizes of 40*l.*, three prizes of 30*l.*, and several prizes of 10*l.* were distributed in recognition of the work of the schools. Their head-master, as in the preceding year, had taken a 30*l.* prize. It would no doubt be satisfactory to them that out of 122 schools Sheffield at least took that position. They were in a low sbb, however, in regard to drawing in Sheffield. With regard to science, it was beginning to simmer a little in Sheffield. The number of students had nearly doubled last year; there were 171 students in the various elementary schools. They were nibbling at science. In 1871 there were less than 90 students; and, in 1872, the students obtained from the State as the result of their learning 92*l.* There were 34 students learning something of chemistry; some few learning mathematics; some few botany; but, in a town like Sheffield, which depended so much on mineralogy, how many did they think were having an inkling of minerals? Should he say 100? No. There was not one. It was the same with regard to metallurgy. Such was the state of the progress in science and art.

Opening of a New Dock in Limerick.—The Lord Lieutenant and Countess Spencer have inaugurated the opening of the new graving dock at Limerick, which has just been finished, after five years' labour, at a cost of 20,000*l.*

HOUSE PROPERTY IN LEEDS.

AN unusually large sale of house property has taken place in Leeds. The property in question constituted the estate of the late Mr. Wm. Croysdale, situated at Richmond-hill and Pottery-field, Leeds, and comprised 270 dwelling-houses and shops, a residence known as Richmond Hill House, and the Sussex Tavern. Mr. John Hepper (Messrs. Hepper & Sons) officiated as auctioneer; the solicitors for the vendors (Messrs. Barr, Nelson, & Barr) were represented by Mr. F. Barr; and the surveyors, Messrs. Bell & Thornton, were also present. The property was divided into twenty-seven lots, and, with one exception, they were all sold, the aggregate amount realised being 24,015*l.* The unsold lot,—a parcel of land,—was not put up to competition. The property had been previously valued by Mr. J. Bell, sen., at 24,019*l.* only 4*l.* more than the sum actually realised.

The following shows the rental of a few lots, the number of years' purchase which the purchase-money represents, and the price paid:—

	Rental.	Years Purchase.	Sold for.
	£ s. d.		£.
14 Cottages in Sussex-street, Salop-row, and Salop street	81 18 0	12½	1,050
14 Cottages in Salop-row and Salop-street	81 18 8	12½	1,050
14 Cottages in Salop-row and Salop-street	84 18 8	12½	1,080
A Shop and 13 Cottages in Sussex-street, Salop-street, and Derby-street	83 8 4	12½	1,030
A Shop and 13 Cottages in Derby-street and Leicester-street ..	85 16 0	11½	1,020
16 Cottages in Derby-street and Leicester-street	97 1 4	13½	1,320
A Shop and 13 Cottages in Sussex-street, Leicester-street, and Surrey-street	80 12 8	12½	1,020
A Shop and 14 Houses in Sussex-street, Surrey-street, and Ellerby-street	83 4 0	12½	1,050
The Sussex Tavern, Sussex-street and Kent-street	60 0 0	38	2,280
14 Cottages in Kent-street, Ellerby-street, and Sussex street ..	109 4 0	11½	1,270

THE ST. GOTHARD RAILWAY.

WE were enabled to give some early details respecting this great undertaking, and we now take from the *Greenpost* the following particulars with regard to the machinery used in the construction of the St. Gothard tunnel. The machines in operation may be divided into two classes: the boring-machines proper, which work in the tunnel itself; and the apparatus and mechanical means outside the tunnel. The latter supply the motive power for the former. The boring-machines are not moved by hand; it would be likewise impossible to drive them by steam-engines, as an engine posted in the interior of the tunnel would soon fill the whole space with smoke, and not only make it impossible for men and animals to exist in such an atmosphere, but would soon extinguish its own fire. Nothing was seemingly left but to place steam-engines outside the tunnel, and to conduct the steam generated in them in pipes to the boring-place. But this also was impossible of execution: the steam would have been condensed in its progress through the pipes, and eventually changed again into water. Professor Colladon, of Geneva, proposed therefore the application of compressed air as a motive power. By means of the latter, the engineer is enabled to conduct power with little loss to almost any distance. Before the tunnel, now, great air-reservoirs have been constructed, in which the air is compressed to the twentieth part of its volume, by a force of 300 horse-power. This power is supplied by immense water-wheels, driven by the wild waters of the Reuss and the Tessin (Ticino). The compressed air is conducted in pipes to the place of operation, where it enters into a cylinder, and, expanding in the latter, moves its piston with great rapidity backwards and forwards. The piston is connected with the cutter, which penetrates deeper and deeper into the rock with each stroke. The boring-machines, of which there are several, bore together fifty to sixty holes. As soon as the latter are made, the machines, which move on rails, are run back, and the miners fill the holes with powder or dynamite, and fire them. As soon as the mines are exploded a valve of the air-conducting pipes is opened, and the force of the compressed air rushing out drives all the smoke in an instant out of the tunnel. After the *débris* of the explosion have been cleared away, the boring begins afresh. The tunnel, which is to connect Göschenen direct with Airolo, will be 14,000 mètres, or a little over three hours long, and is 6,000 ft. below the summits of the Gothard group of mountains. What a superincumbent weight! The contractor of the work, M. Favre, has undertaken the work, which was estimated at 53 million francs, for 50 millions, and promised to finish it in eight years.

THE BRIDE STONES.

SIR,—The relics, mentioned in the *Builder*, No. 1575, are described in the "Mona Antiqua Restaurata," of the Rev. Henry Rowlands, second edition, A.D. 1766. The stones are in the parish of Biddulph, in the county of Stafford, on a rising ground in the break or opening between the Cloud and Woof-Lowe, two of the hills running through Staffordshire, Cheshire, Derbyshire, and Yorkshire, into Scotland. In this work they are engraved with apparent accuracy, and as follows:—A pavement leads from the west, composed of broken pieces of stone, 2½ in. thick, laid on pounded white stones, 6 in. deep, tinged with black, caused by ashes and oak charcoal possibly. The sides of the cave were composed of two unhewn free-stones, about 18 ft. long, 6 ft. in height, and 14 in. thick, each broken into two pieces.

A partition stone was placed across these two long stones, about [illegible] in. high, and 6 in. thick. A circular hole was ma[illegible] this stone, 19½ in. in diameter. The height from the pavement to the covering was 5 ft. 10 [illegible]. Stones covered the whole relic, and two similar monuments were in the vicinity. At the west entrance, or opening, of the cave or passage, were four pillars, two on each side, rough, square, and tapering, 2 ft. thick, and 4 ft. 3 in. broad. Further west is, or was, a circle, composed of eight stones, from [illegible] to 6 ft. broad, of various heights and shapes, distant about 6 ft. from each other in a semicircular form. Within are, or were, two stones, where the earth is black, and mixed with ashes and oak charcoal. The circle is 27 ft. in diameter. 20 ft. eastward is, or was, a standing stone, and another at a similar distance beyond. I hope that the new proprietor will cause this ancient relic to be preserved.

CHR. COOKE.

POROUS TILE ROOFS.

FOR this evil there is a most simple and cheap remedy. Give the tiles a coat of coal tar, which can be obtained at a trifling cost from any gas works. One coat will answer the purpose; two is better. There is not the slightest objection as a matter of taste to the colour of the tar—a dark brown colour, just the colour of an old tile roof stained with age;—but if a red or grey colour is desired, sift fine sand of either colour over the roof whilst the tar is wet; it will adhere firmly. I speak from experience.

K. K.

THE LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

THE general meeting of this Society was held on Thursday in last week in Lincoln's-inn Hall, which had been lent them for the occasion by the benchers. The chair was taken by Lord Talbot de Malahide, who in his opening remarks referred to the proposed vandalism of destroying Northumberland House, which was now the only remaining nobleman's residence of its class.

Mr. E. W. Brabrook, F.S.A., then read an interesting paper "On the Hon. Society of Lincoln's-inn," in which he shortly traced the history of the society from its commencement. As affording a contrast with the present day, he quoted from Fortescue that the young benchers in those days could live in London comfortably on 25*l.* a year.

A paper by Mr. W. H. Spilsbury, the librarian, "On Lincoln's-inn and its Library," was also listened to with interest by the members.

A third paper, by Mr. Coote, "On the Inns of Chancery," was for some reason omitted.

The members then visited the library, spacious kitchen, old hall, and chapel of the Hon. Society

of Lincoln's-inn, and proceeded over the way to Rolls Chapel, where another paper explanatory of the antiquities of the building and office, by the Rev. J. S. Brewer, M.A., the preacher at the Rolls, was read.

Mr. Bloxam gave some explanations about one of the interesting features of the chapel, the monument of Dr. Young, who was Master of the Rolls in the time of Henry VII.

The members then went to Gray's-inn, where a paper "On the History of the Society and the Building," by Mr. W. Douthwaite, was read. Some of the old manuscripts and books, the few remnants of the Great Fire, were admired, especially a copy of the Bible in Latin, in diamond type and illuminated on vellum about the thirteenth or fourteenth century. The librarian called attention to the reminiscences of Lord Bacon, who was their chief glory, and who lived for many years in the square close by. A visit was paid to the chapel of Gray's-inn, after which most of the members partook of a collation at the Old Bell.

OAK.

SIR,—In reply to your correspondent,—a herring-bone pattern for floors will do very well. Cut the oak out directly in lengths, 4 ft. long, 6 in. wide, ½ in. thick, and boil the timber, if possible, in a brewer's boiler, or any large boiler that will contain it. This will get rid of the sap and season it; then stack it in any *dark* chamber, with plenty of air, taking care it is placed perfectly level, with ½ in. pieces of wood between each board, to allow the air to pass. In six months it will be ready for use. Then plane it smooth, and fix it down with long fine brads. The finer the saw you use in cutting the timber the less will be the labour after in planing it.

K. K.

A PROFESSIONAL TRIBUNAL.

AT the meeting of the Royal Institute of the Architects of Ireland, held on the 17th ult., the following resolution was passed:—

"That this Institute having taken into consideration the important bearing of the proposed Judicature Bill of the Lord Chancellor on professional practice, suggested to its notice by the Birmingham Architectural Society, and by report of recent proceedings at the Architectural Association of London, desires to second warmly any efforts which may be made by the Royal Institute of British Architects to further the establishment of such tribunals as proposed—viz., equity courts presided over by members of the architectural profession; and that this Institute desires that the provisions of such a Bill should be extended to Ireland, where the administration of justice in professional questions has been especially unsatisfactory."

"BEGIN AT THE BEGINNING."

SIR,—"Transcriber" does not state his case very clearly; at least, I for one never saw a letter written as he describes it. If we page a sheet of note-paper in the old straightforward way, but write thereon in the modern style, the pages are filled in the order, 4, 1, 2, 3, which is rarely varied. The reason is, I think, found in the use of the copying-press. The bulk of business letters written on note-paper do not extend beyond two pages. If these were numbered 1 and 2, as of old, press-copying would be troublesome, and either require two operations, or leave the copying-book in confusion. Hence it became usual to follow page 1 with page 4, in order to get the two pages *together* for copying. But as this was reading backwards, the modern practice has been to commence on page 4, continue on page 1, and follow with 2 and 3 if needful. For business purposes this is most convenient; but for private or uncopied letters, I should adhere to the old-fashioned way; while for matter intended to be printed it is too bad ever to write otherwise than on *one side only of every sheet or slip of paper*.

COPYIST.

*** The gist of the matter is that the writing, whether in business or private notes, *is backed*, and the new style adds to the confusion. Few correspondents of the press think of the trouble this gives, though, as we have often said, "it is too bad."

HOUSE AGENTS *AND* HOUSE AGENTS.

LEVINSKI *v.* BRYANT.

THIS action, brought in the Lord Mayor's Court, before Sir T. Chambers, Q.C., Deputy Recorder, was to recover 17*l.* 10s. commission, at 5 per cent., on the letting of new premises.

The plaintiff stated that, in August, 1872, Mr. Bryant had a house being built in Wilson street, Finsbury, where he, the plaintiff, was a dealer in cigarettes and prints, and the defendant told him if he could find a tenant for it, he would give him the usual 5 per cent. commission. He found a tenant named Stevens, and introduced him first to Mr. Bryant, and Mr. Stevens took the house at a yearly rental of 350*l.* When he, the plaintiff, asked for his commission, Mr. Bryant referred him to Mr. Newson, his house agent, who, he said, had made all the arrangements for letting the house, and to whom he had paid his commission, and perhaps Mr. Newson would give him something. Witness said he had nothing to do with any arrangements as to letting the house, all he had to do was to find a tenant, and he had done so. When he applied to Mr. Newson, that person utterly repudiated him.

The defendant now denied promising the plaintiff any commission, but only promised him a present if he produced a tenant at once. When the plaintiff introduced Mr. Stevens, he (defendant) asked 350*l.* per annum for the premises, and he then told the plaintiff that if Mr. Stevens agreed to take them that day or the next, he would make him a present, as it would save the expense of employing a house-agent afterwards. Having had to pay Mr. Newson to negotiate and let the house, the sum of 12*l.* 10s., he objected to pay twice, but sent him to the agent to see if he would give him anything.

A strong point was raised that the plaintiff not being a house-agent, was precluded making house-agents' charges.

The learned Judge, in summing up, told the jury there could be no doubt but that the plaintiff introduced a customer for the premises, and was perhaps entitled to something for his trouble; but it was a question whether he could recover for commission as house-agent.

The Jury gave a verdict for the plaintiff for five pounds, which will recover costs, on the lower scale, a matter that will add some fifty pounds to the verdict.

READING GRAMMAR SCHOOL.

SIR,—Alas! I fear it is too true that the announcement in the *Builder* of last week is likely to prove correct: that our old Tudor grammar school in the Forbury (which dates from the time of Henry VII.), is doomed, and will soon be a thing of the past. This I much regret, in common with many of my fellow townsmen. Surely the numberless associations connected with this old building ought to be sufficient to protect it from entire demolition. For a small outlay, it may be so altered as to make an excellent free library and news-room for the use of the public,—a thing, indeed, the want of which is a standing disgrace. It would thus be carrying on in its old age that good and excellent work for which it has been so noted in the past,—the advancement of learning, and the cause of civilisation.

AN OLD READING BOY.

CAUTION TO BUILDERS.

SIR,—Under the above heading, "Moffet Little" recites a case which is, perhaps, of more frequent occurrence than he thinks. But perhaps the other side of his case would open up facts which would alter the complexion very much. The point I wish to raise is—Whether this "sole arbiter" of the architect cannot very easily be upset if it can be shown he is acting unfairly? I have always felt it to be very dangerous to a builder to sign such a clause; but, having signed it, I have also held strongly to the opinion that the arbiter must be reasonable and equitable, failing which he could be displaced. Another point in this case is, whether the arbitrator (Mr. Foster) could admit the "sole arbiter" question after being, as your correspondent leads one to think, settled by Mr. Justice Quain. A table of what an arbiter under such circumstances *can* and *cannot* do (like Mr. Banister Fletcher's tables of what tenants are bound and are *not* bound to do in the way of dilapidations), would be very useful, and perhaps lead some of those gentlemen who still adhere to the sole arbitrament of their own works to modify their demands.

H. A. W. R.

CEMENTS.

SIR,—A while ago I engaged to lay some cement on ironwork, where it was necessary that the article should set quickly.

I ordered and paid for a barrel of Portland, charging the dealer to send me good cement, and explaining the purpose for which it was required very fully. When I opened the barrel sent a short time before it was wanted, the article proved to be Roman.

As the case was very urgent, and my time limited, I explained to the gentleman for whom I was doing the work that I considered the cement sent would answer our purpose quite as well as Portland, as it seemed to be very good, being free from all symptoms of damp.

Accordingly, about half the barrel was mixed with about one-twentieth part of good red sand, and applied just in the same manner as the Portland would have been.

It was found after being on twenty hours to be literally no harder than when first applied, thus causing very serious loss.

May I request some of your correspondents to answer me the following questions:—

For general purposes, where colour is not an object, will not Roman cement of good quality answer quite as well as Portland, and set as quickly, even under water?

Did I not act in the way most men would have done, as the dealer's place was four miles away. I had paid him cash (14s.), and presumed the article sent was of that value?

J. O.

TALL HOUSES AND SHORT ONES: A KNOTTY POINT OF LAW THEREON.

IN the County Court of Morpeth, last sittings, a case was tried involving several knotty points as regards damage caused by tall house rain-spouts flooding the roofs of short houses.

The plaintiff, Mr. Kelly, of Cowpen Quay, sued his neighbour, Mr. Guthrie, for damage done to his house by the overflow of rain from the defendant's spouts on to his roof.

The case was tried before a jury, and a long array of legal gentlemen were retained.

The evidence, however, showed that the original intention of the owners of the land on which the streets were built was to sell the sites for three-storied houses, and the defendant had fallen into this view and built several; and after he had done so no one else would take the ground for three-storied dwellings, and the owners of the land were glad to let it for two-storied houses, so that the defendant's houses treated the short ones with contumely and disrespect. The short houses, however, left one of the gable ends of the tall house unprotected, and it was partly blown down by a storm. After this the gable was not run up to its former height, but was "hipped" and roofed. Subsequently the house now owned and occupied by the plaintiff was built against the defendant's gable end, the plaintiff, of course, paying the usual charge for the party-wall. Both the eaves and spouting of the defendant's house projected over the roof of the plaintiff's house. The spouting was defective, water overflowed from it, and as a consequence, during the heavy rains of last winter and the snow thaws, the water had come down upon the short house roof in deluges and done the alleged damage of 50*l.*, the sum sued for.

The evidence was as usual very conflicting, and the surveyors called on each side as to the amount of damage were equally at variance.

The Judge, however, summed up in favour of the short house, and the jury mulcted the tall house in 10*l.* damages.

Verdict for 10*l.*, with costs.

COMPETITIONS.

St. Luke's, Cambridge.—A new district church is about to be erected for this increasing neighbourhood. The committee invited the following architects to lay sketches before them:—Mr. E. Barr; Mr. E. Bays, Cambridge; Mr. Fawcett, Cambridge; Mr. J. Norton, London; Mr. Smith of the Adelphi; and Mr. R. R. Rowe. Ultimately they selected Mr. Smith to carry out the work.

Chester Workhouse.—In a letter addressed to the chairman of the Board, Messrs. Murray & Thomas, the authors of the plans "We Fight to Win," call attention to a report in which Mr. Culshaw states that the majority of the plans sent in cannot be executed under 42,000*l.* They say:—"Our plans being approved of by the guardians, and amongst the thirteen selected designs, we were very much surprised to hear such a statement had been made, whilst we are prepared to carry out the works for the sum named in our estimate,—viz., 27,000*l.*,—which is under the specified amount by 3,000*l.* We may further add that Messrs. J. Parker & Son, contractors of the Liverpool Exchange, Municipal Offices, Dale-street, and the Royal Exchange, Manchester (now in course of erection), are prepared to undertake the work at the sum stated in our estimate. In common fairness to ourselves, being the lowest in estimate, we consider ourselves entitled to the first premium." It was unanimously resolved to refer the letter to the building committee.

NEW LANDLORD AND TENANT AGREEMENTS AS TO BUILDINGS ON FARMS, &c.

THE North Riding of Yorkshire Chamber of Agriculture have inaugurated new conditions of holdings between landlord and tenant which are deserving of notice.

Several discussions at previous meetings of the Chamber led the council to delegate to the chairman, Mr. E. T. Cayley, of Wydale Hall, who, besides being a large landed proprietor, is a barrister-at-law and an able conveyancer, to frame an amended form of agreement between landlord and tenant; and last week Mr. Cayley submitted his form of lease, which contains twenty clauses, and the main alterations from the form of existing leases relating to the tenure of the land and tenant-right. These are principally a year's notice to quit from either side, the reservation of the winged game to the landlord; the tenant to have the right to take hares by coursing and rabbits by ferreting and digging, and to use wire-netting to exclude rabbits.

After providing for the preservation and replanting of fruit-trees, non-breaking-up of pasture, getting materials for repair, &c., the 10th clause says, that after a notice is given to quit, a white corn crop is not to be grown of more than half the tillage; but the tenant is to be entitled to a following crop, according to the custom of the country.

The next important matter is compensation for "unexhausted improvements in buildings or otherwise"; and the 16th clause recites, "That landlord or on-coming tenant is to allow the out-going tenant the then value, as ascertained by valuers, of any liming, claying, marling, or durable improvement; and of any draining, building, or permanent improvement, which the tenant may have made, with the consent of the landlord in writing, for which he shall not have been previously compensated, by reduced rent or length of time, or otherwise.

The 17th clause provides for the removal of buildings erected by the tenant without consent if not taken by the landlord at a valuation, or three months' damages to be made good.

The tenants look upon these proposed new agreements as a step in the right direction, but as being some long way off their interests in many of the new clauses.

BOROUGH SURVEYOR FOR HARWICH.

SIR,—I cannot avoid calling your attention to an advertisement in your last edition. There must surely be some mistake about it. I find, by referring to the last census, that Harwich is a borough, with municipal and Parliamentary limits, returns a member to represent its interests in Parliament, and has a population of between six and seven thousand. Harwich wants a surveyor, &c., with a *practical knowledge of sanitary matters*, who must devote his whole time to his duties, and shall receive the large salary of 80*l.* per annum. I wonder whether there are any perquisites allowed? It would be wrong of me to say any more, Mr. Editor, or to criticise in an unkind spirit that which I must feel to be a mistake. No doubt about it. The figure 1 in front of the 8 has been omitted. 180*l.* would probably be the correct figure. I feel quite glad that I have hit upon it, and the Harwich Board will at once rectify it. C. J.

THE INSTITUTE DINNER.

SIR,—I shall be much obliged by your allowing me to state in your journal that the Institute dinner (for architects and amateurs of architecture) has been unavoidably postponed until Saturday, the 21st of June, when it will be held at Willis's Rooms, at half-past six for seven p.m. Gentlemen desirous of being present on the occasion should forward their names as soon as possible to the Institute. The price of the dinner-tickets will be one guinea each. CHARLES L. EASTLAKE, Secretary.

SEWERAGE WORKS.

Oxford.—The question of the drainage of Oxford, which has engaged the attention of the authorities for upwards of twenty years, may now be looked upon as practically settled. At the last monthly meeting of the local board, the drainage committee presented a report recommending the acceptance of the tender of Mr. J. T. Aycock, of Norwich, for the construction of the first section of the street drainage works for the sum of 15,000*l.* After a lengthened discussion, the board resolved to accept the tender of Mr. Aycock. The surveyor's estimate for the entire cost of the works is put down at the sum of 85,000*l.*, namely, for the town sewerage and outfall, 60,000*l.*; for the pumping station, 10,000*l.*; for the pumping main and overflow, 1,000*l.*; for other drainage works, 5,000*l.*; and for incidental expenses, 3,000*l.*

Chester.—The sewering committee having recommended that the mayor be authorised to affix the common seal of the city to the duplicate conveyance of Mr. Viggar's land, Sealand, purchased for the outfall works, and to the agreement between the council and the county justices, with respect to the carrying of one of the intercepting sewers through the county gaol at the castle, this was agreed to by the council. The same committee, at a meeting on the 12th May, opened the tenders for the new system of intercepting sewers, which were as follow:—

Gilbert	£30,770 0 0
Fry	29,759 0 0
Nowell	28,500 0 0
Smith & Fawkes	27,559 0 0
Marshall	27,000 0 0
Chappell	27,000 0 0
Pearson, Lee, & Co.	26,250 0 0
Sleight	24,588 0 0
Orer, jun.	23,267 0 0
Hughes	22,902 0 0
Chester	23,840 0 0
Thane	22,400 0 0
Bennison & Spencer	21,879 18 0
Winter	21,330 14 0
Roberts	20,888 0 0

After some discussion Mr. Roberts's tender was accepted by the council.

NORTHUMBERLAND HOUSE.

On the consideration of the Charing-cross and Victoria Embankment Bill in the Commons,

Lord Elcho said that, while admitting that houses of such architectural pretensions as this mansion must give way to public improvements, he recommended that some superintending body should be appointed to act in union with the First Commissioner of Works, in order to save the metropolis from disfigurements, such as Cannon-street and Charing-cross railway stations, and the various railway bridges across the Thames, as well as to prevent changes of the kind recently made in Kensington Gardens.

Mr. Bouverie said the Committee on this Bill, while regretting the necessity for removing one of the few remaining specimens of princely mansions in London, found the advantages of a direct route from Charing-cross to the Embankment so overwhelming that they gave the preference to this over all the other Bills. The Duke of Northumberland, although he had Parliamentary protection, gave his assent to the loss of the mansion for the sake of public convenience. The new street also received the approval of Mr. Wyatt and Mr. Barry, and one effect of its construction would be to hide the iron railway shed which had been alluded to. The plans would be submitted to the Institute of Architects, and the street would be one of the finest in the metropolis.

The motion was agreed to.

THE ARCHITECTURAL ASSOCIATION'S VISITS.

ON Saturday, the 17th, the Architectural Association visited St. Luke's Church, Redcliffe-square, South Kensington, now approaching completion, and made a careful examination of the works. The president (Mr. Mathews), Mr. Thos. Blashill, Mr. S. Flint Clarkson, and other leading members of the body, were present. The architects, Messrs. G. & Henry Godwin, met them on the spot, and gave some particulars of the building, and of the difficulties which had to be overcome, especially in respect to the foundations.

It is a large church, nearly 150 ft. long, and the nave has a width of 35 ft. 4 in. from centre to centre of main columns; but, as we shall take an opportunity to give some illustrations of the building, we need not now go into particulars. The majority of the party ascended to the top of the spire, on which the cap-stone has since been placed. The Association afterwards visited the works of Messrs. Corbett & M'Clyment, and went over a number of their houses on the Redcliffe estate.

IT has been decided to have at least another week of holiday study on English ground before going further a-field. Grantham, Newark-on-Trent, Southwell, and the parish churches and other buildings in the neighbourhood, will, it is to be hoped, give pleasant occupation to a proper number of excursionists during the third week of next August. Mr. Edmund Sharpe will, of course, direct the expedition, and, as before, will map out the route in detail, after carefully going over the ground. When all the arrangements are made and put forward, the middle of July will be named as the time by which those who wish to take part must finally make up their minds and send in their names.

CHURCH-BUILDING NEWS.

Llanfachreth (near Dolgelly).—The church here has just been reopened after having been rebuilt. The old tower, however, has not been touched, but remains as before. The edifice pulled down possessed no archæological or architectural interest whatever, and was in a dilapidated condition. In plan the new building consists of a nave, 46 ft. 6 in. long and 20 ft. 6 in. in breadth, with a south porch, and a chancel of proportionate length, together with a vestry on the north side of it. The walls are built partly from the materials of the old church and partly of new rough local stone. The dressings are of Wrexham freestone. Externally, the roofs are covered with Portmadoc slating. A bold arch supported on corbels separates the nave from the chancel. The seats are all made of pitch-pine by the contractors (without extra cost), though deal was specified. All the benches are open; those to the chancel being of rather more elaborate design, with traceried fronts. The nave has an open stained roof, the chancel a panelled wood ceiling. The pulpit is of pitch pine, with partly open traceried panels, and stands on a stone base. The font is of Wrexham stone. The nave is paved with tiles of different colours, banded with slate; there being a handsome encaustic tile pavement to the chancel. The altar-table, communion-chairs, and railing, are to the architect's design. The total cost has been upwards of 1,200*l.*, the greater portion of which has been defrayed by Mr. John Vaughan, of Hannan Park, and the Hon. T. Pryce Lloyd. Mr. Ferrey, of London, was the architect. Mr. Alfred Guy was clerk of the works; and Messrs. Jonathan Smith & Lewis Evans, of Dolgelly, were the contractors.

Cheddar.—The parish church of Cheddar (St. Andrew's) has been reopened after having undergone a restoration, from designs by Mr. Butterfield, architect. The cost of the work has been about 3,500*l.* The original estimate of Mr. Butterfield was 3,000*l.*, but the estimate has been exceeded to the amount of 500*l.* The church, before the restoration which it has just received, was in a seriously dilapidated state. Its main chancel arch, and the arch and walls on the south of it, had all fallen outwards, and the walls above them were dangerously cracked and out of the perpendicular. These, with a large part of the south chancel, have been entirely taken down and rebuilt. The whole church has been largely repaired, and its stonework, where defective, renewed. The tower windows, which were built up, have been opened, and the pierced stone parapets and pinnacles of the church have been taken down, repaired, and reset. Many of the pinnacles had disappeared. The roofs, which leaked in every part, have to a large extent been repaired, reboarded, and covered with new lead; a new roof of timber and lead has been put upon the vestry. Remains of strong colouring were found upon the walls beneath the whitewash in all parts of the church. The remains of painting on the timber ceiling of the nave were clear, and the ceiling has been repainted in bright colours, in imitation of the old work. The chancel ceiling, beneath an old roof of a higher pitch than that of the nave, is a new one, and of a different character. This also has been painted, so as to carry on the colours of the nave roof eastward. The walls of the chancel and the wall on the west side of the chancel arch are inlaid with lines of constructional colour, with some addition of painting. The remains of old glass which were scattered throughout the windows of the church, and which had already been much moved and patched, have been collected into the large windows of the south chapel already mentioned, and have been put together and harmonised on a new flowered ground. The entire church has been reglazed. The church has been entirely refloored and repaved, and a great amount of earth has been cleared away both within and without the walls. The old nave and aisle seats have been retained, and new ones in oak added. The chancel fittings are new, but some old oak panelling has been used up in parts of them. The old screens to the two side chancels have been refixed. The church has been lighted by coronas and brackets for gas, and has been heated. A new east window, painted, has been presented by a lady to the church. The subject is the Ascension of our Lord. The window is the work of S. Gibbs, of London. The expense of the restoration has mainly fallen on the Marquis of Bath and the vicar of the parish, the extent of which will be about 3,500*l.*, and this, irrespective of the repair and improvement of the organ, at a cost of 65*l.*, and the entire refitting of the church with new gas-fittings, at a cost of 90*l.*; the old standards being removed, and coronas substituted.

Ashbury.—The parish church of St. Mary, Ashbury, near Shrivenham, has been re-opened after restoration, by the Bishop of Oxford. The church, like many others in the neighbourhood, shows signs of the successive ages of architecture, the earliest portion of the building, dating back to the twelfth century. The Norman tower, with zigzag mouldings on the south side, had been built up, but it has now been opened at the special request of the Incorporated Church Building Society. The upper part of the tower (Early English), being much dilapidated, has been rebuilt. One of the bells has been re-cast and re-hung, and a new belfry-chamber made, the floor of the tower being curtained off as a vestry. In the south transept, which belongs to the Decorative style, a monumental arch has been discovered, under which probably the founder of the chapel was buried. The pews put up in the last century have been demolished, and open seats substituted, showing the pillars of the nave, which were built in the Perpendicular period. A new pulpit of freestone, carved, has been placed in the room of the old one. There is a reredos of the same material in the chancel. The floor of the chancel is laid with Minton's tiles, at the cost of the Ecclesiastical Commissioners. The memorial window in the south transept was erected to the memory of the late vicar, the Rev. W. Chambers. The central subject represents Christ preaching the Sermon on the Mount. Another subject represents Moses keeping the flock of Jethro, his father-in-law, the Priest of Midian. A third contains a representation of Boaz and Ruth. The fourth window represents an angel "flying through the midst of heaven." The church is warmed by Parrett's stoves. The architect employed was Mr. J. W. Hugall, of Oxford; and the builders Messrs. Wall & Hook, Brimscomb, near Stroud. The total cost of the restoration, exclusive of the chancel repairs (defrayed by the rectors, the Ecclesiastical Commissioners), is nearly 1,100*l.*

Bilsthorpe.—The work of restoration at Bilsthorpe Church is progressing. Mr. Hine, the diocesan surveyor for the county of Notts, is the architect; and the builder is Mr. Young, of Lincoln.

Ettingshall.—The foundation-stone of a new church to be built on the site of Holy Trinity Church, Ettingshall, has been laid. The building is to be in plain Early English style, and will consist of nave, north aisle, chancel, and transepts, with an organ-chamber and a vestry on the north side of the chancel. The materials are Gornal stone, with Bath stone dressings. Inside the roof will be open-timbered, covered outside with tiles. The total length of the building will be 90 ft. The nave will be 25 ft. wide; the chancel and transepts, each 20 ft.; the width across the transepts, 61 ft.; and the height to the wall-plate, 22 ft. Accommodation will be provided for 500 persons, including 147 children. The cost, exclusive of spire, will be 2,760*l.* The architect is Mr. Griffin, and the builder Mr. Horsman, both of Wolverhampton.

Weston-super-Mare.—The chapel of the West of England Sanatorium has been opened. This little edifice is adjacent to the new wing of the Sanatorium. The building measures 58½ ft. in length by 20 ft. in width and 44½ ft. in height, and will accommodate 150. The style of architecture is Early English, the east end being apsidal. The three windows in the apse are filled with stained glass, representing "The Passion," "The Incarnation," and "The Ascension." Below the centre light is the reredos, in the centre niche of which Christ is represented in the act of blessing the Eucharistic cup. The curve of the apse is enriched throughout its whole extent and depth, from the window-sills to the basement, with carved diapering of sunk double quatrefoil, bordered on the top by a frieze; the ends of this wall-screen being finished with columns of black marble with carved capitals. The credence-table is also of polished black marble. The floors are paved with encaustic tiles. The roof is Early Gothic. At the west end is a gallery connected with the Sanatorium, enabling patients who, from bodily infirmity, are unable to descend to other parts of the chapel, to attend the service with convenience. The six side-windows are filled with stained glass, representing the six acts of mercy. The pulpit is of carved stone. The organ was built by Mr. Sweetland, of Bath.

Saffron Walden.—Mr. Rutterfield's report upon the condition of Saffron Walden parish church is being circulated in pamphlet form, and an active effort is being made to increase the subscription-list. It is necessary to raise the sum of 4,000*l.*, and 2,600*l.* have been already promised.

DISSENTING CHURCH-BUILDING NEWS.

Wombwell. — The foundation-stone of a Wesleyan chapel has been laid at Wombwell. The site is a plot of land, 580 yards in extent, situate between the parish church and the Ship inn, and having a frontage to the road leading through Wombwell to Wath. The building will be in the Italian style of architecture. The chapel, which will be of stone, will be 42 ft. long, 34 ft. 6 in. wide, with school, vestry, and class-rooms at the back. Over the entrance to the chapel will be a gallery to accommodate about 130 children, the body of the chapel being constructed to seat about 220. The pews will be of pitch pine, varnished. The estimated cost will be about 1,300*l.*

Melton Mowbray.—The opening of the new west doors of the parish church has taken place. During the early part of the restoration these doors were almost the only means of entrance, one part of the church being entirely cut off. Therefore, the completion, or nearly so, of the main part of the church, that admission might again be obtained through the principal entrance, was regarded as a notable event. The doors are made of oak. The work of restoration, so far as at present completed, has been at an outlay of 6,500*l.* The restoration of the tower, however, is said to be much needed.

Nuneaton. — The new Wesleyan Chapel in Abbey-street has been opened for divine service. The work has been executed by Mr. Fox, of Stretton-under-Fosse, from drawings by the Rev. J. P. Johnson, of London, altered by Mr. W. S. Burton, of Leicester, architect, and the total cost of the building is to be about 1,500*l.* The shape of the chapel is a parallelogram, of Gothic design, and built in the Early English style. The windows are to be glazed with tinted glass; there are no galleries, and the chapel is calculated to seat 400 persons. The rostrum, seats, and other internal wood fittings, are of deal, stained and varnished. The building is warmed by apparatus supplied by Mr. Grundy, of Tyldesley, near Manchester; the fencing round the chapel has cost 70*l.*; and the gas-fittings are from the works of the Skidmore Art Company, at Coventry.

Northampton.—The Wesleyan Reform Chapel, Wellingborough-road, has been opened for divine service. It is built on the site of a former but smaller place of worship. The work of rebuilding was commenced in October. It affords sitting accommodation for about 300 persons; is seated with open pews, of modern construction, in the body of the chapel, and has also a small gallery at the back. On either side of the pulpit it is lighted by two long arched windows, between which there is a centre circle light; and at the entrance by windows of a square pattern. Artificially, it is lighted with a star-gas pendant, and brackets placed at intermediate points on the walls and gallery spaces. Underneath the chapel there is a school-room, to be used for Sunday-school teaching, and which will accommodate between 200 and 300 children. It is also intended to use this room as a sort of temperance-hall for the neighbourhood. The total cost of the building has been about 750*l.*, towards which 216*l.* 13s. 10d. have been raised.

Darlington.—A Free Church at Middleton-One-Row has been erected in the centre of the village. It is to be used by the Protestant denominations, and has been formally opened by the Rev. E. Boaden, of the Free Methodist Church. The chapel is plain and commodious, built of red brick, with stone dressings. The ceiling is partly open to the roof, the exposed timbers being stained and varnished, as are also the open pews and other woodwork. The whole of the works have been carried on under the superintendence of Mr. Richard Robinson, architect, Darlington; the contractors being for brick, mason, and plaster work, Mr. John Robinson; carpenter's and joiner's work, Messrs. Laverick & Foster; plumber's work, Mr. Johnson, Tubwell-row; slater's work, Mr. J. Atkinson; and painter's work, Mr. W. Roberts, Darlington.

Preston.—The corner and memorial stones of the New Wesleyan Chapel, Marsh-lane, Preston, have been laid in the presence of a great gathering of spectators. The Italian style of architecture has been adopted, and the edifice is to be of brick, relieved with ornamentation of stone. The structure will be surrounded by a palisading, and is approached by several steps to a portico. This comprises three arches, the columns being relieved with ornamental caps; and above this is a triple window. There are three large pediments crowning the front of the building, a smaller pediment spanning each of the right and left wings. The façade is considerably relieved by pilasters, panels, and recesses of an ornamental character. On each side there are recesses for the windows, a block cornice running from end to end. The total height is 40 ft. externally, which is reduced to about 33 ft. in the interior. Opening out to the portico is a vestibule, on each side of which access is gained to the lower and upper portions of the chapel. The ground floor is divided by two aisles, and about 450 people will be afforded sittings. The pews will be a mixture of yellow and pitch pine, stained and varnished. There will be no pulpit, but the preacher will address his auditory from a rostrum or platform, which is surrounded by ornamental railings, and behind is the communion-table. A gallery with about 300 sittings is also to be erected, and behind the communion there will be the organ-chamber and choir-pew. The roof will be a segment in form, and panelled and enriched with plaster cornice and moulds. In the rear of the building are a class-room and minister's vestry; and behind a small yard and usual conveniences. The tenders have been let as follow:—Masonry, David Tullis & Son; brickwork and excavating, John Dalton; plastering work, Messrs. Jones & Martin; joiners' work, R. Paul; slating, Clarkson & Son; plumbing and glazing, J. and R. Park & Co., all of whom are of Preston. The estimated cost of the chapel is 2,500*l.*, and the land having been purchased at 500*l.*, the total cost is calculated at 3,200*l.*

Macclesfield.—A site for a Wesleyan chapel has been purchased in Cumberland-street, opposite the south entrance to the Park, and upwards of 3,100*l.* have already been promised towards the new chapel fund. The style of architecture has not yet been decided upon, but the contemplated expenditure will be 6,000*l.* In a few weeks, if funds are forthcoming, the foundation-stone will be laid.

Middlesbrough.—The new Unitarian church and schools in Corporation-road, Middlesbrough have been opened. The architecture of Christ Church is early Gothic, and the total cost of the edifice and schools is estimated at about 2,250*l.*, a great portion of which has been subscribed. Mr. Clephan, of Stockton, is the architect.

Congleton.—A bazaar has been held in the Town-hall, Congleton, for the purpose of assisting to provide a fund for the erection of a new Congregational Church in this town. A site has been purchased for a new church in Antrobus-street, and Mr. Sugden, of Leek, architect, has been commissioned to prepare plans and elevations. It is expected that the outlay will be about 4,000*l.*, towards which about 2,000*l.* are in hand. The receipts of the bazaar amounted to upwards of 250*l.*

Chalford.—The memorial-stone of a new Baptist chapel has been laid at Chalford, Gloucestershire. The style of architecture is Romanesque, the walling being of freestone quarried in the hill on which the building is being erected. The chapel is to seat 450 persons, and will cost about 1,600*l.* The architect is Mr. Tait, of Leicester, and the builder Mr. Drew, of Chalford.

SCHOOL-BUILDING NEWS.

Ardwick.—A new girls' school in connexion with St. Thomas's Church, Ardwick, has been opened, in the presence of a large assembly, by the Bishop of Manchester. In the year 1871 large new school buildings were opened in the parish to accommodate 400 boys and 300 infants. The cost of the buildings and the site was 4,200*l.* In consequence of the passing of the Education Act it became necessary to provide additional accommodation for the girls, who had hitherto been taught in the old school buildings. The new infants' school also being quite filled with scholars, an additional class-room was found desirable. A site between the new school and the church offered itself. Upon this site have been erected a commodious school-room for 300 girls, a class-room for 80 infants, and a covered play-room, which can be converted into an additional school room in a few days, should it be required. The total cost of the site and buildings will be about 4,000*l.* Of this sum about 300*l.* will be required for the purchase of the chief-rent. Towards this sum about 2,100*l.* have been raised. At one end of the large room there is a lavatory and cloak-room, and this and the class-room, which is situated at the other end of the large room, are heated by warm air generated from two "Manchester School Grates." The heating apparatus is a simple contrivance patented by Messrs. Shillito & Shorland, of Manchester. The builder of the school is Mr. Robert Ellis, of Hulme, from the designs of Messrs. Royle & Bennett.

Middlesbrough. — The foundation-stone of Roman Catholic Church Schools has been laid at Eston. The site on which the building will be erected is on the Middlesbrough-road, at the corner of Graham-street. As a church it will accommodate about 400 persons. The architects are Messrs. Hunter & Carr, of Middlesbrough.

Golcar.—The opening of a new Church-school at Westwood Edge, Golcar, has been celebrated by a tea-party and public meeting. The school, which is in a plain Gothic style, has been erected at a cost of 650*l.*, and it is capable of accommodating 250 children.

Llandegley. New schools for the parish of Llandegley, Radnorshire, have recently been opened. A commodious house for the master forms part of the works, which have been carried out by Messrs. Ingram & Jones, from the design of Mr. E. H. Lingen Barker, architect.

Books Received.

Human Longevity: its Facts and Fictions. By WILLIAM J. THOMS, F.S.A., Deputy Librarian House of Lords. London: Murray. 1873.

Mr. THOMS's painstaking researches into alleged cases of centenarianism are well known, and they now form an interesting volume, in which some of such cases are completely disproved, others shown to be doubtful, and a few of them established. Mr. Thoms has not gone into the inquiry with a predetermination to disprove every such case, as has been done;

that his results are all the more just and valuable. He has proved that some such cases do occur, but that in still more a tendency to exaggerate and excite astonishment and reverence amongst acquaintances has induced supposed centenarians and their friends not only to go "beyond the score," but far beyond even the century, which is so seldom, and ever so little, exceeded. We do not despair, as we have before said, of the lengthening of man's days to 100 years as a much more common limit than now, by sanitary means; and certainly the average is considerably lengthening already; but we suspect that beyond that extreme point no merely sanitary improvement is ever likely to lengthen man's days, or to stave farther off those natural causes of decay under which the frame once composed and consolidated goes on to become constricted, ossified, and at length incapable of vital movement. As one of the Gregorys remarked in a physiological work, it is the continued operation of the very causes of life itself,—which build up the organism and then consolidate its tissues that go on to constrict and wither it away; so that nothing short, one would think, of retrogressive intervals of constrictive-life suspension, far more potent and actual than "nature's sweet *restorer*, balmy sleep," would be requisite to retrograde and counteract those constrictive processes which otherwise inevitably result in decay and total cessation of life in the flesh.

Mr. Thoms's volume includes a searching inquiry into some of the more remarkable instances of human longevity and suggestions for testing reputed cases, illustrated by the examples given. Of course among others we have here old Parr's pretensions to 152 years of age discussed, much to their disadvantage, and also those of Henry Jenkins to 169, in both of which cases Mr. Thoms declares that not a tittle of evidence in their favour exists.

We shall conclude with a case for his inquiry which happens to have just been announced in the newspapers as follows:—

"Lady Smith, widow of Sir Edmund James Smith, the eminent botanist, who was knighted by George IV., reached her 101th birthday on Sunday. On Monday a dinner was given to 101 of the oldest people in the town of Lowestoft, where Lady Smith lives, and a grand dinner was also held in the evening to further celebrate the event. The town was decorated with bunting."

As Mr. Thoms is quite as willing to establish the truth of such a case as to disprove it, inquiry at so opportune a time cannot be held to be offensive; while, on the contrary, the evidence, which may be complete, in its favour, may obviate all doubt in the minds of those open to conviction.

The Soldier's Manual of Sanitation, and of first Help in Sickness, and when Wounded. By Deputy Surgeon-General CHARLES ALEXANDER GORDON, M.D., C.B. London: Bailliere, Tindall, & Cox, Strand. 1873.

THIS manual is intended for perusal and reference by officers, non-commissioned officers, and privates of the active forces; militia, yeomanry, and volunteers, for home and foreign service, for peace and for war. It contains a great deal of useful matter, simply arranged in alphabetical order for ready reference; and, without being intended to supersede professional aid, it is well adapted to aid professional men themselves in their care and cure of coming evils in the soldier which require professional treatment. It contains much good and valuable advice as to cleanliness, drink, air, food, &c., and might be of great use amongst others besides soldiers,—in the navy, and amongst sailors in general, for example;—or a similar book might be readily adapted for various uses.

VARIORUM.

The Sanitarian, a monthly journal: A. N. Bell, M.D., editor. Barnes & Co., New York and Chicago. No. 1. Vol. I. This is a promising new journal, and will show how sanitary science progresses in the United States. The present issue contains an elaborate paper, by the editor, on the New York Quarantine Establishment, illustrated by maps, and views of hospitals, &c. There are various other papers, on Sanitary Science, infant mortality, results of sanitary improvement, &c."——"Hints to Sanitary Legislators. By Vigilans. London: Baily, Cornhill." "It is unquestionably possible [as the author remarks] to strengthen and improve the physique of a race; it is possible to save and prolong life; it is possible to increase health and strengthen the constitution; and it is possible to enable the mass to subsist comfortably on the proceeds of their industry. But this can only be effected by the rulers of the State, and by the Government itself taking the matter in hand with a firm determination to carry out the requisite sanitary measures *coute qui coute*. If the following pages should in any way serve to forward the progress of this desirable object, by inducing members of the Legislature to consider the subject, the intentions of the author will have been accomplished." While treating of pure water and filtration, the process of making Atkins's filters is thus described:—

"The best and purest animal charcoal is pulverised into a fine dust-like powder, and to this is added certain proportions of Norway tar, mixed with a combination of other combustible ingredients, equally finely powdered. The combined material is then thoroughly well mixed with liquid pitch, and the amalgamation is kneaded into a paste capable of being moulded into blocks or slabs of any size."

——"St. Pancras: Report of the Commissioners for Public Baths and Washhouses, 1872-73." In presenting their eighth annual report to the vestry, with the usual statement of accounts, the reporters state that the year now completed has been the most favourable for bathing and washing yet experienced during the five years this Institution has been open. The receipts are 432*l*. 10s. 1½d. more than on any previous year; and the increase has been continuous in every way since the opening. The balance-sheet shows that the total revenue from all sources has been 3,463*l*. 10s. 5d.; and the expenditure for instalments and interest on the balance of loans, is 2,056*l*. 5s., while the total expenditure is 4,218*l*. 1s. 8d., showing the working expenses to be 2,191*l*. 16s. 8d., making the profit on the year 1,271*l*. 13s. 9d.; and had it not been for the unusual increase in the cost of fuel, this amount would have been still more. ——"Electricity and Magnetism. By Fleeming Jenkin, F.R.S.S., L. & E., M.I.C.E., Professor of Engineering in the University of Edinburgh. London: Longmans, Green, & Co. 1873." This treatise, though one of a series of text-books of science, adapted for the use of artizans and students in public and other schools, is not to be classed with the general run of such treatises, inasmuch as one special purpose of it is to initiate the outer public into the inner modes of thought and talk among *savans* themselves, and not to adhere rigidly to the ordinary text-book style. As the author remarks:

"In England at the present time it may almost be said that there are two sciences of electricity one that is taught in ordinary text-books, and the other a sort of floating science known more or less perfectly to practical electricians, and expressed in a fragmentary manner in papers by Faraday, Thomson, Maxwell, Joule, Siemens, Matthiessen, Clark, Varley, Culley, and others. The science of the schools is so dissimilar from that of the practical electrician that it has been quite impossible to give students any sufficient, or even approximately sufficient, text book. . . . The plan followed is as follows: First, a general synthetical view of the science has been given, in which the main phenomena are described and the terms employed explained. This general view of the science cannot be made very easy reading, although it will probably be found easier by those who have no preconceived notions about tension, intensity, and so forth, than by students of old text-books. If this portion of the work can be mastered, the student will then be readily able to understand what follows, viz., the description of the apparatus used to measure electrical magnitudes, and to produce electricity under various conditions."

——"Notes on Beds and Bedding, historical and anecdotal. By James N. Blyth. Simpkin, Marshall, & Co." This small volume contains a good deal of interesting matter in regard to beds and bedding, ancient and modern.——"Honiton Lace-making, illustrated. London: *The Bazaar* (Newspaper) Office, Wellington-street." "Full and practical instructions for acquiring this beautiful art," with patterns illustrated, are given in this useful little treatise.

Miscellanea.

Whitby Piers and Harbour Commissioners.—At a meeting of the Piers and Harbour Trustees, an important plan, prepared under the instructions of the Local Board was taken into consideration. This plan is for the formation of a new quay by the side of the harbour to Boghole, in connexion with the North-Eastern Railway, and near the termini of the Scarbro' and Whitby and Middlesbro', Redcar, and Whitby Union Railways; and also for the opening out of a new road at the end of Baxtergate, as an approach to the railway. The plan comprises a 75 ft. quay, and a 30 ft. road. The plan, with a little modification, received the approval of the commissioners, and, it is hoped, will also meet the views of the North-Eastern directors, who are expected to visit Whitby at Whitsuntide.

National Health Society.—This society held its seventh meeting this season at the rooms of the Social Science Association, on May 1st, when the subject of "Infant Mortality" was considered in a paper by Dr. Alfred Carpenter, of Croydon; the means also by which constitutional weakness is developed were discussed at some length. The author urged that every man is entitled, at birth, to a full measure of health, and that any departure from that standard is to some extent depriving him of his birthright. He considered, therefore, hereditary or constitutional weaknesses as mortgages effected by the profligacy or the ignorance of our ancestors, and that it became the duty of the society to show the way in which such mortgages could be paid off. He pointed out that Darwin's observations had demonstrated how errors became imparted to progeny, and that hereditary diseases were errors propagated in the descendants of those who committed such errors. He then pointed out that it was shown statistically that 81 per cent. of our population were hurried into another world before their time in consequence of such errors, and that the wholesale destruction of infant life which went on yearly in Christian England was far beyond the destruction which was perpetrated by King Herod before the commencement of the Christian era. He then showed that such destruction was not a necessary contingency, but could be materially reduced by corporate action, illustrating his point by reference to the sub-district of Beddington and Wallington, in which is situated the Croydon sewage farm. Dr. Carpenter observed that in London one in six children born, died before it reached the age of one year; whilst in Beddington, in a population of 3,000 persons, most of whom lived within half a mile of the sewage-farm, the death-rate was only 1 in 13½.

Uniformity of Valuation Bill. — Mr. Stansfeld's Bill for the uniformity of valuation classes rateable property as follows:—1. Houses or buildings without land otherwise than gardens, where the gross value is under 20*l*., maximum rate of deduction to be one-fourth; 2. Houses and buildings without land other than gardens and pleasure-grounds valued therewith for inhabited house duty, where the gross value is 20*l*. and under 40*l*., maximum deduction to be one-fifth; 3. The like, where the gross value is 40*l*. or upwards, maximum deduction one-sixth; 4. Buildings without land which are not liable to inhabited house duty and are of a gross value of 20*l*. and under 40*l*., maximum deduction one-fifth; 5. The like, of a gross value of 40*l*. and upwards, maximum deduction one-sixth; 6. Land with buildings not houses, one-tenth; 7. Land without buildings, one-twentieth; 8. Mills and manufactories, one-third. The following are all placed together, viz., brickyards; mines and quarries; rights of fishing, fowling, shooting, and sporting; tithes and tithe rent-charge; railways, canals, docks, tolls, waterworks, and gasworks; and rateable hereditaments not included in the foregoing classes; and the maximum rate of deductions for all these is to be determined in each case according to the circumstances and the general principles of law, as amended by this Bill. The maximum rates of deductions above prescribed are also not to apply to houses or buildings let out in separate tenements; the rate in such cases is to be determined by the assessment committee.

Society of Biblical Archæology.—It is intended shortly to publish a series of translations of all the important Assyrian and Egyptian texts which exist in the various collections of England and the Continent, and thus place before the English student the remains of undoubtedly the oldest and most authentic literature in the world, the foundation of all history, archæology, and Biblical exposition, the contemporaneous records of the nations and writers of the Bible. The selection of the records will not be confined to those bearing directly on the text of the Bible, but embrace the entire range of Egyptian and Assyrian history and literature.

The Annual Conversazione of the President of the Institution of Civil Engineers is to take place on Tuesday next, the 27th inst., in the West Galleries of the International Exhibition. The invitations have again been issued in the names of the President and Mrs. Hawksley; and the distinguishing feature of last years' reception,—the presence of ladies,—is to be repeated. The machinery will be shown in motion, and will be explained by the different exhibitors, aided by members of the Institution.

The New Deaf and Dumb Institution, Bristol.—The new premises now being built for the Deaf and Dumb Institution at Bristol, near the Queen's Hotel, Tyndall's Park, is in a forward state. It is being erected from designs by Mr. J. Bevan, of Bristol, architect, and the work is being done by Mr. Gay, contractor. The new institution is designed to accommodate about seventy children (double the number of pupils now under instruction). The style is domestic Gothic. The building will consist of a basement and three stories. The principal entrance in the middle will be approached from the Queen's Hotel-road by a flight of steps; at the back of the entrance-hall will be the principal staircase, and behind that a large room for meals, with a school-room over. A wing on either side of the entrance will provide rooms for the committee and matron, apartments for the teachers, and day-rooms and dormitories for the first-class and other pupils,—the boys occupying the right and the girls the left wing. A room at the top of the house is set apart for sick inmates. The basement contains the usual domestic offices and bathing and lavatory accommodation for the children. At the back of the building is a large playground. The master's residence stands at the end of the Institution, and will overlook the park. The building will be of local stone, with freestone dressings. In addition to the estimated value of the present house, 4,000*l.* will be required for the new building, the purchase of the site, and extra furniture.

Mr. Plimsoll, our Seamen, and our Ships. It is to be regretted that Mr. Plimsoll has met with difficulties, even with the Board of Trade, in his endeavours to secure the safety of our ships and our seamen; for he complains that information has been refused by the Board to aid him in the saving of lives, while this very information was freely given to underwriters in order to aid them in making their investments! Nevertheless, the influence of coming legislation is felt, and "is working wonders," according to Mr. Plimsoll, in the repair of ships, and notwithstanding "the cry of the Board of Trade for delay." Why should there be any delay in the saving of lives? As to overloading, and especially deck-loading, Mr. Plimsoll has put into printed form, and is circulating, a speech of Mr. Fry, in the Canadian Parliament recently, which is important and instructive. It shows the deplorable extent and the awful character of the results which followed the removal from the Statute Book, in 1862, of the prohibition which previously existed against the practice of deck-loading. The Commission is at work.

Dulwich College Authorities and the North-east of London.—The vestry authorities of St. Luke's have issued a pamphlet and a placard, stating objections to the proposal of the Endowed Schools Commissioners that the Dulwich College authorities give 10,000*l.* to each of the parishes of St. Luke and St. Botolph, towards the erection of schools, under Edward Alleyn's will, for the benefit of the lower middle class; and urging that while 135,000*l.* have been expended for the benefit of 322,000 souls on the south of the Thames, and educating a little over 500 boys, the sum of 20,000*l.* is very inadequate to the educational wants of a population on the north of the Thames estimated at 475,000 souls, for whose wants at present no college has been provided. They are the more earnest in their opposition to the scheme of the commissioners because it is notified that the next step which the latter propose to take is to erect more schools on the Surrey side of the water. It is intended to hold several public meetings in the north-east of the metropolis on the subject.

Proposed Museum for Sheffield.—At a recent meeting of the Town Council, the mayor moved, "That it be an instruction to the Free Public Libraries Committee to procure plans and estimates for the erection of a public museum on the site immediately adjoining the Central Library building, and to submit the same for the approval of this Council." After some discussion, Mr. Robertshaw moved as an amendment, "That the Free Library Committee be instructed to take into consideration the best means of utilising the land adjoining the Free Library buildings, and report to the Council thereon." The committee, he said, might then consider, not only the utilisation of this land, but whether they could get more land, and then they could erect a municipal-hall and a museum also. The motion was lost by a majority of 19 to 14 in favour of the amendment.

Alterations at the Islington Workhouse Schools.—At a recent meeting of the local Board of guardians, the clerk presented Mr. Higgins's bill, as surveyor for alterations at the schools. It amounted to 29*l.* The contract amounted, Mr. King said, to 500*l.* Mr. Wiltshire said the surveyor's charge was 6 per cent., and a first-class architect would only have charged 5 per cent. He observed that a charge had been made on the value of old materials which ought not to be allowed. Mr. King said the School Visiting Committee had carefully examined the account, and they considered it satisfactory. It had been settled that architects were entitled to charge a commission on utilising old materials, as their skill was required in dealing with them. The amount was only 5*l.* He moved that the bill be paid. After some discussion, in course of which Mr. Wiltshire moved as an amendment, that a commission of 5 per cent. be paid on 442*l.*, the amount of the two contracts, the motion of Mr. Wiltshire was carried.

Alexandra Palace.—The opening of the Alexandra Palace and Park on (this) Saturday, the 24th instant, will be an event of importance, as adding a new place of amusement and recreation to the metropolis, and especially as providing for residents in the great and rapidly growing northern suburbs an establishment offering similar attractions to those so long enjoyed at the Crystal Palace by their southern brethren. The natural beauty of the Alexandra Park, heightened as it is by judicious and tasteful planting, would alone suffice to attract myriads of visitors, and the extent of the grounds (which embrace 220 acres) renders them a valuable addition to the existing lungs of London. The great organ, by Mr. Willis, built under the superintendence of Sir Michael Costa, is one of the largest and finest instruments in the kingdom. A first-rate orchestra has been formed by Mr. Weist Hill, the conductor of the company's music, and an efficient choir of 300 voices will assist in the oratorios and other great performances which are to be given in the Palace.

A Town Lighted by Air Gas.—Great Marlow has been lighted by way of experiment with air gas, by charging common air with vapour of mineral oil by means of Kromschroder's patented apparatus. The result is said to have been satisfactory; the new gas having one-half higher illuminating power than the old. It was also stated that the new gas burns more slowly than coal gas, so that 100 ft. of it will go at least twice as far as 100 ft. of coal gas. It is said to store and travel quite as well, and can be produced at half the cost. The gas is inodorous and not explosive. A gallon of petroleum makes about 700 ft., and 70 ft. of air make 100 ft. of the gas. If all this be correct, it remains to be seen whether gas companies are to appropriate the advantages to themselves, or will at least share them with the public. The inventor of the apparatus proposes to provide cheap generators on a small scale for house cellars.

International Fruit, Flower, and Vegetable Exhibition. — A great horticultural exhibition is to be held in the beginning of September at the Manchester Botanical Gardens, under the patronage of her Majesty, who has subscribed 25*l.*, and of other members of the Royal family. The council of the Manchester Botanical and Horticultural Society have subscribed 400*l.* towards the necessary expenses. A committee has been appointed, and subscriptions are solicited. A liberal sum will be offered in prizes, and the committee believe this will be the greatest horticultural show of its kind ever seen. Fruits of foreign growth, as from France, Italy, Holland and Belgium, Austria and Prussia, Turkey and Egypt, and from the United States of America, will be brought together, and placed side by side with fruits grown in our own land. There can be no doubt but that such a display will be both instructive and attractive.

Officers of the Royal Academy.—Mr. J. P. Knight having retired, after many years' service, from the post of secretary, the council have determined, we understand, to seek by advertisement a new secretary outside the walls of the Academy. The position is one which should command the services of a man of ability. The keepership is also vacant, Mr. Charles Landseer having resigned the appointment. This will doubtless be again filled by an Academician. Some changes in the library are talked of with the view of relieving the principal librarian, and affording additional facilities to readers.

Congregational Church and Schools Leek.—Extension of Buildings.—A new range of buildings has just been completed here: comprising on the ground-floor a lecture-room, 45 ft. by 22 ft., with entrance, &c.; and, above that, four commodious class-rooms, communicating with the present upper schoolroom. The new building is stone-faced, as the rest, and finished at each end by a gable and substantial buttressed chimney. On the lower story it has two cusped three-light windows into the lecture-room, and a door-case, with pointed, segmental, moulded arch, resting upon short columns, with carved caps in the jambs; the upper story gives a diversified skyline by three gablets, with a cusped two-light, and circlet over in each. Mr. W. Sugden, of Leek, is architect of all the buildings.

The Trades Movement.—The carpenters employed by Mr. W. Brown, builder, London-road, Lynn, have struck for an advance of 6d. a day wages. It appears that Mr. Brown has a contract on hand to be completed by a certain time on forfeiture of 5*l.* a day, and consequently engaged some Norwich hands at 6d. a day above those regularly employed: hence the dissatisfaction and strike.——Twelve men employed at the ironworks of a large firm near Wolverhampton left their duty suddenly at the end of the week, because they could not get an immediate increase of wages. The furnaces were thus out of blast for four days, and the puddlers and millmen idle. The offenders were brought before the magistrates, when they expressed contrition, and agreed to pay 10*s.* each as compensation for mischief which cost their employers 100*l.*

The New Telegraph Cable Ship.—The first ship that was ever constructed for the special purpose of laying telegraph cables has arrived in the Thames. She has been constructed for Hooper's Telegraph Works (Limited), by Messrs. Mitchell & Co., of Newcastle. The length of the vessel is 350 ft., beam 55 ft., depth 36 ft., and the registered tonnage 5,000 tons. She has an unusually large beam in proportion to her length, it being an important object to have the circular tanks for the stowage of the telegraph cables of as large dimensions as possible. The cable-tanks are three in number, and consist of circular cylinders extending from the inner bottom to upper deck, and of as large a diameter as the beam of the ship would permit. Their structure is incorporated with that of the hull itself, in such a way as to give mutual support.

Royal Architectural Museum.—The Goldsmiths' Company have forwarded to the council of the Royal Architectural Museum a donation of 50*l.* to help the institution in its work, in return for which the council undertake to exhibit the designs for the plate for which the Goldsmiths' Company offer prizes. The art-workmen's evening modelling and drawing classes have been well attended, as many as sixty entrance-fees having been paid. This result is mainly owing to the very practical instruction imparted by Messrs. Brindley and Redfern, two members of the Museum council, who have generously taken the duties of honorary instructors, while the council are seeking funds to provide for a permanent paid teacher.

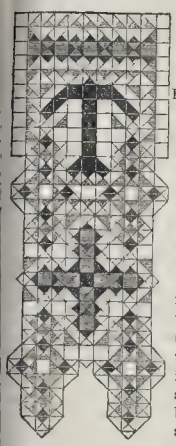
A New Club-house for Liverpool.—We understand (says the *Liverpool Albion*) that a munificent gift is about to be made to the Conservative party in Liverpool. A millionaire alderman has just effected the purchase of the property and ground at the junction of North John-street and Victoria-street at a cost of nearly 30,000*l.*, with a view to erecting there a building adapted for the purposes of a club, which he is to hand over to the Conservative party as a free gift for political purposes.

Value of a House in Pall-mall. — The freehold mansion, land-tax redeemed, known as Adair House, Pall-mall and St. James's-square, lately in the occupation of the Dowager Lady Adair, recently deceased, was sold by auction, on Wednesday last, by Messrs. Rushworth, Abbott, & Co., of Savile-row, and produced the large sum of 35,500*l.* If we remember rightly, a larger sum was offered for it by the adjoining club, when they were arranging to build their house.

Portmadoc.—A new church, to accommodate 400 persons, will shortly be commenced at Portmadoc, North Wales. The building is to be carried out under the supervision of local architects, Messrs. Roberts & Morrow, from drawings by Messrs. Axmann & Perrott, of London, architects.

The Builder.

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Bolton and its Town Hall.

THE new Town Hall, at Bolton, of which we give plans this week,* and which is to be formally opened by H.R.H. the Prince of Wales on June 5th, will be completed by that date so far as the principal apartments are concerned, although in many minor points there will be a good deal still incomplete, the intended date of the opening having been unavoidably anticipated by a month or two, in accordance with the engagements of the Prince and Princess. The building occupies an exceedingly effective site, in what is called "Town Hall-square," with a wide area in front, and a very fair amount of open space on the other three sides: the buildings flanking this square are unfortunately, at present, of a comparatively mean and common type; and it is to be hoped that in time they will be rebuilt with such a degree of stateliness as to form a more suitable surrounding to the new building. We could scarcely recommend, however, the adoption of the same style or manner, for such rebuilding, as that which has been adopted in the Town Hall, which is the usual "school" type of Roman design, with an engaged order of columns or pilasters, running through two stories, and with the usual character of window-dressings, pediments, and so on. The symmetrical disposition of these features always gives, though not a novel, a stately effect, when arranged on a large scale, as in the present case; and the building will retain this effect, at all events until weather and time shall have told on it. We shall, however, give a view of the exterior next week, and our readers can form their own judgment.

In regard to the interior, the plan is in most respects praiseworthy, especially in regard to the manner in which the corridor communication is carried right round the building, as will be seen on the plans; which in other respects, as to the arrangement of the various compartments, will sufficiently explain themselves. The great deficiency is the want of what may be called a grand or "state" staircase in connexion with the main entrance. There is no lack of staircase accommodation, but there is no grand or effective route from the principal entrance to the mayor's state apartments. The basement is occupied by waterworks', treasurer's, and rate offices, and other municipal offices, and by the police accommodation and prisoners' cells; a large part of the basement under the great hall being utilised as a drill and muster room for the police force. This portion of the basement has to be lighted almost entirely by gas, but in nearly every other part of the offices the windows are ample, and the light is very good: the building being elevated on a very high rusticated base, this story is entirely above the ground, and the principal business entrances for the public are on the ground level, and very conveniently placed for access to those offices where the chief pressure of business will occur. The corridors and the floor under the great hall are fireproof (on Dennett's principle), the rest of the floors boarded. The first-floor corridor is laid entirely with Minton's tiles, in a simple and suitable pattern, forming a succession of panels; in the ground-floor corridor the same motive is carried out with the border tiles only, the rest being flagged, excepting the principal entrance and the corridor immediately adjoining, which is laid with a more elaborate tile design (not completed at the time our notes were made). The walls are finished with ordinary plaster, the principal rooms being decorated in colour. The roof of the great hall is (constructionally) an ordinary queen-post truss, the visible ceiling being formed by heavy coffered panels in plaster moulding and bracketing. The roofs are slated throughout with Velinhelli slates.

The large hall, without making much pretence to architectural grandeur, is a very cheerful-looking and effective room, as finished and decorated by Messrs. Simpson & Sons. The deeply-coffered ceiling, already mentioned, has an undeniably good effect on the eye, and its hollows and projections will serve to break up and disperse any echo which might have been returned from a perfectly flat ceiling when the hall was used for music; though it is matter for regret to see so much labour and material spent in mere lath and plaster cradling. A gallery, capable of accommodating two ranks of seats, runs round three sides of the room (very much on the same plan as what is called "the balcony" in St. James's Hall, Piccadilly), the under side of this gallery being bracketed out from the wall in the form of a cove, which makes the finish to the lower stage of the design, consisting of wall-pilasters and arcades. Above the gallery the wall is divided by shallow pilasters running from the surbase to the cornice, with the usual slice of architrave, balanced on the top of each pilaster, which seems inevitable in buildings in this style, and carrying an arcade which cuts into the cove of the main ceiling. The pilasters are made a good deal deeper against the end opposite the orchestra, with the view, probably, of breaking up a return echo. The space occupied by the orchestra (subtracting the large amount required for the organ), is not very great, and will not accommodate a band and chorus of adequate numbers (if this is considered a desideratum), but perhaps speaking rather than music will be the chief use to which the hall will be put. The room is calculated to seat an audience of 1,800. The material, hard plaster, with which the walls and ceiling are almost entirely finished, will make this a room with a decided tendency to echo, and rather reverberative than sonorous; but as the hall is not on the largest scale, this will not be so disadvantageous as it might otherwise be. The decorations of the walls and ceiling are in the main effective, though there is in this, as well as in other parts of the building, too liberal a use of gilding on the ceiling for refinement of effect; the best portions are the pilasters and wall panels of the upper portion of the room,—the former a deep red with foliated scroll ornament of a good type, and the latter diapered in gold on a warm cream ground. The treatment of the doors, with panels in black and gold on stiles of a warm morone tint, is very effective *per se*, but rather too pronounced for the rest of the work. Round the frieze of the hall are inscribed the following texts:—"Except the Lord build the house, they labour in vain that build it: except the Lord keep the city, the watchman waketh but in vain." "Blessed are the nations whose God is the Lord, and the people whom He hath chosen for His own inheritance." We confess to a conviction that the feeling of the said passages is singularly out of keeping with the style of their decorative surroundings, and to a decided dislike to see words which, if they mean anything, mean something very deep and serious indeed, thrown in as part of a decorator's ordinary stock-in-trade; with a more refined and intellectual style of design, they might go very well indeed. The figures of angels blowing trumpets in the spandrels are, on Messrs. Simpson's own authority, "boldly drawn" (whatever that may mean); we should be disposed to call them absurd. The semicircular windows over the cornice are filled with stained glass in panels painted in grisaille, furnished by Mr. Barnett, of Newcastle-on-Tyne; the work answers its purpose, but might have been better. The arches at each extremity of the longer sides, not pierced with windows, are treated as recesses occupied by four groups of plaster figures, each consisting of a female figure and two children, and representing the four Seasons; these are modelled by Mr. Paul, and though not "high art," are well-intentioned and pleasing. "Winter" is the best composed and most original. On the whole this hall may be characterised as a successful piece of ordinary decoration, appealing rather to the eye than the mind. We should mention that the surbase at the back of the gallery is faced by parquetry in various coloured woods by Messrs. Arrowsmith, who have also executed a more elaborate parquetry plinth and dado to the Council Chamber; the whole of this work is exceedingly creditable to them, both in regard to good taste in arrangement and excellence of execution. Above the parquetry wainscot the wall of the Council Chamber is decorated in panels with scroll ornament, and with a frieze above, with diaper ground on which at intervals are introduced small panels containing figures emblematic of various Bolton industries. The ceiling, which is divided into panels with a separate design in each panel, is the best part of the decoration here, and the best perhaps in the building. The decorations of the mayor's banqueting-room display again in the ceiling that over-use of what may be called "gilded vegetation," which is not in good taste, though it gives what is called a "handsome" appearance to a room; the rest of the decoration in this room is well balanced and effective, and the figures on the ceiling and frieze representing the "planets," the "months," and the "four elements," are some of them very elegant, and a great deal better than the "industry" figures in the Council Chamber. As to the "silhouettes of edible animals" round the walls, a whim in the decoration of dining-rooms which is becoming a fashion now, we should say that they were very fitted to amuse children, but out of place on any other consideration. The double columns near each end of this room are a warning instance of "constructed decoration." They stand on nothing below this floor, and carry nothing, not even a "soffit," but are planted straight up against the ceiling. The effect is not good. The Mayor's Reception-room (not yet decorated) may be made a very effective little chamber, considering its situation, plan, and lofty proportions; but it is deficient in light, its single windows being screened by the colonnade in front, an instance of the result of using southern styles in a northern climate. The Sessions Court is well arranged and well lighted, with two tiers of windows and a skylight of obscured plate glass, with embossed ornamental design. The various communications with the court, for magistrates, police, the jury, and the public, are conveniently arranged, and quite independent of each other. The business-rooms in general have an ample provision of light, and the corridors as much as is possible with the plan of building, and, on the whole, perhaps as much as is necessary. Each of the longer passages is commanded by a stair-

* See p. 426.

case window opposite each end, so as to give a through light.

The principal contracts for the building have been carried out by Messrs. Ellis & Hinchcliffe, of Manchester, whose work includes the ordinary particulars of a general building contract, with the addition of the approaches, which are being newly paved, &c., under the superintendence of Mr. J. Proctor, the borough surveyor. Of the external work we will furnish one or two particulars next week, when we propose to give the view of the exterior. The bells, including one large bell for striking the hours and four quarter-bells, are by Messrs. Warner & Sons. The clock, manufactured by Messrs. Potts & Sons, of Leeds, is from designs and plans by Mr. E. B. Denison. It will ring chimes at the quarters in a somewhat similar manner to the Westminster clock. The dials are 12 ft. in diameter, the centre-piece being 8 ft. diameter, in one casting of half-inch plate-glass: they will be illuminated at night. The whole of the internal decorations are, as we have said, by Messrs. W. B. Simpson & Sons, except the decoration of the corridors, which is by Mr. Heyes, of Bolton. The sculpture in the tympanum, which constitutes the chief external decoration, is by Mr. Calder Marshall. The locks and door-furniture are supplied by Messrs. Smith, of Birmingham, and are of excellent quality. The kitchen-range and tiling, and the grates and chimney-pieces on first floor, are supplied by Mr. Wilson, of Manchester; those on the ground-floor by Messrs. Pattison, also of Manchester. The tiling is entirely supplied, we believe, by Minton, Hollins, & Co.; but the only portion laid by them is that in the principal entrance: the rest has been laid by Messrs. Bournes & Son, of Leeds. The ornamental cast-iron work has been furnished by Messrs. Macfarlane, and includes a particularly good and appropriate pattern of stair-railing. The warming and ventilation of the building has been carried out by Messrs. Haden & Son, of Trowbridge, who have also supplied the hoists, &c. The great hall is warmed by hot air, admitted through perforations in front of the platform. This seems rather a one-sided (or one-ended) way of heating a large room, and would have a tendency to keep one end of the room too warm while the other is too cold. Perhaps the position for the inlet is chosen on the principle, that in rooms for hearing in, the system of admission and expulsion of air should tend in the same direction as that in which sound is to be propagated, and thus the words of the orator or the notes of the vocalist are to be borne on a blast of hot air to the furthest corner of the apartment. This is the only portion of the building which is warmed with hot air, the heat in the other rooms and the corridors being supplied (in addition to ordinary fireplaces) by a hot water circulating system and hot-water coils, which latter are liberally supplied, under the windows of the larger rooms, the banqueting-hall, council chamber, &c. The inlet for ventilation (besides windows) is by ordinary wall gratings, communicating with the rooms. The outlet for the great hall is through part of the small ornamental coffers along the margin of the ceiling, and thence into the main tower, which thus unites the useful with the ornamental, and becomes the principal ventilator. All the rest of the used-up atmosphere in the building is taken to four ventilating shafts which rise above the roof, over the four corners of the large hall, and form external features. These will have a hot-water coil inserted in them to insure a current upward. The water arrangements of the entire building have been supplied and carried out by the Bolton Waterworks Company, and by Mr. R. Hayworth, of Manchester, plumber, the supply including a 3-in. main for working the bellows of the organ by hydraulic pressure. Mr. Hayworth has also furnished the speaking-tubes, which form a communication between the principal rooms of the building. The fittings of the court and council chamber are supplied by Messrs. Dovestone, Bird, & Hull, of Manchester; the lightning-conductors and terminals by Messrs. Hibbert & Son, of the same town. The gas supply is laid on by the Bolton Corporation Gas Company (the corporation having recently become proprietors of the principal gasworks, originally a private enterprise), under the superintendence of their manager, Mr. Veevers; the chandeliers in the great hall,—eighteen in number,—are furnished by the Midland Architectural Metalworks Company, of Coventry, as also that in the mayor's reception-room; that in the Borough Court by Messrs. Messengers, of Birmingham; and those in the mayor's dining-room by Messrs. Wingfield, of the same town, who have also supplied the corridor lamps; the pendants and brackets in other rooms are also supplied by these two last-named firms. The organ is being built by Messrs. Gray & Davison.

The building has been erected from the designs and plans of Mr. W. Hill, of Leeds, Mr. Woodhouse, of Bolton, having acted as resident and assistant architect; and the work has been executed under the immediate superintendence of Mr. Jephson, as clerk of the works. The totals of the principal contracts are as follow: —

General contract	A =	£11,378
	B =	15,150
	C =	13,396
Additional sum		200
Approaches		1,784
Bells		1,105
Parqueterie		646
Decorations		5,300
Sculpture in Tympanum		1,000
Grates, Ranges, and Chimney-pieces		896
Clock		580
Tiling		2,000
Heating Apparatus		752
Boilers and Hoists		360
Lightning Conductors		150
Fittings in Court and Council Chamber		1,130
Organ		3,000

The total cost, including purchase of site, will be about 150,000*l.*

Having thus discharged our conscience of the business statistics in regard to the New Town-hall, we may be at leisure to look round us for a few minutes and notice anything else that may call for remark in connexion with the architectural aspect of Bolton. The general look of things is not, we must confess, either interesting or exciting; such "picturesque" effect as there may be in the older streets resulting rather from a general embrowned smokiness than from any more captivating qualities. The approach to Bolton, by the way, from the Wigan side, is by no means devoid of the picturesque, and the landscape is not so blackened and defaced as in the immediate vicinity of some other manufacturing towns. The street architecture, however, may certainly be pronounced, in the main, capable of a good deal of improvement. The principal architectural work of recent date is Mr. Paley's large church at the end of Deane's-gate, which derives the more effect from the sudden and rapid fall of the street here towards the east, leaving the church on a high-level promontory. It is a cross church, in the Late Geometric style, with a north-west tower of very dignified design and treatment, the detail of the upper portion verging more towards the later Decorated or Curvilinear style. The whole treatment is broad and simple throughout. The walls are entirely of asblar masonry. The nave is lofty, and with a wide arcade on rather slender piers, giving a look of ample space. There is not a detail in the building, as far as we noticed, that is not repeated from Mediæval Gothic; but, as a specimen of modern Gothic of the "conservative" school, it is very good indeed. Besides this, the buildings by Mr. Woodhouse, already named as resident architect for the Town-hall, form the best items by far among the newer work. The Gas Company's Offices, closely adjoining Town-hall-square, is a very good building of the French Gothic type, of red brick, with stone bands. The windows are very well treated. The office portion is well discriminated from the mere working portion in the external design. The whole of the internal fittings are in good keeping, and are effective in design without ignoring utility. The front of Bradford-buildings, in Mawdsley-street, by the same architect, is another well-designed and effective red brick building. A new bank in Deanesgate is getting up, from the designs of Messrs. Cunliffe & Freeman,—a building of light-tinted freestone, with grey granite shafts, and showing a very good type of conventional foliage carving in the capitals, and other decorations; but the "style" is scarcely developed in the present stage of the building. Bolton possesses a park also, to be attained by a walk out to the north of the town, through very grimy and uninviting streets, and past waste land of a desolate-looking character; but the park itself is well situated on a slope rising from the banks of the small stream, the Croal, "upon" which the town is situated, or would be, if the stream were large enough for any town to be supposed to be situated on it. The park is well laid out provisionally; that is to say, there are the materials for a very pretty place, but it wants more flowers and ornamental gardening. The terrace along the top forms a fine promenade, affording a view not only of the smoke of Bolton but on a clear day (as we were credibly informed) of the estuary of the Mersey in the distance. This portion of the ground is further diversified by a kind of temple or tribune, with pillars and arches in front, which forms a conspicuous object from the railway below, where passengers generally wonder "what it is"; but if they got out and came up the hill, they would be no nearer finding out. Returning along the Chorley-road (the "West-end" of Bolton, bordered by a neat type of houses, and neater gardens), we may notice a little off the road the Wesleyan Chapel, another of Mr. Woodhouse's works, the treatment of the west end of which is highly creditable to its architect, both in regard to the play of line in the buttresses, and the provision for effect of light and shadow in arches and window recesses; this is a better little bit of modern Gothic design than one often meets with in a provincial town, and we may congratulate Bolton on possessing a local architect of more than average ability. Further in, in St. George's-road, is the Congregational Chapel, by Mr. Oliver, of Newcastle, who is not unknown as the architect of a good many Dissenting places of worship, but who has done better things than this; it is too flat, and destitute of relief and shadow in reveals and mouldings. The market in Bolton, the main portion built a good while ago, is an excellent specimen (internally) of what a general market should be in regard to light and ventilation; the fish-market, a more recent erection, is equally suitable in this respect, and shows a little more attempt at external architectural expression of a suitable nature; the old market being a mere "classic" screen externally. From the fish to the river is a natural transition; not that there is much connexion between them in this particular case, but it may interest the admirers of the great Thames Embankment work to know that similar schemes have been carried out almost simultaneously in other towns; and Bolton also has its embankment scheme. The river aforesaid, which "washes" the town of Bolton (no ordinary task), runs in a deep narrow channel through a part of the town, between the houses; that is to say, it "runs" now, but it appears that it formerly crawled through much mud, and in droughty weather approached to a state bordering on stagnation, endangering the health of loyal inhabitants on its banks. Whereupon the corporation of Bolton, with a wise consideration of the fitness of things, laid each of the banks with a smooth stone pavement, sloping down on each side, and leaving in the centre a deeper channel, down which, even in dry weather, the "silver Croal" now rushes in an impetuous torrent, at least 2 ft. wide. As to the "silver," however, that is but a poetic epithet, for the sewers discharge into it. Seriously, however, this embanking was the most sensible thing that could be done with the stream, and when there is a heavy rain, a most efficient "scour" is at once secured; and such a piece of sanitary work is none the less meritorious for being on a small scale. The question of sewage is being mooted here too, and its "utilisation," we understand, is to be attempted. But there our notes on Bolton must close for the present.

REFERENCE TO PLANS.

Ground Plan.

1. Clerk of the Peace and Borough Prosecutor.
2. Magistrates' clerk.
3. Magistrates' rooms.
4. Sessions court.
5. Jurors' retiring-room.
6. Jurors' waiting-room.
7. Witnesses' rooms.
8. Ladies' retiring-room.
9. Ante-room.
10. Gentlemen's retiring-room.
11. Borough Treasurer's offices.
12 & 13. Borough Surveyor's offices.
14. Solicitors' room.
15. Barristers' room.
16. Large hall.
17. Staircases.

First-floor Plan.

1. Refreshment-room.
2. Waiting-room.
3. Grand Jury room.
4. Sessions court.
5. Committee-room.
6. Committee-room.
7. Mayor's parlour.
8. Council chamber.
9. Town Clerk's offices.
10. Mayor's reception-room.
11. Mayor's dining-room.
12. Spare room.
13. Upper part of large hall.
14. Staircase.
15. Lavatories, &c.
16. Place for organ.

Munificence.—Sir Josiah Mason, who has already built and endowed an orphanage at Erdington, near Birmingham, at a cost of more than a quarter of a million, has now arranged to erect and endow a scientific college in Birmingham, on which will probably be expended at least an equal amount.

LINEAR PERSPECTIVE SIMPLIFIED.

THIS useful and comprehensive little book* is a translation of the work on Perspective which the *Ministère des Beaux Arts* in 1870 directed to be supplied to all the public libraries and schools of France, pursuant to a recommendation made in the previous year by M. Dumas, late Minister of Public Works, who then stated that the author of this work, M. V. Pellegrin, late Professor of Topography at the Military School of St. Cyr, "had been able, by dint of research and ability, to condense into a small number of pages the laws of perspective, and to extract from a confused mass rules which are very simple and easily applicable to every possible case." This kind of commendation in regard to a work of instruction, and the practical recognition of its value by Government, is not usually lightly bestowed in France; and we are not surprised to find that the work, small as it looks in bulk, quite bears out the character thus given to it. A treatise which undertakes to give all that the painter needs of the theory of perspective, and its application, within the compass of fifty duodecimo pages, and with the aid of one sheet of small diagrams, would be a welcome novelty to the student, and perhaps an object of some contempt to the teacher of perspective in this country. But we have always been of opinion that the study of this necessary technical branch of painting has been extremely hampered in English treatises by the want of a comprehensive and simple illustration of its leading principle, and by the multiplication of intricate diagrams and problems, which serve no purpose but to deter and mystify the beginner with a semblance of difficulties which really do not exist, the whole of the various problems of perspective including in reality nothing more than the application of the same rule to different circumstances,—an application which in many cases, instead of requiring a jumble of lines and figures to elucidate it, appeals, in fact, to nothing more occult than what may be termed ordinary common sense.

The author, avoiding geometrical problems in the first instance, goes at once into the practical question of the apparent sizes and proportions of figures on different planes of a picture, and gives simple methods of determining their relative height and scale; having contented himself with simply stating at the outset the broad problem of perspective to be, "to reproduce on a plane surface objects having the three dimensions *height*, *length*, and *width*, and to give to this plane surface (*the canvas*) the apparent depth of nature." What is to be noted in this portion of the treatise is the close connexion kept up by the author between the theory and the practical working out of a picture, which in many such works are kept so far apart that it is some time before a beginner is enabled to bridge the gulf thus fixed between theory and practice: indeed, M. Pellegrin almost assumes practice to take precedence of theory, for he adds that while perspective enables us to accomplish the object just indicated, "there is still necessary the first sketch of the picture,—the composition,—a work entirely of feeling, which the artist throws on the canvas, having nothing to guide him but his inspiration." A certain amount of *eye* for perspective, on the part of the student, is thus assumed in the first instance; and certainly, where this does not exist, it is probable that the most systematic instruction will be of little avail. The first section of the book having dealt with the treatment and placing of figures in a picture, the second and longer section is devoted to that class of problems which in England we are more accustomed to consider as "perspective," including the explanation of the rationale of "distance" and "vanishing" points, &c., which is given in a remarkably clear and simple manner; and without a single superfluous sentence. The whole of the problems and examples dealt with throughout the book are illustrated, as we observed, in a single sheet of twenty-four small and simple diagrams, all given on so many tinted spaces of similar size (about 2½ in. by 1⅞ in.) supposed to represent the artist's drawing-board, and in which all the main points, as the base line, the horizontal line, the distance points, &c., are indicated in each diagram by the same reference letter, however their relative situations may differ, so that the comparison of one problem with another is much facilitated. In each case the diagrams are as typical (so to speak) as possible, and illustrated by the smallest possible number of lines, so that the fact of the universal applicability of the same principle in perspective is almost forced upon the student's mind; while, at the same time, the succinct brevity of the explanations, though furnishing all that is necessary, compels the student to think as he proceeds, and leaves him to acquire the art of readiness in perspective drawing in the only possible manner in which it can be acquired, viz., by the putting in practice for himself, in actual drawings, the theories which are here presented in their simplest and broadest form. Nothing could give a better idea of the thoroughly practical nature of this little book than the manner in which the author disposes, at the close of the work, of the question of lines which are not perpendicular to the plane of the picture, "as in a mountainous road, or the slope of a roof; the lines of these will terminate, as has already been said, in some point of the picture on a line parallel to the horizon. . . . . The theoretical determination of these lines is very simple, but I do not think it of sufficient utility to be sought after. It appears to me in this case that the perspective, estimated from sentiment only, suffices, considering that on whatever ground a building is situated, the walls are always vertical, and the lines of windows horizontal, as also the lines of tiles and the lower edge of the roofs; and that, consequently, the general rules are there for aiding the artist to correct any error he may have made in appreciating the perspective." There is much common sense, too, in the observation in regard to the supposed necessity for a technical study of the drawing of shadows, which does not, M. Pellegrin thinks, "form such an important part of perspective as might be supposed. In fact, would it be possible in any picture whatever to determine geometrically the shadows of the objects of which it is composed? And, further, would the result obtained, however mathematically correct, be real from an artistic point of view?" He promises, nevertheless, to endeavour to find a few simple and practical rules on this point to be added to the present work as an appendix. We do not hear whether this appendix has yet appeared; it is not added to the present English edition.

We regret to have to mention one serious drawback to the value of the present edition as a text-book in English schools; it has been very badly translated. We have not the French original at hand, but we have no doubt that so clear-headed a man as the author is wrote clear and intelligible French; many sentences in the translation are by no means clear and intelligible English, and it is quite evident in many cases that this has arisen from the literal translation of a French idiom instead of the substitution of the corresponding English one. The English preface is signed "G. D.," and we therefore presume that the bearer of these initials, as there is no other translator's name, is to be credited with the work. We know no more of "G. D.," than he does of French and English idiom, but we counsel the publishers, if a second edition of the work should (as we hope) be demanded, to have the translation revised by some one who understands both.

* The Theory and Practice of Linear Perspective, applied to Landscape, Interiors, and the Figure, for the Use of Artists, Art-Students, &c. Translated from the French of V. Pellegrin. London: Bickers & Son.

ON TASTE IN COLOUR.*

IN rooms to be lived in, avoid simple white for colour of walls and paint (as in too many drawing-rooms); avoid also any extremely dark treatment. The walls of rooms should be such backgrounds as will best suit the complexions and dresses of the larger number of people. Delicate white intensifies by contrast any unpleasantness or want of perfection; extreme dark would make people look white and ghastly. Neutral colours will be found the best,—generally some gray or cool colour that will contrast with warmth of complexions. On no account let an absolutely pure colour be used for general surfaces. Nature provides no such colour in pigments. Her yellows are greenish or reddish, and so on. Nor does she use it to any extent in inanimate nature. So much so that you will find that if you have much difficulty in describing a colour, you may be certain it is good: the more difficulty the more beauty. Nature trusts mainly to gradations of tone, using vivid colour in small quantities only, as in the touches on bright flowers and butterflies. This teaching of nature will be found seconded in the pictures of the greatest artists, and in the good old decorated interiors of, for example, Italy and Flanders. In following such teaching, you will, however, need to consider the object to which (in domestic work, say) the rooms are to be devoted. A drawing-room, it is agreed, should be light, festive, and gay; a dining-room at once more sober, and with more depth and warmth, as befits its uses. You must also consider the light and shade; openings, and the positions of them; for these may (or may not) effect for you contrast of tone, and may even touch the question of the good sense of your whole scheme of decoration.

Mr. Wynfield gave suggestions for treatment of,—

1. *A Drawing-room.—Walls.*—A light neutral gray, fawn colour, or pale green (not dark, but not white). Dados are suitable for all rooms, even drawing-rooms. They may be made of wood, painted as the room doors, or of stamped leather, or of the French paper imitations of stamped leather. A frieze does not interfere with the heads of sitters, and adds much interest if it has its sentiment or story. If flowers form part of your decorations, have no relief, no imitation of Nature's light and shade. A wall must be a wall: if, neglecting this, you introduce illusions to the eye, the sense of solidity will not be suggested. The Japanese decorate on correct principles, with truth to the idea derived from nature, and truth in art, adaptation of representation to materials and method. *Woodwork.*—Have no graining anywhere; its aspect, however well executed, is repulsive. Real woods are always beautiful. Plain painting may be darker or lighter than the general wall surfaces; both will look well. The doors may have stencilled decorations in angles of panels—birds, or butterflies, or plants, or any beautiful natural objects will supply motives (a decoration used in rooms by Mr. H. S. Marks, Mr. Leslie, &c.). *Ceilings* should rarely be wholly white, except of halls or where the light is defective. Papered ceilings look well. The use of gold is generally satisfactory; it reflects a warm tone on everything below. Put a good amount of colour on a ceiling,—not, however, making it so dark as to bring it too close to the eye. The *Carpet* must be either lighter or darker than the walls. It is always lighter at a ball, where white dresses abound. This is following out the artist's rule, to make either background or foreground run into the figure. If this is not done in painting, a woman in white satin, for instance, against a dark floor and dark walls will look like a cut-out figure stuck on, and the same sort of result would occur in rooms. As in ordinary life, dresses are dark in colour; where a light wall tone has been recommended, the carpet will have to be darker than the walls. Not too vivid in colour, however, and, of course, no flowers, ferns, birds' nests, and suchlike fearful things. *Furniture and hangings* should not be too much alike in colour; have, say, the carpet one tone, the coverings of the furniture another, and the curtains and other hangings a third. Have summer and winter hangings and furniture coverings: those for the former light and cheerful, the others with more warmth, and suggestive of comfort and home life. A table-cloth, occasional chair, or a rug, may supply a bit of effective contrast with prevailing hues of hangings, &c., and a spot of vivid colour in a vase or some small hanging will complete the formal decoration of the room.

2. *In a Dining-room,*—used for its principal purpose mainly by gas or lamp light,—the living figures are seen in more detail around the lights. And decorated walls and woodwork will thus be sunk into the background among half-lights. More pronounced decoration will be allowable in consequence (and deeper, warmer tints are pleasanter here).

3. *As to Colour in Churches.*—The lecturer said, in answer to a question, that the application of distinct colour is not always a gain. He regretted at times, in revisiting cathedrals, the loss of light and shade,—the realisation of a vision or dream in purity of stone,—seen in visits aforetime. A building rich in varied forms often loses especially by applied colour. If colours must be used (and in cases where it is not thus out of place) pretty colours should be avoided; all violets, greens, and so on. Much of this sobriety in colour may have been safely and wisely dispensed with in the Middle Ages, when the dresses of the people and priests made the centre of the building a mass of brilliant

* Notes of an address by Mr. D. W. Wynfield, at the Architectural Association.

colour; but there is little colour from these sources in a modern church. And without this proportion,—this balancing of colour,—there must be failure. Proportion is at the bottom of all good colour,—of all beauty, in fact.

Mr. Edmund Sharpe, following Mr. Wynfield, urged, further, the avoidance of violent colour in church-decoration. The use of colour at all is very doubtful, where there is much play of form,—at any rate, where forms are abundant colour should be sparing. Probably, it should be confined simply to flat surfaces. In Lichfield Cathedral, in time past, when the colour was taken off the vault the sense of space was at once wonderfully increased. As soon (said Mr. Sharpe) as the vaults and dome of St. Paul's are painted and gilt, that charm,—that air and space,—giving St. Paul's an apparent height and size beyond St. Peter's,—will all be gone.

Mr. R. P. Spiers held by Mr. Wynfield's principle of using neutral tints, brightened here and there by bright points of colour. La Sainte Chapelle (Paris) and Notre Dame de Bonne Secours (Rouen),—two well-known examples of strong colour,—fail to satisfy,—especially in respect of the discords from the light passed through the strong stained glass. The buildings would have been more impressive (and pleasing) with the walls perfectly plain. In domestic buildings, ceilings with much colour seem doubtful. Some quiet colours on the cornice, and stencilled patterns to lead it into the ceiling, will connect all with the walls, and leave the pleasing sense of light and space. Horizontal lines, in the way of divisions to wall-space, augment the apparent size, including the height of rooms. The dado and frieze,—so uniformly done away with of late years,—are a real loss in this way. The Roman and Greek arrangement of a dado about 3 ft. high of dark colour, a lighter portion above, and a frieze about a foot deep under the ceiling, has much to recommend it. The division of the height of a room into two sections:—the lower section carried to, say, 5 ft. from the ceiling, of darker colour, used as a ground for pictures (pictures, rods, &c., above it), and the upper section lighter (a very deep frieze, in fact),—this arrangement is for some rooms even more suitable, and has a little more of the charm,—simple as it seems,—of novelty.

ON RESULTS OF A RECENT INVESTIGATION INTO ANCIENT MONUMENTS AND RELICS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.*

THERE is a class of monuments in the Hebrides hardly noticed by previous investigators, upon which I have so far arrived at no power of definition; but, as my attention is still engaged on the subject, I venture to enumerate them amongst others, without connecting them with any of those I have undertaken to describe.

Their condition, arrangement, and appearances are so similar to what are described by Mr. E. H. Palmer, Fellow, of St. John's College, Cambridge, as found by him in the desert of Tih, that I adopt his words in describing them, though the description he gives is sometimes applicable only in part to some, and in part to others; but every feature in his description is to be found in one or other of the Hebridian relics, the natural physics of the localities also agreeing in description. After passing a place called Agúlah, he describes the wády he is traversing as finding "its way through a very narrow winding gorge, with grand precipitous sides, into Ain el 'Elyá." Here is a spring of running water, and the valley opens out into a large plain covered with hills and vegetation. Shortly after leaving this place we came to a group of nawámís, on the hills to the left of the wády, which were more perfect than any we had hitherto seen in the peninsula. They consisted of two detached houses, on separate hills, and a group of five on the side of a higher eminence. At least three out of the five were apparently untouched. Their dimensions averaged 7 ft. high by 8 ft. in diameter, but one was fully 10 ft. high and 8 ft. diameter inside. They were circular, with an oval top. In the centre of each was a cist, and beside that a smaller hole, both roughly lined with stones; these were covered with slabs of stone, over which earth had accumulated. Some human bones which we found in the cists at first led us to the conclusion that they were tombs; but the small size of the cists, and the evident fact that they had never contained perfect skeletons, proved that idea to be erroneous. In the smaller cist the earth showed signs of having undergone the action of fire, and in one or two small pieces of charred bone and wood were found. The country all round is covered with them, every hill-side having some remains of nawámís upon them. Close by the nawámís were some *stone circles*." Time will not permit a recapitulation of the similar features in North Britain; but the curtailed tomb cist, and the place for cremative operation within a small structure, have been already before you, while the buildings themselves agree exactly in description with some of the detached as well as grouped dwellings in the Hebrides, as shown on the diagrams.

Of what appear to me monuments for sacrificial purposes, I beg to draw attention to mounds I have discovered in North Britain, having the distinct outline of animal forms, in some instances, indeed, quite as clearly defined as those in America, of which latter good illustrations will be found in the *Smithsonian Contributions to Knowledge*. In every case, so far, in which I have excavated these mounds, I have found human remains, generally accompanied with evidences of cremation, and in every case also with remarkable stone structures, often of large, or megalithic description. The forms are mostly serpentine, but in some cases fish-like; and, in some, approaching one of the figures of the American mounds, which resembled that of the winged sphere of Egypt. A natural deposit appears to have been generally taken advantage of, and either carved away, leaving the remainder in the form desired, or heaped up and added to for the same purpose. In some cases both these processes have evidently been resorted to.

Several of these mounds time has not yet permitted me to examine by excavation, and I have selected the more widely distributed, as well for my own comparison of the most distant with each other, as to allow the broadest inquiry. At the same time, on this point, I deprecate opinions formed by any who have only made a partial examination, and who may thus have come to a conclusion from the examination of any one specimen that may affect in their minds the whole question.

It must be remembered that Dr. Borlase discovered such a mound on Carnbre' Hill, in Cornwall; and this, together with the custom of planting such elevated spots, gives ground for supposing that others, perhaps not few in number, have existed in England, the features of which have been obliterated by such process, while the habit of altogether levelling is too well known by the recent cases at Stonehenge, and Dorchester, near Oxford, to say nothing of the noble preservation of relics in Wiltshire, by the liberality of feeling displayed by Sir John Lubbock, to leave any doubt that invaluable scientific treasure of this class has been destroyed in England.

This, indeed, has touched the very remarkable mound near Loch Nell, which is as distinctly in the form of the Egyptian Uræus as any of the sculptures in Egypt, the only deficient portion being that which could have been removed with the greatest facility, from its less important dimension, the *débris* still lying strewn on the most convenient spot, and the area so thrown open to the agriculturist facing the south-west, while the marks of the plough upon it are still visible, though betraying many years of disuse.

This mound is situated in one of the most secluded glens of the district around the triple-peaked mountain Cruachan. The well-known cry of the Campbells,—"It is a far cry to Lochow,"—intimating the remoteness and security from incursion of that district, we may naturally infer that here monuments of a Pagan religion might have remained unmolested when even the distant isle of Iona was subjected to spoliation.

The mound, as illustrated, shows to the west of the head a great cairn. The west was a direction peculiarly selected for burial with many ancient nations, as indicative of the course of the departed spirit, emblemed by the setting sun.

If, as I find reason to assume, mountains were distinctive features of adoration,—though, curiously enough, not included in the objects enumerated in a valuable work now publishing, "The Scottish Highlands: Scottish Clans and Regiments,"—then the position of the whole figure, which has clearly been connected with sepulchral, if not sacrificial rites, has the same tendency, being west of Cruachan; while a local Gaelic tradition asserts that persons were led to execution walking along the ridge to the head,—that is, east to west. These facts, together with the extremely important position of the mound as a theatre, the action upon which, of whatever character, could be seen by many thousands, have led me to the conclusion that it was an erection for sacrifice. When I first observed it, there was what appeared to me the remains of an altar on the summit; but the fragments now lie around which show some of the largest stones to have been reduced by blasting.

On opening it in company with a party of able scientific and professional men, we found a spacious megalithic chamber within; this was composed of *three* large blocks of granite, placed somewhat in the position of a triangle. In this were remains of bones reduced by cremation to very small dimensions, mixed with charcoal and charred earth, so as to require separation by washing. Amongst the charred vegetable matter were shells of hazel-nuts and some relics. A flint instrument was found here, a flake of chalcedony in an adjoining tomb, and a stone celt in another; the two former not being local materials.

I am impressed with the idea that there is still a chamber to the east of the large eastern block of granite, but the great chamber itself was a grand specimen of sepulture and cremation.

The spine of the form appeared to have been distinctly constructed of blocks of granite, and on each side these blocks had rows of smaller blocks, tapering away in reduced size as they receded from the main column.

The district for many miles has grand sepulchral remains, extending even beyond Berigonium and through Glen Lonan, towards Cruachan, a feature almost always attendant on the mounds of this class which I have discovered, and which are also in each case accompanied by what are generally called Druidical stones, either as monoliths or circles, or both.

This great serpentine form has also a serpentine avenue leading from its head, as shown in diagram B, while around the head is a partial circle of stones of the same kind, which puts beyond all question the connexion of the cairn and the reptile form.

The enormous labour displayed in the formation of the great cairn, or disk, formed of large boulders arranged with the greatest symmetry, and covered over with a uniform coating of earth, shows us that the constructors would not have left their labour unfinished for a little work by cutting away the mound, if the latter were no part of their design, so as to continue the circle of stones completely round, as is usual in such monuments; whereas they are complete, except where the disk fits on to the head. If simply a cairn were wanted, like others in the neighbourhood, any spot than the one selected would have been better.

In the particular case of this monument, it is remarkable that the locality round Loch Awe abounds in Gaelic legends of mythic serpents, the great Python of the neighbourhood being overcome by one Fraoch, who is also styled "Son of the Light," but who died from the effects of the encounter.

A similar mound was opened by me in the noble park of the Marquis of Lothian at Monteviot, in Roxburghshire. The form, though clearly shaped into an animal outline, is more that of a fish than a reptile. The plan and elevation of it are shown in diagram H, where it is placed in position for comparison with some of the American mounds. The noble marquis kindly gave me permission to inspect it, and also placed some fine Border lads at my disposal, under his intelligent master-forester, Mr. Weaver, who took great interest in the proceedings, the marquis himself giving me information which I was very glad I was in ignorance of before.

I was attracted to this mound (which has been shaped out of a natural water deposit) from its evidently manipulated form. When I obtained permission to excavate, the marquis gave me also some facts which relieved my only difficulty. Here at least there were no Druidical remains; but on my asking for the records of the estate to be examined to find if there was any mention of the mound having been worked in modern times, it not only appeared to have been unmolested, but a Druidical circle, bearing the name of "Harestanes," was reported as having been near this spot.

On digging beneath what appeared to me to have been the site of an altar, the ground was found to have been disturbed in a vertical direction beneath it, as the natural "walls" of the

* From a paper by Mr. J. S. Phené, F.S.A., read May 19th.

former excavation were found in their original state in each direction. No relics were found here. But I then adopted a plan I had used at Letcombe Castle, in Berkshire, and which was used subsequently at Maiden Castle in Dorsetshire, in which cuttings were made in directions south and east from the centre. The results of my excavations at Letcombe are given in the proceedings of the Oxford Architecural and Historical Society for 1872, pp. 2, 3, and 65; and those of the excavations at Maiden Castle, by the British Archæological Association, were fully reported in the *Times*, and in the "Journal" of that Association. In this case, nearly equidistant from the spot I had first selected, were found—one to the east and one to the south—a human skeleton; the bones were not burnt, but were in a similar condition to those at Letcombe and Maiden Castles. A mound near this, but on the opposite side of the Teviot, has a curious legend attached to it, as follows:—

"Forty paces from the Stabrie mire,*
Sits David Leslie in his golden chair."

David Leslie was, as we learn from Border minstrelsy, a leader in the Battle of Philiphaugh, and much too modern for my inquiries. There is, however, one feature of interest in connexion with his history, which rather tends to point out the locality I am describing as one retained in the memory of the old inhabitants as sacred, no doubt in connexion with the stone circle of Harestanes. David Leslie is represented, when in a dilemma, as being accosted by an ancient man, who, it would seem, abode near this mound, and who advised him how to operate so as to overcome his enemy, and by following whose advice he was successful. This aged man is clearly a mythic personage, as he is represented as figuring in fights over a period of more than 105 years,—from the Battle of Solway Flow to that of Dunbar.† No result attended the excavation into this mound, which I opened at the suggestion of the marquis, to see if any explanation of the legend could be found; but near it, somewhat to the northward, were the remains of a circular tumulus, with evidences of a small cist, like those I have described as in the Cumbrae tumulus.

While mentioning this locality, I can hardly avoid referring to the immense urn exhumed by me as the result of some fragments disturbed in ploughing‡ on a farm on one of the estates of Lord Lothian, in the same county, which is in the occupation of Mr. J. Shiell, who aided my search for the cistvaen. The urn I had the honour to exhibit, together with other British pottery at the *conversazione* of this Institute last year. Its unusual proportions, and the large mass of bones which had been subjected to cremation, show it not to have been the receptacle of the remains of a single person, and its position was so peculiar with respect to the conical hill, the Dunion, which stood between it and the triple-peaked Eildons, that I am impressed with the idea that it was a sacrificial urn.

Diagrams *Daleth* and *He* illustrate the last monument I shall mention. It is the last I have discovered of this class, and has the characteristics of a mound, formed out of a natural hillock distinctly shaped by labour, and an embankment which has been erected by material from the adjacent shore. It is at Skelmorlie, in the grounds of Mr. John Graham, on the estate of the Earl of Eglinton and Winton.

The embankment (now severed by a modern roadway) was originally about 400 ft. long, and the oval summit of the hillock 110 ft. from east to west, and 90 ft. from north to south. This, as well as the Great Cumbrae tumulus, lies westward from the grand Druidical station of Cuff Hill, near Beith, and the district had formerly a very ominous name,—"The dead man's yett,"—*i.e.*, "The dead man's gate." Due south of this is an interesting cromlech, referred to by me in the "British Archæological Journal" for September, 1871, p. 357. And the locality has retained to this day the features of some remarkable tradition, for to enter it has been said from time immemorial to be going out of the world, although the populous town of Largs is in the centre of the district. "Out of the world and into the Largs," the common expression, has no meaning in it, if "largs," as described by a single writer, though often quoted by others, means "slopes." There is no such word as "largs" in Gaelic, but there is Las'-ag, which, by the transposition of the *g*, becomes La(r)gs, the meaning of which is "flame" or "blaze," and agrees with the remarkable evidence of cremation this monument discloses. I dug down the sides of the hillock at the cardinal points to examine if the strata had been disturbed, and if any archæological features presented themselves. This labour was without result. I then continued the trenches on the summit, so as to meet in the centre; and at a depth of about 2 ft. came upon a paved platform 80 ft. long and 5 ft. wide, curved as a true segment, extending from the north-east to the north-west points of the compass, which, curiously enough, at that latitude form the points of the sun's setting and rising on the longest day. The platform had been intensely burned, and the earth beneath it, to a considerable depth, was changed by the action of the fire. The interstices of the stones, which latter were smooth sea boulders from the shore, were filled with charcoal and black earth; on washing the latter, abundance of small particles of bone were revealed. The victims must have been many to have covered an area of 400 square feet with the almost consumed remnants of their bones.

It must be admitted that, to those coming from a southern clime, the lengthening of the day in summer must have been the one object of note; and, on reaching such a barrier as the Clyde, I can well understand that progress might be arrested, while, if at Midsummer, the retrogression of the sun would be a hint to the wanderer to retrace his course, and the interval of the sun's disappearance on the longest day would be a matter of special record, and no doubt of sacrifice. I may state that the part of the hillock on which the platform is was quite unsuited for a beacon, being screened both to seaward and landward; in the latter case, by much higher hills. Time will not permit me to refer to some curious and useful purposes for which, I am sure, some of the monoliths I have examined in the north-west were erected; but that the effects which I observed could have been misunderstood by the erectors of them I feel is impossible: indeed, they must have been erected for the special purposes I found they fulfilled. Nor can I refer to the remarkable orientation of the dolmens and cromlechs in the north of Ireland, and at Ach-na-cree-beg, in Argyleshire, some of the features of which have been published in my papers, in the "British Archæological Journal," and in my lectures at Belfast and Paisley; but I cannot conclude the notice of sacrificial monuments without referring to a representation of one of the circles at Stanton Drew, in Mr. Fergusson's "Rude Stone Monuments." It will be seen at once that it forms an illustration of adaptation of the circle, with head and nimbus both formed by the position of the stones, and placed superior to a serpentine body formed by the either natural or artificial sloping of the adjoining ground, while, whether formed or selected, the position is again one of almost east and west, as also are those of Loch Nell, Skelmorlie, Monteviot, and, as far as I have looked at the bearings, of all those which I have noticed. Does it not appear that, while former antiquaries have endeavoured to place the stones of this monument in a position corresponding with their ideas of traditionary serpent-worship, the real design was overlooked, which was that shown in the diagram?

I cannot close the last portion of my subject without a glance at the historical evidence in favour of sacrificial monuments in Britain. Cæsar says the Gauls (*ergo* the Britons) "have figures of vast size, the limbs of which, formed of osiers, they fill with living men; which, being set on fire, the men perish enveloped in the flames."*

Cæsar, it is to be observed, gives no account of the form of the figures; but, as he informs us respecting a deity which he identifies with Mercury, on the ground, apparently, that he is a god of journeys, and of whom he says, "they have many images of him," persons have apparently jumped to the conclusion that the figures were representations of the human form,—I repeat, jumped to the conclusion, because the monstrous things sometimes represented as great wicker men, which could not have stood by themselves, and, if they did, would have tumbled down directly the torches were applied to the lower parts, certainly are not authorised by the text. But, as it is simply beyond belief that Cæsar could have stated this without foundation it would be interesting if we could discover what he did mean. It appears to me the conclusions formed were near, and yet very wide of the mark. Strabo's statement that in these figures were "wood for fuel, and several kinds of wild beasts," clearly shows that the figure could not have been the basket-idol in our popular representation, but rather an arena. Now, if we can unite these two features, we shall probably approximate towards the mark, still more so if we can show that the two united come under the special description Cæsar gives of the British deity already mentioned.

In the immediate neighbourhood of Cæsar's land is such an image, 240 ft. high, and on so steep a slope of a hill (about 50°) as to look almost upright; this figure, fenced round in the manner customary with the Britons in their defences in the woods, and which is still retained in a more simple form by the hurdle-pen, in Sussex, would have represented an almost upright human figure, and at the same time an arena. Moreover, it would have agreed exactly with the word "*contexta*" as the "interwoven" work would have surrounded the limbs.

I think it will be found that in the gladiatorial shows of Rome beasts and men were not mixed till after pretty general knowledge of Britain and British customs had been acquired; and, as already pointed out, this custom is reported to have been found in Britain.

But the deity that Cæsar mentions as the one of whom the Britons had images is thus described by him,—"They consider him their guide in travelling and on their journeys, and believe him to have very great influence over the acquisition of gain and mercantile transactions." If, then, we find a figure having the former features, and also possessing the symbols of journeying, and placed, moreover, in the centre of that locality which had the greatest mercantile dealings with the Continent, we have, I think, a strong case.

An enormous figure, having all these characteristics, at Wilmington, in Sussex, has been erroneously attributed to the idleness of the monks of an adjoining priory, who, it is asserted, thus portrayed a *pilgrim*. It was not the result of idleness, for it is a device of great care and arrangement. It is not the work of the monks, still less a monkish representation of a *pilgrim*; for the monks would have considered the nude form indecent, more especially in a religious devotee; yet the staves indicate that it was a traveller, and to that extent it agrees exactly with Cæsar's description.

To this we may add that there is no known figure in Pagan mythology that agrees with that description; but its precise representation is found, and, I believe, found only on the gnostic gems, of one of which, for comparison, I give an illustration.

The Wilmington figure towers to an immense height; and when the spectator is only as high as the breast, on looking north, the whole of the country between him and the mid-Surrey hills is carefully commanded. The hill-side had been most fully brought to a surface, and the material so cut away thrown into a chine on the west, as shown by the section.

It was so formed that it would discharge the rain from its surface in every direction, probably the cause of its long duration. The head is above 21 ft. in diameter; and if the figure were kept clean, as in the case of the white horse in Berkshire, it could easily have been used for a day signal station, two of which, with the aid of the chalk, would be found enough to communicate even with London. But the whole district over which this figure towered was an enormous wood, sacred to two deities, known as Andred and Andras,—in other words, to the powers of nature. These deities are often described as one.

A wonderful stone in the park of Mr. Charles Hill, at West Hoathly, known as "Great upon Little," from the smallness of its base, has been traditionally connected with the worship of the latter deity, and I have little doubt it was so. This stone had till lately the autographs of Fox and Pitt upon it, and is in a beautiful, but weird and Druid-looking glen. This stone is shown on diagram Z, in comparison with one in Northern India; but the work of art at Wilmington tells more of the perfect idol, and its Colossus-like form speaks also of the great veneration of its designers for the object represented, and reminds us of the form of that at Rhodes, itself a great seat of mercantile transactions in its day. Even now, whatever were its former uses, it acts as an enormous gnomon, and at noon the

* A muddy stream of that name, forty paces from the mound.

† The Chandos Classics.

‡ The origin, also, of several of the investigations referred to.

* "Alii immani magnitudine simulacra habent, quorum contexta viminibus membra vivis hominibus complent, quibus succensis, circumventi flamma exanimantur homines."—B. vi., ch. xvi.

sun is exactly over its head, and the whole figure disappears, while the most casual observer could easily trace by the shadows, as they lessen and deepen in tone, the hours before and after noon. The gnostic gem shows the sun and moon in connexion with the figure; and it is strange that, while the surrounding heights, which comprise the Beachy Head range, are covered with British tumuli. The part of the coast near to the figure has an immense crescent or lunar-shaped embankment, generally called Roman, but which is certainly a British construction.

Numerous derivations have been suggested for the name or names of the deities, none of which appear to me satisfactory. The title seems, I think, compounded of the Celtic possessive pronoun *an*, and *dreos*. This expression would probably include both divinities, and signifies "*their blaze*."

A British urn was lately found, almost at the moment of my last visit, on the farm of Mr. Thomas Lambe, with bones and charcoal; and large numbers of bronze celts and other British relics have been discovered from time to time at some distance from, but in full front of, the figure.

SCHOOL-BOARD PUPILS AND COOKERY.

A FEW weeks since it was stated in the *Builder* that Mr. John McGregor, of the Temple, well known as "Rob Roy," a member for Greenwich of the London School Board, had proposed to take 1,000 female pupil-teachers and scholars from the London School Board schools, to hear and witness Mr. Buckmaster's lectures and demonstrations on practical cookery, at the International Exhibition. Mr. McGregor is carrying his wisely-conceived and generous design into effect. On Saturday last a select party of about forty pupil-teachers and scholars from the Greenwich School district were conducted by Mr. McGregor to the Exhibition, carefully chaperoned by him there, and passed into Mr. Buckmaster's lecture-theatre on Cookery, where good places and "tasting" privileges were secured for them. Mr. McGregor, with considerate kindness, marshalled his interesting charge out of the Exhibition and homewards as well as into it. The proceedings greatly interested the young people, there is good reason to believe, but it may be doubted whether a tithe of the advantages contemplated, and within reach, were realized by the visit. The youngsters had to take "pot-luck," so to speak, as regards the subjects of the lecture. These were somewhat unfortunate as for working-men's children. The programme of the day embraced "Spinach," "Cauliflower, *au gratin*," and "Croquettes of Potatoes." It is rather sad to think that these girls—future mothers, it may be,—should have listened to Mr. Buckmaster with interest, and that they should have watched keenly every neat movement of "Charlotte" and Mr. Buckmaster's other clever assistants, but that they should be left to regard the whole performance as extraneous to themselves and the families to which they severally belonged. The working classes, and even many of what may be called the middle class, are terribly exercised by this great "food question." It may be feared that information as to how to cook "spinach," or how to treat blossoms of "cauliflower *au gratin*," with "Parmesan cheese" (2s. 6d. per pound), or even the way to make "Croquettes of Potatoes," will be regarded as not quite offering a stone for bread, but as offering a bubble. Spinach is a very small item in the stores of the greengrocer, and it is rarely seen on the table of the working man. Cauliflower the working classes do consume, but not with Parmesan cheese. Potatoes they use largely, but it would be much more useful, and better for London School Board children, to know how to pare, bake, or boil them than to know how to make "Croquettes of Potatoes."

It is to be regretted, we venture to think, that the occasion of the visit of these young people from the London School Board should not have been turned to account specially. Mr. Buckmaster could have given them lessons of real practical value on *Pot-au-feu* (notwithstanding its French name), on Poor Man's Soup, Cabbage Soup, and even on Irish Stew, and on the making of a plain and inexpensive, yet savoury, dumpling.

It is to be hoped that Mr. MacGregor, in carrying out his generous design, may be able to so arrange that the lectures by Mr. Buckmaster to London School Board children will communicate, *à la Bentham*, "the greatest possible good to the greatest possible number."

ROYAL ACADEMY EXHIBITION.

SINCE Adam gave denomination to beast and bird, before Paradise was lost to the peerer, and the wide world outside was made common home for man and beast and bird alike, no human means since has distinguished each from each,—fierce lions and cunning foxes, tigers and tamed brutes, the soaring eagle and the piping bullfinch, polar bear and pet spaniel,—in fact, all animal creation, from elephant to tom-tit,—so plainly as Sir Edwin Landseer's art. The combative stag and the timorous rabbit,—flocks and herds,—all follow at his bidding to prove him Adam's counterpart in the control that was a gift,—the gift of mind to fashion rule under that of the Ruler.

Interminable courses of beef and mutton, with goat-flesh for a change occasionally, are the food of common belief in what constitutes animal-painting of the present day: a picture of a pet horse or funny dog is quite enough to come under its category. Pythagoras become the saint of all that see no soul in a dumb brute's eye!

Mr. H. W. B. Davis has made his cattle-piece an interesting picture by mere copyism, but its verisimilitude includes all the poetry that in nature belongs to it. In "Summer Afternoon" (453), some kine resort to a shallow pool, whereon water-lilies repose in lazy luxuriance, and the kingfisher and wagtail know it to be a pleasant haunt; the sky is hazed with heat, and the midges hum whilst the bigger flies worry the poor cows, that breathe audibly their sighs of trouble; toss their heads, rub their bitten limbs, or lash from their flanks the tormentors. One would need to sit down and push one's hair back to recall anything of its kind better done than this: the creatures are so well drawn, and painted with such force and reality.

Mr. H. Hardy's fighting lions have already been mentioned: they are sure to get all the credit they deserve.

If Mr. Briton Rivière is not spoilt by praise he may become a great artist, though he has to unlearn as well as to learn. "Argus" (464), the faithful hound of Ulysses, recognising his master, even when coming death had glazed his eye, must depend much on type explanation: the dog looks more as if narcotised than near nature's measured call; but it is a clever picture nevertheless. "All that was left of the Homeward Bound" (986) is a girl lashed to a bit of broken mast; the raft for a dog, too, that shivers with starvation and consciousness of predicament: in that respect, less happy than the child,—dead, or in a swoon. The dog is the more interesting object here, and a disagreeable one at best. A boat or a bit of rock visible to make it likely that a haven awaited the sufferers would change the impression this picture leaves,—a painful one, though it is not seen at first or second sight if the poor little maiden be dead or not. However, partial success in such an attempt as this puts forth is worth tons of such platitude as smiles from the walls of some of the galleries.

A cynic,—one, perhaps, of the many hundreds of disappointed painters who had hoped to improve the character of the present exhibition, so far as his offered great help promised,—would be more likely to find in his visit a shilling's worth of contradiction when thinking of the proverb, "Success may be deserved, but not commanded," than to take its value out in discovering where success, if not attained, has been deserved. There is ever a smell of the expired additional lights of old Vauxhall in the announcement of so many thousands of pictures, surplus of the Royal Academy budget's in number right to the unit unquestionably; but is it their room or their company that makes the wanting of the one polite excuse of the other?

It is necessary to be cruel to be kind sometimes, and if it were plainly stated, as it safely might be, that the best of a choice was presented, no silly doubts could be entertained of the justice shown, any more than the capability of judging could be denied to those whose troublesome task it is to make this choice. But the same names for supplementary help appear again and over again in the catalogues: grim pictures of destruction, with no great recommendation of construction, such as Mr. F. W. W. Topham's "Pompeii" (550), Mr. H. B. Roberts's "Homeless" (540), or "The Rush for Water: Scene during the Ramadan in Morocco" (488), by Mr. J. B. Burgess, are well placed. "The Introduction of Lady Mary Wortley Montagu to the Kit-Kat Club" (495) is very clearly and cleverly told by Mr. A. C. Gow, though he just as clearly and cleverly shows it should have been told in water-colours. The story goes that Lord Kingston, at a meeting to choose "toasts" for the year, determined to nominate his daughter, a tyrant of eight years old, as a candidate, vaunting her superior attractions compared with those of any lady on the list. The rules of the club making it necessary that those beauties who aspired to the hiccough of honour should have been seen and approved, the small evil was sent for, and came in a quake and her best frock. This is an historical picture! very small and finely done.

"The Path of Roses" (517), by Mr. W. F. Yeames, is a pretty conceit of earliest wedded life: the happy pair stand in the porch to be pelted with flowers: flowers strew the walk left open for bride and bridegroom, with a pleasant string of maiden mischief on one side of it, and a band of minstrels on the other. Circumstances look uncommonly promising, and let us hope they may be happy: a pretty state of things it will be, after all the expense, if they are not.

Mr. H. Le Jeune's children are more charmingly delightful than ever, from his having adopted a peculiarly light scale of colour, but a very winning and pretty one.

"Mending the old Cradle" (600) is the motive for some admirable handiwork, by Mr. A. Stocks, and gives such tone and strong colour to domestic happiness, that the painter must be answerable for the consequences.

"Toddles" (601), by Mr. J. Morgan, takes the next step in these natural proceedings. As usual, the amenities and troubles of childhood's growth form variously the subjects of many pleasant pictures; from the pink baby, "The late Arrival" (625), in addition to a large, little family, by Mr. F. D. Hardy, down to the pretty "Simpletons" (960), Mr. S. L. Fildes has placed in a stationary boat, with a pretty bit of Thames scenery for a background, and very smooth water for the reflection his spoony lovers give if they are incapable of taking any themselves: the sedate pug-dog sits in judgment of their frivolity; but they would not give one of the many rushes at hand for more wisdom just now; not one for other opinion than their own, and of each other. Mr. T. Webster's "Truant" (269), being "run in" by three special constables for the occasion, is too well aware of the stern nature a mild look may hide, not to be restive and recalcitrant at sight of the old schoolmaster ready with his cane: he is, however, one of the boys with many friends, who secure for Mr. Webster a very large circle of admiring acquaintances.

Mr. F. D. Hardy, again, shows an older child than the pink of babydom: little people grow very wise and very early wise in London's back streets. In "Looking for Father" (164) where father is too often to be found; on cold nights when mother's cough is bad and strike has lessened the little store garnered for more home comfort than home affords now: the tavern's warmth and cheer; the loud talk that drowns thought, are for father the Lethe of troubles he is too weak to face: and poor little Madge will watch for an hour through the gap in the curtain before father staggers out of the doorway that leads to the workhouse as surely as to the house of entertainment for man and beast.

Mr. W. Q. Orchardson depends too much on a dexterity that used to be but one of his qualifications; it is the only recommendation now of such flimsy forwardness as a long lady with a small head owning a blood-hound with a big head shows. Wandering in a wilderness of sun-flowers, the first likely enemies to be met with are the earwigs; but "The Protector" (194) is capable of dealing with greater things, and so is the painter. "Cinderella" (354) posed in contemplation of her baptismal ashes, gives no idea of what fairy dress could make of her; or her godmother,—further than to give her a name. "Oscar and Bain" (208) are two rough terriers very cleverly sketched.

Mr. Eyre-Crowe is to be lauded for the completeness with which he works out his pictures, though, to be original, he goes beyond probability. "Brothers of the Brush" (234) are four house-painters, at work for a wager, one would think, to colour the front of a house down in five minutes; for they wriggle and writhe, with desperate determination, on a long ladder, that should have had its maker's name upon it,—it is such an unbending, strong one, which two companions are steadying, one at its foot and the other from the roof of the narrow strip of edifice

that such energy and free play of eight lively arms and legs must make nothing of in no time. Photography could not have more clearly defined what is represented here. The camera's help is suggested too plainly not to be answerable for some of its real and unreal appearance: the perspective, with that strange perversity of fact reflected, suggests this. Mr. Crowe has four or five exhibits; but this is the best. "At the Pit-door" (626) only means dreadfulness, so far as Exeter Hall teaching implies. Warm admirers of a popular actress are getting warmer in their efforts to secure front seats at the theatre of her triumph, and a variety of personages are acting a struggle. Here is laid bare the difference that must ever separate talent from genius. A Leech or a Tenniel would make more of such a subject in an hour than any pains-taking for three months could bring as its reward for labour merely on the part of those who must copy what they see, and not see at a glance what there is to copy.

Mr. E. Long is a very earnest and ambitious painter, and shows that he studies; but "The Moorish Proselytes of Archbishop Ximenes, Granada, 1500" (628), are likely to be regarded as insincerity should ever be. It is poor change, the paper words of false note for the ready currency even of copper coin. Convicts to a Penitentiary are not inviting subjects for depiction.

"The Poor of the Village" (644), "as they be honest," are better worth consideration, though Mr. J. Israels, a Dutch painter, delights in dinge and heavy gray too much. Ugly peasants are buying food from the proprietor of a fishing-boat. It seems to be at solemn sacrifice of principle that they would eat. The poor of the village are of the merriest so long as they have the wherewithal to buy food at all. Give us the sunny side, the silver lining of dark cloud, and with the tinkle of tin pots and a song to the baby, a hope that pleasanter belief in sea-side peasant life may be founded on our own hook.

STRAINS IN IRON BRIDGES AND ROOFS.

Two books come to our hands simultaneously, bearing almost the same title,* on a subject which has of late years often been written upon. One cause of the frequency of the appearance of such books may be the high and abstruse manner in which strains in girders have been treated by some authors. A master of the higher mathematics too often overlooks the fact that those whom he writes for are not all equally as learned as he is, and when he writes on such a subject as the strains in girders,—one that is interesting to a multitude of people, workmen as well as scholars,—his highly mathematical analysis of them is very imperfectly, if at all, understood by most of those whom he would wish to instruct; and, indeed, this subject of strains is one of those which can be explained in a better and clearer way by other and more simple methods. Another cause is, that writers sometimes lose sight of exactly whom they wish to address, and in trying to accommodate what they have to say to the greatest possible number of readers, they adopt mixed methods of reasoning,—a, b, c, for the novices, and higher pabulum for more advanced students, whereby they make, perhaps, as much as half the book unintelligible to one portion of the community, and the remainder uninteresting to others. The two authors whose books are before us treat the subject, with more or less success, without the aid of the higher mathematics,—Mr. Shreve algebraically, and Mr. Cargill graphically. The graphical method has some advantages in plainness of perception to the senses, but is tiresome in intricate cases, while the algebraical method is more comprehensive, but less perceptible in the process of reasoning. Mr. Cargill says, "it cannot be denied that a method of arriving at any desired result in the field of science which appeals to the senses as well as to the mind, must be more congenial to the comparatively untrained intellect than that which calls into play the mental faculties only. In the former case we perceive, and therefore understand; in the latter, whether we understand or not, we perceive nothing." But surely the first part of the case is over-stated, for we certainly perceive many things which we do not understand; and so with diagrams of strains, the lengths of lines indicate the intensities of forces, but it is only by a process of abstract reasoning that we perceive that they do so; and, indeed, the diagram is merely a memorandum, made evident to the senses, of the truth of that which we must have understood before we could have made a memorandum of it. And we conceive that pupils may easily be led into superficial habits of reasoning, by regarding lines on paper as proving anything of themselves.

In commerce there are "men of straw"; in the engineering and architectural professions there are "men of paper,"—those, namely, who in designing a structure, begin by drawing lines on paper, not having previously considered fully and exactly what they wish to draw, but trusting that, somehow, a few lines laid down will suggest others that ought to follow. So with diagrams of strains. They should be made as memoranda of the processes of abstract reasoning, and not as primarily demonstrating anything. In the simplest form of the principle of the composition and resolution of forces, two forces acting in different directions, and meeting in one and the same point, may be met and held in equilibrium by one force acting in a certain direction, the intensity and direction of which are graphically represented by the length and direction of the diagonal of the parallelogram drawn about the lines representing the two component forces; but this intensity and this direction are not proved because they are represented by the diagonal of the parallelogram, but because of abstract necessity. Diagrams are very useful in these calculations; but it is quite possible that by too frequently relying upon lineal representation of forces, a habit of working without thought may be contracted. "Never be a man of paper," was the warning of an engineer to his pupils.

Before entering upon the general question of strains, Mr. Cargill makes some remarks on the elasticity of iron, from which we quote the following:—"Under ordinary circumstances, an iron bar, after supporting a considerable load, will not return to its original length, but will undergo a permanent alteration in that direction. This permanent increase of length is termed the 'set,' and its amount depends upon the force applied and the nature of the material. When a bar is subjected simply to its safe working-load there is no appreciable set; but as it becomes necessary to test bars in order to ascertain the quality and strength of the iron, a heavy strain must be applied, and the set is, to some extent, an indication of the character of the material. . . . . If the weight be too great, and the set of a corresponding magnitude, the elasticity of the iron is injured." In this we agree. It has always seemed to be folly to apply excessive test-loads in trying the strength of materials, for it by no means follows that because a bar may have borne a given strain once it will bear as much a second time. It is true that if the indicators are sufficiently delicate to show the actual elongation under a given strain, and that strain be repeated with the result that the bar returns to its original length after the force is removed, the test-load can hardly be too high; but imperfections of observation in making the experiments will probably always render these extreme tests undesirable. "There are some peculiarities attending the set of iron deserving of attention. In the first place, it is not produced instantaneously, but some time is required for it to acquire its full amount due to a given weight or strain. When once this has taken place, and the weight has been removed, the second application of it, or of any smaller weight, produces no further set or permanent elongation in the material. Should a considerably greater weight be applied, then the bar will undergo another elongation or set, due to the greater strain upon it." That which follows is inconsistent with this. "It appears as if a certain duration of time were necessary to enable the material to adapt itself to the particular circumstances of each case, for if a heavy weight be suddenly and rapidly applied to a bar it will break, or rather snap at once, without undergoing any elongation of its length; the strain is induced so quickly that the elastic force has no time, to use a common phrase, to exert itself."

Now, any elastic material,—as distinguished from those notoriously brittle, for all materials are more or less elastic,—will resist for a moment, without rupture, a greater force than it will bear during any considerable time, and the statement should have been that it appears as if a certain duration of time were necessary to overcome the cohesive force of the material, and that in a sudden application the strain is induced so quickly that the elastic force recovers itself before the strain has had time to injure it.

Mr. Shreve treats the case differently, and more comprehensively. He keeps up throughout a harmony of discussion and symbols, and the case is stated gradually, beginning with the simpler and proceeding to the more complex forms, the same formulæ being adopted throughout, with such modifications only as the different cases require, each case being considered as a part of the whole. After the discussion of the strains in each form of truss an example is given, worked out in detail, showing the application of the formula. His statements are all deduced from the few simple axioms that lie at the bottom of all principles of construction, the foremost of which is that of the lever, the second the resolution of forces, and the third the equality of moments of forces in structures in a condition of equilibrium. (The moment of a force at any point is its amount multiplied into its distance, measured at right angles to its direction, from the point about which the moment is taken.)

1. *Of the Lever.*—If a weight be borne by a beam, or truss, resting at its extremities upon two supports, these supports may be considered as reacting with two upward pressures, whose sum is equal to the weight; and the weight borne by either support, or the reaction of either support, is to the whole weight as the distance from the centre of gravity of the weight to the further support is to the whole length of the beam or truss.

2. *Of the Resolution of Forces.*—If three forces acting at one point balance, three lines parallel to their directions will form a triangle, whose sides will be proportional to the forces.

3. *Of the Equality of Moments.*—The moments of the forces acting upon a body in equilibrium which tend to turn it in one direction about a certain point, are equal to the moments of the forces which tend to turn it in the opposite direction,—the forces and the point being in the same plane. The directions in which the forces act which are brought to bear upon the members of a truss, are horizontal, vertical, and inclined. The strains induced in the inclined or diagonal braces may be resolved into horizontal and vertical strains by the application of the principle of the resolution of forces. In a truss subject to a uniform constant load throughout its length, and a uniform movable load, the horizontal strains are greatest under a full load, but the vertical strains are greater when the truss is partially (but more than half) loaded—the load extending from one abutment,—than they are under a full load of equal density, and the greatest vertical strain in a truss subject to a rolling load is the strain at any point produced by the constant truss weight added to the strain from the rolling load when it reaches that point, and covers the greater part of the truss. This greater vertical strain from a partial load is, apparently, an anomaly, but it is shown by Mr. Shreve to be so in fact. Mr. Cargill says that to correct this inequality, the platforms of bridges have sometimes been loaded with ballast, to increase the dead weight, and to lessen, comparatively, the effect of the rolling load. He does not, however, approve of this, but suggests a better system of bracing. Both authors give considerable space to the discussion of the strains in roofs, as well as in bridges, but while the one treats of roofs separately, the other treats the strains in them as part of the general subject of strains in trusses; both, however, treat the subject theoretically only, and although a student may ascertain pretty accurately from either the amount and nature of the strains in trusses, he must look elsewhere for the strength necessary to be given to them. This is no disparagement of either book. The first thing to be done in designing a bridge or a roof is to ascertain the amount and the nature of the strains in the several members. A reference, then, to the records of trustworthy experiments on the strength of materials will enable any one who has had sufficient practical experience in the working and use of materials to assign to each member its proper dimensions; but this practical acquaintance with materials is absolutely necessary before a proper structure can be designed, because there are many things to be considered which cannot be taught in books or lectures, and the merely theoretical man can no more design proper structures than the merely practical man can; and of his works we know too much to our sorrow.

* "Strength of Bridges and Roofs." By Samuel H. Shreve, A.M., Civ. Eng. D. Van Nostrand, New York. 1873.
"Strains upon Bridge Girders and Roof Trusses." By Thomas Cargill, C.E. E. & F. N. Spon, London. 1873.

LONDON SUBURBAN TAVERNS.

THE habits of a nation are changed by the growth of its cities; and when London was comparatively small, this country was known as "Merry England," a designation that would be very inappropriate if applied to it in the present day. In the time of good Queen Bess, the citizen after his day's work could stroll out into the country and come home again to bed after enjoying the healthful smell of the hayfields; but now it is a day's journey to get out of sight of streets and chimney-pots. Even at the beginning of the present century grass was to be found within easy walking distance, and John Thomas Smith relates in his "Book for a Rainy Day," that in 1772 all beyond Portland Chapel, in Great Portland-street was country. Smith's mother was recommended to rise early and take milk at the cowhouse: so she used to cross the New-road and walk to a place called William's farm near the "Jew's Harp House Tavern and Tea-gardens," on the borders of Marylebone Park, where Speaker Onslow was at one time in the habit of spending his evenings, till he was discovered and made too much fuss with to suit his quiet habits.

The public-house in Albany-street, with the odd sign of the "Queen's Head and Artichoke," was at the time that Mrs. Smith took her morning walks a little old tavern in a meadow entered from the New-road by a turnstile. The sign was a weather-beaten portrait of Queen Elizabeth, and the report was that the house had been kept originally by one of her Majesty's gardeners. Londoners of old lived a much more out-of-door life than they do now, and round London were numerous wayside-inns and tea-gardens, which were highly popular, and much frequented. In the main thoroughfares leading out of town there were public-houses with seats and tables in front, at which substantial tradesmen and their families were in the habit of regaling themselves in the same manner as is now common on the Boulevards of Paris. These seats and tables may still be seen in some places, but they are now only used by the working classes.

We have before us drawings of some of the old inns round London taken at the beginning of the last century, with MS. memoranda relative to their history; and in the following notice of these inns, most of them now either destroyed or swallowed up by the ever onward tide of London growth, we have incorporated this information. Some of the inns obtained a sinister reputation from their landlords being in league with or harbouring highwaymen.

The "Chalk Farm Tavern," now rebuilt in the midst of shops, was, only a few years ago, in so retired a situation, that the field near it was thought to be a specially appropriate place for the fighting of duels, and many a weary man has rested his limbs upon a bed in this house as his life was fast ebbing away. Farther north was "Belsize House," formerly a family mansion, but turned into a place of entertainment in 1720. At that date twelve "stout fellows completely armed" were employed as a patrol between this place and the town. In June, 1722, the appearance of nobility and gentry at Belsize was so great that they reckoned between 300 and 400 coaches; at which time a wild deer was hunted down and killed in the park before the company, which gave nearly three hours' diversion. About thirty years after this the house was again inhabited by gentlemen. It was rebuilt, and the Right Hon. Spencer Perceval lived in it for a time.

The "Upper Flask Inn" at Hampstead was once a famous house. Here Clarissa Harlowe lodged when she attempted to escape from Lovelace, and the Kit-cat Club met in one of the rooms during the summer months. Sir Richard Blackmore refers to the place in his poem, "The Kit-Cats:"—

> "Or when, Apollo-like, thou'rt pleased to lead
> Thy Scrotic Beat on Hampstead's airy head:
> Hampstead that, tow'ring in superior sky,
> Now with Parnassus does in hon our vie."

The house was afterwards converted into a private residence, and George Steevens, the Shakspearian editor, lived in it.

The "Two Wrestlers," at Highgate, was an old house which, from a date over the chimney, is supposed to have been built in 1502. It is said that Charles II. and Rochester were obliged to make it their abode for one night in October, 1664, when they were out on one of their roving excursions. It afterwards became a favourite resort of highwaymen. Kentish town was tolerably well supplied with inns; but they did not add to the safety of travellers. Those who now pass these houses in a yellow omnibus will find it difficult to realise the state of things represented by the following particulars. Opposite the "Bull and Gate" Squire Greenwood was robbed by W. Yates, H. Morris, and B. Fink, who, after frightening the village, got clean off; but were afterwards taken and hanged at Tyburn, in May, 1736. The "Bull and Last" was kept by John Young, who was hanged at Kennington, for the robbery of Thomas Swinton, in May, 1730. Thomas Theobalds was taken in bed at the "Flask" for a robbery at Squire Matthews's, near Highgate Church, on the 13th of August, 1731.

"Copenhagen House" stood alone in the fields upon which the New Cattle Market has lately been built. It is called "Coopen Hagen" in Camden's "Britannia" (1695), and was, according to tradition, the residence of a Danish prince or ambassador during the Great Plague of 1665. In 1780 Lord George Gordon's rioters passed the house, on their way to attack the seat of Lord Mansfield at Caen Wood, and at this time a party of soldiers were sent to occupy the place until the riots were quelled.

The "Dun Cow," at Holloway, was built in 1604, and on the view of the house that is now before us is the following MS. note relating to one of the notorious frequenters of the place:—"In this house last year, the 20th of October, I met a person whom I took for an honest man: his conversation was agreeable, and he was very good-looking. Since many times I have thought of my fortunate escape, for he was no other than the notorious Turpin. A little after he left me he stopped Lady Dolin's chariot and robbed her of 12*l.* and her watch and rings. This is the last public inn in Holloway. I find Turpin is staying near Hackney. 8 May, 1731."

The site of the Great Northern Station at King's Cross was formerly a lonely spot. Near the "Red Lion," Battle Bridge, John Everett, of St. Pancras, the highwayman, stopped Mrs. Manly's chariot, for which crime he was hanged at Tyburn, on February 29th, 1730, Robert Beech, the landlord, being evidence against him.

Ball's Pond takes its name from a former keeper of a public-house near Newington Green, —one John Ball, who kept the "Salutation" about the middle of the seventeenth century, a place much frequented by the lower orders to see the sports of bull-baiting, duck-hunting, &c. The ancient village of Islington was long famous for its inns:—

> "The Queen's Head and Crown in Islington town,
> Bore, for its brewing, the brightest renown."

These two houses were both situated in the Lower-road, and there was a tradition that the "Queen's Head" was once occupied by Lord Treasurer Burleigh. It was a fine specimen of the domestic architecture of the reign of Henry VII. The "Crown" was pulled down previously to 1810, and the old "Queen's Head" in 1820. The "Pied Bull," situated in the Upper-street, was built about the reign of Elizabeth, and tradition claims it as the residence of Sir Walter Raleigh, and the first house in England where tobacco was smoked. The "White Conduit House" was built about the year 1641, and was for many years quietly situated in the fields. It took its name from a stone conduit which was close by and is shown in the engravings of the house. It was originally a small ale and cake house, at which time White Conduit rolls were nearly as well known as Chelsea buns. The wheel-pond close by was a noted place for duck-hunting, and the house was long a favourite as a semi-country resort. The original tavern was taken down in 1832, and rebuilt, and in 1849 the gardens were let on building leases. The author of the "Beauties of England and Wales" writes as follows of some of these suburban places of entertainment:—"The adjacent tea-gardens and taverns of Highbury, Canonbury, the White Conduit and Copenhagen Houses, all in fine open situations, and furnished with bowling-greens, &c., afford a diversity of entertainment to numbers of the middle and lower classes from the metropolis in their hours of relaxation." Thomas Lord, one of the attendants at the White Conduit Cricket Club, subsequently established the Marylebone Club, and gave his name to the famous ground at St. John's Wood.

The "Canonbury Tavern," bowling-green, and tea-gardens, were kept by the widow Sutton from 1785 to 1808, during which period their fame was widely spread. "Sadler's Wells" Music House, subsequently Sadler's Wells Theatre, was once celebrated for its chalybeate spring. The manor of Highbury formerly belonged to the Knights Hospitallers of St. John of Jerusalem, and "Highbury Barn Tavern" takes its name from a barn which was attached to the prior's house.

Hackney was a fashionable village in the sixteenth and seventeenth centuries, and its inns were numerous and of some renown. The "Three Cranes," in Church-street, was a public hostelry in the early part of the fifteenth century, and took the name of its sign from the machine for raising weights, and not from the bird. The men engaged in building the tower St. Augustine's Church, as it was then called, in 1440, were paid at this house, and from this connexion the machine used by the builders was taken as a sign. On the 17th of December 1729, Benjamin Keys and John Johnson followed John Stuner, with the Norwich mail-bags, from this house and robbed and murdered him beyond Clapton, his body being found in a pond there on the next day. The "Cock," at the corner of Sylvester-row, Church-street, was here in 1651, at which date a token was struck by the landlord. In a room in this house a party of Papist conspirators met, on the 2nd of October, 1661, to waylay and assassinate Charles II. on his return to town from Sir Thomas Vyner's mansion, afterwards called the "Black and White House." The men were baulked in their design, from one of their companions being known to the landlord, John Braine, who sent to inform Sir Thomas. In the mean time they escaped, but left their swords behind them. There is a token of the "White Hart," in Mare-street, dated 1668. Colonel Okey, the regicide, was taken prisoner at this house, after having been concealed for three weeks by Ann Nicholls, who had been an old servant of his while he lived at Barber's Barn, in the same street.

The "King's Head" changed its name several times. Previously to the restoration it was called the "Cromwell's Head," but afterwards the landlord, one Owen, was ordered to be publicly whipped and pilloried for having such a sign. Having thus been taught wisdom, he put up a portrait of one of the Princes of Orange, which he had bought, and called it "King Charles's Head." The "Blue Post Tavern and Tea-garden," in Wells-street, past which "a coach to London" ran "every day," was originally called the "Templars' House," but the reason for such name is not known. It was the once magnificent mansion of Henry Percy, Earl of Northumberland. The "Pie Tavern," in Mare-street, was supposed to be the oldest house of entertainment in Hackney, and in 1434 the Prior of St. John's granted a hostelry called the "Pie" to one John of Banbury, on the condition of bringing bait to him as he passed to his house. Mare-street was then called Gaveston-street. The house was pulled down to form the "Grove" many years ago. At the "Green Dragon," afterwards called the "Northumberland Arms," Bagnigge Wells-road, the infamous Catherine Hays was taken with Tom Billings for the murder of her husband; the landlord, John Blakely, being one of the witnesses against her. She was burnt alive at Tyburn, on May 9, 1726, and Billings was hanged at the same time.

The "Pindar of Wakefield," in Gray's Inn-lane, was destroyed by a hurricane in November, 1723, at which time the two daughters of the landlord were killed by the falling walls. The house was rebuilt in 1724.

Behind the "Half-way House," Hampstead-road, famous for its "prime cakes, twopenny, and ale," Parson Kinnersly robbed Squire Thrupp of 500*l.* after wounding him. He was placed in Newgate for this crime, and died there in April, 1729.

The Manor of Tothele, Totenhall, or Tottenham Court, is mentioned in Domesday Book, and in the year 1560 it was demised to Queen Elizabeth for ninety-nine years, in the name of Sir Robert Dudley. It afterwards became the property of Isabella, Countess of Arlington, from whom it was inherited by her son, Charles Fitzroy, Duke of Grafton. In 1768 it was vested in the Hon. Charles Fitzroy (afterwards Lord Southampton), and a few years afterwards Fitzroy-square, Grafton-street, &c., were built upon part of the site. Tottenham Court is described in Dodsley's "London and its Environs" (1761), as "a pleasant village, situated between St. Giles's and Hampstead"; and Gay had previously mentioned it in his verse as a rural place:—

> "When the sweet breathing spring unfolds the buds,
> Love flies the dusty town for shady woods,
> Then Tottenham fields with roving beauty swarm,
> And Hampstead hails the City virgins warm."

The "Manor House" was transformed into a public house and tea gardens in the seventeenth century, and from the parish books of St. Giles's, for 1645, it appears that three persons were fined a shilling a-piece "for drinking at Tottenhall Court on the Sabbath daie." The sign of the house was the "Adam and Eve," and the tavern at the corner of Euston and Hampstead roads still retains this sign. Eden-street, which is the first turning from the New-road on the west side of the Hampstead-road, was built on the site of the gardens. Hogarth has introduced this tavern into his picture of the "March to Finchley," and Broughton and Slack exhibited here their pugilistic skill. It was at one time well and reputably attended, but the Gooseberry fair in Tottenham-Court-road brought together so many persons of the lowest class that early in the eighteenth century it had obtained a very ill name as a resort of vicious characters, and soon after the fair in 1730, seven footpads were taken at this place. The "King's Head," to which Miss Morris was taken against her will by one Russel, was close by the "Adam and Eve." For assisting in this abduction, Mary Hendron and Margaret Pendergrass were hanged at Tyburn in May, 1728.

The notorious James Dalton was taken prisoner at the "Bull's Head," Tottenham Court-road, for the robbery of Dr. Mead by stopping his coach in Leather-lane, Holborn, in December, 1729. The man committed above fifty robberies in and near London, and was evidence against Jonathan Wild and Blueskin, but at last he got his deserts, and was hanged at Tyburn on May 12, 1730. The "Farthing Pie House," New-road, at the corner of Norton-street, was so called because mutton pies were sold there at that low price. It was afterwards called the "Green Man." In a pond near the house, Mr. Huddle, the landlord, found the trunk and limbs of a Mr. Hays, wrapped in two blankets, on March 26, 1726, and shortly after the murdered man's wife, who committed the crime, was burnt at Tyburn, as mentioned before. The house was visited by many opulent freeholders, and Wilkes frequented it to obtain votes when he was a candidate for the county of Middlesex. The painter Wilson often played skittles here.

The "Rose of Normandy" tavern, gaming-house, and bowling-green was a very old place of entertainment, joined to the better known Marylebone Gardens. Long's bowling-green, at the "Rose," at Marylebone, is mentioned in the *London Gazette* for January 11, 1691, as half a mile distant from London, and in 1746 robberies were so frequent, and thieves so desperate, that the proprietor of the gardens was obliged to have a guard of soldiers to protect the company to and from London. Sheffield, Duke of Buckingham, is said to have been a constant frequenter of the place, and Lady Mary Wortley Montagu is supposed to have referred to him in her line:—

"Some dukes at Marylebone I owl time away."

The gardens are also made by Gay the scene of one of Macheath's debauches in the "Beggar's Opera."

The taverns and tea-gardens of Paddington and Bayswater were long in high repute. The "White Lion," the "Red Lion," the "Pack-horse," and the "Wheatsheaf," were all old houses, and with the latter tradition couples the name of Ben Jonson. Knightsbridge again, as the chief entrance to London, was well supplied with inns. These places were many of them favourite resorts by day, but at night they were frequented by highwaymen, and a MS. annotator of Norden's "Speculum Britannia" suggests that "no good man walk there too late unless he can make his party good." Knightsbridge was a sort of Gretna Green of the seventeenth and eighteenth centuries, and the couples who were yoked together were excellent customers to the taverns of the place. The "World's End" is referred to by Pepys, Congreve, and many of the old dramatists. "Jenny's Whim" was a favourite resort of a rather later date. It was on the site of St. George's-row.

The "Mulberry Garden" at Pimlico, which stood on the site of Buckingham Palace, was a favourite place of entertainment in the reign of Charles II., where the gay world were fond of spending their evening hours. The most interesting recollection of it to us, however, is that of John Dryden sitting there eating the tarts he loved.

We must now bring this notice of suburban inns to a close, not from lack of materials but from lack of space, because an account of all the inns that once surrounded London would fill a volume rather than an article. We will, however, mention in conclusion two inns of much interest at Fulham. The "Golden Lion" was erected about Henry VII.'s reign, and in it, according to local tradition, Bishop Bonner lived for a time. Tradition adds that a subterranean path communicated with the palace. At the "King's Arms" a party of Londoners are said to have taken refuge at the time of the fire of London, and that event was commemorated at this house on the 1st of September for many years.

RUSSIA, KHIVA, AND ART PROGRESS.

It would be difficult to find an artistic and architectural problem more curious than that of the Russian one as it now is. Mr. Cobden travelled, as is well known, over the whole of Europe, for the purpose of instructing the world in the principles of free trade, and seems to have been more especially interested in Russia. Russia is in what may be conveniently termed a *middle age* state of progress. In no other country in Europe can we find such another parallel to our own Middle Ages. In this island, now-a-days, so different from the past, no Peter the Hermit, nor Thomas à Beckett, could hope to find many sympathisers or helpers; nor can there be any possibility of "building cathedrals" on a *great* scale as of yore. The feelings of men have changed, and the wealth of building has gone into other channels. But in Russia, as Mr. Cobden has noted, the whole nation is yet in the fervour of church building, and no small portion of the national industry is employed in the making of silver and gilt church ornaments, in the casting of statues and columns, in the burnishing of domes and cupolas, and in marble carving for the "ornamentation" of cathedrals and churches; and, he adds, that the most gorgeous products of the Russian looms are destined for the hangings of altars and for the vestments of priests. We need say nothing at present of the art-style in which, or from which, these things are executed. Some future world's exhibition may perhaps show us typical examples of those curious things—of the past still in the present. We simply note facts.

It would seem almost impossible to transport oneself into a distant time so as to thoroughly realise it, and though so much study has been given to the "Middle Ages," yet is it all but impossible to understand the intensity of feeling which brought into existence those great cathedrals and churches which nowadays, in architects' offices, form the "precedent" by which to go to work, and without whose guidance and help nothing well could be done! But in Russia this is, in reality, all now going on, in a natural way. Books of precedent can be done without, and the new church would seem to grow, naturally, out of the one last built, and Mr. Cobden, even with his somewhat hard commercial eye, could not but be struck with the individuality of some of the work done. One of his building accounts is curious. He saw by the side of a great church, "sparkling with ornaments," at Nishni Novogorod, where the Great Fair is held, a very simple, unpretending mosque, so entirely without ornamental details, and so *plain*, that he could not but ask his Mahometan guide how it was, with but whitewashed walls, and without fixture or furniture of any kind but the green floor-cloth and pulpit of wood. The answer he got was, "Why should we have *any* ornament *here?*" It must be indeed something not a little curious to see a building going on from pure necessity alone, and with not only no borrowings from fashionable surroundings, but all going on in absolute opposition to them all, and *per se*.

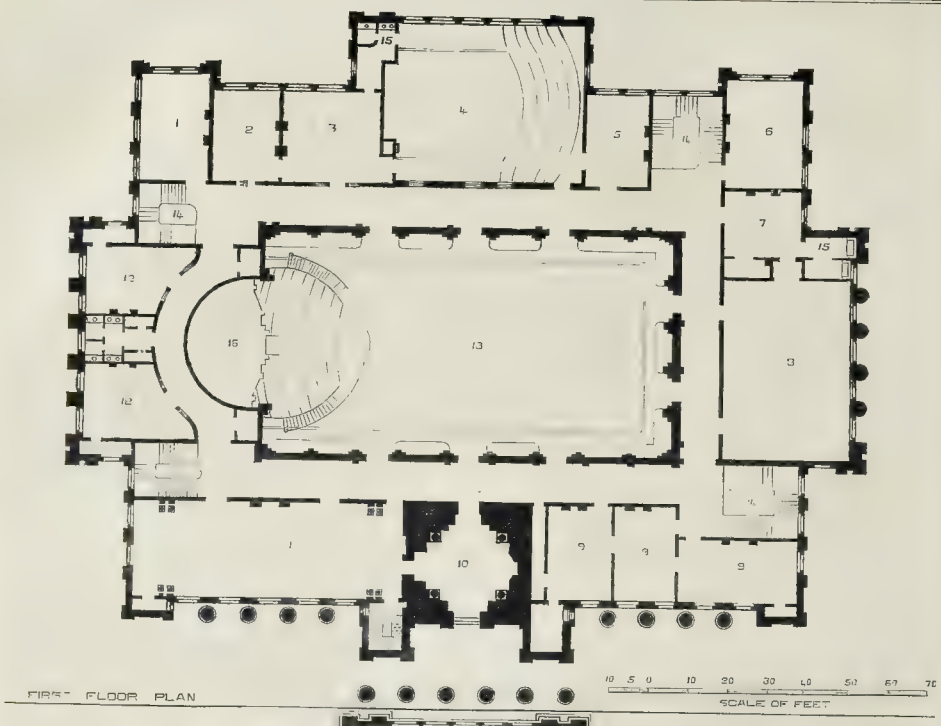
We can hardly imagine a place anywhere wherein the art of it can be in a more puzzling state than in Russia. The Middle Ages in the present! All sorts of experiments are said to have been made by the late Emperor to foster this and that manufacture, and Mr. Cobden noted that no country in the world ever suffered so much from attempts to force a manufacturing system foreign to it into artificial life, as in Russia. Nowhere else has the experiment been made on so large a scale, upon a community so unprepared for the experiment. It is indeed wonderful to think how persistently some men will go on in error. Art-manufacture now well-nigh rules the world, and the Russian has been trying, by dint of machinery of English manufacture, to do that which it would almost seem England alone can do. All those miracles of mechanism which a cotton-mill alone can exhibit are here to be seen, borrowed from England, by the side of other machinery of the most primitive design and construction. The ploughs are on the model of those in use in the days of Cincinnatus, and the scythes and reaping hooks may have been the instruments of the ancient Scythians. What a curious thing it would be to see a nation working out its own capabilities in its own way *only*. Russia, like all other countries, has its own *natural* art industries, leather work, coarse linens, cordage, coarse woollens; and, not least, articles of *wood*, in the manipulation of which the Russian is not a little original and ingenious. The ingenuity of the common people in the working of wood, says Mr. Cobden, is truly remarkable. Every nation to its own individuality must surely be the guiding light of the future. It is by the working out of its own special capacities and individualities, that nations, artistically, are to "progress," and not by the transplanting of exotic productions into them. In Russia this is to be noted in a most remarkable degree.

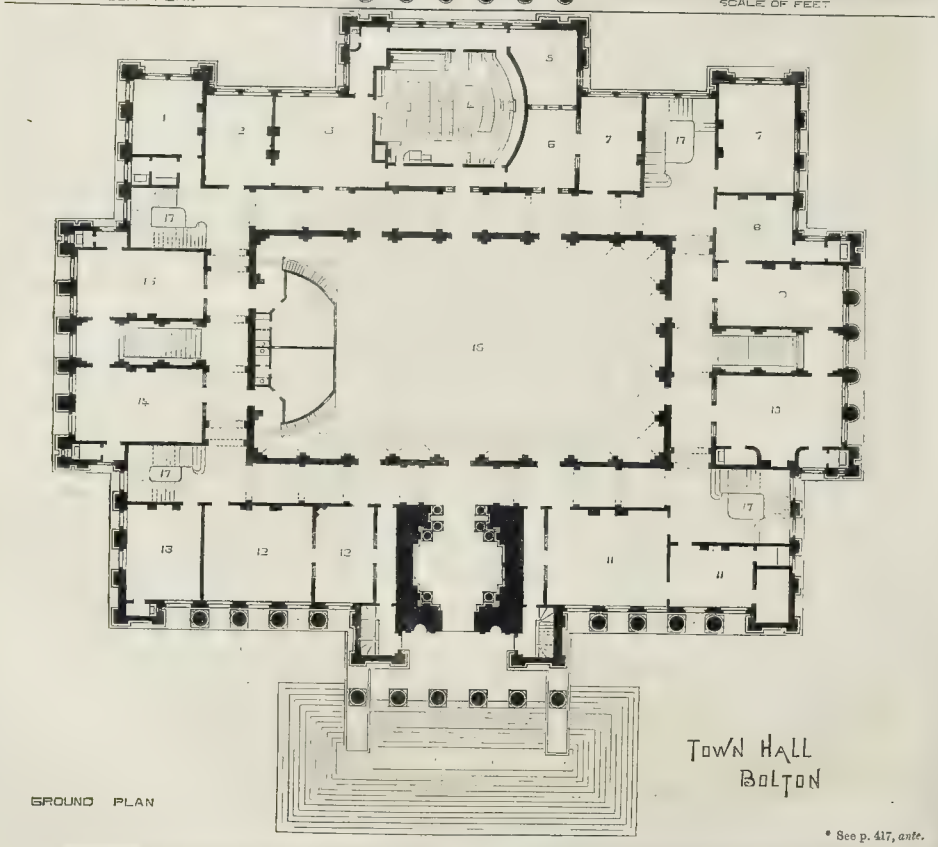
And, again, would there not seem to be a power peculiar to itself in Russia, to elaborate an art and an architecture of its own. What a pity it is that all governments are above noticing such matters as these. It was the steady aim of the late emperor to "improve" his people out of themselves,—to *borrow* from other nations, especially from England, all he could; and never before, perhaps, was so much capacity and wealth thrown away in the vain attempt to make men other than what nature made them. Mr. Cobden laments this, as well he might, and points out how well the Russian can do his *own* work, and how painfully he does the work which is artificially forced on *him*,—his own work in his own materials, that is.

To go but a step further with this singularity of the Middle Ages in the present. Russia, says Mr. Carlyle,—great, silent Russia, without, as yet, a voice,—nought but the *voice* of its cannon, and the noise of the tramp of its Cossacks,—what *will* it say, when it does speak? Well, we must patiently wait. But at least we may *see* what Russia does, and there can be no sort of mistake or ambiguity about it. Russia is progressing, and is going on further and further, and the curious artistic question is,—of course, looking steadily at art,—What is Russia taking into those distant regions, and how far will it oust out of existence what it finds of original matter, and what will it put in the place of it? Khiva is further off by a long, long way than the Middle Ages. The "walled town" and its strange ways take us almost as far back as the days of old Canaan, so wonderfully do things continue in the far East! Will Khiva gain anything through Russian "occupation," and *what* will it gain?

CONVENT CHAPEL OF THE ASSUMPTION, KENSINGTON-SQUARE.

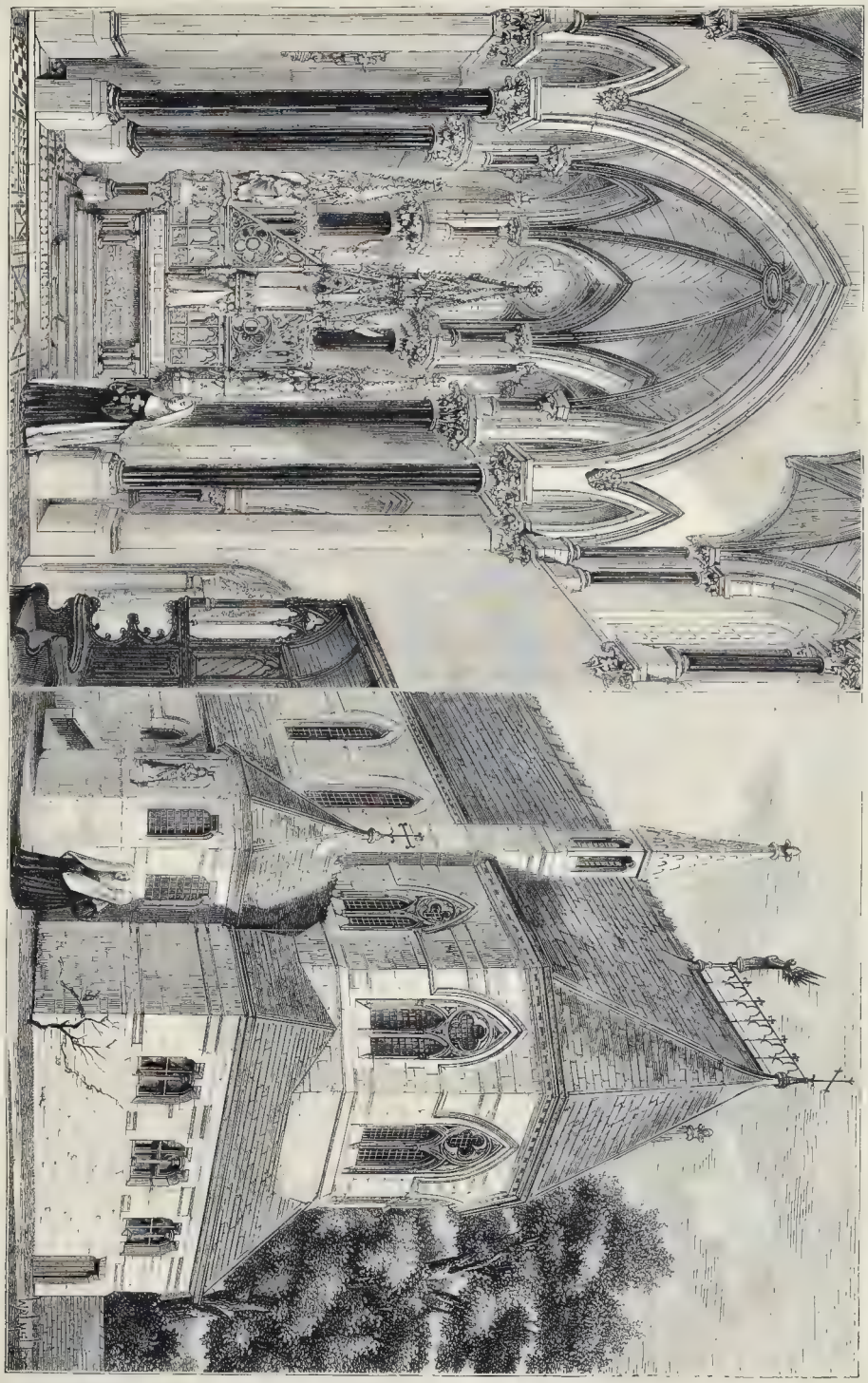
We give an illustration of the chapel of the Convent of the Assumption, Kensington-square. The plan consists of a nave, 27 ft. wide, without aisles, lighted by a lofty arcaded clearstory of single lancets, with a barrel-roof rising from half-vaulting over the clearstory windows. This portion of the church is devoted to the nuns' choir, and accommodates at present the young ladies under their tuition, but whom it is intended to place hereafter in the ante-chapel. Beyond the choir extends the chancel, 20 ft. deep. A simple arcade, carried on slender polished granite shafts, surrounds the high altar; and above this rises a vaulted ceiling in polished woods of two colours. To the right of the chancel extends a small apsidal chapel, and to the rear are arranged sacristies for the almoner and the sisters. At present, these portions of the design alone are finished, but it will combine, when complete, a tribune at the end opposite the altar for strangers, and a lofty bell-turret. It is, moreover, hoped shortly to replace the present temporary altar, by one, as shown in our drawing, in Caen stone and alabaster, the altar itself and tabernacle being in silver parcel-gilt, and enamelled and jewelled. The entire cost of the buildings, as at present completed, has not exceeded 2,700*l*. The contractors for the work were Messrs. Jackson & Shaw, of Earl-street, Westminster; the carving having been executed by Mr. Earp, of Lambeth; and the ornamental metalwork supplied by Messrs. Hart & Peard. The architects are Messrs. Goldie & Child.





TOWN HALL
BOLTON

* See p. 417, *ante*.



CONVENT CHAPEL OF THE ASSUMPTION, KENSINGTON SQUARE, LONDON.—MESSRS. GOLDIE & CHILD, ARCHITECTS.

SMOKING AND THINKING.

At an artistic symposium not long ago we observed three or four young gentlemen working hard for architecture, not one of them yet of age, who were smoking "like furnace," to misuse an expression of Shakspeare; and the question occurred to us, "Does tobacco impair the thinking faculties? Smoking is a habit so common that this inquiry may excite some surprise. Since tobacco has got into literature, the praise of the pipe has been both sung and said, and not a little fine writing has been expended in eulogy of it as the solace of the weary brain, and the companion of the thinker in his meditative hours. The very frequency of the practice gives interest to the inquiry, and we propose to lay before our readers some data which will enable them to answer the question. And, first, it must be recollected that whatever theory may be held as to ultimate causes, the act of thinking is a mechanical one, dependent for its due performance upon certain physiological conditions. The brain is the instrument of thought, and is a highly complex machine, of which the blood is the motive power. The process of thinking destroys a certain portion of the molecular structure of the brain, which has the power of repairing this waste by selecting appropriate matter from the vital fluid with which it is at short intervals regularly bathed. Hence it will be apparent that the healthy condition of the brain depends upon the quality of the blood, by and from which it is sustained. That which injures or enfeebles the blood, must, as a matter of course, affect the health and activity of the brain. If, then, we ascertain the physiological effect of tobacco upon the life-fluid, we shall be in a fair way for deciding the question, especially if we find individual cases confirming the views thus arrived at. There is nothing stronger in medical evidence than the agreement of physiology and pathology.

Dr. Richardson has so clearly explained the influence of smoking upon the blood, that it will be best to quote his graphic account. His scientific eminence entitles his evidence to respect, and lovers of the weed must recollect that it is a smoker to whom they are listening:—"On the blood the prolonged inhalation of tobacco produces changes which are very marked in character. The fluid is thinner than is natural, and in extreme cases paler. In such instances the deficient colour of the blood is communicated to the body altogether, rendering the external surface yellowish, white, and puffy. The blood being thin, also exudes freely, and a cut surface bleeds for a long time, and may continue to bleed inconveniently, even in opposition to remedies. But the most important change is exerted on those little bodies which float in myriads in the blood, and are known as the red globules. These globules have naturally a double concave surface, and at their edges a perfectly smooth outline. They are very soluble in alkalies, and are subject to change of shape and character, when the quality of the fluid in which they float is modified in respect to density. The absorption, therefore, of the fumes of tobacco necessarily leads to rapid changes in them; they lose their round shape, they become oval and irregular at their edges, and instead of having a mutual attraction for each other and running together, a good sign of their physical health, they lie, loosely scattered before the eye, and indicate to the learned observer, as clearly as though they spoke to him, and said the words, that the man from whom they were taken, is physically depressed and deplorably deficient both in muscular and mental power."

Tobacco modifies the circulation in the brain, as in other portions of the body. Hence, it would be remarkable indeed if it did not exercise some influence upon the mechanism of thought. "A sincere, self-observing smoker cannot fail," says M. Meunier, "to recognise that tobacco creates a new nature, more disposed to dreaming than action." Although a great smoker himself, he considered the habit was inimical to the national mind. His frequent diatribes against this *mort aux peuples* excited much raillery; but the habit of twenty years was long too strong for him. So close was the connexion between work and smoke with M. Meunier, that the amount of intellectual labour he had performed was chronicled by the extent of his consumption of tobacco. When, at last, after many fruitless attempts, he put his conduct in harmony with his opinions, it required several weeks of undivided attention to break the chains of habit which bound him. The mode by which nicotine acts upon the blood-vessels explains the apparent contradiction that it should be able to excite into momentary activity an organ which it has enfeebled and stupefied. The excitement and over-activity, which it causes in the contractile apparatus of the walls of the blood-vessels are quickly followed by a general fatigue which is only a modified paralysis. Thinking, as we have seen, is closely related with the cerebral circulation. When, by continual usage, the muscular tissue of the blood-vessels has become gradually benumbed, the blood, in place of its natural rapid flow, circulates slowly and sluggishly, and the functional energy of the brain is diminished. But with a new exhibition of the stimulant, the muscular contractility is again stimulated, the circulation becomes quicker, the brain, abundantly and regularly bathed by the life-flood, takes up again its functions, the brain-power increases, ideas flow with greater rapidity; but the activity thus produced cannot last. With this stimulation disappear the brilliant results which it had produced, and the organ falls into a relaxed condition, from which only increased doses can temporarily rescue it.

One of the results upon the brain is the loss of memory. Many authors have noticed this fact.

The case of l'Abbé Moigno, the celebrated editor of *Les Mondes*, is curious. He had often been in the habit of taking snuff, which had always led to prejudicial results. After various temporary renunciations, he had returned to its use. In 1861, whilst engaged in some mathematical labours, he took from twenty to twenty-five grammes daily, and found himself continually having recourse to the snuff-box. The effect was a rapid extinction of the faculty of memory. He had learned several languages by their root words, of which he knew from 1,200 to 1,500 of each tongue, but he found that his power of recalling these words was gradually diminishing, and recourse to the dictionary became each day more necessary. Struck with this fact, he resolved to abandon the *tabatière* and cigar. Writing after six years' experience as a non-smoker, he says,—"It has been for us the commencement of a veritable resurrection of health, mind, and memory; our ideas have become more lucid, our imagination more vivid, our work easier, our pen quicker, and we have seen gradually return that army of words which had run away. Our memory, in a word, has recovered all its riches, all its sensibility. . . . . That tobacco, especially in the form of snuff, is a personal enemy of memory, which it has destroyed little by little, and sometimes very promptly, cannot be doubted. Many persons with whom we are acquainted,—M. Dubrunfaut, the celebrated chemist, for example,—have run the same dangers and escaped them in the same fashion, by renouncing tobacco, which we do not hesitate to say harms the greatest part of those who employ it, since for one smoker or snuffer who uses it there are ninety-nine who abuse it."

Memory depends upon the vigour and health of the nervous system; it is likely to be impaired by whatever causes unhealthy excitement and nervous waste. Hence if the smoker's memory fail it may be considered as one symptom of general injury of the nervous centres, from which arise other ills. The perceptive faculties become coarser, and this leads to hallucinations. Blatin quotes from Ehrhart some curious cases of this nature. M. X., forty-six years old, nervo-sanguine temperament, and in apparent good health, had often experienced embarrassment in speech and motion after indulgence in tobacco. One fine day in the country, when the air was calm, and the sun was shining brightly, he was astonished to see a heavy rain-shower which appeared to be driven towards him by a violent wind. He extended his hand. No drops were falling, his clothes were quite dry, but at the same moment he was struck with violent palpitation. He threw away his cigar, the violent beatings of his heart ceased, and the vision disappeared. Many times this phenomenon recurred. He abandoned tobacco, and the accidents quickly disappeared. Thinking himself perfectly cured, he commenced again to smoke, but the palpitations and visions reappeared. Complete abstinence was his only safety.

The step from temporary hallucination to chronic lunacy is not very great, and we find on record the case of a man who became insane, and whose recovery was due to a lucky accident which barred him from access to his usual indulgence. Druhen narrates another noteworthy case. A middle-aged man, in good health and of steady habits, was sent by his employer to Paris, charged with papers of considerable value. The importance of the trust preyed very much upon his imagination, and led to an attack of melancholy mania. He was under medical treatment about three weeks, during which time his usual desire for tobacco disappeared. On his recovery he again commenced smoking moderately. A few months after another attack commenced, and he began to talk once more of the (imaginary) risks and dangers he had encountered in his journey to Paris. Druhen saw that he was upon the brink of insanity, and his first prescription was "No tobacco." Under this *régime* the man has since enjoyed the best health.*

These facts, although curious, are not entirely decisive, for in judging by individual cases there is always a risk of mistaking the exception for the rule. There are, however, data of a more absolutely convincing nature which we commend to the careful consideration of young smokers and their parents.

In 1855 M. Bertillon divided the 160 pupils of the Paris École Polytechnique into smokers and non-smokers, with a view of testing this question. The results in the examinations of the twenty who stood highest, and those next to them, have been thus stated:—

Smokers.	Non-Smokers.
6	14
10	10
11	9
14	6
13	7
15	5
16	4
17	3
102	58

An examination of this table will show that whilst the non-smoking pupils exhibit a steady upward tendency, the contrary is the case with the smokers. Although the majority in numbers, they were the minority in intellectual attainments. The contrast is most instructive, and demonstrates conclusively the deadening influence of this popular narcotic upon the functional activity of the brain. If tobacco were, as its apologists sometimes claim, the handmaid of thought, a very different result must have ensued. Dr. Murray, of Newcastle, who is not an opponent, but a defender of smoking, says, "My own personal experience and observation among medical students, is supported by the results of examinations for law and divinity, smokers having been found behind non-smokers in mental calibre. So long ago as 1606, a medical writer said tobacco is not safe for the young, and should be called youths' bane." Sir Benjamin Brodie, from the result of experiments upon animals, affirms that the oil of tobacco acts by destroying the function of the brain. This, of course, refers to its administration as a poison; but who can think with coolness upon our youth, voluntarily sapping the vigour of their brains—the only organ in which we *excel* (?) the brute creation—and thus wearing out their nervous systems ere they have fairly entered upon the important duties of life?

It will be seen that medical science and statistics confirm by *à posteriori* evidence that which physiology would lead us to expect on *à priori* grounds. It would be folly to suppose that the brain, with all its minutely wonderful mechanism, should not be injured by continual contact with blood weakened and deteriorated—poisoned—by contact with the deadly principles evolved in smoking tobacco.

Smoking is now so common amongst persons of unformed constitutions, that the facts here detailed acquire a grave importance. If juvenile smoking continues and extends, we may look for generations endowed with weaker brains and duller intellects in a continued series of degradation. Let those who would not have our brave, bright, English lads degenerate into a race of dyspeptic dullards, warn them, as they wish for the full exercise of that power to think, which is their greatest privilege and glory, as they hope for clear heads and unclouded brains, to resist the dreamy seductions of tobacco.

Enamelled Bricks. — It is reported that works are now being erected in Pittsburg to manufacture pressed bricks with enamelled facings. The enamel is made of various colours, to suit the tastes of architects or builders, and is impervious to water or acids, having a surface that can be cleaned like glass.

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* "Druhen, du Tabac," 1867, p. 56.

THE SALUBRITY OF HOBART TOWN, OR HOBARTON, TASMANIA.

AN important paper "On the Climate and Vital Statistics of Tasmania," by Dr. E. Swarbreck Hall, Fellow of the Royal Society of Tasmania, and an honorary member of several London societies, has been printed by the Colonial Government, along with certain tables, being, as the general title states, the "Results of five years' Meteorological Observations for Hobarton, with which are incorporated the results of twenty-five years' observations previously published by the Royal Society of Tasmania, and completing a period of thirty years."*

The paper by Dr. Hall gives the results of his long medical experience in the colony; the facts and figures, as he urges, "establishing a health character for the climate not to be surpassed by any colony under the British flag." Hobarton, it appears, is annually becoming more and more a sanatorium for invalids from the other Australasian Colonies and India.

"No city," says Dr. Hall, "could be more advantageously situated on sanitary grounds, but man's care has so far done little to obviate those hygienic drawbacks which the concentration of a city population will always produce, whatever may be the climatic and local advantages, unless special care be taken. The ozone table shows how pure the air is generally. Of records of this kind I only know one other place in the world, of which we have ozone returns, which can compete with Tasmania for aërial purity,—that is Madeira; and the registers for it available are not nearly so extensive as for Tasmania."

The city is about two miles in length and a little less in breadth, and the population cannot be considered dense; in fact, a great proportion of the houses stand isolated in their own grounds with gardens around. By the Census of 1861 there were, on the population of the whole island, 5·12 persons to every inhabited house; the Census of 1870 includes stores with houses, so that a similar calculation for that year cannot be made; but the houses in Hobarton have increased in the nine years' interval more than the inhabitants. From visitors, and the vessels in port, the mortality of Hobarton is abnormally augmented considerably. Dr. Hall gives a notable list of persons in the colony still living, though more than 100 years old. One old lady, 104 years of age, who is known to the Doctor, was in the habit of riding over the country, Peruvian fashion, till she was 100.

Dr. Hall, by the way, gives an instructive instance of the prevalence of typhoid fever in the Queen's Asylum so long as bad arrangements as to the removal of sewage prevailed and the disappearance of it on the alteration of these arrangements.

* Compiled from the Papers and Proceedings of the Royal Society of Tasmania. By F. Abbott, F.R.M.S. Barnard, Government Printer, Hobart Town.

CLEANSING AND VENTILATION OF THE LIVERPOOL SEWERS.

IN the local Health Committee, Mr. Deacon (the borough and water engineer) has presented a printed report on the condition and ventilation of the sewers of the borough. With reference to the removal of deposits, the report stated, that since August, 1871, when the work was systematically commenced, the length of sewers cleansed had been 25 miles, at a cost of about 200*l.* per mile. The work of cleansing the remaining 14 miles, all much in the same condition, would occupy about fourteen months, and the cost was estimated at 5,000*l.* The total estimated cost of cleansing all the sewers once would be 13,400*l.* It had been found, however, by a large number of examinations lately made, that the deposits removed within the last eighteen months were, in most cases, accumulating again, often rapidly, and the detailed information obtained led the engineer to the conclusion, that while, at the present rate of cleansing, the work would not be performed once in less than five years and a quarter from the commencement, in 1871, at an average cost of about 2,555*l.* a year, at the end of that time it would cost at least 2,000*l.* a year to maintain a reasonable standard of freedom from deposits. Assuming the average expenditure of 2,555*l.* per annum, for five years and a quarter from the year 1871, to be inevitable, and that when the proposed works had been carried out, an expenditure of 750*l.* a year would be necessary to maintain the sewers in good condition as regards deposits, then capitalising 1,250*l.* per annum, *i.e.* the difference between the 2,000*l.* and 750*l.* per annum, it was found that 25,000*l.* might be expended in the works proposed on economical considerations connected with cleansing alone, and altogether apart from other sanitary aspects of the case.

After alluding to the various plans of ventilation which had been considered, the engineer gave it as his decided opinion, that the death-rate, so far as it was influenced by emanations from the sewers, would invariably be reduced by opening the sewers freely by shafts in the streets, thus preventing the passage of sewer air into the houses. He recommended that from every soil-pipe connected with water-closets in houses, there should be carried up to a point above the roof of the house a pipe not less than 4 in. in diameter. In districts where water-closets of this kind exist, the draught would then be entirely down the street-ventilators and up the soil-pipe shafts; the private drains as well as the sewers would be thoroughly ventilated; and the total movement of air would be greater than could be attained by any other means. Such work would, of course, have to be performed, so far as the private shafts were concerned, at the cost of the house-owners. The report concluded with a summary of recommendations.

The cost of thorough ventilation of the sewers throughout the town is estimated at 18,000*l.*

PROVERBS FOR GENERAL CIRCULATION.

THE present age is very much shocked at Galileo's treatment, but another age will be equally shocked at the treatment of more modern Galileos.

Take care that the man who really furnishes the nation with great ideas has the credit of them.

There are pick-brains as well as pick-pockets.

The experience of a collector is, that the cleverest men seem to have the least money. Grateful country!

If the tiger fails in his pounce, the deer escapes.

The skilful will fence with and parry a deadly thrust.

A thoroughbred dog will not yelp, even if you pluck him up by the ear.

A snarler will be sure to set other dogs snarling, and perhaps biting.

If you mean to bite take care you do not miss your mark.

Every desire is a viper in the bosom, which while he is still he is harmless, but which kindled may sting.

Resolve and keep your resolution, choose and pursue your choice.

Long habits of idleness and pleasure are hard to be cured.

Depravity is not easily overcome. Resolution will sometimes relax, and diligence will sometimes be interrupted, but never despair of ultimate success.

Throw life into a method, that every hour may bring its employment and every employment have its hour.

Vanity makes one mind nurse aversions and another actuate desires, till they rise by art much above their original state of power, and become despotic.

Compare what you have done with what you might have done.

Keep your friendship in constant repair.

A great man will never be a disappointed man.

Little men are for ever impeaching the great.

Love is not love that alteration finds, or bends with the remover to remove.

We are all endeavouring to walk, dance, or balance ourselves upon tight-ropes, and the higher these are stretched, the more numerous the spectators.

If well balanced you will walk erect and be in less danger of falling.

The English are apt to mistake magnitude for grandeur, and to think they are doing wonders, when they are only increasing the dimensions of trifling and commonplace things.

Beware of substituting quantity for quality in education.

The moral and physical worlds endure on the co-operative system. Man cannot avoid co-operation; his only alternative is to co-operate for good or for evil.

In an age of mediocrities a man a trifle higher than his fellows is often mistaken for a great man.

One great impediment to a rapid dissemination of new truths is, that a knowledge of them would convict many sage professors of having long promulgated error.

A man may be so much of everything that he is nothing of anything.

A man may learn to ride several hobbies at a time, but it will prove more astonishing than useful.

RESISTANCE OF WOODS TO STRAIN.

PROFESSOR R. H. THURSTON, of the Stevens Institute of Technology (U.S.), communicates to the *Journal of the Franklin Institute* a description of an apparatus devised by him for determining the torsional resistance of materials, and also the results obtained by submitting specimens of different woods to experiment. By mechanism the force producing torsion is transmitted through the test-piece, and moves a pencil which traces upon paper a curve the ordinates of which are proportional to the torsional moment, while its abscissus represents the amount of torsion to which the specimen has been subjected, thus indicating the relative stiffness, strength, and resilience of the material experimented upon very perfectly. The test-pieces were seven-eighths of an inch in thickness at the middle or smallest part. Some of the conclusions drawn from the results are as follow:—White pine yields quite rapidly as the torsional moment increases. The maximum strength of the test-piece was 15½ foot-pounds, and it was twisted completely off at a total angle of torsion of 130°. The substance is thus shown to have little resilience. Yellow pine has much greater strength, stiffness, and resilience. The sap-wood is equally stiff with the heart-wood, but sooner passes its limit of elasticity. Spruce is less stiff than white pine even, but possesses greater strength and resilience, its moment of resistance reaching 18 foot-pounds and twisting through a total angle of torsion of 200°. Ash seems to be weaker and less tough than is generally supposed. Its most striking peculiarity is its very rapid loss of strength after passing its limit of elasticity. Spanish mahogany is very stiff and strong. It is deficient in toughness and resilience, losing its power of resistance very rapidly after passing the limit of elasticity. White oak has less torsional strength than either good mahogany, locust, or hickory, but is remarkable for its wonderful toughness. It passes its limit of elasticity at 15°, but loses its resisting power very slowly. The latter remains unimpaired to a torsion of 70°, and yields completely at 253°. Millwrights are evidently correct in holding this wood in high esteem for strength, toughness, and power of resisting heavy shocks and strains.

THE GOVERNMENT AND IMPROVED DWELLINGS.

AT the adjourned discussion by the Special Dwellings Committee of the Charity Organisation Association on Mr. Storr's motion in reference to the State assisting in providing improved dwellings for the industrial classes, the following modifications of the original motion were adopted:—

"That as the extensive clearances of late years in London, whereby overcrowding has been so much aggravated, have been in a great measure produced by the compulsory powers conferred by Acts of Parliament, similar compulsory powers should be given for acquiring sites in districts mainly occupied by the industrial classes, in which the ordinary sanitary requirements are found to be impracticable, in order that they may be laid out for building proper dwellings for the same classes on a comprehensive plan.

That pending the creation of a central municipal Government for London, it is expedient that the Corporation of London and the metropolitan Board of Works should be empowered, either separately or conjointly, to collect information as to the parts of London most requiring reconstruction, and to apply to Parliament to acquire sites in such parts compulsorily or others in suitable localities by agreement, and gradually to dispose of them to companies and individuals, under proper restriction, for the erection of dwellings for the industrial classes, and for power themselves to erect such dwellings to a limited extent in case it should seem to them expedient.

But that in any Act for the general government of London, provision should be made for the immediate transfer of all such powers, and of all assets and liabilities acquired or incurred under them to whatever governing body may be constituted."

The committee then adjourned over the Whitsuntide holidays to Wednesday, June 11*th*.

PROPOSED STATUE OF SIR WILLIAM TITE.

THE Chelsea vestrymen have had under their consideration a proposition from Sir Charles Dilke, bart., the member for the borough, addressed to the chairman of the Board, as follows:—

"Dear Mr. Livingstone,—I think that, as Sir William Tite was the best known of the originators of the idea of the Chelsea Embankment, some sort of memorial to him might, with propriety, be set up there. If this suggestion meets with the approval of the vestry, I should, as a parishioner, well acquainted with Sir William Tite, both in his public and private capacity, be glad to be allowed either to contribute 100*l.* for the construction of a mural granite memorial drinking-fountain, if the Chelsea Vestry could find a suitable site, and decide to erect one, or as I believe the Metropolitan Drinking Fountain Association contemplate replacing the detached fountain which formerly stood at the bottom of Oakley-street, I would give 100*l.* to cover the additional expense which might be caused by constructing such detached fountain in a memorial shape, and inscribing Sir William Tite's name thereon. I am, &c., CHARLES W. DILKE.

A. Livingstone, Esq., Chairman of Chelsea Vestry."

The Chairman remarked that the offer of Sir Charles Dilke was a very generous one, and he trusted the vestry would take action in the matter.

Mr. Birch said a preliminary meeting had already been held upon this subject, and that meeting considered Sir William Tite had done much for the parish and that great improvement the Chelsea Embankment. The Chelsea Embankment was entirely due to Sir William Tite's exertions, and the meeting he referred to were unanimous that a memorial should be erected to so great a benefactor to the parish, and so eminent an architect. He would be glad to move that 100 guineas be devoted towards a memorial of Sir William Tite, and he was quite ready to give his five guineas to the same end, and he was confident other members of the vestry would follow his example. He would also move that a reply be sent to Sir Charles Dilke, M.P., thanking him for his offer, and asking him if he would allow his subscription to go with others which would be collected, in order that a statue should be erected to Sir W. Tite on the Chelsea Embankment.

Mr. Cox, builder, seconded the motion; and after an amendment had been proposed and lost the original motion was carried by 27 to 6; and Mr. Birch then moved that at the next vestry the sum of 100 guineas should be appropriated for a monument to Sir William Tite, and a committee formed to collect further subscriptions and to carry out the design; and Mr. Lahee, the vestry clerk, cheerfully consented to act as hon. secretary.

In connexion with the above, it is stated that the Members of the Metropolitan Board of Works are also taking action, so that it is highly probable the late Sir W. Tite will have a statue.

THE LEICESTER MUNICIPAL BUILDINGS COMPETITION.

A CERTAIN number of architects have condescended to respond to the second invitation from the authorities of Leicester for designs for Municipal Buildings. We hold to the opinion we have before expressed, that the author of the design selected in the original competition ought, in justice, to have been employed to prepare designs to meet the altered site and arrangements.

THE NEW COURTS OF JUSTICE.

MR. GREGORY, in the Commons, has called the attention of the House to the delay in the construction of the New Courts of Justice, and moved that such delay was prejudicial to the administration of the law, and to improvement in procedure.

Mr. Ayrton, in course of a long speech, said it was not until the 27th of February, 1873, that the Office of Works was put in a position to invite tenders for the purpose of constructing the buildings. Those tenders were received on the 25th of March last; and after having been carefully considered, the very lowest of them was found, in the judgment of the Office of Works, to have greatly exceeded the sum which had been prescribed. He contended that no time whatsoever had been lost, and that there was no justification for the charge of delay. As he had pledged himself not to bring forward the estimate until the course intended to be taken had been decided upon, any hon. member would have an opportunity of taking the opinion of the House on the subject before any expenditure was incurred. He thought this was the best footing on which to place the question.

Mr. Beresford-Hope said the right hon. gentleman had given the House a very discursive and interesting lecture, but he had not met the point which had been raised. He thought that the architect had been made a scapegoat of, for the benefit of those who sought, in connexion with the new courts, only to consult their own convenience and comfort.

WHILE much disappointment is felt in consequence of the delay in providing proper courts of law, the general objection entertained in respect of the design for the principal front prevents any strong expression in favour of immediate progress. We should be false to our trust as representing the public if we were to urge the Government immediately to carry out that design. Mr. Street, by unwisely persisting in retaining an arrangement next the Strand which, if put into stone, could not fail to be unsatisfactory in effect, ties the hands of a large number who would otherwise gladly aid in endeavouring to prevent injury to the building by unwise economy.

We renew our entreaty that a model should be immediately prepared, or, if already prepared, submitted to public scrutiny.

METROPOLITAN IMPROVEMENTS.

THE Vestry of St. Marylebone are about to consummate a long-projected improvement at the east end of the parish by the continuation of High-street and Thayer-street through James-street to Wigmore-street, and so on to Oxford-street, thus clearing away a *cul-de-sac* in James-street, long a squalid dirty locality, and a source of great nuisance to the neighbourhood, and opening out a line of thoroughfare from the Regent's Park and Marylebone-road to Oxford-street. It is proposed to construct the street 60 ft. in width, and lay out the surplus land suitably for private residences of first-class character embracing all the modern requirements. The works will be commenced immediately, under the direction of Mr. Eales, architect, and an early completion of this important improvement may now be looked forward to.

The vestry have also under consideration a plan by Mr. Eales for another very great improvement at the west end of the parish, long needed, viz. the levelling up, widening, and opening out Little James-street,—or "Little Hell," as it is more familiarly called in its locality,—also Charles-street, Lisson-grove, into Devonshire-street and Salisbury-street, making a continuous thoroughfare from the Marylebone-road to New Church-street, and opening out the east end of Manning and Suffolk Places. This, with the new schools about to be erected by the London School Board in Bell-street, will be a great improvement, morally, socially, and sanitarily, and therefore most desirable to be carried into effect as speedily as possible.

ST. MARK'S CHURCH, WALWORTH.

THIS church, of which the foundation stone was laid last week, will be built in East-street, Walworth-road. The principal entrance to the church will be from the front in East-street, or what would be the west end of the nave if the building was placed with the chancel at its east end; this, however, will not be the case, owing to the shape and position of the site. Over the entrance will be four lancet windows, and above them a large traceried rose-window, 11 ft. in diameter. On the apex of the gable of the roof will be a bell turret for two bells rising to a height of 100 ft. from the ground.

The nave will be 37 ft. wide and 98 ft. long, with aisles on either side, only 7 ft. wide. This departure from ordinary proportions of nave and aisles has been adopted, in order that the stone piers or columns, supporting the arches, may not obstruct the view of the pulpit from the congregation.

The new church will contain 600 sittings in the nave and chancel, in benches, with sloping backs, and there is a space for 150 in the narrow aisles on chairs, which will be so disposed, that the pulpit can be seen from all.

The chancel will be 32 ft. deep, the choir in part nearest the nave will be 37 ft. wide, the organ will be placed in a recess at one side, and at the back of the instrument will be the vestry, about 12 ft. wide by 17 ft. long.

The sanctuary will be 12 ft. deep and 30 ft. wide; over the altar will be a 5-light tracery window.

The roof over the nave will be wagon-shaped and boarded, the height of its apex will be 50 ft.; the exterior height to the ridge of the roof will be 65 ft. As there will be no clear-story, the aisle walls will be 27 ft. high, in which will be placed lancet windows.

The nave will be separated from the aisles, by octagonal stone piers, 2 ft. 4 in. diameter, supporting pointed arches of red brick. The walls will be faced both outside and inside, with yellow stock bricks. The arches to the doors and windows will be of red brick; the dressings will be of Bath stone.

The style of architecture, of which the details will partake, is English Gothic of the Geometric period.

The contract has been taken by Mr. Thompson, of Camberwell, for the sum of 4,778*l.*; and it is anticipated that the total cost of the building will not exceed 7*l.* per sitting, including the expenses of heating apparatus and fittings for lighting. The architects are Messrs. Henry Jarvis & Son.

ST. MARY THE VIRGIN, CROWN-STREET, SOHO.

THE new chancel is now completed, and forms the first division of the work of rebuilding the old church, from the designs of Mr. R. Herbert Carpenter and the late William Slater. The proportions have been made as large as the site would permit, the clear inside width being 36 ft. The east end is in Crown-street, and the south side is next a narrow court, while the north side adjoins the lofty clergy-house. The general idea has been to support the groining on massive buttresses, with thin walls between, the buttresses showing both inside and outside, thus gaining an effect of solidity; the bays being necessarily much narrower than the span, the groining is sexpartite and domical, constructed of red bricks with stone ribs. The height from the floor to the crown is 60 ft., and to the ridge of the high-pitch roof above is about 85 ft. The walls, both inside and outside, are of red brick, with stone stringcourses, windows, &c. The eastern group of five lancet-lights are placed at a height of 30 ft. from the floor, and allow for a reredos on a grand scale, of which the central figure of "Our Lord reigning from the Tree," is being executed in white marble, by Miss Grant. The side windows on the south are coupled lancets, with a sexfoiled circle over. On the north the organ will stand, which is now in hand by Messrs. Walker, and under which the vestries are entered. A small window in the oratory of the clergy-house is arranged high up in the north-east bay. The altar-table is raised twelve steps above the level of the future nave. The steps and pavement generally are of red Mansfield and Portland stone, but inside the sacrarium the floor is Minton's mosaic; and the altar itself stands on three steps of Derbyshire and Devonshire marble, with a re-table wall behind of alabaster and marble, executed by Mr. Forsyth, as are also the sedilia. The contractors were Messrs. Gibson, of Southall, under Mr. Boulder, as clerk of works.

The rebuilding of the north side of the nave and the north aisle is already commenced, as well as the schools, which will adjoin the clergy-house and the north aisle. Mr. Gough, of Chelsea, is the contractor.

PRIZE WORKS CHOSEN UP TO THIS DATE FOR THE ART UNION OF LONDON.

From the Royal Academy.—"Gretchen Leaving Church," R. Thorburn, 150*l.*; "Missing," Miss E. Thompson, 80*l.*; "Emissaries of the Long Parliament," &c., E. Opie, 70*l.*; "Just Awake," A. Stocks, 60*l.*; "A Highland Pine Forest," F. S. Reynolds, 52*l.* 10*s.*; "A Mountain Tarn," R. Farren, 52*l.* 10*s.*; "Among the Lilies," F. G. Cotman, 50*l.*; "Hambledon Common, Surrey," A. Powell, 45*l.*; "A Creek on the Shannon," A. Hartland, 40*l.*; "A Rich Corner," W. S. Jay, 40*l.*; "Glyder Fawr," W. L. Kerry, 35*l.*; "Pleasing Reflections," N. O. Lupton, 35*l.*; "The Angler's Nook," A. J. Stark, 30*l.*; "Dawn in November," E. Jennings," 30*l.*; "Contested Authority," N. Tayler, 26*l.* 5*s.*; "The Missing Playfellow," Miss E. Clacy, 25*l.*; "December—Derbyshire," F. Foottit, 21*l.*; "The Thames at Hampton," A. A. Glendening, 20*l.*

From the Society of British Artists.—"The Ballad," J. J. Hill, 100*l.*; "The Seaside," E. J. Cobbett, 85*l.*; "A Day after the Fair," W. Hemsley, 60*l.*; "Grandad's Vanity," Wells Smith, 50*l.*; "Highland Cattle by the Side of Loch Leven, Ballaclulish," C. Jones, 45*l.*; "Sunday Morning," R. Redgrave, R.A., 45*l.*; "A Wild Night on the Yorkshire Coast," J. W. McIntyre, 40*l.*; "A Short Cut," A. F. Patten, 35*l.*; "Left in Charge," Edwin Roberts, 35*l.*; "I see you," F. Morgan, 31*l.* 10*s.*; "A Dewy Morning," T. F. Wainewright, 30*l.*; "Returning from Labour," J. Peel, 30*l.*; "St. Michael's Mount, Cornwall," J. J. Wilson, 30*l.*; "Harrop Tarn, Cumberland," A. Cottrell, 26*l.*; "Queen Guinevere," &c., Mrs. Charretie, 26*l.*; "On the Lesser Neath," J. B. Smith, 25*l.*; "Distant View of Barmouth Estuary, North Wales," B. Rudge, 20*l.*

From the New British Institution.—"Baron Munchausen relating his Adventures," R. Hillingford, 140*l.*; "The Tamar at Endsleigh," A. B. Collier, 50*l.*; "Waterfall, Vale of Neath," J. B. Smith, 31*l.* 10*s.*; "Lower Lake, Ugbrook Park, Devonshire," W. C. Jay, 25*l.*; "The Hill of Hight, North Wales," A. de Breanski, 25*l.*; "The Pandy Falls on the Mancho, North Wales," J. Godet, 20*l.*

From the Crystal Palace Picture Gallery.—"Court of the Fish-Pond, Alhambra," J. Dobbin, 30*l.*; "Returning Home," J. C. Thom, 30*l.*; "View of St. Remo," E. Myers, 20*l.*

From the Society of Painters in Water-Colours. "Early Morning Effect on Ben Nevis," H. B. Willis, 100*l.*; "Low Tide on the Shore, Tor Cross, S. Devon," Collingwood Smith, 42*l.*

From the Institute of Painters in Water-Colours.—"In Hartingcombe," the late G. Shalders, 45*l.*

From the General Exhibition of Water-Colour Drawings.—"Coming from the Spring," C. S. Lidderdale, 40*l.*; "Cornfield, Godalming, Surrey," A. Powell, 20*l.*

From the Royal Scottish Academy.—"Near Broadford, Skye," Rev. R. G. Fraser, 40*l.*; "Loch Ranza, Castle Arran," W. B. Brown, 45*l.*

ARCHITECTURE IN CHICAGO.

THE rebuilding of Chicago, since its destruction by what the Yankees are pleased to call the "champion blaze of creation," has proceeded with such rapid strides, that nearly the whole city is already restored. Night has been turned into day in the endeavour to rebuild the city; and since the last flame was extinguished, hardly a moment seems to have passed when the noise of chisel and hammer, of saw or axe, could not be heard in some of the many vast edifices that have been erected since the catastrophe.

The Americans are not to be beaten for *size* in anything. Their continent is the vastest, their rivers are the mightiest, their mountains the highest, their forests the biggest, their buildings the roomiest in the world, and their aspirations are higher and more ambitious in proportion. Then the rapidity with which they do everything is extraordinary. Surely the earth does not revolve more quickly in the new than the old world! No sooner is an idea started, than it is carried into execution. They never seem at a loss in the gravest emergency. The board which was displayed on the site of one of the burnt houses on the day after the fire, with the words, "All gone but wife and children. Energy!" roughly painted on it, is a fair specimen of the dauntless spirit that seems to animate every individual person in the nation. In one sense originality is their *forte*, but this is mainly displayed in their efforts to make money in their commercial enterprises. The man who invented "wooden nutmegs," was a genius. He who makes fresh oysters of flour paste and tapioca and salt water, is worthy of a public statue in his honour, if ever such originality deserved such a recognition.

But in matters not immediately affecting their "commerce," their supply of originality is very scanty. The style of their buildings will illustrate our meaning. The first object of an American merchant is to have a house wherein to carry on his business; his chief aim then is to have it as convenient as possible; his next wish is to have it as big as possible: no matter about its architectural appearance as long as it fulfils these two requirements. Certainly in a few of the more important public buildings, the Americans like to have a little ornamentation, but their originality in the matter of architecture seems very limited. In the May number of the *Land Owner* of Chicago, a journal "devoted to real estate interests," the world is presented with a series of fourteen of the designs which were sent in by Chicago architects in the competition for the New City Hall and Court House, for which in all about fifty plans were submitted.

The drawings represent merely the perspectives of the various buildings, so that it is impossible to judge as to the accommodation afforded inside. In this respect, however, many of the plans are very far from perfect. In regard to the lighting, for instance, in most of them many of the inner rooms are lighted by corridors, and do not receive any direct window-light. This is a great defect in such a building as a County Court House and City Hall, and is remedied in one only of the plans submitted,—and this has been selected as the most suitable. Here the plan of the building is in the form of a Maltese cross, the principal entrances being at the four extremities of the cross. Herein lies, so far as can be ascertained from the fourteen illustrations submitted in the *Land Owner*, the only original or novel idea in the design of any of the buildings. The engravings themselves are, however, executed in the worst style of art, and we must charitably suppose they do not fairly represent the ideas of the Chicago architects, though such expressions as the following, which are sown broadcast throughout the number, would lead to a very different opinion concerning their merits. Speaking of the plans, the editor says:—"Our artists have been extremely busy for the past month at work on these plans, and we present our readers in this issue with the first series of them, engraved, at great expense, expressly and exclusively for the *Land Owner*. A journal which has never yet been baffled in its endeavours to please the public certainly could not be kept out of Kentucky block, even if the newspapers of smaller circulation were forbidden to enter. We have no fear that our enterprise will not be appreciated, and that our large outlay to engrave these plans will be amply repaid by the public estimation of our work."

In another place we read,—

"There is not a building on the Continent of Europe that compares with the 'Exchange' building, on the Court House square. And what is Pitti Palace when one has seen Mr. Schweitzer's block, at the corner of Madison and La Salle streets? Buckingham Palace is a mere shed beside some of our grand buildings that were commenced in the air, and settled gradually to the earth by the accommodating Jack-screw. Could Michelangelo return to earth, and visit Chicago, he would mourn because his lost eyesight would not enable him to see that marvellous work of architect Boyington, the Pacific Hotel, and as the old man wept while running his fingers over the Torso in the Vatican, because he could not see it, even so he would burst into tears while picking his way through the narrow doors of this great architectural wonder. . . . The woodcuts in the *Land Owner* are fine. They were engraved by masters of the art, than whom no worse butchers of costly box-wood ever lived in any age, and into whose brains the spirits of all wood-choppers congregate, as soon as released from earth. . . . . We say it positively, there has never been anything produced in Europe that compares with our woodcuts."

We may be wrong, but we doubt if the majority of the engravings in the *Land Owner* are woodcuts at all. They look like the production of some patent Yankee dodge, which enables so many pages of paper to be covered with "illustrations" in the shortest imaginable space of time. If they are really woodcuts, the editor is not far wrong in stigmatising his artists as real "butchers of costly boxwood." It is impossible to judge as to the detail of the architecture. The various styles of the fourteen designs may be classed as,—Gothic, 1; Classic, 3; the others are to all appearances an agglomeration of various styles, incongruously jumbled together.

The windows are generally arranged in rows, without the least attempt at ornamentation or variety of design, just like the windows that are placed in so many rectangular holes in the walls of a Birmingham, Sheffield, or Manchester factory,—all built to let in an equal amount of light, and that is all. But, setting aside the utter unintelligibility of the detail as here represented, there is not one of them that presents in any degree what may be called an effective appearance as a whole. Novelty there is none. There is hardly a design that does not represent the following leading features:—The four corners of the square building are in nearly every case surmounted by one or more pinnacles or domes apiece. Some of the drawings represent smaller additional towers on each side of each entrance. Half of them have a tower or dome springing from the centre. In one case a column, surmounted by a winged beast, takes the place of a tower. The rest have a principal tower,—some two,—springing from some other portion of the building, all meaningless in design, and evidently piled up with the simple object of making something high. Several of these towers resemble an extinguisher, which, in some cases, has the apex cut off, and railings placed round its upper edge. A gigantic needle protrudes from the summit of one. The solitary Gothic design presents us with two weak imitations of the clock-tower of the Houses of Parliament; while the architect of one of the Classic edifices has made a long shot at the dome of St. Paul's Cathedral, aiming at the sublime, and producing the ridiculous. There is only one design that dispenses with the extrinsic aid of showy pinnacles, and presents a single tower of any merit; and this is the only building that is not approached by one or more flights of steps.

One architect would have his main entrance reached by two narrow semicircular flights of steps, guarded with railings, similar to those one sees leading from the street into the limited "area" of one of our London houses.

Such is an outline of the general appearance of Chicago buildings, and we are bound to say they are not very satisfactory. Buildings may be run up fast enough, but architecture is not to be produced at the same pace. Our words are not intended as reproof, but advice.

DROVERS' HALL AND ASYLUM.

THE first portion of this building, which is being erected on the north side of the Cattle Market at Islington, between the large buildings of the corporation now used as dwellings, is nearly completed, and will shortly be opened by the Lord Mayor.

It will, when finished, consist of fifteen suites, of three rooms each, on two floors, for aged and infirm drovers, also committee-room, &c.; and in the rear is a hall, 60 ft. by 33 ft., and 27 ft. high, intended for a reading and club-room, where the men who are occupied in the adjoining market may hold their meetings.

The interior of the hall is lighted by circular-headed windows, under an arcade formed of Pether's ornamental pressed bricks, resting on coupled pilasters of white bricks, with stone foliated caps and bases, and these again resting on a dado of ornamental tiles, executed by the Architectural Pottery Company, between a plinth and surbase of Portland cement.

The ceiling is wagon-headed in stencilled panels, and partly open-timbered, stained and varnished, each truss resting upon the coupled pilasters. A raised dais at one end will afford the opportunity for the delivery of lectures and other means of improving this class of our fellow-creatures, who need it not a little.

The architects are Messrs. Lander & Bedells, of John-street, Bedford-row; and the contractors are Messrs. Mansbridge, of Camden-town.

THE LONDON SCHOOL BOARD.

MR. CHARLES REED, M.P., chairman of the Works Committee, brought up a report to the Board, May 21st, which was agreed to, including the following as to tenders:—

"The Works Committee invited Tenders for the erection of a school to provide accommodation for 1,066 children, on the site in Rolls-road, Southwark. The following were the respective amounts:—

J. Tyerman	£8,990
W. T. Nixon & Son	8,828
W. Higgs	8,860
G. Stephenson	8,614
J. H. Tarrant	8,594
J. Kirk	8,445
Scrivener & White	8,340
Newman & Mann	8,260
B. E. Nightingale	7,968

The Board architect, however, was subsequently instructed to make certain modifications in the plans, so as to reduce the cost of the building, and a revised tender has now been obtained from Mr. B. E. Nightingale, of Albert Embankment, Lambeth, amounting to 7,718*l.*, which the committee now recommend the Board to accept. Cost of site, 1,600*l.* Cost of building per head, 7*l.* 4*s.* 9*d.*

Tenders have also been invited for the erection of a school to accommodate 1,109 children on the site in West-street, Hackney. Subjoined is a list of the amounts:—

A. Sheffield	£7,975
G. Limn	7,960
W. Shurmur	7,750
J. Sewell & Son	7,520
J. F. Sargeant	7,480
J. Perry & Co.	7,460
Wicks, Bangs, & Co.	7,390
T. Enor	7,172
Parsons, Brothers	6,998

As a tender of Messrs. Parsons, Brothers, however, was accepted last week for the erection of the Old Castle-street, Bethnal-green, school, and as a previous tender has already been accepted for the enlargement of the Hornsey-road, Holloway, school, Messrs. Parsons have decided to withdraw from this competition in order to devote the better attention to the two schools already in

their hands. The committee accordingly recommend the acceptance of the next lowest tender, that of Mr. Thomas Ennor, of 1, Devonshire-place, Commercial-road, E., amounting to 7,172*l.* Cost of site, 1,602*l.* 0s. 3d. Cost of building per head, 6*l.* 6s. 2½d."

At the Board meeting, held at the Guildhall, on the 28th of May, Mr. Charles Reed, M.P., brought up the following report, which was accepted:—

"On the 15th January last, the Board instructed the Works Committee to obtain tenders for the erection of the New Offices to be built on the Thames Embankment site. Invitations have accordingly been sent out to eighteen builders, four of whom have been unable to tender. The amounts of the tenders are as follows:—

George Myers & Sons	£21,500
Scrivener & White	20,710
Peto, Brothers	20,670
Dove, Brothers	20,675
Clarke & Bracey (late Axford & Whillier)	20,336
P. Horsman	20,311
J. Sewell & Son	20,001
W. Brass	19,825
W. Higgs	19,747
Jackson & Shaw	19,583
Newman & Mann	18,741
J. Perry & Co.	18,617
J. M. Macey	18,293
Cooke & Green	18,281

The committee recommend the acceptance of the lowest tender, that of Messrs. Cooke & Green, of Marlborough-street, Blackfriars-road, S.E., amounting to 18,281*l.* The time fixed for the completion of the building is the 31st of March, 1874. Amount of tender already accepted for excavation on the site, 617*l.*; for putting in the concrete foundations, &c., 1,575*l.*

ALEXANDRA PALACE AND PARK.

THE long-talked-of opening of the Alexandra Palace took place, as we notified it would, on Saturday last, without any ceremonial, and with less bunting than might have been used on such a bright day, and, for that part of London, so important an occasion. A very large number of persons were assembled, and a concert by eminent artists was given, which doubtless afforded pleasure to those who could hear it. This, we are bound to say, was not our case, or the case of a very large proportion of those present. In time, however, the directors will doubtless find out how to arrange the building for the conveyance of sound. The theatre, which we have already described at some length, was not put to use on the opening day. A flower-show served to brighten up part of the nave. A few good pictures and statues have been collected; and there seem to be plenty of dining-rooms and so forth for the refreshment of the outer man,—not the *inner*, as some folks erroneously say. We may have opportunities to look into the arrangements hereafter.

A view of the exterior of the building will be found in a previous volume of the *Builder*, and it is entirely the fault of the managers that we do not give a view of the interior in our present issue.

ACCIDENT IN MANCHESTER.

SIR,—A new danger menaces us in our streets. Time was when, the Iron Duke being in power, and serious opposition offered to his measures, he threatened to quell it by placing a cannon in every street of the metropolis. The threat thus made was, however, enough to provoke, as it did, more powerful opposition still, and the Iron Duke was removed, "hoist with his own petard." Since his time, Englishmen have seldom, if ever, experienced the peculiar feeling incident to "looking into the cannon's mouth" in the streets of their own towns; and in the latest instance even, which I am now about to relate, the "pleasure," if one may call it so, of that operation, was denied to the spectators mainly because they were at the time unaware that the instrument under notice was possessed of "cannonical" properties.

Those of us who happened to be in the principal business portion of the city of Manchester about three p.m. on Tuesday, May 13th, were startled out of our usual propriety by the sound of a violent explosion as of a large piece of ordnance, proceeding from the neighbourhood of Deansgate. Being market-day, a large crowd was soon collected on the spot where the "accident" had occurred, and the first circumstance which claimed attention was the removal in cabs to the infirmary of some nine persons, all of whom were burnt, some badly; and of these, one, a plumber sixty years of age, and another, a boy of fourteen, have since died of their injuries. On investigating the matter, it appeared that at the junction of St. Mary's-gate and Deansgate, where the latter thoroughfare has been recently widened and paved, the gasfitters to the corporation of the city were engaged in effecting an alteration to their street main which runs at that point under the flagging of the sidewalk. From some fault in the main itself, water collects therein, and to remedy this defect, it was proposed to attach to it a large iron tube 9 ft. long and 4 ft. internal diameter capped at both ends, and which is technically termed a "syphon pot," although it appears to partake of neither the character of syphon nor pot, but rather of a tank or reservoir for the waste water. The hole was dug ready for the "pot," which lay lengthwise in the street alongside at a distance of about 10 ft. from the hole. The caps were "luted" and screwed in position, one end being secured by four bolts only, and the "pot" was then connected with the "main gas-pipe" by means of a 1½-in. iron pipe, for the purpose of filling and "testing as to the leakage of the joints."

This was a very interesting operation to spectators, many of whom flocked around as closely as the slender single-rope barrier would permit, which was very close indeed. The removal of a screw plug in the upper side of the "pot" allowed the escape of air, which was supposed to be driven out by the inflowing gas; and when this was done to the satisfaction of the foreman, he screwed in the plug, and allowed the gas to accumulate pressure within, when, lighting a piece of tarred rope, he applied it around the joints of his "caps," and pronounced them all satisfactory. Directing a workman to disconnect the supply-pipe from the main, he jumped into the hole in the ground. The workman did as directed, and the instant the pressure was taken off, the explosion I have named takes place, forcing off the four ¾-in. bolts which held the cap in position, and projecting the cap,—itself weighing some 10 cwt.,—a distance of 40 ft. along the street, and producing the injuries to the persons (all of whom were spectators) already mentioned.

People in Manchester are asking where the common sense of the gas authorities was to permit the testing of so dangerous a contrivance in the middle of a crowded thoroughfare, at the busiest part of a market-day, to the destruction of human life and person, when the work could have been better done after the work was all fixed in position. *Accidents* have occurred before with the work of the same men as were employed here, and this should have made all concerned doubly cautious in their proceedings. Let us hope, at least, that we have seen the last improvised "cannon" in our streets. E. G.

Erratum.—In letter on "Extinguishment of Fires," for "*finest* steam fire-engine in America," read "*first* steam fire-engine in America."

CEMENTS.

SIR,—In reply to your correspondent's question in your last issue, Roman cement should have answered his purpose, though it is not ultimately so strong as Portland. It has, however, for special cases, two advantages over the latter cement—namely, that of being very quick setting, and of attaining its maximum strength in a short period.

The best Roman cement is of a brown colour, the ordinary black Roman being inferior in quality. It should set in about ten minutes.

Your correspondent should have used clean washed gritty sand, and if his Roman cement had been good, the result would have been satisfactory. EXPERIENCE.

LAND LAWS.

SIR,—Whilst the debates on the English land laws occupy the attention of our Parliament, might not Lord Cairns and Lord Selborne be pleased to remember that many highly intelligent and noteworthy witnesses in actions of ejectment relating to *mort d'ancestour* may labour under consumption,—a very general disease in Great Britain, and usually die at the age of thirty-five years, or a little later. Should such necessary evidence of life's duration be utterly ignored and forgotten by the two Houses of Parliament in so important a question of English welfare, and security for invested capital? No witness can be everliving, or always found if emigrant.

M. W. H.

COMPETITION COMMITTEES.

SIR,—If you are not tired of hearing of the tricks of competition-committees, it is perhaps as well you should be posted up with their latest doings. In the beginning of last year a body of gentlemen advertised for designs for an idiot asylum at Starcross, near Exeter, offering the munificent reward of 10*l.* for the best design. I dare say you will say no matter what treatment I receive for taking any notice of such a tempting bait. However, relying on the known straightforwardness and honour of one of the committee, I did prepare designs, which obtained the premium aforesaid, Mr. Rowell, of this town, being among the unsuccessful competitors. Now the building is about to be commenced, this committee coolly give my designs to Mr. Rowell to prepare working drawings, &c., and to carry out, although not only was he an unsuccessful competitor, but had before given the committee designs which proved unsuitable, hence their advertisement.

Newton Abbot. JOHN CHUDLEIGH, Jun.

COMPETITIONS.

School Board, Wellington, Salop.—In a limited competition for the proposed new schools to be erected at Hadley by the Wellington School Board, the plans of Messrs. Bidlake & Fleeming, of Wolverhampton, have been selected. The plans and specification have been approved by the Educational Department, and the architects have been instructed to obtain tenders.

Schools at Yeovil, Somersetshire.—There were eighteen sets of plans sent in by various architects; these were at first reduced to five, and then to two. Eventually the Board decided to adopt the plans marked "Practical," which proved to be by Messrs. Reade & Goodison. The work is, we believe, to be at once carried out under their direction.

National Health Society.—The annual meeting will be held, at 1, Adam-street, Adelphi, on the 12th of June, at three o'clock, to receive the report of the executive committee, and to elect the general and executive committees. After the meeting Dr. R. Liebreich will read a paper on "School Hygiene."

OFFICIAL ECONOMY.

SIR,—You are aware that the new Home and Colonial Offices are now rapidly approaching completion, and the masons are engaged in carefully carving and cleaning down the stone front. Will it be believed that Mr. Ayrton not only proposes to keep up the houses in Parliament-street, which are closely attached to the new building, but has actually just relet one for a dining-room and restaurant! The effect, of course, will be that the carving and stonework will be inevitably choked and stained with soot during the ensuing winter, and ten times the value of the rent obtained will be lost in permanent blackening of the building. This is economy with a vengeance.

I should think the architects would have something to say as to the First Commissioner's speech of last Friday in the House of Commons; anything more offensive than his expressions towards Sir Gilbert Scott and Mr. Street can hardly be imagined. A. B. C.

THE TRADES MOVEMENT.

Bedford.—The carpenters and joiners are agitating for an increase of wages. The present rate of pay is 5d. an hour, or 25s. per week, and it is thought by some of the men that, in view of the increased demand for labour in preparing for the Royal Agricultural Society's show next year, the scale should be raised.

Middlesbrough.—The joiners have sent a circular to their employers asking for an advance of 3s. per week, and reduction in the hours of labour from fifty-three to fifty-two per week.

Oswestry.—A strike has taken place amongst the stonemasons engaged in the restoration of the parish church. They have been receiving 28s., but now demand 30s. Their hours were sixty-seven and a half, and they ask for a reduction of one hour. The contractor declines to accede, and twenty-five hands have left work.

Birkenhead.—The stonemasons of Birkenhead and the neighbourhood have struck work for an advance of wages from 33s. to 36s. per week. Some of the employers have since conceded the request of the men. Most of the builders of Birkenhead are still standing out against the demands of the joiners, who struck for an advance of 4s. 6d. per week. A meeting of employers in the building trade (Mr. Henry Fisher in the chair) has been held in the Park Hotel, Birkenhead, to consider the demand of the masons for an advance of 3s. per week, when it was resolved to adhere to the offer made by the master masons' committee of Liverpool and Birkenhead on the 1st of May last, viz., 7½d. per hour for fifty-five hours per week in summer, or 1*l.* 14s. 4½d.; 8d. per hour for forty-six hours per week in winter, or 1*l.* 10s. 8d. per week. The secretary to the meeting was requested to communicate this decision to the operatives' association. A counter motion, that no advance be made, but that the wages remain at 33s. per week, as at present, was lost by a majority of ten to five.

Oldham.—The masons who have been out on strike for an advance of 3s. per week, have decided to go in on the terms offered by the masters, 1s. 6d. per week advance at once, and another advance of a similar amount on the 1st of August. When the whole of the concession has been obtained by them, the men's wages will be 33s. per week.

Darlington.—A dispute has been for some time pending between the Darlington joiners and their employers. The men asked for fifty hours per week at 7½d. per hour, the previous rate being 6¾d. The advance was given by a few firms, but the majority declined it, hence a large number of men have struck for the advance. The building trade is just now very active in Darlington. As the masters have previously offered 7¼d., it is thought that the difficulty, considering the small difference which now exists, will be got over.

Wigan.—An arrangement has been entered into between the carpenters and joiners and their employers, whereby the wages of the men are to be advanced from 6¾d. to 7d. per hour all the year round, 55 hours to constitute a week's work in the summer, and 47½ for the three winter months from 12th of November to 2nd of February. For the first four hours' overtime 8d. per hour is to be paid, and afterwards time and a half is to be allowed. The working rules at present in force are to be accepted with the foregoing alterations, which are to date from the 1st of June.

Greenock.—The building trade labourers of Greenock and the district have issued to their employers a demand for an advance of ½d. per hour, on and after the 5th proximo.

The Brickmakers' Strike.—At the Clerkenwell Police-court Walter Connor, a brickmaker and moulder, of 9, Victoria-grove, High-street, Stoke Newington, appeared before Mr. Cooke to answer the complaint of Messrs. Stroud, the well-known brickmakers, of Islington, Brentford, and elsewhere, for having entered into a contract of service with them, and, having entered upon such service, did, on the 28th ult., unlawfully neglect and refuse, and has ever since neglected and refused, to fulfil the said contract, contrary to the statute, &c. After evidence had been taken, Mr. Cooke delivered judgment. He said:—

This is a summons taken out by Messrs. Stroud, brickmakers, under the 4th section of the Masters and Servants Act, against Walter Connor, whom they allege to have employed as a labourer, to first dig up material, and then mould the same into bricks. The facts lie in a small compass. By the custom of the trade, a few days before Christmas in each year, the employer and the employed meet together, and without any written, or even verbal, contract, a sum of a few shillings is paid by the former to the latter, which represents the rate of amount, which varies each season, to be paid for each quantity of bricks made through the season. The person so employed then forms a gang of men, who are engaged, paid, and, if necessary, discharged by him. This gang work at digging the materials until the spring and following three or four months, and then mould what has been dug during the winter months. It seems that the defendant, wishing to vary the amount per 1,000 of bricks, declined, with his gang, to continue work unless paid a higher price, and thence this summons was taken out. The law upon this matter is not difficult. I take it to constitute the relationship of master and servant there must be a personal contract to serve, and not merely a contract to do specific work. If there be a contract to serve, the fact of remuneration being governed by the labour performed, as payment by time or piecework, will not govern such relationship. The three essentials appear to be exclusive service, payment of wages, and a contract between the parties. The application of this law to the facts in this case are not free from difficulty, inasmuch as the judges, upon facts very similar, have differed very much in opinion.

Mr. Cooke dismissed the complaint, but said he would be prepared to state a case if called upon to do so. Mr. Mead said he would ask for a case, and would give the proper notices and sureties in time.

SEWAGE MATTERS.

Irrigation at Croydon.—It appears that the directors of the Croydon Irrigation and Farming Company propose to wind up the concern, not as the result of any failure in the system of sewage utilisation there carried out, but in consequence of the enormous rent demanded by the Croydon Local Board of Health. The directors had "an anxious and protracted negotiation" with the Board, in order to get a reduction of 1,600*l.* in the annual rent of 3,600*l.* payable, but without success. The directors say they exceedingly regret that the Local Board are so hard and exacting, considering the large amount which the shareholders of this company have spent, and which has had the effect of benefiting the ratepayers of the town of Croydon. An approximate statement of the company's assets and liabilities shows an estimated balance of 1,434*l.* returnable to shareholders on the winding-up of the company, after a fine of 500*l.* to the Local Board on the surrender of the lease has been paid.

Sewage Irrigation at Brackley.—Mr. Hope, of the Romford Sewage Farm, has issued a long report respecting the sewage irrigation of Brackley, in which he states that with regard to the various methods that have been suggested for purifying sewage, all have failed with the one exception of its application to land by surface irrigation. Pumping is evidently a thing which, in the case of very small towns, must be avoided if it is possible to do so, because the expense of wages and certain other items is out of all proportion in a small place. Brackley is favourably situated in this respect as compared with many other places; but, in Mr. Hope's judgment, after a most careful inspection of the locality, there is only one place where the sewage can be applied by gravitation, and it is upon what was roughly estimated at about 47 acres of land on the right of the Buckingham-road, before passing over the river. When (at a cost probably of 2,000*l.*) the operations have been carried out, the inhabitants of Brackley will have entirely freed themselves for ever from all difficulties as regarded sewage, and he contended that the sewage farm would be a profitable speculation.

Cleckheaton Drainage.—At a special gathering of the Board of Health at Cleckheaton, the following resolution, moved by Mr. Arthur Anderton, was carried:—"That we at once advertise for tenders for the construction of the Moorbottom, Northgate, Moocrend, Church-street, Whitechapel-lane, and Whitcliffe drains; and that we borrow the requisite amount of money from the Public Works Loan Commissioners, or from any other available source, at the rate of interest not exceeding 4½ per cent. per annum."

State of the Norwich Sewerage Works.—Norwich spent 120,000*l.* about the sewerage works; then between 3,000*l.* and 4,000*l.*; and at the last council meeting the mayor said he was afraid another 15,000*l.* or 20,000*l.* might be necessary. The city engineer has reported upon the new sewers, and it seems that one section is very defective,—"in a very bad state,"—"a great quantity of water finds its way into the sewer through the cracks and defective places in the brickwork." It was impossible for the engineer, Mr. Thwaites, to give an estimate of the cost of the works required; but there was no alternative but to go forward with them, let the cost be what it may.

Disposal of Sewage.—A Parliamentary return just issued shows the progress of the local authorities in dealing with the sewage of towns. In forty-two instances the sewage is disposed of by means of a farm. Fifty-four localities have adopted filtration, and thirty have used some method of precipitation. It would, therefore, appear that filtration is more generally acceptable than any other method, and that precipitation has the fewest instances of practical operation. Among the sewage farms complaints in regard to the "effluent water" are reported to have arisen in only three cases. Filtration has not been so successful, complaints having been made in twelve instances. Towns should seek, in the first place, to get rid of their sewage inoffensively, profit being held as a secondary consideration, though it seems grievous, and cannot be finally safe to make sheer waste of the excreta of towns. The return, however, seems to show that sewage can be got rid of decently by known and practised methods. We may rescue our rivers from being made foul and unwholesome; and if we wish to encourage this process, we must be careful not to ask too much.

CHURCH-BUILDING NEWS.

Oldham.—St. Andrew's Church has been consecrated by the Bishop of Manchester. Its dimensions are as follows:—Nave, 70 ft. by 28 ft.; aisles, 12 ft. 6 in. wide; chancel, 22 ft. long and the same width as the nave; south transept, 28 ft. by 16 ft.; tower, 9 ft. square inside placed in the angle between vestry and north aisle. The organ-chamber and vestry are one on each side of chancel. The roofs are open to the apex, and are plastered between the principals, the height of nave and chancel being the same, viz., 47 ft. 6 in. The building is of brick with stone dressings. The tower has only been carried high enough to form a porch over the entrance; but it is to be completed as soon as the funds will permit. The total cost of the building as now erected is about 4,400*l.*, a large amount being expended in foundations, owing to the awkwardness of the site. The pulpit, reading-desk, font, and tiling of chancel, were gifts from various friends. The architect was Mr. John Lowe, of Manchester, and the work was nearly all done by Oldham tradesmen.

Atlow.—The chief stone of a new church has been laid here on the festival of SS. Philip and James, to whom it is to be dedicated. The old church was a ruin of old limestone and sandstone, the walls out of the perpendicular and dangerous. The ceiling had partly fallen in, and the damp of the side-walls and floor was so great as to render it very unpleasant for the parishioners to remain in the building. On being advised of these matters, the Bishop of Lichfield granted a licence for the use of the school-room in the parish for the offices of religion. The architects of the new edifice are Messrs. Stevens & Robinson, of Derby. Mr. Benjamin Buxton, of Mayfield, is the contractor. The amount of the original contract was 642*l.* for walls, roofs, wood flooring and seating, and to this has been added 30*l.* for the chancel-arch, &c. The pulpit, font, communion-table and rails, encaustic tiling for the chancel and aisles, are not included in the contract, and the architects' and legal expenses have to be provided for, so that an additional sum of 100*l.* is needed to complete the work.

Crowthorne.—The church of St. John Baptist, Crowthorne, has been consecrated. Crowthorne is in close proximity to Wellington College, and the new church has been built as a chapel of ease to St. Michael's Church, Sandhurst, which is about three miles distant. The new church was designed by Mr. Arthur Blomfield, the cost thus far being 2,000*l.* A chancel is still required, and this will cost about 800*l.* At present there is no pulpit, but a brass eagle lectern has been presented by the Rev. A Carr, of Wellington College. The building is composed principally of red brick, with Bath-stone dressings, and in the interior there are three arches on either side of the nave, composed of red and black bricks. The arches rest on six pillars, surmounted with stone caps. The seats are open.

Wilstead.—The church of this parish, having for some months past been undergoing restoration, has been re-consecrated by the bishop of the diocese. The works just completed consist of a new chancel, with a vestry and organ-chamber on the north side; a new chancel arch, and a porch to the south door. There is also a new pulpit of Ham Hill stone. The whole church has been re-floored, and seated with open benches of stained and varnished deal, and the stonework throughout has been cleaned and repaired. The font has also been cleaned and removed to its original position near to the south door, as well as elevated upon steps and fitted with an ornamental cover. Porritt's underground stove has been adopted for warming. The new work in the chancel is built of the old materials, and faced like the rest of the church with local stone of a brown colour. The dressings are of Ancaster stone. The chancel is furnished with choir-stalls and desks of oak, and there is also a low chancel-screen of the same material. The general works have been carried out by Mr. Osborn, of St. Neots, from the drawings of Mr. Blomfield. The cost has been mainly defrayed by Lord John Thynne, who, besides contributing largely to the general restoration fund, has added as his own special offerings an east window, representing the Ascension, and a reredos, the centre panel of which, above the altar, represents the Last Supper, whilst the side panels (with special reference to the dedication of the church to All Saints) represents saints departed of all nations, ages, and classes, waiting in faith and patience for the coming of our Lord. The east window and the reredos were both designed by Messrs. Clayton & Bell. Messrs. Powell, of Whitefriars, executed the work on opaque glass, in a species of mosaic known as "opus sectile."

Lincoln.—The new church of St. Martin has been consecrated and opened for Divine service. It is in the Early Decorated style, and capable of holding 1,000, although at present only seated for 650. The church is erected on what was known as "Burton's Show-paddock," in Newland. It consists of a nave, with north and south aisles, chancel, vestry, organ-chamber, south porch, and a tower at the south-east angle of the church. In the clearstory each bay is pierced with three-light windows, with traceried heads and detached shafts, having moulded caps and bases. Under the clearstory windows runs a braiding of gas in the evenings, from end to end of each side of the nave, round the pillars there are three light burners, whilst the chancel has four brass standards, and the altar two brass pyramids of burners. The aisle windows have three lights, with geometric traceried heads, moulded jambs, and carved caps. The chancel has an apsidal termination, is lighted by seven single-light windows, with cusped heads, having both internal and external columns, carved caps and bases. The ground floor of the tower forms the organ-chamber, and also one of the entrances to the church. The nave architecture consists of five bays on each side, having circular piers and responds, with moulded and carved caps and bases, the arches being double chamfered. The nave has an open-timbered roof, the principals having curvilinear ribs, with trefoiled blade. The contract for the building was taken by Mr. Geo. Johnson, of Nottingham, Mr. W. Goodbarn being clerk of works, and Mr. Beckett, of Nottingham, the architect.

March.—A public appeal has been made for funds to carry out the proposed restoration of the old parish church of March, dedicated to St. Wendreda. A thorough restoration of the entire fabric is imperatively necessary. A subscription have just been started, and already nearly 1,000*l.* have been promised. The work, it is estimated, will cost 3,500*l.*

Alton.—The committee for building the proposed new district church of All Saints, have just issued a statement of facts, calling the attention of the parishioners and inhabitants of Alton to the great need of further church accommodation at the extreme western end of the town, called New Town, which is nearly three-quarters of a mile from the mother-church, and already contains about 88 houses. The new district church, which they propose to erect, will be built to seat above 300 persons, at a cost exclusive of the site, which has been given by one of the committee), of 2,000*l.* Subscriptions have been already promised, amounting to 1,064*l.*

Woodley (Sonning Parish, Oxford and Berks).—The church of St. John the Evangelist, Woodley, has been consecrated. Mr. H. Woodyer, of Guildford, was the architect. The style is Transition. The material is flint and stone. The edifice consists of a nave, with one aisle, a chancel, organ-chamber, and vestry. The triple arches between the nave and the chancel are supported on columns of dark Forest of Dean stone, and filled in with ornamental ironwork; in the centre is suspended a decorated cross. There is a recessed and sculptured reredos of Caen stone, combined with English and Italian alabaster and marble, representing the Crucifixion in the centre compartment; on one side, the Centurion and Roman soldiers, on the other, Joseph of Arimathæa and Nicodemus. This is the work of Mr. Nicholl, of London. The painted east window by Messrs. Hardman, of Birmingham, represents the Ascension, in the centre; on one side, the Last Supper, with St. John leaning on the breast of our Lord; on the other side, the Angel in the Revelation showing St. John the heavenly city. There is an arch into the organ-chamber, and oak screen beneath it; but the organ still remains to be obtained. There are three bells, from Messrs. Mears, London, and these, by machinery made by Mr. G. Belcher, will be rung in the chamber above the porch. The sittings throughout the church will be free and unappropriated. The churchyard has been fenced in by a brick and flint wall against the road, and an iron paling round the rest of the inclosure. The works have been carried out by Messrs. Green, and Cox & Brown, of Sonning, and Messrs. Wheeler, of Reading. The clerk of the works was Mr. Cooper, of Croydon. The late Mr. Robert Palmer, of Sonning, gave 6,000*l.* towards restoring and endowing this church. About thirty years ago he built All Saints' Church in the same parish, and twenty years ago he restored the parish church, which took a large sum. He paid nearly the whole cost of Earleigh Church, all in Sonning parish, besides supplying them all with schools, and erecting six almshouses. Mr. Palmer died last December, and left 5,000*l.* to the Berkshire Hospital. Mr. Richard Palmer, his brother, now holds the estate, and will provide everything that is necessary for finishing and endowing Woodley Church. The building and everything connected with it cost 4,600*l.* without the ground, which is close to Woodley-green.

Withycombe, near Exeter.—The church of St. John the Evangelist, erected some eight or nine years ago from the designs of Mr. E. Ashworth, of this city, has just had several additions made to its chancel. A new reredos has been erected, and a large painted east window put in. The reredos is mainly of fine Painswick stone, and consists of an arcading of fine bays, springing from polished Devonshire marble columns and carved capitals. The bases of these columns rest upon a broad plinth, 2 ft. 9 in. in height. The spandrels between the arches are covered with diaper of a type similar in detail to some of the early diaper over the wall arcading of the chapter-house at Westminster Abbey. The whole is surmounted by a moulded and carved cornice, the apex of each gable over the arcading being capped by an ornamental finial. The foliage used in the carved work is all of a scriptural and symbolical character, and represents the vine, ivy, oak, passion-flower, apple, trefoil, &c. The extreme height of the structure is 9 ft. 9 in., and the entire width, 22 ft. The reredos, the gift of Mrs. Baldock, has been carried out by Messrs. H. & F. Barridge, of Exmouth. The carving is the work of Mr. Harry Hems, of this city. The marble work has been supplied by Messrs. J. & E. Goad, of Plymouth, and the painted decoration is by Mr. Hudson, of London. The east window, immediately above the reredos, has also been beautified by the insertion of painted glass. The window is divided into five lights, and the subject is the Ascension. The form of our Lord occupies the central light, and is shown in the act of ascending in a vesica of glory, whilst immediately beneath him are angels bearing scrolls. In the other four lights are shown the Virgin Mary and the eleven apostles, in groups of three figures in each light. In the centre of the tracery, in the upper part of the window is our Lord in the act of pronouncing the Benediction, also the *Agnus Dei*, and ministering angels. The lowermost panels of the window are filled in with subjects illustrative of various incidents in connexion with our Lord's re-appearance after his resurrection. The window has been made by Messrs. Clayton & Bell, at a cost of 200*l.*

Fordham (Cambs.).—The church here has been further restored. An organ-chamber has been built, the clearstory windows and battlements restored, the nave gable and chancel arch rebuilt, and a new window inserted, different in size and shape from the old one, which had been long closed up. This has been filled with stained glass, at the expense of Mr. Winch, of Petersham, in memory of his wife. The subject is an angel, flying in the midst of heaven, holding the everlasting Gospel, &c., and was executed by Mr. Constable, of Cambridge. The west window has been restored, and filled with stained glass, and the roof and inner walls and tower arch restored, at a cost of about 350*l.* About 300*l.* of this sum was given by the Rev. Tansley Hall, rector of Boylestone. The subject of the window is the Transfiguration, as given by St. Luke, and has been executed by Messrs. Clayton & Bell. A private chapel, forming an aisle on the south side of the chancel, to correspond with the organ chamber, has been built by the lay rector, Mr. W. Dunn Gardner, with a view to retain the old symmetry of the church. This, and the further restoration of the windows, and walls, &c., of the chancel cost about 650*l.* In making these alterations and repairs, some early English work was discovered, sadly mutilated, probably done, or rather undone, in the time of the rebellion. Many of the old stones were found in different parts of the building undergoing restoration. They consist of three sedilia, graduated as if for a priest, deacon, and sub-deacon, and two piscinæ. Sufficient of the old work remained to enable the architect to carry out the restoration in imitation of the old work. This cost about 40*l.* The arches of the piscinæ are adorned with the tooth ornament. There is a stained glass window, placed in 1873, at the expense of Mr. Robert English, in memory of his daughter, executed by Mr. Constable. The subjects depicted are, the Annunciation, Presentation, and Adoration. This window is placed at the south-east end of the south aisle.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

London.—The foundation-stone of a new church has been laid by Archbishop Manning in Great Prescott-street, Tower-hill. After the religious ceremonial a meeting was held to promote the erection of the proposed building, at which the Earl of Denbigh presided. A letter of apology for non-attendance and of sympathy for the undertaking from the Duke of Norfolk was read by the chairman. The principal speakers were Archbishop Manning, the Earl of Denbigh, and the Right Hon. William Monsell. There were present the Marchioness of Lothian, the Countess of Denbigh, the Lady Herbert of Lea, the Hon. Mrs. Pereira, &c. The new church is destined for a Roman Catholic population of over 6,000.

Oxford.—The Roman Catholic Bishop of Birmingham (Dr. Ullathorne), assisted by a large number of Roman Catholic priests, has performed the ceremony of blessing the foundation-stone of what is intended to be a spacious chapel, for the use of the Roman Catholics of Oxford. The site of the new building is the west side of St. Giles's-road, within about a hundred yards of the Redcliffe Infirmary. By the removal of three houses fronting the street a large piece of ground is opened, upon which the new building, which is to be dedicated to St. Aloysius, has already been commenced. The church will, when fully completed, consist of a nave, transept, sanctuary, and side chapels, with a tower and spire. It is only contemplated at present to erect about half the building. This is the sanctuary, part of the nave, the transept, and side chapels. Round the sanctuary will run a small aisle, which it is proposed shall eventually open into five small chapels. The ordinary position of a church is exactly reversed here. The altar will be at the west end, and east of the transept will be three chapels, one filling each arch of the nave, which in their turn will be surrounded by three more; so that, in fact, there will be six chapels occupying what would in most churches be considered as the south aisle. The material to be used is Bath stone throughout, and the internal carving will be rich. The exterior of the building will be equally imposing, the height of the ridge of the roof being 80 feet. Accommodation will now be provided for about 400 sittings, and when fully completed 800 will be the number of seats. The entire cost of that portion about to be commenced is defrayed by the legacy of a lady whose name is not mentioned.

Stokesley.—The new church of St. Joseph has been opened for Divine service. It is situated at the east end of Stokesley, behind the Spring Field Villas, and near the Stockton and Middlesbro' road ends. The church and presbytery have been built at a cost of 1,500*l.* The donor who has presented this gift wishes his name to remain unknown. The architects were Messrs. Goldie & Child, of Kensington, and Mr. J. F. Craggs, of Stockton, was the builder.

SCHOOL-BUILDING NEWS.

Malton.—The Bower memorial schools at Norton have been opened. The building is Gothic in style, and has been erected from the design of Mr. Smith (Smith & Broderick), of Hull, at a cost of over 1,300*l.* The site cost a further sum of 450*l.* The building is divided into three separate schools,—for boys, girls, and infants; the largest of which is 76 ft. by 18 ft., and the smallest 58 ft. by 18 ft., in the interior, and the three will afford accommodation for about 600 scholars. Towards the cost of the schools Government has given a grant of 500*l.*, and the rest has been partly raised by subscription, the whole of the cost not yet being defrayed. The contracts for the erection of the building were in the hands of Mr. George Oldfield, builder, and Mr. Samuel Brotherick, joiner, of Norton; and the whole of the plumbers' work has been done by Messrs. R. & J. Read, of Malton.

Ipswich.—The new Board schools are approaching completion, and, according to the *Suffolk Chronicle*, are as follow:—Wherstead-road, Argyle-street, Trinity-street, and California. The two first-named are the large schools, each being designed for the three classes,—boys, girls, and infants. Wherstead-road School is the largest school, intended to accommodate 800 children of all classes, about 300 of which are infants, the remainder of the space being equally divided between boys and girls. Mr. Butterworth's design was selected by the Board as the best, and the contract was given to Messrs. E. & E. C. Gibbons. The work has been under the superintendence of Mr. Oliver Gibbons. The site is on a portion of the meadow on the west side of the Wherstead-road, near Messrs. Bennett's brickyard. The schools thus face Bath-street. The front elevation consists of three gables corresponding to the three schools, and the boys' and girls' schools, which stand at the north and south respectively, come within 10 ft. of the road, and each contains a three-light Gothic-headed window, the red brick gables being relieved by the introduction of black bricks. The centre gable is recessed other 10 ft., from which a porch, 10 ft. by 9 ft., projects. Above this are two small Gothic windows. The total frontage to the Wherstead-road is 136 ft., of which 116 ft. are occupied by the schools. They are enclosed from the road by a dwarf wall and iron fencing, with five entrances and ornamental piers. The boys' and girls' schools are fac-similes of one another. The principal schools are ⌊ shaped, the long leg of the ⌊ being 55 ft. by 20 ft., and the short one 21 ft. by 20 ft., an arrangement which is thought to be advantageous the master or mistress being placed at the corner. The desks, to accommodate 150, are arranged in three rows, each a little higher than the other, on the outer side of the long leg of the ⌊ and the inner side of the short leg. The rooms are both light and lofty, the average height being 19 ft. The angle of the ⌊ is in each case filled up by a class-room, 20 ft. square, and fitted with a gallery, accommodating fifty. At the back of the principal schools is another class-room in each case, with cloak-room, lavatory, porch, &c. The schools are warmed with hot air, by an arrangement of stoves, the invention and patent of Messrs. Wright & Co., of Rotherham, as to which Sir William Armstrong,

president of the Society of Engineers, has made some flattering remarks. The ventilation of the schools is provided for by Arnott's and Sheringham's ventilators; and the walls are hollow, to secure the better ventilation. The casements in the lantern of the infants' school can be opened and closed simultaneously, and the opening regulated as desired by an ingenious patented contrivance. The walls are dadoed 4 ft. up, and the remainder rough stuccoed and blocked out. From the centre of the building rises a bell-turret and spire 70 ft. in height; the turret being octagonal. The spire is encased with lead. The schools altogether occupy something like 100 rods of ground, of which about forty are occupied by the buildings, the remainder being divided into two playgrounds. The whole of the playground is enclosed by a wall 6 ft. high. The total cost is about 3,600*l.*——The Argyle-street schools have been turned out by the same contractors, at a cost of from 2,600*l.* to 2,700*l.*, the architect being Mr. H. M. Eyton. The appearance of the front is monotonous, owing to the absence of entrances, which are at the side. In the centre gable is a three-lighted window, the heads of the lights being cut off. Surmounting this part of the building is the bell-tower, octagonal in shape, of brick and stone, the spire being supported by eight columns of Mansfield stone, two of which run partially down the front of the gable, and are supported by a stone corbel. Springing from the columns are small trefoil arches, and the spire is relieved by small gablets. The windows along the rest of the front are all simply square windows, with the top corners rounded off, the top part of the arches being filled in with ornamental brickwork. Like the Wherstead-road school, the buildings are in three blocks, the infants' school being in the centre, the girls' and boys' on the north and and south side. Nearest the road in the infant school is a class-room, 30 ft. by 16 ft., behind which is the infant school-room proper, 30 ft. by 50 ft., which is fitted with a gallery to accommodate 120 infants, and two groups of three desks, which will accommodate 42 children. At the back of this school is another class-room, 18 ft. by 17 ft. 6 in., which will hold 44 infants, the total accommodation for infants being somewhere about 200. The boys' schoolroom is, like the Wherstead-road school, of an L shape, being 66 ft. by 20 ft. in the long leg, and 19 ft. by 20 ft. in the shorter; and in addition there are two class-rooms, 18 ft. by 16 ft. The girls' room is oblong, will accommodate 126 girls, and in addition there are class-rooms of the same capacity as those on the boys' side. All three schools are lighted by lanterns in the roof. The rooms have all plain open roofs, and the walls are not plastered or dadoed, but simply coloured. The warming is by Bacon's patent, a system of small hot-water pipes, which run along where the skirting generally is, the place of skirting being taken by a grating. The desks with which the school will be fitted will be of American birch, and the woodwork inside the building is stained and varnished deal.——Trinity-street School is the name by which the infant schools in St. Clement's have been known by the Board, though the street is named by the Local Board, Olive-street. The buildings are recessed from the road about 10 ft. The main room is 60 ft. by 20 ft. and there are two class-rooms each 18 ft. by 20 ft. The entrance is by a porch and two lobbies, which are paved with Staffordshire tiles. The inside work is stained and varnished, and the walls will be coloured a light grey tint. The warming is done by means of two stoves open to the main room, with hot plates at the back to warm the class-rooms, and there is an arrangement by which the foul air from the room is drawn off under the floor into the fire. The building has also a turret or spire; the turret is octagonal in shape, and the spire, which is covered with zinc, is relieved by small gablets. There is a playground attached, 83 ft. by 48 ft. The design for the schools was that of Mr. A. Hubert, and Mr. W. G. Cannold was the contractor; the total cost, including extras, will be about 737*l.*——California Schools are from the designs of Mr. James Butterworth, Mr. Henry Luff being the contractor. The schools are built on a site on the left side of Spring-road leaving the town, and consist of three principal rooms. The general room, which is 40 ft. by 24 ft., and a class-room at the back 20 ft. by 16 ft., compose the main building, while another class-room for the younger infants forms a wing. The general room will be fitted with a gallery, and there are two groups of desks for those children who are sufficiently advanced to take writing lessons. The rooms are all lofty, and well lighted and ventilated, and warming apparatus similar to that in the Wherstead-road schools has been adopted.

Newcastle.—The plans for the new high school which have been sent in for competition, have been on private view. The following are the local competitors:—Messrs. Lewis & Son, Messrs. Scrivener & Son, Messrs. R. Chapman & John Snape (Sandbach), Mr. George Rhodes, jun., and Mr. John Birch. Plans have also been sent in by Mr. W. H. Noble, Sparkbrook, Birmingham; Mr. J. S. Moye, London; Mr. T. W. Chalmers, Stafford; and Mr. J. Candall, Leamington.

VARIORUM.

"REPORT of the Committee on the Treatment and Utilisation of Sewage, re-appointed at Edinburgh, 1871. London: printed by Taylor & Francis, Fleet-street." This is a pamphlet reprinted from the report of the 42nd meeting of the British Association for the Advancement of Science, held at Brighton in August last. It contains the results of inquiries into various modes of dealing with sewage. Among the methods brought to the notice of the committee, that of treating sewage by Messrs. Weare's process at Stoke Union Workhouse, of which we have already spoken; the precipitation and conversion of the deposited matters into cement at Ealing; and the system of intermittent downward filtration at Merthyr Tydfil, have appeared most important; and they have accordingly been investigated, the results appearing in this report. A process known as Whitthread's patent has been also examined by experiment on a sufficiently large scale, and the result is given. The committee having reported upon the sewage-farms at Tunbridge Wells and Earlswood at the last meeting of the Association, it was thought advisable to inspect them again, as the works were incomplete when the committee last visited them. The observations at Breton's Farm had been proceeded with uninterruptedly, and are described. These investigations have now extended over a period of more than two years; and the experience thus gained from the *continuous* records of the flow, and sampling for analysis, of the sewage and effluent water, of the application of the sewage to the various crops, of the results of such application upon the produce grown, and the degree of purification effected in the sewage, will, it is hoped, prove valuable to sewer authorities and others interested in the question of sewage farming. Being fully impressed with the importance of these investigations, the committee paid special attention to render them as complete as possible; but it was felt that to perfect them, especially as regards the important branch relating to the effect of the application of sewage upon the crops grown, it would be necessary to continue them, for at least some months longer.——*Leisure Hour* says,—"Railways are well represented in the Legislature. In the House of Lords there are 48, and in the House of Commons 122 directors, many of whom are on the boards of two companies, while some share in the directorate of three or four companies. There are besides many of the other members of both Houses who are extensive shareholders, and are thus interested. With such an army of supporters the companies have little difficulty in securing the success of the measures brought forward in their interest, while at the same time it is not so easy to carry great measures of reform in the public favour."

Miscellanea.

The Terrible Bridge Accident in Illinois. The *New York Times* in describing the occurrence says:—

"There was a sharp, quick crash, a heavy rumbling, and a prolonged, soul-rending shriek from 500 beings. The main western stringer of the north span of the bridge broke like a reed, tipping 300 persons into the stream, and falling 60 ft. with crushing weight upon them. The fall dislodged the stays from the abutments. The shock ran along the whole length of the bridge like a flash of electricity, and span after span was drawn from the piers and sank to the water's surface, till the whole five hung like immense bags holding a bruised, bleeding, frightened, and frantic mass of men, women, children, and horses."

There were stretchers still clinging to the abutments which were not loosened by the fall, and these some grasped to save their lives.

Value of Land in 1688 and 1873.—T annual value of land in England and Wales estimated to have risen six times since 16 Mr. John Macdonnel, in his recently publish book on the land question, tells us so, and t this rise has been going on of late is proved a glance at the property-tax returns, which sh that between 1853 and 1870 the annual value the rent-bearing area of the United Kingdom creased from 47,559,000*l.* to 56,540,000*l.* At t same time, even during the present centu there have been great fluctuations in ren During the French wars they rose enormous After the peace they fell 10 to 33 per ce Under the influence of the Corn Laws th again rose, to decline shortly after the measures had been repealed. From 1852 to t present time they have steadily risen. As urban land, a square foot in Victoria-street le for 1*l.* sterling. A piece of ground in Holbo bought in 1552 for 160*l.* now yields 5,000*l.* year. A wharf in Castle Baynard bought f 2,000*l.* in 1670 lately realised 110,000*l.* An ac of land in South Kensington, which was sold f 3,200*l.* in 1852, fetched 23,350*l.* in 1860. are told that the price of an acre of the mo valuable uncovered land in the City of Lond after the Great Fire in 1660 was 30,000*l.*, about one-third of the value when built upo At the present time the highest rate for such u built land may be taken at 1,000,000*l.* an acr and such value constitutes fully three-fourths the value of the property after it has buildin upon it.—*Land and Water.*

Building in Vienna.—Prices of house-pr perty have been steadily on the rise, and more than one instance the builder of a sing sumptuous mansion in one of the "Rings" h made a profit of seven or eight thousand pound in the course of a year or two. But to any on who knew the Vienna of half a dozen yea since it has been a standing puzzle whence th population came who pay the fancy rents f houses and apartments in the new quarter which are springing up everywhere. Th recent panic goes some way to answering th question:—"Vienna was living on gamblin gains, and builders were drawing bills on th expectant prosperity of the future, as Englis Chancellors of the Exchequer reckon—wit more justice—upon the elasticity of our revenue It was the new building companies that wen with a crash the other day, threatening to bur everything else in their ruins. One or two c them came to the ground altogether. Th shares of others were depreciated in four-and twenty hours, 20, 30, 50 per cent." It is scarcel a secret that some of the best known financier of Austria have gone so deep into stone an lime, and building operations generally, that i the event of a crash they are likely to b crippled, their great resources notwithstanding.

The Liverpool "Underground Railway." The entire of the tunnel between Brunswick Station and Stanhope-street, says the loca *Journal*, is in working order, and the three line of rails are laid down to St. James's Station From that point to the end of the tunnel i Back Bold-street, the whole of the brickwor roof has been completed, with the exception o about 120 yards; but a considerable amount o blasting through the solid rock has still to be done The contractors, however, hope to have a loco-motive driven right through to Ranelagh-street before the end of July, and the tunnel opened for regular traffic before October. The line now being completed forms only part of the great scheme for connecting Cheshire with Liverpool and its docks by sub-river and sub-city tunnels. The route from where the new line branches off at Cressington Park is very direct to Manchester and the engineer of the line guarantees that the journey from Manchester shall be regularly run in about forty-five minutes, thus eclipsing the speed of the London and North-Western Railway's fastest trains. The contractors for the entire works are Messrs. Kirk & Parry, of London, and Sleaford, Lincolnshire. The im-mediate superintendence of every department of the station, tunnel, and line construction is entrusted to Mr. Knight, and the engineering and designs for the stations directed by Mr. Morton, C.E.

Destruction of the Theatre in Malta.—News of the burning of this theatre has been received in London. During the rehearsal of a new opera, one of the scenes caught fire, and in a few moments the whole of the interior of the building was in flames. The place was completely burnt out.

The Builder.

VOL. XXXI.—No. 1583.

A New Chapter in Art.

IT may seem bold, if not paradoxical, to announce the opening of an entirely new chapter in the history of art; and yet it is an announcement which appears to us to be justified. Recent discoveries, not in one field alone, but in several, are at once so novel and startling in themselves, and so suggestive of the probability that they are only the precursors of more of the same kind, that they demand the serious and unprejudiced attention of those who seek to view art from the high stand-point of its relation to ethnology.

The first of the recent acquisitions of modern research to which we have o refer is the very remarkable *terra cotta* sarophagus which has just been added to the reasures of the British Museum. It is one of he articles purchased (or rather that we trust rill be purchased) of the indefatigable collector nd discoverer, Signor Castellani. The extraordinary peculiarity of this sarcophagus lies in he fact that it preserves with great fidelity two ntirely different ethnological types, and that it epresents a relationship between the races thus ypified of which we are, as yet, quite at a loss o offer any historical explanation.

Of the two ethnological types thus reproduced, ne is Greek, and Greek of a period not later han that represented by the Phygaleian marbles. 'he pure classic outline of the faces is unmisakable. So is the graceful fall of the folded eplum. The round shields borne by the warlors are like those with which we are so amiliar. The helmets are representations of elicate work in metal, and the cuirasses also eem to be intended for bronze, and not for the rmour of boiled leather, which takes the very ndentations of the human form. The proporions of the figures are squat, the heads are mall, and the drapery resembles that depicted n early Greek vases.

The second type we may perhaps be justified n terming Phœnician. It is, at all events, siatic, and, in our opinion, Semitic. The nose s aquiline, the chin prominent, the mouth narow, but with protruding and freely opening ps, on which a perpetual smile seems to dwell. 'he beard and whiskers are so trimmed as to resent a crescent on each side of the face, iving the effect of the profile that is sometimes rawn within the disc of the moon—the moon od, not crowned with the crescent, but wearng the crescent as a sort of bonnet or helmet. The figures thus characterised are totally or nearly nude.

But the most remarkable consideration remains o be noted. It is that the Greek figures appear n the subordinate rank. The nobly-draped vomen are standing as if in attendance on the eated Asiatics, who appear to be enjoying themselves without restraint. If the Greeks are not laves, the only explanation that occurs would be that of honour shown to some foreign visitors of importance; but in almost each instance the Phœnicians occupy the post of honour.

On the lid of the sarcophagus a nude, spare, and boldly-modelled man reclines on cushions, which have been adorned by a sort of tesselation in the clay before it was burnt, as in the Henri Deux ware. A partially-draped female, of the same type, squats, in Indian fashion, by his side. We can hardly doubt that we have the portrait of the person for whom the sarcophagus was made, together with, perhaps, that of his wife.

Modelled *relievi* adorn each side of the sarcophagus, and it is in these that the two types, of which we are speaking are brought into relation. At the foot is a medallion, containing six figures, two of which are armed with the round shield, and are evidently Greek warriors. At the back of the sarcophagus is a representation of two Phœnician figures, seated on a couch, who are apparently the same as the full-sized figures in the round on the lid. On either side of the couch stand two draped Greek females, holding different implements, and apparently in attendance on the feasting Asiatics. On the head of the sarcophagus are four figures, seated on thrones, and apparently weeping in great distress. These are also Greek. Lastly, on the front is a relief containing numerous figures, the centre of the group being composed of two warriors, like those at the foot of the sarcophagus, fighting hand to hand. A nearly nude Phœnician male stands on each side. The subject of the two last relievi we take to be the mourning at a funeral, and the performances of combats, by way of funereal games. Whether the feasting scene be a funereal feast or the representation of an apotheosis, or state of happiness after death, may be doubtful; but the appearance of the nobler type of mankind, engaged either as gladiatorial combatants or as attendants on a feast, and the depiction of these scenes by artists whose sympathies are evidently with the non-classical type, are subjects of the deepest interest, and excite a curiosity which it is not easy to gratify.

The sarcophagus was discovered in a tomb, but not buried in earth, at Cervetri, the ancient Cære, in Etruria. This city, which had historic relations with Asia Minor, preserved its independence until the time of the siege of Rome by Brennus, after which its people enjoyed the privilege of Roman citizens, in gratitude for the hospitality which they offered to the Romans who fled thither, with the sacred fire. This fact seems to limit the possible latest date of the *terra cotta* to some 2,260 years ago, as there is no evidence of any Roman influence in the art displayed. The possible anterior limit it is more hard to assign. The letters are of a type which it is difficult to know whether to attribute to the Phœnician or to the early Greek alphabet, the *mu* and the *theta* holding most closely to the latter, and the *pi* to the former. They are boldly laid on in a sort of black paint. The inscriptions have been read by Mr. Murray, a gentleman whose appreciative knowledge of Greek art is an honour to the British Museum, as follows:—(1) *Mi vela vesnas me vepe tursi kipa*, and (2) *Thania Velai Matinai Cnata*. The presence of two forms of the *S*, Mr. Murray remarks, shows the presence, in the dialect employed, of the Phœnician element of a double sibilant. The ethnological peculiarity, however, strikes us as likely, when explained, to be more determinative of date than the forms of letters, which certainly have a very wide range, both geographically and chronologically. Some special local peculiarity, such as the presence of a Greek slave, accustomed to the work of the studio, in Cære, may possibly have been the cause of the anomalous representation of types to which we refer. But even if such an artist had used portraiture for the principal figures, and added the remainder of the groups in a conventional style, it is hard to understand why he should have represented his own countrymen in the inferior position.

A mixture of nude and draped figures in the same composition is to be found in many Indian sculptures, of the same date and character as that elaborate gateway of the Sanchi Tope which was exhibited two years ago at South Kensington. In these we are perhaps justified in regarding the former as representing gods, or happy souls, and the latter the living mortals of the country. If this be so, the absence of drapery in the figures we term Phœnician may possibly have a similar import. But, in any case, the definite portraiture, which is unmistakable in the figures in the round, marks clearly to which of the two types the monument properly belonged.

Closely connected with this fact is the very small size of the sarcophagus; the occupant of which must have been less than 5 ft. high, if, as there is every reason to conclude, the body was laid straight in the receptacle hollowed out as if for the purpose. It is suggested that the remains were those of a female, and even that they were, according to the inscription, those of Tannia Unatia, the daughter of Velius Matinius. This might account for the small size; but on the other hand the gaunt nude figure reclining on the mattress and cushion forming the lid of the sarcophagus, seems to be naturally regarded as the person in whose honour it was modelled. We are far from despairing of the solution of the riddle, but at present it is one of great perplexity. Nor is the fact that the two descriptions, which have appeared in two of the best-informed of our contemporaries, are altogether silent as to the peculiar significance of the physiognomical characters of the work, calculated to direct that attention to the subject which it unquestionably deserves.

Not directly connected with the Castellani sarcophagus, but belonging to the same category of ancient and recently-discovered terra-cotta figures, are to be named the objects lately found at Moab, and collected by Mr. Shapira, of Jerusalem, which have been purchased by the Emperor of Germany for 1,000*l*. A rather acrimonious controversy has raged about these objects, in which we scarcely think that the experts of this country have shown themselves so much alive to the real interests of art as have those of Germany. Imputations of forgery have been very freely cast upon those who are not in a position readily to defend themselves. There is no doubt that the manufacture of mock antiques is a branch of rascal industry that is not confined to Flint Jack and his pupils in this country, or to the dealers in earthen lamps, and bronze symbols of a well-known character, in Southern Italy. How beautifully the antique spoils that have been rusted by the tufa of Pompeii, or preserved in the air-tight embrace of the lava of Herculaneum for 1,800 years, may be simulated, let those who take an interest in that graceful branch of art judge for themselves by a visit to Mr. Gardner's showrooms at Charing-cross. There will be found many an object stamped with the *cachet* of the Italo-Greek work of the First Christian Century, of which it has all but the actual verity. But in all these matters, whether they are arrow-heads, phallic charms fabricated for the purpose of deceptive sale, or classic objects simulated for the elegant adornment of our drawing-rooms, there is to be remarked the constant presence of one characteristic. They all hold to that which is known, and generally to that which is well known. The forger is, *ex nomine*, a copyist. He is never an inventor. He would, in that case, indeed, be an original artist. We all know the story of Michelangelo and his Cupid. How he wrought the statue, and then broke off and buried the arm; and how, when the earth, perhaps with some aid from sulphuric acid, had given a false air of antiquity to the

fragment, he produced it, sold it as an antique, and afterwards—as in the *sic vos non vobis* of Virgil—produced the arm. The very Cupid, some experts tell us, is now to be seen in the Court of the South Kensington Museum. But Michelangelo was a sculptor of the rarest powers. He studied the antique till he was thoroughly imbued with its spirit. He thus produced a work in which that spirit breathed, and by means of which, with the aid of artifice, deception was easy. And even then, when the whole figure is examined, a sculptor would never hesitate as to whether it came from the chisel of the great Florentine, or from that of a Greek artist. Thus, the experience that we have as to plastic forgeries leads to the conclusion that quaint, grim forms, new to our eyes, such as those which have been brought to light in Moab, are the last things on which a forger would venture. The genius of the man who could now originate figures, at once totally dissimilar to any known type, coarse, rude, and often repulsive in appearance, but imbued with the very spirit either of astrological or of phallic worship, would be of a very high order. No such genius would stoop to such barbaric poverty of execution, combined with such depths of a religious sentiment, once predominant in the race, but now abhorrent to the ideas of the age, as marks the objects purchased for the Berlin Museum.

Without attempting, with the deductive analysis of Comte, to trace back the religion of the earlier tribes of man, first to astrolatry, and ultimately to pure fetichism, it is indubitable that, in very early times, and over a great range of peoples and of districts, two grand elements marked the religious thought of the time, and were constantly reproduced in symbol, and commemorated in worship. How deep a truth, in those rude, wild times, underlay the primary idea of those archaic objects of reverence, we do not now know. Perhaps we may never know. But the two main ideas, in themselves, were these: first, that of the constant, ever-present, irresistible power of the unseen Ruler of the world, evinced, sometimes, in the destructive energy, as in Typhon, but more generally in the reproductive, of which Indian mythology gives the most literal version; and, second, of the divine wisdom, order, and rule, of which the chief symbols and exponents were the planets. The extreme antiquity of planetary worship becomes more apparent with every fresh message from the long-forgotten past. The antiquity of the week is very great, and wherever the week is observed we have the evidence of study of the stars. The names now given to the days of the week, which connect them with the planets, are first mentioned, if we are not in error, by Dion Cassius; but there is good reason for supposing the connexion to be as ancient as that special division of time itself. It is common to trace the establishment of the week back to the Exodus, and to regard it as an institution of the Law of Moses. But, to say nothing of the very first chapter of the Book of Genesis, we find the week referred to as a well-established measure of time in the days of Jacob, 486 years before the Exodus. Again, the seven lamps of the golden candlestick are said by Josephus to refer to the seven planets, and he even mentions the *decani*, or ten divisions of each,—a matter which is purely astrological. In the same passage this author connects the fourfold structure of the veils of the temple with the four elements, and the twelve jewels of the ephod with the twelve months, or signs of the zodiac.

The septenary division, not only of time, but of general philosophical system, appears to have a direct reference of astrological considerations. The order in which the days of the week, consecrated to the several planets, follow one another, is far from being arbitrary or casual. It betokens acquaintance with astronomical phenomena, and an attempt to reduce these phenomena to system. It is not inconsistent with, although not a direct evidence of the knowledge of, the Pythagorean system. Archimedes, 250 years before our era, considered the position of the sun to be intermediate between the inferior and superior planets, the earth not being counted amongst either. Scaliger gives a complicated series of triangles, by the intersection of which the planetary sequence of the week is arrived at. But that idea of the seven-branched candlestick, which places the sun as the central lamp, and the three superior and three inferior planets, in the respective orders of their apparent velocity of motion, on the left and on the right, gives the exact sequence of the week, if we take the lamps in alternate order. Thus the sun is first kindled, then the moon, or nearest lamp on the right; then Pyrolis, or Mars, the nearest on the left; then Stilbon, or Mercury, the second on the right; then Phaethon, or Jupiter, the second on the left; lastly, Hespera, or Venus, the third on the right; and Phainon, or Saturn, the last on the left. Regarded in this simple order, we find the sequence of the week thoroughly to harmonise with formal, though not with physical, astronomy.

When we observe that not only the days of the week, but the series of years, and of weeks of years, are divided by the radix of seven, at the same time that the seventh day is specially consecrated by the religion that adopts this division of time, a close connexion with astrological, or at least with astronomical, law becomes apparent. The gravity of the character invariably assigned to the slowly revolving orb of Saturn, the tint of black which is assigned to it in the scale of colours, the connexion between the genius or deity of the planet, and the impersonation of Chronos, or Time, the father of Zeus Pater himself,—are in remarkable accordance with the expression "Antiquus dierum," which we find applied to the deity in that one of the Hebrew sacred books which contains the most direct reference to the doctrine of numbers.

A close relationship between the early religion of the Jewish people and the planetary worship is again to be traced in the account given of the incantations of Balaam. The erection, three times over, on the summit of as many mountains, of seven altars, and the double offering made upon each, is a distinct instance of planetary worship. We might therefore rationally expect, if we recovered any trace of the early idol worship of Moab, to be able to recognise some sign of planetary powers. This expectation is fully satisfied by the terra-cotta figures collected, and yet in course of discovery. In some of them may be recognised symbols of Astarte, Ishtar, or the moon; in others of the sun; in very many seven stars or seven punctures, or an accentuation of seven features or points upon the human figure, are notable. One, a female deity, has the sun in place of one arm, and the moon in that of the other.

It is as to the inscriptions, however, that the most uncompromising controversy has raged. These may be divided into three categories. First there are the Hamath inscriptions, originally questioned as to their authenticity, which is now admitted, but still in doubt as to their ideographic or phonetic character. Mr. Dunbar Heath has detected in these ancient sculptures marks closely resembling the cartouches of certain Egyptian kings; and his patient comparison, leading to the identification of certain symbols in different inscriptions or portions of an inscription, must be held to be the first step towards the decypherment of a hieroglyphic character totally distinct from the hieroglyphics of Egypt. Hamath, we need hardly add, is to the immediate north of Palestine.

A second group of sculptured characters occurs on certain slabs and lintels in Moab. They are less complex than the Hamath inscriptions, to which they do not present any sensible resemblance. But they mainly consist of rude representations of the idols formed in *terra cotta*; and probably will be found to be dedicatory or prophylactic inscriptions invoking the protection of the planetary powers for the buildings of which they formed a portion, or for their builders or owners.

The third group of characters consists of those ancient, but not unknown, forms which seem to have been the common ancestors of the Hebrew, Phœnician, Greek, and modern European alphabets. They are found painted on the foundation-course of the Great Temple peribolus at Jerusalem, incised in various ruins throughout Palestine, carved on the unfortunate Moabite stone, and impressed on numerous vases of burnt clay. It is as to the authenticity of the latter that the chief opposition has been raised; the ground of disbelief being stated to be the different antiquity of the forms of letters found upon the same object. We are not about to step from our chair to become advocates on either side. But we may remark that it is hardly conceivable that any forgers should have taken the trouble to cover rude jars, before baking, with very numerous impressed letters, the number of which must increase both the labour of execution and the risk of detection, while the selling value of the object itself is quite incommensurate with such an amount of misdirected skill. Again, in one of these inscriptions which has been condemned, as we think, over hastily, by one of our most learned authorities, who divided the letters into four categories, of different dates, we ourselves observed that certain characters which even the magnifying-glass could not aid us to discriminate from one another, were referred to different categories. While caution should be used, it is evident that the method adopted by the Germans, of first acquiring objects which are *primâ facie* of such great interest, and then patiently setting to work to describe and decipher them, is far preferable to our own cheaper method of encouraging discovery by simply denouncing it as forgery.

We have been led to dwell too long on the *terra-cotta* objects recently discovered in Etruria and in Syria to speak of the noble and unrivalled bronzes which Signor Castellani has been the means of enabling our national museum to acquire. As to the high character both of the skill of the founder and the art of the sculptor that these objects display, we may find another opportunity of bearing witness.

NOTES IN THE INTERNATIONAL EXHIBITION.

PICTURES, DRAWINGS, &c.

WE have already commented on the collection which makes the chief pictorial attraction of this year's Exhibition,—the works of Phillip and Creswick. Among the other paintings by British artists there is not much to call for special remark, a large proportion being of very mediocre merit, and some of the best too well known, or too recently exhibited, to bear fresh criticism. Among the exceptions may be mentioned E. W. Cooke's "Catalan Bay, Gibraltar" (743), certainly one of the best and most telling works of a painter who has of late years fallen a little too much into the groove of common-place realism. Poynter's spirited Roman military subject, "The Catapult" (758 *a*), is a good specimen of his treatment of figures in energetic action; and Pettie's "Conspirators" (332) is one of the very best illustrations of the peculiar powers of this very unequal artist. "When Leaves fall and Cold Winds come" (947), by G. Mawley, should be looked at as a beautiful unpretending work, full of the true poetry of landscape; and, in a contrary view, Storey's "The Children at Breakfast" (957), four little things perched like sparrows on a very high bench, painted with a genuine feeling and sympathy for child-nature. The same painter's "The Danaides" (1,010), is a fine study of semi-nude figures, very carefully drawn and painted in the slightly conventional tone which this artist adopted in his nude studies (a class of subject which he seems entirely to have discontinued of late); the sombre tone of the landscape of "Hades" harmonises completely with the expression and feeling of the figures, but it must be admitted that the work scarcely rises to the imaginative height which such a subject demands. Lucas's "Autumn" (1,017), not without power, is overdone, to the extent of becoming "stagey." Of that interesting class of small landscapes, notable chiefly for their feeling and composition, two by J. R. Lee (997 and 1,003), one by Cotman (1,092), and one by J. A. Houston (1,062), are very pleasant specimens. G. F. Watts's "Galahad" is not one of his best works; the head and bust by him, under the title of "Pygmalion's Wife" (1,026), is splendidly painted in regard to the texture and reflected lights on the neck and bosom. "An Afterglow" (1,077), by J. C. Thom, is a small picture, with much of feeling and poetry of light and composition. A representation of "Dr. Guthrie Fishing in Lock Lee" (1,097), by Sir G. Harvey, P.R.S.A., is a melancholy specimen indeed of the kind of rubbish which appears to pass for "art" with our canny cousins across the Border.

What is good in the water-colour room (there is a good deal that is not) is mostly by well-known hands, in their usual manner. We may remark how uniformly interesting and powerful are Mdme. Bodichon's broad, freely-handled sketches, rather than drawings, of landscape and sea. One work which must not be passed over, however, is the study, or series of studies, by the late H. Tidey, for a drawing of Pygmalion and the Statue (486–7–8). The large-size study (in pencil) represents the vivified statue doubtfully putting forward one delicate foot over the edge of the pedestal, feeling her way the enraptured sculptor standing by with hands

clasped over his head; from the two smaller coloured studies it appears that the artist aimed at representing the very moment when the first flush of life had begun to overspread the cold marble, and had scarcely reached the extremities of the limbs, or of the long flowing hair, which is just turning from snow to gold. The subject was one exactly suited to Mr. Tidey's peculiar powers of execution, and had he lived to complete it, he would probably have equalled or surpassed his famous drawing of "Queen Mab." While alluding to the water-colours, attention may be drawn to Mr. MacCallum's Sketches in Egypt (1,515–39), to be found in Room XVIII., and which are of much interest.

In Room IX. are placed some works by deceased British artists, including six of the beautiful little works of the late G. Mason. The "Harvest Home" will be remembered in last year's Academy; but the exquisite little picture called "Evening, Matlock" (765), has not been so recently popularised; nothing could be more characteristic of the painter's peculiar genius, few things more subtle and delicate in tone, than this simple composition, with the girl and sheep coming down from the upper portion of a rising field into the brown twilight shadow of the low foreground. A number of works by the late Mrs. Carpenter may be passed over in discreet silence; but some of those of the late A. Rankley (most popularly known by his rather tame picture of "Dr. Watts and his Little Friends") surprise us by a degree of power of tone and feeling which would seem to warrant a higher place for this artist's name than we are accustomed to hear given to it. "The Doctor's coming," the interior of a Gipsy tent, where a mother sits, in a wild paroxysm of grief, at the head of her child; "The Gipsy Mother," a single figure; and "After Work," are all pictures decidedly rising above the common-place or mediocre in art. The manipulation is scarcely equal to the composition, perhaps, as far at least as variety of texture is concerned; they are pictures on the old *chiaroscuro* ideal; but there is no lack of power.

Now as to the foreign pictures. There are a few interspersed among the English works, of which one by Legat (France) "A Recollection of the Mill of Gravelle" (320) should be noticed; it is a fine twilight composition of massed trees, with the old grey straggling building seen through them. The Meissoniers, too, which were recently at Bethnal Green, are exhibited here on separate screens; an honour of which they are well worthy, and which, indeed, works of such delicacy of detail almost require. Among the Belgian paintings in Room XX., but a small proportion can be quoted as of any marked merit. The "Undine" of Van Lérius (1,635), whose "Godiva" has popularised him in England, will hardly add to his reputation; the execution is not up to the mark of "Godiva"; the poetic element is utterly wanting. His "Elaine" (1,683) is inferior even to this; a total failure as to conception and feeling. "The Studio," by Sacré (1,630), showing an artist and his friend discussing some very every-day matter amid a conclave of bronze and marble deities, is a clever idea, of which, however, more might have been made. Of the two or three other figure subjects that are at all worth notice in this room, are Bource's "Waiting the Arrival — Beach at Schevening" (1,744), noteworthy for the thought bestowed on the composition and relation of the groups of figues; and "Dancing the Bolero" (1,765), by Dillens, which is clever, especially in composition and lighting, but otherwise not nearly equal to some of Phillips's Spanish pictures. Among landscapes, Roffiaen's "Village of Meyringen and Wetterhorn" (1,646), sustains his reputation as a powerful and studious painter of mountain scenery; Asselberg's two little views in "The Campine," "Morning" and "Evening" (1,654-5), are most interesting studies of nearly the same scene under different aspects of light; and Heymans's "Meadow in the Campine" (1,690), and Cooseman's "Interior of a Wood" (1,720), are works remarkable for tone and feeling, and a total absence of "paintiness"; the latter especially, a small study of dark ragged woodland scenery, painted very solidly, somewhat after the manner of Dupré. The "Scheldt near Antwerp," again (1,721), shows what Heymans can make out of grey water and two boats. There are other small landscapes worth attention (1,660, 1,747, 1,768), and Bossuet's architectural pictures, as masterly as ever, should be looked at, especially the "Moorish Tower on the Tagus" (1,670), one of the best things he has ever done of the kind.

The most characteristic productions of foreign art, however (mostly in a small way), will be found in Room VI., dedicated to "Bavaria, Italy, Germany, Saxony, and Holland." The Bavarian paintings have a general commonplace tone which renders them as a mass uninteresting, in spite of an average of good execution. Cohen's "Villa d'Este, Tivoli" (30), is a fine combination of trees and architecture; and Meermann's "Regensburg" (88), an old "schloss" and moat in deep shadow, with masses of brown trees relieved against a faint evening sky, is a work full of poetry. Marc's "Decameron" (46) will have admirers, melodramatic though it be; and Franck's "Wine-house in South Tyrol" (89), as a study in the opposite direction, the realistic of low life,—of a "boozy" Auerbach's tavern existence, — is clever and pointed enough. Among landscapes, Weber's "Twilight" and Heffner's "Close of Autumn" (73 and 78) are good specimens of imaginative treatment of common themes; the former reminding us of Lamorinière, whose works, always thoughtful and refined, we miss from this year's exhibition. Langko's two views near Munich (94, 95), and Professor Lange's "Lake of Lowerz" (98), are all landscapes above the average in feeling and execution: the latter with red sunlit cliffs standing over a dark lake, though a little "painty," is undeniably powerful. The small collection of Italian pictures is of some interest, if only from the peculiar idiosyncracies of style and treatment displayed. The little pictures of Professor Fattori, of Florence, are very original in motive and treatment: "Evening" (121), cows and thin bare trees on a dark plain; "Repose" (125), a woodland glade, with black swine and the swineherd in various attitudes of somnolence; "Landscape" (129), with two or three cows slowly making their way through long green grass under the shade of trees. These and one or two others, with a manner of treatment which borders on the humorous, have nevertheless real merit and originality of style, and show that the Professor has his own way of looking at things. Molinari's "Sappho" is a mistake; but in his pictures of the life of the Campagna,—"Leaving School" and "The Punishment" (147, 156),—he is thoroughly original, reminding us a little in manner of some of the Dutch school in paintings of low life; his tumble-down misshapen lumps of buildings are most characteristic. Ciardi's "In the Fields" and "Returning from the Fields" (143, 157); Ciardello's "Confidantes" (163); De Tivoli's "Ruins of the Claudian Aqueducts," standing up red in the sunlight in the foreground (155), are all works interesting in their way, and with a nationality of manner and tendency sufficiently distinguishing them from the works of any other nation represented here.

The small number of paintings (chiefly from Dusseldorf) included under the very large and vague term, "Germany," contain two works worth a note, though for different reasons. The first is a special compliment to ourselves, being a portrait of "The English tourist" (121), in full travelling suit, portly and well-fed, standing in the midst of a Swiss mountain scene, conscientiously "doing" the mountains, *lorgnette* in one hand, and "Murray" in the other. This is sent over to us by the kind consideration of the artist (W. Simmler), that we may—

> "See ourselves as others see us;"

but the species portrayed are, we fear, too thick-skinned to be reached in this mode. Let us ask, by the way, does no other soil grow the same kind of animal, or its equivalent? The other work referred to, "The Sea Shore" (189), is by E. Dücker, of Dusseldorf, whose grand landscape, "The Bed of a River," was the finest thing of the kind in last year's exhibition (where, by an odd mistake, it was classed with the Russian pictures). The tone of this work is peculiar, and the sea is of a perhaps scarcely admissible brown, but the painting of the shore and shoal water in the foreground is splendid, and the whole thing has that power and unity of feeling which only genius can impart to a painting. If this artist, little known in England, has attained in the average of his works anything like the elevation of these two, he is one of the finest landscape-painters living. "Saxony," which occupies the next place on the walls, introduces us to another very fine work," "Verona" (195), by Choulant, of Dresden: the view is taken from the river, the sluggish turbid water of which forms the foreground, crowded with a number of heavy black barges, above which rises a congeries of white low-roofed houses in all kinds of fantastic groupings, crowned by the tall Romanesque cathedral. This is one of the finest paintings of an architectural subject, on a large scale, that we have seen. "Saxony" presents nothing of note besides, and Holland is to be credited only for some very good small landscapes, of which the best are Van Beest's "Strand at Scherening" (222), Destrée's "Sunset in Gelderland" (230), Vogel's "Landscape" (217), and Liernur's "On the Sea Shore" (215): the last curiously reminding us, in feeling and manner, of the works of our talented countryman in the same "line," Mr. H. Moore. On the staircase adjoining this gallery is hung, among other things, a large painting, by Baron Gudin, of "Byron on the Brig of Don," near Aberdeen (a great deal of the "brig," and a very little of Byron, it will be understood), of which we will only say that we regret to see such a name to such a work. Some foreign artists seem to think that any "English" subject is sure to please the English, however handled. We have not all come to that yet, however.

A whim of this Exhibition has been the collection of drawings, sculpture, &c., by officers in the army and navy, in Room XVIII. There are very accomplished amateurs among the members of these professions, whose works might claim hanging-space anywhere; but taking the collection as a whole the result is not remarkable: even in cases where the execution is of a high class there seems to be in the main, as it struck us, a remarkable lack of feeling for artistic effect, the side on which the amateur generally may be supposed to have the best chance of success. Col. Crealock's sketches of celebrated cavalry charges are spirited enough in intention, but the horses' legs are wonderfully put on. The works in statuary by Lieut.-Col. F. Baring, however, are quite above the amateur average. The officers seem to succeed best, as a rule, in drawings of buildings, of which there are some also in the Albert Hall Gallery, of unquestionable excellence. Among the subsidiary attractions of the Exhibition are to be found, also in the Gallery, the collection of etchings, by some of our finest artists in that branch of execution. There is a whole collection of Mr. Whistler's, the peculiar excellencies of which are well known. The small etchings by Mr. Jesse (3,220) are very powerful, and recall in style and handling some of those executed by Blake as book-illustrations. Mr. E. George's etchings of architectural subjects on the Moselle (3,233) are good in another manner; and Percy's "At the Opera" (3,224), a half-length figure, shows what delicacy of texture and tint may be attained in this medium, more suited as it is in general for slighter work. The frame of five etchings by Messrs. Cope, Hook, O'Neil, Millais, and Slocombe (3,256), is most interesting; that of Mr. Slocombe, a master in this art, is admirable for its light and atmosphere, and should be compared with his "Illustrations to Sophocles and Ovid" (3,228). There are plenty of other specimens of the art that are worth looking at. The collection of engravings and photographs here will repay attention; among the latter are some of Mrs. Cameron's effective figures and groups from nature.

The show of sculpture this year is small in quantity, and includes a good deal that is not remarkable in quality. Torelli's "Young Masaccio" (2,033) is a finely-finished statuette in the usual modern Italian manner, with all the texture of the dress minutely and elaborately worked upon it. Fontana's two busts, called respectively "Coquetry" and "Summer" (1,914-15), are very elegant and finely modelled. In the latter the full, yet delicate, lips give a peculiar character quite in keeping with the ideal subject. The same sculptor's figure of the youthful "David" (1,913) strikes us as weak and nerveless. Another very charming head by Braga (the Italian sculptors seem to have a fancy for these ideal busts) is that called "Bashfulness" (1,878), a very sweet face, drooped a little forward, and with kerchief tied round under the chin. The most original work exhibited is certainly that by Mr. Lawlor, "The Itinerant" (1,969), perhaps suggested by Scott's wondering "gleemaiden" in the "Fair Maid of Perth": a young girl reclines on the ground, with a mandolin, one knee up, the face turned to one side, with an expression of weariness and dejection. The pose of the figure and the composition of the lines of limbs and drapery have been carefully studied, and it looks well from every point of view. The scale is about half life-size. The artist's other

work, "Artemisia," though delicately modelled, is not at all equal to this one. Among the Italian heads we may notice two more, Argenti's "Happy Memories" (1,861), as an attempt only partially successful, to realise a very momentary and fleeting expression of pleasure on the countenance; and Pessina's "Prayer" (2,006), a very beautiful up-turned face, with parted lips, quite realising the expression suggested by the subject. It is worth while to look at these Italian heads (of which there are a good many more), as specimens of ideal treatment in sculpture purely by the medium of facial expression. The execution of most of them is very finished, and both in execution and expression they belong to a higher walk in art than those leering, grinning busts which Carrier and others of the French school have unhappily affected. Among the specimens of child-sculpture, to which modern artists seem to have been a good deal led, are some very pretty works,—notably the one called "Innocence" (1,890), by Dal Negro, a figure of a little chubby maiden, who, "prodigal enough to unmask her beauty," is funnily quarrelling with her only garment, unconscious of any conventionalities. Braga's "La Vergognosa" (1,876), which might almost have been intended as a companion to the last-named, a coquettish little girl, with her head on one side, laughing slily, is scarcely so successful, as the sculptor has tried to seize an expression of face too pronounced, and at the same time too momentary, to be quite suited for marble. There are two little works in one of the adjoining galleries worth a word, because each embodies that unusual thing, an "idea." "The Orphan," by Paganucci, is a little boy's head and bust, the face thin and sad, looking down, with one hand on the cheek, and an expression of premature care. It is a very touching little work. In the same gallery a small statuette, in terra-cotta, by Dillens, of Brussels, gives an ideal representation of "Echo." A nymph, with long hair floating down her back, is standing, with mouth open, and a wearied expression, as if aimlessly and fruitlessly calling out about nothing. This is a very little figure, and might easily be passed over; but the artist has succeeded in embodying his fancy, which is an original one, and value in such cases does not go by size.

We have thus rapidly indicated what there is that is worthy of particular attention among the fine-art works of this year's International Exhibition, and hope that our remarks may both save our readers some trouble in hunting the best things through a mass of inferior ones, and insure attention to some small and out-of-the-way works which, nevertheless, do not deserve to be passed over. We take this opportunity, however, of again expressing an opinion that to attempt an exhibition of fine art on this scale every year is a mistake, which can do no good to art, nor to the public taste, nor (in the end) to the promoters of the Exhibition. No doubt, there is a certain proportion of works which we are glad to look at, but there is a much larger proportion which are of no good at all to any one, and would scarcely be hung in any other exhibition; and this state of things is likely to get worse instead of better. The first Exhibition was talked down upon by artists on account of the low average standard of the paintings, though we had in that year those clever contributions by Italy in sculpture and painting which surprised every one, and the splendid display by France of the leading names in her beautiful, if somewhat narrow, school of landscape art. The next year the average standard was lower; this year it is much lower still; and so it will go on, if the exhibition be made an annual affair; and we would seriously ask, what is to be gained by the mere process of lining a long wall every year with so many furlongs of pictures, good, bad, and indifferent? Let the picture-exhibition be made a *triennial* one, and duly notified as such on the Continent, and the leading artists of each school would have time to devote to something worth sending; and in such a case the exhibition might afford the most advisable opportunity for comparing the progress and the respective merits of different schools of modern painting.

Institute of Architects.—The royal medal and others will be presented at the closing meeting of the Institute, on Monday next, June 9th, and a paper by Dr. J. W. Hayward, "On Health and Comfort in House Building," will be read. The Intermediate examinations will be held on the 3rd of July.

A LOOK THROUGH LOW LEYTON.

WITHIN the last month we have been to Low Layton, or Leyton as it is now termed, and we repeated the journey to assure ourselves on one or two matters. This somewhat scattered and straggling town, situated at a slight elevation above the river Lea, or Ley, from which it is supposed by some to take its name, is improving of late years in buildings, and, of course, in population. The ancient village, though it must have been small, yet appears to have been one of importance, and its history is, in a measure, mixed up with that of Leytonstone, Stratford, Walthamstow, and other adjoining districts. Whether Low Leyton has been the Durolitum of Antoninus is very doubtful, we think, though urns and other Roman remains have been unearthed here for a century back. The manor belonged once to the Abbey of Stratford, but at the dissolution it was given to Lord Chancellor Wriothesley. Since that period it has passed through numerous hands.

We must leave notice of its antiquities for some other occasion, desiring just now to speak of matters of more immediate interest.

The almshouses date back to 1658, and are the foundation of a worthy citizen of London, named John Smith. Built with red brick, and roofed with tiles, backed in their entire length against an arm of the churchyard, and one end of them abutting the body of that ground, they present, with their little gardens in front, a picturesque appearance. Appearances, however, in this case, are very deceptive; for, on closer examination of their interiors, each almshouse is but a single room, with only one window in front. There is an absence of ventilation and other healthful arrangements in these eight almshouses, so called, and nearly all the inmates of these eight small rooms, who are aged women, were ailing when we visited them. It can hardly be otherwise. The only "accommodation" for these eight houses is one small compartment situated in the centre of the row. The inmates of the rooms on either side of this closet suffer grievously from the smell arising. The trustees of the charity or the vestry are bound to remodel these almshouses, as a matter of decency, sanitary precaution, and improvement. The charity is a small one, and the benefits accruing to the poor aged and infirm inmates are small. The sum of 3s. 6d. per week, and a ton or less coal in the year, are not sufficient. From Advent to Easter a 4 lb. loaf is distributed to each inmate weekly. Formerly, we hear, it was given all the year round; but some years ago this benefit, we learn, was transferred to an adjoining district. A suspicion exists in the town that the full benefit of Smith's trust is not enjoyed by the present-day recipients of his charity; and it is represented that other donors, subsequent to Smith's death, left sums to be added to the charity. The subject is worthy of inquiry, that the truth may be stated, and suspicion set at rest; indeed, the whole subject of charitable trusts needs another Government Commission, for it is to be feared that many benefits have been filched from the poor from time to time.

In a sanitary direction and with minor improvements, the Local Board, or rather the vestry authorities of Low Leyton, have for the last two or three years been doing something; candidly speaking, we cannot say they have been quite successful in what they have attempted. The drainage of the town is imperfect, and of course defective; and the outfall sewer, anent which some hubbub was created several months since, is not at all what it should be in design or execution. Probably the local engineer's hands were tied, and it is not at all unlikely that his plans were in a measure frustrated, and himself badgered by the wise vestrymen, or a majority of the noisiest of them. If common report be correct, a great amount of talk takes place in the vestry-hall, and a very small amount of practical work. The outfall sewer and filtering-chambers are not ambitious pieces of sanitary engineering. We have come to this conclusion from an examination of them, and their surroundings, entrance, filtering-beds, and outfall. The entrance culverts to the filtering-chambers deposit of course their unmitigated cargo of sewage matter, yet after passing through several chambers with their netting, the final clearance chamber receives more than the effluent water that should pass out clear through the outfall culverts. Despite of netting and ballast the "blacks" turn up in large quantities, or in other words, floating patches of escaped and unprecipitated sewage escape through the outfall culverts. Where, think you, does the outfall empty itself? Into an open ditch,—another open foul sewer, once a running stream, but now a stinking oozy ditch. We have not traced it to its source to find where it receives its first foulness; but from the Low Leyton Outfall, where it receives an addition to its filth, we have followed the course of this ditch through the fields for a considerable distance. Well, then, the outfall water, which is not very clear, mingles with other foul water, meanders along through the low marsh lands of the Lea, towards Temple-mills and Stratford; but the current on its way intersects several other cross ditches, some of which carry a portion of the outfall drainage of Leyton into the river Lea.

If the Vestry Board of Low Leyton have not a high opinion of their own dignity and importance we do not know what other vestry has. They have commemorated their service to humanity by having an Aberdeen granite slab or tablet inserted in one of the brick piers of the gateway at the entrance of the outfall works. The names of the whole of the vestrymen, clerk, engineer, and all are epitaphed in sunk and gilt letters. The tablet lacks one adornment. A space should have been allowed at top for a death's-head and cross-bones. It would then be symbolical of their labours, and in a future age it might be utilised in the village church as a polygraphic memorial of the great departed.

Perhaps the members of the Board will grow wise in time. We do not wish to be too hard upon them, but if they would take an honest advice let them at once mend their ways,—roadways and pathways,—and perfect the drainage of the town, which is very defective. The class of houses at present erecting in the town are of the usual cheap speculative build, though a large portion of the land is freehold. Many of the houses of the poor are unsanitary within and without, and the accommodation is bad. The water supply is mostly from pumps; in the high parts it is good, but in the low it is unfit to drink. The town from its situation is liable to periodical attacks or outbreaks of zymotic disease. In the winter months the marsh lands below the town stretching each side of the river are covered with water, and from these rise and float thick mists sufficient to render a person at a few yards invisible. A *quasi* London fog, in fact, often and for long periods, envelops the marshes in the winter, and extends over Low Leyton. The old buildings and mansions of the gentry in the neighbourhood are good specimens of red brickwork in the style common in the reign of Anne, showing good moulded brick ornamentation on the front. Some years ago many persons of title and rich City merchants resided here, but the rapid extension of East London has driven them more inward to Essex, or altogether away, and the lands they occupied are now being intersected with new roads, and are being built upon. Low Leyton and neighbourhood contain at present many nursery gardens, in which flowers, plants, and shrubs are reared for Covent Garden wants; and if there be any trade indigenous to the district, nursery gardening would seem to be the only staple one. Some of these nursery gardens are well worthy of a visit, as a good deal of horticultural craft is displayed in their management. Near to the town, the well-known Mr. Barclay, of the banking firm in the City, has very fine gardens, but of course these are for private use, and the pleasure afforded. One of the urgent wants of the town is a ready mode of communication with the City. Either by Stratford or by the Lea Bridge-road, is a round-about journey, involving much loss of time. The so-called railway station at Leyton is at a distance outside the town. A new road is required across the marshes and the river, to commence alongside of Church Farm, and to take the direction of Hackney, or South Hackney; and a branch of railway from Hackney Wick could be continued to accommodate the town, passing on to Snaresbrook, and other unserved villages. The tramway line from Clapton could be continued along the Lea Bridge-road, to serve the town and other places, and a tram line from Stratford in the opposite direction, could meet it in the town.

These low marsh lands already alluded to on either side of the Lea, between Hackney and Leyton, are, we believe, in portions manor, commons, and common lands, and a difficulty would no doubt be experienced in securing any part of them for irrigation purposes. In view of the future of the drainage of Low Leyton and surrounding districts, these lands should be drained,

levelled up, and utilised at least to some extent by irrigation. The several open ditches that receive the outfall drainage of Leyton should be covered in, the river Lea saved from further pollution, and a proper system of main sewerage perfected for Low Leyton and surrounding districts.

PUBLIC WORKS IN EGYPT: CAIRO.

AN official report, just published, upon the public works of Egypt, with more particular reference to Cairo, gives some interesting information relative to this subject. The present Viceroy of Egypt has done more, it is stated, for the improvement of his capital during the past four years than was ever done before in so short a space of time; and the many admirable public works which he has carried out are spoken of with the greatest admiration. Gas has been laid down in all the principal streets of Cairo, and they are now better lighted than are those of many of the capitals of Europe. Water-pipes have also been laid down in all the principal thoroughfares, from which a plentiful supply of good water is distributed to all the houses whose owners desire it, and are prepared to comply with the necessary regulations. New streets, of considerable width, have been opened through the most densely-crowded quarters, where formerly the alleys were so narrow that the projecting lattice-windows from opposite sides nearly touched each other, and where, owing to the want of ventilation, an epidemic which once occurred was not eradicated until the population was decimated. A large open space, called the Ezbekiah, situated in a fashionable part of the city, was formerly traversed by a seething ditch, and disfigured by mounds of rubbish and small Greek and native drinking-booths. This space has been lately enclosed with iron railings, the heaps have been cleared away, the ditch is filled in, and a pretty artificial lake formed, which is regularly supplied with fresh water from the Nile. The remainder of the enclosure is tastefully laid out with gravel walks, flower-beds, &c., and there are also in the grounds kiosks for bands of musicians, for theatrical representations, and entertainments of a similar order. The land outside this enclosure is being built upon, in accordance with a uniform plan, arcades and shops forming the basement of handsome houses. A tract of land, between the Ezbekiah and Boulac, has been laid out in carriage-drives, and the land has been given by the Viceroy to any applicant who would undertake, within a given term, to erect on it buildings on an approved plan. The German colony has just completed and inaugurated a Protestant church; and a piece of land has been granted to the English colony, in order that they may erect an Anglican church. An opera-house for Italian operas and ballets, a theatre for French plays, and a hippodrome for horse exercise and acrobatic feats have also been built at the expense of the Viceroy. The singers, actors, and performers required for these several establishments are engaged in England, France, and Italy, and during the winter season high salaries are given. Another work of considerable importance has been the construction of a carriage-road to the Pyramids, and another to Heliopolis. All these new roads and streets are bordered by neatly-planted trees, chiefly acacias and sycamores, and an agreeable boulevard appearance is thus imparted to them. The construction of railways is also a work not by any means neglected in Egypt; in fact, altogether there are at present about 750 miles of railroad working in the country. Shortly after the completion of the Suez Canal, the Egyptian Government caused a line to be laid down from Benha to Suez, *viâ* Zagazig and Ismailia, thus running parallel with the new canal, from which the engines and passengers were supplied, and the expense of sending water-trains consequently saved. The rails of the old lines through the desert have since been taken up and utilised. On the left bank of the Nile, there is a railroad from Cairo and Rhoda. The northern terminus is at Einbuba, a place directly opposite Boulac, a suburb of Cairo; and trains are taken across the Nile on a railway ferry. This ferry, however, is only available during a portion of the year, owing to the rise and fall of the waters of the Nile. A large iron bridge has lately been erected over the Nile. On the right bank it is situated near to the palace called Kasr-ed-Dabbara, and on the left bank it lands at Gezirah, a small district which was formerly an island, but which was lately joined to the mainland by the artificial filling up of the left branch of the Nile. It has subsequently been found that the water of the two branches, by being diverted into one bed, has caused damage to the banks, quays, and to some houses, amongst which is the Boulac Museum. It has, therefore, been decided to re-open the former stream. Another bridge has been constructed on dry land at a convenient spot to connect the future island with the mainland again; and a canal will be dug and made to pass under this new bridge. A carriage-road connects these two bridges, which road leads from Cairo to the pyramids, in an almost direct line. It is significant to notice, also, that the Viceroy possesses a well-conducted printing establishment at Boulac, for Arabic works. Many valuable publications have issued from this press. His Highness has also built a large paper-mill in close vicinity to this establishment, at a cost of about 80,000*l*.

ALESSANDRO MANZONI.

ALL Italy is in mourning. One of her greatest has gone to his rest. Manzoni, whose mind assimilated more than other writers' to that of his great predecessor, three centuries back, the immortal Dante;—Manzoni, the loved and venerated by all his countrymen, has after a long life of patient waiting for his country's freedom, a long life of domestic cares and losses, in which he has survived all dear to him, lived to see the unity of Italia, an event that seemed to him ever as a poetic dream, and at the advanced age of eighty-nine gone to his grave.

Born in Milan, 1784, he owed his first education to his mother, the daughter of the illustrious Beccaria. His life is learned in his writings. The man to whom Italy owes so much, for his pure, elevating teaching through his works, whose name will be written in golden letters among the regenerators of his country, remained through his long life far from public cares, taking no active part in the struggles that occurred; he was not among the imprisoned or exiled when his Lombard compatriots were persecuted, not because of any servile submission to the stronger, but because his own greatness stood so conspicuous that he could not be attacked without offending the whole civilised world. He remained in his native city, Milan, during the five days' struggle, hoping always to see the flag of independence float over his beloved city. A pure, religious spirit guided him through all. He wrote not much, but the little he wrote was of the best, the most instructive and enlightening.

His "Promessi Sposi," read in every land, in every tongue, is his best known work. His poems and sacred hymns are known to all Italy. His life of Frederick Borromeo is celebrated. His love for the French nation was very great, and among his writings will be found many valuable works on the history of the French. His retiring modesty equalled his genius. His loving religious spirit shines forth in his great character of Don Cristoforo, in his great romance.

His fervent love for his country, and his own deeply religious mind, made him always cling to the belief in the existence of the same in his countrymen.

After the publication of his great novel, he ceased writing romances, and even disapproved of that kind of literary work. It may be remarked how few good romance-writers have existed or exist in Italy. Our social habits may require the aid of romances, while those of Italy's more favoured inhabitants, by clime and nature, are supplied by the evident romance of everyday life.

Manzoni's works are read and prized by every Italian who can read. His death occurred on May 23rd. His last prayer was for his king and country.

Telegraphic despatches announcing his death were immediately sent to the King, the Royal Princes, and the Parliament.

The body of Manzoni, which had been embalmed, was interred on the 29th of May, with great honours. His death, though long expected, has produced a general regret. All seek to do honour to his memory.

New Town-hall at Wrexham.—Sir Watkin Williams Wynn, M.P., has opened a new public hall and corn-exchange at Wrexham, including club-rooms, a magnificent concert-room, and every convenience.

CRUSHER FOR CONCRETE, CEMENT, AND ASPHALTE.

THE introduction of machinery as a substitute for manual labour has been for generations past a sore subject with many of those more immediately interested. That the supercession of the one by the other has caused disturbance in the channels of industry,—that it has caused distress in some instances, in many, it may be,—is not to be disputed. On the other hand, however, it would be easy to show that the use of machinery has, in many cases, greatly reduced the prices of divers necessaries and luxuries, has conduced to the welfare of the great body of the people, has originated new industries, and has opened up and made available mines of wealth and sources of advantage that would have remained closed but for its use. Many machines, indeed, do their beneficent work without the displacement of any manual labour at all, but have caused rather its creation; as, for instance, the steam road-roller, a comparatively recent innovation, that produces a result greatly desired, it may be, before its introduction, but a result scarcely dreamt of or attempted to be produced as within the power of men and horses. Stone-crushing machines for the production of "road metal" may be objected to by "Luddites," if any survive, but these machines have really performed the feat of giving good roads to countries and districts in which the roads were, before their introduction, impracticable for most of the ordinary purposes of commercial and civilised life.

Any one visiting the Montpellier Iron Works, Walworth, will find that the machines produced by Messrs. J. C. Cole & Co. are capable of doing a great deal more than breaking blocks of granite into small cubes to be used as road metal. A large machine just completed is to be sent to Berlin for employment on the streets in grinding to powder the Neufchatel asphalte with which they are paved. It has been ascertained that the asphalte loses much of its virtue in the course of transit, when it is ground in the quarry, and in Berlin it is to be delivered in blocks, and ground down by one of these machines stationed in or near the street in which the material is to be used. The machine occupies a very small space; it is 8 ft. long by 5 ft. wide, and 6 ft. high, and may be driven by either steam or horse power. The disintegrating parts of the machine, which are strong and simple, are different from the arrangements in any other machine employed for stone-crushing. They consist of strong metal teeth of pyramidal form, the bases of the pyramids being fixed upon two parallel shafts, and the teeth working into each other. From the crushing-machine the stuff passes by a sloping shoot with a jigging motion to the grinding metal discs, beneath which it is reduced to powder. In the crushing machine the asphalte is liable to clog, and scrapers are introduced to prevent this effect. Between the grinding discs, curious though it may seem, this tendency to clog does not appear, and the asphalte is driven out rapidly at the edges, cool, and in the condition of a fine powder. The machine reduces twenty-five tons of bituminous rock asphalte to powder in a day of ten hours. It weighs about six tons.

Another interesting machine has just been completed in the same works, that differs in construction, and is destined for quite a different use, from the asphalte-crusher. This is a double-action stone-breaker, for the production of material for making concrete and cement, and reduces granite, limestone, quartz, or any other mineral, to pieces of a quarter of an inch irregular cube, or any other desired size. It has two hoppers and crushing-chambers, one on each side of the cross central shaft, which has a heavy balance-wheel at each end, and is driven by a belt. On the outer sides of the two crushing-chambers there are toothed surfaces of chilled iron, that are acted upon by the two toothed moving surfaces attached to the main shaft. The attachment of a cam to the shaft gives an effective eccentric action to the crushing surfaces, that may be best described as a "chewing" motion; being a combination of forces applied vertically and horizontally. The shaft makes from 200 to 220 revolutions per minute, and, as each jaw does duty at every revolution, it follows that crushing-force is exercised in the two chambers from 400 to 440 times per minute. It was interesting to notice, as evidence of the strength and simplicity of the machine, the condition of a piece of wrought iron that had accidentally got into it while at work. The iron is deeply marked with the teeth of the grinding-faces, but could not get through

the narrow egress at the bottom of the crushing-chamber, and the effect was simply that it stopped the machine, and caused the belt to slip, until the power could be turned off, and the innovating substance removed.

ON CHURCH RESTORATION.

ARCHITECTURAL ASSOCIATION.

AT the last meeting, held on May 30th, Mr. W. White, F.S.A., read a paper on "The Restoration of Adisham Church, Kent." The village is about six miles east of Canterbury, on the road to Dover. The church is cruciform on plan, with a central tower, and an Early English chancel of considerable size and excellence. Mr. White traced the history, and detailed the features of the church, and the fresh light gained in the course of the recent restoration under his superintendence. He called attention to the position selected for the pulpit (on the west side of the south-east pier of the crossing). The popular notion that the north side (the gospel side) is the proper traditional place for the pulpit, Mr. White disputed, urging that the sermon is another matter, and that old pulpits, undoubtedly *in situ*, as in Devon and elsewhere, are on the south side. A comparatively modern upper story has been removed from the tower, and a steep pyramidal roof constructed, covered with deal shingles Burnettised. This covering does not cause such hazard to roofs, in case of a slip, as would plain tiles (used in the other new roofs); and the colour is now very pleasing, calling to mind the old shingled roofs of churches on the Rhine. A late Mediæval segmental pointed arch under the pointed east tower arch has been removed; and its work in keeping the piers in their places is now performed by an old screen and large oak straining pieces, resulting in an improvement in the view of the chancel, heretofore disfigured by the arch inserted for stability without regard to beauty. The large tower piers make the arches comparatively small (12 ft. 3 in. in the clear). The inconvenience from this has been in part overcome by seating the nave (which has no aisles), with fairly wide spaces next the side walls. An old stone bench table round the side walls remaining in a considerable portion of the nave, is exposed by this arrangement, which was, however, mainly followed in order to keep the seats, as much as might be, in the space opposite to the tower arches (the central passage in the nave has not been omitted). The ground on which the church stands falls rapidly towards the east end, and the chancel floor was below that of the nave, no doubt so arranged from motives of convenience and economy. After convincing himself that this was original, and that the proportions of the church would suffer by alteration, Mr. White succeeded in obtaining the retention of the step down eastward, raising, however, the extreme east end by steps. He expressed an opinion that frequently old churches have suffered greatly in general effect by the diminution of height in their chancels in the raising of the floor in a way not contemplated in the original design. The position of the good-sized organ on the side of the chancel (not in a recess) was found to carry the organist's seat nearly to the centre line. This difficulty was got over by placing the organist at the opposite side, and the organ is played by trackers under the floor, with advantage in use, as he can hear the choir without being disturbed by near sound of the instrument. In making some general remarks on the subject of church restoration, Mr. White advised under rather than over restoration—the maintenance of ancient features not absolutely injurious to the uses of a building, even though not of special beauty in themselves. At the cost of much personal trouble the old timber porch on the north of the nave was got together again, and forms an interesting feature, though considered quite hopeless by the workmen. Well-intentioned people, anxious to make neat work, require to be carefully looked after: some early fourteenth-century caps, gray with age, not perfectly true in form, would have been reworked, and made geometrically accurate but for imperative orders. Decayed work should not be restored, as its authenticity is rendered doubtful. Much of the motive for the preservation of such work will be gone if confidence is taken away in its being what it was at first For determining the date which should be followed for new work, such as new roofs, &c., no universally applicable rules can be laid down. The character of the parts of the building to which they will be put must regulate the treatment in each special case. In this restoration the chancel roof follows the character of the Early English architecture below. In all cases the general effect, the attainment of a religious and solemn character with real harmony in design, should be the great consideration; and with this the following out of any mechanical rule of mere conformity of style to that of certain old features might be in conflict.

OPENING OF A NEW STATION ON THE SOUTH-EASTERN LINE.

ON Sunday, 1st June, or more correctly, on Monday last, a new suburban station was opened for public service, that is situated about midway between New Cross and Lewisham Junction stations of the South-Eastern system. The new station has nothing pretentious about it in an architectural point of view. It is formed in a deep, wide hollow, and has three double platforms, each long enough for the heaviest passenger trains, and that accommodate seven lines of rails, two of which are, however, for shunting and engine-turning purposes. The platforms are covered, for about half their length, with very neat and substantial timber roofs, covered, in flat section, with galvanised iron, corrugated. Access to the platforms is by a bridge and three stairs (all covered), that are, by a happy thought, legibly numbered 1, 2, and 3 at the top of each. The booking-office and waiting-rooms are on a level, considerably higher than the platforms, and rather lower than the public road. The structure is of timber, but well finished within. It, as also the roadway leading to it, is on "made ground," with which concrete, judiciously applied, is combined. The new station accommodates ninety trains up and down, per day. The number of trains up and down that pass the station are about 200 per day. It is expected that this station will prove a great convenience to the residents, and a great saving to the company, by enabling them to run "shuttle" trains, and saving the carriage of an enormous proportion of dead weight.

FRIENDLY RECOGNITION.

MR. WYATT PAPWORTH, who has given valuable services to the Royal Institute of Architects, has been wise enough to get married; and some of the members, his personal friends, thought it a good opportunity to recognise those services: so they made a little subscription, and on Friday, in last week, the testimonial, which had taken the place of some plate selected in accordance with Mr. Papworth's wishes, was presented to him at the residence of Mr. Chas. Fowler, who has acted as honorary secretary in the matter. There were exactly fifty subscribers.

THE ENDOWED SCHOOL COMMISSIONERS AND THE SIR WALTER ST. JOHN'S SCHOOLS, AT BATTERSEA.

THE Endowed School Commissioners have just issued a scheme for the future management of the Sir Walter St. John's Schools at Battersea, which, if eventually adopted, will involve the erection of new school buildings at a considerable outlay. Under the proposed scheme there are to be two schools, viz., an upper school and a public elementary school. The governors of the upper school are to sell the site and buildings formerly used for the purposes of the school, but now let, and apply the proceeds, and a further sum, not exceeding 4,500*l.*, to be raised out of the capital funds of the trust, in the purchase of a new site, and in the erection of school buildings suitable for 250 scholars, and the school is to be a day-school exclusively. In addition to a fixed stipend of 100*l.* per annum, the head-master is also to receive payment, according to the number of boys in the school, at the rate of not less than 2*l.*, nor more than 4*l.*, yearly for each boy. The entrance-fee is not to exceed 1*l.*, and the minimum tuition-fee is to be 6*l.*, and the maximum 12*l.* a year. The governors are to hold the present site and buildings for the purposes of the public elementary school, the tuition-fees not to exceed 9*d.* per week. The vestry and parishioners of Battersea held a meeting in opposition to the scheme, as violating the intentions of the founder, and interfering with the education of the children of the poor, for whom alone the schools were intended. A committee was appointed to consider the scheme, and to draw up a report for presentation to another meeting of the parishioners.

BOLTON TOWN HALL.

WE publish this week an exterior view of the new Town-hall in Bolton, of which we gave plans and a description last week. The columns are omitted on the back (west) elevation; the basement, cornice, and other details being, however, carried round with little or no modification; and the two halves of the structure are precisely symmetrical, except that on the south flank columns square on plan are substituted for circular ones.

The basement, up to the level of the ground-floor string (which formed the first contract), is of Bolton stone; the tower is of the same stone; the principal front is of Halifax and Darley Dale stone, the north and south fronts of Huddersfield, and the west front of Longridge stone.

The tower, which rises 200 ft. from the ground, will be, owing to its comparatively elevated position, in the highest part of the town, a conspicuous object for a considerable distance round the country. The general aspect of the building, and the nature and arrangement of the site, are such as to give an impression of the dignity and importance of the structure, and leave no doubt on the spectator's mind as to its office as the municipal centre of the town.

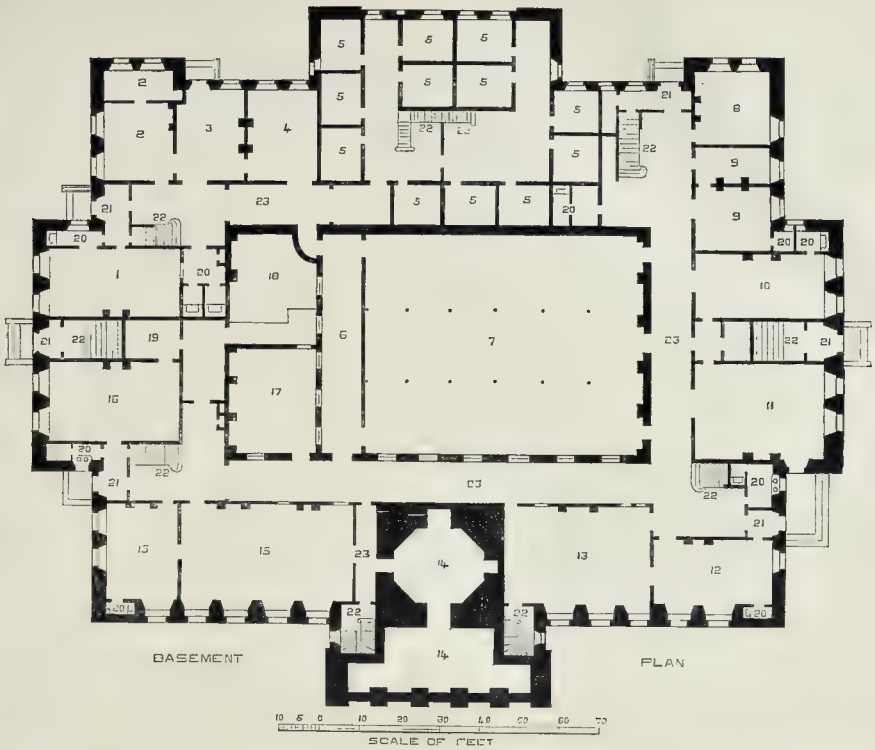
The realisation of the town-hall scheme is the result of very long struggles and aspirations, commencing more than half a century ago, on the part of a rising town; though of course the idea of the present building was only fairly taken up during a more recent period. The original limit of cost was fixed at 40,000*l.*,—a sum which, as our readers are already aware, has been far exceeded in the execution of the design finally determined on. We may hope that this augmentation of expenditure represents a proportionate increase in the prosperity of Bolton, and typifies further progress in the same ratio. We add to the plans already given,* that of the Basement.

THE CICERONE FOR ITALY.

DR. BURCKHARDT, the original author of the book † thus designated, has been long recognised in Germany as an authority on the history of art. The present work, intended as a practical guide for the student of painting in Italy, is now made accessible to the English public through the translation given to us by the widow of the late Arthur Hugh Clough, poet—and something more. In its original form the work was a handbook of architecture, sculpture, and painting; the translation includes the portion devoted to painting. The plan of the book is to give a concise history of the various schools of painting in Italy up to the close of the seventeenth century, especially pointing out the characteristics of the leading painters, their influence on the art and on their successors, &c.; and enumerating their principal works, and the places where they may be seen and studied. The object of the work being something beyond that of a mere guide-book (as the term is commonly understood), the arrangement of the subject is according to schools, and not according to localities; but a double index, of places and of painters, gives a reference to the page and (by means of marginal letters) the paragraph, where information is to be found as to the locality of any painting mentioned, and the paintings of any locality; so that the ordinary office of a guide-book is also fulfilled, at least for those who do not travel *à la* tourist—doing so many picture galleries in a day. The English edition is printed in double columns, in a small but clear type, and thus a very great amount of information is compressed into a volume small enough to carry conveniently in the pocket. The office of the editor, Dr. Von Zahn, has been exercised in regard to the second edition, the author having been occupied with other duties, and he has supplemented the work by contributions from other and more recent sources of information,

* See pp. 417, 426, *ante*.

† The Cicerone; or, Art-Guide to Painting in Italy. For the Use of Travellers. By Dr Jacob Burckhardt. Edited by Dr. A. Von Zahn; translated from the German by Mrs. A. H. Clough. London: J. Murray. 1873.



1. Detectives (police department).
2. Chief constable.
3. Receiving-office.
4. Police clerks.
5. Cells.
6. Police waiting and dining room.
7. Police parade.
8. Borough analyst.
9. Porter.
10. Medical officer of health
11. Inspector of nuisances.
12. Pay-office, Borough treasurer.
13. Rate-office, Borough treasurer.
14. Waterworks stores.
15. Waterworks offices.
16. Hydraulic engines for organ.
17. Kitchen.
18. Warming apparatus.
19. Store-room.
20. Lavatories and W.Cs.
21. Entrances.
22. Staircases.
23. Corridors and passages.

BOLTON TOWN HALL.—*Plan of Basement.*

with the view of bringing it up as far as possible to a level with the latest and fullest information on the subject which is available. Among the writers who have thus become coadjutors in the work are the late Herr Mündler, Messrs. Crowe and Cavalcaselle, Dr. Frizzoni, Dr. Bode, and the editor, the quotations from each being enclosed in brackets, and distinguished (except in the case of the editor's own additions) by their respective initials. As indicative of the full and precise information conveyed, it may be mentioned, that in many cases, in addition to an analysis of the character and composition of a work, &c., is added an editorial note of the time of day when the best light is on it, no unimportant item of information in the case of many paintings and frescoes placed with little regard to facilities of lighting. Mrs. Clough's translation is, with the exception, perhaps, of a few unimportant sentences, characterised by a clear and expressive English style and idiom; does not, in other words, read like a translation,—a kind of praise which cannot always be bestowed in such cases.

The volume is, however, as we have hinted, more than a guide-book; and whilst giving testimony to its efficacy in this respect, it would be scant justice to mention such a book at all without adding something as to the value of the higher art-criticism contained in it, which would render its perusal a matter of pleasure and profit to many who have not the intention or opportunity of studying Italian painting on its native soil. Dr. Burckhardt's criticism is very broad and philosophic in its tone, and based upon serious considerations of the nature and end of painting as an art, apart from the mere estimate of technic excellence. Some of the reflections occurring incidentally in the course of the work give, in a few words, the key to much which is habitually misunderstood or left out of consideration in the popular judgment on works of art; and, if rightly apprehended, would lead to a much more intelligent study of painting on the part of the average of readers who may make use of such a book than at present exists,—in England, at all events. We note, for instance, in the opening of chapter v., in which the prominent motives of the "Renaissance" are ably characterised, the following observation on the superseding of the church type by that of realism:—

> "Instead of general types of faces we have individuals; the traditional system of expression, of gestures and draperies, is replaced by the endless variety of real life. . . . . In this sense a work of art gives less than the church requires or might require. The religious expression claims absolute supremacy if it is to be successful. And this for a simple reason, which is not always openly acknowledged: *this impression is essentially negative in its character, and consists in excluding everything that recalls profane relations in life*; if these are carefully and on principle introduced into art, as now becomes the case, the picture will no longer appear to be a religious picture."

How much weak talk about "ecclesiastical" and "religious" art would be appraised at its true value, if the idea in the sentence we have italicised were once generally laid hold of, must be evident to some at least of our readers. We commend to the attention of the *dilettanti* of the "ecclesiastical" school, again, the note on p. 90, in which the question as to whether Perugino "really felt as his creations feel" is summarily dismissed as "quite out of place, and an infringement on the eternal rights of poetry":—

> "Many confused ideas prevail concerning the 'profession of faith' of the artist and poet, according to which it would be required that he should constantly carry his heart on his tongue, and in every work give out as complete a programme as may be of his individual thought and feeling. But as artist and poet he needs no other *sentiment* than the very strong one which is needed to give his work the greatest possible perfection," &c.

It is perhaps almost hopeless to expect the popular mind of England, which seems incapable of rising above the mere moralities of art, to comprehend this view of the subject; still the oftener it is repeated the better, especially as in opposition to the overwrought and unreal sentiment about "art and religion" with which we are perseveringly dosed by certain critics. On the other hand, "the entire absence of moral elevation" (a very different thing from "moral *teaching*") in the figures of Corregio, for example, is duly recognised by our author as a distinct and important deficiency in works of art claiming the highest ground. "One is tempted to exclaim,—I myself could have conceived this from a higher artistic point of view." Very suggestive also are the observations on allegory and symbolism in art (p. 39), as *apropos* of the Giottesque school; in the course of which it is observed that "a work of art ought never to be founded on a metaphor; that is, an idea transferred to a new fictitious reality, which gives a necessarily false result in a picture." The author recognises, however, to the full, the importance and grandeur of Giotto's symbolic work, and the distinction which he draws between "symbolism" and "allegory" should be noticed.

In his criticism on, and characterisation of, the greatest names of Italian painting, Dr. Burckhardt is particularly interesting and comprehensive; and perhaps the nature of the power which Titian possesses over us could

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hardly be better stated in a few words than in the following sentence:—

"The divine quality in Titian lies in his power of feeling in things and men, that harmony of existence which should be in them according to their natural gifts, or still lives in them, though troubled and unrecognised; what in real life is broken, scattered, limited, he represents as complete, happy, free. This is the universal problem of art; but no one answers it so calmly, so simply, with such an experience of absolute conviction" (p. 185).

This is finely as well as truly said; and we may add the remark further on in regard to a special class of subjects with this great painter:—

"Titian has also in certain nude figures solved other problems of a lofty existence, and at the same time achieved a triumph in the pictorial representation." (After some references to the two famous "Venus" pictures in the Uffizi, the author proceeds.) "Figures of this kind so often mislead modern, especially French, painters. Why are these forms eternal, while the moderns so rarely produce anything more than beautiful nude studies? *Because the motive and import, and the light and colours and form, arose and grew together in the mind of Titian.* What is created in this manner is eternal. The delicious cast of the figures, the harmony of the flesh tints with the golden hair and white linen, and many other special beauties, here pass altogether into the harmony of the whole; nothing obtrudes itself separately" (p. 186).

There is matter here for reflection, both for those who paint pictures and those for whom they are painted. We may add, however, that some of the modern French painters may be said to have realised, to some extent, this unity of conception in the embodiment of the poetry of the nude figure; Ingres, for instance, in his "La Source," so full of delicate sentiment expressed in delicate form; Gerôme occasionally, though in quite another key; Watts, perhaps we may add, in his "Daphne." Our author does not, however, allow his enthusiasm for Titian, "the gigantic figure in the centre of the Venetian school," to run away with him; while observing that there is no intellectual element in the school which he (Titian) does not "somewhere exemplify in perfection," he adds, with the caution and impartiality belonging to a true critical spirit, "he certainly also represents their limitations."

Dr. Burckhardt's characterisation of Raffaelle comes much nearer to the old orthodox idea of this painter, than to that view of him which a school of earnest but rather narrow criticism among ourselves has to a great extent induced,—for the present, at least. "Raffaelle," indeed, he says, "spreads his beauties before us with such directness that every one who sees his pictures, can find his way without a guide, and can carry away a lasting impression. The following suggestions are intended to clear up the sometimes hidden reasons of this impression." In respect, indeed, of this clearness of object and aim, Raffaelle is in painting what Handel is in music; and it must, perhaps, remain always a subject for difference of opinion in criticism, whether the artist who appeals to the simpler and more widespread sense of beauty in material, or he who (like Michelangelo and Bach) gives up his innate grandeur only to more recondite study, deserves to be called the greater or the more valuable in the world of art. That the permanent popular verdict and feeling in regard to Raffaelle, however, will always be in the main nearer to that of Dr. Burckhardt than of Mr. Ruskin, is our own decided conviction. Through the long and elaborate description and criticism on the numerous works of Raffaelle we cannot follow our author, but may quote the following sentence from his final summing up of this painter's status in the history of the art:—

"To Raffaelle, of all men, there is least occasion to forgive anything, or to help him out by assuming something. He accomplishes tasks of which the intellectual premises, not by his fault, lie far removed from us, in a way which seems quite natural to us. The soul of the modern man has in the region of the beautiful in form no higher master and guardian than he. For the antique has only come down to us as a ruin, and its spirit is never our spirit."

The interesting remarks on Leonardo we must pass over merely with the observation, that the author reduces the authentic (completed) works of this artist to a minimum, considering that Italy contains (not counting the coloured drawings), only a single genuine *finished* picture by Leonardo, the portrait of Isabella of Arragon, wife of Galeazzo Sforza, in the Ambrosiana, at Milan. The whole of the chapter on Michelangelo is admirable, and should be read with attention. "Of all that makes life dear to us, there comes out little in his works;" and in regard to his forms, "no drawing, however grand, no expression of power, can make us forget that certain extremes of breadth of shoulder, long necks, and other such forms, are arbitrary, and sometimes monstrous. Certainly, when in presence of his works, we are always disposed to allow Michelangelo a right and a law peculiar to himself." The author does not fail to point out what we noticed in reviewing Mr. Tyrwhitt's work on "Christian Art," some little time since, that Michelangelo, though it has been a fashion to speak of him as the great "Christian artist" of the Renaissance, had, in fact, "severed himself from all that may be called ecclesiastical types and religious tone of feeling." "He revels in the Promethean pleasure of calling into existence all the capabilities of movement, position, foreshortening, and grouping of the human form." After observing that this artist first of all conceived the Creation "not as a mere word, but as an action," it is remarked that "in the whole domain of art there is no other example of such an intellectual living expression of the supersensual by a perfectly clear and speaking sensuous act," as is embodied in the representation of the Creator giving life to Adam. Dr. Burckhardt is not blind, however, to the questionable nature of the influence which Michelangelo's genius exercised (such as genius of so abnormal a character always must exercise) on those who succeeded him. "After his death, all principle in all the different arts was overthrown; every one strove to reach the unconditioned, because they did not understand that what in him appeared uncontrolled in fact took shape from his inmost personality."

We must here take leave of a book remarkably interesting in its class, and replete with information conveyed in a method both systematic and agreeable to the reader. We are indebted to the translator for furnishing us a pleasurable task in going through a work in which we meet everywhere the evidence of a thoughtful and cultivated mind, and an enthusiasm tempered by a true spirit of criticism. We can recommend the book to all who wish to study intelligently the relics of the great epoch of painting which remain in Italy, and join with the author in wishing "to those who may read and approve him, and take him as their companion across the Alps, the calm joy of soul which he tasted in Rome, the remembrance of which comes back to him so powerfully even in looking on the feeble copies of the great masterpieces of art."

SEWAGE AND DRAINAGE WORKS AT WINDSOR CASTLE.

THE "separate system" of drainage, whereby the channels for carrying off the rainfall are distinct from those for conveying the sewage, has been applied to the new drainage works which have just been completed in connexion with Windsor Castle. At the same time further measures have been taken for equalising the levels of the river Thames at different periods of the year, so as to increase navigation facilities, and prevent the danger and injury caused by the annual flooding of the low lands along the banks. The works altogether have taken six years to complete, and have now, under the guidance of Mr. W. Menzies, surveyor of Windsor Park, and Mr. Leach, engineer to the Thames Conservancy, been brought to a conclusion.

In carrying out the works for regulating the level of the river, it was considered necessary not to alter the general level of the water, but to maintain it at its average summer level. The subsoil water on each bank is kept at about 5 ft. from the surface, so as to give as much benefit as possible to the pasturage and trees on the Royal estate. Old Windsor lock and weir have been rebuilt on their old sites, the waterway of the weir being increased, when all the sluices are raised, from 555 ft. to 647 ft., for the river to pass through. Its sill, also, is built 1 ft. 6 in. lower than formerly, thus giving greater facilities for letting off winter floods. At the same time the sluices and hatches have been built higher, so as to admit of the summer level being kept at an increased height of 1 ft. The bed of the river has been also dredged to a uniform depth of 5 ft.

Self-acting tumbling-bays have further been constructed contiguous to the weir and lock, so that whenever the river rises more than 15 in. above the summer level, it can immediately flow off. Similar works have been carried out at Bell lock and weir, and Romney lock and weir, the result of which is that the river can be maintained 1 ft. higher than its original summer level, while the floods can be reduced 1 ft. 6 in. The levels formerly varied about 10 ft.; their greatest variation is now 7 ft. 6 in.: the floods consequently which used to cover so large an area of land on each bank of the river will be controlled to such an extent that, as last winter's experience proved, they will not extend over a tenth part of the land they formerly submerged. The total cost of these works was 16,629*l.*

The works for the supply of water to the whole of the Castle Estate have been simultaneously executed. The water is procured from a well sunk near Old Windsor Lock, the spring supplying which seems to be unfailing. The water is raised into the cisterns, the highest of which is 274 ft. above the river, by utilising the water falling over Old Windsor Lock to turn a water-wheel. This power is supplemented by an 8-horse power engine to be used in case of accident. The water-pipes extend nearly a dozen miles in length, and carry sufficient water to supply all the houses in and near the park.

The total cost of these works was 8,529*l.*

But the most important, because the most novel, of the works, are those which have been carried out for draining the castle and adjoining buildings for the irrigation of the lands, and for the utilisation of the sewage.

Formerly all the sewage and drains ran into the Thames direct, or into the Windsor town sewer. Since the Thames Conservancy ordered the diversion of the foul matter from the river, it was determined to utilise the sewage for irrigation, and to discharge the surface-drainage into the river direct; and the Crown buildings have now a system of drainage distinct from the town system.

An equalising reservoir, to contain 20,000 gallons, has been constructed to hold this sewage, which is carried in 18 in. pipes, with a fall of 3 ft. to the mile, to a small piece of land of about eighteen acres, which has been laid out for irrigation. The levelling and preparing of this land were performed at the large cost of 80*l.* per acre.

The water-supply of 1,000 persons and 500 cattle is about 150,000 gallons a day, the surplus supply unutilised being directed into the lake at Frogmore.

The principal feature in connexion with these works is the pumping-engine, which is thus described by Mr. Menzies:—

"The engines were constructed by Messrs. Easton & Anderson in such a form that they can be worked either by compressed air or steam, a boiler being placed in the engine-house for the purpose. To supply this compressed air, the turbine wheel at the waterworks acts upon a piston and cylinder, which forces the air into a pipe 2 in. in diameter and 425 yards long, leading up to the sewage pumping station; and great economy is thus obtained, as coals will not be required except in special cases. A self-acting float in the sewage reservoir stops the air-engines when the tank is empty, and a safety-valve at the turbine-house then blows off, and at the same time stops the whole compressing machinery, while the pumping of the water for the Great Park goes on as usual. The maximum amount which it was calculated the sewage pumps would ever be called upon to lift would be 200,000 gallons a day of twenty-four hours. This was estimated on the supposition that the whole of the 150,000 gallons of the water supply used at the Crown buildings came down the foul drains; that there was a heavy rainfall on the dung and manure-pits and farms at the royal farms, which drain into the system; and that there was a quantity of subsoil water which would pass into the main drain when it was submerged in flood time, notwithstanding all the precautions we could take to exclude it. Each set of pumps at the sewage reservoir was, therefore, planned to throw 10,000 gallons an hour, whether worked by steam or compressed air, but in a case of emergency double the quantity could be lifted by putting steam to work on one set of pumps and air on the other, or the boiler alone at the same place is sufficiently powerful to drive both sets of pumps for the greater part of the day when working at 50 lb. pressure to the inch."

The cost of these works, including compensation, machinery, embankment, and levelling, part of the charge for rebuilding weir, &c., is 18,119*l.*, which brings up the total charge for all the works referred to, to 41,808*l.*

The apparently enormous expenditure is repaid by the substantial nature of the works, and the lasting benefits that will ensue from their execution, as well as in the direct profits that will be made by the increased value of the lands and houses in and adjoining the estate, in the proceeds of the irrigation farm, and the saving of labour in pumping and carting water, to say nothing of the improved sanitary condition, not only of the immediate neighbourhood, but of places further down the river.

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t by Messrs. W. Hill *and* G. Woodhouse, *Architects.*

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HE MEXICAN METHOD OF MAKING HARD LIME FLOORS.*

ME years since, the writer had occasion to Northern Mexico, to examine and work e silver-mines; and, while passing through Mexican villages, noticed the exceedingly and polished lime floors and roofs of the es.

the village of Salinas, where our party ained some three weeks, the horses passed through the house into the inner court- over one of these floors without leaving an ntation, or injuring it in any way. Some after, having occasion to construct some dings at La Yguana Mines, an attempt was e to imitate these floors and roofs. Attri- ng the peculiar hardness and smoothness of floors to the inherent good qualities of the used, no inquiries were made as to the ican method of working. A good quality of stone was selected and calcined in the ordi- way. Shortly after burning it was slaked dry powder, and afterwards used as required. or was laid with a foundation of about 3 in. roken stone, over which was evenly spread t 2 in. of mortar, formed of two parts of sharp sand and one of lime. The lime was ," swelled greatly in slaking, and was not l hydraulic.

he floor, made as above, was a total failure. the end of four weeks the leg of a chair ld indent it. As soon as the surface was aged it began to crumble; and soon broke It would probably have been about as hard ur ordinary lime mortar if allowed to set a cient length of time before being used.

nowing that the Mexicans used the same erials with better success, their superior was called into requisition to lay all the ining floors and roof of the same building. y used the same sort of lime and sand in t the same proportions, and upon the same of foundation. The result was a floor as and smooth as a piece of polished marble, a horse could trot upon without injury.

brief account of the method of making e floors may not be uninteresting.

he limestone used was a hard, compact blue erial, in some places sufficiently hard to e fire on the drills used in running a drift ugh it for mining purposes. It often con- s iron pyrites in small proportion. This calcined in kilns cut out of a very soft lime- e, that likewise is found in that section of ntry, and which, on account of its whiteness softness, is called "cal leche." I believe s never used for making lime by the icans.

fter calcination the lime was removed from kilns, and slaked as soon as cool. Some of as used within a day or two, and some ained a month or more in barrels. All the k made with it seemed to be equally good.

n making the floors, a layer of broken lime- e, three or four inches thick, was first laid ly over the surface of the ground, the stone g about the usual size for macadamizing ls. Over this a mortar of about two parts of d to one of lime was carefully and evenly ad to the thickness of 1½ in. to 2 in.; this allowed to remain for about twenty-four rs, or until the surface had become quite It would probably take longer in this ate, where the air possesses a greater amount oisture than in Mexico.

he floor was then thoroughly pounded all with a tool composed of a block of wood ut 1 ft. square and 3 in. thick, having handle rising from the middle, so that an could stand while using it. The whole face was beaten over with this ram until it again as soft and moist as when first laid. s operation of ramming brought the water in mortar to the surface so as to form a layer emi-fluid substance on top.

he floor was again allowed to dry, and again ten over each day for about a week, when operation brought only a slight amount of sture to the surface.

mediately after the last pounding the whole face was powdered with a thin layer of red e, evenly sifted on, and then polished as ows:—

smooth, nearly flat, water-worn stone, a e larger than the fist, was selected from the of the stream which ran through the place, with this the whole floor was laboriously gone over, rubbing down, and leaving the surface of the lime as smooth as a piece of polished stone, the red of the ochre rendering it of a rich brown colour.

In less than a week the floors made in this way were sufficiently hard to bear the weight of a horse without indentation. Roofs were made in the same manner, without the colouring matter, which was added only to give the floors a better tint than the gray of the mortar. These roofs were perfectly waterproof, and were unaffected by sun or rain.

In the city of Monterey, sidewalks in the principal streets are made in the same manner, and some of them have lasted for years, wearing through like a block of stone.

The great durability and strength of these floors and roofs are entirely owing to the pounding operation above described, as the same materials were tried in the ordinary way without success.

The writer has not had occasion to make use of this process in this climate, but gives a description, hoping that it may be of value to others who may have occasion to lay floors of lime in architectural or engineering works. He has never heard of this method being employed in this country; although it seems singular that it should be used so generally by a neighbouring nation, and be wholly unknown to our builders.

The following correspondence grew out of the above:—

From Estevan A. Fuertes, C.E., Member of the Society.

A paper read before the Society, upon a Mexican method of consolidating mortars, described as of extreme hardness, suggested to my mind that, perhaps, its author might be mistaken in attributing its main durability and hardness to the slow system of consolidating the road-bed and its cover.

My doubts have grown out of the circumstance that the author says (without seeming to attach much importance to the fact), that ochre, or a similar pigment, was mixed with the mortar.

I think that the colouring matter, believed to be of secondary importance, is the main ingredient which determines the superiority of the cement described; and instead of its being ochre it was underburnt brickdust.

If I am not the one who is mistaken, the consideration of this subject will bring up for discussion the method of obtaining a cheap and superior cement, that, I believe, has not been used much in this country.

The hydraulic engineer has much need of studying the causes which induce the "setting of mortars," because it is almost certain that the resistance of such materials as bricks, limes, and cements, depends upon their conditions of crystallisation.

I am aware of only two methods of hardening the silicates usually employed in hydraulic works, viz., the gradual chemical change (crystallisation in the slow, humid way, as in submerged foundations, &c.), and the quick vitrification under the influence of intense heat, as employed in brick-making.

It is notorious that under-burnt brick resists very badly the influence of atmospheric wear, especially near salt water. I have crumbled in my hand an under-burnt brick, one year after its exposure to sea spray, and gunpowder was manufactured from the nitrate of potassa formed upon its porous substance; but the same clay burned with chalk, making a double salt of carbonate of lime and silicate of alumina, or rather a sub-crystalline double silicate of lime and alumina, after being ground, made a cement susceptible of receiving a splendid lustre, and withstood the action of the spray and of the waves without apparent change.

Both the limestone and the brick had been used separately as building material in a burying-ground near the sea-shore, where the experiments were conducted in 1861. Eighteen months of exposure for the stone, and twelve months for the brick, were sufficient to render both materials useless; but when burnt, ground, and mixed, they stood much better than the finest and distinctly crystalline marbles.

At the end of three years, or more than the sum of the times of durability of each material, I left the place where the experiments were made, and then the cement had not changed where the surface had been left rough, nor tarnished where it had been polished.

A cement called "Revocado" by Spanish engineers is made by mixing in several proportions fat limes with sand and under-burnt brick-dust. The usual proportions are measured by equal volumes of the three materials; but when the cement is to be used for stopping roof leaks, cementing cellars, or where blows upon the cement are not anticipated, the proportion of sand is greatly diminished, and even suppressed altogether.

The Spanish learned the compounding of this cement from Biscayans probably; and I doubt if the Romans had anything to do with its introduction in Spain, because the ruins of ancient water-channels with "revocado" exist in the Basque provinces, where neither Romans nor Moors ever penetrated. The Biscayans, in their turn, are the most ancient people with whom we are acquainted, it being probable that they preceded the Phœnicians.

I have seen Spanish "revocado" in Mexico, and it is natural to suppose that the Spaniards introduced the art in that country during the Conquest.

Now, may it not be possible that the ochre referred to by Gen. Ellis is only powdered brick, used to make the excellent and hard "revocado"?

The description given of the method of consolidating the mortar, &c., and even the employment of wooden compressors, explain accurately the process still followed in Spanish countries to form the floorings of plazas, public walks, &c.

In many cases, immediately before the cement becomes set, its surface is polished with a smooth cobble-stone until it acquires a high and lasting lustre.

From Gen. Ellis, in reply to the above.

Having read the remarks of Mr. Fuertes upon my recent paper relating to hard lime floors, I apprehend that he did not give sufficient attention to the process therein described.

In no case was the red pigment mixed with the lime and sand, as he supposes, but was solely used for a surface-colouring after the hardening process was completed. Roofs and sidewalks of equal hardness were also made by the same process of successive poundings without the colouring matter, and finished by polishing in the same manner as the coloured floors.

The pigment used upon the floors was not brick-dust, but a red earth found in the vicinity, probably a fine clay coloured with sesqui-oxide of iron. Bricks were not used in that part of the country; "adobes" taking their place in building.

It will thus be seen that the material of which the described floors and roofs were made was not the same as the "revocado" used in Spain and Southern Mexico, described by Mr. Fuertes. Is not the term *revocado* essentially the same in meaning as the more common Castilian word *revoque*, one being the participle and the other the noun corresponding to the Spanish verb *revocar*, the nearest English equivalent to which, in an engineering sense, is to *rough cast?* This implies an admixture of coarse material in the mortar. "Revoque" was known to the Romans as "*parietis linimentum.*"

Mr. Fuertes is, I think, in error when he attributes any rapidity of setting, greater hardness when set, or improved hydraulic qualities, to the mixture of burnt or under-burnt brick in any proportions with lime. The experiments of Smeaton show conclusively that the only gain is the slight amount of moisture that the brick will absorb from the lime and favour its *drying*.

The only way in which hydraulic properties can be given to a compound of silicate of alumina and carbonate of lime is by burning them together after being mixed, as in the production of artificial cement. This is exactly what was done in the case Mr. Fuertes recounts; clay and chalk were burned together, and, if in proper proportions, would form an excellent artificial cement. It is not remarkable that neither should be a good building material by itself.

If the "revocado" of the Spanish possesses any quick-setting or hydraulic qualities, it is probably not owing to the admixture of common brick, but to some qualities of the lime, or perhaps what Mr. Fuertes has taken to be brick was artificial "trass," formerly much used, which was burned like brick, and, when added to mortar, gave it hydraulic properties.

I think it highly probable that the process of pounding ordinary lime-mortar for many successive days in order to give it hardness, and afterwards polishing the surface, originally came from Spain to Mexico, and is probably an ancient practice. The only matter of surprise

* From a paper by General T. G. Ellis, C.E., read at ting of the American Society of Civil Engineers.

is that it has not become more generally known and used.

Note by the Printing Committee.

Is this "pounding process" of the Mexicans anything more than a simple yet effectual method of freeing the mortar of its *surplus water*, and thereby insuring a condition in which the lime can pass to a crystalline carbonate, at the same time compacting the whole mass into the best possible state?

WATER IN ROME.

IN the course of a lecture last week on Roman antiquities, delivered at the Royal Institution, Albemarle-street, Mr. J. H. Parker said,—The celebrated Aqua Marcia has recently been again brought into Rome, and is rapidly coming into use, being considered the finest drinking-water in the world, always cool even in the hottest weather. At its source it is so intensely cold that, in the hot summer weather of Italy, a glass tumbler put suddenly into it will break in the same manner boiling water will break a tumbler in frosty weather in London. The company which has now brought this excellent water again into Rome consisted chiefly of English capitalists, and the late Mr. James Shepherd, an Englishman, has the chief merit of the direction of the works. The engineers found it expedient to adopt the old plan of the Empire. For the first ten miles of its course, as far as Tivoli, it is carried in a stone specus, and on arches where necessary, just in the old manner. But after descending the hill at Tivoli (avoiding the cascades by a considerable *détour*), where it arrives at the level of the low hills of Rome, it is carried in large iron pipes in order to avoid the still greater *détour* which the old aqueducts took to keep clear of the streams that cross the line, and fall into the river Anio. The water of that river, which falls into the Tiber about two miles above Rome, is always distinguished from that of the Tiber itself by being clear, and contrasting strongly with the muddy, yellow water of the Tiber. The water of all the early aqueducts was that of springs which fell into the Anio, and were intercepted and forced to flow through Rome.

The earliest was the Aqua Appia, made B.C. 312, the sources of which are in the meadows of Lucullus, about seven miles from Rome, at a low level; one of the springs is in the fine old stone quarry on the bank of the Anio, called the caves of Cervaro, from which it is believed that the great tufa blocks for the great wall of Servius Tullius had been taken. This was, therefore, an old stone quarry made centuries before the time that the earliest aqueduct was made.

The course of this earliest aqueduct was entirely subterranean, and at a considerable depth until after it had entered Rome and had passed for a mile under the Cælian Hill when it had to be carried across the deep valley from the Cælian to the Aventine, where Mr. Parker found it during his excavations in 1868, carried over the Via Appia upon the Arch of the Porta Capena; and a portion of the specus remaining in one of the towers of that gate, now a gardener's cottage. He traced it again in a subterranean stone quarry under Santa Sabba, and from thence under the Aventine Hill to its mouth near the Marmorata and the Porta Trigimina on the bank of the Tiber.

The Aqua Virgo was made by Agrippa in the time of Augustus, and came from the same meadows about a mile further from Rome, where also several springs are collected in a large central reservoir, and then carried in a specus to Rome. Both of these streams bring a great deal of clay with them, the soil of the meadows being clay upon the tufa rock.

The specus of the Appia is filled up with clay to the depth of 2 ft., or one-third its whole height, as may be seen in the stone-quarry; this clay is a deposit left by the water, and was probably the cause of its being abandoned, as it was too deep to be destroyed by the Goths or other enemies. The Virgo was restored to use by the Popes, and is now called the Aqua di Trevi, having for its mouth the celebrated fountain of Trevi. The Anio Vetus was another spring that fell into the Anio below Subiaco, and twenty miles above Tivoli; its course was almost entirely subterranean, though it can be traced by means of the wells that fall into it. The Marcia also comes from the same neighbourhood below Subiaco, but the spring there forms a small lake about half a mile from the river. The Tepula and the Julia come from the Alban Hills, near Marino, and are added to the Marcia at the great piscinæ or filtering-place, where all the earlier aqueducts emerged from the hills at the level required. From that point the arcades are made to carry them across the Campagna until they enter the wall of Rome. They are then carried upon the high bank of the Tarquins as far as the Prætorian Camp, and thence across the Pomerium to the centre of the great Agger of Servius Tullius on the Viminal Hill, where they were found with inscriptions relating to them on two Cippi during the excavations of 1870 made to enlarge the railway station; there was a large reservoir at that point from which the water was distributed. The Claudia also comes from Subiaco, just above it, and was also a copious spring intercepted. But the Anio Novus is part of the river Anio itself, two miles higher up, where a fine cascade falls over the rock in a deep rocky gorge. Here great engineering works were made in the time of Claudius and Nero. A great wall, 12 ft. thick, built of large blocks of stone, was erected across the river at the lower part of the gorge, forming a dam of 100 ft. high and 12 ft. thick, to enclose a portion, perhaps 100 yards long, between the dam and the natural cascade; the water was made to fall over the dam, which thus became the cascade; but at one end of it a specus was made below the level of the surface of the water, so that the water must always flow through that specus, and consequently through Rome, before any of it could fall over the cascade. This magnificent and most useful piece of engineering continued in use for centuries. It was destroyed in the fourteenth century by an ignorant monk, who was annoyed by a temporary flood in the upper country, which overflowed the meadows near his monastery, and, to relieve that, he made a hole at the bottom of the great dam. The force of the water soon carried all before it, and caused a great flood over all the lower country, even to the Tiber, and did immense mischief—even the walls of Rome were injured.

Mr. Parker said that he had not time to describe the thermæ, or great public baths, to supply which most of the aqueducts were made, but he could not conclude without mentioning that the opinion commonly entertained, that the ancient Romans were ignorant of the fact that water will rise to its level, is entirely a popular delusion. At every half-mile of the aqueducts, on their course from the foot of the hills to Rome, each aqueduct forms an angle, to break the force of the water, and at that angle a great reservoir is made, with a piscina or filtering-place at one end. Each piscina consists of four vaulted chambers, two above and two below. The water enters into the top of the first upper chamber; it then falls through a hole in the vault into the first lower chamber, then passes through small holes in the intermediate wall into the second lower chamber, then rises again through a hole in the vault into the second upper chamber, and then follows its course at the same level as it originally entered, depositing its mud in the lower chamber as it passed. Each piscina is therefore made upon the principle of water finding its level.

They used the large stone specus instead of ordinary pipes, because they could not depend either upon their leaden pipes or their terra-cotta pipes to resist the force of such a stream of water. Nothing but the concrete stone was strong enough.

At the present time, the cast-iron pipes of the new company are bursting every day in the streets of Rome to such an extent that the managers of the company fear that this expense will be ruinous to them. This seems to show that the old Romans were better engineers than we are.

Rational Gymnastics.—A tract has been issued by Baillière & Co., of King William-street, Strand, titled "Rational Gymnastics reviewed in their relation to the Health and Education of the Younger of both Sexes, being the Subject of a Lecture delivered before the National Health Society; by Augustus Georgii, formerly Professor of Anatomy and Sub-director of the Royal Central Institute for Gymnastics at Stockholm, &c." The author proposes that physical, no less than mental, education be equally extended to and compulsory for both sexes; and that normal schools be established for teaching gymnastics as an art and a science, in connexion with suitable anatomical and physiological instruction.

THE ROYAL ARCHITECT, "CHAUCER"

SIR,—The presumed son and family of t poet, Geoffrey Chaucer, having lately formed subject of an article in the *Builder* (No. 1 p. 351), it may possibly be interesting to y readers to be told that the poet himself cam near to being formally appointed architect King Richard II. as the language of his age mitted. That is to say (on the authority of life by William Godwin, 4 vols., 1804), that was in 1389 appointed to the office of Clerk the Works; and a Latin document is cited which the works at Westminster Palace, Tower of London, and at various other pla specially named, are placed under his c together with another document in which th is assigned to him "*capellam nostram collegial Sancti Georgii infra castrum nostrum de Wyn sore, que minatur ruine, &c.*"

It will be new to some readers to find t not only was St. George's Chapel at Wind built, but it was threatening to go to ruin, in fourteenth century.

The poet did not hold his office, it wo appear, longer than about twenty months. W regard to his special qualifications for it, history is silent. He was entitled to the ass ance of a deputy, for whom a salary was p vided by the Crown. His own salary was *per diem*,—equivalent, it is reckoned, to 657 year in modern money. He had been, a previous period, comptroller of the customs the port of London.

With regard to the term Clerk of the Wor it may not be generally known that the arc tect to the Corporation of London was o officially known as "Clerk of the City's Work until within the last thirty years. Previously that time expressions like the following were be heard in common use at the Office of Wor Guildhall. "Is the Clerk of the Works in "The Comptroller sends his compliments to Clerk of the Works, and would be obliged by stepping over if disengaged"; or, perhaps, thundering tone, "The Clerk of the Works wanted immediately in the Court of Alderme &c. The Royal "Clerk of Works" appears the reign of Charles II. to have grown i "Superintendent and Surveyor"; for so John Denham, another poet, is described Evelyn. G. M

A NEW TEMPERANCE HALL FOR BURY.

THE teetotallers have now begun to buil new temperance-hall in Henry-street, Bu The height of the building in front will be 35 It will be 35 ft. wide, and 84 ft. long. It be two stories high, and the frontage in Hen street will be of seconds brick, with stock br dressings and Burnley stone cornices, sills, In the upper story in the front will be twe windows, while on the lower floor there will b window on each side of the main entrance. the ground floor there will be a room 33 square, suitable for "Good Templars" to m in, and in it there will be a horse-shoe shap gallery. It will be fitted up with all furnit necessary for conducting meetings. Behind lodge-room there will be a room 33 ft. wide 17 ft. long, which it is intended to let off for use of Oddfellows or others as a club-room. the first floor there will be a large assembl room, 33 ft. wide by 65 ft. in length, havin it a platform at one end, and a gallery at other. The height of the room will be 2 Under the platform will be a room for the pr paration of tea, and at the back there will three retiring-rooms. The inside will finished plainly, the timber fittings being simp varnished; the walls will be coloured and finish with stencilled ornaments.

It will be erected from plans prepared b Messrs. Maxwell & Tuke, architects.

The contracts for the different portions of th work have been entered into as follows:—Brick work, Mr. Samuel Smith; joinering, Mr. Charl Green; plumbing, Mr. T. Caton; stonework, M James Hill; slating, Mr. John Kay; and plaste ing, Messrs. Lomax & Sons.

The entire cost for the erection of the buildin will be 1,600*l.*

The Albion Tavern.—According to the *Ci Press*, the freehold of the Albion Tavern h just been acquired by the directors for t shareholders, who are thus possessors of th freeholds of both this and the London Tavern.

THE NEW LARGE RESERVOIR AT OSWESTRY.

THIS undertaking is now in a fair way of being aced in such a position as to justify the addi- onal expenses to be incurred. The original timates for the work varied from about 800*l.* 1,900*l.*, and to make the "big hole" at the ount upwards of 1,800*l.* has already been pended, which, with the cost of the land, 200*l.*, akes a total of 2,000*l.* "The hole," as stated, s been made sufficiently large to store six llion gallons of water; and after great pecu- ry loss on the part of one of the contractors, d sacrifice of time to his surety, and after a mal opening two years ago, no sooner was the ter let into it than the steps gave way, and e water was of the colour and nearly of the nsistency of mud. The wet weather coming the banks, or "batters," all fell in, and, as eservoir, it was perfectly useless. It has re- ined in this dilapidated state until the work been commenced upon it. Mr. J. Ward has dertaken to make a long puddle wall, to p out the water from the springs and drains the adjoining land, to remake the dilapidated nks and drive piles into them, and to line it ide with 6 in. of concrete, for 1,350*l.*, by the h of September next. A number of men are v engaged upon it. When this reservoir is npleted there will be a storage in the three ervoirs of ten million gallons of water. Sup- ing them to be all full, they would supply h person in Oswestry with ten gallons of e water a-day for twenty weeks. The total t will then be, in round numbers, 3,500*l.* On alf of the corporation of Oswestry, Mr. orge Owen, C.E.; Mr. John Morris, builder; d Mr. W. H. Spaull, architect, have consented nspect the works during their progress.

MONUMENTAL.

THE statue of John Bunyan which Mr. J. E. ehm was commissioned by the Duke of Bed- d to execute for the town of Bedford is far vanced towards completion, and promises to a fine work. The pose of the figure, which is heroic size, is easy and natural; the hands d a book; and the face upturned to heaven ggests the inspiration to which Bunyan's narkable production is often attributed. The ds of the short cloak of the period, carefully delled, serve to give variety and elegance of m to the back of the figure. When completed, model will be produced in bronze, and will nd on a pedestal, which should not be too y, in St. Peter's-green, and will bear *relievi* three of its sides. Mr. Boehm has just now shed a recumbent statue of the late Duke of nt, intended for St. George's Chapel, Windsor, has in progress, amongst other works, an ant bust of Mrs. C. J. Freake.——A statue the late Earl of Derby, which has been cuted by Mr. Noble, was unveiled on Tuesday Preston by Colonel Wilson-Patten, M.P. On same day Lord Houghton unveiled a statue he late Sir Robert Peel, which has been ed in St. George's-square, Huddersfield.

OMPLETION AND OPENING OF THE NEW GLOBE BRIDGE AT PECKHAM.

THE new bridge over the Surrey Canal in the mmercial-road, Peckham, which has been for e time in course of erection, and respecting ch difficulties and misunderstandings have spired, already mentioned in the *Builder*, at length being satisfactorily completed, taken over from the contractor by the Cam- well Vestry, who have officially declared it n for traffic.

The bridge has been erected on the site of the bridge, which was a narrow, inconvenient k structure, only 12 ft. in width, whereas new bridge is 40 ft. in width. The abut- nts are of solid brickwork, built in cement a foundation of concrete, carried 2 ft. ow the bed of the canal, and are faced above water-level with red pressed bricks, and ne dressings. The roadway over the bridge arried by nine segmental-arched girders of ught-iron, and is protected on each side by a t-iron ornamental parapet railing.

The approaches are by easy gradients from l-street and Commercial-road, but the com- nications with the tow-path are by sharper e gradients, supported by retaining walls, on ich an ornamental hand-railing is fixed.

The bridge has been erected from designs furnished by Mr. James Dredge, C.E., of Buckingham-street, Adelphi; the contractor being Mr. S. S. Peach.

THE TRADES MOVEMENT.

London.—A strike is imminent.

Whitehaven.—The journeymen joiners have addressed a circular to their employers, intimating that at a meeting held by them on the 7th ult. the following resolution was agreed to,—"That we solicit you for an advance of 3s. per week on our present rate of wages, knowing all trades of the surrounding country are on the advance, and the prices of victuals and other materials being so high we think it a just demand." The notice for an advance was to expire on the 7th of June. The present rate of wages in Whitehaven for journeymen joiners is about 30s. weekly.

Oswestry.—The stonemasons who have been on strike at the parish church have gone to work, a compromise between the contractor and the men having been effected. Twenty-eight of the men demanded a rise from 28s. a week to 30s., and a reduction of one hour a week. The terms on which the men returned are 29s. a week, being an increase of 1s., while the hours of labour remain unaltered.

Montgomery.—The strike of the Montgomeryshire joiners at Forden Workhouse has terminated in a compromise. The men demanded an increase of 3s. and a diminution of two hours in the week. The contractor offered them 2s. rise, but no alteration in time. This they refused; but they have now agreed to the contractor's terms, and work is resumed.

THE POSSIBLE STRIKE.

SIR,—In a recent article entitled "The Chances of another Building Strike," the writer states that we "are acting with a view to enforce another increase of wages." The facts, so far as the masons are concerned, are these:—We have given the employers six months' notice to fulfil an agreement entered into last summer, viz., that if trade was at all good this season, we should have one halfpenny per hour advance. That was part of the compromise accepted by the masons in settling the dispute of 1872. The description of the demoralisation, mistrust, and suffering of the men certainly does not apply to our trade; for the result of the lock-out was a gain of over 100 new members to three London lodges. Their pay for the time lost was 16s. per week.

Again, it is stated that "to strike without the Society's approval, we should not be supported by its funds." I beg to state that should the employers not fulfil the promise given last year, we shall certainly take measures to obtain the advance on the date given in the memorial, the sanction of the Society having been obtained some two months since. In addition to that, we have now a large local fund sufficient to make up a weekly payment of 1*l.* per man.

The article goes on to say that "there are hundreds of masons working overtime, and the societies are powerless to stop them." I defy the writer to prove the case in a single instance, unless they are being paid time and a half.

* * * *

HENRY BROADHURST, Stonemason.

THE COOKERY CLASS AT SOUTH KENSINGTON.

SIR,—The visit of School Board girls to the class for Popular Cookery at the Exhibition was noticed in your last number with some kind and judicious remarks. If the children of our poorer friends are to profit much by the excellent teaching given on such occasions, it will undoubtedly be desirable, as you point out, that the viands they are taught to prepare should be, in general, what they will be most likely to meet with in their ordinary life.

But on this first occasion of an organised effort in this direction the object of our visit was rather to test the amount of interest which would be excited, without special provision for the particular audience, and to see how much of attention would be given at the time, and the recollection afterwards of the information imparted. In all these ways the first experiment was very satisfactory, and the written accounts of it since sent to me by the ten pupil teachers who were present show that our object was fully attained.

Nothing "advertises" so speedily as a number of young girls talking of an event, and I am sure that when the next and more methodical step is taken, whereby selected girls may attend a series of five or six lessons properly arranged, we shall have many eager applicants for this useful education. But already enough is surely evident to prove that a permanent "School of Cookery" should be at once established, where young women could learn from good teachers, and could then be admitted to practising classes and examinations, and to certificates, and even diplomas, if such a grave Greek word is proper to denote women who can boil potatoes.

In seven cruises, far away and entirely alone, I have learned much of cooking, but with dire sufferings sometimes, which a few preliminary lessons would have saved. J. MACGREGOR.

SUDDEN DEATH OF AN ARCHITECT.

WE regret to have to record the death of Mr. T. B. Jones, of the firm of Jones & Solomon, Whitehall-place, which occurred suddenly on Sunday evening last, at the house of a friend. Mr. Jones was in company with some professional friends on Saturday afternoon, and conversed in his usual manner. The writer of this was almost the last person who spoke to him when he left for home between six and seven o'clock. On the Sunday afternoon he went to pass a few hours with a personal friend at Chelsea, and during a conversation, without uttering a word as to the attack, he merely leant back on his chair, closed his eyes, and expired. His stillness was instantly observed, and medical aid procured with all possible haste; but of course with no avail. Mr. Jones had long complained of suffering from disease of the heart, and at the inquest, which was held on Tuesday, that fact was established; the verdict was, therefore, in accordance with it. He was about forty-two years of age, and leaves a widow and four children to lament his loss. At the time of his death he was engaged upon the working drawings of the large asylum about to be built at the expense of Mr. Holloway, at an estimated cost of 70,000*l.* The funeral will take place in the Brompton cemetery on Saturday, the 7th instant.

RENOVATION OF ST. GEORGE'S HALL, BRADFORD.

THIS hall is undergoing a "spring cleaning," and is to be repainted and gilded from floor to ceiling. The organ is to be put into a state of efficiency, the ventilation and warming-apparatus is to be improved, and the system of lighting to be altered. Messrs. Lockwood & Mawson have prepared the drawings for the decorations, which will be carried out by Mr. Henry Briggs, of Bradford. Their general character is based upon the Pompeian style, and the work will be treated in broad, firm tones of colour. Hitherto the painting of the hall has been in light shades, which very soon became obliterated by smoke and dirt. The great object of the present scheme of decoration, has been to give the hall an entirely different character, still preserving its architectural features.

The wall round the area is to have a dado, 4 ft. in height, in black, divided into panels, with gold and small scrolls at the corners, the base below being in maroon. From the top of the dado to the cornice underneath the stalls, the walls will be in Pompeian red, divided into courses, with fawn-colour lines. This part of the wall also will be divided into panels, in the centre of each of which will be a wreath, enclosing a blue ground, on which will be inscribed in letters of gold the names of the great composers. The divisions of these panels will correspond with the trusses which carry the front of the stalls. The groundwork of the face of the stalls and the cornice beneath will be in cream colour, and the ornamental work will be enriched with pale green bronze, picked out with blue and gold. The partition at the back of the stalls will be in Pompeian red, as also will be the walls round the galleries and the orchestra. The front of the gallery will be treated in almost exactly the same manner as the front of the stalls, and the supporting columns, caps, and brackets will be in pale green bronze relieved with gold. The mouldings round the gallery walls and windows will be in cream colour, with

a blue fret and light maroon rosettes underneath. The windows and the railings will be bronzed, and the seats and woodwork will be painted fawn colour and varnished. The general colour of the great cornice round the hall will be cream, the trusses and moulding in pale green bronze picked out in gold. The ceiling will be similarly treated, the groundwork of the panels being in blue-grey, and the beams and mouldings in cream colour relieved with blue and gold. The pilasters at the orchestra end of the hall will be cream colour, the groundwork of the panels being blue and the rich scroll ornament and surrounding moulding in gold. The masks in the centre of the pilasters will be in bronze and gold, the capitals will be in bronze, and the figures supporting the lights will be bronze relieved with gold. The general colour of the organ will be cream colour. The pipes will be pale green bronze, diapered in gold, and the trellis work in the panels will be regilded. The cornice and capitals will be picked out in blue. The orchestra front will be treated in cream colour, black, blue, bronze, and gold. The saloon, corridors, staircases, vestibule, and ante-rooms will all be repainted and decorated in uniformity with the hall.

The hall will be lighted by four large patent sun-burners from Messrs. Strode, of Regent's Park. These will be surrounded by large upright flues carried directly through the roof, and will be so disposed that the products of the gas will pass at once into the open air. Separate flues will also be provided round the centre one. New heating apparatus will be supplied by Mr. Clapham, of Keighley.

FIRE-PROOF FLOORS.

SIR,—I read occasionally the *Builder*, and have never noticed any remark having been made on the construction of fire-proof buildings by the use of Cones. There are two sizes of these, 9 in. by 4½ in. and 4½ in. by 4 in. They are hollow, like garden-pots, made with pure red earth, and resist heat. They were used at Buckingham Palace. WILLIAM WHITEHEAD.

*** Some years ago these floors, as constructed under the late Mr. Nash, were described in our pages.

THE BUILDING STONES OF THE NORTH OF IRELAND.

AT a meeting of the Belfast Architectural Association, Mr. J. Lanyon in the chair,

Mr. W. Gray read a paper on "The Building Stones of the North of Ireland, geologically considered."

Mr. Gray referred to the connexion between geology and architecture, and showed that it was important, if not absolutely necessary, for an architect to know something of geology, so that he might be the better prepared to know where to find and how to use his materials, so as to secure variety and beauty in his designs, and strength and durability in his structures. Mr. Gray then gave a general description of the geology of the North of Ireland, and of the various strata exposed, noticing more particularly the formations which are capable of yielding building stone, referring to each bed in descending stratagraphical order. The marked peculiarity of the North of Ireland is the occurrence of extensive beds of trap rock, so well known in connexion with the Giant's Causeway. The same rock extends over an area of about 1,200 square miles, not in one solid bed of rock, but in a number of irregular beds, each having been originally poured forth as volcanic lava, mud, ashes, &c., either in the worn surface of the chalk or under water. Mr. Gray explained that the trap rock usually made damp walls, not because the stone admitted wet through its substance, but because of the defective mode of jointing the masonry; properly built, the trap would be impervious to wet. Below the trap there occurred a whole series of stratified rocks, such as the chalk, greensand, lias, and new red sandstone. Between the greensand and lias is the proper position for the oolite series, including the Bath and Portland stones: but in the North of Ireland this series is entirely wanting. The new red sandstone yields the Scrabo and Dundonald stone, which is also represented at various other points, such as the Gas Works, Belfast; Dunmurry river, Moneymore, and Moira. Under the new red comes the carboniferous series represented by the sandstones of Dungannon, Cookstown, Dungiven, Donegal, and Ballycastle; all of which come from the upper portion of the carboniferous system, the lower portion yielding the limestones of Armagh, Castle Espin, Tubbermore, Dundalk, &c. The old red sandstones occur below the carboniferous, and are possibly represented by the sandstones of Cushendall, and, doubtless, some beds in Tyrone. The silurian formation occurs chiefly in County Down, and furnishes the compact stone of Ballygowan quarries, and the slate of Greyabbey. Mr. Gray then described the various descriptions of granite, particularly the very excellent examples from Castlewellan, Newry, Bessbrook, Gorawood, and Donegal, and demonstrated that we had in our locality a variety of granite which in quality or quantity are equal, if not superior, to the granite of any other place in Great Britain.

THE NEW FISH MARKET, OLDHAM.

THIS new Fish Market has just been opened. The Corporation, more than twelve months ago, determined to erect a small market for the retail of fish adjoining the present market, and consequently decided to advertise in competition to architects for drawings, two premiums being offered. The designs of Messrs. Mangnall & Littlewood, architects, Manchester, were selected, and they were instructed to prepare the working drawings. The building was commenced in February, 1872, and is now completed. The size of the market is 80 ft. in length by 40 ft. in width, with ground-floor and basement, the ground-floor being set apart as the market, which is lighted chiefly from the roof, with north lights. The roof has three bays, the construction being a combination of cast and wrought iron, and timber. The market is fitted up with stalls formed of polished stone bearers and Sicilian marble tops, with moulded nosings. The framing above the stalls for carrying the poultry and game, &c., is of wrought iron, of simple construction. The stalls are divided so that they can be let to twenty tenants. The contractors for the construction of the buildings, except ironwork, were Messrs. Greenup & Watts, of Manchester. Messrs. Mabon & Co., of Manchester, were contractors for the ironwork to roof and gates, &c.; Messrs. Wolstenhulme & Rye, the ironwork for ground-floor; the marble and stone fittings were by Messrs. Pattensons, of Manchester; and the wrought iron in connexion with fittings, Messrs. Hibbert & Co., of Manchester. Mr. David Jackson, of Oldham, has carried out the flagging. The total cost of the market has been about 2,200*l.*, and about 500*l.* for fittings.

THE DESIGN FOR NEW SCHOOLS IN OXFORD.

IN a convocation held on the 23rd ult., Mr. Scott's design for the new schools to be erected in the High-street was submitted for approval.

Mr. Fyffe, of the University, as reported in the local *Journal*, entered into a lengthy criticism of the plans. He objected to the smallness of the quadrangle, necessitated by the proposal to erect a complete building on the site now available, rather than providing for gradual completion. The quadrangle would be only one-sixth the size of that at Magdalen, one-half the size of Lincoln quadrangle, and yet the buildings would be much higher. The courts of Whewell's buildings at Cambridge showed what would be the gloomy results. The cloisters, too, would be both narrower and lower than those of Magdalen, and their unnecessary introduction was probably the reason for a top-heavy elevation. Of details there were more than in all the colleges put together. Not a feature but was a reduction and a parody of something else in Oxford. As to the court, progress from door to door was only possible by "cannoning" off a pillar. The design made no provision for extension. The elevation towards the High-street embraced with other elements that of a church. It did not harmonise with the other academical buildings of the High-street, but faintly only with St. Mary's. Mr. Fyffe went on to suggest how the ground available might have been more satisfactorily treated, his essential point being prospective and not present completeness.

Professor H. Smith warned members of the difficulties they would incur by the rejection of the design. One architect of name had given as his reason for refusing to compete,—the treatment of the previous design. He urged the following points:—Do not mistrust first impr sions; do not reject ornament because it is u less; do not compare schools with colleges. the one "we live and lounge and smoke:" of t other we are temporary visitants. Consid also the difficulties of the ground, and of getti more, and the necessity of a front to the Hig street. There is no complaint as to the amou of examining space; in short, the design is g in itself, but there is a stronger reason accepting it,—it would be difficult to ge better.

The Principal of St. Mary Hall would v against the design, as a "complete plan on incomplete space."

Dr. Acland desired to follow his first impr sion, which was that the design was unwort of the object and of the site. He compar it with the Examination Buildings at Burling House. The better way of getting a des would be to select and trust some one m He criticised the condition of the High-street All Saints' Church unspired, the new buildi opposite unworthy of Manchester warehous and a huge gap below to be filled up by a fac entirely unworthy of the external expression the interior work of a university. We sho follow in preference one of our serious, simp unpretending academic fronts.

Mr. Rogers knew nothing about art, he thankful to say. It was high time to get rid "eminent architects." Oxford had suffe long enough from them, and from the imbecil which characterised their productions.

The design was rejected by fifty-four vo against twenty.

COMPETITION.

Deaf and Dumb Asylum, Margate.—The p miums offered in this competition have b awarded as follows:—100 guineas, 1st, Mes Drew & Bower, of Margate; 50 guineas, 2 Mr. Thomas Henry Watson, London.

ACCIDENTS.

Caution as to Balconies.—These, especially old houses, are often traps for the unw A shocking and fatal accident has happene Mr. James Simon, an architect, son of Mr. S jeant Simon, the member for Dewsbury. Simon was visiting at the house of a friend n Tavistock-square, and while standing upo balcony outside a first-floor window, and lean over it, the front gave way, and he fell upon rails of the area below. Mr. Simon attemp to save himself by springing forward, but, fortunately, he was caught by the sharp poi and they entered his abdomen, and caused fa ful injuries. Wounded as he was, Mr. Sim managed to extricate himself from his terr position, and he was at once conveyed to U versity College Hospital, Gower-street; but case was hopeless, and after lingering for th days he died. Mr. Simon was about twen eight years of age, and a man of talent promise. Shortly before his death he was p paring for the press a volume on a subj connected with his profession.

A Music-hall burnt down at Derby.—The "S Music-hall and Theatre of Varieties," De has been burnt. When the fire was first noti the whole of the inside of the building, whic some 50 ft. high, was on fire. The fla spread with such rapidity that in less than hour the entire building was gutted and stroyed. The roof, which consisted of galvani iron, fell in with a tremendous crash, sho after which the boundary walls also gave way fell in. The hall, was capable of holding seve thousand people.

Fall from a Scaffolding in Swansea.—T scaffolding of a Wesleyan chapel in course erection in St. Helen's-road, Swansea, gave w and three workmen, who fell from a heigh 26 ft., were seriously injured. One sustai concussion of the brain, and is not expected recover. The building was blown down i storm some time ago.

Fatal Accident to Halil Pasha. The *Lev Times* announces the death of Halil Pas Grand Master of Artillery, at his town residen at Pera. His Excellency has been rebuild his konak, and he took an active personal p in the superintendence of the work. As he w going over part of the building, some mate became dislodged, and, falling upon him, stumbled, when, before he had time to reco himself, he was knocked down by a fall of la

tones which descended on his head, and killed im on the spot. Halil Pasha was educated at Woolwich, and, speaking our language fluently, e was well known among our countrymen. He ad a strong predilection for English workmen, f whom he had introduced a considerable numer into the Imperial establishments under his irection, as well as for English manufactures. He used to say, indeed, that he considered himelf an Englishman, and, what was more, an English mechanic."

POWER OF SURVEYORS' CERTIFICATE.

SIR,—About two years ago we constructed a main sewer or the Toxteth Local Board of Health, along Aigburthead, near Liverpool; and during the execution of the ork several of the properties on the line of road were, y the orders of the owners, and under the cognizance of e Surveyor to the Board, connected with the main sewer y our putting in branch drains. The whole of these ranches were put in during the progress of the work, at notions sanctioned by the surveyor, and were therefore en to his further inspection, and for all of which we ve been paid, except in one instance, and being unable get paid for this, we have had the matter tried in the ounty Court; the defendant, who is a member of the ove Local Board, refusing to pay unless the surveyor rtified that the work was properly done. At the trial e surveyor, who was present on behalf of the defendant, id that he knew from defendant, and also from us, about e drain before it was done, and that he knew something d been done, "but could not say whether the work was ne or not done," and he withheld his certificate until he as satisfied that the work was done properly, although had passed the whole of our accounts for work in conxion with the sewer and drains against both his own oard and the private individuals. Of course, we were nsuited.

Now we beg to submit the above case to you, and to ask at course we should take to obtain this valuable docuent, the "Certificate"? Are we to open up the sewer, show the surveyor that the drain is there, when either mself or his clerk of works was constantly on the works en the contract was being executed, and *ought*, if they *d not*, to have seen this drain as well as the others that ve been paid for?

JOHN ANWELL & SON.

Liverpool.

A WATER-TIGHT FLAP.

SIR,—Among your numerous readers possibly there ay be a man of genius who knows how to make a waterht basement flap? If so, I recommend him to make own his whereabouts. I have had considerable experice in paying builders, and I have the honour to employ architect with five letters attached to his name intiating that he is in connexion with some distinguished stitute, but each and all "give it up" after a series of periments in attempting to keep the wet out of a baseent.

INQUIRER.

SEWER VENTILATION.

THIS is an important subject, often treated of, d with many suggestions, in our columns, uring the last thirty years, but still in an nsettled and unsatisfactory position. The ithdrawal of the sewer-gases through rain or her pipes to the bedroom or upper stories of uses is one of the many suggestions referred , as also is the construction of special shafts r districts or towns, to carry the gases up yond the imminent risk of befouling the air of r sleeping-apartments, and even to "consume" em on the way, by help of furnaces, or, at st, by rarifying them, to hasten their depare into the general atmosphere thereby. The composition of sewer-gases by deodorisers in e sewer-gratings is another mode of getting l of these vile effluvia; and some or all of ese suggestions have been tried; but still the estion how best to get rid of our sewer anations is an unsettled one.

A contribution towards this very desirable d important end has been recently made by r. R. J. Johnson, of Peckham, builder, who has tented an apparatus for rarifying *or* consuming wer-gases by means of heat while passing rough iron or other suitable pipes either in nnexion with house-drains, and running up hind grates or ranges to the tops of houses; in connexion with the sewers, through special afts provided with furnace arrangements, on e plan of his apparatus.

It is probable that the solution of the problem ay be both mechanical and chemical in comation; that some such apparatus as Mr. hnson's, combined with proper chemical means r really decomposing, and so consuming, the wer-gases while thus under the favourable luence of adequate heat, may effect the purse in view, but this would not be very practicle in house arrangements, and could only ply, on the great scale, to districts or towns. it be proved that heat applied in the way prosed will not merely rarify, but will, chemically, roughly, and without fail, decompose the nch-gases, then no harm might arise from miting forth the proceeds more or less on a el with house-roofs; but this is a chemical question. That heat in combination with chemicals *can*, with fitting apparatus, be made to thoroughly decompose, or "consume," such abominations as sulphuretted and phosphoretted hydrogen, &c., there can be no doubt; but whether any heating apparatus can be so applied to dwellings as practically to decompose, and so destroy, such emanations must be tried and proved by actual experiment.

BUXTON EXALTED.

BUXTON "of the Peak" and its neighbourhood have found another panegyrist. Mr. James Ballantyne, whose poems are as well known in Scotland as his painted glass, having been freed by its wells, its baths, and pure fresh air

"From painful, wrenching misery,"

has filled two columns and a half of the local *Advertiser* with his song of admiration. Speaking of *Haddon Hall*, he makes a spirited offer to the owner of that interesting domain:—

"We pass through village and through town,
And many scenes of old renown
Where Druids prayed, where Romans fought,
And where brave Britons freedom bought.
And now we reach old Haddon Hall,
A glorious pile beloved by all;
Alas! what pain it must impart
To every lover of Old Art,
To see this palace, once so gay,
Neglected—crumbling to decay.
The grand oak panels, friezes, walls,
That grace these grand baronial halls,
Left to the grubs and devastation
Without attempt at preservation;
The gorgeous tapestries, too, wasting;
The whole to utter ruin hasting.
Come, wealthy Duke of Rutland, come,
And make this Hall once more your home;
Or, if you won't, give it to me,
And such a glorious fane you'll see
That all the Rutlands would be fain
To have it for their home again."

Chatsworth delights him, and thus he sings:—

"But come, another Hall we'll seek,—
Chatsworth, the 'Palace of the Peak';
Behold it 'mid its vast surroundings,
With forest, hill, and river boundings,
The verdant parks, the herds of deer,
The birds in myriads warbling clear;
The Derwent as it rills along,
Melting in floods of liquid song;
The mountains clothed with forest trees,
Berging and dancing in the breeze;
The gardens,—gems of Paxton's skill,
Have ne'er been matched, and never will;
Then enter this rich home of art,
Crowded with gems in every part:
Ancient and modern works combined
Delight the eye and charm the mind.
Sculpture and painting each come wooing,
As if each for your love were suing;
As if, like rival swains, they strove
Which should first win your virgin love;
And while on these bright gems you gaze,
Emitting such transcendent rays,
You cannot fail to love the art
That fills these halls in every part;
Ceilings and walls, and flowers all blending,
Each to each other beauty lending.
Wood, jasper, marble, silver, gold,
In varied forms these charms unfold;
And while from fairer climes they come,
When placed beneath this genial dome
They seem, each in the proper place,
The Palace of the Peak to grace."

If ever we visit the writer's house, we shall expect to see on his sideboard a wide-spreading salver of silver, legibly inscribed,—

"*From Buxton to Ballantyne.*"

TRADES GUILD OF LEARNING.

A CONFERENCE is to be held on Saturday, the 14th of June, at the Society of Arts, Adelphi, for the purpose of establishing this guild, and determining its constitution; the chair will be taken at eleven a.m. by Mr. Morley, M.P., and at three p.m. by Mr. Mundella, M.P. It is stated that a number of gentlemen have engaged to attend, "but whether the movement is carried further will depend upon the attendance of the working men themselves at the conference." The means proposed are:—

"1. The formation of classes for practical instruction in various trades, in art workmanship, and in scientific knowledge, both theoretic and practical, connected with those trades. 2. The delivery of courses of lectures, accompanied with questions to and from the students, and followed by voluntary examinations. 3. The holding periodical discussions, *conversazioni*, and social meetings. 4. The giving prizes for essays, poems, songs, &c., to be read, recited, and sung at stated festivals of the guild. 5. The formation of libraries and reading-rooms, halls, and clubs (where the classes, lectures, &c., could be conducted); the establishment of museums, exhibitions of painting and sculpture, industrial exhibitions, art-workshops, &c.; and the utilisation of all such existing agencies. 6. The institution of scholarships and exhibitions for promising pupils in primary schools, to enable them to attend higher schools, instead of being sent to work at an early age; and, in exceptional cases, to send them to college. 7. The employment of a visiting or organising agent.

All these and similar means are to be used, as soon as possible, in conjunction with the Department of Science and Art, South Kensington; the Society of Arts; the Universities of Cambridge and Oxford; the Working Men's Club and Institute Union; the City Companies; Unions of Mechanics' Institutes; Trade Organisations; Co-operative Societies; and all other bodies desirous of promoting the technical and general education of the working-classes."

The object in view,—the promotion of Technical Education,—is an excellent one, but the present movement will require a good deal more talking about before there will be any chance of its being properly carried out.

GOOD SEED.

SIR,—The *Builder* has sown much good seed, and people are content to eat of the fruit of the plant, without asking to whom they owe it. The *Times*, in a recent excellent article on the state of things in France, reproduced one of the sound proverbs lately published in your pages,—"Woe to the nation that forgets its benefactors." You will not mind, I am sure, how often it is said. I hope it may have world-wide currency, and so prevent much evil,—"Woe to the nation that forgets its benefactors."

SENEX.

LANDSLIPS AND NEW BUILDINGS.

NORSWORTHY *v.* THE REGENT'S CANAL COMPANY, and THE REGENT'S CANAL COMPANY *v.* NORSWORTHY.

THESE cross-actions have for a considerable time past engrossed the attention of builders leasing Crown lands on the banks of the Regent's Canal, as well as the legal profession and the law courts, and so important had the dispute become, regarding the law of landslip, as to necessitate the two cross-actions being stated in the form of a special case, for the opinion of the judges in banco, the Lord Chief Justice of the Court of Common Pleas (Bovill), and Justices Grove, Keating, and Brett.

The digest of the case submitted to the learned judges was, that Mr. Norsworthy leased Crown lands abutting on the Regent's Canal, and here he had constructed a terrace of houses with gardens. As far back as February, 1867, a landslip of the gardens occurred (but precipitated the wall and part of the earth into the Regent's Canal. As the Regent's Canal Company had nothing to do with the Crown lands abutting their property, and considered they were in no wise answerable for the mishap, and the canal itself being stopped by the fall of the wall and the earth, they at once claimed damages of the builder and lessee (Mr. Norsworthy), and urged that the cause of the landslip was by the percolation of rain-water through the terrace-gardens, and the additional weight imposed on the banks of the canal by the new terrace and the wall; and action was taken to recover damages.

The answer to this claim was an action brought by Mr. Norsworthy against the Canal Company, for that it was through the percolation of the water from the canal that the Crown lands had become a water-bed, and rendered unsafe to build upon.

An arbitrator having been appointed, that official examined practical men produced on each side, and his award was "that the damage was not caused by any act, neglect, or default of either party."

A long array of counsel now argued from each point of view, and the learned judges, not liking the case, endeavoured at an early stage of the argument to get the litigants to agree to a *stet processus*, *i.e.*, an order to stay proceedings.

Having had so much expensive law, the builder was averse to this unsatisfactory mode of settling the dispute, and so were the Canal Company, and each side agreed to "have it out."

The Court at length gave judgment for both sides, holding that neither Mr. Norsworthy nor the Regent's Canal Company had made out any case, and confirmed the award of the arbitrator.

As to the ruinous costs, Mr. Norsworthy can claim his in the action brought against him, and the Regent's Canal Company can claim theirs in the action brought against them by Mr. Norsworthy.

Such is the result of "going to law"!

NEW PUBLIC SCHOOLS FOR CHESTER.

A NEW project is being matured at Chester for the management and improvement of the King's School, including the erection of new school buildings. The scheme has been approved of by the Committee of Council on Education, and by a public meeting recently held, at which arrangements were made for collecting subscriptions.

Upon the tables of the Council Chamber, where the meeting was held, were copies of the design by the architect engaged, Mr. Arthur Blomfield, M.A. According to the plans of this gentleman, which have met with general approval, the school buildings will occupy, almost exactly, the site of the late episcopal palace, as erected by Bishop Keene, and added to by Bishop Blomfield and others; including the old Gateway of the Abbey, the upper floor of which will be restored, and converted into a head master's class-room. The principal front will be to Northgate-street and St. Werburgh-street; and, while in keeping with the Cathedral itself, will also harmonise, save in the colour of the stone, with the new Town-hall on the opposite side of the square. The main entrance will be at the

angle of the two streets, and the building will be set back at this point, so as to still farther open out the view of the Cathedral from North-gate-street. Supposing the design to be carried out, there will be, in passing in to the right under the groined porch, on the left of the principal staircase, a class-room, about 27 ft. by 21 ft., lighted by three windows from the open playground on the north-east; a lobby on the right of the staircase leading to the south wing, where the cap and cloak room and other offices are situate; and thence, by a flight of steps, a descent to the groined cellar of the late palace, which, being an interesting relic of the abbot's house, has been retained, and will be appropriated to a lavatory, with the addition of a boys' yard on the north side. Returning to the entrance-hall, a lobby, flanked on the left hand by the porter's rooms, leads into the covered but well-ventilated playground, measuring about 52 ft. square; this would be mainly of use during wet weather, and between lessons for the purification of the class-rooms. The large open playground would form a continuation of the covered one, and occupy a large part of the garden of the old palace; bounded on the north side by Abbey-square, and on the west by the cloisters and Abbott's-hall. To the westward of the covered playground would be another room, 27 ft. by 13 ft., at present also allotted to the porter, and lighted by one good window to Northgate-street, and by two small openings and a doorway through the south wall of the Abbey-gate. The staircase to the head-master's class-room would be at the south-east corner of the old gateway; this would form a commodious room, 32 ft. by 28 ft. pleasantly lighted both from Northgate-street and Abbey-square. Through a door at the top of this staircase, the head-master would have access to the great school, about 82 ft. by 34 ft., having six windows to Northgate-street, four towards the playground on the east side, and two in the angle in St. Werburgh-street. A door at the west end of the great school would lead through a lobby to another good class-room, over the one upon the ground floor, and to the south wing, occupied by a long corridor, and three other convenient class-rooms the great staircase in the angle leading back to the entrance-hall.

Mr. Blomfield's estimate for the building is 12,000*l*. But since he gave it, building materials have risen in price, and for labour something must be added. There are 3,000*l*. for the existing palace, and to the 15,000*l*. may be added 5,000*l*., so that the sum required is estimated at 20,000*l*. Towards that there are already 9,000*l*., and of this 7,000*l*. are available for building,—that is, 5,000*l*. given by the Ecclesiastical Commissioners and 2,000*l*. from Owen Jones's Charity. It is thought safe in beginning to build if 5,000*l*. more can be added to the amount in hand.

THE PROJECTED SCIENTIFIC COLLEGE FOR THE MIDLAND DISTRICT.

WE have stated that Sir Josiah Mason, who has already built and endowed an orphanage at Erdington, near Birmingham, at a cost of more than a quarter of a million, has now arranged to erect and endow a scientific college in Birmingham, on which will probably be expended at least an equal amount. All the arrangements for this munificent gift have been completed, according to the *Derby Advertiser*. The site has been secured, and the deed of foundation duly enrolled in the Court of Chancery. The first clause in the deed furnishes a brief sketch of the founder's life. He was born at Kidderminster (February, 23, 1795), and from his earliest youth was engaged in earning his livelihood. He was first a shoemaker, then a baker, and then a carpet-weaver at Kidderminster. He was introduced into his present business of steel split ring and key-ring making, in Birmingham, "by his good friend, Samuel Harrison, the first inventor of steel split rings." He added to it the manufacture of steel pens. In 1842 he entered into partnership with Mr. G. R. Elkington, as electro-platers and gilders, under the firm of "Elkington & Mason," and then in the business of copper smelting, under the firm of "Mason & Elkington." This partnership was dissolved in 1858. During his long experience as a manufacturer, Mr. Mason became deeply convinced of the want of, and necessity for, "thorough scientific instruction, specially adapted to the practical, mechanical, and artistic requirements" of the Midland district, and this want he has determined to devote a portion of his remaining property to supply.

The institution is to be called "Josiah Mason's College," or "Josiah Mason's College for the Study of Practical Science." A preparatory school may be added to the college, and the instruction to be given is strictly confined to subjects specially adapted to the "practical, mechanical, and artistic requirements" of the Midland district, more particularly the boroughs of Kidderminster and Birmingham. Regular systematic instruction is to be given in mathematics, abstract and applied; physics, both mathematical and experimental; chymistry, theoretical, practical, and applied; the natural sciences, especially geology and mineralogy, with their application to mines and metallurgy; botany and zoology, with special application to manufactures; and physiology, with special reference to the laws of health. The English, French, and German languages will also be taught. The trustees have power to include mechanics, architecture, and all other necessary subjects. Provision is made for lectures and classes, open to all persons, "without distinction of age, class, creed, race, or sex." Preference is to be given to candidates, "otherwise eligible," who have been, or are at the time inmates of Josiah Mason's Orphanage. The college will be open to qualified persons of all classes who have to rely on science, art, or manufacture for a livelihood, "especially the more intelligent youth of the middle class." The site selected for the college is in Edmund-street, Birmingham. It is in the centre of the town, and close to the Townhall, the Central Free Libraries, the Midland Institute, the new Post-office, and the proposed Corporation buildings. The land therefore is of the greatest value, and the founder has already laid out upwards of 20,000*l*. on the site alone.

AN ORDER OF THE GUARD.

IN a country where patriotism is keen, there will always be men on "the watch" in all matters affecting its welfare, and in affairs quite distinct and apart, very frequently, from their own professional vocations,—men who, for the most part, have no desire to enter the arena of politics, but who are gifted with the genius of *prevision* in special directions,—"seers" in the true sense of the word; with the clearer *prevision*, perhaps, because not paid to perform the special duty, or because their attention is unbroken by the calls of *routine*, and their thoughts are unhampered by the mass of detail, as the attention and thought of the officers of any special department of the State inevitably must be. Such men are not unfrequently of great service to the country, but are nevertheless generally overlooked and neglected by the ruling powers. No one can predict where this foresight, where this spirit liateth, till it manifests itself. It is, therefore, for the recognition of such men, and for the purpose of enrolling them as a corporate body under one banner, that I solicit a little space in your widely-circulating journal, to propose an order of "The Guard." I feel convinced that the annals of such an order would be filled with records of great and glorious services to the State. VIDETTE.

Books Received.

Transactions of the Society of Biblical Archæology. London: Longmans & Co. 1872. Vol. I., Part II.

THE second part of the first volume of the Transactions of the Society of Biblical Archæology contains a number of interesting papers. The first is on Cypriote inscriptions, by Samuel Birch, LL.D.; and there are others on Cyrus, the Son of Cambyses, King of Persia. by J. W. Bosanquet, F.R.A.S.; on Assyrian Mythology, by H. F. Talbot, D.C.L.; on the Origin of Semitic Civilisation, by the Rev. A. H. Sayce, M.A.; on Jerusalem, by W. Simpson, F.R.G.S.; on the Base Length of the Great Pyramid, and the Dimensions of the Royal Coffer, by S. M. Drach, F.R.A.S.; on Egypt, before the Reign of Ramses III., by Dr. Eisenlohr; and various others. The volume is illustrated with maps and numerous examples of Cypriote, Egyptian, and Assyrian inscriptions, &c.

On Coal, at Home and Abroad. By J. R. LEIFCHILD, M.A. London: Longmans.

THIS volume relates to the consumption, cost, demand, and supply, and other inquiries of present interest in reference to coal; and is a reprint of three articles contributed to the *Edinburgh Review*, with an Appendix. Mr Leifchild is the author of other works on coal and mining. The first article relates to the consumption and cost of coal; the second to the mineral itself, and the coal-fields of North America and Great Britain; and the third chiefly to coal mining and its accidents in the North of England. The author also offers a forecast as to the future cost and supply of coal, of interest to the general public.

VARIORUM.

THE current number of the *British Workman* gives an interesting notice of a self-taught wood-carver, Marshall George Strapps, now acting as postman in Wisbeach. It serves to show what may be done by perseverance. He is engaged at this time on a very elaborately carved chair, which, judging from an engraving of it, is superior to what we usually obtain under such circumstances, and not to be confounded with the cathedrals formed out of corks and similar trivialities sometimes put forward by admiring and ill-instructed neighbours. The chair is 6 ft. in height, and includes numerous subjects from the New Testament illustrating the life of the Saviour. Not the least satisfactory part of the relation is, that Mr. Strapps (though he has had a family of fourteen children, nine of whom are living) has contrived to save money enough to buy the little house in which he lives, as well as a plot of building land through a building society.——According to *Nature* the "Fishmongers' Company have presented to Mr. W. K. Parker, F.R.S., well known for his valuable researches on the Foraminifera, the shoulder-girdle and skull in vertebrated animals, the sum of 50*l*. in addition to an allowance of 20*l*. a year for the next three years, in order to enable him to pursue such parts of his work as relate to the anatomy of fishes." This is a good precedent for other of the great City companies to follow. ——Mr. Richard A. Proctor, B.A., Hon. Sec. of the Royal Astronomical Society, has contributed an article on "The Approaching Transits of Venus," to the June number of *Cassell's Magazine*.——Part VI. of *Old and New London* is occupied chiefly with St. Paul's, and is an interesting number.——The *Art Journal* says,—"The Royal Academy diploma of Sir Joshua Reynolds then Mr. Joshua Reynolds—was sold last month, and purchased by Messrs. Graves & Co., for 'the small sum' of 6*l*. Why it was not purchased by the Royal Academy for their library is a mystery not to be explained. It is dated the 15th December, 1793, and is signed by George III. It was sold at the sale of a curious collection of 'remnants,' the property of Joshua Reynolds Gwatkin, Esq., deceased, the great nephew of the painter who is England's chiefest glory in art. Messrs. Graves purchased at the same sale a matter even more curious. It is a small book, bound in vellum, containing twenty pen-and-ink sketches of much merit, picturing Windsor Castle, Holyrood, and other places, and is the note-book of the secretary of James II. then Duke of York, in which were entered the expenses incurred *en route* from London to Edinburgh—the Royal party, including the Duke's first wife, Anne Hyde, leaving London on the 27th October, 1679; the cost of the journey to Edinburgh being 832*l*. 11s. 7½d. In a pocket of the note-book was found a lock of hair, of a light brownish tint, and on the paper that encloses it is written in Sir Joshua's hand, 'Lady Waldegrave,'—the Lady Waldegrave of whom he painted a portrait. His picture of her three daughters is his *chef d'œuvre*. She was afterwards Duchess of Gloucester. It is recorded by Mr. Tom Taylor, that when Sir Joshua was working at the portrait, he asked the lady for a lock of her hair, that he might get the true colour with accuracy. She gave it, and after the lapse of 112 years the identical lock is thus accidentally discovered."——"More-street, now Moor-street, Liverpool; its Origin and early Associations. By Henry Ecroyd Smith. Brakell, printer, Cook-street, Liverpool." This reprint from the Transactions of the Historic Society of Lancashire and Cheshire, contains some particulars of interest in the history of an old street in Liverpool. We thank Mr. H. E. Smith.

Gift of a Church.—On Wednesday morning Earl Fitzwilliam laid the foundation-stone of a new church, his lordship's own gift, at Wentworth, near Rotherham.

Miscellanea.

The Sewage Farm at Fazakerley, Liverpool.—The farm of 200 acres acquired by the West Derby Local Board, for the utilisation of sewage on the irrigation system of Mr. William Hope, of the Romford sewage farm, is being brought into operation. The amount paid for the land, compensation to tenants, legal and other charges, was 36,000*l.*; and the cost of the construction of a culvert, the levelling and laying out of the ground, the bringing the sewage on to the farm, and other expenses, was estimated at 22,700*l.* Borrowing powers for 58,700*l.* were obtained, the principal to be repaid in thirty years, and 4½ per cent. was paid for the money. About the middle of last year operations began on the farm, under the superintendence of Mr. Hope, who was assisted by Mr. Orridge (surveyor to the local Board) and Mr. William Avis (superintendent under Mr. Hope). Of the 200 acres of land, 180 are intended, at present, for irrigation by sewage. About 165 acres are already drained, nearly 80 acres have been levelled, and 45 acres have been cropped with onions, carrots, mangolds, beans, turnips, and cabbages. The remainder of the land, with the exception of the 20 acres, will be cropped as soon as the levelling is finished, and the 20 acres are intended in time to receive the sewage of the western or least populous part of the district; but, of course, additional land will have to be acquired. Eighty men are labouring on the ground at various points. The farm is intended to utilise the sewage of 17,000 persons.

The Condition and Ventilation of the Liverpool Sewers.—A special meeting of the Local Health Committee has been held for considering the report of the borough engineer upon the condition and ventilation of the sewers. Dr. Taylor occupied the chair, and the mayor was also present. Some of the recommendations of the report were adopted, and a discussion took place as to the sixth,—

"That the system of drainage in question having been put into good condition, gratings be fixed on the manholes in the streets; or, in the absence of manholes, that ventilating shafts in the streets be constructed at distances not greater than 100 yards."

Mr. Trench, the local officer of health, was against the recommendation, and stated that Mr. Rawlinson and other well-known scientific men had condemned it. The borough engineer, however, said he had been in communication with the gentlemen named by Dr. Trench, and that the general opinion was in favour of the system adopted in London. He quoted the subsequent opinion of Mr. Rawlinson in favour of his proposal, and in course of which Mr. Rawlinson had said,—

"In reply to your questions, I beg to say that I consider main sewer ventilation of the utmost importance,—that, in fact, sewers without ventilation are unwholesome as gas-gas retorts, which gas, in its concentrated form, is deadly. Main sewer ventilators to the open streets, as in London—one such ventilator on each 100 yards in length,—should be provided."

Mr. Forwood referred to the introduction of Archimedian screws, and said that if they were adopted throughout Liverpool, 17,600 would be required, and estimating them at 11*l.* each, the total cost would be 193,600*l.* The meeting was then adjourned.

The "Opera Comique."—Every now and then the theatrical critics of the daily papers take it into their heads to vary the ordinarily good-natured style of their notices by "pitching into" some piece produced under circumstances that do not happen to please them, with edifying unanimity. This has been the case with the *opéra bouffe* now played here, "The Wonderful Duck," very cleverly imitated from the "Canard à Trois Becs" by Mr. Charles Lamb Kenney. Judged of from the *opéra-bouffe* point of view, it deserved better treatment, and unless we are mistaken, this opinion will be justified by a long run. It was poorly played, with some exceptions, on the first night, but the cast has been strengthened, and the actors (Mr. George Honey, Mr. Odell, Miss Patty Laverne, Miss Rose Bell, and others) are getting hold of their parts, which enables them at the same time to take hold of the audience. Mr. Kenney has executed his part of the business admirably. There is a good deal of real fun in the piece, and some of the music is so charming, and is now so well sung, that the audience are not satisfied with hearing it twice. "The Wonderful Duck" will have a flight, notwithstanding the arrows that were feathered from its wing.

The Twenty-second Annual Report of Amalgamated Society of Engineers, &c.—The General Secretary, Mr. Allan, states in his remarks that during the year the council has opened thirteen new branches—eleven in England; one in Scotland; one at Kingston, in Canada; and one at San Francisco, California. So that at the close of the year the society had 351 branches, with 41,075 members, 5,294 having been been admitted during the twelve months. They have been enabled to add to their previous balance no less than 41,987*l.*, thereby making their total accumulated fund at the end of December last 158,313*l.* or 3*l.* 17*s.* 1*d.* per member, being the highest amount per member they have been possessed of (except in 1866) since the formation of the society. The total income during the year amounted to 105,373*l.*, to which must be added 116,326*l.*, that being the balance in hand at the commencement of the year, making a grand total of 221,704*l.*, and during the same period the expenditure amounted to 63,390*l.*, thereby leaving a clear balance of 158,313*l.*, as stated, in favour of the society. The sum of 15,377*l.* has been paid as donation benefit to unemployed members, including 6,000*l.* expended in trade disputes. In support of sick members 18,563*l.* have been expended. In eleven cases of accident, &c., 100*l.* have been paid to each. The funeral benefits have amounted to 6,273*l.*

Results of the High Price of British Iron.—At the last weekly meeting of ironmasters in Wolverhampton, it was notified that a consumer of finished iron, carrying on business in the midst of the iron-rolling mills of that district, had made arrangements to import from across the Atlantic 1,000 tons of strip-iron made in America; further, that the firms who manufactured railway-axles in America are selling axles at 3*l.* per ton under the prices, in American markets, of the leading railway-axle companies of South Staffordshire. In West Yorkshire all sorts of prices have been asked and given during the past week when any iron could really be met with. The dearth of the metal, however, has been almost unprecedented. Prices of Cleveland iron are simply nominal, although work has been resumed in the meantime, with the view of arbitration. In the Scotch market there is substantially no change as regards values, but that is a sign of weakness rather than otherwise. Merchants and consumers fail in obtaining lower prices; for the ironmasters insist on their published quotations, knowing that very soon consumers will be forced to buy on the best conditions which the state of the supply will admit of.

Sanitary Report on Whitechapel.—The Board of Works, Whitechapel District, report on the sanitary condition of the district for the quarter ending March 29th, 1873, by Mr. John Liddle, medical officer of health, has been issued in a printed form. The total area of the Whitechapel District is 406 acres, or 1,965,040 square yards; and the population at the last census, according to the report, was 76,332. The water area of the district is 23 acres. The density of the population is therefore 25·7 square yards for each inhabitant. The deaths, excluding those of non-residents and those which were the result of accident, were, for the quarter, 2,023, which gives a death-rate of 26·4 per 1,000. This rate of mortality, however, varies in different subdistricts. Thus, in a block of buildings, bounded on the north by the south side of Royal Mint-street; on the east, by the west side of Dock-street; on the south, by the north side of Hog-yard; and on the west, by the east side of Glasshouse-street, the rate of mortality was 43·3 per 1,000,—a sad difference. We hear of a recent outbreak of illness in the district.

The Whitehall Approaches to the Thames Embankment.—An opinion appears to be entertained in the Westminster Board of Works, that additional approaches are needed from Whitehall to the Thames Embankment. At a special meeting, a proposition has been made, having for its object the opening of an approach by way of Derby-street, but after considerable discussion the consideration of the subject was adjourned.

A Right Suggestion.—We are glad to hear that a movement is on foot, with a view to the presentation of a personal testimonial to Mr. Henry Cole, C.B., on his retirement from the duties he has so long successfully performed at South Kensington. A preliminary meeting of gentlemen interested in the promotion of it is to be held, this, Friday, June 6th.

Exeter Cathedral. — The London fund towards the restoration of Exeter Cathedral now amounts to about 1,200*l.*, and it is proposed to close that, as also the Oxford fund. The amount originally required for the restoration was 35,000*l.*, viz., 25,000*l.* for the choir and that part of the edifice east of the organ, and 10,000*l.* for the nave. The sum promised through the Chapter amounted to 21,100*l.*, which, with the city fund, would make a total of nearly 31,000*l.* Over 4,000*l.* are still required. To the contractor has been already paid for work done 14,779*l.* It is proposed to do much more work than was at first contemplated. The bishop's throne will cost 500*l.* and the organ 800*l.*,—double the outlay originally intended. In addition to this, there are special funds for the restoration of the Lady Chapel at the sole cost of Lady Rolle, of Bicton, the four memorial windows to the late Bishop Phillpotts for the Lady Chapel; the memorial window for the east end, and two pulpits, the cost of which will be 1,000*l.*, as a memorial of the late Bishop Patteson. The entire restoration when completed will thus cost about 40,000*l.*

Ravensthorpe Main Drainage.—On the 11th of May an inquiry was held at Ravensthorpe by Mr. Robert Morgan, C.E., one of the inspectors attached to the local government office, for the purpose of receiving evidence touching a proposal for putting into force the Lands Clauses Consolidation Act, with reference to taking about 1½ acre of land for sewage outfall purposes. The scheme adopted by the Local Board comprises the complete main drainage of the district into a receiving-tank, and hence the sewage will be pumped with an ultimate view to utilisation by irrigation. The natural difficulties caused by the low level of the ground, and liability to floods from the river Calder, have hitherto deterred the board from undertaking the work. The cost of the scheme, including main outfall sewers, tank, overflow, and pumping works, is estimated at 6,700*l.* The engineer, Mr. Malcolm Paterson, of Dewsbury, and others, gave evidence at the inquiry. A provisional order from the local government office, authorising the purchase of the site, has been received by the Board.

Archæological Discoveries at Humbledon Hill.—The summit of Humbledon Hill, about 300 ft. above the level of the sea, about half a mile west of Bishopwearmouth, has been chosen as the site of a high level reservoir for the use of the Sunderland and South Shields Water Company, and in the course of the needful excavation for the works, several interesting remains were discovered. Two sun-dried urns have been found, which were in an inverted position, and filled with bones, in fragments. These urns are supposed to be of ancient British origin, belonging to the Brigantes. The wheel has not been used in their manufacture. Excepting on the neighbouring heights of Tunstall Hills, and at Trimdon, no instances have occurred in the county of Durham of the finding of urns of a similar kind. The urns have been presented to the Borough Museum by the directors of the Water Company.

Drinking-Fountain and Cattle-Trough Association.—The fourteenth annual meeting of this association has been held at Willis's Rooms, with a larger attendance than on any previous occasion. The Marquis of Westminster, president of the association, was in the chair. The committee's report for the past year stated that the year's subscriptions (annual) amounted to 1,315*l.* odd, and the donations to something over 2,140*l.*, besides a legacy of 500*l.* from the executors of the late Mrs. Jane Lyon. The expenditure exceeded 2,962*l.* The committee have in some cases to pay as much as 30*l.* a year for the water consumed in a single trough; and they point out that, without the liberal support which they solicit—the society depending entirely on voluntary subscriptions—it will be "impossible for them to sustain and extend a work, the beneficent effects of which are experienced by many millions of human beings and animals every year."

A New Memorial Hospital.—The friends and congregation of the late Rev. W. Pennefather having determined to erect a memorial of him, it is proposed, if the fund collected should admit of it, to found a hospital for women and children,—in other words, to extend and enlarge the plan of the present children's nursing-home at Mildmay Park, Islington.—*The Rock.*

Moving a Girder by the Sun.—A girder of the bridge now constructing at Kuilenborg (Holland), which rested about 2 in. too far on one of its piers, has (according to the *Chron. de l'Ind.*) been moved into its proper position by a means not unknown in this country. By a variation of temperature of the girder, which is about 465 ft. long, 1° C., it was found to expand about 1-14th of an inch; the difference of the temperature of the air by night and by day amounting to 18° C. In the morning the girder was securely fastened at the end, where it rested too far forward, and in the evening, when in consequence of the rise of temperature during the day, it had moved forward about 1 in. at the opposite end, it was fastened to this, but set free at the other, so that it might contract during the night. By repeating the proceeding, the girder was got into its proper position.

Proposed Press Cable between America and Great Britain.—A large meeting of the members of the New York Cotton Exchange was held in New York on the 11th ult., to discuss the proposition of the *Journal of Commerce*, that the press of America should combine to lay an ocean cable for telegraphic purposes, and to devise means for encouraging such an enterprise. The President of the Exchange occupied the chair. Appropriate resolutions were passed. Mr. Graner said that one million sterling would be sufficient to make and lay a cable, and that amount could be raised in a week. Messages could be sent for 25 cents a word, and then pay an enormous profit. Merchants could then transact a much larger part of their business by telegraph, and be sure of prompt dealings.

New Fuel.—Mr. L. Banks, of Hull, proposes a new manufacture of fuel. The invention relates to the combination of the following matters:—1. The refuse which accumulates round the mouths of coal-pits. 2. Small coal. 3. Turf, peat, or such like matter. 4. Mineral pitch. 5. Coal-tar. 6. The scum or refuse from cotton seed after obtaining oil-cake therefrom. The coal-tar and the mineral pitch are prepared by being mixed whilst hot, and after being boiled in the ordinary manner in equal proportions. The two are then run together; before use they are reboiled and mixed with the other ingredients before named. The whole are then compressed together by steam-power or otherwise, and the composition is then ready for use.

Damaging the Ruins of Dudley Castle. At the local police-court two boys were summoned for unlawfully damaging the ruins of Dudley Castle. A watchman in the employ of the Earl of Dudley stated that he saw the two defendants upon the highest portion of the triple gateway. He called to them, and immediately afterwards he found that a man had been seriously injured. A large stone, weighing upwards of 20 lb. had struck him and rendered him insensible. As it appeared to have been an accident, a penalty of 5s., damage 6d., and costs, with the alternative of fourteen days' imprisonment, was inflicted. It is just such sixpenny damages, however, that cause our interesting historical remains gradually to disappear altogether.

Shop Architecture in Newcastle.—New business premises have been erected in Clayton-street for Mr. Barrass Grant, hatter. The work has been carried out from designs by Mr. George Lambton, architect, Newcastle, and superintended personally by him. On either side of the shop is a cornice, carried by Corinthian pillars, with carved capitals, the cornice being broken above the pillars, on the top of each of which is a raised chamfered block. Over the rear of the shop is a gallery, reached by one of Macfarlane's spiral staircases; the balcony railing, by the same maker, is of simple design. The fittings of the windows are of brass.

Report of the Ladies' Sanitary Association.—The fifteenth annual report of this Association has been published at their office, 22, Berners-street, Oxford-street. It states that many ladies have joined the Association during the past year, and that its publications are becoming more extensively useful. In all, 45,500 tracts have been issued, making a total of 823,340 since 1857, which cannot fail to have much extended the public knowledge on sanitary subjects. The committee earnestly urge the co-operation of friends in the distribution of these tracts and the collection of funds.

Society for the Encouragement of the Fine Arts.—Mr. H. C. Selous delivered a lecture on "Form and Motion" before the members of this Society, on Thursday evening in last week, when Dr. Doran, F.S.A., presided. The lecture was illustrated with diagrams, showing the form and action of the various portions of the human body, and considerably interested the audience. It is complained, and with some justice, that long speeches, often entirely irrelevant, are made here after the lectures, which only serve to remove the good impressions produced by the lecturer and chairman.

Attempt to Blow up a Statue.—A Dublin correspondent telegraphs that an attempt has been made to blow up the statue erected to the memory of the late Viscount Fitzgibbon, on Wellesley Bridge, Limerick. A barrel of gunpowder had been placed on the pedestal, and ignited by a long fuse. The statue is happily not much injured, but the explosion displaced the top stone of the pedestal. No arrest has been made. The statue was erected after the Crimean War, Viscount Fitzgibbon having fallen at Balaklava.

Milton Abbas Cottage Hospital.—This institution was recently built by Baron Hambro, for the welfare of the people on his estate of Milton Abbey. The hospital gives assistance in case of sickness (not infectious) and accident, and midwifery cases are admitted. Patients may be recommended for approval of the medical officer by subscribers of 10s.; and those admitted are required to contribute towards their own maintenance. There is no restriction as to religious visitation.

Dover Harbour.—The engineer's report on the Dover breakwater, or western arm of the harbour of refuge, a work which he describes as begun a quarter of a century ago, shows that at the end of March, 1873, the expenditure had reached 671,434*l.* There had also been 14,646*l.* expended upon the substructure of the fort for the War Department. Will some one who knows be so good as to say *when* the harbour will be finished, and how much must be expended before that consummation will be arrived at?

"Smoking and Thinking."—We are told that the article under this heading, which appeared in our last, had already been published elsewhere. The MS. had been in our hands many months, and the author of it now informs us, with apologies, that, supposing we had given up the intention of printing it, he sent a duplicate to another journal.

Oxford Architectural Society.—The members and friends of this Society made an excursion on Saturday before last to Rollright Stones, Lyneham Camp, and the churches of Shipton-under-Wychwood, Chipping Norton, &c.

TENDERS.

For sundry repairs and painting to the Great Synagogue, St. James's-place, Aldgate. Mr. N. S. Joseph, architect:—

Vernell	£725	0	0
Hurn	646	0	0
Kinymont	528	6	0
Hopkins	497	0	0
Heeps (accepted)	480	0	0

For supplying fittings and fixtures at the new Vestry-hall, for the parish of St. Giles, Camberwell. Mr. E. Power, architect:—

Sage	£1,450	0	0 !
Drew	1,190	0	0
Sadgrove	1,105	0	0
Shapley	820	0	0
Ramsey	780	0	0
Tonson & Williams	772	0	0 !

For house at Anerley, for Mr. A. W. Chauner. Mr. W. G. Bartlett, architect. Quantities by Messrs. Stoner & Ashby:—

Pritchard	£1,767	0	0
Wood	1,688	0	0
Downs	1,596	0	0
Blake & Ramplen	1,540	0	0
Adcock & Rees	1,462	0	0

For excavations for warehouse, Blackfriars. Messrs. Smith & Seymour, architects:—

Green	1,500	0	0 !
Goodman	900	0	0
Mansbridge & Co.	700	0	0
Batch	595	0	0
Hilton	500	0	0
Hubbard	377	0	0
Irons	360	0	0 !

For the erection of a house at Orpington, Kent, for Mr. G. Allen. Messrs. T. & W. Stone, architects. No quantities:

Lathey, Brothers	£1,220	0	0
Goodman	1,220	0	0
Kiddle & Sons	1,180	0	0
Payne & Balding (too late).			

For villa residence, Plot 12 E, Crystal Palace Park Estate, Sydenham. Mr. J. Norton, architect:—

Taylor & Sons	£2,690	0	0
Oliver	2,621	0	0
Coles	2,417	0	0
Sand & Simpson	2,300	0	0
Blake & Ramplen	2,279	0	0
Keastand	2,225	0	0
Elliott	2,197	0	0
Tibbett	2,055	0	0
Aitchison & Walker	2,025	0	0
Moore	1,997	0	0
Blackmore & Morley	1,990	0	0

For erecting workshops and chimney-shaft in rear of No. 13, Greek-street, Soho. Messrs. Lee, Brothers, & Pain, architects:—

Tilly	£2,013	0	0
Pain (accepted)	2,010	0	0

For alterations, &c., to the Rectory House, Brinkley, Newmarket. Mr. Frederick Thomson, architect. Quantities by Mr. W. Barnett:—

Bell & Sons	£1,097	0	0
Taylor	993	0	0
Thoday	950	0	0
White	795	0	0
Mason & Son (accepted)	714	10	0
Mason & Fell	662	10	0

For repairs at Duke of Abercorn, High-street, Kensington. Mr. H. J. Newton, surveyor:—

Brindle	£150	10	0
Shurmur	149	0	0
Taylor (accepted)	147	0	0

For alterations at the Tollington Arms, Hornsey-road. Mr. Wayborn, architect:—

Steed	£440	0	0
Carter	390	0	0
Terrey	345	0	0
Chapman	342	0	0

For infants' school and dormitory at the Stockwell Orphanage, Clapham-road. Mr. J. Cubitt, architect:—

Keyes & Head	£1,272	0	0
Thompson	1,147	0	0
Rider	1,053	0	0
Tarrant	1,050	0	0
Colls & Son	1,036	0	0
Hart	1,028	0	0
Cullum (accepted)	998	0	0

For a farmhouse and homestead at Quinbury Farm, Braughing, Herts. Mr. Robt. Hutchinson, architect:—

Ginn	£2,478	0	0
Glasscock	2,400	0	0
Ekins	2,343	0	0
Lawrence	2,338	0	0
Cade	2,280	10	0
Lord	3,295	0	0
Cornwell	2,238	0	0
Dover	2,195	0	0
Waldman	2,171	0	0
Allen & Smith	2,079	0	0
Gibbons	1,937	0	0

For new buildings at King-street, Covent-garden, for Mr. Henry Butler. Mr. Alfred Cross, architect:—

Patman & Fotheringham	£6,748	0	0
Candler	6,670	0	0
Newman & Mann	6,516	0	0
Perry & Co.	6,300	0	0
MacLachlan	6,297	0	0
Clemence & Sons	6,200	0	0
Howard & Co.	6,175	0	0
Hart & Co.	6,071	0	0
Wilson, Brothers	5,979	0	0

For new stable in Montague-street, for Mr. Stanley, Mr. Sandall, architect:—

Howell	£212	0	0
Crosker	189	0	0
Green	149	15	0
Linfield	149	0	0

For lodge to The Cedars, Enfield. Mr. T. J. Hill, architect:—

L. & W. D. Patman	£375	0	0
Bayes & Ramage	363	0	0
Fairhead	363	0	0

For additions, &c., to premises, High-street, Barnet, for Mr. Schleucker. Mr. T. J. Hill, architect

Paterson	£295	0	0
Miller	277	0	0
Baughan	260	0	0

For a house, Church-road, Upper Norwood. Mr. S. Dyball, architect:—

Stevenson	£3,006	0	0
Newman & Mann	2,836	0	0
Manley & Rogers	2,627	0	0
Daymond	2,553	0	0
Babey & Son	2,426	0	0
Wright (accepted)	2,349	0	0
Coles	2,336	0	0
Bryan (too late)	2,280	0	0

For proposed additions at St. Mary's schools, Paddington, for the Rev. John Wall Buckley and others. Mr. T. R. Parker, architect. Quantities supplied:—

Temple & Foster	£519	0	0
Ebbs & Sons	500	0	0
Morsman	490	0	0
Cross & Son	480	0	0
Oldrey	420	0	0

For proposed additions at Munster House, Fulham, for Messrs. Blandford, Hemming, & Williams. Mr. Thos. R. Parker, architect. Quantities supplied:—

Goodman	£4,028	0	0
Webber	3,974	0	0
Smith	3,937	0	0
Simpson & Co.	3,900	0	0
Smith & Alder	3,846	0	0
Cross & Son	3,837	0	0
Adamson & Sons	3,786	0	0
Aviss & Co.	3,786	0	0
Wigmore	3,700	0	0

The Builder.

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Staffordshire Pottery and Porcelain.

POTTERY and Porcelain Manufacture in Staffordshire dates from the middle of the sixteenth century, but for nearly two hundred years after its introduction the produce of the industry was of small extent and of the rudest type. Tobacco-pipes, urns, glass-house pots, and butter-pots are mentioned in the old county records as the earliest descriptions of pottery made in Staffordshire. Dr. Plot, whose account of the infant manufacture is very elaborate, remarks (A.D. 1680):—"As for tobacco-pipe clays they are found all over the county, near Wrottesley House, and Stile Cop, in Cannock Wood, whereof they make pipes at Armitage and Lichfield, both which, though they are greyish clays, yet burn very white. There is tobacco-pipe clay also found at Darlaston, near Wednesbury,* but of late disused because of better and cheaper found in Monway Field, which is of a whitish colour and makes excellent pipes, as also doth another of the same colour dug near the salt-water pool in Pensnett Chase, about a mile and a half south of Dudley; and Charles Riggs, of Newcastle, makes very good pipes of three sorts of clay, a white and a *blew*, which he has from between Shelton and Hanley Green, whereof the *blew* clay burnes the whitest, but not so full as the white, *i.e.*, it shrinks more. But the best sort he has from Grubber's Ash, being whitish mixed with yellow. It is a short *britle* sort of clay, but burnes full and white, yet he sometimes mixes it with the *blew* before mentioned. But the clay that surpasses all others in this county is that at Amblecote, on the bank of the Stour, in the parish of Old Swynford, yet in Staffordshire, in the hands of that judicious and obliging gent. (*sic*) the worshipfull Harry Gray, of Enfield, Esq. . . . . I say the most *prefarrable* clay of any is that of Amblecote, of a dark *blewish* colour, whereof they make the best pots for the glass-houses of any in England. Nay, so very good is it for this purpose, that it is sold on the place for sevenpence the bushell, whereof Mr. Gray has sixpence and the workman one penny, and so very necessary to be had that it is sent as far as London, sometimes by waggon and sometimes by land to *Beaudley* [Bewdley], and so down the Severn to Bristol, and thence to London. . . . . Other potters' clays for the more common wares there are at many other places, particularly at Horseley Heath, in the parish of Tipton; in Monway Field, where there are two sorts gotten, one of a yellowish colour mixed with white, and the other *blewish*. . . . . Of these they make divers sorts of vessels at Wednesbury, which they paint with slip made of a reddish sort of earth gotten at Tipton.† But the greatest pottery they have in this county is carried on at Burslem, near Newcastle-under-Lyme, where for making their several sorts of pots they have as many sorts of clay, all dug round about the *towne* within half a mile's distance." The garrulous historian goes into a most minute account of the process of manufacture, which is very curious, and would be worth quoting did space allow; but the extract given sufficiently answers our present design, by showing in what parts of the county the pottery trade was at that period located. The concentration of the industry in that part of North Staffordshire to which it gives its name probably took place about the commencement of the last century. Burslem was the first centre of the trade which rose to anything like importance. As early as the year 1650 the place was called the *Butter Pottery*,* owing to the erection of a factory of some pretensions, for making butter-pots. These pots were cylindrical in form, and, by the provisions of an Act of Parliament in 1670, were required to be 6 lb. in weight, and to contain not less than 14 lb. of butter. This piece of legislation was due to a fraudulent practice by certain makers in the Moorlands, by making these pots thick at the bottom, in order to increase their weight. They were made of the coarsest clay, and displayed the rudest workmanship. About the year 1670 the rude article was further improved by a partial glaze, and soon after the vessels were further improved by coarse medallions of the reigning sovereign attached to either side.† At the close of the seventeenth century, glaze, of salt and lead, had become common in the earthenware manufactures of Staffordshire. At that period, according to Pitt, the historian, a great variety of useful and ornamental articles, in large dishes, jugs, and candlesticks, were manufactured at Burslem, exhibiting some pretensions to design and workmanship. It was not long, however, before a purer clay from Dorsetshire and Devonshire, was brought to North Staffordshire; but this was used only for washing or lining the insides or ornamenting the outsides of ware with flowers and figures of various kinds; and these white ornaments were sometimes founded upon a red body, well glazed with lead ore. The white clays of Devonshire and Dorsetshire, mixed with a due proportion of calcined flint, were used in the manufacture of "white stoneware." This proved an era of some importance in the history of the Potteries, although at the time such a result was quite unexpected. The clean appearance and durable quality of this white ware soon ensured for it a considerable demand on the continent of Europe. The first articles produced of this description were circular pieces, or such as were made on the thrower's wheel, and finished in the lathe. Plaster moulds, up to that time, had not been used. The only kind of moulds then known seem to have been made of brass, or a sort of clay known among potters by the name of "Tough Tom." Ralph Daniel, a potter of Cobridge, was the first, in conjunction with Aaron Wood, to introduce plaster moulds, the idea having been borrowed from the potteries of France. The gypsum mines of Derbyshire supplied the material in ample abundance, and complete table services of barleycorn, mosaic, basket-work, and other fanciful patterns were produced. According to Pitt, the introduction of plaster moulds marked an era in the trade, and the variety of produce was very considerably increased. In the year 1815, there were twenty ovens in the parish of Burslem, all of which glazed their wares with salt, an operation usually performed simultaneously on Saturdays, at noon, producing an effect which strangers have compared, not inaptly, to the emissions of a volcano. The historian already quoted remarks that various improvements in the body, glaze, and workmanship of the ware immediately followed the introduction of stone-glazing, the manufacture of white stoneware having by this time extended itself along the whole range of the line on which the various strata of coal presented themselves, at or near Tunstall, Shelton, Cobridge, Hanley, Stoke, Lane-end, and Mere Heath.

The first Staffordshire potters of whose works any reliable record has been preserved, were two Dutchmen, Elers by name, who brought the art from Holland, and established a small factory at Bradwell, near Burslem, as early as the year 1690. Pitt, differing from most historians, disputes the claim of the Elers to this distinction, owing, as he remarks, to the "very improved state of the manufacture of Crouch ware at Burslem, in the reigns of William and Mary, and Queen Anne, as well as on account of the unfitness of their oven at Bradwell from its small dimensions for this manufacture."* For half a century following the introduction of white stoneware, the lead ore glaze continued to be used, and small factories sprang up in all parts of the district. Manganese rubbed under or upon the glaze with a sponge, produced what is called "Tortoise-shell" ware. "Agate" ware was produced by the application of ground zaffer, and became largely in request for knife-handles, snuff-boxes, and other articles which were sent from the potteries to Birmingham, to be fitted with hinges, hoops, and springs. By an application of calcined copper, iron, and other metals, "Cauliflower" and "Melon" wares were introduced. Lead ore, with a small proportion of ground flint, delicately applied, produced the celebrated cream-coloured ware. This was originally made by Edwin Booth, of Tunstall, in 1750, and in the following year it was improved by Mrs. Warburton, of the Hot-lane, near Burslem.

About this period, Thomas and John Wedgwood, leaving the employ of their father, as lead or glaze potters, commenced on their own account the manufacture of white stone ware. In this enterprise they achieved marked success, improving the outline of the articles and the purity of the ware. A larger manufactory was soon afterwards erected near the Brindleys' famous windmill, where flint stones were reduced by a rapid process to fine powder. This factory was condemned by the populace as being too extensive, and by some was known as "Wedgwood's folly." It is a suggestive fact that this was the first earthenware factory in the Potteries not roofed with thatch. A considerable improvement in salt glaze was made soon after by William Littlor and Aaron Wedgwood. Littlor, as Pitt observes, had noticed how nearly the white stone ware approached to porcelain, and about the year 1750 he left Burslem, and commenced a porcelain manufactory at Longton, near Stoke. He so far succeeded as to excite the astonishment of the potters; but it proved an unprofitable article, and the manufacture of it was discontinued. Aaron Wedgwood, who married Littlor's sister, was a manufacturer of white stoneware, and joined his experience to that of Littlor in the attempt to improve salt glaze. The result of these experiments was the addition of ingredients of easy fusibility, with certain proportions of ground zaffer, and the flint and clay of which the body of the ware was composed. In this compound, when in a liquid state, the ware was dipped, by which it imbibed a thin coat or covering of the liquid; and this, when exposed to the fire in the usual method of glazing with salt, produced a fine, smooth, glassy surface, quite free from the small inequalities which are observable in all the pieces of ware glazed with salt alone.

* Pipe-making was at that time, and for a century later, an important industry in Wednesbury.

† The vessels referred to were no doubt common red jars and pitchers.

* Burslem is marked *Butter Pottery* in several old maps, but neither Speed nor Camden gives it that name.

† Some years since a vase was dug up near Burslem, ornamented by a basso-relievo medallion of Queen Anne, and surmounted by a crown.

* In 1796, some well-preserved specimens of this Crouch ware were dug up in the neighbourhood of Burslem.

The comparative imperfection of the pottery trades down to the middle of the last century is sufficiently indicated by the earnings of the workpeole at that period, which were too scanty to admit of the supposition that the craft displayed any considerable skill. In the year 1750, 5s. to 6s. represented the average weekly wages of an experienced journeyman potter, and a modeller was satisfied with a shilling a day. It is clear from this that the Staffordshire potters at that period were exclusively occupied in the production of the cheapest and simplest forms of earthenware, making not the slightest pretensions to rivalry with Chelsea and Sèvres. But a master-spirit was already maturing the genius, which, to quote the fitly-chosen words of his epitaph, soon "converted a rude and inconsiderable manufacture into an elegant art, and an important branch of national commerce."

For anything like a biographical sketch of Josiah Wedgwood, even if space admitted of it, this is not the place; but the story of this man's life is so interwoven with the industry in which he won his fame, that one or two of the bolder outlines of his career may be given as representing really so many important epochs in the history of his art. The son of a potter in humble circumstances, Wedgwood was the youngest of a family of thirteen. He began life as a "thrower" at the age of eleven, but soon after, a disease settling its dregs in the lower part of the leg, rendered amputation necessary, and he was no longer able to follow his employment. But, as Mr. Gladstone remarks, "in the wonderful ways of Providence, that disease which came to him as a two-fold scourge, was probably the occasion of his subsequent excellence. . . . . It sent his mind inwards, and drove him to meditate upon the laws and secrets of his art. The result was that he arrived at a perception and a grasp of them, which might perhaps have been envied, certainly have been owned, by an Athenian potter. . . . . We find the works of his earliest youth already beginning to impress a new character upon his trade: a character of what may be called efficiency combined with taste, and with the best basis of taste,—a loving docile following of nature." Soon after attaining his majority, he commenced business in partnership with a practical potter named Harrison, and when the term expired he linked his commercial fortunes with one Whieldon, but this did not last long, Wedgwood's expansive mind and energetic spirit rendering the yoke unequal. About the year 1760 he joined himself as a partner with Mr. Richard Bentley, a kindred spirit, who excelled especially in the rendering of classical art, and into the service of the new firm came Chisholm, the renowned chemist, and Flaxman, the world-famed modeller of plastic art. With such associates, it was no wonder that a new life dawned upon the scene of Wedgwood's labours, and that a rude attempt at ornamentation, whether in outline or finish, gave place to the highest excellence of artistic beauty. From the Etruscan, Portland, or Barberini vase, down to the cheapest article of domestic use, Wedgwood's productions alike exhibited a remarkable advance in beauty of form and decoration. On this subject we cannot do better than quote the beautiful words spoken by Mr. Gladstone at the opening of the Wedgwood Institute in the autumn of 1863:—"It would be quite unnecessary to dwell on the excellence of such of the works of Wedgwood as belong to the region of fine art, strictly so called, and are not in the common sense commodities for use. To these all the world does justice. Suffice it to say in general terms that they may be considered partly as imitations, partly as reproductions, of Greek art. As imitations they carry us back to the purest source; as reproductions they are not limited to the province of their originals, but are conceived in the genuine and free spirit of that with which they claim relationship. But it is not in happy imitation, it is not in the successful presentation of works of fine art, that the specialty of Wedgwood really lies. It is in the resuscitation of a principle,—of the principle of Greek art; it is in the perception and grasp of the unity and comprehensiveness of that principle. That principle lies in severe and perfect propriety,—in the uncompromising adaptation of every material object to its proper end. If that proper end be the presentation of beauty only, then the production of beauty is alone regarded, and none but the highest models of it are accepted. If the proper end be the production of a commodity for use, and perishable, then a plural aim is before the designer and producer. The object must first be adapted to its use as closely as possible; it must be of material as durable as may be; it must be of moderate cost; then it must receive all the beauty which can be made conducive to, or concordant with, the use. And because this business of harmonising use and beauty, so easy in the works of nature, is arduous to the frailty of man, it must be made the object of special and persevering care. To these principles the works of Wedgwood habitually conformed." Wedgwood's remarkable enterprise not only raised the products of his industry to the highest type of excellence, but to it was also due in a great measure the opening up of cheaper and more direct facilities of transport by means of the Grand Trunk Canal, which linked the Mersey to the Trent. The effect of his combined labours during a quarter of a century was to raise a half-civilised district of 7,000 people, partially employed and poorly paid, to a prosperous and skilled community of 20,000. The wilderness, as if by a stroke of magic, was suddenly transformed into a fruitful field. Large and well-arranged factories sprang up in all directions, superseding the low, miserable workshops thatched with straw, which had hitherto been characteristic of the trade; and multitudes of intelligent and highly-skilled artworkmen flocked to a scene which gave such fair promise of employment to their best talents.

To the experiments of Wedgwood are due the following species of earthenware and porcelain for various useful and ornamental purposes:—Terra cotta, basaltes, or black ware, white biscuit, jasper, bamboo, and porcelain biscuit, all of which are capable of receiving a high polish, are proof against acid, and possess high qualities of endurance. To each of these materials Wedgwood gave the purest types of art, antique vases and busts dug up from the buried ruins of Pompeii and Herculaneum affording in many instances the models from which he worked. A few years before Wedgwood's death, in 1795, the art of printing upon glazed ware various artistic devices was invented and perfected by an ingenious engraver, of Liverpool, named Carter, and as an instance of the success of this process, it is stated that from his factory in the Potteries, Wedgwood was accustomed to send to Liverpool "a wagon-load of cream-coloured ware every fortnight to be printed on this new method." In a few years, however, many engravers settled in the Potteries, and the impressions taken from copper plates upon thin, soft paper were transferred to the ware on the original plan. Subsequent enterprise largely improved upon this method, simplifying the process, and so reducing the cost as to bring this beautiful form of decorative art within reach of the humbler classes.

Josiah Spode, of Stoke, who, in Wedgwood's days, was a successful producer of blue-printed and other earthenwares, commenced, in the year 1800, the manufacture of porcelain, which was at once pronounced superior in quality to any previously made in England, and which even surpassed in transparency the world-famed Sèvres ware. The material of this new ware contained a large admixture of bone and feldspar. His enameller, Henry Daniel, introduced, in 1802, the present method of ornamenting china in raised unburnished gold. In 1806 Spode's factory had become the most extensive establishment of the kind in Europe. At Mason's factory in Delph-lane, ironstone china was first produced, and in the early part of the century it was very largely worked up into jugs, jars, vases, dinner-services, and other kindred wares. Enoch Wood, of Burslem, whose works occupied the site of five old factories, established, in connexion with his factory, a museum filled with specimens illustrative of the rise and development of the potter's art in Staffordshire—a labour of love, which did much to promote the progress of the industry, and won for him the patriarchal title of "father of the Staffordshire potteries." Other prominent manufacturers of that period who, in various ways, advanced the excellence of the industrial products of the district, and whose names still survive in connexion with the trade, may be mentioned:—Ridgway, of Shelton; Davenport, of Longport; Bourne, of Fenton; Dimmock, of Hanley; Hicks, of Shelton; Minton, of Stoke; Meigh, of Hanley; and Copeland, of Stoke; to some of whose works I shall refer more fully by-and-by.

The present number of potteries in Staffordshire is as follows:—Burslem, 61; Fenton, 16; Hanley, 56; Longton, 71; Stoke, 12; and Tunstall, 24; being a total of 240. At a moderate computation these factories employ in the aggregate 27,000 workpeople, of whom over 10,000 are females. The increase of population in the pottery district affords a sufficient indication of the growth of the trade. In 1738 the inhabitants of the potteries numbered 4,000; in 1811, the number had risen to 31,000; in 1838, to 63,000; and in 1864, to 123,000. The estimated value of the earthenware productions of the potteries is 2,500,000*l.* per annum, of which sum fully one-half is disbursed in wages. The quantity of prepared clay annually consumed is nearly 260,000 tons. Mr. H. Coghill gives the following statistics respecting the proportions of clay required in the manufacture of earthenware and china:—

Earthenware.	Per cent.	*China.*	Per cent.
Dorset and Devon clays	28	Calcined bone, or phosphate of lime	43
Cornwall clay	26	Cornwall stone	30
Flint	29	Cornwall clay	27
Cornwall stone	17		
	100		100

The annual consumption of coals in the trade may be computed at 450,000 tons. To stain the clay, and print the ware, about 67,000 lb. oxide cobalt are used, about 1,100 tons of borax and boracic acid to glaze it, and 12,000 oz. of gold to gild and embellish it. The manufacture of china in the potteries annually requires 4,500 tons of calcined bone, the greater part of which is imported from South America. The exports in 1850, according to the Board of Trade returns, amounted to 999,448*l.*, being an increase of 50 per cent. since the year 1836. The subsequent fourteen years showed a proportionate advance. In 1864 the total exports amounted to 1,422,130*l.*, and the home market absorbed 1,487,870*l.* The French treaty has benefited this trade only to a very slight extent, the annual requirements of that market being only some 50,000*l.* in value; and it has been well observed by a local producer, that the French potteries are too extensive to admit of any great requirement in the shape of porcelain, manufactured in this country.

A detailed account of one or two of the leading representative establishments will afford a more accurate idea of the existing importance and characteristics of the ceramic art in the Staffordshire potteries than could be given by mere statistics or by general observations. We will commence with a sketch of the great house of Minton & Co., at Stoke-upon-Trent.*

These works were established in the year 1789 by the late Mr. Thomas Minton, a native of Shrewsbury. Mr. Minton was a practical engraver, and clever at his art, as specimens of his work in etching and engraving recently found bear ample testimony. His commencement was at a time very favourable for progress. The labours of Wedgwood had paved the way to success, and called for increased production, for an import trade had been converted into an export one. English pottery then commanded a high range of prices, and it may be interesting to remark that the old "willow pattern," copied from an old Chinese plate, was first introduced at these works, and was then sold at 5s. 6d. per dozen plates, whereas the present price averages about 2s. The productions of this house were for a number of years principally confined to useful articles, and, being of a good, durable material, without much reference to artistic decoration, soon commanded a good position in the home market. Mr. Minton died in 1836, and was succeeded by his second son, Herbert, who achieved great eminence as a potter. He invoked the best aid at his command, both English and foreign, and the specimens in almost every variety of style shown at the Exhibition of 1851 may be referred to as proofs of his success. On that occasion the first specimens of Minton's "majolica" ware, now so justly celebrated, were shown, and also, for the first time, a combination of Parian statuary with decorated porcelain for dessert-services. The service of this class attracted universal admiration, and was purchased by her Majesty, as a present to the emperor of Austria. Mr. Herbert Minton was commissioned by her Majesty to make the presentation, but as great coolness had arisen between the two courts, on account of a speech made by Lord Palmerston, some delay and difficulty occurred in obtaining an audience, but it was at length satisfactorily accomplished; the present was graciously received, and cordial relations were soon afterwards resumed. To Mr. Minton the public is indebted for the revival

* For many interesting details here given we are indebted to the courtesy of Messrs. Minton, through their representative, Mr. J. Stringer, of Stoke-upon-Trent.

of the art of making encaustic pavements, now in such general demand for churches and other public buildings, and without which even ordinary dwellings of any pretensions are scarcely considered complete. It will illustrate the character of the man if we state that for many years he pursued this branch of business at a very considerable loss; and when on one occasion he was urged by his partner to give it up, his characteristic reply was, "I will make encaustic tiles if they cost me a guinea a piece." Mr. Minton received during the Paris Exhibition, at the hands of the Emperor of the French, the insignia of the "Grand Cross of the Legion of Honour." He died in 1858, and was succeeded by his nephews, Mr. Colin Minton Campbell and Mr. Daintry Hollins, who, however, in 1868 dissolved partnership, the encaustic tile department devolving on Mr. Hollins, all the other branches being carried on as usual by Mr. Campbell in conjunction with his cousins, Mr. T. W. and Mr. Herbert Minton, so that the old name is not likely to become extinct. The manufactures of the firm embrace nearly every article of the potter's art, so much so that any one embarking in the retail trade might from these works alone completely furnish his shop, from the richest ornament to the meanest kitchen requisite. The money expended in perfecting these varied manufacturers has been enormous, and the annual value of the ware produced averages 105,000*l.* The number of hands employed is between 1,600 and 1,700, and amongst them there are upwards of 600 females, the latter being largely engaged in enamelling and "transferring." There is only one lady designer in the establishment, and she boldly challenges competition with the sterner sex. There are two clever German painters. All the rest are English, some of them superior artists, who derived much advantage from their course of study at the school of art conducted at the building erected as a memorial to the late Herbert Minton. Among the *chefs d'œuvre* of this establishment may be noted: a pair of large vases, turquoise ground, decorated with birds and flowers, purchased by Baron Rothschild. A pair of candelabra, with figures of Highlanders supporting hunting trophies, executed by royal command. The large majolica fountain, under one of the domes of the Exhibition (1862) building; candelabra, 8 ft. high, in the same material; and several great artistic works in parian.

The late William Taylor Copeland, founder of the famous house which bears his name, commenced business at Stoke in 1833, succeeding the Spode family at the factory established by Josiah Spode in the preceding century. The present firm of W. T. Copeland & Sons produce articles in every branch of ceramic manufacture:—porcelain, china, earthenware, majolica, encaustic tiles, slabs for mural decoration, and parian. The last-named material was invented by this firm, about the year 1843, and from it have been produced many rare and beautiful works of art. Gibson, Foley, Durham, Marshall, and other eminent sculptors have, from time to time, modelled for Messrs. Copeland, and the reproductions have faithfully reflected in almost every instance, the true spirit of the artist's design. Classic subjects largely enter into this description of manufacture, the Greek Slave, the tinted Venus, Cupid, and Paris, being among the more widely-known representations. A miniature bust of the Princess of Wales, for the Art Union of London, is perhaps the greatest success achieved by Messrs. Copeland during the last few years; the delicate delineation of outline, and the great naturalness and beauty of expression being remarkable evidences of the perfection attained in this description of art-workmanship. The number of hands employed by this firm is upwards of 850. The annual produce is 7,500 packages, varying in value from 5*l.* to 50*l.* each, exclusive of the more elaborate and costly works of art.

The High Price of Steel.—One of the leading firms in the steel trade has within the last few days received letters from the United States countermanding a large number of orders on account of the high prices which now prevail here. These orders are being replaced in America, and both manufacturers and workmen in England are likely to feel the effects of the grasping and idling policy which has been recently pursued, with such insane heedlessness, both in the coal and in the iron trade.

THE DESTRUCTION OF ALEXANDRA PALACE.

WHEREVER plumbers are employed on roofs of important edifices, a watch ought to be set over them: there are such reckless men among them, that wherever they are so employed, there is the utmost danger to the edifice. At twelve o'clock, when dropping work and dinner are the sole ideas in the head of the workman, down he throws his hot iron, as if it were burning *him*, and off he goes from his brazier, leaving everything to chance. So must it have been in the present instance; and from twelve o'clock at noon on Monday last we must date the origin of the fire at the Alexandra Palace, which, in one short hour—the workmen's dinner hour,—destroyed half a million of money's worth, and many pleasant hopes in the North of London.

The dome roof—the very centre and key of the whole building—was the spot where the plumbers were at work, and there it was, accordingly, where the fire originated. It is said to have been first observed about half-past twelve, but this we cannot understand; for the writer of this, about half-past twelve, saw great volumes of smoke already pouring up high into the sky from the direction of the Palace, while he was in Holloway, four or five miles away; and by half-past one nearly all had disappeared from his view, and the Alexandra Palace was an unroofed ruin. There was a want of water; and the height of the dome (some 150 ft. or so above the floor) was too great for the ascent of what water there was.

The valuable tapestry and lent pictures were all saved, but the collection of rare and valuable pottery and porcelain, it is said, and Messrs. Defries's costly crystal chandelier, &c., have perished with the multitude of other valuables. The exhibitors have suffered sadly.

The fire was still burning when Messrs. Kelk & Lucas, and two or three other directors, together with Mr. Grüning, held a meeting in the afternoon, and decided to carry out their programme of the season as far as the out-door *fêtes* go, and to rebuild the Palace as quickly as practicable; and next day a meeting of the company was held, when their architect (Mr. Johnson, of Meesom & Johnson) was instructed to provide a new design for the re-building, which, we hear, the directors are resolved to have completed within a year.

Only one death is as yet known to have occurred, but two or three persons are missing, and several have been injured.

The deepest sympathy is felt generally for the directors and the company, while the inhabitants of the northern district consider the destruction of the Palace a national disaster. The Palace, we learn, was insured to the extent of 120,000*l.* only on Thursday or Friday in last week.

Within the main walls of the gables or pediments are 9-inch brick walls. Several of these have lately fallen, causing much dismay, and those which remain up are expected to come down also, possibly through the behaviour of the iron rods, which, if we mistake not, tie them to the outer walls.

A LESSON FROM THE FIRE.

THE directors of the Alexandra Palace have paid a heavy penalty for their economising the salary of an engineer,—an officer who should have had the responsible charge of the water supply of the edifice, as well as of the communications of the establishment, and of other engineering details. It has been a penny-wise saving with a vengeance! It is no reply to say that the manager is a professional man. The onerous duties proper to that office are ample to take up the whole attention of one man, and are such as to render it out of the question that he should exercise the entire reflective vigilance of an officer who has only professional duties to discharge. The manager of such an establishment is, in fact, the person who has charge of the public attractions. The anxiety and stress of mind involved by such a function are not small. Three weeks is stated, by some of those who have the largest experience in these matters, as the average life of a new attraction. The novelties have to be not only provided, as far as forethought and research go, but to be placed *en scène*. The general supervision of staff, and maintenance of the whole concern in going order, so fully occupy the thought as to leave no room for the discharge of the entirely independent functions of the engineer. The confusion which attended the railway arrangements on the opening of the palace is another instance of the want of a proper officer.

We may be asked if we are not regarding a disaster, which all of us deplore, from a too exclusively professional point of view. We reply that we conceive the safety of the public to depend, in no small degree, upon the general enforcement of the proper *status* of professional men. People constantly endeavour to save tangible payments, in the shape of fees or salary. But they do so, on the broad average, at a heavy cost to themselves. We know the adage that the man who is his own lawyer has a fool for a client. How many thousands, spent annually in litigation, might have been saved by the expenditure of perhaps a less number of six-and-eightpenny fees? What is the result,—on temper, health, and length of life,—of the saving of the fee that should have gone to the medical man? It is the same in the two sister professions of the architect and the engineer. People constantly think that they can save money which, it seems to them, is so easily earned by the professional man. They are little aware of the long course of study and experience that enables "the man of art," in whatever line, at once to put his finger on the weak place. Of late years there has been more disposition to dispense with the proper responsibility of the architect and engineer than even with that of the lawyer or the doctor.

The misfortunes thence arising have been numerous and great; and we are not yet, it may be, at an end of the dangers to public safety that spring from the same fertile cause. The chief of the Fire Brigade expressed to the reporter of one of the daily papers his astonishment that so large a building should have been erected in such a situation without better provision for a supply of water. We doubt if there has been, in this case, any professional man so thoroughly in the position of architect or engineer of the building, in the first instance, as to be now exposed to the condemnation thus uttered, or to be liable to be asked the question how he came to construct, of *papier mâché* and wood, an enormous fire-trap that would ignite with a single spark. The way the fire spread in the dome was a marvel.

We do not deserve the title of civilised men if we allow such great disasters as the fire at the Crystal Palace and the fire at the Alexandra Park to succeed one another without deriving some benefit from lessons written in such characters of flame. Who is to blame? is the first question. After a little fuss the reply is generally, "Providence. It has been an unavoidable accident!" Here, however, is one distinct cause to be inquired into, namely, absence of proper professional responsibility. Will it be the same in the next great fire? If so, we may be said, indeed, to tempt misfortune.

THE NEW ST. STEPHEN'S CLUB BUILDING.

THE new building for the St. Stephen's Club, opposite the clock tower of the Houses of Parliament, and which has for some months been in course of erection, is now beginning to display its architectural features, the principal elevation at the angle of the Embankment and New Bridge-street having already been carried up to the extreme height of the ground floor, and within the last few days the iron columns above, indicating the lofty height of the first floor, have been fixed in their places. Before the ground level of the Embankment and New Bridge-street was reached the works in the basement and sub-basement, which are carried to a great depth below the street level, occupied a considerable time. These portions of the structure are not the least interesting features in it. The sub-basement will contain extensive cellars, together with a steward's-room, and several other apartments, whilst in the upper basement there will be clerks' rooms, dressing-rooms, committee-room, and lavatories, and in connexion with this upper basement there will also be a subterranean communication with the Houses of Parliament, passing under New Bridge-street, and a similar communication with the Metropolitan District Railway and with the steam-boat pier.

The style of architecture selected for the building is the French Renaissance, and the elevation, carried along the Embankment and into New Bridge-street, is about 160 ft. in length,

the building extending backwards to a depth of 80 ft. The elevation will consist of the ground-floor, and first, second, and third floors, with dormers, the materials used in the frontage being Portland stone, with bases and shafting of red and grey polished granite, and similar polished granite columns will also be freely introduced in the ground-floor and several floors of the elevation. The principal central entrance on the ground-floor on the Embankment portion of the frontage will be 20 ft. in width. On the first-floor over the main entrance there will be a large central window, with a niche on either side for the reception of a statue. The windows on the first-floor are unusually lofty, being 13 ft. in height. The elevation will have a bold and massive main cornice, and above there will be a lofty mansard roof, with ornamental iron casting.

The principal entrance from the Embankment leads into an entrance-hall nearly 70 ft. in length, at the rear of which is the main staircase, circular in form, and which leads up from the ground-floor to the several stories above. The ground-floor contains the library, a spacious apartment about 60 ft. by 20 ft.; a morning-room of almost similar dimensions, but nearly square in form, being 49 ft. by 46 ft.; together with a small reception-room. At the northern angle of this floor a range of arches gives access to the District Railway. The first-floor contains a large coffee-room, and members' and strangers' rooms; on the second-floor are the members' billiard-room, strangers' billiard-room, smoking-room, and card-rooms; whilst the third-floor contains the kitchens, and apartments for the *employés* of the club; and above are a number of bedrooms. The kitchen floor on the third story is intended to be fireproof.

The building, which is being erected for a new club, consisting of several members of Parliament and others, is expected to be ready for opening by the commencement of next year's Parliamentary session.

Mr. J. Whichcord is the architect; and Messrs. Peto, Brothers, are the builders.

PUBLIC WORKS IN EGYPT.—SUEZ.

A SHORT report has been published upon this subject, and is prefaced by a description of the chief public buildings of Suez. One of the most important is the "Suez Hotel," a large, square, whitewashed building, consisting of a ground-floor and upper story, and measuring externally 200 ft. by 120 ft. The first European-built house is occupied by the agent for the Peninsular and Oriental Steam Navigation Company, which is built much upon the model of the hotel, although on a smaller scale, showing a frontage of 110 feet, and running back 100 ft., with a central court, 50 ft. by 45 ft. Adjoining these premises, is the British post-office, which was also built by Europeans; while the next conspicuous building is the Egyptian post-office, a moderately large structure, 50 ft. square, though neither very imposing in appearance nor commodious in design. A new and handsome Government House has also been built in Suez for the Egyptian Government, at a cost of over 30,000*l.*, by Messrs. Dussaud Frères. This building, in size and style, though somewhat marred, it is mentioned, in external effect, by want of elevation, and perhaps, too decidedly French in style for the locality, is the most imposing edifice that Suez has yet seen. It consists of two large wings, united by offices, and a spacious entrecourt, covering in all a space of 333 ft. by 133 ft. Each wing is 133 ft. by 83 ft., and consists of two stories, counting as one of them the ground-floor. The western wing is appropriated to the personal accommodation of the governor, and the eastern wing to that of the Divan and Government offices. The Khedive, some time since, granted a concession for the distribution to the town of fresh water from the fresh-water canal to a company under French management, which erected, for the purposes of its concession, at a distance of about a mile from the town, a system of waterworks, with filters and steam-pumps for high-service; the cost of such works being, it is stated, about 30,000*l.* The water company, however, has not proved a success, financially speaking, owing to the disinclination of the inhabitants to pay the necessary charges. This, it is to be hoped, will be remedied. The construction of important docks has also been a work of importance at Suez; and in a report to which we refer, a full description is given of the construction of a large dry dock at Suez, although, as the matter is now rather old, there is no necessity for us to go over the ground again. It may be mentioned, however, that the studies and examination of the ground for this dock were begun some years ago by M. Stœcklin, an "Ingénieur des Ponts et Chaussées" of France. After the plans had been prepared by this gentleman, and approved of by the authorities, the Viceroy contracted with the Messageries Impériales Company to build the dock for 7,000,000f. The latter company employed as their sub-contractors Messrs. Dussaud Frères; and in the course of the work a further sum of 1,500,000f. was paid to the sub-contractors in commutation of native labour, which was to have been supplied to them by the Viceroy, but which was found not to answer practically. With some other items, this sum made the whole cost of the dock to amount to about 350,000*l.* The dock is 110 ft. long, by 90 ft. wide at the top, and 400 ft. by 70 ft. on its floor. The width between the entrance piers is 80 ft. Subsequently, by command of the Khedive, Messrs. Dussaud submitted a design for a port capable of receiving an unlimited expansion without interference with the use of the completed portion of it while a new portion was being added. The design for this port—now in course of execution by Messrs. Dussaud Bros.—includes the formation of a large quay on the south, for Government purposes, and a jetty on the north, of exactly half the width of the present central "mole." This extent of port will afford 102 acres of water surface, and nearly 50 acres of quays. The length of the quay front, including the eastern quay, will be 3,250 metres (10,650 ft.), which will afford twenty-five berths of 400 ft. each for ships to lie broadside on, and leave 600 ft. over for stairs, lighters, and small craft. It is stated that the question of protecting the new port by batteries has been before the Khedive, but for the present left undecided. As Egypt has no naval force which could cope with European ships of war, it is not improbable that shore batteries will be added in the course of time to the port. This would involve the building of cover for the men for manning the batteries and the protecting of the line of railway communication with the town.

THE PURCHASE OF SITES AND BUILDINGS FOR IMPROVED DWELLINGS FOR THE POOR.

THE Special Dwellings Committee of the Charity Organisation Committee resumed its weekly sittings on Wednesday, after the Whitsuntide holidays. Lord Napier was in the chair.

The subject for consideration was that of "sites," divided under four heads. The first portion discussed was "the desirability of recommending improvement associations to apply for compulsory powers for the purchase of sites."

Mr. Vigers observed that, from his experience and knowledge as a surveyor and a purchaser of land and property for rebuilding upon, and for other purposes, he could say it was altogether impracticable for improvement associations to apply for such compulsory powers with respect to sites on which inferior property already stood. The wisest course to pursue in his judgment was for the associations to look out merely for vacant land on which to erect dwellings for the poor. He was perfectly satisfied that they would have a difficulty in raising up houses for the industrial classes on land costing more than 5s. per foot, and, without endeavouring to purchase sites compulsorily on which buildings at present stood, he was convinced that eligible land was to be purchased in various parts of the metropolis. In proof of this he might say that he had recently purchased land in Blackfriars for 4s. per foot, and in the neighbourhood of Grosvenor-road, Pimlico, for 2s. 6d. per foot. On the other hand, if the associations obtained these compulsory powers, and attempted to purchase any block of inferior property as a site, he was persuaded they would have to pay a much higher rate for the land, because, in the first instance, a jury would take into consideration the rental received for the property, however inferior, and beyond that there would be the usual 10 per cent. allowed for compulsory purchase, and therefore with the value of the land itself, they would have to pay a much higher price than 5s. per foot. He at once admitted, that in the event of these powers being obtained, he should advise any client of his to ask for the amount involved in a compulsory purchase, and entertaining these views, he thought the obtaining of such powers would be followed by a failure of the object which they had in view, and that the high price which they would have to pay for land on which to erect buildings, would not be compensated by the low rate of interest to be paid for the borrowed money.

Dr. Greenhill, on the contrary, was of opinion that if the Government would allow the improvement associations to borrow money at a low rate, they would be enabled to purchase sites with inferior buildings upon them, on advantageous terms.

The Rev. Mr. Simpson thought, after the explanation given by the first speaker, that if the owners of this class of property, who were grinders of the poor, insisted upon an artificial price being paid for houses unfit to live in, for which they obtained such high rents, it would not be practicable for the improvement associations to press for these compulsory powers of purchase. At the same time he thought it ought to be placed on record that if there were no difficulties in the way the purchase of such property by private improvement associations was desirable.

Mr. Storr agreed with Mr. Vigers that they ought not to give more than 5s. per foot for land on which to erect workmen's dwellings, whereas if they bought up rows of inferior houses they would have to pay at least at the rate of 10s. per foot. His notion was that it was altogether impracticable for private associations to be armed with these powers, although he thought that public bodies should possess them.*

Mr. Bosanquet thought that the only way of preventing the owners of this inferior class of property from placing an artificial value upon it would be by enforcing the provisions of Mr. Torrens's Act.

Mr. Blake Humfrey was opposed to private associations being armed with these powers, but he thought the Government ought to be able to say to the owners of such property, "You shall not only be compelled to sell it, but shall sell it without putting an artificial value upon it."

The following resolution on the subject was ultimately adopted: — "That this committee, having already approved of the policy of conferring compulsory powers on the Corporation of London and the Metropolitan Board of Works, or other municipal authority, for the purchase of sites for the erection of dwellings, do not recognise the expediency of extending similar powers to private associations, except in special cases."

The following heads were next discussed, at considerable length, but ultimately adjourned to Wednesday next: — Amendments to Mr. McCullagh Torrens's Act, and especially re-introduction of omitted clauses, compelling local authorities to rebuild; Reservation of Sites in Railway and improvement Bills; Powers to limited owners to sell lands for dwellings for labourers.

THE PRESTON STATUE TO THE LATE EARL OF DERBY.

THE statue of the late Earl of Derby, which has just been placed in the Miller Park, at Preston (advantageously situated in a sloping position on the banks of the river Ribble), was executed by Mr. Noble.

The statue is made from a block of Sicilian or Campatella marble. The marble base is about 1 ft. in height, and the figure itself 11 ft., the whole weighing between 5 and 6 tons. The original block from which the statue has been cut weighed 18 tons. The attitude assumed is well adapted for giving full expression to the countenance of the deceased, and the form and features of the Earl are represented with considerable exactness. He is dressed in his usual attire in the House of Lords, and depicted in the act of taking part in a debate. His right hand contains a scroll, and his robe of rank, as an earl, is thrown carelessly behind him, and forms a covering to the three volumes in which his chief literary works are comprised. The uppermost represents his translations from Horace and other Classical authors, whilst the other two volumes contain his translations of Homer's "Iliad," and the words on these may be seen by the spectator at a distance.

* Whether desirable or not it is tolerably certain that Parliament would not grant the required compulsory powers to private associations.—ED.

The pedestal upon which the figure stands is 3 ft. 6 in. in height. The first base is of a usticated character, being made from Peterhead granite, and measures 10 ft. square. The next course is made of Rubslaw granite, and is 8 ft. 6 in. square. The remaining parts are composed of Kennay granite, and measure, respectively,—third course, 7 ft. square; fourth, 5 ft. 4 in.; the die, 4 ft. 5 in. by 4 ft.; the frieze, 3 ft. 4 in.; and the caps in proportion. The usticated base is unadorned, but the remaining courses are artistically moulded. The die itself weighs 7 tons, and the pedestal, as a whole, 30 tons, the pedestal and statue together weighing about 46 tons. Messrs. Macdonald, Field, & Co., of Aberdeen, produced the minor part of the work.

AWARD OF PRIZES, ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR GILBERT SCOTT, R.A., in his capacity of President, presented the Royal Gold Medal to Mr. T. H. Wyatt, at a meeting of the Institute on Monday, the 9th inst., and made an address, to which we may hereafter refer, Mr. Wyatt responding in suitable and effective terms.

The other prizes and premiums presented were as follow :—

Soane Medallion.—Wm. Frame, of 10, Youngstreet, Kensington-square.

Medal of Merit to J. H. Eastwood, 77, Chancery-lane.

Institute Silver Medal, and Five Guineas.—A. H. Kersey, of Kingswood Lodge, Lewishamroad, Lewisham.

Medals of Merit to Thos. Garratt, of 15, Prince's-row, Buckingham Palace-road, and Arthur Hill, of 22, George-street, Cork.

Essay Prize (Medal of Merit).—Alfred Jowers, 24, Victoria-road, Kilburn.

Pugin Travelling Studentship, 1873 (*Medals of Merit*).—P. J. Marvin, of 20, Camden-street, Camden-town; R. C. Page, of 15, Clarendon-street, Warwick-square.

Pugin Travelling Studentship, 1873 (*Honourable Mentions.*—Thomas Garratt, of 15, Prince's-row, Buckingham Palace-road; Walter L. Spiers, of 23, Bernard-street, Russell-square.

A paper, by Dr. Hayward, on the ventilation of houses was afterwards read.

ARCHITECTS AND SANITARY SCIENCE.

When present last evening at the Royal Institute of British Architects, after a lengthened absence from England, the pleasure afforded me by witnessing the presentation of the Royal Gold Medal by the hands of one long and greatly esteemed friend to another who has won the respect of all his colleagues, was followed by the opportunity of hearing the instructive paper on "Warming and Ventilation," read by Dr. Hayward, which I listened to with peculiar interest, the subject being akin to that treated of in my paper on "The Essentials of a Healthy Dwelling," read before the Institute, Jan. 30, 1862, and, partially so, to another, previously read, Jan. 21, 1852, which was translated and widely circulated in France, by order of the Government of that country, with a prefatory introduction, which in many respects is so confirmatory of Dr. Hayward's remark on the importance of his subject, that it may interest some to read the following quotation :—

"Cet ouvrage s'adresse à tous les hommes de bien, à tous les amis du pays. Il leur est offert comme un signe de la sollicitude qui s'éveille vivement dans une autre contrée pour l'amélioration du sort des classes ouvrières, comme un exemple dont ils sauront s'inspirer.

Quel est le médecin qui ignore pourtant que le défaut de lumière, un air vicié, un sol bien humide, un entourage sale sont autant de causes qui séparées et à plus forte raison réunies, contribuent plus que toutes les autres à abréger la vie et à la rendre misérable, en affligeant ceux qui s'y exposent d'une foule d'infirmités personnelles ou héréditaires? Quel est le moraliste qui n'ait reconnu que l'âme humaine elle-même se dégrade sous l'influence prolongée de telles conditions? Quel est l'homme d'état qui n'ait gémi de voir les hôpitaux et les prisons encombrés des malheureux qu'elles engendrent?"

The observations made by Mr. Wyatt, referring to some remarks in Dr. Hayward's paper which were derogatory to architects, on the difficulty which they frequently experience in obtaining that consideration for sanitary subjects which their great importance demands, has recalled to my remembrance a resolution which I had the opportunity of proposing at a Congrés International de Bienfaisance held in Brussels in 1856, when the representatives of about twenty different countries, convened under Royal authority, unanimously declared

"it to be of public utility that the working classes be enlightened by all possible means in regard to the improvement and the keeping of their houses in good order. That the instruction of the young, in the labouring classes, ought to comprise all which relates to the cleanliness of their persons and their dwellings, to the benefits resulting from good ventilation, and the evils resulting from humidity. Lastly, that the study of the science of preserving health is one which ought to be rendered accessible to all."

In order to the carrying out of this resolution, the importance of sanitary science as an essential branch of a complete education, and most valuable to all classes, has been urged in this and other countries where education is felt to be of primary importance.

HENRY ROBERTS.

THE POSSIBLE STRIKE.

WE are requested by the Central Association of Master Builders to state that the assertion made by Mr. Broadhurst in our last impression (p. 451) that 9d. per hour had been promised to the masons, and "was part of the compromise accepted by the masons in settling the dispute of 1872," is utterly and entirely without foundation.

On Wednesday last a very large meeting of master builders from all parts of the country was held at the Westminster Palace Hotel, for the purpose of forming an association of the employers throughout the kingdom, in order to resist the demands being made by the men for an increase of wages of ½d. per hour. The meeting was presided over by Mr. Hannen, of London. In reference to a statement lately issued by the masons as to alleged promises on the masters' part to grant the rise asked for this year, it was said that the statement put forth was not true. Some of the employers urged that, if the masons of London called the men out from any firms, and commenced partial strikes as they did last year, the only way of meeting them and resisting the evil was to resort to a general lock-out simultaneously throughout the whole country. In consequence of the absence of some of the provincial firms through accident, it was resolved not to pass any resolution till the general opinion of the trade was taken. It was therefore resolved to call another meeting in about a fortnight's time.

In the evening of the same day, a crowded meeting of operative masons was held at the Falstaff Music-hall, Old-street, St. Luke's; Mr. Spencer in the chair, and eventually the following resolution was unanimously adopted :—"That this meeting of the masons of London having considered the letter received from the Master Builders' Association, desires to express its regret at the propositions therein contained, and pledges itself never, under any circumstances, to return to the one o'clock on Saturdays, and further declares its full determination to firmly adhere to the terms of the memorial sent in by the committee." The effect of the adoption of the above resolution is that unless the master builders concede the half-penny per hour advance on the 19th of July next, the whole body of masons will cease work on that day.

THE TRADES MOVEMENT.

Bristol.—The carpenters' strike is likely to assume a more extensive form. At a recent meeting of the men, they passed the following resolution :—

"That in the event of the employers, at their meeting on Friday next, not coming to an arrangement satisfactory to our united committee, they shall be empowered to call society men out of those shops where the employers have only given a partial advance."

The masters met at the Athenæum, and after talking the matter over for upwards of an hour, separated without arriving at any decision, the only resolution passed being to adjourn the meeting for a fortnight.——The Rev. Prebendary Percival has given a decision as umpire between the operative labourers of Bristol in all branches of the building trade and their employers, in reference to the rate of wages paid them. The men asked for an increase on the present pay, in consequence of the rise in the cost of the necessaries of life. Mr. T. Kelly and Mr. Cronin addressed the umpire on behalf of the labourers, who were stated to number 2,800; and Mr. J. Foster, Mr. Brock, and Mr. Yalland for the masters. Mr. Foster said that the state of the building trade was extremely dull at the present time, and he anticipated the dulness would continue. Mr. Percival's award by agreement between the employers and men, is to remain in force for a twelvemonth. The decision is as follows :—

"The College, Clifton, Bristol, June 2nd, 1873.

Having carefully weighed all the facts bearing upon the matter in dispute between the master builders of Bristol and the operative labourers employed in the Bristol building trade, so far as they have been made accessible to me, I have come to the conclusion that, whilst on the one hand the labourers may fairly claim a somewhat larger advance than a farthing per hour; on the other hand, the circumstances do not seem to warrant anything beyond a halfpenny.

Consequently, I hereby give it as my award that from the present date the labourers should receive an advance of a halfpenny per hour upon the rate of payment which was current on the 4th of February last.

(Signed) J. PERCIVAL."

Sheffield.—The Sheffield branch of the Amalgamated Society of Engineers have addressed a circular to their employers, stating that they find themselves compelled to place a higher value upon their labour, and they desire that the minimum rate of wages should be advanced from 32s., as at present, to 34s. a week, with the condition that those workmen who are now receiving 34s. or upwards per week should mutually arrange with their respective employers as to their future rate of payment. They also request that ordinary overtime should be paid at the rate of time and quarter for the first two hours, and time and half for all worked after; but in the event of working all night, time and half for the total number of hours worked as overtime. Should a workman be required to work on Easter Monday, Whit Monday and Tuesday, and the day following Christmas-day, he should be paid at the rate of time and half for each hour worked. Should any workman be called away from home between the hours of 10 p.m. and 6 a.m. on the following morning, he should be paid at the rate of double time for each hour worked; and if required to work between 12 p.m. on Saturday night and 6 a.m. on Monday morning, he should be paid at the rate of time and three quarters for each hour worked. The code of terms also sets forth that in the commutation of time each should be considered by itself; that all workmen required to work out shall be paid 6d. per day extra, if within two miles; if over two miles, and can return home at night, 1s. per day extra; if required to lodge out, shall receive 2s. per day extra, Sundays included; and where night-shifts are necessary, forty-five hours should constitute a week's work, at the same rate of wages paid to day-men for fifty-four hours. The men wish the concessions to take effect from Saturday, the 28th instant, and ask for a reply to their communication by the 12th. It is said to be certain that a strike will take place if their demands are not conceded.

THE NEW WORKHOUSE FOR WHARFEDALE UNION.

THE ceremony of opening the new workhouse for this extensive union has just taken place. The new building has been erected on about six acres of land, situated in the Newall Carr-road, about half a mile to the north of Otley. The block of buildings forms a conspicuous feature in the landscape for many miles round. In the centre of the site stands the main block, two stories high, and upwards of 150 ft. long, with a clock-tower surmounting the principal entrance. The entrance-hall divides the building into two wings, occupied respectively by the males and females, and on each side are the requisite apartments and rooms for the master and matron. From end to end of this block runs a central corridor, from which the various wards are readily reached. The aged and infirm inmates occupy the front portion, the children are placed in the two ends, and the ordinary able-bodied men and women have their rooms at the back. Opposite the principal entrance, and in the rear of the chief block of buildings, is a dining-hall, serving also as a chapel. Immediately adjoining are the cooking kitchens, larders, and other domestic offices. At the back of the building are paved yards, where the inmates may take exercise, and also sundry work-shops, wash-kitchens, &c.; and still further in the rear stands the infirmary, also two stories in height, and upwards of 110 ft. long. In the centre of this block are the necessary officers' and administrative rooms, and on each side respectively are the male and female wards, the whole being well lighted and ventilated with windows on both sides. Running parallel with

the Newall Carr-road, and at right angles to the buildings already described, stand the entrance block of buildings, one story in height, and upwards of 160 ft. long. The group is set back some little distance from the road, and broken up in outline. The general entrance is through an archway, filled in with wrought-iron gates. Here are the porters' rooms, offices and rooms for the accommodation of the board of guardians on the one side, and for male and female vagrants and probationers' wards, &c., on the other. The whole of the works in connexion with the new workhouse will entail an expenditure of something like 14,000*l.* The contract for the buildings was let for 10,000*l.*, but to this must be added the cost of the boundary-walls, entrance-gates, and railings, the formation of a large culvert to convey the contents of a tributary of the Wharfe which flowed through the site, and sundry articles in connexion with the fittings and furnishing. The buildings throughout are erected of local sandstone, quarried from the Farnley Hall estates. The architects were Messrs. C. S. & A. J. Nelson, Leeds and Derby; and the contractors for the general works, Messrs. Boothman & Broomhead, of Leeds and Newcastle. The stoves and chimneypieces were supplied by Messrs. Heaps & Robinson, of Leeds, who also fitted up the cooking apparatus. The entrance-gates and railings were the work of Mr. J. Exley, of Otley; and Mr. M. Hobson, of Bramhope, acted as clerk of works.

SANITARY MATTERS.

Bradford-on-Avon.—A "report on the Drainage of Bradford-on-Avon, Wilts," by Mr. A. W. Estridge, C.E., has been issued in a printed form, by order of the local commissioners. (Day, printer, Bradford). Mr. Estridge gives an account of the existing drainage and sanitary condition of the town, which are very bad, although the town stands on elevated ground. The old midden and cesspool system prevails, and the nuisance is excessive. Sewage distributes itself in open channels, and saturates the ground. One closet for three, four, or five houses, is a common occurrence, and there are instances of even eight and more houses with but one closet for all. Mr. Estridge proposes a scheme of improvement for the interception of all refuse from the river; the collection of all sewage into one outlet; the obtainment of means for flushing; and the ventilation of the sewers; all at a total cost of 3,250*l.*, to be borrowed of the Public Works Loan Commissioners, entailing an annual outlay of only about 190*l.*, for thirty years.

Utilisation of Town Refuse.—A reprint from the "Journal of the Liverpool Polytechnic Society," March 17th and May 26th, 1873, has been issued, "On the Utilisation of Town Refuse, by G. F. Chantrell, Hon. Sec. of the Microscopical Society of Liverpool." It contains an account of Mr. Chantrell's Patent Refuse Collecting System, with diagrams of dust-boxes, charcoal filters, &c. The object of Mr. Chantrell's patent is to do away with open middens, substituting portable receptacles, reducing the weight of refuse one-third. It is related to the Rochdale system.

MEMORIAL CHAPEL AT CHISELHURST.

AFTER the funeral of the late Emperor of the French, the Empress determined upon having a mortuary chapel built, wherein to deposit his remains until the place where they shall finally rest has been selected. The plans of the proposed new building having been prepared by Mr. H. Clutton, architect, and approved of, some progress has been made in the work, which is being done by Mr. Brass, builder. The site of the chapel is immediately adjoining the Roman Catholic Church of St. Mary, at Chiselhurst, in a south-west direction. The Empress has just now privately laid the foundation-stone of the building; Prince Louis Napoleon accompanying his mother. The new chapel will be in the Mediæval style, the outer walls being composed of Bath stone, and the interior of Caen stone. The dimensions of the interior will be 12 ft. by 24 ft., the height being 18 ft. There will be three windows at the side, and one at the end, groined arches being employed in the construction of the roof. At one end of the chapel an altar is to be placed, and a recess is to be made at the side for the reception of a monument, or other purpose, at any future time. Immediately in front of the recess referred to, and in the centre of the building, the sarcophagus,—the gift of her Majesty Queen Victoria,—which will contain the body of the Emperor, will be built. The tomb will be of polished Peterhead granite, bearing the inscription, "Napoleon III. R.I.P." The pavement will be tesselated, and by cutting away a portion of the wall of St. Mary's Church an entrance is to be made to the chapel for the special use of the Empress, who will bear the entire cost of the new building. The granite to be used in the erection of the sarcophagus is not expected to arrive till August. The new chapel is dedicated to "Our Lady."

The coffin of the late Emperor now lies almost obscured by the floral decorations and other tributes of affection that continue to be placed upon it; among the more noticeable of which are some palm decorations recently sent from Italy by Cardinal Buonaporte.

OPENING OF THE NEW PIER AT REDCAR.

THE new pier which has just been completed at Redcar has been formally opened. The structure runs out from the shore at the east end of the town, in an east-north-east direction, a distance of 1,300 yards, and is directly in a line with Graffenberg-street. At the shore end are collectors' offices—one on each side,—it being intended that those who walk on the pier shall pay toll; under their roofs are ladies' and gentlemen's waiting-rooms. The width of the pier is 20 ft., with the exception of some forty yards or so at the extreme end, where it is considerably wider, the additional space being taken up with seats, which run round the end in a double row in the shape of a horse-shoe. These seats will accommodate about 600 persons, and are screened from the wind. They run round on the outside of the screen as well as the inside. The pier itself is supported on cast-iron piles, 9 in. in diameter, and the rock into which they are driven gives a good foundation. To these piles are attached iron columns, placed in pairs 30 ft. apart; and, slanting inwards, an additional stability is given by strong wrought-iron bracing. Upon the top of the piles are cast-iron spandrels connected transversely by the flooring timber joists. Along each side of the pier is a wrought-iron palisading, with recesses at intervals for seats, and at night it will be lighted with eighteen lamps. A landing-stage, to be available at all times of the tide, is in course of construction in connexion with the pier, for the use of passengers by the steamboats which ply along the coast, or those who engage the pleasure-boats. The original contract was 6,250*l.*, but the wind-screens and other extras will involve an additional expenditure of 1,000*l.* The capital of the company was 10,000*l.*

Messrs. J. E. & A. Dowson, of London, were the engineers; and Messrs. Head, Wrightson, & Co., of Teesdale Ironworks, South Stockton, were the contractors.

UNVEILING OF SIR ROBERT PEEL'S STATUE AT HUDDERSFIELD.

THE ceremony of unveiling the statue of Sir Robert Peel, in St. George's-square, Huddersfield, already alluded to, was performed, by Lord Houghton, under most favourable circumstances. It should be stated that the money was subscribed for this statue more than twenty years ago, and that, in consequence of internal dissensions among the inhabitants of the town over matters of detail, the funds had remained in the hands of the bankers, being substantially increased from time to time. In 1869 the committee offered the erection of the statue to competition. Four London sculptors of eminence sent in estimates, including Mr. Theed, and the work was eventually intrusted to Mr. Theed at the sum of 950*l.* for the statue and 50*l.* for the pedestal. The statue, which in itself is 9 ft. high, is cut out of Sicilian marble, single block, and weighs 3½ tons. The likeness has been considered, both by the present Sir Robert Peel and Mr. Cardwell, to be successfully obtained. The robe is that worn by the Chancellor of the Exchequer. In his left hand the deceased statesman holds a scroll, to which he is pointing with the right. Including the pedestal, the statue is 20 ft. high. The pedestal has been executed by Messrs. Macdonald & Shield, of Aberdeen, in grey Aberdeen marble, and some two or three Yorkshire stone steps have been added by Mr. Cocking, architect, Huddersfield, to increase its elevation. In front of the pedestal there is a bronze relief of "Feeding the Hungry," also from a design by Mr. Theed, which is a reference to the benefit conferred upon the working classes by the repeal of the Corn Laws. At the back of the statue is the celebrated extract from a speech by Sir Robert Peel:—

"It may be that I shall leave a name sometimes remembered with expressions of goodwill in the abodes of those whose lot it is to labour and to earn their bread by the sweat of their brow, when they shall recruit their exhausted strength with abundant and untaxed food, the sweeter because it is no longer leavened with a sense of injustice."

The ceremony of unveiling was made the occasion for a public demonstration, and this took place with the most successful result.

SCHOOL BOARD FOR LONDON.

AT the Board meeting, held in the Sewers Court, at the Guildhall, on the 11th inst., Mr. Charles Reed, M.P., chairman of the Works Committee, brought up the following report, which was agreed to:—

1. The Works Committee have invited tenders for the erection of a school, to provide accommodation for 1,136 children, on the site in Lower Mansfield-place, Marylebone. The following were the respective amounts:—

Manley & Rogers	£12,677	0	0
J. Grover	12,193	0	0
W. Crockett	11,650	0	0
Kelly, Brothers	11,630	0	0
Dove, Brothers	11,537	0	0
Scrivener & White	11,399	0	0
W. H. & J. Mansbridge	11,336	0	0
R. Mann	11,187	0	0
T. Niblett & Son	10,140	0	0

The Board architect, however, was subsequently instructed to make certain modifications in the plans, so as to reduce the cost of the building, and a revised tender has now been obtained from Messrs. T. Niblett & Son, of No. 37, Birkbeck-road, Hornsey-rise, N., amounting to 9,556*l.*, which the committee recommend the Board to accept. [Cost of site, 2,780*l.*; cost of building per head, 8*l.* 8s. 2d.]

2. Tenders have also been invited for the erection of a school, to accommodate 566 children, on the site in George-street, Marylebone, the amounts of which are as follow:—

J. McLachlan	£6,110	0	0
F. Mark	5,994	0	0
Merritt & Ashby	5,910	0	0
G. S. S. Williams & Son	5,872	0	0
Dove, Brothers	5,848	0	0
G. Wall	5,800	0	0
Scrivener & White	5,606	0	0
J. Kirk	5,555	0	0
T. Niblett & Son	5,440	0	0

In this case, also, it was considered necessary to make some reduction in the cost of the building, and the committee now recommend the acceptance of the reduced tender of Messrs. T. Niblett & Son, of 37, Birkbeck-road, Hornsey-rise, amounting to 4,790*l.* [Cost of interests already purchased, 4,703*l.* 5s.; cost of building, per head, 8*l.* 9s. 3d.]

Mr. E. R. Robson is architect of both these schools.

DR. LANKESTER AND THE DEMOLITION OF DWELLINGS.

AT the last meeting of the Camberwell Vestry, according to the *South London Chronicle*, a report of the Sanitary Committee of the vestry was read, which recommended,—

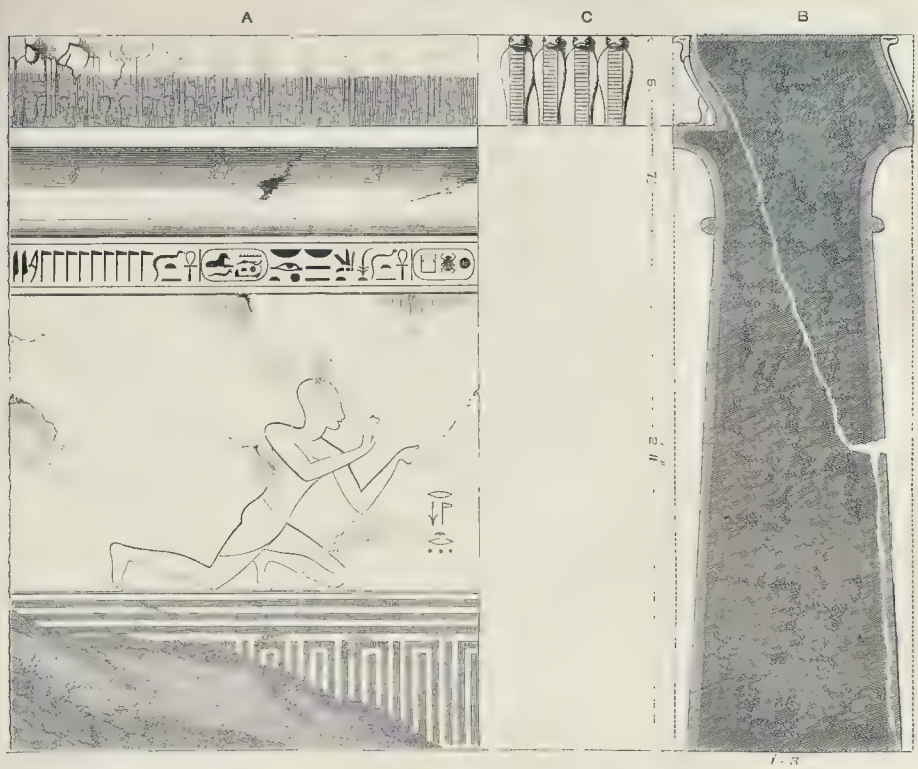
"That the vestry clerk be instructed to write to the vestry of St. James's, Westminster, expressing regret that the medical officer of health for that parish should have given evidence against the vestry's order for the demolition of houses unfit for human habitation, and in opposition to the testimony of three other medical officers of health, and which order was confirmed by the dismissal of the appeal with costs."

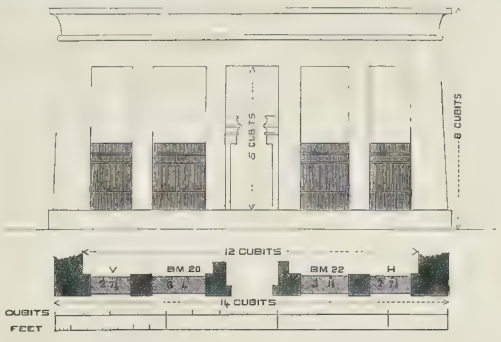
The houses in question were in Berkeley-court and Alpha-street.

After some discussion, in the midst of which Dr. Lankester, the officer of health for St. James's, was not without his defenders, the motion for the adoption of the report and recommendation was agreed to with five dissentients.

There must surely be some misunderstanding here, as we do not think it likely that authorities such as Dr. Lankester, Dr. Liddell, Dr. Iliff, and Dr. Bristowe, would so vitally differ in opinion on a subject fairly and equally laid before each and all of them. Mr. Reynolds, the Camberwell surveyor, went with the majority in the case.

RESTORATION OF AN EGYPTIAN TEMPLE.





Sketch Elevation of Temple, and Plan of Front.

A Sculpture on the inner face of the intercolumnar wall lately brought to England by Miss Harris.

B Section of an intercolumnar wall, measured and drawn from those in the British Museum. The white line shows the fracture that was occasioned by an attempt to divide the stone into two pieces. The part on the right of the white line does not exist in Miss Harris's slab. The lighter margin of the contour of this section shows the extent of the smooth surface, the darker shade the surface worked with the pick, proving that these stones were most accurately joined to the columns, the probable width of which is indicated by the dotted line.

C Shows the appearance of the cobra snakes in the front view, taken from the intercolumnars in the British Museum.

This intercolumnar wall is precisely the same height and section as those in the British Museum, Nos. 20 and 22.

RESTORATION OF AN EGYPTIAN TEMPLE.

OUR drawing represents a slab of hard stone, perhaps basalt, lately brought to England by Miss Harris, of Alexandria. It is 2 ft. 7¼ in. wide and 4 ft. 0½ in. high. At the top is a row of eleven vultures. Lower down is a single line of hieroglyphics, which may be translated, "The king's prenomen, living for ever; king of Upper and Lower Egypt, lord of the land, lord of the buildings, Nectanebo, living for ever, beloved of all the gods." Under this inscription is the figure of the king on his knees, looking towards the spectator's right hand, presenting some offering, which is no longer visible. Under the place where the offering was once represented are a few hieroglyphics, the name of the offering, probably frankincense. Below the king is a broad ornamental border.

This slab, from its shape and sculpture, lets us understand that it was made for a dwarf intercolumnar wall, and was part of a small temple, which, from the known proportions of the Egyptian temples, we may suppose was about 14 ft. high. Our interest in the slab is increased by the knowledge that we have in the British Museum two other slabs or inter-columnar walls, which probably belonged to the same diminutive temple, while there is a fourth now in Bologna, but found in Rome, 1709, of which there is an engraving in Ficoroni's "Vestigia di Roma," published at Rome, 1744.

The Harris slab (H) has been split in half, and therefore shows sculpture only on one face; those in the British Museum being nearly entire have sculpture on both faces. From them we learn that we exhibit the back of the slab H, which faced towards the interior of the building; because in all cases where the rows of vultures and of cobra or hooded snakes are represented on these dwarf walls, the vultures appear on the surface towards the interior, while the snakes are always on the outside as guardians of the temple. From this circumstance, and that the figure of the king is looking towards the right, it is quite certain that the Harris slab occupied the intercolumnar space marked H on the plan, or the right-hand corner of the portico viewed from the outside. Of the two slabs in the British Museum, the one marked 22 occupied the next intercolumnar space, that on the right-hand side of the entrance, and No. 20 that on the left-hand of the entrance. The slab marked V on the plan, on the left-hand corner of the portico, is the slab now in the Museum of Bologna. Thus we have two slabs for each side of the door; and if we suppose that this little temple had four columns, it will have had, with its two side walls, five intercolumnar spaces; one of these was the doorway, and four were filled with the four above-mentioned slabs.

The temple, as we have said, was about 14 ft.

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high, as it stood on a floor, or base, and with its lateral walls, nearly 25 ft. wide. Now Herodotus (ii., 175) tells us that he saw at Sais a small monolith temple, of which the outside front measure was 14 cubits in width, and 8 cubits in height, and that the inside measure was 12 cubits wide by 5 cubits high; or, if we turn these measures into English feet at 21 in. the royal or longer cubit, then the outside measure will be 24½ ft. by 14 ft., and the inside measure 21 ft. by 8 ft. 9 in. Herodotus thought this little temple of one single stone, as it was declared to be, was as remarkable a work of art as any of the great temples of Egypt. From the measures furnished by Herodotus we learn the thickness of the outside walls, which were of 1 cubit each, and also the thickness of the entablature and floor united, which were together of 3 cubits. We include the floor, since, if the temple seemed to Herodotus to be of a single block, it must have stood on a floor of its own. Let us, therefore, draw the front of a temple according to the known proportions of those in Egypt, giving to it Herodotus's measurements, with four columns and an entablature, all of suitable thickness, and giving to the floor what remains of its height which will be about three-fourths of a cubit. With this restoration of a temple, we shall then find that our four slabs supply us with the four intercolumnar spaces of the required size, and we may say with confidence that they formed part of the small temple described by Herodotus. It was not, indeed, a monolith temple, as he was told, but each wall and each column may have been of a single stone, and the whole so squared and fitted together that the joints were not seen.

The earliest name on these slabs or intercolumnar walls is that of Pharaoh Hophra, or Psammetichus III., who reigned about B.C. 591-566, about 100 years before Herodotus visited Egypt. Hophra, we must suppose, left the ornamental sculpture unfinished. This was very often the case with the Egyptian buildings. Hophra's reign was followed by civil war, then by the Persian occupation of the country, and it was not until 100 years after Herodotus's visit that the sculptures on the other slabs were finished in Nectanebo's quiet and prosperous reign of eighteen years.

The Museum has also two small obelisks of black basalt, which, when perfect, may have been about 12 ft. high, and when set on pedestals would be of the right height to stand as ornaments in front of this temple. They bear the name of Amyrtæus, a king who was reigning when Herodotus was in Egypt, during an interval of liberty gained from Persian domination.

Our restoration of the temple has the stones which are now in Europe distinguished by a dark shade.

SAMUEL SHARPE.
JOSEPH BONOMI, *Del.*

NOTES FROM AMERICA.

Texas.—The most delightful work, next to a survey on the London, Chatham, and Dover Railway in England, has been to the writer—a short trip in Texas. The natives semi-civilised; the country filled with superstitious legends, but abounding with some of the most beautiful scenery that can be imagined or wished; the land fertile; the climate in the autumn most invigorating. The towns are laid out on the Spanish system—a plazza, or a broad green; a town-hall, court-house, and in the centre a gaol. Magnificent trees shade the whole square, and the singing-birds render the scene most delightful. The streets are lined with teams laden with cotton and hides, and, what is more, silver and gold to handle,—a pleasant thing after the ragged, greasy greenbacks. But the scenes on the square are various. On one corner a group of niggers singing, heavily laden with the curse of the world—"bad whisky;" a crowd of "*cowboys*" selling hides, and swearing in a manner a Texan alone can do. Then the never speculating Yankee, perched on an old box, selling in a manner after the fashion of a Sheffield Cheap John. Gambling seems to be a commercial pursuit, and a hell is fitted up gorgeously: the drinking-bar, with its "*chemist*" retailing the vile poison that maddens the brains of the gambler; the roulette-table, the wheel of fortune, which wheedles the nigger's money to the last cent.; the faro bank and other card-tables loaded with gold and silver; the speculators investing in games which your writer never heard of, and none the worse for not knowing; and all the time a harp and violin are scratching forth music. But emigration, it is hoped, will eradicate all these evils, and allow the country to be peopled with a respect for the Supreme Being, who has formed a country, indeed, of milk and honey, if labour be properly and commercially applied. Waco is a county town of about 3,000 or 4,000 inhabitants, the best town the writer has visited, full of enterprise. A neat suspension-bridge of nearly 600 ft. has been erected across the Brazos River; four churches, good school-buildings, fine stores, and several banks; also a railway terminus. St. Louis and Chicago are about building two lines of railway for the purpose of carrying the cotton from Texas; and Texas, I think, will be the real commercial State of the southern parts of the United States.

Kansas.—Timber is very scarce in these prairie countries, and is only found near streams and ravines: so fuel is very scarce, and as a substitute the husks and Indian corn are used, which make a fine glowing fire. In the unsettled portions of the prairies, far away from the settlements, are "trails" running in every conceivable region along the "divides" worn through the tall grass by the hoofs of the bisons; and by watching these ugly-looking animals from a distance, they can be seen travelling like a single file of dairy cows returning home at night from pasture. Kansas is fast filling up, and a good many towns are now built, which at the time of the American War were nothing but prairie lands. The sunsets are most beautiful, and can hardly be pictured by pen. The balmy nights!—but the loneliness is terrible. And, oh, the wind in an open prairie! it can be only likened to a storm at sea. The richest timbered country is Southern Kansas, but the best watered are Northern Kansas and South Nebraska, being easiest to farm; but better protection is required of the United States military for the settlers from depredations of the Indians.

QUERCUS.

MEMORIAL BRONZE STATUES OF THIRTEENTH, SIXTEENTH, AND NINETEENTH CENTURY SCOTCHMEN.

SIR,—It is a curious fact that we have at this time three bronze statues in embryo intended to honour the memory of three representative Scotchmen, three centuries dividing the career of the three. The last and most likely to be soon erected in Edinburgh is that of the present period, in which Livingstone so graphically illustrates the "derring do" of the heroic Bruce, and the stern candour of Knox, "who never feared the face of man."

The artistic skill of Mrs. D. O. Hill has enabled her in fact to produce such a statue of Livingstone as rolls the three three-century divided Scotchmen into one. This life-like statue, now proposed to be cast in bronze, is truly suggestive of all that is good and great in this most heroic of the Scottish kings,—born 1274, and died 1329. And there is also vividly shown the fiery zeal of the great Scotch Reformer, for enlightening his rude barbaric countrymen of the period in which he lived,—1505-1572. Even viewed in such a light, this graphic Scottish statue of the great missionary explorer of African wilds cannot satisfy either the Scottish people or their visitors, when they gaze upon the questionable tower reared to honour the memory of Wallace, and when they too plainly see the unquestionable dishonour done to the memory of Knox at his very grave, where the grim sarcastic leaden statue of Charles II. on horseback rides roughshod over all the associations of the spot. Statuesque memorials of both Bruce and Knox will yet be erected in the style and costume of their respective periods. Dr. M'Crie, in his Life of Knox, says,—"A Popish author has informed us that Knox was gratified with having his portrait drawn, and has expressed much horror at this, seeing he had caused all the images of the saints to be broken." There are even Presbyterians of our day who hold that "Protestant idolatry is manifested by this desire for a statue to John Knox in Edinburgh," yet such have not been able even to rear

"The taper spire that points to heaven"

over the stunted floreal pinnacles of the Knox Kirk, built some twenty years ago, alongside the old house of Knox, so prominently jutting into the grand vista east and west of the old historic High-street. Surely, if the house and kirk of Knox are to stand where they are, the modern kirk should be ornamental, and the old house saved from its venerable uncleanliness.

J. K.

NATURAL HISTORY MUSEUM.

I HAVE only just seen in the *Builder* of the 4th of January last Mr. Waterhouse's design for this building, and I regret to learn, by your editorial notice, that from motives of economy the two central towers of the façade are to be omitted. They appear to me a principal feature of the design, and to omit them will destroy the symmetry of what promised to be a handsome and successful building.

I presume it is not suggested that Mr. Waterhouse's design is of an unusually costly character, but because the price of work has risen (I suppose from the natural laws of supply and demand) we are to pare down and spoil a public building.

We are told sometimes that the rise in prices is an evidence of our wealth. At all events, we are the wealthiest nation in the world, and were never more prosperous than at the present time.

But, sir, a parsimonious policy is not always cheapest in the end. On this very same site ten years since we erected a building, very substantially, on a cheap plan, but which was so inveterately ugly that the public would not stand it, and the Government was compelled, though resisting to their utmost, to pull it down.

Look, again, at our National Gallery, where the unfortunate architect was so pinched and hampered about cost that he could only give us (no fault of his) a building that we are ashamed of, and which we have long ago decided must come down.

But, sir, here is a consoling reflection for the authorities, and which I hope will weigh with them, regarding the matter from a £. s. d. point of view.

It must be twenty years ago that we found that the British Museum was full to running over, and that an additional building must be provided to hold our collections. For twenty years we have been debating and discussing about this additional building, and at last we have decided on it. Well, then, have we not saved twenty years' interest on our outlay? Say only at 3 per cent. per annum, there is a saving of 60 per cent. I am sure, sir, that the authorities will appreciate this, and I yet hope that (accepting the fact of the rise in prices which the rest of the community are compelled to accept), they will take 15 per cent. out of the 60 saved, and give us the building as designed by the architect, unmutilated.

OLD KENSINGTON.

A GIGANTIC BRIDGE OVER THE FORTH.

AMONGST the several railway and other Bills which have been before the Parliamentary Committees during the present session, one is in connexion with the construction of a stupendous railway bridge over the Firth of Forth, at Queensferry, at a proposed outlay (including the railway), of 1,250,000*l.*, being something more than four times the cost of the bridge over the Tay, now in course of construction, and which up to the present time has been regarded as the largest bridge in the world. As the Bill for the proposed bridge over the Forth received the sanction of the Committee of the House of Commons last week, a notice of some of its chief features becomes interesting. The proposed bridge, which has been designed by Mr. Thomas Bouch, will be no less than 150 ft. in height, and will contain nearly 100 spans. The largest span in the centre will be 1,550 ft. in width, or nearly a third of a mile in extent, dimensions which are without a parallel for any similar piece of architectural construction, and the smaller openings or spans will all be 150 ft. in width, being considerably beyond the average dimensions of the largest spans in ordinary bridges. The highest engineering evidence on the design was laid before the Parliamentary Committee, and amongst the engineers of eminence who bore testimony in favour of the proposal, were Mr. G. P. Bidder, Mr. Hawkshaw, Mr. Barlow, and Mr. Harrison, all of whom deposed as to the practicability of its construction, the sufficiency of the estimates, and as to its safety and suitability for carrying railway traffic. On these points, a joint report, signed by all the above-named engineers, was laid before the Committee, in which they state that having examined the plans of the proposed bridge, in connexion with storms of wind, as well as the effects of passing loads over it, and also in regard to temperature, they all agree in being satisfied that the bridge, when completed according to the designs and dimensions, and with the materials submitted to them, will be found amply sufficient not only for the safety of

the ordinary traffic, but also to meet the strains due to extreme gales of wind. As to construction, the engineers in question state that the most important point is the sufficiency of the foundation and anchorage, and in reference to that question the information afforded them gives them complete confidence; whilst having regard to the varied and powerful means which are now at command for the erection of such structures, they believe that the execution of this bridge, although of unusual magnitude, is quite practicable, and capable of being carried out with success by modern skill.

THE PUBLIC BUILDINGS OF BUCHAREST (TURKEY).

AN interesting report has just been published, regarding the improvements made in the public buildings of Bucharest, also giving information relative to other improvements effected in the city. Bucharest covers a space of more than twenty English square miles, and has been gradually built haphazard, every man having placed his house as he pleased, without the slightest regard to the position of the dwellings of his neighbours. This neglect of the unities of construction has formed an agglomeration of buildings which is certainly peculiar. Considerable progress has been made of late in paving the streets of the city, and the principal street is now paved with Aberdeen granite, and cubical stones from Italy, and is kept moderately well watered in summer. This street (called the Podo Mogochoi) contains the principal shops and hotels, many of the best private houses, the Prince's residence, and the National Theatre, one of the largest buildings in the town, the whole being interspersed with hovels and unbuilt spaces, the effect of which is anything but seemly. Of late years great progress has been made in building new houses in Bucharest, but this has scarcely kept pace with the increase of the population. What is termed "The Palace," was built nearly half a century ago, and was sold to the Government, having been originally intended for a private residence. Its only redeeming feature is said to be the throne-room. Prince Charles of Hohenzollern has done much towards rendering his habitation internally comfortable by introducing improvements from time to time; but at best it is not a very regal residence. It has been attempted to convert a monastery on the outskirts of the city into a summer residence for the court, but hitherto this attempt has not been altogether successful. There are 100 buildings in Bucharest which are used as churches, but none have any pretensions to architectural beauty, or even to much antiquity. There are ten synagogues, of which the largest is a modern building erected at considerable expense, and decorated in a somewhat pretentious fashion inside and out, after the Saracenic style of the new Jewish temples of Western Europe. The Academy is the most imposing of the modern buildings of Bucharest. It forms one side of the commencement of a boulevard, which it is proposed to carry through the town from east to west. This edifice contains the university, which is divided into four faculties,—philosophy, law, medicine, and the sciences; and possesses a good laboratory and collection of physical apparatus. The large theatre of the university is occupied by the senate during the Parliamentary session. The Academy also contains a public museum of antiquities and natural history. Bucharest boasts two public gardens of considerable size, which are of comparatively recent construction. One is in the centre of the town, is about a mile in circumference, and is principally resorted to by the townspeople who have no carriages. The other public garden is just outside the town, and is the fashionable drive. Amongst the new buildings, a handsome edifice has been erected on the boulevard for a hotel, which will eclipse all its rivals in point of size and imposing appearance. Bucharest has lately been lighted by gas. The water supply drawn from the Dimbovitza is partly pumped by steam, and distributed through iron pipes to some public fountains and private dwellings; but for the most part it is doled out by small carts in a filthy state, and at considerable expense. The municipality, however, has for some time been in treaty with foreign companies for an unlimited supply of filtered water, the want of which is much felt. The sanitary state of the city is far from satisfactory, and the authorities are not so active as they might be in introducing improvements in this direction.

ST. MARY'S SCHOOL, HULME, MANCHESTER.

THE foundation-stone of this school was laid on the 6th inst. The school will have accommodation for 131 scholars. The building consists of a school-room, 36 ft. by 19 ft. 6 in.; and two class-rooms, 18 ft. by 14 ft.; also lavatory and cloak-room, &c. The elevations have a hipped gable to the class-room, and a hipped gablet over the centre bay, the windows in both these rising higher than the others. All the windows have arched heads; and buttresses divide the elevation into bays. The principal elevation has a hipped gable, from the centre of which rises an ornamental chimney-stack having an inscription stone in the centre of gable. The whole of the walls are faced externally with white header bricks, with arches, string-courses, and other dressings of stock bricks. The interior is of selected bricks. The rooms are warmed by open fireplaces, and the alternate windows have part opening for admitting fresh air, while the vitiated air has its exit through openings in the ridge, the roof being a high-pitch open to the apex, and plastered between the principals. Mr. George Napier Hulme is the contractor, under the superintendence of the architect, Mr. J. Lowe, Manchester. The total cost, including boundary walls, will be about 830*l*.

THE VENTILATION OF THE SEWERS OF LIVERPOOL.

SIR,—In a recent issue you favoured us with an extract from the report of the borough engineer on the ventilation of the Liverpool sewers recommending "the introduction of open gratings in the streets, and the carrying up of a pipe not less than 4 in. diameter, from every soil-pipe, to a point above the roofs of the houses, so that in the districts where these water-closets exist, the draught may be down the street ventilators and up the soil-pipe shafts."

In a large borough like Liverpool, it is important that the scheme adopted should be effectual, as small boroughs may be induced to follow the example of their larger brother; and in that view I propose to discuss its merits.

The open gratings will provide for the introduction of fresh air, but in some cases they will act as outlets, according to levels and other local circumstances.

The proposed outlets by the house-drains are however open to very serious objections:—

1st. The gases from the sewers will take the shortest route, and rush into the houses, when the pan or valve closets are used, instead of passing up the 4-in. outlets as proposed.

2nd. By this scheme every house will be in connexion with every other house, as now.

3rd. It will have a tendency to invite the entry of sewer gases into the badly-drained houses, and so increase the death-rate rather than diminish it.

In most schemes for ventilation, the chief object has been to disconnect the house-drains (*for ventilating purposes*) from the main sewers, and to prevent the sewer gases from entering the houses; but in the scheme proposed, there is an ingenious but expensive attempt to do that which most sanitary authorities have condemned.

The great objection always raised against sewers, that there is no isolation, will by this scheme be still further increased, as the current of the gases will be in the direction of the houses from the sewers of deposit, and if there be the slightest defect in the house-drains or the soil-pipes (a very common thing), *they will become outlets into the houses* from the main sewers. Further, the principle of ventilating main sewers by the house-drains is radically wrong, and should in no case be adopted.

Sewers should be ventilated, as they have been in other towns, *entirely separate and distinct from the house-drains*.

House-drains should also be ventilated, separate and distinct from main sewers, by 4-in. pipes from the soil-pipes, or by other means.

We are told that 18,000*l*. are to be expended on ventilation, but I trust, in the interest of sanitary science, the proposed scheme will not be adopted.

JAMES LEMON,
Borough Engineer, Southampton.

Leicester Municipal Buildings. — The drawings submitted are now on view. We are asked to mention that the author of the design under motto "Simplicity" gave no address, and therefore could not be communicated with.

LONDON SCHOOL BOARD SCHOOLS, OLD FORD-ROAD.

THESE schools, which have been built near the Old Ford Station, will shortly be opened.

The nominal accommodation is for 720 children, but the actual number which could be accommodated is 841, allowing 8 ft. superficial of floor-space for each infant, and 9 ft. for each girl or boy.

Owing to the position of the site the entrances to all the divisions of the schools were obliged to be from the same road, but they are separated as far as possible from one another.

The general schoolrooms are 22 ft. wide and 45 ft. long, with windows on each side, which allows a current of air across the rooms and an equal distribution of light. The window-backs in the wall opposite the desks are 8 ft. high, to allow of maps, &c., being hung below them. The windows behind the desks are the usual height above the floor.

The ceilings throughout are plastered to a level surface, no beams being visible.

The general arrangement of the ground floor will be seen by the accompanying plan. The first and second floors, for the boys' and girls' schools respectively, are similarly arranged, with the exception that there are two class-rooms at the ends of the general rooms, each 20 ft. by 18 ft.

Cap and bonnet rooms and lavatories are placed at the entrances to each department, on a level with the general schoolroom.

A classroom for drawing is on the second floor, entered by the girls from their schoolroom, and by the boys from their staircase.

There is a room for the master or mistress on the first floor, immediately over the managers' room.

The staircases are of Yorkshire stone, with wrought-iron handrails.

The desks and seats for the children will be arranged in pairs. The infants' and babies' rooms each have galleries with low backs to the seats.

The upper parts of the doors between the school and class rooms are glazed, to enable the head teachers to supervise the whole of their respective departments.

Captain Douglass Galton's ventilating stoves are placed in the general school-rooms; each story is 14 ft. high from floor to ceiling, and the walls are coloured a light green tint. All the windows have straight heads with sashes double hung.

There is a covered play-shed in the infant's playground, paved with Wright's tarred paving, which is laid in all the playgrounds. The building is faced with picked stocks, with red brick arches and diapered patterns of red, white, and yellow bricks to the gable-ends, and Bath-stone dressings are used in the window and door-heads.

The contract for the building, including fittings for heating and lighting, was taken for 4,987*l*. by Mr. Tarrant of the New Kent-road; this gives about 5*l*. 18*s*. per head, taking the actual accommodation at 841 children.

The architects are Messrs. Henry Jarvis & Son, of Trinity-square, Southwark.

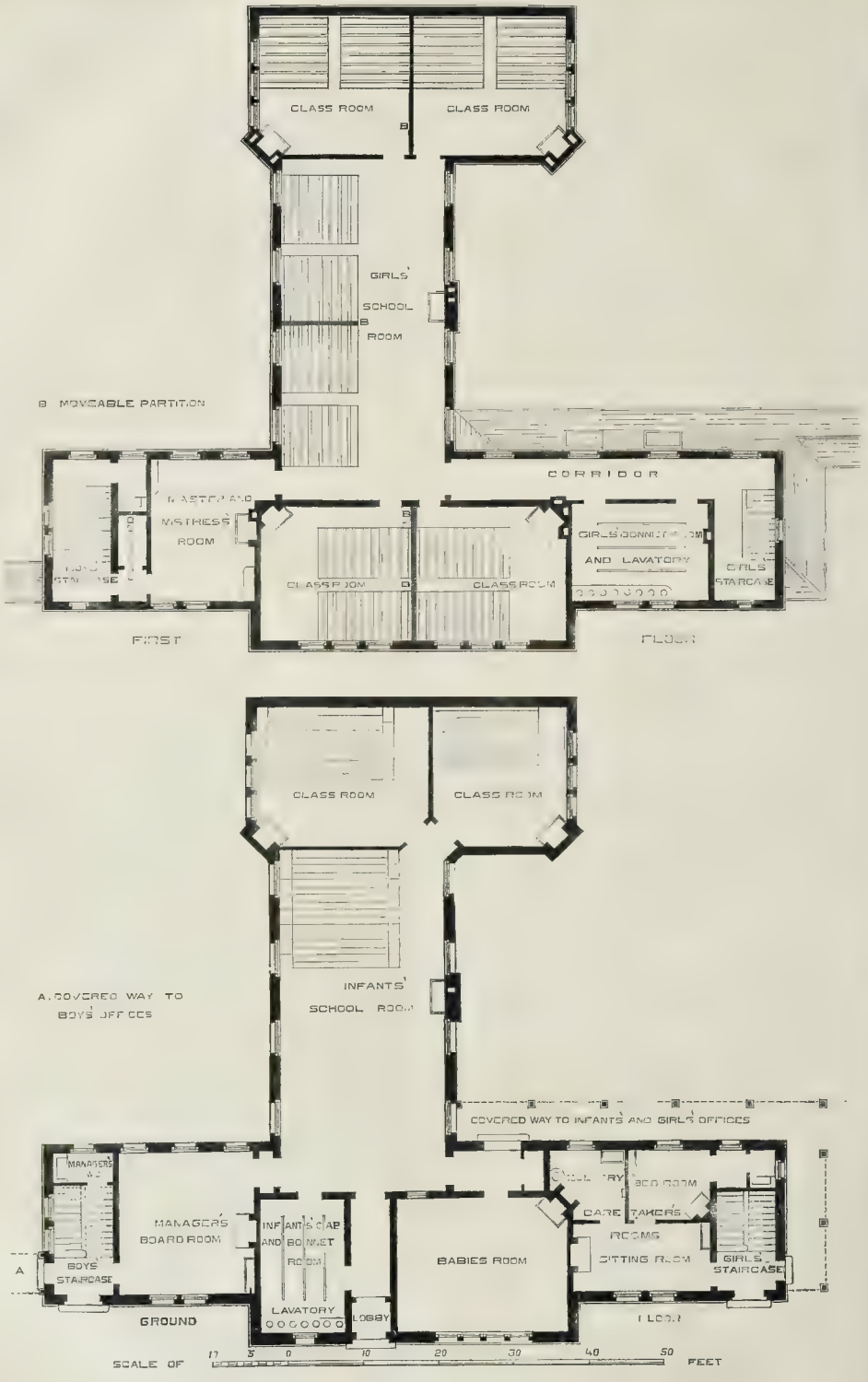
USEFUL NOTICE.

DR. DUDFIELD, the medical officer of health of the parish of St. Mary Abbott's, Kensington, has issued the following sanitary notice, which may be usefully read elsewhere:—

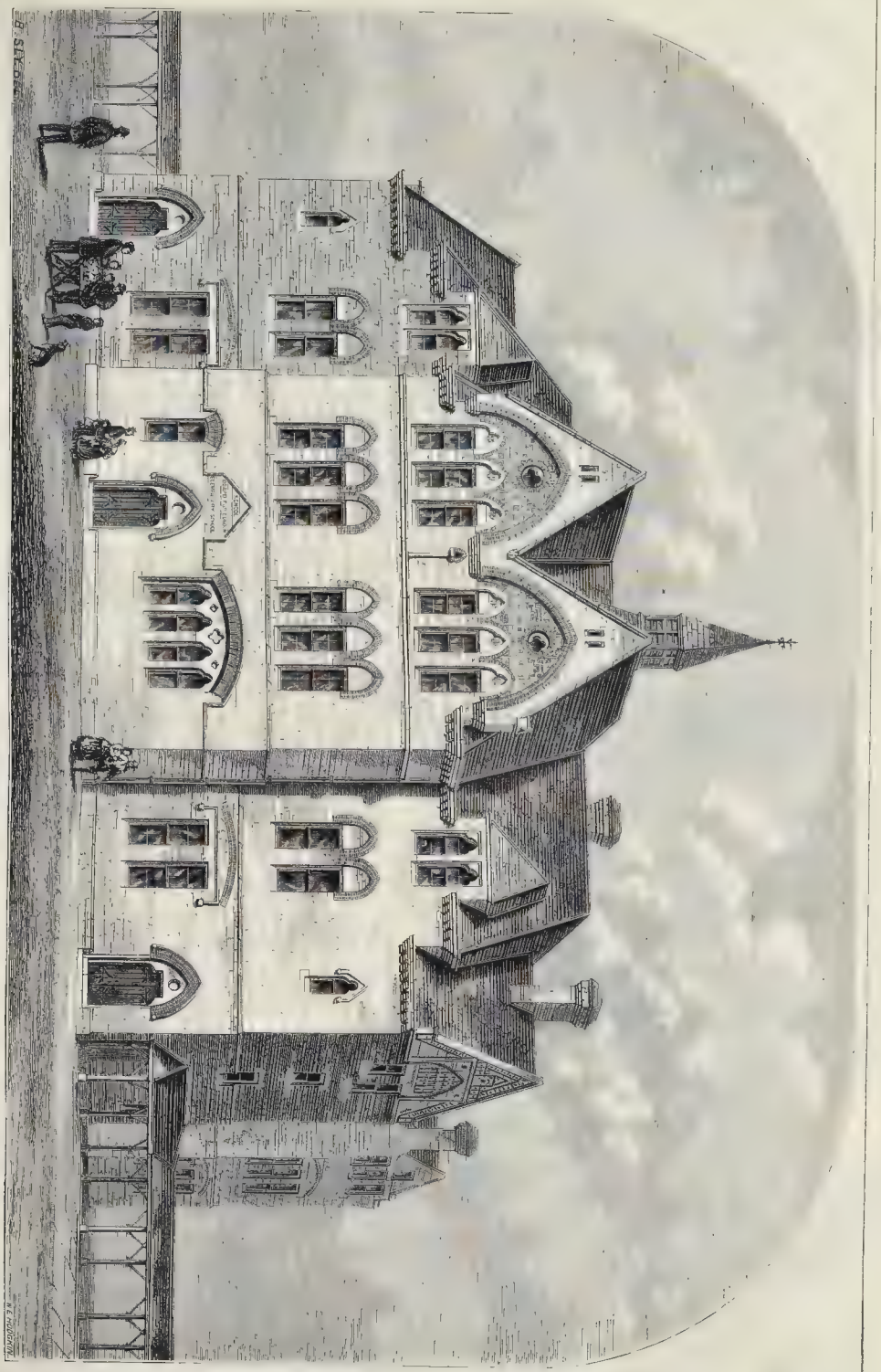
"Parishioners are earnestly requested not to deposit animal or vegetable refuse in their dust-bins, the decay of such matters, especially in hot weather, when few ashes are made, causing offensive smells injurious to health. All such refuse being, after slight drying behind the fire, combustible in ordinary grates, may and should be burned, small quantities being placed on the fire at a time.

Parishioners are further requested to have their water-cisterns cleansed frequently, and particularly during the summer months. The waste-pipe, if connected with a drain or soil-pipe, should be effectually trapped, otherwise the water will become polluted by foul air, to the great danger of health and life. In all cases, when practicable, however, the waste-pipe should be abolished, and an overflow or warning pipe substituted. Cisterns should be carefully covered, to exclude dirt. Water-closets should have an independent water-supply. A ventilating-pipe, at least 1½ in. in diameter, should be arranged so as to carry off into the open air the gas generated in the soil-pipe of the water-closet and the waste-pipe of the sink. The main drain of the house should also be ventilated and trapped, so as to prevent the entrance into any part of the house of sewer-gas.

Impure air and polluted water being fertile sources of disease, especially of diarrhœa, which is so fatal in summer, and of communicable diseases, such as typhoid fever, &c., the importance of the above recommendations must be obvious."



SCHOOLS IN THE OLD FORD ROAD, FOR THE LONDON SCHOOL BOARD.—*Plans.*



LONDON SCHOOL BOARD SCHOOLS, OLD FORD ROAD.—MESSRS. HENRY JARVIS & SON, ARCHITECTS.

STRENGTH OF CEMENT.

PROFESSOR BAUSCHINGER, of the Polytechnic School of München, has lately made experiments (in the technical laboratory of that institution) with mortar of Perlmosen Portland cement and water-lime; and he publishes his results in the *Zeitschrift des Bayer. Ingen.- und Arch.-Vereins.*

Cubes of pure cement, as well as of mixtures of one part cement with sand or rubble up to five parts, were submitted to pressure. The resistance of pure cement was found to be greater than the mixture of the proportion of 1 : 5; it diminishes very slowly, even if as much as three parts sand (even coarse rubble) are added. Cubes of water-lime and coarse rubble were found to resist pressure best, mixed in the proportions of 1 : 2 or 1 : 3; pure water-lime offering the least resistance. The resistance to pressure in a mixture of the proportion of 1 : 4 is nearly as great as in that of 1 : 1.

Cubes of brickwork, made of common bricks and mortar of one part water-lime and three parts fine sand, after hardening for ninety days, were next tried, when it happened that the mortar remained firm, whilst the bricks were crushed.

Slabs of one part cement and two parts fine sand, about 1½ in. thick, also, after setting for ninety days, were likewise experimented upon, and the results showed that the strength per square unit increases with the dimensions of the cross section, but it is also determined by its form, and diminishes somewhat with the thickness of the slab.

Similar experiments with cement prisms likewise showed that the strength of rupture of cement increases if it is mixed with sand in the proportion of 1 : 3, and even that of mortar mixed in the proportion of 1 : 4 is greater than that of pure cement.

In the trial with slabs made of one part cement and two parts fine sand it was found that they possess equal strength whether they rest on all four corners or only on two edges, and that the resistance was nearly proportional to the square of thickness of the slabs. The slabs were tried after hardening for 105 days; the prisms after 90 days.

Professor Bauschinger intends publishing an empirical formula as soon as a sufficient number of experiments are available for the purpose.

THE STORY OF A CHEST OF DRAWERS.

BY A CABINET-MAKER.

"Trade is the golden girdle that encircles the globe."

DURING the past twenty years the attention of the public has been greatly directed to manufactures of all kinds. One result has been that during that time marked progress has been made in taste. The producers in the different trades have been stimulated to greater variety and excellence in their designs, and their exertions are receiving substantial appreciation and encouragement. This interest extends itself even to the raw and uninviting materials, and to the processes of manufacture, and hence our Industrial Museums. Availing ourselves of this feeling, we propose briefly to trace the history of an ordinary chest of drawers, made of mahogany and fir.

Let us glance at the procuring of the materials. A number of wood-cutters have tracked their way into a dense forest of the West Indies, and there at the river-side they have reared their little hut. Around them the scene is one of great life and beauty. Bright birds and flowers, of rainbow hues, the serried trunks of stately trees entwined by green tendrils, and over all the feathery palm-tree,—"a forest above a forest." The wood at times resounds with the cries of its many tenants, and anon the most solemn stillness prevails. Amid all the woodcutters resolutely proceed with their arduous work. They first select a good mahogany tree near the riverside, and by the aid of axe and saw and strong arm they lop off the branches and cut through the compact trunk, which is generally from 12 ft. to 15 ft. in circumference. The logs are then floated down the river to the nearest port, and then the lumberer or wood-cutter can count his gains. If the shippers purchase them for Britain, they are sent to Liverpool, the principal market in this country for mahogany and similar woods. Here a brisk and profitable trade is carried on by wood-brokers. The mahogany logs are assorted into lots, catalogues are sent throughout the kingdom, and in a week or a company of tradesmen from the various towns gather round the jovial, hearty auctioneer, and soon the tree which but a few short months ago waved in grace and beauty in the primeval forest, has become the prized possession of the cabinet-maker.

The purchase of mahogany is very much of a lottery, and no sooner has the manufacturer got his logs into his wood-yard than he is anxious to see if he has secured a bargain. The log from which our chest of drawers was made was found of excellent value, as part was suitable for cutting into veneers, and the rest was of good quality and colour.

The other wood used was pine or fir for the inside of the drawers. This was got from the shores of the Baltic; but instead of enlarging on this, let us look at the workman.

In general the cabinet-maker is a hard-working and intelligent tradesman. He passed six years as an apprenticeship, and entertains a high opinion of the requirements of his craft. He requires to be neat-handed, and interested in his work. He has an excellent stimulus to activity and application, being paid not by the length of time he labours, but for each piece of furniture he produces.

When our chest of drawers was commenced to be made, the workman had handed to him a slip of paper giving a rough sketch of the article, with the sizes and mouldings marked on it. He then went to the cutting-out shed for the suitable woods, and this in workshops without machinery is the roughest and most exhausting part of the cabinet-maker's work. Next followed the smoothing or planing, shaping, dove-tailing, and, not least, the veneering. To an ordinary and uninstructed spectator, for some days little progress seemed to be made; but this was not so, for the dis-jointed pieces, when all prepared, were soon glued together, and they assumed the familiar and useful form of a chest of drawers, and required but a coating of polish and a hearty rubbing to fit them for their adventures in the world. It would be an interesting task, in fancy, to follow them to their future homes and uses; but this is beyond our province.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE annual meeting of the above Society was held on Friday, the 6th inst., at the Board-room, 7, Westminster-chambers. The report showed that the Society had been working successfully during the past session, and that the number of members was still increasing. Cordial votes of thanks were passed to the president, Mr. C. W. Whitaker, and the other officers; and the following members were elected office-bearers for Session 1873-74:—

President, Mr. C. H. Kew.
Vice-presidents, Messrs. G. W. Willcocks and W. F. Butler.
Members of Council, Messrs. E. H. Brewster, J. A. Coombs, J. J. A. Flower, C. Kingsford, W. Meakin, E. Perrett, C. J. Samuda.
Honorary Treasurer, Mr. W. C. Street.
Auditors, Messrs. H. Sandall and G. Cruickshank.
Honorary Accountant, Mr. J. Wagstaff Blundell.
Secretary, Mr. Edward Speed.

PROPOSED SANITARY AND EDUCATIONAL EXHIBITION.

IN connexion with the Social Science Congress, to be held at Norwich, from the 1st to the 8th of October next, there will be an Exhibition of Educational, Sanitary, and Domestic Appliances, based on the experiment which proved so successful at Leeds in 1871. The spacious Drill Hall has been placed at the service of the Association. The object of the exhibition is to bring under the notice of the public generally, and particularly those who are interested in social, sanitary, and educational questions, the latest scientific appliances for improving the public health and promoting education. Among these may be mentioned:—All matters relating to house construction, connected with which are building materials, light, warming, ventilation, and interior ornamentation; flues, fireplaces, stoves, boilers, furnaces, gas apparatus; cisterns, baths, piping, filters, fountains, lavatories, and all things connected with the supply and use of water; drain pipes, tubes, sinks, traps, troughs, closets, urinals, filters, and all plans, diagrams, sections, models, and specimens of sewage and drainage contrivances; in fact, all sorts of appliances, appertaining to the advancement of sanitary science, the promotion of education, and the improvement of the health and domestic comfort of the community at large.

FROM AUSTRALIA.

Melbourne.—One of the landmarks of the city of Melbourne in its early history has been removed by the pulling down of the Scots' Church, which stood for nearly thirty-two years on the site at the corner of Collins and Russell streets. In the beginning of 1869 the necessity for additional accommodation, suggested that a new church should be built. Steps were accordingly taken, which resulted in the design of Messrs. Reed & Barnes being accepted, and the subscription list already shows a sum of 12,000*l.* towards the necessary expenses. The *Australian Illustrated News* presents its readers with a fair engraving of the building, which is of good design, though the tower and spire are rather attenuated. The site is one of the finest in Melbourne. Being at the top of a hill, the building will form a striking feature in any distant view of the city. The style is Early English. The church is cruciform in plan. It consists of a nave, 42 ft. by 102 ft., and two narrow side aisles, 10 ft. 6 in. wide. The transepts are 30 ft. wide, and 18 ft. 6 in. deep. There is an apse formed at the north end of the nave, in which is placed the minister's platform. An organ-chamber is projected from the west transept, which is to be fitted up for the choir. The sittings are all contained within the nave, the side aisles being used only as passages. A tower, 22 ft. 6 in. by 22 ft. 6 in., and with a spire, 211 ft. high, stands at the salient angle. The church will seat 950 or 1,000 people, and will cost about 20,000*l.*——About the close of the year 1871, a number of gentlemen, having investigated the style of accommodation afforded in the cheap lodging-houses in Melbourne, resolved upon undertaking the erection of a model lodging-house for the poorer class of citizens. The Society for the Promotion of Morality cordially gave their support, and a sub-committee having been appointed to act, steps were taken to form a company, having a capital of 5,000*l.* in 400 shares of 12*l.* 10*s.* each, for the purpose of erecting and furnishing a house for men exclusively, having 200 beds, baths, reading-room, smoking-rooms, and other appurtenances. The whole of the shares have been taken up. The Government of the day granted a site for a building. It is intended that the scheme shall be self-supporting, the interest on the paid-up capital being limited to 10 per cent. The plans for the building, furnished by Messrs. Crouch & Wilson, were adopted.——The Eastern Arcade in Melbourne is approaching completion. Six months previously, the ground on which the arcade stands was a heap of ruins and *débris* from the Haymarket Theatre, which was destroyed by fire some twelve months before. At this time the services of Mr. George R. Johnson, architect, were called in, and he prepared the plans of this structure, which was commenced in July. The frontage to Bourke-street will comprise a hotel and shop on the ground floor, with extensive cellarage underneath, and a large hall, 83 ft. and 40 ft., on the first floor, suitable for drawing-room entertainments or public meetings. On the second floor will be the bedrooms, kitchen, &c., required for the hotel, and a photographic studio. The front is in Bourke-street. In the arcade proper will be, on the ground-floor, thirty-six shops, with cellars underneath, 22 ft. by 12 ft., and on the first floor or gallery level will be twenty-eight shops, 18 ft. by 12 ft., two of which are fitted up especially for florists, having glass roofs. The gallery will be 9 ft. wide, with light ornamental iron railing. This will form a promenade, and is so constructed as not to obscure the light to the shops on the ground-floor. All round the gallery are Doric columns and entablature, from which springs the large circular roof of the arcade. This is carried on laminated girders, steamed and bent, similar to what Mr. Johnson introduced in the Prince of Wales Opera House. There is a lantern light the whole length of the arcade, 14 ft. wide, the sides of which are filled in with glass louvres, giving both light and ventilation. The under side of the circular roof is panelled, and filled with five-pointed stars, glazed with stained glass. The gallery is approached by four wide staircases, leading from either corner of the arcade, where there will be also drinking-fountains for the accommodation of visitors. The frontage to Little Collins-street will comprise a hotel and restaurant, and an extensive photographic studio, constructed specially for Mayall & Sons. The restaurant is approachable from the gallery floor for the convenience of the tenants. The total cost of the building will be about

17,000*l.* The contractor is Mr. George Cornwell, who also built the Haymarket Theatre, which formerly occupied the site.

Kew.—The first stone of the Catholic College of St. Francis Xavier, Kew, was laid on the 8th of December. The site of the college is a short distance outside the village of Kew, off the road between that municipality and Hawthorn. It is in the midst of a beautiful park of 70 acres, purchased for 10,000*l.*, on easy terms, from Mr. Patrick Mornane, of Melbourne. The architect is Mr. T. A. Kelly. The main block will be a parallelogram, and projecting central and side blocks will complete the design.

Fitzroy.—Building is spreading rapidly in the suburbs as well as in town. The National Bank of Australasia, which is being built at the corner of Smith and Webb streets, Fitzroy, was to be opened for business in a few days. It has a frontage of 46 ft. to Smith-street, and of 67 ft. to Webb-street, and from the footpath in Smith-street to the top of the parapet is 39 ft. The front of the main building to both streets is of the same stone as that used at the Melbourne Town-hall, and is of uniform colour. The style of architecture is that used in the palaces of Rome. The lower story has rusticated joints, with semicircular heads to the windows. The upper windows have also semicircular heads, with moulded architraves and cornices. The lower portion of the building is rock-faced blue-stone ashlar, surmounted by a well-finished deep-fluted string of Malmesbury stone. The size of the public office is 34 ft. by 24 ft., and is 17 ft. high. The ceiling is divided by iron girders, covered by plastic mouldings, into three compartments. The floor in front of the counters and screens is to be of Minton's tiles. The strong room is large and lofty, and fireproof. For the customers of the bank 34 ft. by 12 ft. are allotted. Mr. R. Huckson is the builder, and Mr. L. Terry the architect.

Geelong.—When the gas-mains were laid in Geelong, some ten or twelve years since, a mile or two of paper pipes were put down as an experiment. On December 13th, when laying on a service-pipe for Mr. Gale's balloon, some of them were unearthed, and found to be in as good condition as when first laid down, while the iron pipes near the same place were nearly corroded through.

Ballarat.—The Town-hall at Ballarat bids fair to be more costly to the city than was thought would be the case. The *Courier* states that "Mr. Cowland, the contractor, claims 3,500*l.* for delay occasioned, as he alleges, during the progress of the contract. The city council has a claim for a very large amount,—some 1,500*l.*,—against Mr. Cowland for fines and penalties due on foot of said contract; and, on the suggestion of the mayor and the ex-mayor, the matter has been referred to arbitration,—Mr. Edwin James being the council's arbitrator, and Mr. R. Tunbridge arbitrator for Mr. Cowland."

Brunswick.—The Wesleyan denomination in Brunswick have just completed a new edifice, an engraving of which appears in the *Illustrated Australian News*. Mr. Percy Oakden, of Ballarat, was the architect. The church was formally opened on the 6th of February. It is only calculated to seat 800 persons, though attended by nearly 1,200 at each service. The building is of brick, on a stone foundation. Dark red bricks, of which the front is principally composed, harmonize with those of a lighter colour, arranged in patterns, used as quoins, or in the arches over the openings. Externally, the front is divided into three compartments, the centre one corresponding with the width of the main building, rising to the height of 53 ft., the gable being filled with a large window, pierced with four lights, with quatrefoil opening above. The northern division of the front is a porch, also gabled, with an open arcade of two arches. The southern division is occupied by a bell-tower, square at the base, and becoming octagonal in form as it rises. The upper portion is open, the roof being sustained by arches springing from iron columns. It rises to a height of 90 ft., and is finished with a wrought-iron finial. The interior of the church measures 72 ft. by 63 ft. The floor slopes for about two-thirds of the distance from the front towards the pulpit, the remainder being level, so that the seats, which are disposed in curves, with the pulpit as a centre, rise gently. The church internally is divided into nave and north and south aisles, the aisles being separated from the nave by arches of coloured bricks rising from iron columns with bronzed foliated capitals. These arches support the clearstory wall, which is pierced on either side with circular windows at a high elevation, thus providing for ample ventilation. The contractor was Mr. Robert Roberts, and the clerks of works, Messrs. Boase & Stanton. The total cost of the building is 5,000*l.*, of which the congregation have raised 3,000*l.*

Adelaide.—In the illustrated paper already named there is an engraving of the central hall of the new Post-office, Adelaide. The two entrances to it, the one from King William-street and the other from Victoria-square, are arched with pilasters on either side, and have deeply-coffered ceilings. There are five steps of Mintaro slate, each in one length, leading from the pavement into a small lobby, and then access is gained by four steps into the public hall itself. This is 90 ft. long by 35 ft. wide, and runs the height of the two stories and a portion of the roof, being 65 ft. from floor to ceiling. It is paved with Minton's encaustic tiles in simple patterns, and lighted by a half-dome roof, the sides of which are formed of glass, framed in light iron-work. The principals are of large boiler-plate girders, and the ceiling is sunk and enriched with panels and centre-pieces containing ventilators. The room will be lighted at night by two ornamental lamp-pillars of four burners each. The balcony gives access to the whole of the upper story, there being fourteen french-polished cedar doors opening into it from the various offices and rooms. A basement, 8 ft. 6 in. in height, extends under the whole of the building, and is divided into storerooms, workrooms, lavatories, reading-rooms for the letter-carriers, and a residence for the keeper. Mr. R. S. Thomas is the architect for the building, and he estimates the total cost at 56,000*l.* The whole of the contract, including the fittings, has been carried out by Messrs. Brown & Thompson.

THE CONTRACTS FOR BOLTON TOWN HALL.

WE add to the particulars of the new Town Hall, Bolton, already given, the following list, from the *Bolton Weekly Journal*, showing the amount of each contract. It may serve as a guide, to some extent, in determining on similar undertakings:

Contractors' Names.	Description of Contract.	Amount. £.	s.	d.
Ellis & Hinchliffe	Basement story	12,020	0	0
Haden & Sons	Warming and ventilating	752	16	0
Ellis & Hinchliffe	Masons, brick-setters, &c.	44,690	0	0
W. C. Marshall	Tympanum statuary	1,000	0	0
Ellis & Hinchliffe	Carpenters, joiners, &c.	12,975	0	0
W. Potts	Clock	580	0	0
Warner & Sons	Clock bells	1,080	0	0
Haden & Sons	Steam boiler, pipes, &c.	168	0	0
Haden & Sons	Hydraulic hoist and lift	118	0	0
Bolton Gas Co	Piping for gasfittings	160	0	0
Minton, Hollins, & Co.	Tiling of Great Hall floor	2,000	0	0
Simpson & Son	Decorations	5,300	0	0
Ellis & Hinchcliffe	Paving approaches	1,784	0	0
Hibbert & Co.	Lightning conductors	150	0	0
Ellis & Hinchliffe	Alteration, Large Room	45	0	0
Gray & Davison	Organ	2,220	0	0
Doveston, Bird, & Co.	Boro' Court, &c., fittings	1,130	0	0
Arrowsmith & Co.	Parquetrie, Great Hall, &c.	646	0	0
C. Smith & Sons	Door furniture & fittings	859	0	0
W. Wilson & Co.	Kitchen fixtures	296	0	0
J. & H. Patteson	Chimney-pieces & grates	372	0	0
W. Wilson & Co.	Chimney-pieces & grates	228	7	6
W. Wilson & Co.	Kitchen ranges, &c	296	0	0
Broadbent	Safety clock - weights, 2*l.* 10*s.* per weight, and 16*s.* per cwt.			
Brown & Lamont	Blinds	153	14	11
George Smith & Co.	22 lamp-pillars	173	0	0
Macfarlane & Co.	2 ornament lamp-brackets			
Smith & Son	Master keys, each	5	5	0
Smith & Son	Brass rail, Gt. Hall, per ft.	0	5	6
Winfield	Hall lamp			
Messenger	Design for pendants			
Winfield	Design for bracket-lights			
D. Waddington	Chairs for Great Hall	867	0	0
D. Waddington	Furniture, Reception-room	271	16	0
Doveston, Bird, & Co.	Furniture, Magistrates' Room	336	5	0
James Lamb	Furniture, Dining-room	884	10	0
Arrowsmith & Co.	Furniture, Mayor Parlour	178	11	0
James Lamb	Design of Borough Court stove	56	15	0
James Lamb	Dining-room chairs	350	0	0
James Lamb	Chairs for Mayor, &c.	85	0	0
Winfield	Design of 3 pendants			
Messenger & Son	Pendant design			
James Lamb	Design for carpet			
James Lamb	Chimney-piece and fire-grate	275	10	0
Burstall & Taylor	Lion figures for portico	201	17	0
William Heyes	Painting	440	0	0
Gray & Davison	Hydraulic engines, &c.	1,099	18	6
Corporation Gas Department	Gas pendants for Gt. Hall			
	Temporary star-lights	348	0	0
Doveston, Bird, & Co.	Basement fixtures	1,241	6	0
Joseph Marsden	Ground-floor fittings	336	13	0
Joseph Marsden	First-floor fittings	242	8	10

LIGHT AND AIR, AND THE LONDON SCHOOL BOARD.

THE Vice-Chancellor, Sir R. Malins, at the suit of Mr. J. H. Clarke, against the London School Board, to restrain that body from building, so as not to interfere with his ancient lights to certain small tenements in Winchester-court, Pentonville, of which Mr. Clarke is lessee, has given a judgment.

The bill filed by Mr. Clarke against the School Board sets out that the Elementary Education Act, 1870, under which the School Board is constituted, incorporates the Lands Clauses Consolidation Act, 1845, and gives to the Board the power of taking lands compulsorily, with certain restrictions, viz., that the Board must obtain an order of the Education Department of the Privy Council authorising them to put their compulsory powers in force, and that no order so made should have any validity unless confirmed by Act of Parliament.

The Board had duly put in force their compulsory powers by taking a piece of land, about 53 yards square, north of Winchester-court, and were proceeding to build a schoolhouse upon it. Part of the schoolhouse-wall was within 4 ft. of the windows of some of the plaintiff's houses, and it was not disputed that the effect of this would be to block up and darken the plaintiff's light

It was urged, however, on the part of the Board that they had already purchased the freehold interest in the plaintiff's houses, and that it was only the exorbitant price asked by Mr. Clarke which prevented their coming to terms with him. They were, however, taking the necessary steps to obtain powers to purchase his interest *compulsorily*, and meanwhile they maintained they were entitled to build upon the land, which they had acquired in the manner they were doing, and that they intended to pay Mr. Clarke, the plaintiff, a compensation to which alone he was entitled, and not an injunction.

In giving judgment, the Vice-Chancellor, Malins, said the case involved questions of very great importance. Everybody knew the important public purposes for which the School Board had been constituted. In order to carry out these purposes, compulsory powers had been given them, which, however, were to be exercised with certain restrictions. Now, it could not be contended that an adjoining owner, who was a private individual, would be entitled to build within 4 ft. of his neighbour's "ancient lights;" it was, however, maintained by the Board that they could do anything upon the land which they had duly acquired, short of touching the neighbour's soil, and that his remedy was only in compensation. If they could build within 4 ft. they could build within 4 in., and the proposition amounted to this, that, by exercising their right of blocking up a man's windows they could practically turn him out of his house, though they could not take it. To that proposition he, the Vice-Chancellor, could not agree. In Hutton *v.* South-Western Railway Company, and other cases which had been cited by the learned council in support of this contention, the damage complained of was sustained in consequence of an Act expressly made lawful by Parliamentary powers, of the application to the Legislature, for which the public had notice, and to the granting of which they might have objected, and the judges had proceeded on the rule of "convenience;" that as the defendants had the right to do the thing complained of, and as the damage could be better ascertained after it was done, the injunction should not be granted. But in this case he (the Vice-Chancellor) could not hold that a man practically turned out of his house must wait until the lengthy proceedings for the ascertainment of compensation under the 68th section of the Lands Clauses Consolidation Act, 1845, were worked out, and it could not be said that Parliament intended to take away rights in this manner. The School Board were to exercise their powers in a reasonable manner, and were to fix upon property where those powers could be exercised without doing injury to adjoining owners. It was important that public bodies should be kept within the strict exercise of their Parliamentary powers: and although the Board might ultimately acquire this land, and had already offered a reasonable sum for it, the plaintiff was entitled to insist upon his rights; and, considering that the School Board had taken an unreasonable view of their right of dealing with adjoining owners, he (the judge) was bound to give the plaintiff the protection he legally demanded.

Injunction granted, with costs, against the London School Board.

OWNERSHIP OF LAND.

A VERY suggestive question, in respect to the acquisition of lands and houses by churchwardens, overseers, and others in parochial trusts, is now under consideration of the Solicitor of the Treasury, Mr. Gray, Q.C., brought before that official by the Local Government Board and the Mile-end Town Board of Guardians, and the case is the following very extraordinary one.

In 1846-47, representatives of the several north-eastern parishes of London were delegated to provide a joint district asylum for vagrants, and to carry out that idea they got a loan from the Government Works Loan Commissioners and purchased a building in White Horse-lane but which fell through, although Mile-end Old Town advanced money to carry out the scheme. The joint committee ceased to exist after a ten years' sitting, and at that time they had a balance in hand, but no portion of the money borrowed, or the interest upon it had then or since been paid.

A gentleman of the name of Kelday, one of the present churchwardens of Hackney, acted as secretary or clerk to the above committee, and has set up a claim to the property intended to be purchased, or purchased, for the vagrants' asylum, on the ground that he has held *undisputed possession* of it for more than twenty years Some of the land, it appears, has been let by Mr. Kelday on lease, and new buildings have been erected on it.

The Mile-end parish now contend, and the Government too, it seems, that it is a strange thing that an individual should be allowed to take possession of half an acre of land and use it as his own private property, in defiance not only of the parishes on whose behalf he was employed but also of the Government authorities from whom the money was obtained to purchase it. They further contend that the mere fact of the legal documents relating to the land being left in the hands of the secretary to the committee do not confer upon Mr. Kelday any title to the land, and that his possession of it, or leasing it, is not legal.

In the meantime the building lessees of the ground are as it may be supposed, in serious jeopardy and a fix.

AIR VAPOUR OR GAS FOR GENERATING STEAM.

Mr. R. WALKER has obtained letters patent for the invention of a new method of applying atmospheric gas, spirituous vapour or gas, and impregnated combustible vapour or gas as a heating medium for the generation of steam or other purposes. His mode of manufacturing the air vapour or gas is by means of pumps or other appliances, by which the air or atmosphere is forced through a perforated or inlet pipe placed in a receiver, which is partially charged or filled with naphtha, petroleum, methylated spirit, or oil, which are to be heated or otherwise, as may be requisite for increasing or lessening the strength and volume of the vapour or gas. In this receiver is placed a certain plate or plates, in a position relative to the perforated or inlet pipe, and to the level of the liquid. The air, after impregnation as before stated, passes from the receiver into one or more expanding and contracting vessels or regulators, which are made of vulcanised india-rubber, or any other such elastic substance. By the contraction of these regulators or vessels it is forced into the pipes, and thence regularly through the burners for ignition. The claim includes the combination of "air-forcing," "air-impregnating," "impregnated-air delivering," and "impregnated-air consuming (or utilising)," contrivances or apparatus set forth, including particularly the use and application of the invention to the furnaces of boilers of marine, locomotive, and stationary engines.

NEW METHOD FOR THE UTILISATION OF SEWAGE.

A MEETING has been held of gentlemen interested in the promotion of a company in Ireland for the purpose of carrying into effect Dr. Anderson's process of defecation of sewage, as practised by the General Sewage and Manure Company, Limited, at Nuneaton, Warwickshire and other places in England. Lord Talbot de Malahide occupied the chair.

The Chairman stated that the question of the utilisation of sewage was not new to him. He had given much attention to it, and had felt confident from the first that the resources of science would lead to some method of deriving valuable products from sewage. Heretofore a vast number of schemes had been started for the purpose, almost all of which had proved failures.

Dr. Cameron said that he might state, both for Dr. Reynolds and himself, that when they were first called on to investigate the process in question they were prejudiced against it. They had very gloomy forebodings, and thought that they should have to report adversely. However, after they had made their investigations, they arrived at the conclusion which they had already reported to the directors of the company, that the process afforded every probability of a commercial success. The quantity of sewage proposed in a city like Dublin, with a population of a quarter of a million, was enormous. By means of the process in question this sewage could be made to yield an immense quantity of manure. He had calculated the actual money-value of the sewage of Dublin at 100,000*l.* There was reason to believe that Parliament would sanction a scheme for the purpose of applying sewage as a manure to the soil on a large scale, and, that being so, they were bound to render it as inoffensive as possible. He believed that the present process afforded every probability of success in the way of rendering sewage innocuous. The cost of producing the manure would be about 5*s.* a ton. This would be sold by retail vendors at from 1*l.* to 1*l.* 5*s.* per ton, and its money-value to farmers would be about 1*l.* 10*s.* a ton.

Dr. Reynolds said the process consisted in applying to the sewage clay treated with oil of vitriol, and mixed with a little water, in the proportion of 6½ cwt. of the vitriolised clay to every 100,000 gallons of the sewage. To that mixture 1½ cwt. of slaked lime is added. After a few hours a precipitation forms at the bottom of the receptacle containing the sewage, leaving a clear liquid at the top. The precipitation is the manure, and both it and the liquid are perfectly devoid of odour, and inoffensive. The liquid may be used for irrigating land, or allowed to escape into the sea. Dr. Reynolds gave an experimental illustration of his statement, by applying to a vessel filled with fluid sewage, taken from one of the sewers of the Liffey, a proportion of the prepared clay. The clarifying of the fluid and formation of the precipitate at the bottom became visible while the proceedings were going on, though not complete to their termination.

The chairman asked Dr. Cameron to give an account of what he had seen on the occasion of his visit with Dr. Reynolds to the General Sewage and Manure Company's works at Nuneaton.

Dr. Cameron said, that the only difference between what they saw there and what had been now shown experimentally by Dr Reynolds was, that at Nuneaton the process was carried on with reservoirs, &c., on a large scale. The fluid there was used for the irrigation of fields. It was proposed that when it was not required for that purpose it should be discharged into a river or the sea.

Mr. Alma, one of the Blackrock Commissioners, stated that the Board of which he was a member had sent Mr. Baines, C.E., to report upon the works at Nuneaton. Mr. Barnes was present, and would be happy to afford his testimony on the subject.

Mr. Barnes gave a most favourable account of the efficacy of the process in producing results altogether innocuous in a sanitary point of view. The water produced after the deposit of the precipitate was perfectly pure. The mechanical arrangements at Nuneaton were not as perfect as he thought they might be, but that was a matter of detail. The sewage produced at that place was anything but favourable as a test of the process. He was perfectly satisfied that the process was one capable of being successfully applied. In reply to a question, Mr. Barnes said that if fluid, such as was the residuum after the deposit of the precipitate formed by the process, were discharged into the sea, he did not think it would be in the least degree injurious to the bathing.

The Chairman said they were deeply indebted to Dr. Cameron and Dr. Reynolds for their valuable lectures, and he was sure he was only acting in accordance with the wishes of the meeting in offering them their very best thanks.

"POWER OF SURVEYOR'S CERTIFICATE."

SIR,—I would respectfully suggest that the writers of the letter published in your issue of the 7th inst. under the above heading consult their legal advisers, instead of trying to get "cheap advice" through your valuable columns.

AN OLD SUBSCRIBER.

UNVEILING THE NEW REREDOS IN GLOUCESTER CATHEDRAL.

THE ceremony of unveiling the new reredos presented to Gloucester Cathedral by the Freemasons of the province, at a cost of 1,000 guineas, took place on Thursday in last week. We have already (Feb. 22nd, p. 146), given a view and description of the reredos; but we may repeat, that it was designed by Sir Gilbert Scott, the cathedral architect; is 17 ft. 5 in. in width; and contains seven niches, filled alternately with statues and sculptured groups, the subjects being—"Moses bearing the Tablets of the Law;" "The Nativity;" "St. Peter;" "The Ascension;" "St. Paul;" "The Entombment of the Saviour;" "David bearing the Harp." The central group, "The Ascension," is 5 ft. in height, and the side groups are about 4 ft. 3 in. high. Over the figures and groups are finely-wrought canopies; above these are three open pinnacles, with statues and angels, and surmounting the central pinnacles is a cross 27 ft. from the floor. The groups and statues were by Mr. J. H. Redfern, sculptor. The other portions of the work were executed by Messrs. Farmer & Brindley.

The Rev. C. Raikes Davy, P.C., the Freemasonic Grand Chaplain of England, preached the sermon. His text was from Psalm xc. 17, "Let the beauty of the Lord our God be upon us; and establish Thou the work of our hands upon us; yea, the work of our hands, establish thou it." The Rev. gentleman excited the curiosity of the ladies by propounding for his own reply the question, "What is Freemasonry?' But he went on to say,—Our ceremonies are only the keys to our treasure. From the lessons which they inculcate the well-informed Mason derives instruction. The teachings of our lodges, like the Adyta of the ancient temples, are hidden from the eyes of the uninitiated. But as to the possession of a secret unknown to the rest of the world, we profess nothing of the kind. It is true that all our affairs and transactions are conducted in secret, but we do not on that account pretend to be better or wiser than our fellow-creatures. Let us look at the present state of society in general. The diffusion of knowledge is a remarkable feature of the times. Literature, taste, and art, and philosophy and science, may elevate and enrich the intellect. They may wield an almost magic sway over the minds of men; but they will not sanctify the heart, nor change the natural disposition. So far these attainments are no foundation on which to build for eternity. "Other foundation can no man lay than that is laid, which is Jesus Christ." From the building of Solomon's Temple, its wondrous architecture and its magnificent structure, we are led to the foundation-stone of the Spiritual Temple—Jesus Christ himself,—that bright and morning star, whose rising brought health and salvation to mankind, and light to those that sat in darkness and in the shadow of death. Yes, Christ is set before us as the foundation-stone, the corner-stone, the topstone, of our Masonic structure. We are taught to look to Jesus as the captain of our salvation; to look to Him as our incarnate God and Saviour; to look to Him as Christ our Prophet, Christ our Priest, and Christ our King. Such are Freemasonry, its principles, and its teaching. The heart of the true Christian is the abode in which God delights to dwell. To turn human souls to become this dwelling-place is one principal use of the Church material. By the Word preached within its walls is unfolded and displayed the great story of the Cross on which the Prince of Glory died. By it is infused into the minds of the people the love of Christ. They are made to know the power of his death and resurrection. This is the work of human preaching with the power of the Holy Ghost sent down from heaven. Let us rejoice heartily that this material house,—this palace of the Lord God,—has been thus so greatly beautified. Let us pray God to make it a spiritual house,—a house of living stones, that the inner palace may also grow up under the teaching of the Holy Ghost the Comforter. Let us remember how it is that the stone is shaped before it is fitted for the builder's use,—

> "Every stone by blows is squared,
> By the hammer rude prepared."

May we be built up in the walls of the heavenly Jerusalem, and there abide for ever. "Let the beauty of the Lord our God be upon us; and establish Thou the work of our hands upon us; yea, the work of our hands, establish Thou it."

Some of the Masonic brethren, deep in the lore of the craft, ventured upon a criticism, implying that the sentiments of the preacher were drawn from the Templar degree, rather than from the broad ground of pure Masonry; but the general public know nothing of the distinction.

CARCASSES, NON-PRODUCTIVE BUILDINGS, AND PAROCHIAL BUILDERS.

THE suburban boundaries of London, that have been much overburnt, *viz.*, the parishes of Kensington, Fulham, Battersea, &c.,—for several years past have been under much difficulty in regard to the assessment and collection of rates imposed upon new buildings, for new roads, pavement, and other parochial burdens; and it is well known that very large buildings, unlet, in the rich parish of Kensington, have had legal sequestrations affixed to their doors for non payment of rates. In some parts, at Notting hill, street after street of new houses belonged to the parish, if the builders or mortgagees did not answer to the summons affixed to the unfinished or unoccupied premises. The roads, however, being actually impassable for foot, horse, or carriage traffic,—yet "dedicated" to the "parish,"—and the "parish" crushed the little builders by demands for roads never made, and, what was worse, for roads made impassable to reach the new streets.

The parish of Fulham has been "wise in time," and last week a shrewd committee of the vestry saw the short-sightedness of their neighbour, Kensington, and, on surveying the large extent of non-productive property, have recommended "that rates should not be charged upon unfinished houses, commonly known by the name of carcasses." The vestry adopted this report, and the builders have at once set to work to finish some hundreds of houses, unroofed.

Battersea parish has no less than 3,000 empty houses, and tenants are afraid to take eight-roomed houses at the low rent of 20*l.* a year, for fear of back rates and the toll of the Government bridge at Chelsea.

Pimlico, Westminster, and Chelsea are overcrowded, and cannot, for the above causes, supply tenants.

ACCIDENTS.

Gas Explosion in Manchester.—At the Pleasant Inn beer-house, York-street, Cheetham, Manchester, an escape of gas being suspected, the landlord incautiously took a light to the gaselier in the front room. He had no sooner done so than the gas instantly ignited at the bottom, and running up the pipe, a volume of flame filled the room, and a terrible explosion took place. The front part of the building was entirely shattered, the windows and walls being thrown into the street a distance of several yards. Mr. Melville turned off the gas at the meter while his clothes were in flames. His wife and he were much burnt. The damage is estimated at between 300*l.* and 400*l.*, covered by insurance in the Sun office.

Fatal Fall of a Wall at Manchester.—Two bricklayers were employed in pulling down a wall at Butterworth's Mill, Manchester, where a large fire had occurred a day or two previously. One was on a ladder, a second was undermining the wall, and a third was watching, ready to give an alarm; but before he could do so the wall fell, and the two men who were working on it were killed.

Destruction of a Mansion by Fire.—Alderdale Lodge, the residence of Mr. Buckley, M.P. for Stalybridge, and situate about three miles from

Ashton-under-Lyne, has been destroyed by fire. The gardener had taken a light into the cellar to discover a leakage of gas, and an explosion ensued, blowing out most of the windows to the building, and setting fire to the house. The fire brigade, who were quickly on the spot, could do no more than save the offices. The damage will amount to several thousand pounds.

Fatal Fall from the Top of a Monument.—In the neighbourhood of Cupar Fife, Miss Laird, daughter of the Rev. John Laird, minister of the Free Church in that town, went along with a brother and a cousin to a monument, 100 ft. high, erected to the memory of the late Earl of Hopetown, on the top of a hill. The column is pierced by a spiral staircase, and surmounted by a cupola, about 15 ft. in height. The footing at this elevation consists of a square stone slab, and is protected by a stone parapet only 3 ft. high, which parapet, being circularly built, leaves the four corners of the rectangular slab jutting outwards for several feet beyond the circular column. Having noticed some acquaintances coming up in the direction of the tower, the attention of the party was for a moment diverted from each other, and on Miss Laird's brother turning round he was horrified on seeing his sister standing on the outside of the parapet, on one of the corners of the slab referred to. He cried to her to come back, but the poor girl seemed suddenly to become giddy, and made a clutch at the edge of the parapet. She missed her holding, and fell over and down to the ground below. The poor young lady never recovered consciousness, and died without uttering a syllable. To leave it possible even for carelessness to meet with such a fate seems culpable.

Accident in the Vienna Exhibition.—A portion of the staircase to the balcony of the Russian Pavilion has fallen in, injuring four persons, including two Austrian officers.

COMPETITIONS.

Mountain Chapels.—The sub-committee appointed by the Carlisle Diocesan Church Extension Society to adjudge the premiums under the above scheme, have awarded the first (twenty guineas) to the designs of Messrs. Paley & Austin, of Lancaster, bearing the motto "In montibus," and the second (fifteen guineas) to those of Mr. C. J. Ferguson, of Carlisle, bearing the motto "Delta."

Leicester. — The design of Mr. Tait, of Leicester, has been selected in a limited competition for a new Nonconformist church, to be erected at Belgrave, the northern suburb of this town.

Wesleyan Chapel and Schools, Peterborough.—In a limited competition for the above building, the plans submitted by Mr. John Johnson, London, have been selected. The proposed chapel will accommodate upwards of 1,000 adults, and the schools 550 children. The cost of the works will be about 4,500*l.* The style of the building is Italian.

St. Petersburg.—The competition for bridge designs (Neva Bridge), at St. Petersburg, is decided. The commission have awarded the first premium, 6,000 roubles, to "Westminster" (supposed to be Mr. Page: arched design); second premium, 3,000 roubles, to R. M. Ordish "Max Am Ende"; third premium, 1,500 roubles, to "B. S." (a Russian). Eighteen designs were sent in.

A WATER-TIGHT CELLAR-FLAP.

IN reply to "Inquirer,"—his object may be accomplished thus:—Let the section of the curb be 6 in. high by 4 in. wide. Let it have a rebate *inside underneath*, say 1 in. high by 2 in. wide. Let the curb, when made, be properly bedded on good brickwork with Portland cement, and so that the under-rebate shall be made good with the cement. To effect this, screed may have to be used. When this shall be done, no water will be able to pass under the curb into the basement.

The top of the curb will have to be rebated for the flap 2¼ in. deep by 1¼ in. wide. Let the inner angle of the rebate have a ½-in. water-channel all round, ½ in. deep, with plenty of ¾-in. holes to convey the water from the channel to the outside of the curb. Let the top of the curb be weathered ¼ in. and its lower outer edge be ⅛ in. or perhaps ¼ in. above the ground level; then the water cannot re-enter the rebate, but will run away through a small drain-pipe laid all round the curb below the level of the ½-in. water-channel, and having an outlet discharge-pipe laid with a proper fall. The bottom of the rebate to receive the flap will then have a ¾-in. fillet, weathered towards the water-channel, on which the flap will rest.

The flap would be best made of 1¼-in. boarding properly prepared, ploughed, and tongued, and in two thicknesses, crossing each other at right angles, and screwed together from the underside with stout 2-in. screws, and the under-side of the flap when cleaned off should be covered with galvanised iron turned up round the edges of the flap, which should be rebated 1⅛ in. by ⅜ in. to receive it, and the iron turned into a groove in the edge of the flap, and also properly nailed all round the edges.

If made by a competent workman the result will be successful. HENRY AMBROSE.

MONUMENTAL.

A MEMORIAL of Sir Joseph Paxton has been unveiled on the terrace at the Crystal Palace. The memorial, which has been erected by private subscription, consists of a colossal marble bust, 8 ft. high and 4 ft. 6 in. at the base, carved in Carrara marble by Mr. W. F. Woodington. The pedestal is 11 ft. square at the base, and 31 ft. high, making the total height 39 ft. from the ground. The lower part of the pedestal is in Portland stone; the upper part in Portland cement, in imitation of red porphyry. In the base four incised slabs of Cornish serpentine will be inserted, the first containing a diagram of the principle on which the building of the Crystal Palace is constructed, and the other the following inscriptions:—"Joseph Paxton, born at Milton-Bryant, Beds, 3rd August, 1803; died at Rockhills, Sydenham, 8th June, 1865." "The Crystal Palace was opened by Her Majesty Queen Victoria on June 10th, 1854." And "Si monumentum quæris circumspice." The whole monument is designed by and erected under the care of Mr. Owen Jones. The carving on the base is by Mr. Smith; the masonry and cement work are by Mr. Charles Bool and Mr. Enoch Bool.

BUENOS AYRES.

IMPROVEMENTS are being made in the suburbs of this city. Flores has a new theatre now in progress, and the proposed waterworks will, we hear, be shortly carried out. Notwithstanding the high price of materials in England, tramways, gas, waterworks, and telegraph works are still going on, the name of Mr. George Bower, the contractor, being connected with most of them.——The Mutual Gas Company is making progress, and the works are expected to be the finest in South America. This company holds a valuable contract with the municipality for ten years, for 4,200 lamps, at about 10*l.* 15*s.* per lamp per year. The city is still making rapid extensions. For the new extension of the Rio Cuarto Railway, there are thirteen proposals. The contract is likely to fall into the hands of Mr. Thomas Thomas and his associates.——A Frenchman has lately imported wooden houses of about four rooms each, and erected them on the Flores-road. The cost, with duty, comes to 400*l.*, but like a similar speculation of iron houses by an Englishman, they have proved a failure and a loss.

THE COTTON WINDOW, GUILDHALL.

THE stained-glass window presented by Mr. Alderman Cotton to the Corporation of the City of London, and erected in Guildhall, has been formally unveiled, before the City Lands Committee. The alderman's active and well-known connexion with the Lancashire Cotton Fund first suggested the subject of the window, which has been executed by Lancashire artists and workmen, and supplied by Mr. William Ramsey.

The story is that of the Cotton Plant. The different stages from its growth to its final application to clothing are illustrated by twelve medallion pictures, showing, 1st, Sowing; 2nd, Growing; 3rd, Picking; 4th, Packing in the Field; 5th, Loading at New Orleans; 6th, at Sea, in American Clipper; 7th, Discharging in the London Docks; 8th, Carting through St. Mary-axe; 9th, in Transit on the Rail; 10th, Manchester, Piccadilly, the Cottonopolis; 11th, Manufacture in Cotton-mill; 12th, Wearing, being Family Group. The colour of the ground-work is lavender; the borders are ruby, with an amber ribbon, in colours, ruby, amber, and lavender; the Gothic scroll-work being brownish-white.

ARCHITECT TO THE CHILIAN GOVERNMENT.

SIR,—Whoever the successful candidate may be, I feel sure he will not object to giving "the profession" a few particulars of his experience in Chili, through the medium of your columns.

The construction of buildings, in countries subject to volcanic eruptions, has occupied my attention for several years, and if I mistake not it is an ordeal that many of the "successful candidate's" buildings may have to go through. I hope, therefore, that we may have the pleasure of reading a little of his experience in due time, and I am sure the profession at large will feel greatly interested. H. T. P.,

One of the Ninety-five Unsuccessful Candidates.

CONTRACTS.

WANT *v.* STALLIBRASS.

ACCORDING to the *Law Journal*, this was an action to recover 300*l.* deposit paid on a contract for the purchase of an estate sold by auction subject to conditions, among others—1. That the vendor should deliver an abstract of his title in seven days, all requisitions not delivered within fourteen days after delivery of the abstract to be considered as waived; and 2. That if the purchaser made default in the conditions, his deposit should be forfeited. An abstract was delivered, showing that the property had been devised to trustees (of whom the defendant was the survivor), upon trust to pay the income to Frederick Stallibrass for life; and after his death to sell, and divide the proceeds among his children. The abstract also showed that Frederick Stallibrass was still alive. The purchaser made no requisition within the fourteen days. At the trial of the action the verdict was entered for the plaintiff. A rule having been obtained to set aside this verdict,

The Court held that the condition as to waiver of requisitions and to forfeiture applied to the case of a defective title, the defects in which could be supplied on requisition, but had no reference to such a case as this, where there was really no title at all in the vendor; and they discharged the rule accordingly.

CHURCH-BUILDING NEWS.

Liverpool.—The church of St. James-the-Less in Stanley-road, has been consecrated. The building was erected some ten or twelve years ago, and consisted of a south aisle 70 ft. long by 20 ft. wide, and a chancel 20 ft. square. For some time this has been found to be inconveniently small, and the accommodation has been increased from about 250 to 750 kneelings by the enlargement of the edifice according to the original design. This has been done by the erection of a nave 30 ft. wide, and chancel 35 ft. long by 24 ft. wide, organ-chamber and vestries and small west gallery. The whole area of the church is paved with red and black tiles, and seated with rush-bottom chairs, except a portion of the south aisle, which still contains some of the old open benches. The roof to the nave and chancel is continuous and unbroken, except by the lesser width of the chancel. There is no chancel arch or jamb to obstruct the view, but the junction will be marked by means of a rood-screen of carved oak, in seven compartments of arched openings, filled in with open tracery. The lower part of this screen is already fixed, and the centre opening protected by wrought-iron gates. The chancel is divided into three bays, the first two having an arcade of moulded brick on each side, resting on polished red granite pillars, and filled in with screens of open tracery work. The third, or eastern bay, forming the sacrarium within the altar-rail, having three sediliæ and piscinæ on the Epistle side. The sediliæ are constructed in the thickness of the wall, of Caen stone, with red marble shafts and carved caps and bosses. The chancel is raised three steps above the nave, and the altar is set upon a dais of three steps, with one more at the altar-rail. The chancel is furnished with stalls returned against the wood screen, with subsellæ for the choir. The eastern wall of the chancel affords a ground-work for a reredos. Instead of there being a single large window there are two two-light windows with pier between, and a pentagonal circular window in the apex. The bosses to the chancel arcade are carved with emblems of the Passion, and upon the caps of the two principal granite pillars are carved representations of the

ntombment and the Resurrection. Much of
e carved work is at present only in block
oncealed for the occasion under a profusion of
atural foliage and flowers arranged and applied.
he arcade of the nave is of moulded red and
ack brick of two orders, resting on red stone
llars. The inner arches to all the windows
d other openings are of red pressed brick, as
ell as the lower part of the walls and the bands
wall heads and spring of windows. The nave
ll be lighted by means of wrought iron coronæ,
spended from the points of the hammer-beams,
d the chancel by three floriated brackets on
ch side. The only portion of the exterior
ich comes into view is the east end of the
ancel, with a niche in the centre pier for the
ception of a figure of St. James-the-Less. The
rk has been executed by Mr. Burroughes,
m the designs, and under the supervision, of
ssrs. W. & J. Hay, of Liverpool, architects.

Lightcliffe.—Contracts for the new church
ve recently been let as follow:—Masons,
ssrs. Luke & Wm. Crowther, of Rastrick;
rpenter and joiner, Mr. J. Christy, of Hudders-
d; plumber and glazier, Mr. R. P. Stafford, of
lifax; slaters and plasterers, Messrs. A. Ban-
ft & Son, of Halifax. Mr. C. Mawer's tender
carving was accepted. The church which was
igned by Mr. W. S. Barber, of Halifax, will
in the Perpendicular style. The ground plan
es nave, aisles, chancel, with side-aisles and
an-chapel, and sacristies on the north, bap-
ery opening from the second bay on the
th; and north-west tower. The nave, in five
ys, is to be 71 ft. 3 in. long, and 23 ft. 9 in.
de; width of aisles, 9 ft. 9 in.; and depth of
ncel, 32 ft. 6 in. The tower, which is 12 ft.
are, rises to a height of 74 ft., and has an
agonal turret at its north-west corner. It is
our stages, the first having a two-light win-
v facing west, and the entrance-door (which
a carved niche over it) on the north face.
e belfry stage has coupled two-light windows
each face. It is to hold a peal of eight bells.
e great west window is a four-light one, with
cery. The windows to the aisles are three-
ht and two-light ones. On the south side the
otistery is 12 ft. by 8 ft., and is lighted by two-
ht windows. The east window is in five
hts, with head tracery. All the floors will be
in encaustic tile-work. The roofs are open-
bered, that to the chancel having a carved
nice. The shafts to the nave arches are
agonal, with flowers carved on the capitals.
thing has yet been done as to the introduc-
n of stained glass. The foundations of the
rch are in course of being laid, and ere long
work of its erection will be pushed forward.
e cost of the building itself is borne by Major
ter, of Cliffe Hill.

Poulton.—The foundation stone of a new parish
rch has been laid in the village of Poulton,
the high road from Cirencester to London.
W. Butterfield, of London, is the architect,
the contract has been taken by Mr. Restall,
Bisley, the builder of the schools. The church,
ch will be dedicated to St. Michael and all
gels, will, we understand, be a very plain
cture, and will not cost more than 2,000*l.*, of
ch amount about 1,100*l.* have been already
scribed.

Wadingley.—The restoration of the church
been proceeded with so far as the funds at
sent available will permit. The works already
cuted include new open-timber roofs to the
e and aisle, facing with stone the clearstory
on north side; rebuilding a portion of aisle,
adding battlements to same; also restoring
nsiderable portion of the stonework generally.
works have been carried out by Mr. John
ley, of Cambridge, architect, the contractors
g Messrs. Joseph Worboys, of Comberton,
Tomson, of Cambridge. The plumber's
k was executed by Messrs. Favell, Ellis, &
s, of Cambridge. The chancel will probably
be in course of restoration in a short time.

Wysall.—The ancient church here has recently
ergone considerable repair, and has been re-
ned for Divine worship. The church had
allowed to fall into a dilapidated condition,
much so that it was considered unsafe to
r it. The south wall had become 1 ft. or
e out of plumb, and would probably have
e down at no very distant date had not pro-
ings been taken to prevent this. The work
done by Mr. G. Hitchcock, builder, of Hazle-
d. Some few alterations have been made in
nterior of the church. The old pews have
removed, and chairs substituted, and addi-
al accommodation has been obtained by
ng the old schoolroom near the belfry. A
new pulpit has also been obtained, together with a communion-table, lectern, and harmonium. The old porch, which formerly went down with two steps, has been much improved, and the floor of the church has been reflagged. The whole of the sittings are now free, and accommodation is provided for about 200 people.

Shrewsbury.—It is proposed to build a new chancel to St. Michael's Church, in this town. At present there is only a shallow apse, and there are not enough seats for the choir, and the whole of the east end of the church is inconveniently dark. The estimated cost of the new chancel, together with the warming of the whole church, is about 500*l.*, of which nearly 400*l.* are already promised.

Lawford (near Rugby).—St. Peter's church has been entirely rebuilt from designs by the late Mr. William Slater, and by Mr. R. Herbert Carpenter. With the exception of the Norman doorway, the north arcade, and two curious lancets in the chancel, there was nothing of interest in the old church, excepting the timbers of the nave and chancel roof, which have been repaired and re-used. The church has a nave of five bays, with north and south aisles, a long chancel, with organ-chamber and vestry, on the south side. It seats 300 persons. The walls are built in coursed Attleborough stone, with Attleborough stone dressings. The tower stands at the west end, and is of entirely new design, the former one being but late and poor in character; the parapet and turret are of the usual embattled Warwickshire type. The contractors were Messrs. Law, of Lutterworth, under Mr. Thompson, as clerk of works; the carving has been executed by Mr. Harry Hems.

Dorking.—The foundation-stone of the tower of the new parish church of St. Martin has been laid by the bishop of the diocese. This tower is now being restored by Messrs. Goddard, of Farnham. The hon. sec. of the present building committee was also secretary to the restoration committee in 1835, when the late parish church was built, and the two churchwardens under whom the present work of rebuilding is being carried out filled the same office (though at different periods) while the chancel was being restored in the years 1866–68. The rebuilding of Dorking parish church was commenced on the 1st of August, 1872, the cost being defrayed by public subscription. Mr. Henry Woodyer is the architect, and Mr. William Davidson the clerk of works.

Hyde.—The foundation stone of Holy Trinity Church, Gee-cross, Hyde, has been laid. The church, which will cost about 1,800*l.*, is estimated to seat comfortably 300 persons. About 1,100*l.* have already been subscribed. It will be built of stone, with mullioned and traceried windows, and will be, of course, provided with a chancel, nave, transept, organ-chamber, vestry, &c. A belfry with spirelet is to be situated in the angle between the chancel and transept. The style of the building will be the Decorated Gothic. The site was given some years since by Mr. T. W. Tatton, of Wythenshawe, and is almost on the top of the slope going up to Werneth Low. The architect is Mr. Medland Taylor, Manchester.

Grindale, Bridlington.—The foundation-stone of a new church has been laid here by the Rev. Y. Lloyd Greame, of Sewerby House, patron of the living, who provides the whole of the money, 2,000*l.*, which the building will cost. The church is to be erected on the site of what was really a modern church, having been built so recently as 1830. The new building will be in the First Pointed style of architecture, and will consist of nave, chancel, vestry, porch, and bell-gable for two bells. It will be built of Whitby stone, and will seat about 150 persons. The building is being erected from the designs of Messrs. Smith & Brodrick, of Hull and Bridlington Quay, by Mr. John Renard, of Bridlington Quay.

Ashbourn.—At a meeting of the inhabitants it has been unanimously resolved that the spire and parapet of the tower of Ashbourn Church be repaired, and that a committee be appointed to collect subscriptions for the purpose, and communicate with Mr. Frith, of Coventry, who has recently repaired the tower and steeple of Stratford-on-Avon Church, and has examined the spire of Ashbourn Church, and sent in an estimate of the probable cost; and to submit Mr. Frith's report to the opinion of some other person competent to judge of the matter; and obtain such further information as they may think necessary, and report thereon to a future meeting. A committee has been appointed. It is estimated that the cost of the repairs will be from 400*l.* to 500*l.*, and this will include only such repairs as are necessary for the safety of the church and spire. A list of subscribers was opened in the room, when several liberal sums were promised.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Wednesbury.—The foundation stone of a new church for Wednesbury has been laid. The building will occupy a site adjoining the parish church, on Church-hill, a portion of the old Roman Catholic church having been pulled down to make room for the new building, which will be in the Early English style of architecture, faced with red brick. The windows will be relieved with box-grained stone, and the columns of the arches and outside the nave and chancel will be of Painswick stone. The roof will be open groined. The building, when completed, will accommodate 1700 persons, being sitting-room for nearly 500 more than the old one. There will be no pews, and the fittings will be very plain. Mr. Gilbert R. Blunt, of London, is the architect; Messrs. Barnsley & Sons, Birmingham, are the builders; and Mr. Carew is the clerk of the works. Until the new church is erected, the service will be conducted in the portion of the church that has not been pulled down. The Rev. Mr. Bathurst, the pastor, we believe, provides the greater portion of the cost of the edifice, which will amount to 5,000*l.*

Harrogate.—A new church has been opened here for divine service. The edifice is dedicated to St. Robert. The new church adjoins St. Robert's Presbytery and Schoolroom. It is built of brick, with an admixture of stone. The style observed is that which prevailed in the thirteenth century. The principal front is in St. Robert's-street. The doorway is deeply recessed, with a circular window in the pediment displaying an ornamental cross, and this is surmounted by a group of four lancets, with shafts of red Rainton stone. From amidst these, from a sculptured corbel, rises an enhanced shaft, terminating some feet below the apex of a gable in a bracket to support a statue, which in its turn is surmounted by a canopy lifted considerably above the roof. The semi-octagonal baptistery projects on the one side, and the bell-turret, containing the stairs to the organ-loft, on the other. By this means additional breadth is given to the façade. The church consists of a wide nave, flanked by aisles, and a chancel of the same height and width as the nave. The columns of the nave are of light red sandstone, and carry arches, finished in brick. Above these and connecting the corbels of the roof, runs a continuous string-course of brick and stone, and a clearstory of unadorned lancets, placed two in each bay, which light the entire structure. In the treatment of the altar end, under deeply-recessed arches, resting on pilasters with carved capitals, are two windows, each of two lights, the heads pierced with quatrefoils, while above and between them is a circular window of rich design, all three being symmetrically united under a trefoil-headed arch. The capital of the central pilaster supports a cross of large dimensions, its arms extended in front of the rose-window, which thus encircles the conspicuous figure of Christ crucified. The plain corbels of the nave give place in the chancel to others of ornamental design, from which spring shafts of Rainton stone to meet the principals of the roof, which throughout are arched and coupled with tie-beams. The aisles are lighted with lancets similar to those in the clearstory. Each aisle is terminated with side-chapels, which are entered under lofty arches, and are half octagon in plan. The three stone altars were presented to the church. The architect is Mr. George Goldie, of London, who was also architect of the Church of St. Wilfrid. The estimated cost, exclusive of the altars and internal fittings, was 3,500*l.*; but the total cost will be much more. The church will seat 600. Mr. John Wood, of Leeds, builder, was the contractor for the whole. The high altar was the gift of Miss E. Baillie, of Leeds. It is executed in Caen stone, carved, with polished granite shafts, and slabs of Devonshire marble. In the centre of the reredos rises a canopy, surmounting the tabernacle, which is of metal, enamelled and set with precious stones. The extremities of the reredos are ornamented with statues of angels carrying groups of candles. The whole rises to the height of about 20 ft. Rising above the lofty canopy of the tabernacle is the representation of the Crucifixion. The design is in the meantime marred by the powerful light from the

adjacent white windows, and especially the rose-window behind it,—a defect which the heads of the church hope may be remedied by some generous benefactor filling the windows with stained glass. The altar on the right of the high altar is dedicated to St. Joseph, a statue of which saint, sculptured in wood, and executed at Munich, fills the niche in the centre. Sculptured Caen stone and marbles complete the design. This altar is the gift of Mrs. Jackson, late of Leeds. The altar on the left of the high altar is dedicated to "Our Lord of the Sacred Heart," and is somewhat similarly treated in Caen stone, with inlays of English alabaster and Devonshire marbles, and a statue (in colours) of our Lord in the upper portion. A small carved tabernacle of alabaster fills the centre of the altar. This altar is the gift of Mr. Swales, of Rud Farlington. The floors of the sanctuary and side chapels are laid with mosaic tiles, and the whole of the church is floored with black, white, and red tiles, in patterns. The carving of the chancel has been completed; but the remaining portion of the church is left in block. The windows throughout are of cathedral glass, the small squares therein alternating in colour with tinted green and creamy white.

DISSENTING CHURCH-BUILDING NEWS.

Peckham.—Four memorial stones have been laid in connexion with a new Wesleyan chapel which is being built in Lordship lane.

Hanley.—The new Wesleyan chapel here has been opened for divine service. The building, which is Gothic in character, was designed by Messrs. Scrivener & Son, architects, Hanley. There is accommodation for 300 persons. The length is 60 ft., and the breadth is 33 ft., with schoolroom underneath of the same proportions. The building is of blue and red bricks, with stone dressings, and the roof is covered with blue and red tiles ornamentally arranged. The chapel is seated throughout with open benching, stained and varnished. The roof is open timbered, and there is a gallery at one end of the chapel. The rostrum is of pitch pine, with a polished oak rail, and the panels, like those in front of the gallery, are filled in with scarlet cloth. The side windows, fourteen in number, are of tinted glass. There are also two vestries, and a porch entrance from Keeling's-lane. Mr. R. Hammersley, of Bucknall-road, is the builder, and the contract was for 1,355*l.*

Fenton.—The new Wesleyan chapel, the foundation-stone of which was laid in April last year, has been opened for divine service. The new edifice stands on the site of a plain old one which accommodated the Wesleyans for about sixty years. The style of the building is Italian. It is of red brick, with bricks of other colours sparingly introduced for relief, and Hollington stone dressings. The accommodation is for about 700 persons, and a portion of the sittings are free. The ground-floor is approached through inner and outer vestibules, fitted with swing doors to avoid draughts; and the galleries, which extend all round the building, are entered by two staircases from the inner vestibules in front, and a staircase at the back, intended more especially for the choir and school children. At the rear of the chapel there are a spacious class-room and a minister's vestry. The central portion of the front gable contains the two entrance doorways, and a five-light window with traceried head. The interior is arranged so as to secure ample light and ventilation, and the acoustic properties of the building are said to be good. The ground-floor and galleries are fitted up with open pews with inclined backs. The interior woodwork is of pitch pine and red deal, stained and varnished. The building is warmed by hot air. It has been erected by Mr. Newbon, of Longton, from the design of Mr. G. B. Ford, architect, Burslem. The stonework has been executed by Mr. Sherratt, of Longton; and the gasfitting, plumbing, glazing, and painting, by Mr. Peake, of Fenton. The cost of the building has been 2,185*l.* 14s., including lighting and heating apparatus.

A Public Hall for Tonbridge.—It has been resolved, at a public meeting, to establish a limited company, with a capital of 5,000*l.*, in 5*l.* shares, for the purchase of a site and erection of a public-hall for 500 persons. The site has a frontage of 46 ft., and the hall will be 35 ft. wide and 70 ft. to 90 ft. long. A committee has been appointed, and nearly 600 shares have already been guaranteed.

SCHOOL-BUILDING NEWS.

Worthing.—The foundation-stone of the Broadwater schools has been laid by the Bishop of Chichester. The contractor is Mr. W. Softly. The contract amount is 855*l.* The three new schools for Broadwater and Worthing will cost nearly 3,000*l.*, towards which the sum of 2,500*l.* has already been obtained.

Wheathampstead.—In order to meet the requirements of the Education Department to provide additional accommodation for eighty children, a new school is in course of erection at Gustard Wood, and the first stone has been laid. The building will contain accommodation for 100 children, and will be similar in construction and design to the existing national schools. The plans have been prepared by Mr. Edward Browning, of Stamford, architect, who made the plans for the national schools, and for restoring the church.

Ross.—The foundation-stone of the new Board schools, in Cantelupe-road, has been laid by Mr. Thomas Blake, chairman of the School Board. Numerous articles were deposited beneath the stone, among which was a copy of the *Hereford Journal, Hereford Times, School Board Chronicle*, and other papers; also a duplicate of the Board's seal, a list of the workmen employed, and two coins, one of very ancient date.

Defford-cum-Besford.—A new school has been opened here. It is situated between the two villages of Defford and Besford, and is capable of affording accommodation for 100 scholars. In connexion with it is a teacher's residence. Mr. Hopkins, of Worcester, was the architect; and Mr. Smith, of Eckington, the builder. The work, however, has not been thoroughly completed for want of funds. A fence is needed against the road, and on the west side of the school; and to complete the work it is estimated that a further sum of 60*l.* is required.

Books Received.

The Art of Grafting and Budding. By CHARLES BALTET. London: Robinson, Southampton-street.

THE volume under notice is a translation of M. Charles Baltet's French work "L'Art de Greffer," and is said to embody all that is known on the subject. The various methods of grafting and budding are described at length, with numerous illustrations, an enumeration of the trees, shrubs, &c., to which each mode of operation is best applied; and other information. The art of grafting and budding has for many years been so extensively and successfully practised in France that French gardeners are now far in advance of all others in this branch of horticulture.

The Workman's Magazine. Edited by HENRY SOLLY. No. 6. June, 1873. Kent & Co., Paternoster-row, London.

THIS new sixpenny monthly magazine appears to be going on well. The present issue contains a paper on "Wages," by H. Shaen Solly, and others on "The State Management of Railways," "Common Sense about Health," "England in 2085," "Things New and Old," and others, besides intelligence as to workmen's questions, reviews, correspondence, &c.

VARIORUM.

IN the *Contemporary Review* (King & Co.), which, by the way, is edited by an architect, Mr. Herbert Spencer comments valuably on the want of common sense in much every-day work:—"You rise in the morning, and, while dressing, take up a phial containing a tonic, of which a little has been prescribed for you; but after the first few drops have been counted, succeeding drops run down the side of the phial—all because the lip is shaped without regard to the requirement. Yet millions of such phials are annually made by glass makers, and sent out by thousands of druggists: so small being the amount of sense brought to bear on business. Now, turning to the looking-glass, you find that, if not of the best make, it fails to preserve the attitude in which you put it; or, if what is called a "box" looking-glass, you see that the maintenance of its position is insured by an expensive appliance that would have been superfluous had a little reason been used. Were the adjustment such that the centre of gravity of the glass came in the line joining the points of support (which would be quite as easy an adjustment), the glass would remain steady in whatever attitude you gave it. Yet year after year tens of thousands of looking-glasses are made without regard to so simple a need. Presently you go down to breakfast, and taking some Harvey or other sauce with your fish, find the bottle has a defect like that which you found in the phial: it is sticky from the drops which trickle down and occasionally stain the table-cloth. Here are other groups of traders similarly so economical of thought, that they do nothing to rectify this obvious inconvenience. Having breakfasted, you take up the paper, and, before sitting down, wish to put some coal on the fire. But the lump you seize with the tongs slips out of them, and if large, you make several attempts before you succeed in lifting it—all because the ends of the tongs are smooth. Makers and vendors of fire-irons go on, generation after generation, without meeting this evil by simply giving to these smooth ends some projecting points, or even roughening them by a few burrs with a chisel."

——A writer in the *People's Magazine* describes a Japanese bridge:—"When we came in sight of the Fuji-kawa (river), we found we had to cross it by a suspension-bridge built entirely of bamboo. The Japanese are naturally very proud of this work; and they may well be so. It is the only one of the kind in the country, the river being too broad and swift to allow of bridges being built, except at enormous cost. At this place their ingenuity is displayed to perfection, and it is a sight well worth seeing. The surrounding scenery is very pretty, the river running down a lovely valley, the hills covered with trees on each side, of great height, rising abruptly from the banks. One feature connected with the scenery of Japan is worth mentioning; viz., that the foliage does not strike Europeans as strange or tropical; they would generally recognise all the trees, the most notable peculiarity being the bamboo growing amongst our well-known trees, with occasionally a palm or banana here and there; the chestnut, hazel, lime, and beech are plentiful, but the wax-tree is very tropical in appearance. The bridge we had to cross was about 100 ft. above the river, and its width a single span of 60 ft. It is made by the bamboo being twisted into a sort of rope, and a single plank is laid on it to walk over upon. The bridge shakes and sways very much as any one crosses, and, there being no railing of any sort at the side, it looks more unpleasant to cross than it really is. The best method of getting over is to look straight to your front and walk quickly; to double across is perhaps better, though, of course, nothing can prevent its swaying from side to side in rather a disagreeable manner. The bridge is about 4 ft. wide,—not a bit too much for any one who may possibly lose his head, as the river rushes below over huge rocks in a very uninviting way."——*Chambers' Journal* says: "We have more than once made known that stone in quarries and coal in mines could be 'got' out by machinery with great economy of time and labour. Even advantageous improvements, it seems, cannot be adopted all at once; but a beginning has been made, and for some months past a machine worked by compressed air has cut out the coal in a colliery near Glasgow. This machine is to be introduced into the mines of Northumberland and Durham; and should it pass into general use, the mines would become less unwholesome than at present, through the escape of the compressed air, and the greater part of the coal-miners would have to find some other employment. There are 360,000 men and boys employed in British coal-mines; not more than 60,000 will be wanted when every mine has its machine. Another advantage is the avoidance of the waste which takes place where coal is dug by hand; this waste at present amounts to about 15,000,000 tons a year. With the machine, the waste would not be more than 4 per cent. of the whole quantity of coal produced."

Compensation to Workmen. — Mr. H. Palmer, in the House of Commons, asked the President of the Board of Trade when he intended to introduce his promised Bill respecting compensation to workmen for injuries in their employment. Mr. C. Fortescue admitted that the subject demanded early attention, but could not promise a Bill this session. The question of the liability of shipowners for injuries done to their seamen was embraced in the reference to the Royal Commission on unseaworthy ships, and it would be better to await the report of that Commission.

Miscellanea.

A Substitute for Church Bells.—At a time hen efforts are being made in different parts f the country to raise peals of church bells, suggestion on the subject in the *Choir* is portune. Dr. Ferdinand Rables, of Malvern ouse, South Hackney, writes suggesting the e of steel bars as a substitute for cast bells. hey are, he says, introduced in the United tates and Germany with great success, and ould form a new branch of industry should the anufacture of them be taken up in this country. here is not only a large area for them in Eng- nd, but a great demand may be expected from e flourishing colonies of Canada, Australia, ew Zealand, and India, as soon as they are own in those regions. The following outlines ill explain their particular merits, combined ith cheapness of production:—Steel bars pro- uce a very pure, distinct, and particularly elodious sound, with many other great advan- ges over church bells of moderate size. The ower of a clear and sonorous sound can be ob- ined equally well, if not superior, to that at from bell-metal or steel. Their weight will light in comparison to the present ponderous oductions. They will not burden the steeple much, and, consequently, will give more scope r architectural design, and have the merit of r-sounding. Their winding and hanging up ill not be so difficult, dangerous, and expensive. ey are not liable to crack, as is often the oc- rrence with bells, and are therefore adapted r use in any climate. By a simple and me- anical contrivance they are more easily set in otion. The cost, compared with manufactured st bells, is so trivial that small churches and apels, and especially mission stations abroad, ll be enabled to secure a peal. Three or four el bars, forming a peal whose weight would t exceed 100 lb., could be manufactured for l. or 12l., whereas only three cast bells of the me power would at least amount to 50l. or 60l. ey can be made of any dimension, weight, and wer of sound. Every note or harmony can be oduced more easily, and the tuning is obtained ore precisely than in cast bells. In addition their being a cheap and effective substitute r church bells, they are also equally applicable places where large bells are required, such as ockyards, on board of vessels, steam-boat piers, ilways, and manufactories.

A Box-making Machine.—Mr. Wormersley, the Carrow Works, of Messrs. Colman's gantic mustard and starch business, has in- nted and patented a piece of mechanism for proving and facilitating the manufacture of all wooden boxes, varying from 9 in. to 24 in. length, with a proportionate depth. Of such xes an enormous number are required in the rrow business. By the new machine there is t only a great saving in time and labour, but e box is much more finished and easily ren- red air-tight. The machine cuts transversely to a wooden board, of a width and length that ry for different-sized boxes, three rather deep grooves, and at the same time bevels the ugh ends of the board. This done, the board n be folded or bent together until the groove close, with or without glue added, when there e produced the four sides of a box, only a ttom and a lid being wanted to complete it. ails are knocked in crosswise at each of the itred corners, a bottom and a lid are quickly iled on, and then there is completed a box thout any gaping cracks at the corners. The achine was made at Carrow, by Mr. Keymer, nder Mr. Wormersley's direction, and will be hibited in the London International Exhi- ion.

Wells Cathedral.—The restoration of the est front of this cathedral is progressing. The uth-west side, up to the small north-west door, ay be said to be finished, and has much the ppearance of a new building, though not a bit new stone, it is asserted, has been used yond that which was absolutely necessary. he constant attention of Mr. J. T. Irvine (who so superintends the work of restoration going on Bath Abbey Church) is given to insure careful nd substantial reparation. The new contract ith Mr. White for completing the restoration at ells includes the remaining portion of the west ont, and the whole of the sculptured work except the figures), with the small lias columns the north and eastern sides of the base of the orth-west tower, and the tower itself.

The Widening of Bristol Bridge.—The present extreme width of the structure is 55 ft., and it is proposed to widen it 11 ft. The extra width will be on the Welsh-back side. For the purpose of these improvements, the city has purchased the row of shops at the Welsh-back corner of the bridge, and the toll-house at the other end near the Redcliffe-street corner, and the contractors have been engaged since April in removing these premises, and making preparations for the alterations which are to follow. The work is under the direction of Mr. F. Ashmead, the city engineer, and the contractors for the masonry are Messrs. Brock & Bruce, of Temple-meads. The masonry work, according to our authority, the local *Times*, is well advanced, but the iron work is not yet commenced. To effect the alterations, coffer-dams have been sunk at the four piers, and it is expected that the work will be finished in about six months from the present time. The new side of the bridge will correspond with that opposite. The columns are to be of granite, and there are to be wrought-iron girders, and cast-iron cantilevers for carrying the footway. A wrought-iron girder will be thrown across the corner where the fishmarket is now held, and an increased width of approach will be secured at this spot.

The new Reredos for Exeter Cathedral.—The new reredos for the choir of this cathedral is now in course of completion from the design by Sir Gilbert Scott, at an estimated cost of 1,625*l.*, by Messrs. Farmer & Brindley, sculptors, London. The expense will be defrayed by Dr. Blackall and the Rev. Chancellor Harington conjointly. The summit of the reredos rises to a height of 22 ft. above the floor of the choir, the materials used in its construction consisting of marble and Derbyshire alabaster, with precious stones. The centre compartment of the reredos is occupied by a sculptured group in alabaster representing the Ascension, the figure of the Saviour being 3½ ft. in height. The figure of St. Peter, to whom the cathedral is dedicated, has likewise a prominent position, while on either side of the Saviour appear angels. The Transfiguration and Descent of the Holy Spirit on the day of Pentecost are also represented. The reredos occupies about a third of the space at the east end of the choir. The central compartment alone will cost 900*l.*, and it has been found that the estimate of 1,625*l.* for the whole work will be considerably exceeded.

Healthy Tynemouth.—The public health of this borough is said to be so good that, for the first time since its cemetery was opened the fees taken during the past month were not equal to meet the ordinary working expenses. The *Newcastle Daily Chronicle* says:—"There is no doubt but North Shields is one of the healthiest seaports in the kingdom. It is admirably sewered. Its streets are kept clean and wholesome, the principal thoroughfares being sluiced in dry weather, and the sewers washed out with salt water. The middens are cleared out regularly by a staff of men employed under the superintendent of police and the inspector of nuisances. The result of this is that the public health is brought up to the highest standard amongst seaports in the kingdom, and the town is kept clear of epidemics. True, a little more has to be paid in rates, but the young ones of the household are protected from danger, and the working men of the town get better results out of their own lives by being enabled to carry on their employment more regularly."

Fire Detectors.—An experimental display of some of Professor Grechi's instruments for signalling the commencement of fires in any room, or in interspaces difficult of access, has been made in one of the corridors adjoining the Machinery Court at the International Exhibition at South Kensington. Small straw fires, inflamed with petroleum, were ignited, when the instruments caused the alarm-bells to ring, and notified the particular locality by the fall of a numbered disc. A lantern was also lighted in one compartment by the falling of a small weight upon glass globules of sulphuric acid. The principle of the apparatus is this: a double spiral of zinc and platinum is soldered to a disc carrying an index and a small wire contact-maker. When the spiral expands by the heat the contact-maker is turned by the motion of the spiral, thus putting in action a current from an electrical battery, by which the alarum-bells and signal apparatus are put in action. The instruments are very roughly made, and cost about 2s. a-piece.

Utilisation of Coal-dust.—A new building material is found in coal-dust. The mixture is composed of one-sixth cement and five-sixths coal-dust. In the Waverley hydropathic establishment at Melrose the experiment was tried. A series of thick sheet-iron plates are stiffened at the edges with angle iron, the plates being attached to uprights of T iron, and being kept in the proper position by pins, the plates are fixed so as to be readily raised as the building progresses. After the requisite proportions of mine-dust and cement have been mixed together, and the whole thoroughly saturated with water, the mixture is flung in between the plates, and large pieces of slag or stone bedded in it; thereafter another bed of concrete, which fills the interstices between the larger pieces, and thoroughly fixes them; another layer of stones or slag is then added, and so on, till the space between the plates all round the building is filled. After being allowed to stand for a night, the concrete will be hard enough to allow of the plates being lifted in the morning.

Ancient Wall-painting at Henstridge.—A curious old painting has been discovered on the north wall of the parish church of Henstridge, under innumerable coats of whitewash, and has been laid bare as well as was possible. The picture occupies a space of 8 ft. by 9 ft. 6 in., and exhibits a gigantic figure of St. Christopher, bearing on his shoulder a small figure of the Saviour, whose hand is raised in the act of blessing. The feet of St. Christopher are in water, and around them are fishes. In the background are a windmill, packhorse laden with corn, and a dog, with a man carrying on his head a sack. There is also a lofty rock, surmounted by a church, and on a projecting ledge stands a monk with girdle and rosary, holding out over the water a lantern hung to the head of a stick. The whole picture is surrounded by a border of lotus leaves. It is said to be too much injured to be preserved, but it will be accurately copied.

A Mental Almanac.—With the title of "An Infallible and Instantaneous Mental Almanac for any Year in any Century of the Christian Era. By W. Relton, Insurance Secretary," a pamphlet has been published by Pitman, of Paternoster-row. This is an ingenious and curious "method of finding by an easy mental process, and without referring to tables, the day of the week corresponding to any day of the month, or the day of the month corresponding to any day of the week, throughout any year" of 5,000;—in short, a calendar carried in the head, by learning and remembering only less than thirty common words, significant of a few fixed numbers. We give an example:—Queen Victoria ascended the throne on the 20th June, 1837: what was the day of the week?

Year	4
June	0
Day of Month ...	20

Cast the sevens out of 24=3, or Tuesday.

Monte Video Harbour and Land Reclamation.—Mr. Charles Burn, C.E., has published a project for the construction of a sea-wall round the south and east sides of Montevideo, commencing at the Gasworks and ending at the Aduana. The enclosed space between the sea-wall and the shore will be filled up, and by this means about 450,000 square varas of building land will be reclaimed from the sea, estimated to be worth 5,250,000 dols. Along that portion of the sea-wall on the south side, facing the sea, will be a road and promenade, planted with trees, at present much wanted in Montevideo, and along the promenade will be built first-class residences. At the end of the sea-wall, opposite the Calle 25 de Mayo, will be run out a solid stone pier, with five landing jetties. Mr. Burn is known as the author of a treatise on the Construction of Breakwaters, and was the projector and engineer of the Amsterdam Harbour and Ships Canal.

American Engineering.—An elaborate Trade Circular has been sent us, consisting of something like a treatise on Bridge Engineering, profusely illustrated, and titled "Phœnixville Bridge Works: Clarke, Reeves, & Co. Office, No. 40, Walnut-street, Philadelphia. Second illustrated Album of Designs. Philadelphia: J. B. Lippencott & Co. 1873." It is something more than a mere trade circular, this, and contains matter of use to English engineers and others with reference to American modes of working.

Opening of Wrexham Public Hall and Corn Exchange.—The new Public Hall and Corn Exchange, Wrexham, which has been converted out of the old Yorkshire-hall at a cost of about 5,000*l.*, has been opened. The new hall will seat over 1,500 people. The larger hall is 80 ft. long by nearly 50 ft. wide, and lighted from the top. A balcony runs all round, capable of holding 400. A stage is erected at one end, and behind are green-rooms, lavatories, cloakrooms, and other conveniences. Running round the hall on the ground-floor are suites of offices and store-rooms; on the first floor are also offices and refreshment-rooms; while on the third floor is a suite of rooms, including billiard-rooms, reading-room, &c., which will be taken by a gentlemen's club about to be formed in Wrexham. There is on this story a small concert-room. The architects were Messrs. Holden & Co., Manchester; and the contractor is Mr. W. E. Samuel, Wrexham.

Sugar a Test for Potable Water.—From an article on "The Discrimination of Good Water and Wholesome Food," in the *Pharmaceutical Journal and Transactions*, we find the following simple directions given for testing water, whether it is good and drinkable:—"Good water should be free from colour, unpleasant odour, and taste, and should quickly afford a good lather with a small proportion of soap. If half a pint of the water be placed in a perfectly clean, colourless, glass-stoppered bottle, a few grains of the best white lump sugar added, and the bottle freely exposed to the daylight in the window of a warm room, the liquid should not become turbid, even after exposure for a week or ten days. If the water become turbid it is open to grave suspicion of sewage contamination; but if it remain clear, it is almost certainly safe. We owe to Heisch this simple, valuable, but hitherto strangely neglected test."

The Gas Supply of the Metropolis.—At a recent meeting of the London Gas Consumers' Association, the report of the half-yearly meeting of the South Metropolitan Gas Company, which has for the last twelve months supplied 16-candle gas, free of meter rent, at 3*s.*, being a net-charge of 2*s.* 10*d.* per 1,000 ft., was read. It stated that,—

"notwithstanding the reduction in the price of gas last year to 3*s.* per 2,000 ft. and the increased cost of coals and all other materials and labour, the profits of the half-year amount to 15,836*l.*, against 15,064*l.* of the corresponding period of 1871; the increase of the cost of coal having been met by extra receipts for coke during the half-year under review."

It was contended that all the London companies could afford to supply gas at the South Metropolitan rate, a saving in the cost of gas to consumers amounting to 715,520*l.* a year.

Cookery.—An experiment for the purpose of practically testing a system for the preparation and expeditious distribution of meals ready for cooking, is about being made at the Australian Meat Agency Company's Department of the International Exhibition, South Kensington; when several hundred meals will be prepared and despatched uncooked to various parts of the metropolis previously agreed upon. The object is to enable good and nutritive meals to be placed at the disposal of working men at their respective homes, or places of employment, whether indoor or out-door. A committee is being formed, for the purpose of observing and reporting on the proposed experiment.

Cost of Filtering Sewage.—The cost of filtering town sewage is shown in a return presented to the House of Commons as follows:—Melton Mowbray, parish and Local Board, population 5,000, filter beds of gravel, surplus water being passed through charcoal before put into the river. Cost of works, 515*l.* 3*s.* 1*d.*, viz., 215*l.* 3*s.* for the purchase of land, and 300*l.* for making tanks and building offices at the same. Other expenditure, — besides 179*l.* interest, annually, on cost of new sewer, for thirty years,—11*l.* 15*s.* for clearing out the tanks. Receipts during the year, *nil*; number of years in operation, nine. No nuisance has arisen from effluent water.

The Architect of the Royal Exchange.—We have received some letters from Mr. H. M. Grellier, reiterating his statement that Sir William Tite "merely adapted his father's designs to the requirements of the Gresham committee," and calling upon us to publish the letters. We have already expressed our opinion on the subject, and do not consider it necessary to return to it.

The Camden Society.—The report of the council of this society, read at the general meeting on the 4th of June, 1873, has been issued in a printed form. It announces the books proposed for issue during the present year, which are three,—a military memoir of Col. Birch, the Parliamentarian Governor of Hereford; Letters from London to Sir Joseph Williamson, Plenipotentiary at the Congress in Cologne in 1673; and a Chronicle of English History, Henry VII. to Elizabeth. The books issued last year were a memoir of Bedell, Bishop of Kilmore; Mayor of Bristol's Calendar, temp. Edward IV., and continuation; and Debates in the House of Commons in 1625. The Society is prospering.

Worcestershire Architectural Society.—It is in contemplation to have an excursion of the members of this society either the last week in this month, or on the 3rd of July, when it is proposed to visit the churches, and other objects of interest, at Preston, Much Marcle, Kempley, Dymock, and Donnington, starting from and returning to Ledbury. Much Marcle is a fine church, with good sepulchral effigies; and at Kempley church the walls are covered with the most valuable examples of twelfth-century wall painting, hitherto discovered in England. They have recently been brought to light by the vicar, who removed the whitewash with his own hands.

Proposed Visit of the Shah to the International Exhibition.—A committee, consisting of the Prince of Wales, the Duke of Edinburgh, the Duke of Sutherland, Earl of Carnarvon, Viscount Sydney, and Sir Thomas Biddulph, met on Saturday at Marlborough House to consider as to the *fête* to be given to the Shah of Persia. It was decided that the entertainment should consist of an inspection of parts of the International Exhibition, and of a grand concert at the Royal Albert Hall, and that the admission to the Exhibition should be by season tickets only.

A Writing Machine.—Among the novelties to be seen just now in London is a "writing machine," of American invention, which, it is confidently predicted, will come very shortly into general use. It is made in the shape of a small pianoforte, with three rows of keys, and the person using it "plays" it with both hands. A series of hammers strike against a band of riband, so prepared that an impression of the letter used is produced on the roll of paper which passes over the riband. The price of the machine is at present 25*l.*

A New and Powerful Magnet.—A magnet of extraordinary carrying power has been constructed by the well-known French physicist, M. Jamin. Whilst artificial magnets have not hitherto been made to carry more than four or five times their own weight, this magnet is able to sustain upwards of twenty-two times its weight. It is constructed of a great number of thin well-magnetised plates, instead of the thick plates generally employed.

The Discovery of Remains at the Railway Excavations, York.—A collection of skulls has been obtained from the excavations made by the North-Eastern Railway Company. There are about a dozen skulls obtained from that source already in the Museum of the Yorkshire Philosophical Society; and it is proposed to add the recent find to this collection. The skulls are evidently very ancient.

An Open Space in the City.—In the centre of Old Smithfield an open space or park has been laid out and opened at the expense of the Corporation of the City of London, who have, in addition, erected there a costly drinking-fountain. The open space is called Smithfield Park. Though not large, it is well laid out with plants and flowers. A view of the drinking fountain we have already published.

Metropolitan Water Supply.—In reply to Mr. Agar-Ellis, in the Commons, Mr. Stansfeld said it rested in the first instance with the Metropolitan Board of Works to enforce a constant supply of water to the metropolis, and if they failed, the Local Government Board would then take the matter in band. No steps had yet been taken in the matter.

Literary Fund Dinner.—The total receipts at the recent dinner presided over by the Right Hon. W. E. Gladstone were 1,408*l.*, and leave a clear addition to the fund of more than 1,000*l.*

The Royal Horticultural Society.—The annual exhibition of this society has been held in their gardens at South Kensington. The assemblage was a large one, as also were the number of flower exhibitors and the variety of specimens. The flowers and fruits were arranged in a large tent at the bottom of the grounds. A number of prizes were awarded.

Cameo Cutting.—We are glad to hear that her Majesty the Queen has commissioned Mr. James Ronca to execute four cameos for the Victoria and Albert Order: two will be on onyx, and the others shell. Our readers may remember that Mr. Ronca recently executed a fine cameo on onyx for the Art Union of London.

New Cattle Market at Windsor.—A new cattle-market has been opened at Windsor under the auspices of Mr. W. Mason. The site is on the west of the town, near the terminus of the Great Western Railway. A good cattle market in the royal borough has long been wanted.

Health.—A course of six lessons on health for working women is about to be given by Miss Hoardon, on behalf of the National Health Society, at the Portland British schools, Little Titchfield-street, Great Portland-street. Working women applying at the schools can have tickets gratis; and they *should* apply.

Chapel of the Assumption, Kensington.—This building, illustrated in our last issue, is warmed by an apparatus set up by Messrs. Bacon & Co.

Arundel Society.—The annual meeting is fixed to take place on Tuesday next, the 17th inst.

TENDERS

For St. Laurence's School, Hulme, Manchester, exclusive of the plastering and painting. Mr. Herbert J. Tijou, architect:—

Adams & Marshall	£1,958 0 0
Ward	1,800 0 0
Southern	1,700 0 0
Thompson	1,672 0 0
Herd (accepted)	1,636 0 0

For alterations and additions at the Archway Tavern, Highgate. Mr. H. J. Newbon, architect. Quantities by Mr. H. W. Lamb:—

Hockley	£1,309 0 0
Taylor	1,122 0 0
Shurmur	843 0 0
Brindle (accepted)	794 0 0

For new warehouse, Queen's-road, Nottingham, for Messrs. Charles Cox & Sons. Messrs. Hovenden, Heath & Berridge, architects:—

Lynam	£9,805 0 0
Fish & Sons	9,728 0 0
Dennett & Co. (accepted)	9,635 0 0

For painting exterior of Alexandra Orphanage for Infants, Hornsey-rise:—

Cox	£144 0 0
Thomas	138 0 0
Burford	137 13 6
Southcott	129 10 0
Boden (accepted)	86 0 0

For warehouse in Southampton-street, Leicester. Mr. E. Burgess, architect. Quantities by Mr. L. C Riddett:—

Loveday	£3,074 0 0
Bland	2,737 0 0
Osborne, Bros.	2,696 0 0
Tomlinson	2,625 0 0
Tyers	2,500 0 0
Major (accepted)	2,474 0 0

For infant school, Percy-street, South Hackney, for the Rev. R. D. Tyssen, rector of South Hackney. Mr. E. Low, architect:—

Forrest (accepted)	£425 0 0

For Memorial School, Littleton, Middlesex. Mr. E. Low, architect:—

Knight & Son (accepted)	£600 0 0

For two houses and shops (shop-fronts not included) High-street, Staines, for Mr. T. P. Harris. Mr. E. Low, architect. Quantities supplied by Mr. F. Johnstone:—

Turner	£2,338 0 0
Smith	2,190 0 0
Collvier	2,175 0 0
Sawyer	2,089 0 0
Messom (accepted)	2,048 0 0

For new bank and shop premises, Edgware-road and Praed-street. Messrs. Bird & Walters, architects:—

Hill & Sons	£8,826 0 0
Higgs	8,566 0 0
Lethey, Bros.	7,900 0 0
Newman & Mann	7,875 0 0
Adamson & Co.	7,789 0 0
Henshaw & Co.	7,433 0 0
Brown	7,393 0 0
Williams & Son	7,162 0 0
McLachlan	7,090 0 0
Mark	6,848 0 0
Temple & Foster	6,647 0 0
Ebbs & Sons	6,512 0 0
Thompson & Smith (accepted)	6,367 0 0

The Builder.

VOL. XXXI.—No. 1585.

Leicester Municipal Buildings Competition.

THE Competition for the proposed new Municipal Buildings in Leicester affords one of those interesting proofs, which we so often see at present, of the long-suffering, sanguine, and hopeful character of the architectural profession generally, and of the very unsatisfactory and doubtful benefit, to either side, presented by the competition system. In the first instance no less than twenty designs were sent in, and a selection was made, but circumstances having led to a change of site, a second competition was invited, without any regard to the fact that an architect had been already chosen. To this there have been twenty-five respondents; some of the designs now sent in being entirely new, others (by former competitors) being modifications of their first plans and designs; but in all cases, as far as we observed, involving entirely new drawings. Considering the number and elaborate character of some of the drawings which go to show a single design, there has been an amount of work done on speculation in this instance, which, viewed in proportion to the amount of the "prize" offered (the limit of cost of the building is 30,000*l.*), it is somewhat melancholy to contemplate. The contributions of these latter twenty-five rivals have been reduced by selection to the number of ten, which have been hung for exhibition in a room in the Free Public Library in Leicester; the fifteen rejected sets of drawings forming a shapeless mass piled against the wall opposite. The fortunate (?) ten it is proposed further to "reduce" by the aid of a professional reducer specially invited for the occasion; and when they have been cut down by this agreeable process to the number of either five or three (we did not quite gather which, for on this point opinions seemed to differ), the corporate wisdom of Leicester will proceed to disentangle the fortunate *one* from among the survivors.

So much for the *modus operandi*. The site now fixed upon is a fairly good one, though not in immediate contiguity to any one of the principal thoroughfares; if a town so quiet and impassive-looking in its aspect and street traffic as Leicester can be rightly said to have "thoroughfares" at all. The site is bounded on the west by Bowling-green-street, on the north and south by Horsefair-street and Bishop-street respectively: a trio of street titles of characteristically varied associations. Indeed, it may be noticed that among towns with any history at all there is generally some leading principle to be detected in the naming of streets; sometimes, as here, in connexion with occupation carried on in their vicinity, sometimes from associations of locality existing long before the land was built on, or any street formed at all. The three above mentioned are all secondary streets; Horsefair-street, however, is dignified by the small shabby theatre with its classic "compo." front and broken panes, close opposite to the north-west corner of the new site. A proposed new street, to be driven through from Horsefair-street to Bishop-street, along the east side of the site, will, therefore, give the aspect for the principal front of the building, more especially as the ground falls in that direction; and the buildings adjoining the site on this side are of such a nature as to encourage the idea of their being possibly removed altogether shortly, and something like a square or *place* formed. Until this is done, there is no effective point of view, in any direction, from which the new building could be seen to advantage; and the tower and other accessories contemplated by most of the competitors would require some such extended open ground before them to be properly seen.

We will take the ten designs in the order in which they were hung on the walls, the numbers being those with which they were first labelled when the whole were sent in. It should be premised that the competitors had the option of sending in either under their own names or by motto, a system which has a good deal to recommend it. The first design we notice is No. 1, signed "Simplicity." This is in most respects a very meritorious one, both in regard to plan and architectural treatment. The required accommodation for the new building may be classed under three heads,—first, the courts and their accessories, judges', barristers', and witnesses' rooms, &c.; secondly, the rooms for municipal business, including council-chamber, mayor's and town clerk's apartments, and other offices; and thirdly, the police department, including, besides other accommodation, a constable's house, with separate entrance, and an open or partially open parade-ground for the police. It is in the various ways of disposing, on the site, the courts, municipal offices, and the parade-ground that the main distinction of the various plans lies. In the plan under notice the building forms three sides of a quadrangle, the courts occupying the south wing, and the offices the more northern portion of the building. The Borough Court is kept well within the building, and the accessory rooms are for the most part conveniently placed and arranged. The room for witnesses, however, should surely have been on the same level as the court, instead of being on the first-floor. The whole of the plan is well and completely arranged, in such a way as to make the most of the space, and with little regard to minute symmetry; it is in fact an entirely Gothic plan in principle, and this character is completely carried out in the architectural design, in which each portion is treated separately and characteristically, so that any one knowing the contents of the building might distinguish from a glance at the exterior the disposition of the various departments. Such a mode of treatment, if even moderately well carried out in detail, almost ensures an interesting and picturesque result, which is certainly the case with this design, especially in regard to its principal front, the predominant feature in which is a large and boldly-treated, though simple, square tower at the north-east angle, marking the entrance to the municipal offices. The style is Geometric Gothic, remarkable rather for correctness and good taste than for any novelty in the treatment of detail. There is an ample supply of entrances and staircases; the staircase leading to the public gallery of the council-chamber opens out of the corner of the parade-ground (facing west), not a very convenient position; and the ground-floor corridor, which at first sight appears to give a communication all round the three wings, is practically intercepted by a portion being cut off as a private corridor in connexion with the courts. This is not a very good principle, and the private corridor has been better managed in some other plans; but on the whole there is little to find fault with in this plan, and the elevations and perspective view, which are rather slightly and ineffectively drawn, show, nevertheless, a true perception of architectural treatment, combined with an entire absence of any straining after effect, which is unhappily rare in competition drawings.

No. 4, by Messrs. Goddard & Spiers, is a plan of a more symmetrical and palatial tendency, with a "grand entrance" in the centre of the east side, and a wide corridor running the whole length of the front, the legal department occupying the northern, and the business department the southern half. The principal court is well situated, and the judges' room, reached by a private passage from the main corridor, running behind the court and interfered with by nothing else, is very well placed. The grand-jury room occupies the north-west angle, with an angle bay forming a feature in the design; the council-chamber and mayor's room are also well marked on the external design; the plan in the main is a good one of its kind, and possesses the advantage of one decidedly principal and dignified entrance for the judge and attendants, which is rather a want in the last-named plan. Two alternative designs, Gothic and Classic, are given; the former, a simple treatment of "plate tracery" Gothic, is the best, excepting the central tower, which is by no means good; the Classic design has a tower which is an improvement on its Gothic companion.

No. 8, "Bosworth," covers a great deal of the site with building, leaving only a somewhat small and cramped parade-ground at the south end of the site. The principal entrance is in the centre of the east front, and leads to an entrance-hall and principal staircase, to the municipal rooms, immediately adjoined by another octagon staircase "for the offices"; there is a waste of room in all this, and as the two staircases open out of the same corridor on the ground floor, and land in the same corridor above, in close proximity to one another, one of them is manifestly unnecessary, or at least wrongly placed: the two courts are situated in the centre with a closed corridor between them, and the judges' rooms, at the other extremity of the large court, also separated by a private corridor: the arrangement of this portion is good. The public corridor communication is continued right round the building, an arrangement always best in such a building where the site will admit of it, but which generally is not economical in regard to space, and has been obtained at some sacrifice in the present case. The plan in the main is one that would work well, though there is what may be called a lack of "specialty" about it: the design is Gothic, of red brick, with white stone dressings; the angles are emphasised by pavilions, with rather exaggerated angle turrets corbelled out; the details are not refined; the composition is entirely symmetrical, with little regard to the disposition of the plan; the windows of the mayor's parlour, for instance, balancing those of the School Board offices, with not the slightest variety in design.

No. 13, "Contranando Incrementum," is a very elaborately got up design, or rather two designs, marked A and B, presenting alternative plans, and Gothic and Classic designs respectively, the drawings being numerous, and prepared with much labour. Design A, evidently intended as the preferable one, shows in the main a good plan, symmetrically disposed to a certain extent, with the different departments well arranged and disposed, and the entrances and staircases very well placed and distinguished. The courts are placed internally, and everything connected with them is well planned, excepting the judges' room, which is so placed that the judge would have to cross the public corridor from his room to the court. The plan is, however, somewhat wasteful of space, and in consequence the parade-ground is disproportionately small. The design is Gothic, of the usual "Early" variety, rather heavily treated; the ornament consists chiefly of horizontal lines of panelling; the council-chamber (on the east front, first floor) is well marked in the external design by fenestration; the north-east corner is

occupied by a large tower, the lower three stories of which are utilised as "strong-rooms," which furnishes a valid motive for massive plain treatment, and small windows in this portion; the upper portion, with spire, is disproportionately decorated in relation to the rest of the building, and is more elaborate than artistic or original. Design B chiefly differs from the other in reversing the relative positions of the large and small courts, and in a somewhat more palatial arrangement of the first-floor plan; but it is not so good as the other, and the Classic design accompanying it strikes us as decidedly poor. The author deserves credit for his plan, and has been most industrious in getting up his drawings. The frame of small sketches, partly of interiors of the principal rooms, is good; but in the main the design cannot claim the highest rank.

No. 16, "Duvicta." The plan here is a complete quadrangle, the parade-ground being enclosed in the centre; the arrangement of staircase entrances and architectural features generally being entirely symmetrical. This is just the style of planning which looks exceedingly well on paper, but in execution is only suitable for buildings for very monumental or ceremonial purposes, and where there is ample space at disposal. In the light of getting the greatest accommodation out of a given space of ground no style of plan in general can be more wasteful than this; and the present plan is no exception: besides which, the over-effort after symmetry has resulted in inconvenient placing of many of the rooms in regard to one another, and the quadrangular arrangement throws both the courts to the outside. The plan, considered as a plan for effect, is a fine one, but fails from a practical point of view.

No. 17, by Messrs. G. G. Scott, jun., and J. O. Scott, is on the whole a very compact and well-arranged plan, covering the ground to the east and north sides; the parade-ground occupying the south-west quarter of the site. The courts adjoin the parade-ground, with the judges' apartment placed between them with bay projecting into the parade-ground. The principal entrances are from the new street, in the centre of the east front, nearly opposite the judges' private corridor, and from near the north-east angle. The mayor's and town clerk's rooms are on the first floor, and well-placed, and the council chamber, the position of which is also well marked on the external design. The treatment of the roofs at the angles is effective, but the tower near the north-east angle is unhappy in outline and composition. The style is Gothic; built of brick with white stone dressings, a combination requiring much refinement of treatment to prevent it becoming vulgar in effect. There is one odd discrepancy between plan and design; the perspective shows apparently a deeply-recessed arcade or arcaded portico in the centre of the east front, carried on detached piers; but on referring to the plan these piers are found to be close against the wall, and all but attached to it, and the apparent portico is a mere wall arcade.

No. 25, by Mr. R. S. Wilkinson (Torquay), is a peculiar and somewhat doubtful-looking plan. The courts are well placed; and the arrangement of some of the accessory rooms for witnesses, &c., shows originality in planning; but the corridors are mostly narrow, and the plan generally a little labyrinthine in arrangement: the route from the principal entrance to the judge's retiring-room is curiously circuitous. As a plan, it could scarcely be recommended; and the design (Gothic), though well and effectively drawn in the principal perspective view, is heavy in treatment, and presents no features of any special interest.

No. 20, by Mr. F. J. Hames, though appearing compact, and making the most of the space, is a defective plan in detail: the judge's room is small and meanly placed, and lighted only from the top; the town clerk's and mayor's rooms are not well placed, and the rooms belonging to the former are divided from one another by one of the public corridors. The courts are conveniently placed near the principal entrance (which is in the centre of the east front), and the staircases are roomy and well discriminated. In the design there is no little merit. It is in the Queen Anne style, which, corrupt and unsatisfactory as it is in many ways, has a character of its own which has been here thoroughly appreciated and consistently worked out. The materials are brick and stone. The design is, for the most part, symmetrical, and the repetition of the rather plain and bald type of window is not very interesting, though a certain breadth of result is obtained. The angles are entirely unaccentuated. But the treatment of the centre portion is very clever and picturesque, the main entrance with a lofty and deeply-recessed archway somewhat profusely decorated with the details belonging to the style; the barristers' entrance and the municipal staircase-window forming subsidiary features to left and right, each with its own characteristic treatment; this centre portion being further emphasised by a wide projecting balcony carried on very heavy stone brackets. A low square tower, with an open stage in the roof, marks the entry to the municipal buildings, near the north-east angle. The author sends a very good drawing also of the interior of the council-chamber, a wainscoted room with a semicircular arched ceiling, decorated in panel-work. We should scarcely wish to see so important a building erected in this style. It may be urged that it harmonises with the character of the Leicester streets; but that, perhaps, should be rather a reason against than for it; for the town sadly wants enlivening in regard to its architecture; and if this design were carried out, something should, at all events, be done, by a more striking treatment of the angles, to take away a little of the workhouse look which from some points it would inevitably present. Nevertheless, we must congratulate Mr. Hames on his generally able treatment of the style he has selected, and on the excellence of his drawings.

No. 22, by Mr. F. W. Roper, is a good plan, neither above nor below the average of those submitted (the plans in this competition, as we have perhaps inferred, are in the main much better than the architectural treatment). The design is certainly the most original here, taking originality to mean "*successful* novelty." The walls are divided into solid broad masses of pier between the windows, scarcely broken up by any ornament, and the windows are placed so that those between each pier are combined under an arch and gable springing from and uniting the upper portion of the pier; the motive is not new, but the manner in which it is carried is novel and effective. The tower in the centre of the east front is well composed, and a great deal of dignity is added to it, by combining it in the lower stages with what is really a portion of the lower building, carried slightly up, and with high lean-to roofs as shoulders flanking the tower. This is a mode of treatment which requires great care to avoid an unpicturesque lumpiness of effect, but it has here been cleverly accomplished. The defects of the building lie in the details, which are a kind of mixture of Jacobean and Gothic, and in some instances ought certainly to be reconsidered. If this building is ever carried out, we should suggest to the architect to try another perspective of his principal front at a considerably sharper angle, when he will perhaps find that the vertical grouping of piers and windows requires some modification to insure an agreeable result from all points of view.

No. 9, by Messrs. Ordish & Traylen, of Leicester, is a very elaborately-prepared design, with a good deal to recommend it, at all events as far as the plan is concerned. One feature is peculiar to it—that of a wide principal entrance corridor running across from front to back of the building, the entrance in the east front being meant as the "administrative," that in the west front as the "public" entrance. From this a narrower public corridor branches to right and left, running longitudinally along the building. The town clerk's entrance is placed near the north-east angle on the north front; the borough surveyor's entrance near the south-east angle. The plan, taken as a whole, is a well-arranged one,—one of the best of the set. The design is rather a medley, presenting a cross between Elizabethan and Jacobean, with reminiscences of Gothic. We can hardly call the result happy. The tower is set back from the front, and could not from any (at present) available point group with the lower composition, as it does in the perspective view exhibited. It is a peculiar tower, and is clever and characteristic, but not very pleasing, especially in skyline. There is a novelty in the manner in which the large clock face is set on, which we should think better suited to a smaller tower; it is a little too odd and piquant to be done on a large scale. There are two slight but effective little sketches in Indian ink of the interiors of the court and the council-chamber. The authors certainly deserve credit for this design, which, with decided drawbacks, shows also decided ability.

On the whole, we are inclined to think the ten designs so far selected, none would, w carried out, answer the purpose better on whole, and give more equal satisfaction to ar tects and laity, than the one first mentio "Simplicity,"—so far, at least, as general des grouping, and character, are concerned. plan would require some modifications, and drawings are not full enough or finished eno to enable us to judge well of the proposed tr ment of the architectural detail. Some oth show more originality, and in particular should be very glad to see so original and cle a design as No. 22 carried out, and perhaps would be the next best for a selection, tho one or two others are better in plan. Suc design, however, it must be admitted, wo very probably be rather interesting to archite as a clever experiment in character and c position than pleasing to the general pub One or two of the best plans are unfortunat accompanied by elevations which it is impossi to wish to see built; and the one we have m tioned above (No. 1) seems the only one wh combines excellence of plan and design in nea equal proportion, and which would be a build likely to please all parties.

Among the less fortunate fifteen is a v good Gothic design marked "F.R.I.B.A.," dently, from its beautiful drawing, the work practised hand, and much superior to most the Gothic amongst "the ten." It may h been rejected on the score of expense. T design marked "Sirius" shows in the persp tive view a picturesque treatment of Gothic the modern manner; and "Comme il faut" in many points a good design. The rest, as as we were able to observe, present no v special excellence of architectural treatment.

On the whole, however, the average of me in the drawings sent in for this competiti seems to us to be, in proportion to numbe higher than in some more important com titions we have had occasion to notice. regard to plan this is decidedly the case.

NEW MERCHANT TAYLORS' SCHOOL

THE first stone of a new building, to erected within the precinct of the Charterhou for the Merchant Taylors' School, was laid Monday last by the Duke of Edinburgh, in t presence of a concourse of some 800 peopl among whom clerical and City magnates we most conspicuous. The occasion was made u of for a great deal of unjustifiable self-glori cation on the part of the Company, and of undeserved sneer at architects by the Archbish of York, who, in replying to a toast, remark that from the experience we had had of arch tects' estimates the cost to the company of t proposed new buildings and alterations might set down at the least at 150,000*l*. The actu estimate for the new buildings and alteratio was stated to be 40,000*l*., and even taking in account the cost of the ground, the tot expenditure would not reach the amount me tioned by the archbishop. The clergy are as body prone to abuse their privilege of immuni from public contradiction by making loose state ments. As a rule their utterances can do bi little harm; but when a high Church dignitar on a public occasion assails the character of body of professional men, and by implicatio the good faith of the architect of a particula building, it is incumbent upon the profession t resent the aspersion as being ungenerous an unfounded.

Merchant Taylors' School (which will b superseded by the new building, of which th first stone was laid on Monday last), is situate in Suffolk-lane, a narrow thoroughfare, between Cannon-street and Upper Thames-street, in the parish of St. Laurence Pountney. It formed a part of a large house or palace, called the Manor of the Rose, otherwise Pulteney's Inn, originally built by Sir John Poultney, five times lord mayor, in the reign of Edward III., and successively the residence of the noble families of Exeter, Suffolk (whence the name of Suffolk-lane), Buckingham, and Sussex. It is chiefly memorable, however, as having been the scene of the alleged treason of William de la Pole, Duke of Suffolk, in 1447, as related by Holingshed, and dramatised by Shakspeare in "Henry VIII." Charles Knevet, the perfidious surveyor to the Duke of Buckingham, who had "lost his office on the complaint o' the tenants," being, as Holingshed relates, "partly provoked with desire to be revenged, and partly moved with hope of

vard," at the instigation of Cardinal Wolsey, nly accused the duke of treason. On the g interrogating him as to his knowledge of the ke's designs upon the succession, the surveyor plies in Shakspeare's words (which are almost same as Holingshed's),—

"Not long before your highness sped to France,
The duke being at the Rose, within the parish
Saint Lawrence Poultney, did of me demand
What was the speech amongst the Londoners
Concerning the French journey: I replied,
Men fear'd the French would prove perfidious,
To the king's danger."—*Henry VIII.*, act i., sc. 2.

On the attainder of the Duke of Buckingham, Manor of the Rose was forfeited to the own; but four years after the duke's execu- n, it was granted (17th Hen. VIII.) by patent Henry Courtenay, Earl of Devon, who had en recently created Marquis of Exeter, and s then in high favour with the king. Henry's vour was not of long continuance. In 1538, urtenay was suspected of high treason, and in 39 was beheaded on Tower-hill, and his pro- rty fell to the Crown. In the following year e estate in the parish of St. Laurence Pountney s granted to Robert Radcliffe, Earl of Sussex, whose family it continued until the year 1561, hen the earl's grandson sold it to John Hethe, izen and cooper, who divided the estate into o moieties, one of which was purchased by chard Botyl, and the other by William Beswick. otyl was agent for the Merchant Taylors' Com- ny, and he conveyed his purchase to them on e 1st of May, 1561. The other portion in- uded the site of Nos. 3, 4, and 5, Laurence ountney-hill, and the buildings known as urence Pountney-place, situate in a quadrangle tween Merchant Taylors' School and Duck's ot-lane.

All trace of the ancient building upon the site Merchant Taylors' School has disappeared; e present school and master's house were ected in 1675, Sir Christopher Wren having en, in all probability, the architect, as he as employed by the Company about this time, d built for them the almshouses and chapel unded by Bohun, otherwise Boone, at Lee, near lackheath. There are, however, remains of e basement story of a part of the manor of e Rose under the house No. 3, Laurence ountney-hill, now used as a carpenter's shop, very good preservation; there is also another ortion to the westward under a house in Suffolk- ne. In the crypt under No. 3, Laurence ountney-hill, boarders at the Merchant Taylors' chool were accustomed, at the beginning of this entury, to perform plays at Christmas.

In the building in Suffolk-lane Merchant aylors' School has been carried on since its nstitution in the reign of Elizabeth. The original uilding was destroyed in the Great Fire, but it as rebuilt, as already mentioned, in 1675, and emains to this day substantially unaltered, the nly alterations of any moment being the addi- ion, in 1829, of two rooms, formed out of part f the cloister, for the accommodation of the riting and mathematical masters, and the sub- titution, a few years ago, of iron casements and late-glass to the windows of the upper school- oom, for the thick wooden frames and lattice- anes of Wren's time. There is an excellent xterior and interior view, in water-colours, of he school, by J. D. Harding, the former of which as been re-produced in chromo-lithography.

The present school-building being found in- dequate to meet the requirements of the modern ystem of tuition, and being moreover unpro- vided with a playground, the company entered nto an arrangement with the governors of the Charterhouse to purchase a portion of the Char- erhouse estate in Goswell-street, on the removal of Charterhouse School to Godalming, for the purpose of transferring their school to that site, of providing ampler means of instruction, and increasing the number of the scholars. The ground thus acquired consists of about five acres, and cost the company 90,000*l*. The frontages next Goswell-street and Wilderness-row have been let on building terms, and will re-coup the company a portion of this expenditure. One effect of this utilisation of the ground is the widening of Wilderness-row 20 ft., which will enable it to be used for carriage traffic, for which it was before unadapted. A new road- way will also be formed across the northern extremity of Charterhouse in continuation of Old-street, which will afford a sensible relief to the traffic proceeding westward at this point.

The property purchased by the Merchant Taylor's Company consists of the Upper Green or play-ground used by the elder boys, with the school which stands on the north side of the green, the schoolmaster's house (so called to distinguish it from the master's house), and the buildings in the school-master's court. The pur- chase also includes the assistant master's house and day-boys' lodge, in Rutland-place, Charter- house-square.

The Schoolmaster's house was rebuilt in 1825 by Mr. Edward Blore, at the same time as the residences of the Poor Brethren of Charter- house, in the Preachers and Pensioners' Court. This house is built of white brick, with stone dressings, and is Perpendicular in style, as are the rest of the buildings. Adjoining the School- master's house, on the south, was the oldest portion of the school, which has been pulled down, and upon the site of which the new building for Merchant Taylors' School will be erected. The old school was divided on the ground-floor into two portions, the northern part being appro- priated to the head-master's boys, and the southern portion being used as a writing-school and day-room for the junior boys. It is probable that this formed part of the buildings erected by Thomas Sutton; but it had been so frequently repaired and added to, that it had lost all its distinctive character, at least externally. The wall next the Schoolmaster's Court had been cased with brickwork some time in the last century, and new dormers were a few years ago added by Mr. P. C. Hardwick. On the wall over the fire- place in the head-master's school-room are the arms of James I., worked upon the wall in wet plaster, which have been preserved. The writing-school was a square room, with four columns supporting the floor above, singularly ill-adapted to its purpose, being lighted only from one side by narrow windows, placed at a great height from the ground. The ceiling was of plaster, and contained the arms of various benefactors; it had, however, been restored at various times, and all its interest destroyed. In the rear of the writing-school, and lighted by windows looking into the Preachers' garden, was the Hall, which was used by Charter-house boys for all meals except dinner, and as a sitting-room for the senior boys. It had been modernised by Mr. Hardwick, and contained two massive chimneypieces, one apparently be- longing to the original fabric, but of inferior design; and the other copied from an old chim- neypiece in another part of the building.

At right angles to the school, and occupying the south side of the schoolmaster's court, is the building known as "Gown-boys'," from its having been used by the Foundation scholars, who are distinguished from the other boys by wearing gowns. This is a handsome building, erected, some twenty years ago, by Mr. P. C. Hardwick, and will be converted into class-rooms in con- nexion with the new school. The School- master's house will also be used for the same purpose, with some additions to form a library and lecture theatre.

The new building, of which the first stone was laid on Monday last, will occupy a site about 100 ft. long by 56 ft. wide, and will have its principal frontage on the east towards the Upper Green. It will be approached by a flight of steps, and will consist, on the ground-floor, of a spacious entrance-hall in the centre, 26 ft. wide, with a school-room on each side, 62 ft. by 40 ft. A corridor on the west side of the new building will connect the lecture-theatre and the class-rooms to be formed in the Schoolmaster's house, with those in the building known as "Gown boys'." On the upper floor will be a hall, 93 ft. long by 50 ft. wide, for the purpose of assembling the whole school, and occupying the entire extent of the new building. This hall will have an open-timbered roof, carried upon principals continued down to the floor, and without buttresses or horizontal ties. Exter- nally, the new building will be faced with red bricks, with Portland stone dressings, and small panels of terra-cotta. The roof, which will be covered with green slate, will have a central *flèche* rising 50 ft. above the ridge, of oak, and the upper part covered with shingle.

The estimated cost of the new buildings, and of the alterations to the existing buildings, is 40,000*l*.

The architect is Mr. Edward I'Anson, the surveyor to the Merchant Taylors' Company.

Mr. Henry Shaw.—The death is announced of Mr. Henry Shaw, F.S.A., of No. 103, South- ampton-row, aged seventy-two. It took place on the 12th instant, at Broxbourne. Mr. Shaw was an able draughtsman, and several of his works on antiquarian subjects are well known.

EASTERN ART: ITS VALUE AS AN INDIVIDUALITY.

Now that what is generally called the "East" is being "opened out," and made more or less familiar to this Western world, so different from it, there may be some interest in a thought or two on the art of two such entirely different individualities,—so opposite in natural instinct and tendencies. It would certainly be a very difficult thing indeed to fix upon a subject fuller of materials for thought and speculation than this interchange of the "East and West" of the world. The difficulty is to see best where to begin, and what to select in a short space most typical of diversity, where all is unlike. But without waiting for perfection of method may we not affirm that the first and most striking item of difference between the East and the West in these modern days, is in the presence and almost complete domination of *machinery*, and the power of intermediate mechanism in almost everything, especially in art, in European, or what are called somewhat vaguely and indefinitely *civilised* communities,—like England, or France, or Germany; while in Eastern countries, such as Hindostan, China, and Persia, there is an almost total absence of native machinery: there is nothing between the hand of man and the material he works upon, but the all but indis- pensable tools with which the work is done. No one can well paint a picture, however skilful he may be, with his finger; a brush or *tool* is neces- sary, something for the hand, imperfect for all purposes, and the object wrought upon. It is the same with weaving. A machine, if formed but of two sticks and a few strings, and a shuttle, is absolutely needed for the work to be done. But in both these cases, be it observed, and they are fairly typical examples, the *hand* of the work- man *operates directly* on the object to be worked on. It is not, therefore, that in the East there are no tools nor machinery, but that the intermediate machinery is guided directly by the hand of the operative and executive workman, whatever he may be, and whatever the degree of his skill. But in this Western and more highly-favoured half of the world this mere tool machinery has grown up into an almost living and self-working monster. In the simple loom of the East the workman using it acts through it *directly with his hand* on the fabric produced, while in one of those "miracles of mechanism," a Lancashire cotton-loom, the workman has but to stand by it to see it do its work, almost like a thing of life, and to occasionally join a broken thread. The very *shuttle* itself, that second hand, is moved by the machine. It would be impossible to draw a wider line between two things both designed for the same purpose and meant to do the same work. In the one case the machine is a *help*, and a help only; in the other, it is the *workman*. In the one, the workman is still there at his work; in the other, he may be, and sometimes really is, away altogether, so perfectly self- acting is the machine.

It may, perhaps, be difficult to make the significance of this power of the machine, as taking the place of the human hand, quite visible to many who have not gone a little into the subject, but if any such will look with a little attention into the Eastern fabrics, as they may so readily be seen at the South Kensington Museum, at the International Exhibition, and at the fine collection in the India House Museum, they may be convinced of it beyond all possibility of doubt or dispute. It will be recollected that some time since a vast collection of the "fabrics of India" were collected together by Dr. Royle for the purpose of teaching our Western manu- facturers what it really is that the vast popu- lations of India want. The *texture* of the stuff, whether of *cotton* or *silk*, the *colours* used, and *how combined*, and lastly, the *patterns* or *designs*;—these are all to be seen in the India House Museum; and we once met a representative of a great Manchester printed cotton firm for whom expressly these specimens of Eastern work were got together, and he assured us, strange as it will sound to some, that a number of the most beautiful of these Hindoo fabrics could not by any possibility be wrought by mere *machinery*, however complicated and perfect in miraculous- ness of mechanism; "for," he said, "it is in reality *hand* work, and shows, as you look at it and examine it, *mind* in it." This, he said, his machinery, perfect as it was, would not and could not do. What a lesson, then, is here! Will the converting the Eastern man into a Western man be wholly and in every way a gain? Is there nothing to be said for the necessity of

hand work? Machinery and the power of it is now advancing at a pace never before dreamed of,—it seems to bid fair to do pretty nearly all things. But is that wholly a gain? we may well ask. Nay, so far did this man go,—and he thoroughly understood the matter, as manufacturer and salesman,—that he affirmed that the whole of the finer and costlier work in the Exhibition was quite useless as "precedent" to go by; absolutely nothing could be done with it. It was the common cottons only that could be profitably manufactured here for the Indian market, and the price quoted day by day by magic telegraph! But still all this time, and in spite of all, the East, as we are assured, is gradually and most surely being "opened out." We are getting to know more and more about it, and the multitudes of peoples who live in it, and the what it is they want, day by day, so that in time these Eastern races,—Hindoos, Chinese, Japanese, Persians, the "Wandering Tribes," and even the Khivites,—will and must know something about us, and must take our goods,—roads or no roads,—and become, in spite of themselves, "Westernised," in art, as elsewhere. But still it is not all gold that glitters; go a little below the surface, and things change, not a little strangely. Like the characters on the miraculous sabres, they change while you are looking at them. Even Cobden himself, who travelled far to knock down barriers, and to open roads all the world over, was sometimes, in spite of himself, taken quite aback by the look of things when he saw them closely. At a great fair or market in the confines of Europe and Asia, he was not a little struck by the intense picturesqueness of things. All sorts of peoples, costumes, and tongues, the spirit of trade and barter manifested, satisfied even him; but so strong was his "Manchester" instinct, that he could not but regret that this vast host was not supplied from hence with "cottons." If it had been so, as we must suppose it one day will be, then all this almost infinite variety will be at an end,—all must become alike; for these printed fabrics are run out from the magic machinery not by the yard, but the *mile*, and it is sameness and quantity that do the work of the "market."

It would, perhaps, be useless to argue for a moment against such a course of things and such a prospect, but nothing is to be got without paying for it one way or another. In these multitudes of Eastern races there is almost an infinite variety, and a prolific *power of design*, as the Indian fabrics testify, coming from the brains and hands of widely separated individualities. But run the work through a machine by the mile, and all this is destroyed in precise proportion as the "trade" is successful. As a matter of mere business and commercial extension and modern progress, the prospect is indeed almost boundless, and there would seem to be little doubt that the power of production of so industrious a community as exists in England could supply, as Cobden hoped, the whole world. But what becomes of the fine faculties of those races who can work so characteristically for themselves?

There is another very singular merit in these productions of the Eastern mind and hand well worth more than a passing thought, and it is the more interesting just at the present moment, when a great representative of the far East is on a visit here to see, it may be presumed, what it is we can teach him. We refer to the really marvellous way in which the Oriental mind, from whatever cause, works in *colours*. No matter what the object may be, or for what purpose, or how plain and simple the colours or the "design." The softness and harmony of the whole is complete and well-nigh perfect. The very brightest colours may be employed, but the result is the same. There is no vulgarity—to use a somewhat indefinite but expressive term;—the colour, beauty, and harmony are complete. And this is not the result of an elaborate system of teaching, or a fancied knowledge of what are termed "principles" of colour. The Oriental has a natural eye for colour, and the arrangement and harmony of colours. It is really the gift of nature, and would almost seem to be the result in part of his life under the bright and beautiful skies of the perpetually sun-lighted countries in which he has been placed. The sun does half the work, and colours all things round and about him. He lives in it. Night, as well as day, helps him. He may, with literal truth, be said, in the language of advanced science, to grow up and work under the "potential energy" of the sun!

May we not, therefore, in the face of those considerations, out of so many more that might be adduced, question the wisdom of a good deal of what is now going on in the name of "improvement." Are we not stifling some fine faculties and powers of work by putting all things possible between the rollers of a machine? And not only doing that ourselves, but compelling everybody else all the world over to do so *too*, as far as it is possible to them. Mr. Carlyle once affirmed that the future "epic" of the modern man must and would be "Tools and the Man,"—*i.e.*, tools first, and *then* the man after them; and thus it really and literally is. The substitution of the word *machine* for tool would be more correctly descriptive, perhaps; for it is not the mere simple saw, or hammer, the tool in the hand of the man, that is doing all, but the self-moving saw, and the self-guiding saw or saws, the vast self-acting machine, that the future epic must commemorate. Nay, we may almost ask, in some poetic wonder, where is the *man*, wherever you look for him? He has been there, for he made the machine, and has supplied it with materials to work on; but where is *he*, in the work or the final result? The man of the East, whether wise or no, does not come here to teach us anything: he comes here to pick up as much "Westernism" as he possibly, in the time, can; but not, let us hope, to forget, in its glories, the precious gifts that have been bestowed on himself.

THE QUESTION OF SITES FOR LABOURERS' DWELLINGS IN THE METROPOLIS.

THIS subject was again discussed at the weekly meeting of the Special Dwellings Committee, on Wednesday last. General Cavannah took the chair, in the temporary absence of Lord Napier, the chairman.

METROPOLITAN IMPROVEMENTS AND RAILWAY ACTS.

Mr. Vigers brought forward the following resolution:—"That the committee deem it expedient that all metropolitan improvement Acts or railway Acts involving the removal of large numbers of the poorer classes, shall contain special clauses providing that all persons having the power vested in them under such Act shall be bound to clear sites to a corresponding extent, to be set out in such Acts, for the erection of dwellings for the poorer classes, and that such sites shall be purchased, cleared of buildings, and offered for sale, before any part of the land for such improvements or railway is cleared of its buildings." He did not desire that the particular number of houses or the number of persons who were to be displaced should be stated in the clause which he introduced into any particular Act, but only the area of the site corresponding with that to be taken for any metropolitan improvement or railway.

The Rev. R. J. Simpson seconded the resolution, stating that he agreed with Mr. Vigers that it was not desirable to fix any hard-and-fast line. What they wished was to enunciate a certain principle. Without stating anything as to the exact number of persons to be removed by any particular improvement, he thought it desirable that where a large number of persons were to be displaced provision should be made for them before the improvements were commenced.

The Rev. Mr. Denton thought the resolution did not go far enough. They had seen instances in which railway companies had displaced thousands upon thousands of persons, and yet had not made provision for even a thousand. He thought that where so many persons were displaced by railway works or improvements, provision should be made for them on sites adjoining.

The Rev. R. J. Simpson said it must be borne in mind that in the immediate locality of these improvements there was often inconvenient overcrowding, and therefore it would, in many cases, be impossible to provide sites adjoining.

Mr. Liddell thought the resolution was vague. He wished to ask who were to erect the dwellings? Certainly not the railway companies themselves, for they could not be expected to do so. The resolution also stated that "such sites shall be purchased and cleared." He should like to know by whom? He did not think that the public outside would consider them good men of business in proposing that such an indefinite clause should be introduced into any Act of Parliament.

Mr. Vigers observed, that all he wished was that the clause should be general in any future improvement or railway affecting the metropolis. It was not for them to particularise the clause inasmuch as it was altogether impracticable. The exact wording of the clause could only be drawn in reference to any special railway or improvement Act which might be applied for, and that would have to be settled by Parliament. Adverting to the complaint which had been made against Mr. Denton, that they did not give compensation to poor persons whom they displaced for new works, Mr. Vigers observed that he differed from Mr. Denton in that respect. He could state from his own experience that the only persons who did not pay compensation was the Metropolitan Board of Works, their plea being, that in the improvements which they made they were dealing with the public money. As regarded the railway companies, it was within his knowledge that the railway companies did pay compensation to the poorer classes whom they displaced, and beyond that, they had been the means of conferring great benefits upon them, by removing them from houses and localities not fit to live in, and where they had been oppressed by grasping and unscrupulous landlords.

The Rev. Mr. Denton, on the other hand, stated that he, too, had had some considerable experience of railway companies in his neighbourhood, and he could not agree with Mr. Vigers. He knew of an instance in the case of the Metropolitan Railway Company where upwards of 2,000 poor persons were displaced, and he (Mr. Denton) had great difficulty in screwing 5s. per head out of the railway company.

The discussion was continued for some time, in the course of which it was urged by several members present that the resolution was not sufficiently explicit. It was also urged by Mr. Liddle and others that it was most unwise to attempt to compel railway companies or other bodies making improvements to provide sites for dwellings in the neighbourhood of such railways or improvements.

Col. Gardner strongly urged the importance of the clause expressly stating that sites should be provided, and houses built upon them, and made ready for occupation, before the railway companies or the Metropolitan Board should be permitted to proceed with the works which would displace any particular number of persons.

Lord Napier and Ettrick (who had now arrived) said he quite agreed with the last speaker. He had always held that construction ought to precede demolition, and the fact of its not having done so hitherto had led to large numbers of persons in the metropolis being yearly thrown out of their homes. The houses to be built on acquired sites, in lieu of those to be demolished, ought to be ready for occupation before demolition commenced. This might be hard upon railway companies or other public bodies, but, in the interests of the poorer classes, it ought to be insisted upon.

Dr. Ross observed that all they could ask for was that the railway companies or other public bodies should be compelled to provide sites and offer them for sale for building upon. They could not expect railway boards or others to stop their works until new houses were actually erected and occupied.

The resolution, modified as follows, was ultimately adopted:—"That the committee deem it expedient that all persons empowered to remove dwellings of the poorer classes under metropolitan improvement, railway, or other Acts, shall be required to clear sites to an extent proportionate to the number of persons proposed to be removed, for the erection of new dwellings for the said classes, and that such sites shall be purchased, cleared of buildings, and offered for sale* before any part of the land for such improvements or railway is cleared of inhabited dwellings."

POWERS TO LIMITED OWNERS OF LAND TO SELL FOR BUILDINGS.

Mr. Wilkinson next brought forward the following resolution, which, after some discussion, was carried:—"That associations or companies formed for the purpose of erecting labourers' dwelling-houses, should be enabled to purchase land from limited owners under the agreement clauses of the Lands Clauses Consolidation Act, with appropriate provision for securing the character and purpose of the dwellings to be erected."

The committee adjourned to Wednesday next.

* Under conditions similar to those contained in the Act of 1872.

STATIONERS—ALL.

THE dinner given by the Lord Mayor terlow), as master of the Stationers' Com-y, on Saturday evening last, was remarkable, master having gathered around him men nent in the State, the church, art, science, literature, several of whom made excellent ches. The quaint, *post* fire, hall, with two hree good pictures, and a magnificent tree ts quiet garden, never dreamt of by the aming crowd up and down Ludgate-hill, rested greatly many who were visitors for the time. The tree was amusingly alluded to he Master when he welcomed as their prin-l guest the patron of their Company.

Archbishops of Canterbury have been ons of this Company ever since its first incor-ation, more than two centuries ago. "In year 1400," said Sir Sidney, "a society was ned called the Brotherhood of the Text ters, or Stationers, and in 1556 a charter ncorporation was granted to the company called the Stationers' Company. But with charter and its attendant privileges were osed very serious obligations in reference to control of the printing-presses, not only London, but throughout the United King-. They were required to ascertain every se in which there was a press, and to keep a ster of them, besides learning the nature of publications printed at it. At the time of the r Chamber, the Archbishop of Canterbury was of its most important and active members; our records show, that during the exist-e of that body, the archbishop constantly t warrants down to the master and wardens the Stationers' Company, requiring them, er pain of forfeiture of all their rights, of alties from the Church, and punishment by State, to seize the publications which were med to be seditious, to bring them into the den which you see outside these windows, and n them; and I do not doubt that the tree ch is now flourishing with such beautiful en leaves was very much strengthened and ered by the ashes of the publications so nt."

The Archbishop replied with much humour l such command of face as would make the tune of an actor,—without a smile or a move-nt to show that he knew he was saying any-ng fuuny. The best speech of the evening, wever, was that made by the Bishop of Win-ester, who, responding for the House of Lords, nted out where the company resembled that dy, and alluded gracefully to the fact that, ile other guilds had changed their character, one was admitted a member of the Stationers' mpany who was not in some degree connected h the craft. When we say, trusting to mory, that there were gathered round the rd Mayor, Sir Arthur Helps, Lord Houghton, e Archbishop of York, Sir John Gilbert, Sir nry Thompson, Messrs. John Walter, E. M. ard, Joseph Durham, Sidney Cooper, Henry le, F. Leighton, Calder Marshall, J. G. Nichols, orge Leslie, Thos. Hughes, Harrison Ains-rth, Winter Jones, E. B. Stephens, John rray, Shirley Brooks, Serjt. Parry, Dr. Doran, e Editor of the *Edinburgh*, the Editor of the *arterly*, and several other distinguished men, shall have justified the assertion with which began these remarks.

THE TRADES' GUILD OF LEARNING CONFERENCE.

ON Saturday last there were two conferences, nvened by the provisional committee for the tablishment of a "Trades' Guild of Learning," r the purpose of determining the basis and nstitution upon which such an institution ould be established. The morning sitting as presided over by Mr. Samuel Morley, M.P., d a considerable number of representatives working class organisations and clubs ere present, as also many other supporters, nongst whom were Mr. Mundella, M.P., Lord yttelton, Lord Edward Fitzmaurice, M.P., Sir ntonio Brady, Mr. Joseph Dodds, M.P., Mr. homas Hughes, Q.C., M.P., Mr. Alexander rogden, M.P., Mr. W. M'Arthur, M.P., Mr. hn Whitwell, M.P., the Lord Mayor, the Right on. W. Cowper-Temple, M.P., Lord George amilton, M.P., Sir John Bennett, the Rev. anon Robinson, the Rev. Canon Ridgway, the ev. Henry Solly. The chairman observed that ie object sought to be obtained by this Trades' uild of Learning, was to adopt the best method of extending the advantages of university education, not only to the working classes, but to all classes; and he believed that if there was one class that needed this more than another it was the middle class. The following resolution was adopted, "That a Trades' Guild of Learning be now established, and that the persons present pledge themselves to render it the best support in their power. Mr. Mundella, M.P., presided at the afternoon sitting, which was well attended.

OUR strongest sympathies being in the direction advocated at the conference held on Saturday last, at the Society of Arts, we should be glad if we could find more encouragement in what took place than we did. There seemed throughout the entire conference to be a wonderful diversity of notions,—we use the word in contradistinction to what we would term ideas, among those called on to speak, or volunteering to do so. It strikes us that some of the promoters of the Trades' Guild of Learning have not yet got a clear idea of what they really desire to establish, and carry into effect. The trade representation at the conference was very small, the representatives attending connected with trade societies being the few who are generally prominent in every new movement, no matter what may be its nature.

A Trades' Guild of Learning, in the opinion of one of the speakers, who wished the movement success, though he was afraid they would fail, ought to be a guild in the Mediæval sense, and bound together by solemn pledges, and enjoying some exclusive privileges. In fact, the gentleman believed that a tie was required, on oath, or its approximate, similar to that existing and binding together such bodies as the Freemasons, Odd Fellows, Good Templars, and so on.

Another advocate proposed a scheme which, if possible, would have the effect of relieving the country of its school boards and manufacturing skilled artizans, without much cost or trouble. As the detail of this scheme was not given, we are left to conjecture how it could be accomplished. One speaker proposed that the power of the new guild should be brought to bear upon the youth particularly, idle apprentices, and others who were to be found hanging around our street corners, and in other open places, and to compel or drive them into the classes opened for their instruction. The grown youth who is not desirous of obtaining that knowledge which will make him more skilled in his trade, will hardly be improved by any driving process. The speaker who said that technical instruction ought to be in connexion with the workshop, came the nearest to the mark, with some modifications, if the scheme of technical instruction is to be ever successfully carried out. "Make every workshop a normal School of Art," we have written long since, and more than once in these pages. We also can commend the observation made by Mr. Webster,—"It is as necessary, or nearly so, to learn to draw as it is to learn to write"; and he saw no reason why "every lad at school, or receiving instruction, should not be taught drawing as well as writing;" we commend it the more so, as we have urged the same thing for these twenty years past. A good groundwork is laid when elementary education includes drawing. Make your *protégé* or trade student thoroughly understand the example, and practically apply it himself, if only by the use of a model: then true technical instruction will be imparted, and skilled labour made manifest. To carry out this in respect to all branches needs something more than talking and lecturing to young men, -it needs teachers and workers, educated workers who can teach and not merely talk. We have but few good lecturers in our midst, in the Faraday sense, — a lecturer whose every essay was a practical lesson of instruction that became riveted in the mind of his hearers. To make technical instruction really useful a fair elementary education is a first necessity. Among some of the speakers at the conference it seemed to be taken as granted that a trades' guild of learning would make artizans in general masters of a universal knowledge in technical matters. This is a somewhat absurd idea. As there is an organisation and a division of labour, there must also be an organisation of technical instruction suited to the different branches of trade. The trade classes, if ever established in connexion with the workshop system or apart, will have to be confined with a special view to the one branch of trade to be developed by a higher instruction in technical matters. A high degree of excellence can never be obtained by any one man in several branches of skilled labour as far as the manipulating processes are concerned, though he may theoretically acquire a knowledge of the practice of several.

The objects as specified in the draft constitution of the guild, as submitted to the conference, were good; but the means by which these objects are to be obtained opens a very wide field, through which we do not see at present a very clear road without a great clashing of interests. What the guild proposes by the aid of several existing institutions is being partly done, or attempted to be done, by these same bodies. For instance, the Department of Science and Art at Kensington are doing, in connexion with their numerous schools of art in affiliation, much useful labour throughout the three kingdoms. The mechanics' institutes and working men's clubs have been doing something in this way for years. The City companies are beginning to show signs of aiding in technical education and skilled labour; but the trade-unions, pure and simple, are doing nothing. The universities can only be means to an end by a system of lectures, or perhaps affording degrees for a few highly educated, who will probably abandon trade instead of being an acquisition to their fellows. Next arises the financial difficulty. Will there be available funds forthcoming to buoy up the great experiment until it is firmly rooted in the soil as an institution? Will branch guilds spring up rapidly to aid the parent body? Will the different trade and other organisations appealed to devote a per-centage of their funds to carry out the objects sought? These and other germane questions we would like to ask; but we know it would at present be impossible to get answers. We fear the trade-unions in general will render very little aid. They have not as yet shown any interest in the movement. There are, however, one or two sources from which financial help might be legitimately expected. Firstly, there are the City companies, with their enormous wealth, the *bonâ fide* accumulation of trades' guilds. Instead of being auxiliaries, they ought to be the chief promoters of a trades' guild of a proper nature. We have sketched out already what the City companies could and should do, and perhaps it would be wiser for them to do it at once, than allow the thin end of the wedge to be driven by another party, who may possibly succeed in obtaining a portion of their funds without their agreeable consent. We should be glad to find the Trades' Guild of Learning succeed in perfecting the institution they have launched. But there are immense difficulties in the way, and our impression still is, as we said a few days ago, that it will need much more talking and working before the guild is a living and healthy reality.

TRADES GUILD OF LEARNING.

SIR,—As I have for so many years been an advocate of education, and more especially of the education of the workman, I am not likely to be suspected of any sinister motive, in opposing the present project. I have a strong conviction that, notwithstanding the good intentions of the promoters of this scheme, it tends towards a misdirection of energy and a confounding of purposes. We do not appear in England to have a faculty for organising, discriminating, and rightly dividing functions. It is at one time all physical training, now all science, then all technical education. The hog, the whole hog, and nothing but the hog. Now the trades' guilds of old had special functions, and immense advantages would, no doubt, accrue to all crafts if the ancient and special functions of these guilds were revived,—viz., that of collecting all information having reference to the technicalities of the various crafts and providing for their improvement, by the appointment of fit persons to investigate processes, to communicate the results of these inquiries, and to answer questions submitted to them. The guilds might also gradually become tribunals to which disputes between masters and workmen could be referred. These functions were allotted to the guilds in my paper on the Organisation of Education which appeared some twelve months since in these columns. The educational function should be entrusted to working men's colleges, and I proposed in that paper that the art-schools of

the Science and Art Department should be expanded to working men's colleges. The special functions of general education and technical inquiry and study would then be distinctly divided, and each would be better attended to and performed.

Charles Burton clearly pointed out in his articles on "Technical Education," which appeared in "Art, Pictorial and Industrial," that technical education and technical institutions on an extensive scale were more a necessity of foreign countries than our own. For other nations,—to emulate the industry of England, and being comparatively without workshops, had to improvise workshops. England has, and has had for centuries, the best of all technical colleges,—her great workshops. He also pointed out in that journal the mischief that is likely to ensue from an indiscriminate provision for technical education. There are degrees and special functions even in the various crafts, a wholesome division of duties. The science and mental direction properly belong to the masters. Skill of hand and eye, of handicraft, is another and distinct function, and belongs to the workman. You are hastening, by your misdirected efforts, to confound these separate and distinct vocations, and to increase the causes of bickering between master and man.'

Another curious inconsistency appears to me to crop up in the discussions on these matters, viz., the solicitude evinced to confer the advantages of a *university education* on the workman,—the advantages of that education, observe! which has long since been pronounced unsatisfactory, and quite out of harmony with the times. No, sir, the education of the workman must be something quite different from that, not only for his own, but for the country's, sake, in which it is predicted he is to take a more prominent political part. What it should be, I some time since endeavoured to set forth in a lecture delivered at the Working Men's College, which was, I believe, fully reported in the *Builder*.

W. CAVE THOMAS.

HEALTHFUL DOINGS IN DUBLIN.

IT is an augury for good to find men of all shades of political opinion, and of all creeds, uniting for the promotion of a useful and legitimate object, and one essential to the well-being, morally as well as physically, of a nation.

There is no law to prevent a combination against dirt, and that the law officers of the State cannot prosecute for such, is the opinion of the Irish Chief Justice. This is simple justice, but this does not state the whole case as regards the advocates and agents of sanitary reform in all their relations with society, for actions have been actually threatened against members of the Dublin Sanitary Association for their efforts towards the common good.

Fortunately for these gentlemen, their opponents were not quite assured that they had law on their side, or probably threats would have been followed by actions.

The experience of this, the first, year of the existence of the Dublin Sanitary Association shows the necessity for carrying out the recommendations of the working committee of that body,—namely, to give the medical officers of all districts, *in town and country*, the legal status of sanitary or health officers at all times, not alone, as at present, during the existence of epidemic disease, or during threatenings of such visitations.

The opportunities afforded to the district medical officers of Ireland for the acquirement of information as to the beginning of epidemic disease, as well as of the prevalence of endemic disease, is unequalled by anything in other parts of the United Kingdom, or probably in other countries.

In Ireland, the district medical officer is well acquainted with the people, is to a very large extent their medical attendant, and is in most cases, and should always be (as the law directs) the local registrar of births and deaths.

We are not surprised to learn, therefore, that the late Irish Poor-Law Commissioners were very favourable to the union of duties of preventive medicine with those of a curative nature, in the person of the Irish District Medical Officer; and the Local Government Board of the present day have, we understand, recommended to the Legislature that such a union of offices should be carried out in the new measure proposed for Ireland.

The Royal Dublin Society and the Dublin Sanitary Association have given the public the opportunity of hearing several important matters connected with public health, treated, by medical and other professional men, in a popular way, during the early months of the present year, in the Lecture Theatre of the Dublin Society.

This one fact comes out in strong relief, viz., that wherever sanitary defects exist there are also to be found demoralisation and degradation, and there will also be found a people ready to revenge themselves on those who are better off than they are, for wrongs real or imaginary. To meet this evil two things are needful;—first, a firm attitude by those in authority, and a determination to put the law vigorously in force against all transgressors; and, secondly, a determined and continuous support of those who are striving to bring modern culture, thought, and science, to bear on the acknowledged sanitary defects under which the people of so large a portion of Dublin labour.

It is, therefore, with the best hope for the future that we have received accounts of the first annual meeting of the Dublin Sanitary Association, held in that city on the 11th of June, and we will now only express the hope that Parliament may notice the admonitions and act on the suggestions of the several speakers on the occasion referred to, who, in the face of great difficulties, have succeeded in arousing considerable attention to the physical,—and therefore the moral,—degradation of the inhabitants of the very parts of Dublin that poured forth its thousands on Saturday night and Sunday morning last, as regardless of the day that then dawned as they were of the lives and property of their fellow-citizens.

The Dublin Sanitary Association, though in its infancy as to time, has already enlisted under its banners the county and university members of Parliament and one of the city members of Dublin, many leading members of the medical and legal professions, and a large number of the chief mercantile men, with, also, some members of the fair sex.

Some curious facts have come out at the meeting* just held; amongst others it appears that the amount devoted to expenditure under Sanitary Acts in Ireland, when compared with the valuation, was represented by *one-eighth of a farthing* in 1871.

THE NEW PUBLIC BUILDINGS AT BILSTON.

THESE new buildings have been formally opened. They are in the Italian style of architecture, having a frontage to Lichfield-street of 95 ft., and to Church-street of 74 ft. They have been erected in brick, stone faced. The Town-hall will afford accommodation on the ground floor for the Town Commissioners, consisting of board and committee rooms, waiting-room, town clerk's, surveyor's, and collectors' offices. On the first floor is a large room, 72 ft. by 43 ft., for public meetings, with orchestra gallery at the west end, and several retiring-rooms. The public entrance to the Town-hall has been carried up as a tower, forming a prominent feature on approaching the buildings from Oxford-street.

The Free Library buildings, though uniform in frontage with the Town-hall buildings, are distinct therefrom. The entrance is from Lichfield-street, and the accommodation on the ground-floor comprises a reading-room, 26 ft. by 20 ft.; and library, 22 ft. by 17 ft. 6 in., with reference library on the first floor, the second floor being used for class-rooms. A porter's residence is provided in connexion with the Town-hall buildings. The entrance-halls are laid with Minton tiles, and the assembly-rooms heated with a hot-air apparatus.

The total cost of the buildings is about 5,000*l.*, exclusive of the price paid for the land. That portion appropriated for the Free Library has been paid for by the Free Library Auxiliary Committee, they having succeeded in raising 1,000*l.* by voluntary subscriptions, and the proceeds of a bazaar held last year, in addition to which the committee is now fitting up the Free Library buildings at a cost of about 300*l.* The fittings are made of oak and mahogany, all French polished.

The works have been carried out by Mr. Nelson, builder, Dudley, from the designs and under the superintendence of Messrs. Bidlake & Fleeming, of Wolverhampton, architects.

* An Analysis of the Population, Acreage, Expenditure under Sanitary Acts, and Medical Charities Act, &c., in Ireland, by D. T. T. Maunsell, M.B., M.R.I.A. Dublin: 1873.

THE CASTLE OF BARNARD CASTLE.

BARNARD, or Bernard's, Castle, so called fro its founder, Bernard de Baliol, stands in a co manding position on the left bank of the Tee here the boundary between Durham and Yor shire. It is a large castle, and was long a ver important one, both from its position on th frontier of the bishopric, and from the power the great barons who built and maintained it.

The castle crowns the summit of a steep an in part precipitous shelf of rock, which ris about 100 ft. above the river, and has a pr jecting shoulder, by means of which the nort western quarter of the fortress is protecte naturally by a cliff. The remainder of the are was covered by a deep and broad artificial ditch now mostly filled up, which intervened betwee the east and north sides of the castle and th contiguous town, to which it gave name, and th people of which, in the times when the castl was maintained, looked to its lords for protec tion. The north front of both town and castl received a further defence from the Percy-beck, stream which flows into the Tees about 450 yard higher up.

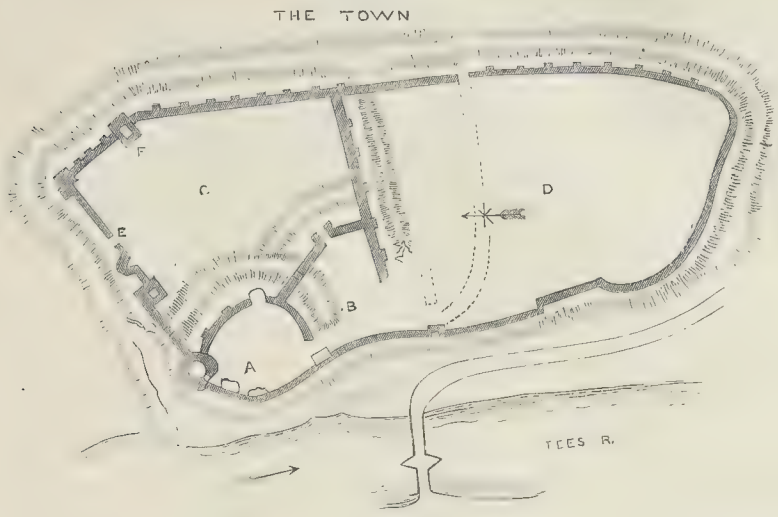
The area of the castle, within the walls, rather above 8 acres. In plan it is oblong having four unequal sides, averaging abou 293 yards north and south by 133 yards east an west. The east or town side, the longest, slightly convex, and measures 336 yards; th west, or that upon the river, 245 yards; th north end, 160 yards; and the south end, 1 yards. The Tees Bridge springs from the rock bank, below the centre of the western front, an was commanded from the battlements.

The area is divided into four wards, of whic the "outer" covers rather more than its southern half, and the "town ward" about the eastern hal of the remainder. The other, or north-western quarter, is again subdivided pretty equally int a "middle" ward, and a northern or "inner ward. The whole area and the several ward are protected, where necessary, by walls an ditches. The curtain along the cliff seems t have been a mere parapet, save where, as in th inner ward, it supported interior buildings. The walls generally vary up to 30 ft. in height, an from 4 ft. to 5 ft. in thickness. The outer ditch of the place, also the town ditch, commenced in a deep ravine close north of the keep, was carried along the north front, skirting what are calle "the Flats"; thence along the east front between the wall and the town, and thence round the south end, and so beneath a part of the west front, until it is lost in the steep ground near the bridge, having been altogether nearly 700 yards in length. From this ditch branched a second, which traversed the place east and west, from the town ditch to the river bank, and which, placed to the south of a cross-wall, was the defence of the three northern wards from the outer ward.

Another ditch, commencing in the ravine below the keep, runs north and south, and joined the preceding ditch, and thus protected the inner and middle wards from the town ward. Finally, from this branched another and still shorter ditch, which ran east and west into the river bank, and formed the defence of the inner from the middle ward; so that each curtain had its separate ditch. All the ditches are shown in Grose's plan, but the town ditch, though to be traced, has been filled up and built upon. The deepest and broadest of the whole, and it is a formidable excavation, is the ditch proper to the inner ward, something of the elevation of which is due to the heaping up here of its contents. These ditches seem all to have been dry. They are traversed at their ends by the curtains, and in three places, where the north curtain closes the end of the innerward ditch, and where the other end ran out upon the river slope, and where the east curtain closes the great cross ditch, are arched openings in the curtain at the level of the bottom of the ditch. Grose also shows a fourth arch in the wall of the middle ward. These were either drains or posterns. They are so nearly buried that only the tops of some of them are seen. Grose calls them doors, and they may be so. They seem original.

The enceinte of the outer ward seems to have been a mere buttressed and embattled wall, of no very great strength. This ward could only have been held by a very strong garrison. It was probably designed, like the Scottish barmkin, to afford a refuge for the townfolk and their cattle, supposing the town to be taken by an enemy. In the event of a serious siege it would probably have been abandoned. Leland

BARNARD CASTLE.



A. Inner Ward.
B. Middle Ward.
C. Town Ward.
D. Outer Ward.
E. North Gate.
F. Brackenbury's Tower.

eaks of a fair chapel and two chantries in the rst area, with monuments said to be of the aliols. They were probably in this ward. here was a gate from the town in the east ront, opposite the market-place, probably at he present entrance, and an inner gate, at the orth-west corner, of which some traces remain, nd which led into the middle ward. The draw- ridge of this gate is replaced by a causeway of arth, closing the end of the ditch. The slight efence of this outer ward is consistent with the tanzas in the old ballad of the "Rising of the Torth":—

"That Baron to his castle fled,
To Barnard Castle then fled hee,
The uttermost walles were eathe to win,
The Earles have won them presentlie
The uttermost walles were lime and bricke;
But thoughe they wan them soon anone,
Long e'er they wan the innermost walles,
For they were cut in rocke of stone."

The Baron was Sir George Bowes, who held the astle for eleven days against the Earls of Northumberland and Westmoreland in 1569, and hen, according to some accounts, capitulated on air terms. Probably Percy beck was then so amed.

The town ward, occupying the north-east uarter of the area, much less extensive than he outer ward, was more strongly fortified. Upon its east curtain are the remains of a ectangular building, projecting inwards from he wall, and known as Brackenbury's Tower. There was also a square tower at the north-east ngle. On the north front is a half-round ower, projecting from the wall, and serving to lank a large round-headed doorway, evidently a ain entrance from the north, independent of he town. The arch of this portal is composed f three rings of voussoirs, set in chamfers, of xcellent ashlar, but without ornament. The jambs are also chamfered. They have a plain impost also chamfered, but with a sort of bead- moulding underneath. There is no portcullis. This seems to have been the middle or inner doorway of a regular rectangular gatehouse, the lines of the side walls of which are indicated by toothings on each side of the door. There are remains of similar lateral walls within. With the gatehouse, the drawbridge is, of course, gone, and the ditch has been filled up.

West of this Norman gate, and standing on the counterscarp of the ditch of the inner ward, opposite to the keep, a shoulder in the curtain is occupied by a small rectangular tower, in substance Norman, from whence the curtain, of great height and strength, closing the north end of the ditch, runs up to the keep. In its base, in the bottom of the ditch, is seen the upper part of one of the round-headed openings already noticed. This is of 4 ft. span, and more like a postern than a drain.

The area of this town ward is occupied as a kitchen-garden, and part of it is locked up, and entry refused. The curtains seem substantially Norman. Grose shows the remains of a draw- bridge between this and the middle ward, and no doubt there must have been some such communication.

The middle ward seems to have contained stables and offices, now destroyed. Its communication with the outer and town wards have been mentioned. It had also a drawbridge, superseded by an earthen causeway, at its north- west corner, leading into the inner ward. It is difficult to say whether the ditch was here run out upon the face of the cliff, and has since been filled up, for a cottage has been built on the slope outside, and effectually conceals the point for examination. Grose, however, indicates a doorway in the ditch here, as at the other end, and in the crosswall dividing this from the town ward.

The inner ward is the most perfect and really curious part of the castle. It is in level about 30 ft. above the rest, commands the whole area, and predominates grandly over the Tees. It contains the keep, northern tower, the domestic buildings between them, the curtains and but- tresses, and the remains of the gatehouse. The keep caps the north-east angle, and is half within and half without the curtain. It is a very grand piece of masonry, built of blocks of coarse red grit of moderate size, square and coursed, with rather open joints. It is circular, about 40 ft. diameter, and about 50 ft. high to the base of the parapet, now gone. It rises from the rock. Its base for about 6 ft. batters slightly, but above that it is cylindrical. It is absolutely without ornament, and there is not even the usual cordon to mark the top of the base. The loops are of unusual length, and slightly dovetailed at the lower end; never cruciform. The original open- ings are mostly square-headed, and without mouldings or labels. One large window, high up, towards the north, is round-headed, and probably original. Towards the town ward is a five-light late Tudor window, an insertion. Probably the parapet rested on bold corbels, but if so they are gone. There are no strut-holes nor indications of a bretasche. Though circular above and towards the field, the interior face is capped by a bold spur, a pyramid cut diagonally, with the apex dying into the round wall about four-fifths of the way up. This spur contains a mural chamber. It is much shattered.

The keep is cylindrical within, and has a base- ment and three upper floors. All its original openings seem to have been either flat or round- headed. There is no original pointed arch; that over the main door is clearly an insertion. The basement is on the ground level, about 20 ft. diameter, the walls about 10 ft. thick, and it is covered in with a flattish dome of inferior rubble, but probably original. On the south side are traces of a fireplace, of which the vertical tunnel remains in the wall. The entrance-door is on the west side, and so also is the main door. It is much broken, and has at present a late flat- pointed arch, but it seems to have been round- headed. It opened not, as now, from the court, but from the passage-room leading to the pos- tern. In the outer wall, a couple of yards to the right of the door, is a recess like a sepulchre in the keep wall, and in it is laid a stone coffin, probably found in the outer ward. The recess may have been a seat; it can scarcely have been a tomb. The entrance-door has no portcullis. In its left jamb a flat-topped mural passage, 3 ft. wide, leads into a garderobe which projects outwards between the keep and the curtain, and has a short exterior loop. The shaft of a garderobe in the floor above so drops that it is evident that here, as at Corfe, there was a wooden partition.

Entering the keep, on the right a door leads up half a dozen steps into the north side of what is called the guard-chamber, a barrel- vaulted room, 14 ft. east and west, by 7 ft., with a loop to the south. This looks very much like an oratory, though it is a passage-room. It is contained partly within the spur buttress, and is evidently the cause of that appendage. From near the west end of the chamber a second door leads by a mural stair, 3 ft. broad, to the first floor, a circular chamber, 21 ft. diameter, with walls about 8 ft. 6 in. thick. This stair opens by a narrow, round-headed door in the jamb of a doorway, also round-headed, which seems to have led from this floor into the "great chamber," the withdrawing-room of the hall. In the oppo- site door jamb, a similar door leads by a mural passage to a garderobe above that already men- tioned.

The first floor was evidently the state-room,

It has traces of a fireplace to the south side, but the hood is gone, and opposite to it is a round-headed window of 4 ft. opening, looking up the Tees. Another window, probably of the same pattern, looked towards the tower ward. This has been altered to suit a Tudor five-light, flat-topped window. This seems to have been called "My Lady's Chamber."

In the left-hand jamb of the north window, now much broken, another narrow door opens on a mural stair, 2 ft. 6 in. broad, which, following the curve of the wall, and lighted by small loops, led up to the battlements, opening, on the way, upon the second floor, of which the floor and roof, both of timber, are now gone. This floor also had a fireplace, and a sort of magnified loop, which did duty as a door, and opened upon the battlements of the hall, and led also to a third garderobe, corbelled out above the other two. This has an open vent, while the shaft of the other two descends within the wall to a sewer, the arched mouth of which is just visible at the foot of the wall, outside.

There seems also to have been a square-headed opening in the stair, to give a way to the ramparts of the ward-curtain, which was 2 ft. 6 in. wide, having a parapet of 3 ft., and a rerewall of 2 ft. As the parapet of the keep is gone, the stair terminates abruptly at the level of the rampart wall, where the wall is 7 ft. 6 in. thick; and from hence is a good view of the castle and town, and of one of the most lovely reaches of the Tees. In 1592 this keep was roofed with lead. The roof was probably always flat.

Mortham Tower capped the north-west angle of the ward, rising from the rock high above the river. It is a mere fragment. It seems to have been of irregular plan, built to fit on to the hollow bend of an existing wall. When it was built, it was thought prudent to strengthen the wall by stout exterior buttresses. The original wall is Norman. The first built part of the tower seems to have been Early English, and its completion Decorated.

The space between Mortham Tower and the keep was occupied by the hall and withdrawing-rooms, the latter being next the keep. The hall was on the first floor, as shown by its two windows in the curtain. These are of two lights, with a transom, and trefoiled heads, and an oval quatrefoil in the head. They are placed in recesses with plain segmental arches, and side seats of stone. They are of the best Decorated period, and evidently insertions into an older wall, which has also been strengthened with Decorated buttresses.

Between the hall and the keep were, on the ground-floor, passages leading on the left to what was probably a cellar below the hall, and on the right into the keep, while at its end is a small square-headed postern in the curtain, still in use. Above this passage was the withdrawing-room, placed between the hall and the state floor of the keep; and the window of this room, in the curtain, is the well-known bay which displays in its soffit the "bristly boar" of Richard III. The window is projected over the postern, upon bold corbels, and is mainly of good Perpendicular date, but the superstructure has been altered and debased by some very poor Tudor work, similar to the window in the keep, and possibly due to Sir George Bowes. This was called "The Great Chamber" in 1592.

Its gate-house occupied the south-west angle of this ward, and was built on the edge of the cliff. The remains of it are very scanty. The curtain between it and Mortham Tower seems to have been a mere parapet, cresting the cliff.

The curved curtain connecting the gatehouse with the keep, and covering the two landward faces of the ward, is tolerably perfect. It is strengthened by an exterior buttress and a small tower. This latter, which is placed near the angle of the curtain, towards the keep, contains a basement and upper chamber, both vaulted, though of the latter, which was at the rampart level, only some fragments remain. This tower is rectangular, but the angles are chamfered off. It has no internal projection, and outside, against each of its three faces, is applied a Decorated buttress of 2 ft. 6 in. breadth, by 3 ft. 6 in. projection at the base. Each is of three stages, and dies into the wall near its summit. Between this tower and the keep is a large buttress, apparently hollow, possibly for the pipe of a garderobe. This also is a Decorated addition. Near it the curtain has a flat Norman pilaster strip, but of three stages. It is 4 ft. broad, and diminishes from 18 in. to 6 in. projection. It also dies into the wall near the top.

It is not unlikely from the aspect of the inner ward that this was a fortress of the tenth century, composed of a cliff on two sides, a ditch on the other two, and a centre more or less nearly circular, and artificially scarped; in fact, a motte, upon which stood the original stronghold. The outer ditches may be of the same date, but from their figure and plan they are more likely to have been a later, probably a Norman addition. Their contents are thrown inward so as to form a ramp behind the wall.

It is evident that the whole area of the castle, as it now stands, was inclosed by the Normans, and the walls throughout and nearly all the towers are latish in that style. Here and there, spread over the whole enceinte, are remains of Norman work. The pilaster strips on the inner curtain, the arches in the several ditches, the square tower and gate on the north curtain, Brackenbury's Tower, and much of the wall towards the town are original. In the inner ward the base of Mortham Tower, and the half-round mural tower near the north gate, are probably English. The keep, the fragments of the hall, the south-east tower of the inner ward, and most of the remains of other buildings are evidently Decorated. The original walls were mostly of sound rubble, with ashlar dressings. In the Decorated work ashlar was more freely used.

The castle must have undergone almost a rebuilding in the Decorated period. The Norman architect evidently treated the whole inner ward as a shell keep. Later builders added part of Mortham Tower, and the Decorated artist, more ambitious, raised the round tower as a keep, added,—probably rebuilding,—the hall, and completed Mortham Tower, and strengthened or restored the curtain in various places.

Here, as was much the practice in the North, the round-headed arch and the flat lintel were largely employed in the Decorated period. The general style of the work is much to be admired. Strong, sound, massive, very plain, of excellent execution, it is in admirable taste, and in good keeping with a military structure. The keep, though not one of the largest, is one of the finest round towers in England. Its proportions are good, its materials of proper size and rich colour, and its very plainness is indicative of strength.

There is but little Perpendicular work; probably it was of a lighter character, and has fallen and been removed.

Whatever may be regarded as the value of the material evidence of its earthworks, the notion of Bernard Castle occupying the site of an earlier stronghold is unsupported by records. The present town is thought to have risen on the fall of Marwood, a place the very site of which is now forgotten; neither is it a parish, being included in the vast parish of Gainford, the church of which is eight miles distant. From Domesday no aid is to be derived, seeing that this valuable record does not include Durham, nor is there any mention of either Marwood or Gainford, still less of the castle, in Hugh Pudsey's Domesday of Durham, the Boldon Book, compiled in 1133, for this is confined to the bishopric, within which the Baliol fee was not at that time included.

Guy de Baliol received from William Rufus the Barony of Bywell, in Northumberland, and either from that king, or his father, the lordship of Gainford, of which he gave the church to St. Mary's, at York.

Bernard, his son and successor, was a distinguished adherent of Stephen, but lived into the reign of Henry II., and was one of those who broke up the siege of Alnwick, by the Scots, in 1174, before which time he probably built Bernard Castle. He also seems to have built the church, or rather chapel, of Barnard Castle town, and gave it also to St. Mary's. He was succeeded by another Bernard, father of Hugh, father of John de Baliol, founder of Baliol College, Oxford, and of St. John's Hospital, in Barnard Castle town, and regent of Scotland. He was born in the castle. He married Devorgoil, a co-heir of Alan, Lord of Galloway, from whom their son, another John, inherited the deadly claim to the throne of Scotland, which he made good, after a fashion, in 1292. He lost his English estates, and died at Château-Gaillard in 1314.

Edward, his son, became King of Scotland, 1332, but was expelled in 1341, and died childless in 1363.

On the attainder of John de Baliol, Bishop Bek claimed Barnard Castle, probably unjustly, as belonging to the See. As early as 1301 he had seized upon it, and he held it for some time, and to his tenure are attibuted the keep and other additions in the style prevailing at t period. Edward I., however, granted it to G Beauchamp, Earl of Warwick, who cared lit for episcopal claims, which took the form of pr tests from several successive bishops.

The castle remained in the Earls of Warwic Beauchamps, and Nevilles, for five descents, a here Thomas Beauchamp founded an August Priory about 1381. How it came to be held f a time by the Earls of Westmoreland of t other line of the Nevilles does not appear. finally, however, vested in Richard Duke Gloucester, who repaired it, and left h cognizance upon it, as has been stated. On h death it remained in the Crown until it was sol and after various vicissitudes became the pr perty of the ancestor of the Duke of Clevelan It was dismantled in 1630, when the spoil of th great hall was carried to Raby.

The bridge across the Tees is a fine one, two lofty pointed arches, said to have bee rebuilt in the last century. The arches a moulded in three sets-off, and beneath, each arc is supported by five bold ribs. If modern, th old type is well followed.

In the adjacent church there are some ol parts. There is a good ornate south door wit flanking columns and capitals, round-headed with a chevron moulding on the arch. Th opening is wider than usual. The style is lat Norman. The base of the tower is set round wit several short Early English buttresses. Abou 12 ft. west of the tower, in the churchyard, ar laid several large blue gravestones of a quality not now used. They seem to have carried brasses are much worn, and have evidently been remove from the interior of this church or the castl chapel. Under one, on which remains merchant's mark, is buried Sir John Hallock, Baron of the Exchequer, who died July 31st 1829, and his wife, who died November 18th 1852.

G. T. C.

A WOODEN HOUSE FOR NORWAY.

ABOUT the close of the year,—Christmas-day,— the readers of the *Times* had the advantage of a long account of a certain wooden house erected in Devonshire, which had been imported from Norway; and a great deal was said in recommendation of this mode of house-building.

In our present number we give, for the sake of comparison, illustrations of a house designed, a few years ago, by an English architect for a Norwegian gentleman, the owner of several timber farms, and intended to be erected for his own occupation on one of his estates near Christiania. The drawings were made under his personal superintendence as to details; and the arrangements of plan are therefore similar to what would be necessary ordinarily in a similar situation. But the architect is chiefly responsible for the double height of veranda and the top room, or belvedere, and other architectural features. The construction was to be of local materials,—that is, the timber of the estate and the chimneys of brick; but as it was to be carried out by local workmen entirely, the cost is not known.

It must hardly be assumed, however, as was assumed by the writer in the *Times*, that a wooden house is so great a novelty in England as to make it necessary for gentlemen to go to Norway to get them designed or built, any more than it was necessary for the Norwegian gentleman to employ an English architect. We know of a large timber mansion built by this same English architect in Cornwall,* at a cost much less than the same would have been in stone; and one, larger still, is being built in Gloucestershire by another architect, Mr. Christian. It is but the partial revival of a good old English style which had died out from various causes, after having achieved some fine results, many examples yet remaining in the midland counties particularly; but elsewhere it was and is a common method of house-building, whether for mere shelter or for ornamental purposes.

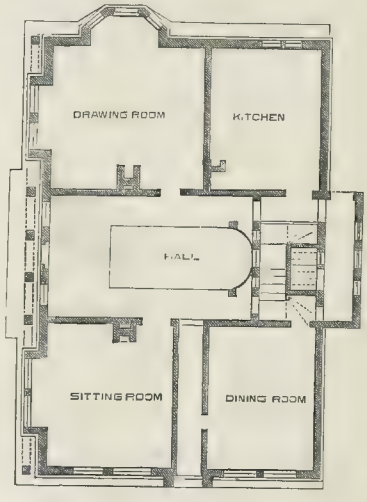
The architect of this Norwegian design is Mr. C. Forster Hayward, F.S.A.

As our illustrations do not include a scale, we add the dimensions of some of the rooms:—Drawing-room (*Dagligstue*), about 18 ft. 6 in. by 16 ft. in clear; sitting-room (*Dagligkämer*) about 16 ft. by 14 ft.; dining-room (*Spisekämer*), about 16 ft. by 14 ft.; kitchen (*Kökken*), about 16 ft. by 14 ft.; hall (gallery over), about 25 ft. by 20 ft.

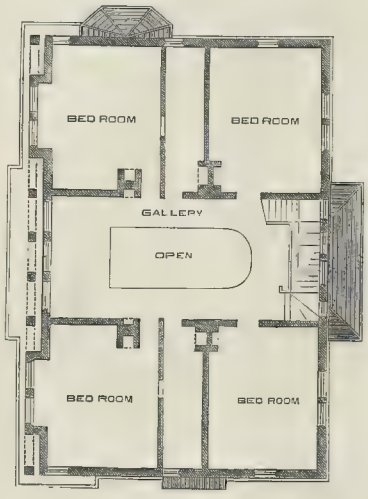
* Oldrennick, near St. Germans.



E. POCOCK DEL. W.E. HODGKIN.



GROUND — PLAN



FIRST-FLOOR-PLAN

A WOODEN HOUSE FOR NORWAY.—MR. C. FORSTER HAYWARD, F.S.A., ARCHITECT.



NATIONAL PROVINCIAL BANK OF ENGLAND: ST. JAMES'S BRANCH, PICCADILLY.

MR. JOHN GIBSON, ARCHITECT.

NATIONAL PROVINCIAL BANK OF ENGLAND, ST. JAMES'S BRANCH, No. 212, PICCADILLY.

THE present premises of this branch in Waterloo-place having become too small for the increasing business, the directors decided to erect a new building, noticed with commendation at page 378, *ante*, and of which we now give an illustration. It has been recently finished and was opened for the transaction of business on the 16th instant. It is situated on the southern side of Piccadilly, a few doors from Regent-circus.

The front, which is of Portland stone, has a width of 31 ft. towards Piccadilly, and is about 59 ft. high. The ground and basement stories are devoted to the purposes of the bank. The banking-room is 60 ft. long, 25 ft. wide, and 18 ft. high, the back portion being lighted by a square skylight, having an inner light glazed with specially-designed matted sheet-glass. The public space is paved with Minton's tiles.

The counter, desks, screens, and so forth are of Spanish and picked Honduras mahogany; and the glass in the screens, as also in the front windows, swing-door, and fanlights, is British plate, handsomely embossed. The manager's room and desk are screened off in the front of the banking-room. The entrance-lobby is of stone, the doors being of Honduras mahogany, veneered with Spanish, a night-door closing over the swing-door on the inside, shutting off communication with the bank from the entrance-lobby. The principal strong-room is on the ground-floor, and is brick-arched above and below, and is secured with an iron door and gate, a night-slot communicating with the resident's room. The inside of the strong-room is fitted with an inner iron-room, deed-cupboards, &c., and the former is lined throughout with half-inch hardened wrought-iron plating, the walls having T-ironwork built longitudinally into their thickness. A lift communicates with the basement, in which are the book-rooms (one 25 ft. long by 11 ft. wide), which will also be used for the reception of customers' plate, &c. These are fitted with iron doors, gates, and shelving, which work was contracted for by Messrs. Chubb.

The clerks' lavatory and cloak-rooms are in the front part of basement.

The basement and ground-story are brick and tile-arched. The banking-room is heated by a heating-apparatus and coils, executed by Mr. Phipson, and the artificial lighting is by standards in the counter and desks, the two ornamental corners in the ceiling being intended merely to create a current for the purpose of ventilation.

A portion of the upper part of the building is to be devoted to chambers or a private residence.

The building has been carried out from the designs of Mr. John Gibson, of Westminster, by Messrs. George Myers & Sons, who have also executed the banking-room fittings. The total cost of the works have exceeded 9,000*l*. The stone carving was executed by Mr. Daymond. Mr. James Dewey was clerk of the works.

DRAINS, CHIMNEYS, AND WATER-SUPPLY.*

IT is not my intention to enter into a prolonged dissertation upon any of the subjects to which I have now the pleasure to refer, believing that the object of our meeting will be better attained if each member of the profession will bring before his colleagues the result of his experience, whether successful or otherwise, in any department of our art with which he may have had opportunity to make himself particularly conversant. Our failures may even serve to point out to those who come after us the rocks and shoals on which we have been wrecked, as well as those laws of Nature which should be more fully investigated by the patient searcher after her divine truths. As our health, our happiness, and our very vitality depend mainly upon the air we breathe, it is all-important that our dwellings, while we seek to be protected from the vicissitudes of our climate, we should, with warmth and shelter, have a plentiful supply of air unpolluted by the exhalations arising from the indispensable outlets which discharge away the foul water from the site of our abodes. The question of house-drains claims our first attention, and it is a singular fact that, simple as the subject of drains may appear to the general public, less attention has been bestowed on this branch of our art than on almost any other. It is true the designer of a noble edifice may gain no extra laurels, from the fact of the drains being perfectly free from smell, and abundantly sufficient to carry off all refuse matter from the property; that the chimneys draw, and that the service of water is abundant. But let it only be whispered that the nasal organs are offended as you enter the vestibule; that smoke is not in the ascendant, or that water finds its level, and the unhappy designer may bind his brow with willow, and pursue his professional career under the shade of the blighting upas. The effects of bad drainage are so various and deceptive, and the causes so numerous and subtle, that I will confine myself to such points as may appear to be sufficient to represent in the main the leading principles on which drains should be constructed, and the defects most commonly to be met with in their execution, leaving the results to be dealt with by all who have to bear the responsibility of a domestic circle.

Presuming that the site of the intended building has been sufficiently provided with land drains, to carry off all water from the foundations to a proper outlet,—no matter of what nature the subsoil may be, whether gravel, stiff clay, loam, or rock. Any drain intended to carry off foul water from scullery, closet, or sink, should be formed of impervious and smooth materials, and circular in form when practicable, preference being given to fire-clay tiles, glazed, carefully stanched in the sockets, and laid to a proper fall of at least 1 in. in 10 ft., although a greater inclination should be preferred. The junction with the main outlet or sewer should be formed with a stench-trap at or near the outlet, to prevent the return of noxious gases into the dwelling; and as a trap of this description, no matter of what dimensions, will become filled up at times, a convenient cleaning cover should always be provided for removing obstructions without disturbing the drains at any of the joints. For this purpose the dip stone trap or syphon may be used; but I have found more satisfaction in adopting a trap formed as a sketch which I have frequently used, being less likely to get out of order, and more simple in its construction, the outlet being covered by dipping into the water. The scullery trough should be outside the house, and any connexion therewith should also be provided with a water-trap,—the circular cast metal Ordnance trap, with strong hinged cover, having many advantages over the ordinary bell trap, being easily cleaned, and preventing sand or other matters from passing into the drain, and the cover being capable of lifting without removal.

It is desirable, in all cases, to provide that the w.c. drains should not communicate with scullery drains, or any others, in order that the flow of water may have no back outlet in case of leakage, deposits of soap, grease, or vegetable refuse, the great object being to remove the soil as quickly and effectually as possible from the closet. All bends in soil-pipes are to be avoided, and the pipes kept outside of the house where practicable. A bell crank driven into the wall has often been found to pierce the pipe, and cause the house to smell. In no case should a drain be allowed to pass under a building where it can be avoided, experience having shown the fatal effects of the neglect of such precaution. The most trifling leakage of bad water from the joints will in time saturate the subsoil, leaving it surcharged, to exhale its noxious fumes through the superstructure, or to find its way into the foundations, which are usually laid dry, proceeding along until it drops into the spring well, which not unfrequently is placed under one of the garden walls, for the convenience of supporting the pump. If the building be erected on rock, the fissures become filled with the foul matter, and impregnate the well; and to this cause alone many cases of fatal consequences have been justly attributed during the prevalence of cholera. Many of us have been the witnesses of the sad results of such apparently trifling errors. And the medical profession have lately decried the system which leaves so vital a subject in the hands of unskilled or careless operatives. I would, therefore, for the honour of our noble art, ask my hearers this evening to consider nothing beneath their notice, with which it has been shown that their professional reputation may be called in question, before valuable lives may have been sacrificed to the neglect of what are sometimes improperly called little things.

One of the most common errors in ordinary house-building is the position of the well with relation to the drains and foundations. Let us suppose the course of footings laid dry without mortar, the well placed for convenience under the centre of a garden wall dividing two houses, and the drains laid above the level of first course of footings, the joints being seldom water-tight, and we have then a perfect conduit in the foundations, depositing the leakage of drains into the well. Many of us have been required to report upon defective drainage where this system had been pursued, and in some cases, I regret to say, not until most serious results had called for a professional opinion on the property.

The lead suction-pipe, from the pump to the well, has often been found the means of escape of sewage from the drains into the well, the water running in the bed of the pipe, which it is difficult to stanch round with clay so as to prevent escape.

When the rainwater pipes are allowed to discharge into the drains, they act as foul-air shafts for carrying off the gases generated therein, which, if confined, often force the water upward out of the metal trap, and so give admission into the dwellings. In all cases joints should be stanched; upright pipes should be carried up high above windows and roof, as any aperture in the lead gutter or behind parapets, will be the means of allowing the bad air to enter the sleeping apartments. A very novel and ingenious means of ventilating a foul drain has been resorted to by a non-professional friend with success. He simply made a communication from the drain to the kitchen chimney, by a small pipe inserted under the ceiling of the kitchen, and the draught of which driving off from the drain the foul air, and being carried away with the smoke, acted as a very perfect disinfector.

It is a singular fact that the sense of smell cannot always be depended upon where the presence of a foul drain is suspected. One member of a family may become the victim of its fearful effects, while others are utterly unaffected by it; and of this many instances must have been met with in the ordinary practice of architects and medical men. It is not for us to enter into the subtle causes of the extreme refinement of some natures as compared to others. Let the poet sing:—

> "Oh! why were farmers made so coarse, or clergy made so fine?
> A kick that scarce could move a horse, may kill a sound Divine."

The exception proves the rule; and we should regard such sensitive mortals as warning beacons to save our stronger frames from impending dangers.

Houses which for years had been perfectly free from the effect of drains have been suddenly found to be completely uninhabitable from causes little suspected by the inmates. A single hole made by a rat through the old brick drain has been the means of forming a communication into the foul deposit of many years lying beneath the house, while the inmates were ignorant of the very existence of such a disagreeable neighbour; and even in the public footpaths of certain fashionable localities the abominable smell coming up through rat-holes leading into the common sewers have been for years a positive nuisance to the inhabitants, while no proper means have been taken to remedy so glaring a defect.

No foul drain should be allowed to cross a pipe conveying soft water to a tank, as in cases where the rain-water had become foul it has been found to owe its origin to escape from the joints of the foul drain, and thus delivered into the tank.

The ludicrous array of capricious forms of chimney-pots in all countries exhibit a lamentable want of attention to all the fundamental laws which regulate the draught of smoke. From the Venetian trumpet,—an inverted bell-shape,—the flat or hooded tops, with rectangular lateral openings, of the north of Italy and Switzerland, the London cowls and elbows, the French zig-zag tubes, to the Irish mitred slate pots, we have an assembly of interesting objects, all for the same purpose, but widely differing in their development. The range extends "from grave to gay, from lively to severe." To know the cause is half the remedy, we have learned in our school-boy days, *Est beatus homo qui novit causas rerum*; therefore a careful investigation of the origin of the failure should be made in all cases before applying a remedy. It is well here to

* Paper read by Mr. Charles Geoghegan, at a meeting of the Architectural Association of Ireland, May 29th, 1873. Mr. R. S. Swan in the chair.

observe that the defects of chimneys arise as frequently from natural as from material or constructive impediments, and I shall endeavour to place before you some of the most ordinary errors to be met with in domestic chimneys, with some hints to be attended to in every-day practice, and such suggestions as to a remedy as have been found most valuable in execution.

A chimney may be expected to smoke if an abundant supply of fresh air be not provided for the fireplace, a down-draught being created by the warm apartment drawing its supply of air down the flue, to the serious obstruction of the smoke while making its way in the opposite direction. A strong wind crossing the top of a flue where the draught is feeble will prevent the exit of smoke, and induce puffing at times. Adjacent high buildings or hills divert the course of the wind currents, and cause them to strike down upon the top of the chimney, and render the discharge intermittent. The draught is rendered sluggish by soot lodging in the flues, rough or damp surfaces, slates lying across the top, birds' nests, or other trifling casualties.

The altitude almost invariably determines the power of the draught. The atmosphere becoming more rarefied as we ascend from the earth's surface, the pressure therefore is diminished in proportion as the top of the chimney becomes elevated. A high chimney in a building will cause a lower shaft to smoke, the air being drawn down the latter to supply the former; and if this fact be borne in mind, we need not be surprised to hear of the usual complaints of return buildings smoking, their flues being generally lower than those of the main building: the action in this instance resembles that of the syphon, if we regard the latter as inverted in order to establish the theory.

It sometimes happens that the smoke from a back chimney will ascend, and be delivered freely from the top, and immediately form a curve, and descend down the front flue of the same building; and this singular fact may be accounted for simply by a little knowledge of the science of house ventilation. Any opening in the chimney between the bottom and the top will admit a cross current of air, and obstruct the smoke. Many chimneys owe their failures to careless workmanship, projecting stones in the flue angles, or being wide in one part and narrow in another: the gathering over the fireplaces should be specially attended to. Kitchen chimneys are frequently injured by inattention to this important provision. Damp and foggy weather will affect a flue, the atmosphere being more charged with moisture at such times, and vapours will therefore ascend with difficulty. Drafts across a room from doors to windows injure the effective power of the flue, and too much fuel will cause the chimney to be overloaded, and the smoke cannot get away quick enough. External chimneys, or those in outside walls, waste a great deal of caloric, and do not succeed as well as those within a building. When fresh air is let in from the outside under the fireplace, a powerful draught is experienced; but the consumption of fuel becomes too rapid. Flues formed round on section are better than square or oblong, the angles forming deposits for soot, which reduces the smoke-area.

Horizontal flues deposit soot very freely, the particles being found attached to the upper surface, which fall upon the bottom in flakes as they become heavier. The draught being sluggish, such flues are not to be depended upon, and when a descending flue must be resorted to, a rarefier to expel the cold air should be provided, and for this purpose a jet of gas has been found best for the purpose and least troublesome. Metallic surfaces attract the particles of soot, and walls or divisions across flues have the same effect in a lesser degree, and to this may be attributed the success of the very long flues constructed to contain the deposits of chimneys from lead and silver mines by which a vast amount of valuable metal is annually saved. Confining the mouth of the flue will improve the draught, as the blower will prove. A fire-place the same width as the flue will have a strong current upwards, and by inclining the back of the grate into the room instead of forming the slope in the opposite direction, with a very narrow aperture for smoke, the heating power of the fire is greatly increased. Each grate should have a separate flue, and all hobs or other wide grates are objectionable, as the air escapes up the chimney at each side without catching the smoke in the current.

I need not here observe that the open fireplace is perhaps the most luxurious and least economical mode of warming an apartment, a greater amount of actual heat may be obtained by one-fourth the consumption of coals if burnt in a well-designed close stove, and when the external sides of metal stoves are lined with glazed ornamental tiles (as is customary in Germany) the atmosphere is not affected by contact with the iron.

A fire of wood or turf will require a grate of larger dimensions than one of coal, and the chimney should be properly proportioned thereto. The tops of chimneys should be curved outwards to assist the exit of the smoke, a flat top being found injurious when the wind is blowing across it. A basement or ground-floor may be made the means of heating moderately the entire house, if the flues are made to pass backward and forward under the paving in a similar way to those of the flues heating a Turkish bath. The lower strata of air being heated will ascend, and each succeeding body of cold air, in like manner, until the entire cubical contents of the building becomes generally warmed. If this system were commonly resorted to we should find a corresponding reduction in the amount of the coal expenditure, which has lately been a matter of rather serious consideration. Factory chimneys will require special provision in proportion to the power of the machinery, the consumption of coals being in well-constructed furnaces about 6 lb. per horse power.

It has of late years been the custom to form these flues wider at the top internally than at bottom, and with very good results. The reason for so doing has not been fully investigated; but it is evident that the friction of the smoke becomes diminished in ascending against the sides of the chimney. If we consider that in a well-constructed marine engine the draught is powerful enough to maintain perfect combustion and expel the smoke while a vessel may be going against a head wind at the rate of twenty miles an hour, it will at once be evident to our common sense that a smoky chimney must mean a clumsy and ill-contrived means of wasting fuel, and rendering our habitations anything but habitable. The science of combustion is understood, but the details of working out the principles are usually left to the care of unthinking or incompetent hands.

Domestic Water Supply.—The cistern which receives the supply from the main for household purposes should never be allowed to supply the pan of a w. c. direct, or to overflow into a soil-pipe, even if a trap be provided at the outlet, the foul air being known to escape up the pipe as the water descends, and lying on the top of the water, will become absorbed by its poisoning the water. Of this a familiar instance occurs where tobacco-smoke has been found to be condensed on the surface of water, and singing-birds poisoned by drinking it. Each w. c. should have a separate supply cistern, if not taken direct from the main, as may be where the constant high pressure is laid on.

In cases where old cisterns have been allowed to supply closets, the best means of overflow is to let the pipe discharge out on the roof, or into a rain-water pipe; and where supply is taken from the valve to the pan, a small air-pipe from the former should be carried outside the house, and a large floating ball chained to the valve may then be made the means of overflow, when the excess of water lifts the ball and allows the surcharge to escape without allowing the bad air to return from the pan or soil-pipe.

For cold water, a slate, stone, or cement cistern is preferable to one of lead, copper, or iron. The water when very soft decomposes the iron; if hard, it often destroys the lead, and the copper may be affected in either case, and requires to be kept particularly clean. It has been found that when soft water is admitted into a cistern which formerly was used for hard water, the calcareous deposit left on the sides and bottom by the former is dissolved by the latter, and this fact will account for the old pipes and boilers becoming foul where a change is made in the supply from hard to soft.

All the cocks for high-pressure service should be made self-closing to prevent waste, and it seldom happens that the ball is made large enough to have floating power to shut off in cisterns, the result being that a constant running may be noticed in most cisterns causing enormous waste, and consequently extra cost on the ordinary consumer, as the charge must invariably be made in some quarter. If water companies took means to prevent such reckless extravagance, the poor could have the benefit of having a plentiful supply at lower rates. A high-pressure safety-cock should be supplied outside of each house, worked by a chain and lever, in case of accidents from leakage or bursting. The supply-pipe for ordinary dwellings must not exceed ¾ in. diameter where the service is constant; and all external pipes should be protected from frost by felt, sawdust, hemp, or other casing.

Kitchen boilers should have their circulating cisterns made of galvanised iron, or have lining of tin, copper, or lead—the hot water acting upon the cast iron it becomes charged with rust, and unfit for drinking or for baths. A safety-valve should in all cases be provided for the kitchen boiler where closed in, and for this purpose I would suggest a small piece of sheet-lead bolted with plate and washer on the top of the cistern, in order that any pressure from within should cause the lead to bulge, and open before extreme expansion by steam could occur. The supply-cocks from the boiler should be made to work two ways, so that if cut off from one service, the other should be left open, as it frequently happens that baths and conservatories are heated from the one house-boiler. The supply for the house should be taken from a pipe above the boiler, so that it could not be left empty at any time. And the cold-water service should never dip into the top of the boiler so as to leave any air space above the water, this being the common cause of noises and reports.

All water for drinking purposes should be filtered unless when taken from a perfect spring, river water containing organic matter largely, the well being seldom free from contamination, and the roof water tainted by the soot in the gutters. For this purpose a very simple and ingenious apparatus has been sent here for your inspection, which I consider will meet with general approval from the public. I am also glad to have to notice a very simple and effective w.c. apparatus, with supply-cistern attached, which can be set up at a very moderate cost, and which has the advantage of being perfectly free from all connexions with metal surfaces, which materials should never be allowed to come in contact with water or soil from a house closet. In stables also, all metal troughs and drains should be avoided, the waste water generating ammonia when allowed to lie in metal, from which cause horses have been known to become blind.

The invention now exhibited for allowing only a certain quantity of water to be let off every time a closet is used, appears to answer its purpose well, and has been designed to meet the new regulations of the water companies for prevention of waste, the modes of adopting the apparatus to existing cisterns being extremely ingenious and simple.

I have also here a full-size working model of the invention which I have patented for protecting the old lead pipes from bursting by high-pressure water or from frost, and which, after being three years in operation, has proved to be of extreme value for its purpose, and perfectly self-acting, and is known as "Geoghegan's Patent Regulator."

This apparatus admits the high-pressure water supply into the highest story of any building, filling the cistern or tank, and instantly causing by its own action the main inlet situate inside the house to be perfectly closed, the cock opening as the water is used through any of the closets or cocks throughout, thus saving the alteration of all existing low-pressure pipes, cocks, &c., in old buildings, and preventing the waste of water by moderating and regulating the pressure. The supply-pipe being exhausted by means of a self-acting valve when the cistern has been filled, no damage can occur to the pipes where exposed.

The water at high pressure being admitted through the valve of the apparatus, passes up to the highest cistern to be supplied, from which all other branch pipes may be taken at ordinary pressure. An air-box, 11 in. by 11 in., is placed in this cistern, inverted and firmly secured by straps and screws to the top of the cistern, the warming pipe being united to the air-box, is carried down and attached to the lower chamber of the regulator, which is divided from the upper by a diaphram, a tube being fixed in the centre for the guidance of the spindle to which the ball is secured, and which also allows the water to pass from lower to upper chamber under floating ball. As the cistern becomes filled, the air confined in the inverted box being condensed by the pressure of the head of water rising 4 in. or 5 in. above the open bottom, is forced down the warming-pipe into the lower chamber of the apparatus, depressing the water in

same, and causing it to ascend in upper chamber, in which the ball floats connected with the high-pressure valve. As this cock closes, it raises the balance tube charged with mercury above the horizontal position, allowing the mercury to fall over to the other end of the tube, the momentum of which acting upon the lever of the exhaust, causes it to open after the main inlet is closed, and thus empties the rising main from the regulator up to the cistern.

As water is drawn off from the cistern, the condensed air becomes liberated, the ball again descends, the exhaust cock closes by weight of lever, and the inlet opens as before.

A GUNPOWDER PILE-DRIVER.

AT a meeting of the American Society of Civil Engineers, in New York, on March 5th, a paper "On Shaw's Gunpowder Pile-driver," by Samuel R. Probasco, C.E., of Brooklyn, N.Y., was read.

This pile-driver was set at work in October, 1872, on a line of sheet piles for a reservoir-dam in the valley of Parsonage Creek, Long Island. The material to be penetrated was sand and fine gravel, cemented together in places, so as to be hard and difficult to move with a pick, and like "hard pan." Clay was found below the water-level of the basin,—some borings showing it at 15 ft. below the surface. The lower stratum was tough and tenacious, and the whole material was under water. The machine in form resembles an ordinary pile-driver: a cast-iron block, called a "gun," resting on the head of the pile, is bored out, and receives, without windage, a wrought-iron piston attached to another cast-iron block, called the "ram, which is lifted by explosion of powder in the bore. When the piston leaves the gun, a cartridge is thrown in, which, exploded by the heat freed by the piston in its descent, throws the ram upward again, and forces the pile downward. The area of the piston is adjusted to the weight of the ram, which also is adjusted to the work to be done. Soda powder cartridges, in cylinders of 1¼ oz. to 1½ oz., coated with black lead and paraffine, are used. The coating is expected to keep the powder dry, lubricate the gun, preserve the requisite tightness, prevent escape of gas, and cause the entire force to be exerted on the base of the piston. The piston is made a little smaller than the bore of the gun, and has on its lower end a steel ring which fits the bore closely. The performance was as follows:—At first several explosions were necessary to lubricate the gun, which leaked gas so that the ram would not go to the requisite height to move the pile. After a few shots the piston moved up regularly, and in its descent, fired the charge, forcing the pile down and itself upward.

When the resistance is slight, this machine may be economical, but when, as in this case, required 300 blows from cartridges, costing 2½ cents. each, to force a pile down 5 ft. or 16 ft., it cannot be called so. The gas from the explosions cut passages in the ring at the end of the piston, and thereby much lessened the power of the machine. The gun became hot from the rapid discharges, and the bore enlarged, whereby more gas escaped.

Seven piles were driven with it,—each costing more for powder than the contractor got for piles in place,—when the machine refused to work. On examination, the steel ring was found furrowed by the powder, and the piston (diameter, 5 in.) to be bent by striking the bottom of the gun as to be useless. The air-cushion relied upon to prevent this was lost by the furrowing of the ring.

The inventor, on being consulted, decided that the excessive consumption of powder was due to the piston being too small for the ram, weighing over 1,700 lb.

The bore of the gun was then enlarged to receive a piston of 7 in. in diameter, and ten piles more were driven, when the machine was again laid aside.

The result of this trial was similar to the first, except that the piston was not bent. The gun got so hot as to fire the powder before the ram reached its place. Altogether, seventeen piles were driven to a depth of from 14 ft. to 19 ft., requiring from 200 to 300 blows of 1½ oz. cartridges. An ordinary pile-driver was then employed, with a hammer weighing 1,800 lb., and falling 8 ft. to 10 ft. In this way eleven piles were put down, 15½ ft. in ten hours, costing per pile no more than 100 blows from the powder-machine. These 100 blows at best would put the pile down but 10 ft.

The piling was spruce, from 10 in. by 10 in. to 10 in. by 14 in., 20 ft. long, with 2 in. square tongue and groove.

The piles were bevelled at the point on three sides, leaving the grooved side untouched. The groove was driven on the tongue of the preceding pile. The heads were protected with a light band. Seven piles were driven without shoeing; the eighth split, and showed the necessity of protection at the point. A cast-iron cup-shoe, weighing about 40 lb., with a groove in it, and made with three bevels and one plain side, was found to stand the work.

The tendency of the tongue of the pile to work up was obviated by twisting a chain tightly about the pile and tongue; a lever, with rope attached, was used for this purpose, the force being applied as the blow was delivered. Seventy-five piles were driven in this way to a mean depth of 15½ ft. By experience, 6 in. more depth has been attained, which is about the maximum penetration in this kind of material, and this can only be done with the best of sound, dry spruce.

THE DRAINAGE OF WINDSOR.

SIR,—In an article in your impression of last Saturday on the Windsor Castle Drainage Works, the public are led to suppose that in consequence of the alterations to the weirs the flood waters are now sufficiently under control, and great satisfaction is expressed at the success of the arrangements made for regulating the height of the water. As an inhabitant of the district which was more than once flooded last season to a much higher level than has been the case for many years (see a sketch at the time published in the *Illustrated London News*, "Windsor and the Floods"), may I be allowed to suggest to those in authority that they should not congratulate themselves upon the success of their works until they have at least so far regulated the height of the river as to keep the water out of our homes, and our roads and lanes open for their proper traffic, and not for punts and boats?

OXFORD ROAD.

PROPOSED MEMORIAL OF THE LATE SIR WILLIAM TITE.

THIS project is making progress. A committee of the Chelsea Vestry has been appointed to make the necessary arrangements, and we are informed that they are desirous of receiving suggestions and promises of monetary aid from the public and private friends of the deceased. Sir Charles Dilke, the member for the borough of Chelsea, who, as well as his father, was a personal friend of Sir William, has taken the subject up warmly, and has promised a contribution of 100*l*. Mr. C. Lahee, the vestry clerk of Chelsea, acts as honorary secretary, and will be glad to receive communications addressed to him at the Vestry-hall, King's-road, S.W. We will gladly do anything we can to advance the object in view.

COAL AND IRON.

MR. J. LOTHIAN BELL, president of the Iron and Steel Institute, in the course of his evidence the other day, before the Coal Supply Committee, said the sole cause was the extraordinary demand. As prices rose the labourers obtained higher wages, and they insisted upon working a shorter number of hours, which they were able to do in consequence of getting higher wages. By opening out new collieries and working those already existing more industriously, the coal-owners were able to keep pace with the demand for a time, but in 1850 the Cleveland ironfield was discovered, and some time afterwards it was found to extend close to Middlesbrough, and a railway was constructed to connect it with South Durham. The production of iron went on increasing at a rate which soon made itself felt. Anterior to 1850, 111,000 tons of pig-iron were made in the north of England, and the total consumption of coal for iron purposes was under half a million tons a year. In 1858 the amount of pig-iron manufactured was 512,000 tons; in 1863, 838,400; 1867, 1,156,953; 1870, 1,695,377; and 1872, 1,968,972. The number of puddling furnaces in 1850 was 250. It increased in 1861 to 546; 1863, 662; 1866, 1,168; 1868, 1,215; and 1872, 1,680. In 1860 the price of small coal was as low as 1s. 5d. per ton, and of coke 7s. 4d.; in 1865, small coal fetched 1s. 11½d., and coke 8s. 8½d. Up to the end of 1871 coke only brought 10s. 6d. a ton. No portion of the community could be more surprised at the enormous change which then took place in the price of coal than the coal-owners themselves. This is shown by the fact that some of them agreed to sell coke for a period of which three years have yet to run, at 11s. a ton, having very little idea that before the end of 1872 coke would be selling at 20s. a ton, and shortly afterwards at 45s. In 1872 the quantity of coal raised in the county of Durham was not sufficient to meet the demands of the district, and it is actually a fact that large quantities of coal were imported into Newcastle. The whole output of France is not half as large as that of Northumberland and Durham. The French coal-fields are small, few in number, and difficult to work. All over Europe they are raising coal as cheaply as we are here, but they are raising it in much smaller quantities. I do not think we have anything to fear from foreign competition either in reference to coal or iron.

At a recent meeting, it was stated by Mr. Landale, managing partner of the Lochgelly Iron and Coal Works, Fifeshire, that the men worked from four to four and a half days a week. For some years, as a rule, they had always had one idle day a fortnight—the Monday after pay-day. Latterly they had taken another day, in order to prevent the coal owners from accumulating stock. A considerable number of the men, about two-sevenths, declined to work more than three days a week. The restriction upon the output of coal was due partly to the action of the men themselves, and partly to the miners' associations.

ARCHITECTURAL ASSOCIATION.

AT the meeting held on Friday evening, June 13th, attention was called to the fact, that all the prizes awarded this year at the Institute had been won by members of the Association,—the Soane Medallion and Institute Medal, and medals of merit for essay, drawings, and designs. The Pugin Studentship and medals of merit in the competition for it, and certificates of honourable mention, are also all held by members of the Association, who have furnished all the successful candidates in this year's architectural examination (proficiency — both artistic and scientific sections): seemingly a proof that the Association contains a good share of the young men of the profession who are likely to be even better known hereafter. Visits have recently been made to manufacturing premises, to see the processes of girder building, and other engineering matters at Messrs. Moreland & Sons' works, in Old-street, and to see glass-blowing, stained-glass painting, and glass mosaic working, at Messrs. Powell's, Temple-street, Whitefriars. Both these large establishments were in full work when the visits were made, by a goodly number of members. A paper was read by Mr. F. Chambers, at the meeting (13th inst.), to which we shall return.

LIGHT AND AIR.

DICKINSON *v.* HARROTTLE.

IN this case, before Vice-Chancellor Malins, the plaintiff and defendant (according to the *Law Journal*) were owners of adjoining houses in a street in Newcastle-on-Tyne, the plaintiff carrying on the business of a tobacconist. At the top of his house was a garret, having at one end a window looking eastward over the defendant's roof, and at the other a window looking westward. This room had formerly been used by the plaintiff for drying tobacco, a through draught being created by opening the two windows. The defendant recently commenced re-building his house, and proceeded to erect a gable roof, the top of which would be considerably above the plaintiff's east window; but the part facing the window was intended to be sloped downwards, so as to join the plaintiff's wall a little below the window. It was admitted by the defendant that the roof, when so raised, would interfere, though not materially, with the plaintiff's east window, and the defendant offered to place two dormer windows in the plaintiff's roof at his (the defendant's) expense. The plaintiff declined the offer, and filed this Bill, to restrain the defendant from proceeding with his building in such a manner as to interfere with the light and air as theretofore enjoyed

by the plaintiff through his east window. The cause now came on upon a motion for an injunction.

Mr. Glasse and Mr. Medd for the plaintiff; Mr. Cotton and Mr. A. G. Marten for the defendant.

Vice-Chancellor Malins said it was well settled in all these cases that the Court would not interfere by injunction, unless there was a material diminution of light and air. Here the plaintiff would have a sufficient quantity of light for any purpose for which the room was likely to be used, and he could create just as strong a draught of air as formerly. It was important that the owners of houses in towns should have a reasonable power of improving their property, and a man had no right to prevent his neighbour exercising such a power. Where the Court was satisfied that the interference with the plaintiff's light and air was trifling, and could be compensated for by damages, it would not prevent the improvement of property by granting an injunction. In the present case, there was no such diminution as would justify an injunction, and therefore the motion must be refused.

THE CHANCES OF ANOTHER STRIKE.

SIR,—On pages 125 and 127 of the *verbatim* report of our interview with the employers last July will be found the statement to which I alluded in my letter. In answer to one of the deputation, Mr. Lucas says:—"*Yes, you shall, if the trade will admit of it.* You will have *any price you like.*"

Other paragraphs are equally clear, and still stronger was the promise implied throughout the whole of the discussion on that point.

H. BROADHURST, Stonemason.

*** The masters are equally positive that no such promise was given.

IN reply to an application on the part of the carpenters to the Master Builders' Association, that their delegates might be permitted an interview, in the hope of satisfactorily adjusting the dispute, Mr. Matkin, the secretary of the Carpenters' Association, has received a reply from the Masters' Association, stating "that the masters are determined to adhere to their refusal to comply with the men's demands for the extra halfpenny per hour, and that, therefore, any meeting between them would be useless."

SEWER VENTILATION.

SIR,—As much attention is now being given to sanitary science, I was pleased to see in your last issue a proposition, by the borough engineer of Southampton, to discuss the merits of sewer ventilation as proposed by the borough engineer of Liverpool, therefore I should like to make a few remarks upon the subject. House ventilation in districts where houses are of uniform height is certainly recommendable; but where this system of house-building is deviated from, I consider the ventilation of house-drainage, as proposed in Liverpool, highly objectionable, from the nuisance arising by the sewer gas escaping from the ventilating-shaft of a lower house entering into a dormitory or other window (which are often found) in the gable-end of an adjoining and higher house; but where this evil can be avoided (which could be done by carrying the ventilating-pipe along the roof and up the chimney-stack), ventilation of house-drains ought to be indispensable; and I am of opinion that, instead of having a ventilator to every soil-pipe, as proposed, and thus entailing great expense, one pipe would be sufficient, provided its bore be at least equal to half that of the one it ventilates, with the additional proviso that it be inserted at the end of the drain, or at the end of the ramification of the drain. From experience of, and attention given to, such matters, I never found the indraft of a sewer, by means of street-ventilators, so great as the outdraught. Referring to the objections stated by Mr. Lemon, that "the gases from the sewers will take the shortest route, and rush into the houses when the pan or valve-closets are used, instead of passing up the 4-in. outlets, as proposed. I fail entirely to concur with the reason of such argument, for it may fairly be assumed that no closet-pan is attached to the drain without first having a syphon placed immediately beneath it, and thus trapped would prevent an escape of gas into the house, and find its exit by the ventilator applied for the purpose. The objection raised by Mr. Lemon would entirely be avoided by a system of trapping; and if the diaphragm of every trap communicating with a house-drain had a dip of at least 2 in. in water, it would be sufficient to prevent an escape of sewer-gas into the house, especially as the pressure would be greatly diminished by the ventilators. For my own part, I think it advisable to prevent the gas from the sewers having access to the house-drains, allowing the sewers to have ventilating-shafts to the street-surface at distances of 100 yards apart, and cutting off the connexion, as far as the gas is concerned, between the sewer and house-drains, which could be done by inserting a syphon in the latter with inlet pipe attached. At a convenient distance from the house-frontage, by adopting this method, both the houses would be disconnected in ventilation, as well as free from the inhalation of their neighbours' gases. OXFORD.

SEWER VENTILATION AT LIVERPOOL.

AT an adjourned special meeting of the local health committee for the purpose of further considering the report of the borough and water engineer upon the condition and ventilation of the sewers in Liverpool, Dr. Trench, the medical officer of health, advocated the archimedean screw principle as the best for ventilating sewers.

Mr. Forwood moved:—

"That the system of drainage in question having been put into good condition, gratings be fixed on the manholes in the streets, or, in the absence of manholes, that ventilating-shafts in the streets be constructed at distances not greater than 100 yards; that advantage be taken where practicable, of any tall shafts as up-cast shafts; and that in very confined places where, owing to special difficulties in connexion with the condition of the sewer, mephitic air is expected to accumulate unduly, Archimedean screw ventilating-shafts of the largest size, and similar shafts without the screw, be used if practicable."

This was seconded and carried. It was also agreed:—

"That the manufacturers be required to abate the nuisance arising from the discharge of hot water into the system of sewers in question, and that manufacturers be prohibited from injecting steam into the sewers, and be required to turn it into the air."

After a brief discussion, the committee agreed to adopt the following recommendations:—

"That immediate consideration be given to the practicability of requiring owners of existing property to ventilate their drains by pipes carried up to the tops of houses; that the regulation with respect to compelling owners of property about to be built to wet-trap their drains, and thus cut off air communication with the sewers if they refuse to ventilate them, be added to the form of permission for drainage at present in use; that, in conjunction with the removal of all drains from the interior of cellars in courthouses, and the change from intermittent to constant water service, the drains in cellars of front houses adjacent to such courts, be cut off, when the owners are willing to dispense with the water supply within the cellars; and that the influence on the sewers be taken into consideration whenever the repaving of a street presents an opportunity of rendering the pavement impervious."

The report of the borough and water engineer, Mr. George F. Deacon, upon the condition and ventilation of the sewers, ordered by the Health Committee to be printed, has been issued in a printed form (Benson & Holme, printers, Castle-street, Liverpool), and a copy of it is now before us.

BRICKMAKERS' PRICES.

SIR,—Will some correspondent send you the prices given to brickmakers for making bricks and draining-pipes, inclusive or exclusive of coals, at a few places; also the prices at which bricks and draining-pipes are sold in the yards?

In the present uncertain state of labour, and also of prices of coals, the owners of private yards are quite powerless to make the demands of the men meet a reasonable price of production and sale. NOT A BRICK.

STREET DISFIGUREMENT.

SIR,—Advertisement of all kind is a fair and necessary thing; and if the eye does occasionally stare at a newspaper page half-filled with notices about a certain despatch-box, the buying up of old clothes, or what not—and if farther one's nerves are certainly shaken now and then by the alarming designs and colours which modern advertisements on London walls sometimes assume, it is after all a mere feeling of passing curiosity that is roused. One moves on, and next day the walls are covered by fresh ones.

When, however, it is attempted to advertise permanently by means of a whole house-front, as done at a certain magic tea-shop (No. 478) in Oxford-street, I would ask, sir, whether reasonable limits have not been passed, and whether no authority can prevent our street architecture, which in its present grimy state is at all events modest in its ugliness, from being fully exposed by such attempts at coloured symbolism. On stepping from Mudie's Library, I quite recoiled at the sight opposite, and I advise delicately-nerved people to avoid it by a detour. A. C. G.

WALLS OF A RACKET COURT.

SIR,—I should feel much obliged if any of your readers would inform me the best materials with which to plaster the walls of a closed racket-court and form the floor.

H. D. F.

COLOUR OF GAS TAR.

SIR,—I should feel obliged if any of your correspondents would recommend me something to mix with gas tar, so as to change its colour. I wish to cover a quantity of rough deal fencing with the tar, but do not like the colour. E. S.

IRON NETTING FOR PLUMBERS' FIRE-POTS.

SIR,—With reference to the late Alexandra Palace calamity, a lady friend of mine suggested yesterday the possibility of the said braziers or fire-pots being covered with an iron netting, on the Davy safety-lamp principle, whilst the men are away at meals, so as to prevent any sparks or pieces of charcoal, &c., falling on the inflammable roof. Why is not a call-man retained to summon the men to dinner, and watch the said fire-pots till they return, and not trust to *boys*, who naturally look rather to the passing amusements beneath the roof than attend to the destructive agent?

S. M. D.

ARCHITECTS AND COMMITTEES.

SIR,—What is the proper course to take under the following circumstances? The Bolton School Board advertise a competition for two Board schools, on selected sites, offering a premium of 10*l.* for the best, and 5*l.* for the second best. The plans are sent in (five architects competing), designs are selected, a premium of 10*l.* to be given to each, as they were considered of equal merit; resolution passed that each of the successful competitors should carry out his design at the usual commission. Suddenly, opposition is organised to prevent schools being built, which seems, at present at all events, likely to succeed.

Have I, as the successful competitor, any claim upon the Board beyond the premium? Not a word was said in the conditions as to whether or not they would employ the successful architect, but still they have made no secret that they would, and that was the object of the competition, so that, being a public body, they could not be considered to be showing any favour or partiality. S. H.

THE ROYAL ARCHITECT, GEOFFREY CHAUCER.

PERMIT me to remark that the St. George's Chapel at Windsor repaired in the reign of Richard II. was not the same building as we now have it, but a previous structure, the present edifice having been built by Edward IV. I should say that the building which Chaucer worked on was that built by Henry III., in 1216–1255.

Geoffrey Chaucer, as clerk of the works, had 2*s.* a day; but his predecessor, William of Wykeham, who has left his name on Winchester tower, had but 1*s.* a day when he filled the same office in the previous reign. A. HALL.

A PATENT STONE-POLISHING MACHINE.

A LARGE number of the principal builders, architects, and engineers of Scotland met recently in the works of the North British Patent Stone-Polishing Company, Dalry, Edinburgh, in order to witness the trial of a patent machine, invented by Mr. Wm. Adams, for the working and polishing of freestone, marble, and granite. About eighty persons assembled. The invention of Mr. Adams, it is explained by the *Weekly Scotsman*, was purchased about three years ago by an American company, and has since been at work with the most successful results in the United States. It was tried upon freestone, granite, and marble, says our authority, with most encouraging results, and was declared to be the best machine yet introduced for working the surface of stones.

A limited liability company has been formed in Edinburgh, who have acquired the patent-right for Scotland, and have erected premises at Dalry.

Mr. Adams's machine consists of two platforms or tables, standing parallel to each other, and resting at either end upon a double crank shaft. These shafts are joined by strong connecting-bars, one of them being connected with the

eam-engine or other driving power. The ones are laid on edge, face to face, upon each the platforms, and as the machine works the atforms are alternately raised and depressed ith a motion like that of the engines of a ddle-wheel steamer. The stones are thus bbed against one another, and receive the st delicate polish. Each platform has an up- ght back, which can be moved backwards and wards by means of screws to suit the thick- sses of the various stones, besides being pro- ded with adjusting screws, in view of the ghness and inequalities of the stone. Sand d water are supplied from above by means of imple apparatus invented by Mr. Wm. Beattie, chitect, Edinburgh, and fall between the sur- es of the stones, rapidly cutting off the raised d rough portions, and reducing them to a ooth and uniform surface. The inequalities one stone correct the inequalities in the other, d in a short time, varying according to the rdness or softness of the stone, a polished face almost mathematically true is imparted both the rows of stones. The advantages imed for this invention are its extreme sim- city and the fact of its requiring no steel tools other implements which would necessarily uire to be frequently sharpened and upheld much expense. The operation is so rapid t a load of freestone can be worked from a rry face to a finely-polished surface in a ce of time varying from ten to twenty utes, according to the hardness of the stone. nite and marble can, it is said, be worked in nt one-third of the time taken by the ma- nes presently in use. The machine is also of ght and simple description, and can be fitted h wheels so as to be moved about from place place. The machine was tried with four e Plean quarry stones, which were taken after the lapse of about twelve minutes, a true and polished surface. Another pair tones from Polmaise Quarry, in Stirlingshire e finished in thirteen minutes and a half, and quality of the work excited the admiration ll present. At the close of the proceedings mber of gentlemen expressed their entire sfaction with the working of the machine, united in according a vote of thanks to the entor, Mr. Adams. Orders for machines were en by firms in Glasgow and Aberdeen.

A NEW WINDOW IN WESTMINSTER ABBEY.

ESSRS. CLAYTON & BELL have just now pleted the fixing of a window in the north sept of Westminster Abbey, in memory of officers, men, and boys who perished in the *ain*. The following is a list of the subjects nded :—

he Sea giving up its Dead; Building the ; the Passage through the Red Sea; the t of Solomon; Building the Ships of Tyre; h delivered from the Whale; Christ stilling Tempest; Christ walking on the Sea; st teaching from the Ship; the Miraculous ght; and the Shipwreck of St. Paul.

brass plate is in preparation, to be laid in avement in front of the window; and two e memorial brasses, by the same artists, ding the names of all who were drowned he occasion, will shortly be fixed in St. Paul's edral. The plate in the Abbey will be ibed :—

"The stained Window above
commemorates the foundering
of H.M.S. Captain on September 7th, 1870.
when Captn. Hugh Burgoyne, V.C.,
Captn. Cowper Coles, C.B.,
with 19 Officers,
and 462 Men and Boys,
perished off Cape Finisterre,
in the service of their country."

e window is made in direct imitation of old ; to such an extent, indeed, that parts of lesign are represented as if worn away, and parts as if corroded by time,—a principle bably open to discussion. The general effect ry harmonious and agreeable.

The Poet Cowper's Window.—The memo- window to the poet Cowper has been placed reat Berkhampstead church. The public riptions fell short of the cost by more than but this was made up by some of the in- ants, including Mr. William Longman, A., to whose exertions the success of the he is mainly due.

CHURCH-BUILDING NEWS.

Rishton, near Accrington.—The ceremony of laying the corner-stone of "a new Church of England," has been laid at Rishton, a thriving township near Accrington, by Mr. F. W. Grafton, of Heysham Hall, Lancaster. The church is estimated to cost 5,000*l.*, towards which Mr. Grafton has given the donation of 1,200*l.*, and the other promised subscriptions make the amount into 3,000*l.* The Rev. Canon Birch, of Blackburn, presented a silver trowel to Mr. Grafton; and that gentleman, in addressing the spectators, said that his sympathies had been aroused towards that place through the Rev. J. Allott, the minister, informing him that several of the members who were masons had built a large portion of their schoolroom free. He wished the Church of England to be free from the extreme parties within it, and that it would become more the church of the people and a true national church. He also hoped that the church would be opened free from debt, and that they would not have to resort to a bazaar to accomplish that end. The architects of the new church, which will be dedicated to St. Peter, are Messrs. Maycock & Bell, of Manchester.

Littlebury.—The first stone of the chancel of the church here has been laid by Lady Braybrooke, wife of the patron of the living. The architect is Mr. Edward Barr, of Saffron Walden, and the contractors are Messrs. Whitehead & Jacklin, of Royston. The whole cost of the chancel is borne by the patron, as also of the new vestry, and half the cost of the organ-chamber. The stained-glass east window will be the gift of Lady Braybrooke, together with the reredos.

Olney.—It is proposed to continue the work of restoring the parish church, commenced by the Earl of Dartmouth in the chancel, on a liberal scale. The west end section will be the first work undertaken. The estimate for this, including the western bay of the nave and aisles, but exclusive of the seating and of the enclosure to the western doorway, is 365*l.* The seating and enclosure would cost about 175*l.* The roof would be restored with the rest of the roof of the nave. The estimate for the whole work, in accordance with a plan furnished by Sir Gilbert Scott, if done at once, is 4,000*l.*

Cambridge.—St. John's Church, situate in Wellington-street, Newmarket-road, has been dedicated. The building is to serve the double purpose of a children's and mission church. The gable abuts upon the street named. There is accommodation within its walls for some 300 persons. The building consists of a nave, 44 ft. by 26 ft. clear of walls; chancel, 21 ft. by 14 ft.; on the north side of chancel is the organ-chamber, and on the south side a small vestry; the side walls are 12 ft. from floor to plate; the roof is of Memel timber, trussed with iron ties to collar-beam, with ring, rod, &c.; the ceiling line is on the top of collar, making the total height 20 ft. in the clear: the church is lighted on each side with four lancet-headed windows. Externally, the edifice is simple, showing a roof running through at the same level from east to west; the front elevation consists of porch on either side, and one three-light plain lancet window in the centre, over which there is a small bell-turret, terminating with a cross; the total height from ground-line to top of cross being 45 ft. The style adopted throughout is Early Pointed. The building is of white brick, with red arches and Bath stone sills and weatherings. The floor of the nave is of wood, with cocoa matting in the aisle and seats; and the church is warmed with hot-air by Messrs. Blake & Co., of Coventry. The cost of the fabric and fittings is about 800*l.* The plans and specifications were given Mr. C. Day, of Bedford, builder (brother-in-law of the vicar's churchwarden, Mr. Cawley), and the work was carried out by Messrs. Hicks, of Cambridge. The windows, which are at present filled with Hartley's patent glass, are to be filled with stained glass the gift of Mr. F. Leech. The organ, which is of ample scope for the building, was built by Mr. Trustam, of Bedford.

East Rudham.—On the 15th of October, 1870, the ancient tower of East Rudham church, which had long given symptoms of decay, fell down, and rendered the edifice, which was also in a very unsatisfactory state, quite unfit for the purposes of Divine service. The chancel has been supplied with a new roof, but not having been re-built, it was not considered necessary to re-consecrate the church. It is unfortunate that the restoration or rebuilding of the church has not been in some way under the direction of an archæologist. It was one amongst the most interesting of Norfolk churches, and was worthy of a true restoration. As it is, the fine proportions are, fortunately, not lost, but many details are gone altogether, and the scantlings of the roof are meagre, thin, and unsatisfactory. The church greatly needs furniture, and presents a cold and naked appearance. No provision has been made for warming the church, though one has been made in the roof for ventilation. The cost of now fitting up a warming apparatus will be fully one-third more than if it had been erected during the re-building of the church.

Huntington.—The vicar and churchwardens have formally deposited in the north-west angle of the wall of the new nave of their parish church a parchment record of the work of restoration which is now being carried on to completion. At the foot of the document are given the names of the committee, architects, masters, and men engaged in the work. Last year the edifice consisted of chancel, nave (with a wooden bell-turret on the roof), south porch, and a brick vestry recently added. The restoration comprises—rebuilding the nave; a new north aisle; the rebuilding of a side chapel on the north of the chancel, of the former existence of which evidence was found on taking down the nave, which will provide an organ-chamber as well as a vestry; and building the basement portion of a new tower and spire, which forms the south porch and entrance to the church. The completion of the tower and spire, unless sufficient funds can be obtained, will have to be left to future efforts. The chancel, which is fifteenth-century work grafted upon thirteenth-century, as shown by the sedilia in its south wall and arcade of the former chapel which was discovered, is retained, but lengthened.

Halifax.—The chief stone of St. Augustine's Church, Halifax, has been laid with Masonic ceremonial. The building has been designed by Mr. Richard Coad, of London, architect, and the style is to be Gothic of the latter part of thirteenth century. The nave will be 83 ft. in length and 27 ft. in width, and the aisles, 11 ft. 6 in. wide, with slightly projecting transepts, 21 ft. wide. The church is to be 41 ft. long by 23 ft. wide, with an apsidal east end, having chapels and vestry on either side. A tower, 21 ft. square, is to be placed on the south-west corner of the south aisle. The material of the body of the church will be of hammer-dressed stone, from the quarries of Northowram, and the dressings will be of Ringby stone. The internal facings of the walls are to be lined with red and white bricks, in patterns. The roof will be of stained deal, framed with panels. The vestry roof will also be of the same material, and all the seats will be open. It is proposed to have lofty windows in the clearstory, as being suitable for a town church, to insure sufficient light in the nave. The nave, aisles, and transepts are only proposed to be erected at present, at a cost of 6,500*l.*, leaving the chancel and tower until sufficient funds are received for their erection.

Southsea, with Milton.—Emmanuel Church has been consecrated by the Bishop of Ely. The first stone of the edifice was laid on Whit Tuesday of last year. The contractor for the work was Mr. Bennett, of Lynn, for 2,000*l.* It is estimated that the sittings will hold about 400 persons.

Oxford.—St. Mary Hall chapel has been re-opened, having been, since Midsummer last, in process of repair and improvement, under the superintendence of Mr. J. C. Buckler, of Oxford. The east and south windows have been repaired, and a reredos added of Painswick stone. The east window has been filled with painted glass by Mr. C. E. Clutterbuck, of Stratford, London. It contains fifteen small representations of events illustrative of the life of the Virgin Mary, from the Annunciation to the Ascension. The south windows have painted quarries, by Messrs. Lavers, Barraud, & Westlake, London; and the north by Messrs. Powell, London. New seats and a screen, in English oak, were furnished by Messrs. Rattee & Kett, of Cambridge. The roof has been boarded through the entire length, with intersecting ribs over the eastern part, and carved bosses, by Messrs. Rattee & Kett. By the removal of two sets of rooms (one of which was in the roof), space has been gained for an organ gallery. The organ is by Messrs. Gray & Davison, London. The whole block of building, of which the chapel forms the top story, was built chiefly at the expense of John Saunders, Principal of the Hall, from 1632 to 1644, and Provost of Oriel, from 1644 to 1653. The sum expended has been between 1,100*l.* and 1,200*l.*,

rather more than a third having been (hitherto) met by subscriptions of Aularians past and present. The builder was the late Mr. J. Fisher, of Oxford.

STAINED GLASS.

Convent, Mill Hill.—Mr. Thomson, of Southwark, has been executing some stained glass windows, under the direction of Mr. Goldie, architect, for the chapel of an extensive Franciscan convent, after the designs of the latter gentleman, at Mill Hill, Middlesex. Eschewing positive colour, the effect is obtained by contrasted tints of varied rolled cathedral glass. The subjects, being the great saints of the Franciscan order, are drawn with conventional grace and beauty, combined with the simplicity of treatment of the Early Italian artists, who in their time worked so thoroughly, and have no shading, the requisite amount of form being obtained by delicate hatching. Canopy-work is wholly ignored, and the figures are relieved by a background of dispered quarries.

FROM SCOTLAND.

Edinburgh.—The public bodies interested in the restoration of St. Giles's Church have concurred in nominating a committee, to whom have been delegated full powers in reference to the procuring of stained-glass windows for the restored choir. The committee consists of the Chairman of the Restoration Committee; Dr. William Chambers, of Glenormiston; the Lord Justice-General, the Lord Provost, Dr. Arnot, and Sheriff Thoms. ——There seems now to be a prospect of the completion of the national monument to Prince Albert. Some delay was occasioned by a change of plan in reference to the pedestal, and the consequent necessity of raising a supplementary subscription to meet the extra cost of Peterhead granite. There was also the question of the most suitable site for the monument. The *Weekly Scotsman* understands that the foundations of the structure are to be commenced immediately. From the nature of the ground in Charlotte-square, it will be necessary to go some 11 ft. or 12 ft. below the surface, and to put in a mass of substantial masonry in order to secure adequate support for the superincumbent weight. The pedestal itself has been for some time in course of formation at Macdonald's Granite Works, Aberdeen. It will consist of enormous blocks of polished red granite, some of them the largest ever produced from the works. The erection of the sculptures will follow in due time after the pedestal is placed. The subsidiary groups and bas-reliefs have long stood complete in the bronze. Mr. Steell has meantime been touching and retouching the great equestrian statue which is to form the centre-piece of the memorial. He expects to be ready with this figure as soon as the pedestal is ready to receive it.——Mr. Steell has been selected to execute a statue of Robert Burns for the Central Park, New York. The proposal to have such a memorial thus follows closely upon the erection of the Scott statue. The committee, it is said, were influenced in their selection by the general admiration which Mr. Steell's Scott statue has excited in New York. The new statue is to be executed in bronze; the price, exclusive of pedestal, to be 2,000 guineas. This offer, communicated through Mr. Duncan, of the Crown Office, Edinburgh, was accepted by Mr. Steell. The statue is to be on a colossal scale, but the sculptor is left entirely to his own discretion in regard to posture and style of treatment. There is no restriction as to time.——There has just been erected over a grave in the south-east corner of the Grange Cemetery, a monumental memorial of the late Mr. John Mitchell, for many years superintendent of the Edinburgh Fire-Brigade. The monument, which has been executed by Mr. T. M'Ewen, sculptor, Lothian-road, is in the form of an obelisk, 8 ft. in height. The whole structure — base, die, and needle alike,— is worked in red Peterhead granite, highly polished.

Greenock. The new Garvel Park Graving Dock has been formally inspected by the Harbour Trust of Greenock, preparatory to its being opened. This dock is said to be the largest work of the kind in Scotland, and is expected to have the effect of attracting additional ships requiring repairs to the Clyde, while preventing in future the necessity of large Greenock-built and other steam vessels having to leave the Clyde for Leith, London, and other ports. The length of floor of the new dock is 500 ft., width at bottom 70 ft., and at coping 80 ft.; the entrance is 60 ft. wide at the coping, with a depth of 20 ft. of water at high tide. The dock is formed on an improved principle compared with the present docks of Greenock, and the caisson for the entrance, which is the patent of Mr. Kinipple, renders unnecessary the heavy swing bridges and expensive opening and closing machinery, and has increased facilities, only one man being needed, instead of fifteen or twenty as at Leith, to set the machinery in motion. It may be opened or closed at all times of the tide, and although weighing 250 tons is so ballasted as to have a gravity only of a few tons, being nearly in a floating state. The caisson when in its place serves as a bridge, 15 ft. wide, and prevents the necessity of a cofferdam. The water can be retained in dock at any level, and thus a wet dock may at any time be formed of sufficient size to accommodate six ordinary-sized vessels afloat. The engine-house is placed underground. The whole works will cost over 60,000*l*. The dock will be opened to receive shipping within a few weeks. It is the first of a series of docks, quays, and breasts on the Garvel Park estate, purchased in 1868 for 80,000*l*.

Books Received.

A Course of Water-Colour Painting. With Twenty-four Coloured Plates, from Designs by R. P. LEITCH. Cassell, Petter, & Galpin, London.

THIS is a very useful little book, as well calculated to effect what it aims at as such a book can be. Any person who has acquired a reasonable power over the black-lead pencil, and will steadily work out the examples Mr. Leitch here gives, in conformity with the instructions accompanying them, will find that he, or she, as the case may be, has also acquired a considerable power over the colour-box, and would be able to turn to good account a few lessons afterwards from a live master.

London (illustrated): *a Complete Guide to the Leading Hotels, Places of Amusement, &c.* London: Henry Herbert. 1873.

ALTHOUGH, in plain truth, a directory and trade-book, this smart volume, smiling in green and gold, with illuminated leaves, contains a useful outline account of what there is to be seen in the metropolis by the passing visitor, and a number of views of the public buildings.

VARIORUM.

"COLLINS'S Elementary Science Series. Practical Plane and Solid Geometry. By Henry Angel. London: Collins & Co." This small treatise is prepared specially for students in science classes in connexion with the Science and Art Department, by the science-master of the Islington School of Science and Art, who has taught the subject for several years to large classes of artizans. The aim of the writer has been to show the principles upon which constructions are based, thereby helping the student to avoid the cram system of which examiners justly complain.——"Cook's Continental Time Tables and Tourists' Handbook, with Sectional Maps." This is the first issue of a useful tourists' time-table, got up by the well-known Cook & Son, of Ludgate-circus. The more immediate purpose of the present issue is for distribution among railway officials and others interested for correction and revision before issuing a second edition.——"The Waste of Wealth. By William Hoyle. London: Simpkin, Marshall, & Co." This is a paper read before the Statistical Society of Manchester in January last. The author estimates the national waste or loss from follies of fashion, extravagant Government expenditure, costliness of law, waste of sewage, game laws, excess and luxury in food, tobacco, and drink, at 491,000,000*l*. per annum. He shows what could be done with such a sum in the way of sanitary and other improvements and remarks that the first thing to do is to make the public familiar with the subject.——There has been prepared and printed for the Irish Poor-Law Medical Officers' Association, by the Hon. Sec., D. Toler T. Maunsell, M.B Dub., M.R.I.A., "An Analysis of the Population, Acreage, Expenditure under Sanitary Acts and Medical Charities Act, in the various Provinces, Counties, Rural and Urban Districts in Ireland; along with the average Salaries of the Medical Officers, Poor-law Valuation, total Poundage on Valuation, and Poundage on Medical Salaries." This Analysis was prepared in anticipation of the introduction of a Public Health Bill this session for Ireland, and has been obtained from the latest available returns. ——"Criminal Returns: Metropolitan Police." These returns (for last year), show as usual the influence of education in excluding the people from the criminal lists. It is remarkable, however, that the most numerous class are not those who can neither read nor write, but those who can read only, or read and write imperfectly. Of the latter, 1,387 males, and 436 females, were tried and convicted, and of the former, only 329 males, and 176 females. Doubtless, the fact that a very large proportion of the whole population can now be classed with the latter, and a relatively small one with the former, helps to explain this. Only 113 males and 8 females, tried and convicted, could read and write well; and only 5 males and 1 female had superior instruction.

Miscellanea.

The Bradford Waterworks. The two reservoirs which are to be constructed at Oxenhope,—the one on the bed of the Leeming and the other on that of the Leeshaw stream,—for storing compensation-water to keep the mills in the Worth Valley going, are now in progress, but will not be completed, it is believed, for two years yet; and under the Act no water from this quarter can be sent to Bradford till these two reservoirs are certified as finished. The high-level service of Bradford has been, and will be, until these works are completed, wholly dependent upon a comparatively small drainage area, the water from which is stored in Stubden Reservoir and in that at Horton Bank. A catch-water conduit will be constructed between Haworth Moor and Sawood, along the hill-side, for a distance of four and a half or five miles. The water so collected will be conveyed in the conduit to the mouth of a tunnel which is being constructed through the hill which divides the valley of the Hewenden Beck from that of the Worth, and will thus be conveyed to Stubden Reservoir. It is to provide compensation-water to the Worth Valley mill-owners that the two huge reservoirs at Leeming and Leeshaw are being constructed. The contract for the two amounts to 60,000*l*., and has been taken by Messrs. Crabtree Brothers & Sugden, of Keighley. The tunnel, which is known as Oxenhope Tunnel, has now been in course of construction by Messrs. Pearson, of Bradford, for nearly two years, and is a large undertaking. It is 4,000 ft. in length, and passes chiefly through rock.

The Reredos in Gloucester Cathedral.—A correspondence between the Rev. Thomas G. Price, vicar of St. Augustine the Less, Bristol, and the Bishop of Gloucester and Bristol, on the subject of the new reredos just erected in Gloucester Cathedral, was published on Saturday. Mr. Price expresses his sorrow that the Freemasons have been permitted to erect a reredos filled with images, of which the central and principal one is "a representation of our blessed Lord Jesus Christ, God and man," and that the bishop is to be "one of the performers in the solemn pomp and ceremony of its unveiling, thereby giving publicly before the Church the sanction of the highest official to this desecration of the house of God." In support of his views, Mr. Price refers to the homily against peril of idolatry, and quotes a passage from Tertullian, and the decree of the Emperor Valens and Theodosius, in aid of his earnest entreaty to the bishop to refuse to take any part in the proposed ceremonial, and so free himself "from all complicity in such a flagrant violation of the second Commandment, and in the scandal and offence which will be caused throughout the diocese." The bishop, in his reply, says, "I concur with you and the venerable homilist in a sincere disapproval of all idolatry. As, however, I have no reason for thinking either (*a*) that the Freemasons or the Dean and Chapter entertain the purpose of worshipping and honouring the statuary to which you allude, or (*b*) that the figures will be provocative of idolatry in others, I do not feel it necessary to refuse to take part in the ceremonial."

Decorations of the Pump-room, Bath.—The Baths and Pump-room Committee of the Bath Town Council "in view of the approaching exhibition of the Royal Horticultural Society," having some time since recommended that the various works comprised in the specification of the surveyor of works for decorating the Grand Pump-room and filling the windows with plate glass, should be undertaken, the Council adopted the Committee's report. The amount asked for was 2: 0*l*. The work has been done. The whole building, including the vestibules, has been painted, the interior walls being coloured cobalt blue, as well as the cove and ceiling. The cornice and columns are painted in an antique ivory colour. The frieze is a brighter blue, with arabesque pattern and chocolate, the architectural portions being coloured red and blue. The capitals and abaci are gilded, and the lower portions of the columns are of a darker colour, so as to assimilate with the oak dado. The architrave moulding is of ivory tint, as also is the cornice, beneath which is a pattern in light blue. The panels contain, or will do so, patterns with designs surrounding them. The alcove is to be filled with Minton's tiles, to correspond with the walls. The designs of the decorations are by Mr. C. E. Davis, the surveyor of works to the Corporation, and the work is being executed by Mr. Backhouse, painter. One of the panes of the old glass, says our authority, the local *Chronicle*, was found cut by a diamond in the following inscription,—"Edward Stroud, glazier, glazed the Pump-room, December 23, 1795."

The Excavations in Rome.—Mr. John Henry Parker, C.B., gave his fourth and last lecture "On the Archæology of Rome," at the Royal Institution, London, on the 3rd instant. The excavations formed the subject of this lecture, and Mr. Parker alluded to the vigorous manner in which the Italian Government is carrying on excavations in the Forum Romanum, on the Palatine Hill, and in several other places, in conformity with the anxious desire of Parliament, which votes 1,200*l*. a year for the purpose, with the ultimate intention of making a second Pompeii in the middle of the city. Mr. Parker gave a detailed account of some of the chief excavations recently made. Among other discoveries, he said that under the arch of Septimius Severus two marble walls had been found, with sculptures of the time of Hadrian, representing a procession carrying books to the Emperor, supposed to be in honour of his cancelling the immense debt of the city; and on the tomb of a boy, aged eleven, who lived in the time of the later Republic or early Empire, are inscribed some Latin and Greek verses, for which he obtained a prize at school, in free competition, as stated in an account of his life appended by his sorrowing parents.

The proposed Public Hall and Street Improvements in Stafford.—At a recent meeting of the town council, it was reported that at a meeting of the Treasury Memorial Committee, held on the previous day, the borough surveyor submitted another plan for the erection of a public hall. The surveyor's idea was to purchase the shop, house, and land belonging to Mr. T. Turner, which has a frontage to the main street, and adjoins the Guildhall, and make a thoroughfare direct from the Market-square to Albion-place. St. Mary's-lane would be considerably widened, the cottages abutting it being bought for that purpose. Upon part of the land so acquired would be built the proposed public hall and the butchers' market. The committee, after considering the plans, resolved that, "in consequence of the new plan produced by the borough surveyor, the committee do not consider themselves prepared to report on the plans originally submitted to them by the council, and beg to refer the matter back for further instructions." The council had some discussion on the subject, and it is understood that the committee are further to consider the question.

The Metropolitan Water Supply.—A report of the examination made during the month of May of the water supplied by the Metropolitan companies, before and after filtration, at their works, has been issued in a printed form. The state of the river supply is said to have been good. The water companies state that they have prepared their mains for constant supply, and have now 900 miles of such mains continually charged with water ready for constant supply along their whole course. Hydrants, however, as preferable to fire-plugs for fires, with constant supply, have not yet been in any case supplied.

The New Synagogue, Manchester.—The foundation-stone of a new "Portugese Synagogue" in Manchester has been laid. The Portuguese community of Manchester comprises about thirty families, and thirty unmarried members. The synagogue is intended to afford accommodation to 200 men and 100 women, and, in case of future requirements, will be capable of extension. Its site is in the Cheetham Hill-road, where, when completed, it will have its frontage. The cost of the building is estimated to exceed 3,000*l*., exclusive of any outlay on the school, which it is contemplated shortly to build. The style of architecture adopted is Mooresque, the principal feature in the front being the entrance in brickwork and stone, ornamented with vitrified marble bosses; the remainder of the elevation is of brickwork, with stone dressings. The interior has an open wooden roof, with galleries supported on marble columns. The reading-desk is in the centre. The ark, in the east, and in a recess, with large circular window above, will be filled with stained glass. The whole of the interior is especially designed for future painted decorations. Mr. E. Salomon is the architect, and Mr. S. Warburton, the builder.

Safety of Mines.—In 1871, Mr. Hermon, the senior member for Preston, feeling the disasters that had befallen the mining population, decided to offer 200*l*. for the best essays on the means of preventing such catastrophes,—150*l*. for the first prize, and 50*l*. for the second. The result was that about 300 essays were sent in. Mr. Staveley Hill, Q.C., M.P., Mr. T. Hughes, Q.C., M.P., and Mr. Rupert Kettle, accepted the post of judges, and they have just completed their task. In their award the judges write that they have agreed upon bracketing as of equal merit for the first prize the essays by Mr. Robert Eloin, of 63, West-street, Sheffield, and Mr. William Galloway, of 3, Duke-street, Portland-place, London. They place as next to these an essay by Mr. Hopton, of St. Helen's; and were of opinion that the essay by Mr. Bainbridge, of the Duke of Norfolk's Colliery Office, Sheffield, is entitled to high commendation. Mr. Hermon has increased the amount to be distributed to 275*l*.,—that is to say, two first prizes of 100*l*. each, one second prize of 50*l*., and one third prize of 25*l*.

The Rosario Railway.—The first sod of the most important railway that has been projected in the states of the River Plate has been laid by the Governor of Buenos Ayres, at the village of Almagro, near Buenos Ayres. The Rosario Railway, with its various branches, will represent a total of 500 miles. The line will start from Almagro, and running through the little town of San Martin, close to Pilar, near to Capilla del Señor, and thence, in a straight line, will make Rosario the second city in the Argentine Republic in commercial importance, at a distance from Buenos Ayres of about 186 miles. By the terms of the concession, this trunk line will have branches to the various towns and ports on either side of the route. The country through which the trunk and branches will pass is admitted to be the richest and most thickly populated in the whole province of Buenos Ayres. The line, with branches, has been surveyed and pegged out. The following gentlemen comprise the engineering staff that effected this part of the work:—Mr. John Robinson, chief of the staff, Mr. Malcolm Graham, C.E., Mr. George Shortrede, C.E., Mr. Arthur Henry Le Breton, C.E., Mr. Henry Hoggar, C.E.

Carlisle New Post-office.—The Carlisle Athenæum, which was some time ago sold to the Government, is now undergoing the process of conversion into a post-office. Before the new work is begun, says the local *Journal*, the building is to be completely gutted, and nothing but the bare walls left standing. The lecture-room is to be the future sorting-office, a room 46 ft. 6 in. by 56 ft. 4 in. The floor will be raised to the level of the entrance passage. The rooms used as a museum will be formed into a telegraph and instrument room, open to the roof, and lighted there with landing lights. This will do away with the large sale-room at present above. In front of that will be the public office. The entrance for the letter-carriers and clerks, with all the mail-bags, will be at the back of the building. Messrs. Hutton & Bell, of Carlisle, are the contractors for the whole of the work. Mr. Rowland is clerk of the works, which are being executed under the general superintendence of Mr. James Williams, architect to the Office of Works, London.

Proposed Lecture Hall and School of Art for Leicester.—At a recent meeting of the Leicester town council, a report was read from the Museum Extension Committee appointed to consider a resolution of a public meeting held on the 27th of January last, and cordially commending to public support a proposal to raise the sum of 3,000*l*. towards the expense of providing, in connexion with the museum, a large lecture-hall and suitable accommodation for the School of Art, such sum to be offered to the corporation of Leicester on condition that they expend an additional sum of at least an equal amount on the accomplishment of the two subjects. The committee recommended the council to entertain the proposal of the public meeting, and to inform the proposed subscribers that as soon as the sum of 3,000*l*. has been deposited with the borough treasurer, application will be made by the council to the Lords of Treasury for their sanction to the council contributing the like sum towards the proposed museum extension, and that permission be asked to provide such sum out of moneys arising from the sale of real estate. The council, after some discussion, adopted the committee's report by a large majority.

Technical Education: Museum of Trade Patterns.—Some years ago a capital plan was suggested by Mr. William H. Ablett, for the furtherance of technical education, in the formation of Museums of Trade Patterns, the establishment of which would serve as a connecting link between technical education and its practical application to manufacturing industry. Assistance of the most valuable kind could be afforded to both artizans and manufacturers by the Museum of Trade Patterns, which would give an opportunity to all interested in any particular branch of manufacture to inspect samples of goods made abroad and elsewhere, showing where we are excelled by our foreign competitors, and where our own weakness lies. Thousands of workmen in this country see nothing else but their own productions and those of their fellows from one year's end to another. Mr. Ablett's idea appears to be that it would be desirable to establish a Museum of Trade Patterns in London, with the view of serving as a model, and of rendering assistance to the provincial towns which might be inclined to adopt the plan.—Abridged from the *Macclesfield Courier*.

Society of Arts general Examinations, 1873.—Among the prizes and certificates awarded to candidates, the Prince Consort's prize of 25 guineas was awarded to Thomas Richard Clarke, aged 21, formerly of the Salford Working Men's College, and now of the Birkbeck Literary and Scientific Institution, accountant's clerk, who obtained the following first-class certificates in the present and three preceding years:—1870. Arithmetic, first-class certificate; geography, first-class certificate, with first prize, and Royal Geographical Society's prize; English history, first-class certificate. 1871. Metric system, first-class certificate, with first prize. 1872. Book-keeping, first-class certificate, with first prize; English language, first-class certificate. 1873. Logic, first-class certificate, with second prize; political economy, first-class certificate, with second prize.

Baths and Washhouses for Paddington. The foundation stone of the intended baths and washhouses for Paddington has been laid in the Queen's-road, Bayswater. The new building has been designed by Mr. L. H. Isaacs, of Verulam-buildings, and will be erected by Mr. Thos. Elkington, of Golden-lane. The contract price, exclusive of the machinery, is 22,595*l*., and the building will contain a first-class men's swimming-bath, a second and third class men's swimming-bath, a ladies' swimming-bath, and about seventy-two private baths. In addition to this, there will be a laundry department, providing accommodation for sixty washers, and for the necessary operations in connexion with drying and ironing. These departments are exclusive of the Board-room and offices, which will be erected for the commissioners and the servants of the establishment.

Baths for Derby.—On Saturday last, new public baths, the gift of Mr. Bass, which have been erected at a cost of 5,000*l*., were formally presented by him to the mayor and corporation of Derby as representatives of the town. The baths are situated in the Recreation Ground, which was also the gift of Mr. Bass. Mr. Bass has also offered to give 5,000*l*. towards building a free library if the town will provide a site.

Proposed Tunnel through the Rocky Mountains.—A scheme is now on foot for running a tunnel through the Rocky Mountains. This may seem a prodigious enterprise, but the projectors are sanguine of the most complete success. The idea is to tunnel the mountains from point to point about one mile below Black Hawk to the Middle Park, running in a north-westerly direction. The tunnel to be run will, it is presumed, cut many rich veins of gold and silver, and thus a great mining interest be developed. Money for the prosecution of the works will be furnished by English capitalists, who are sanguine of the ultimate success of the enterprise. The tunnel, if completed, will be twelve miles in length.

The State Purchase of Railways.—A special meeting of the Society for the Encouragement of Arts, Manufactures, and Commerce has been held in the Society's chambers, John-street, Adelphi, when a paper by Mr. William Galt, "On the Purchase of Railways by the State," was read, and partly discussed. After the reading of the paper, which was a long and elaborate one, advocating the State purchase of railways, Lord Derby expressed doubts as to the prudence of burthening the State with something like six or eight hundred millions more debt, and of placing such a vast amount of additional patronage in their hands. The discussion was adjourned, and afterwards continued on a subsequent day.

Essays for the Encouragement of Thrift. Sir Joseph Whitworth has offered prizes of the value of 100*l.*, to be obtained through the Society of Arts, for the best essays on the "Advantages that would be likely to arise if railway companies and limited companies generally were each to establish a savings-bank for the working classes in their employ." With this offer he has transmitted a series of observations as to the principal subjects which the essayists should consider. The council have accepted this offer, and appointed a committee to arrange the details for obtaining the essays.

The Royal Italian Opera.—If crowded houses may be taken as proof, Mr. Gye must have reason to be satisfied with the season of 1873, which is to be further emphasised by a state visit in honour of the Shah of Persia, on this, Saturday night, when the house will present (we remember two previous occasions of the same kind) an aspect rarely to be seen. The Royal Box will be formed in the centre, and uniforms and court dresses will make colour general. The Floral Hall, where accommodation has been provided for a large number of visitors, will also present a brilliant scene.

A New Gaol for Bristol.—At a special meeting of the Bristol town council to consider a communication from the Home Secretary calling upon the corporation to provide a new gaol for the city, it has been resolved, by a large majority, "That in the opinion of this council, acting as the prison authority, it is expedient that a new prison, adapted to the purposes as well of the city gaol as of the house of correction, be forthwith built upon a new site."

New Reservoir at Pontefract. — The Pontefract Town Council have resolved to construct a new reservoir connected with the Corporation Waterworks in that town, capable of containing one million gallons, for the further supply of the inhabitants. It is to be situated on Park Hill, a short distance from the town. The reservoirs will be constructed according to plans and specifications which have been drawn up by Mr. George Malcolm, C.E.

Bridge over the Neva.—In a paragraph in our last as to this competition, it was stated that the first premium of 6,000 roubles was awarded to "Westminster," "supposed to be Mr. Page; arched design." Messrs. Whitaker & Perrett, No. 23, Abingdon-street, Westminster, inform us that they sent in the arched design marked "Westminster."

Burnley Surveyorship. — Four gentlemen were selected from seventy-six candidates for a personal interview with the committee for the above office, vacated by Mr. Edward R. S. Escott, on his appointment to the office of borough engineer of Halifax, namely Mr. W. B. Bryan, of Nottingham; Mr. Bell, of Bolton; Mr. Dawson, of Salford: and Mr. Richards, of Wolverhampton. Mr. Bryan obtained the appointment.

London School Board.—A new school for the accommodation of 750 children is to be erected by the School Board in Stanhope-street, Marylebone, and the tender of Messrs. Scriveners & White has been accepted for the execution of the work, at a cost of 6,142*l.*

Cleansing in Westminster.—The Board of Works for the Westminster District (St. Margaret and St. John) have accepted the tender of Mr. Cookson for street cleansing, watering, dusting, &c., for three years, at the sum of 6,800*l.* per annum.

The Widening of Bond-street. — An opportunity for beginning this on the site of the Clarendon Hotel has offered itself, but has not been taken up, we are told, by the Vestry in the manner that might have been expected. This is to be regretted. It may not be too late even now.

The Alexandra Palace Company.—An advertisement in our present issue shows the terms on which the directors are willing to admit a certain number of new shareholders, and may be worth attention.

St. Stephen's Club.—With reference to our recent notice of this building, it may save trouble if we add that the carving and statues are in the hands of Mr. E. Wyon, the sculptor.

TENDERS

For erecting retort-house and ovens, for Sutton Gas Company (Limited). Mr. C. R. Mead, managing director:—

Potter & Ferrige (accepted)	£397 0 0

For alterations and additions to "The Elms," Carshalton-road, Sutton, for the Sutton Water Company. Mr. E. Locke, architect:—

Keal	£303 0 0
Dawson	283 0 0
Martin	271 0 0
Rogers	268 0 0
Potter & Ferrige (accepted)	267 0 0

For alterations at 134, Leadenhall-street. Mr. E. B. I'Anson, architect:—

Killby	£470 0 0
Martin	425 0 0
Staines & Son	408 0 0

For lecture-hall and offices, St. Matthew's Church, Croydon. Mr. A. M. Blomfield, architect. Quantities by Mr. Mullett:—

Peskett & Taylor	£1,165 0 0
Adamson & Sons	1,010 0 0
Burrows & Brooker	975 0 0
Bayes & Ramage	944 0 0
Nightingale	926 0 0
Coles	926 0 0
Crossley	909 0 0
Jarrett	898 0 0
Wright, Bros., & Goodchild	885 0 0

For extension of sewer to the Southampton-road, Fareham, for the Fareham Local Board of Health. Mr. J. Rosevear, engineer:—

Plummer & Gamblin	£163 0 0
H. & W. Evans	158 0 0
Cole	147 0 0
Chapman (accepted)	137 0 0

For the extension of water main to the top of Southampton-road, Fareham, for the Local Board of Health. Mr. J. Rosevear, engineer:—

Chapman	£263 17 8
Darby (accepted)	249 10 0
Cole	245 0 0

For re-seating, &c., at the Union Chapel, High Wycombe, Bucks. Mr. Arthur Vernon, architect:—

Pierce	£499 0 0
Cooper	333 0 0
Loosley	309 0 0
Spicer (accepted)	285 0 0

For alterations and additions to the Rectory House, stables, &c., and new labourers' cottage, Llangunider, South Wales. Mr. Andrew Edwards, architect:—

Watkins (accepted)	£425 0 0

For alterations and additions to "The Elms," Holmwood, Dorking, for Mr. D. Punnett. Mr. W. H. Punnett, architect:

Pearce	£324 15 0
Robbins (accepted)	487 0 0

For schools at Llanvechva, Monmouth. Mr. E. A. Lansdowne, architect:—

Bevan & Son	£2,349 0 0
Jones & Allen	2,268 0 0
Burgoyne	1,998 0 0
Cock, Bros.	1,993 0 0
Phillips	1,960 0 0
W. Jones	1,957 0 0

For alterations and additions at the "Duke of York," Homerton. Mr. H. J. Newton, architect:—

Brindle	£680 0 0
Shurmur	644 0 0
Taylor	477 0 0
Hockley	470 0 0

For repairs, &c., at the "Compasses," Ebury-street, Pimlico. Mr. H. J. Newton, architect:—

Shurmur	£174 0 0
Brindle	166 0 0
Taylor	153 0 0
Hockley (accepted)	140 0 0

For an 80-quarter malt-kiln, at Beverley Station, for Mr. W. Glossop. Mr. Robert Clamp, architect. Accepted tenders:—

Excavator, Bricklayer, and Plasterer.

Dalton	£1,434 16 6

Slater.

Wylde	£230 17 6

Mason.

Hague	£86 0 0

Carpenter and Joiner.

Grassby	£1,482 12 10

Smiths and Founders.

Dosser, Young, & Co.*	£408 9 6

Plumber and Glazier.

Goldesbro	£47 10 0

* The tenders for wrought-iron work for tramways ranged from 24s. to 56s. per cwt., and the former, by Mr. Perkins, has been accepted.

For the erection of a villa residence at Wood Green, for Mr. Goodman. Mr. W. Cross, architect:—

Wells	£1,520 0 0
Sharp	1,510 0 0
Ward	1,490 0 0

For Church Cottage, Yaxley, Suffolk. Mr. E. Boy, architect:—

Day	£655 0 0
Grimwood	625 0 0
Taylor	568 0 0

For villa residence in Holly Park, Crouch-hill, Mr. William Smith, architect:—

Slatford	£1,138 0 0
Aitcheson & Co.	1,025 0 0
Carter	930 0 0
Stevens	918 0 0
Blake & Co.	876 0 0
Johnson	839 10 0
Channing	835 0 0
Blackmore & Morley	824 0 0
Sharp (accepted)	790 0 0

For manager's house, stabling, &c., at Messrs. Johnson, Brinsmead & Sons' pianoforte manufactory, Kentish-town (second contract. Mr. Chas. E. Evans, architect:—

Manley & Rogers (revised estimate accepted)	£1,500 0 0

For erecting a detached house at Wandsworth. Messrs. Lee, Bros., & Pain, architects:—

Aviss & Co. (accepted)	£2,588 0 0

For a small house, in Myddleton-road, Hornsey, for Mr. Kennir:—

Mardell	£315 0 0
Matthews	280 0 0
Sharp	274 0 0

For residence, Green Lanes, Stoke Newington, for Mr. G. C. Boor. Mr. William Smith, architect:—

Hill (accepted)*	£1,400 0 0

* Exclusive of stoves, mantelpieces, &c.

For repairs and alterations to villa residences, Woodgreen, for Mr. H. S. Friend. Mr. William Smith, architect:—

Dunford & Langham	£163 0 0
Blackmore & Morley	153 0 0
Coombes & Son	138 0 0

For alterations and additions to 71, Brompton-road. Messrs. Lansdown & Pollard, architects:—

Wagner	£250 0 0

For constructing additional class-room and painting at the Licensed Victuallers' School, Upper Kennington-lane, and painting, &c., at the office of the *Morning Advertiser*, Fleet-street. Mr. W. Nunn, architect:—

Wagner	£671 0 0

Erratum.—In last week's list of tenders for schools, Lower Mansfield-place, Kentish-town, for T. Niblett & Son, 10,190*l.*, read 11,090*l.*

TO CORRESPONDENTS.

W. M. N. (the matter is closed so far as we are concerned).—V. Co.—W. A.—C. S.—H. S.—C. de C.—S. & Co.—E. W. P.—J. L.—E. A. W.—J. R. T.—C. E. E.—H. G.—C. H. S. C. E. C.—C. B.—J. W.—W. C.—H. B.—L. & P.—E. R. S. E.—C. L.—C. H. S.—W. S.—A. E.—A. V.—C. P.—W. & P.—J. B.—T. W.—M.—A. D. D.—R. & —G. F. D.—C. A. W.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles and papers read at public meetings, rests of course with the authors

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The Builder.

VOL. XXXI.—No. 1586.

*The Three Cathedrals Dedicated to St. Paul in London.**

IF the members of the Finance Committee for the completion of St. Paul's had held a council to consider the best mode of popularising their great scheme, they could scarcely have determined upon an undertaking more likely to forward their object than that which the chairman has just accomplished, unassisted by their deliberations. We allude to the publication of a new and interesting volume on the cathedral and its predecessors, by Mr. William Longman, entitled "The Three Cathedrals dedicated to St. Paul, in London." This work, by bringing into prominence Old St. Paul's, or Paules, or Powles as it was sometimes written in old times, gives the present structure on its site a much closer association with the worthy citizens of the days of yore than it possesses, in itself, for most minds. In looking upon Wren's building, we are apt to think, only, of those merchant princes who, so to speak, "came over" with Charles II. We are apt to forget that those who came over" with William the Conqueror found a Saxon church on the same spot, dividing honours, indeed, with the Saxon edifice at Westminster; and that in Plantagenet, Lancastrian, York, and Tudor times, the London citizens reared in a fabric that was more lofty by 50 ft. than Salisbury Cathedral, and that, with its gradual enrichments, became more beautiful in some of its details, especially in its rose-window, and in the eastern end, than any other that could be named. But Mr. Longman reminds us minutely of these facts, and of many more: so minutely, in truth, that whoso lingers over his volume is not likely to look at St. Paul's otherwise, again, than as closely linked with the memory of all the old worthies, whose footsteps wore away the stones of its predecessors. This is again to the interests of the fabric, in its present need of pecuniary aid; for while only the sympathy of classicists is evoked by its present aspect, that of Mediævalists, if the unwise division is to be kept up in terms, will be attracted towards it by the recital of its ancient reality, misfortunes, and associations.

Five times has fire attacked the cathedral church of old London; and thrice that fire has descended from the heavens above. The first Saxon church was destroyed by fire "in the time of the Conqueror's reign." The Norman church that slowly began to rise up during the episcopate of Bishop Maurice, was still in course of erection when it was ravaged by fire. Not until two centuries had passed away was the edifice completed, and then, notwithstanding the wide range in the architecture this interval involved, the national progress of ideas demanded various alterations, which were gradually effected. When thus perfected, the spire was struck by lightning in 1444. Leland records against this date, "This year Paule's steple was set on fier with lightening on Candilmas Even, but after quenchid by the Morow Messe Prest of Bow," or priest from Bow who said the early morning mass. Stow, mentioning this same calamity, says the fire was put out by the labour of many well-disposed people, "the same, to appearance, quenched with vinegar;" but when they had all returned to their houses, "praising God," it burst out again, more fervently than before, destroying both timber and lead, till it was more effectually extinguished by the mayor and people. Eighteen years elapsed before all the damage was repaired. The fourth fire took place in 1561. It occurred in a tremendous storm. The church of St. Martin, Ludgate-hill, was first struck, and then the lightning was seen to flash into an opening in the spire of the cathedral. For four hours the fire blazed, running along the roofs, devouring the timbers, melting the bells and lead, crumbling the stones, and filling the walls with a mass of smoking ruin. Queen Elizabeth gave a thousand marks out of her own purse towards the re-roofing of the edifice, as well as warrants for a thousand loads of timber from her woods, or elsewhere; but no attempt was made to restore the spire. King James found the fabric in an indifferent condition, and placed it in the hands of Inigo Jones, as we know; and after a time came the fifth great fire, that resulted in its total destruction, and the erection of Wren's building.

Mr. Longman has picked out a new path for himself in his account of the fabric, while he has not neglected to avail himself of the efforts of previous historians. One of his first steps in a new direction is to challenge the correctness of the old views of the building (including Hollar's), and of the dimensions generally quoted. And another is to furnish a set of drawings representing the cathedral as it really existed before the last fire. The cost of the successive buildings, and the modes in which the necessary sums have been got together also furnish him with special aims. All this is not done without the assistance of several *collaborateurs*. Mr. Edmund B. Ferrey has drawn up a list of the discrepancies in Hollar's plates to Dugdale's "Old St. Paul's." He points out that one view of the choir shows the outer mouldings of the arches almost touching the triforium floor, and another leaves a considerable distance between them; that eleven bays are shown in views of the choir, and twelve in the plan; that the figure of Thomas Kempe and the tomb of Roger Niger are placed in different positions on the ground plan to those in which they are shown in the views; that whereas in the view of the north side of the choir, St. Faith's Church has but four windows shown, the ground-plan gives seven on the same side; that the buttresses of St. Faith's are made to project 9 ft. 6 in. from the wall, while those of the cathedral above project 12 ft.; that six steps are shown in the ground-plan as leading to the presbytery over St. Faith's, while the interior view gives but five; and so on through half a dozen further disagreements. The warden and fellows of All Souls' College, Oxford, have permitted the publication of copies of Sir Christopher Wren's original drawings; and Mr. Gardner, of St. John's Wood, has rendered service by placing his remarkable collection of prints and drawings of London at the author's disposal. Out of this mass of information, and with the aid of all this scrutiny, Mr. Longman gives a minute description of "Paules"—not the Saxon church, but the second edifice, the old St. Paul's, in a word, that Mr. Harrison Ainsworth has shown us so attractively in the world of fiction, and that most persons thought Hollar and Dugdale had shown them faithfully in reality. It was surrounded by a wall furnished with six gate-houses opening out into Ludgate-street, Paternoster-row, Canon-alley, Cheapside, Watling-street, and Carter-lane. Within this boundary, north-west of the cathedral, stood the Bishop's Palace; and on the south side of the chief building was the chapter-house. The preaching cross was also within the churchyard, as well as a charnel-house, with a chapel over it. The east and west sides of the enclosure were claimed by the citizens as places of assembly for various purposes connected with their "folk-motes," and the defence of the city. The cathedral, which consisted of a nave, choir, and lady-chapel, all with north and south aisles, and transepts with aisles on the western and eastern sides, measured about 596 ft. in length, according to Hollar, but 690 feet, according to Dugdale and Stow, the latter of whom takes his statement from a survey made in the time of Edward II., to which he had access. Probably the caligraphy of the scribes of those old times, which we know to have been often full of the most puzzling flourishes, may have led to the accidental substitution of the figure 6 for 5; for, taking the lower estimate as the correct one, the building would still have been 66 ft. longer than Winchester Cathedral, which is the longest in the kingdom. It measured 104 ft. in breadth, including the aisles. The external height from the ground to ridge of outer roof to choir was 142 feet, and to the top of the steeple 285 ft. The spire measured 208 ft., or 204 ft., if taken from the top of the parapet of the tower. Mr. Edmund Ferrey, who is the authority for these figures, brings forward a new statement. He thinks that the height of the choir must have been greater than that of the nave. His reason for this assumption is thus stated:—

> "Taking the diameters of the piers to the nave and choir as data where the ground-plan (the only plate showing the cathedral, which is drawn to scale) aided me, I endeavoured to build up the 'elevations,' i.e., using the diameters of the piers (as also other approximate means) in the same way as classicists calculate their proportions by 'modules.' Assuming the *tolerable* correctness of Hollar's representations, the result of these researches was to prove that the choir was higher than the nave. . . . . There is, also, this further proof of the additional height of the choir. In order to preserve the proportions indicated in Hollar's internal views, it is necessary to raise the ridge of the vaulting considerably above that of the wall-ribs. If the vaulting had been treated in the more usual English manner, the choir must have been made even higher than shown."

The argument is not very conclusive, but we let it stand for what it is worth.

Built close against the cathedral, on the south-west side, was the parish church of St. Gregory. Under the choir was the Church of St. Faith, and adjoining this was Jesus Chapel. These two establishments were in the first instance above-ground, like St. Gregory's, but were transferred to the crypt, to admit of the enlargement of the cathedral in 1256, which arrangement caused Fuller to describe St. Paul's as "truly the mother church, having one babe in her body,—St. Faith's, and another in her arms,—St. Gregory's." Besides these churches, there were several chapels in or near the cathedral. Two were in the building, on the north side; one of which was known as Sherrington's Chapel, because founded by him; and the other the chapel of the Holy Ghost. Another was in a cloister on the north side of the church, called Pardon Churchyard. From the fact that the erection of the fabric had proceeded slowly,—through two centuries, indeed,—the style of architecture, which was Norman to begin with, gradually changed to Early English, and thence to Decorated. Standing at the west end, and looking eastwards, the eye was captivated, on the right hand and on the left, by an arcade of twenty-five arches, whereof twelve were in the nave, supported on Norman pillars, and twelve were in the choir and lady-chapel, supported on clustered columns; and standing between the piers of the central tower, the eye could follow, northwards and southwards, on the right hand

* A History of the three Cathedrals dedicated to St. Paul in London, with reference chiefly to their structure and architecture, and the sources whence the necessary funds were derived. By William Longman, F.S.A. London: Longmans, Green, & Co. 1873.

and on the left, arcades of five arches. Over each arcade were a triforium and clearstory. Across the choir, at the west end, was a rich screen; and high in the gable of the east end was the beautiful rose-window we have mentioned. Around were the tombs and monuments of many illustrious persons.

One chapter of Mr. Longman's work is devoted to curious customs and incidents connected with Old St. Paul's. We are thus reminded of the horse that climbed up to the top of the steeple, among other matters; of rope-dancing on the battlements; of a Dutchman on the weather-cock; of a man whose ear was nailed to a post close to the bishop's palace, and then cut off, because he had made "a fray in Powlles Chyrche"; of lawyers conferring with their clients at the various pillars; of lotteries; of assignations; gossipings; brawlings; and pick-pocketings without number. Mr. Longman is probably wrong, however, when he thinks the floor was laid out in walks,—"the south alley for one purpose, the north for another,"—for, though, doubtless, desecrated in the manner described, they must have been laid out with very different intentions. Dean Stanley's recent researches at Westminster have recovered a lost expression, "middle tread," for a central distinguishing mark in an ambulatory, for the purpose of aiding the regularity of a procession; but no evidence is brought forward as to the existence of anything of the sort here. The whole of the nave is spoken of as the "middle aisle," and called Paul's-walk. It appears to have been used, after the Reformation, as an exchange for the transaction of business, and promenade for the dissemination of news. A dozen old writers concur in picturing it as the resort of half the idlers in the metropolis, including those mirrors of the times, Shakspeare and Ben Jonson. In 1658, Francis Osborn, writing of the reign of King James, said,—"It was the fashion of those times, and did so continue to these, for the principal gentry, lords, commons, and men of all professions, not meerely mechanick,, to meet in St. Paul's Church by eleven, and walk in the middle ile till twelve, and after dinner from three to six, during which time some discoursed of businesse, others of newes." Weever, in his "Funeral Monuments," could not refrain from complaining of the walking in the middle aisle during service. Boys, nursemaids, and children made it a regular playground, especially on Sundays, when they kept the fun up till dark. Proclamations appear to have had no result in abating the nuisance. So unlike a Christian cathedral had the building become, that a proposal was set on foot to convert it into a synagogue.

It is curious to note the effect of this disregard, combined with the change of taste in architectural matters, as time went on. One Master Farley importuned King James for eight years before he could induce him to take any measure for its preservation, and then another eight years elapsed before much was done. Charles I. issued a new commission, which was more popular. Sir Paul Pindar, a London merchant, who had been sent as ambassador to Constantinople in the preceding reign, contributed as much as 10,000*l.* towards the repair of the fabric, and subscriptions flowed in from all parts of the country. In seven years, the sum of 89,489*l.* was collected, of which nearly 10,000*l.* were awarded to persons whose houses were too close to the cathedral, and were consequently demolished, and about 68,000*l.* expended upon the nave, choir, and west end. But the national troubles soon caused the cessation of this liberality; and the small sum of 15*l.* only was received for the restorations in 1643. When Charles II. ascended the throne, the edifice was found in absolute ruin, and fresh steps were taken in its behalf. Another subscription was started, and a book prepared to make record of the promises and payments, as in the previous reigns, which book is still preserved in the library of the cathedral. King Charles, we may read in it, promised 1,000*l.* a year, to be paid quarterly. Mr. Longman quotes a dozen of the most interesting signatures; but we must pass on to note Wren's professional opinion of "the Gothick rudeness of the old design." When he was appointed architect to the fabric, he did not at first propose to take it all down; but at very early stage of the proceedings he suggested that it would be well to cut off the inner corners of the cross, and "reduce this middle part into a spacious dome or rotunda, with a cupola or hemispherical roof," and place upon the cupola a lantern with a spiring top. Before anything was done, however, came the Great Fire, and when Pepys went out to see the extent of the calamity, he saw the "body of the quire fallen into St. Faith's." In his surveys of the doomed building, Wren speaks of some of its features as a *heap of deformities*, and of the fabric generally as *ill-designed* and *ill-built*. However, the old masons were speedily avenged; for scarcely was his own cathedral finished, than it came under the fire of adverse critics. Strype, in his edition of Stow's Survey, discharged one of the first shots. "Let anybody take a view of St. Paul's from any of the neighbouring hills," he says, "and he will instantly discern that the building is defective, and that the form of a cross is more favourable to superstition than to beauty; he will easily see, at least, that the dome, in its present circumstance, is abundantly too big for the rest of the pile, and that the west end has no rational pretence to finer or more splendid decorations than the east."

We have said the mode of gathering together the large sums of money acquired for the execution of the successive buildings takes a special place. The Saxon church was endowed by its founder with the Manor of Tillingham, in Essex, which still furnishes funds for the repair of the present edifice; but there is no record that there were any means taken to defray the cost of building, besides those furnished by the founder, Ethelbert, King of Kent. The funds for the second edifice were contributed by "good people," whose bounty was stimulated by letters of indulgence. Bishops wrote letters to the clergy under their charge, recommending the work to their congregations, and granting indulgences to those who persuaded others to contribute, as well as to those who contributed themselves. A whole boxful of these letters is preserved in the library; but there is no account of the sums raised. The means for the third cathedral were to be raised by contributions, a proportion of the commutations of penance, by a charge upon bishops of fifty pounds before their consecration, and a similar sum, instead of glove-money. The king's promised 1,000*l.* per annum appears to have dwindled down to two sums, viz., 527*l.* 1s. 3d., ont of fines and forfeitures, and 1,627*l.* 9s. 8d. out of arrears of impropriations.

Mr. Longman has a word or so for the future of St. Paul's, or, as he expresses it, following the wording of the documents of Wren's day, the "adornment" of the building. He advocates variety of colour, and gilding. The variety of colour should be produced in the dome, and in the cupolas of the side aisles with mosaic work. He adds, cautiously, "whether the form of marble incrustation introduced by Baron de Triqueti, which seems admirably adapted to flat and even surfaces, under certain circumstances, would be suited to St. Paul's Cathedral, is a question for the architect; but it can hardly be doubted that it deserves his consideration." No extravagance in design representing peculiar ideas as to worship or doctrine will be approved. The pavement will form an important feature in the general treatment. The question of sculpture is not gone into, nothing but a slight general glance at the materials at command being given.

The recovery of the Prince of Wales, and the national thanksgiving in consequence of it, gave birth to the feeling that it was desirable to make some permanent record of the public joy. Hence the renewal of the long dormant scheme to proceed with the adornment of the national cathedral. The amount subscribed for this purpose up to March of the present year is quoted by Mr. Longman as about 56,000*l.*

There are upwards of fifty illustrations in the book, some of which are taken from prints in the Gardner collection, and others from Wren's drawings, as we have hinted. We reproduce two as specimens,* and we may look at Mr. Longman's volume on another occasion from a different point of sight.

Sanitary Matters in Bedfordshire.—At a recent meeting of the rural sanitary authority Bedford, fully reported in the local *Times*, a report from Dr. Prior, the officer of health and borough analyst, was read, disclosing a bad state of matters in several cottages infested by enteric or typhoid fever. They are situated beside a graveyard, and it is feared the well-water supplying them percolates partly at least from the graveyard. The reporter was requested to analyse the water and report again.

* See p. 503.

ARCHITECTS AT DINNER.

THE annual dinner of the Institute of Britis Architects took place on Saturday last at Willis Rooms, King-street, St. James's. Sir G. Gilbe Scott, R.A., presided, and amongst the gentleme present were Lord Elcho, M.P.; Col. Hogg, M.P (Chairman of the Metropolitan Board of Works) Sir Francis Grant, P.R.A.; Sir J. Gilbert Messrs. A. Waterhouse, C. Barry, T. H. Wyat B. Ferrey, Hawksley, C.E., G. Vulliamy, C. Penrose, E. Sharpe, H. Currey, D. Brando E. Christian, E. l'Anson, Horace Jones, C. Eastlake (secretary), J. Turner, R. J. Withers F. P. Cockerell, Matthew Wyatt, &c. Mr Ayrton, M.P. (First Commissioner of Works was unable to fulfil his promise to attend.

The chairman, after grace, said,—The firs toast among loyal Englishmen is, and alway was, and always will be, the same—our Sove reign; and if this is constantly and enthu siastically drunk in every company, how muc more ought it to be so drunk by a societ like ours, which, by the special permission of th Queen, calls itself the Royal Institute of Britis Architects,—by a society which is commissione by the Queen annually to advise her as to th appropriation of an honour which she herse has awarded to those who are considered by th Institute most worthy of it in connexion wit our own art. I therefore propose to you th health of our great and gracious patron, th Queen.

The toast having been enthusiastically honoure the chairman proposed the health of H.R.H. th Heir Apparent, of the Princess of Wales, who everybody loves, and of all the Royal Family which toast was also heartily received.

Mr. Horace Jones proposed "The Army, th Navy, and the Volunteers." Whilst giving t their neighbours and friends full credit for thei skill and valour, Englishmen held that Fame ha written upon her roll no greater deeds of skil and valour than our army and navy had achieve There was a third force which claimed a shar in the toast, in connexion with which many o them could perhaps recollect having played i part in fruitless campaigns at Wimbledon or th Surrey hills. Nor was it to that alone that the owed the "fellow-feeling" that "made them wondrous kind." There was amongst the volun teers a system of almost fervent competition and he honestly and earnestly desired tha the system of competition amongst architects might produce no more heart-burnings than i had produced amongst volunteers. He referre as an illustration to the competition between th three kingdoms for a well-known shield, which he trusted might this year again return to th metropolis; and in conclusion coupled with th toast the name of the donor of that shield—Lor Elcho.

Lord Elcho, M.P., in responding to the toast said he was not aware until a few minutes pre viously that he should have to return thanks fo the defensive forces, and he was told, strange t say, that he of all men later in the evening would have to fill Mr. Ayrton's place, and return thanks for the House of Commons. He con cluded his name was coupled with the army not because he was a member of that profession, but in consequence of the fact that he had been that day at the review at Woolwich; and from his personal observation he could say that at least one branch of the army—viz., the Artillery,—was in a state of extreme good health and thorough efficiency. Nothing could have been more perfect than that review; and he hoped the Eastern Potentate who witnessed it would return to his own country greatly impressed with the power of the army, and especially of the Artillery, of England. At the close of the review, the Shah had the choice of thirty-six guns, which were manœuvred by the Royal Horse Artillery, offered him, and he chose one of them, which would return with him to Teheran. Many persons thought that a great deal remained to be done to make the army perfect, but as regarded the Artillery, the country might congratulate itself, not only on its efficiency, but also on the increase which had taken place during the last twenty years. Without wishing to do any injustice to the efforts which had been made by the Secretary of State for War, he must say that he considered everything to be extremely unsatisfactory, and more especially with regard to the branch of the service of which he had been for fourteen years a member. There were at the present moment 2,000 volunteer commissions vacant, and there were 11,000 fewer volunteers than there were

st year. He was not sorry for this, because e believed the first thing that would teach this ation that there was something rotten in our ilitary organisation, was a falling off to a very eat extent in the volunteer force. Architects ho had to design a beautiful building knew at it must not only be beautiful, but suitable r the purpose for which it was designed; bove all things, it must rest upon a solid foun- ation, the stones must be kept together by orter or cement, and the building must have es in various parts of it to keep it together. 'ell, our system of military organisation must e beautiful, but he knew that in the opinion of ilitary men, this new structure which was being ised, had no foundation, no cement, no mortar, nd no ties. There was one thing only that ould give foundation to the building, but the rchitects were afraid to ask the House of ommons for it, viz., some form or other of com- ulsory service. Having "a streak of silver a" between us and our neighbours, we could ot require compulsory service for the army, pecially as the men were sent out to India, amaica, or the Cape. But something of the nd was required for the reserve forces to check e competition between the militia and the line, nd to make the volunteer force what it is not ow,—a force upon which the country could epend at a moment's notice.

Mr. C. Barry proposed the toast of "Art and cience," coupled with the names of Sir F. rant and Mr. Hawksley. Few words were eedful to ensure to the toast a most cordial eception, but the toast itself, and the names ssociated with it, demanded some few words rom him, which it would be almost dis- spectful for him not to utter. Taking Art first, the greatest, which it would naturally e in that room, he could not help alluding to he position which Sir Francis Grant so worthily 'd for many years, as the representative of rt, in this country, and by virtue of his office of resident of the Royal Academy, as the represen- tative of art everywhere. Having the plea- ure of knowing Sir F. Grant personally, e knew that although he was a painter he ad also sympathies with architecture, which ould especially recommend him as the respon- ent to the toast. Sir Francis Grant had a ery parallel character to that of the late pre- dent of that Institute, Mr. T. H. Wyatt. That arallel consisted in the kindness and urbanity, s well as talent, which enabled men holding igh positions to get over all the difficul- es of those positions, which prevented them rom losing any friends, but, on the contrary, nabled them to gain friends, and thereby to njoy the very highest pleasure they could ossibly have in the exercise of their art—the tempt to make that art more perfect, more onourable, more honoured, and at the same me more genial. The other branch of the ast was worthily connected with the name of r. Hawksley, who not only was a man of minent science and an engineer, but who ad d dicated himself more particularly to a ranch of his profession, which was of the reatest possible utility, viz., that of supplying e people with pure water, and securing for iem good drainage; and therefore they owed im a peculiar and personal debt of gratitude r his labours. He (Mr. Barry) had the honour f entertaining Mr. Hawksley a few nights ago, nd that gentleman was called upon to return anks for the toast of science and art; but hen he came to the question of art he became ore diffident, and expressed a sentiment upon hich many gentlemen in that room would feel trongly, viz., that both science and art ought o be more intimately connected with their aily life and professional studies than they eemed to have been. When he looked upon he grand opportunities which the engineers in his and other countries had, and must have, nd always would have, both as to the magni- nde of works they had to deal with, and the omparatively unlimited means to which they, imple architects, were almost strangers, he ould not but regret that the study of art as uch was not more recognised in the early ducation of men who had to fill posts such as hat of Mr. Hawksley, and did not form greater art of the continuous study of their lives longside those peculiar and technical studies with which they were at present identified.

Sir Francis Grant, in acknowledging the toast, aid:—I assure you I feel very highly flattered by the compliment paid me in connecting my name with art, and that compliment is especially valuable as coming from a body of architects, for I feel that we are brethren and fellow-labourers in art. Mr. Barry has very justly said that although I am a painter I can appreciate architecture. I honestly confess that I think there is no department of art more important than,—perhaps none so important as, archi- ture. The painter may paint upon a piece of canvas a fine picture to adorn a gallery; the portrait-painter may hand down to posterity the likenesses of the illustrious men of his day, and the landscape-painter, if he has something of the genius of the famous Constable, can represent the beauty of the green fields of dear old England, which must be so refreshing for the eye of the wearied man of business to look upon as it hangs on his walls. The sculptor, if he be a clever man, may give life to inanimate marble, and may create a beautiful figure to adorn some corridor or gallery which has already been rendered chaste and beautiful by the genius of the architect. But when we contemplate great works of architecture, for instance, West- minster Abbey or St. Paul's Cathedral, or any of the other great works which are well known to exist in this country, we cannot but feel that the best exertions of the painter and sculptor are dwarfed into insignificance in the presence of those mighty and magnificent monuments. I am glad to be allowed to compliment the architects of this country upon the vast improvement which is now taking place in the architecture of the metropolis. A few years ago it was a reproach that London was only a huge assemblage of brick houses and warehouses. Now, wherever we go, whether to the City or to the West End, we see noble structures which do honour to the country, and I firmly believe that in twenty or thirty years, through the exertions of the architects of this country, London will be a city of which the country may well be proud.

Mr. Hawksley returned thanks on behalf of science, and, after some humorous remarks, stated that he had never been able to see any reason why engineering should be divorced from architecture. He believed that by-and-by the occupation of the engineer would again be united to that of the architect. He looked upon his profession and the gentlemen engaged in it as the ephemerisms of the hour. They were called into existence simply because science had discovered something of which the archi- tects of the former ages had no knowledge, and in which up to the present hour they had taken probably very little interest. New modes of construction had been discovered by engineers because metallurgists had been able to present them with materials which architects had been not only not accustomed to use, but even almost up to the present period disinclined to use. Had architects been disposed to work otherwise than in bricks and stone, or with cement and mortar, he believed that engineers would never have sprung up as a separate and distinct body of scientific men, and architects would have been the great bridge-builders of the day. He was sure that if architects would only pay attention to what chemistry had done for the metallurgic arts, and would apply themselves along with their other beautiful studies, to the uses to which the new materials and the new modes of work- manship could be applied, there would then be no long-r any distinction between the occupa- tions of the engineer and the architect. He honoured art in its every branch, and, although he was no artist himself, yet in the execution of any works which he might be called upon to perform his first thought was how to do those works so that they might not be a disgrace to artistic taste. It had been well said that it was the business of the architect to beautify the town, and that it had become the business of the engineer not to beautify but to "uglify" the country. He hoped engineers had far removed themselves from that disgraceful position; but as they removed further from it the closer they would get to the architects, and he hoped the time was not far distant,—and he was convinced it would ultimately come,—when the engineers and the architects would no longer be distinct races of professional men.

Mr. Vulliamy next proposed "The Two Houses of Parliament," coupled with the name of

Lord Elcho, who, in returning thanks, observed that he believed he was taking the place of one of her Majesty's Ministers, the right hon. gentleman who was at the head of the art of this country, viz., Mr. Ayrton, and perhaps he ought therefore to speak a little as Mr. Ayrton would do. Now, some heretical persons had held that it was desirable that the gentleman who held the office of First Commissioner of Works should have some know- ledge of art, and that the appointment to that office should not be made a matter of mere party or political convenience. He absolutely disputed such a doctrine, and if they would look to the result of what had occurred of late years, they must be satisfied that he was right in holding that position. Some people held that it would be desirable to have competition, that architects should be invited to send in designs for public buildings, and that the public should have an opportunity of judging of such designs when they were settled and arranged. He absolutely disputed such a proposition as that. In the case of the Natural History Museum, after the design had been adopted, subsequent to a careful exam- ination by Mr. Fergusson and other distinguished architects, the architect died, and it was put into the hands of another gentleman. The public had seen the original design, but they had no opportunity of seeing the substituted one; for it was only exhibited in the House of Commons at the close of the session. The public com- plained: he thought the public was unjust. But prices had altered, and the design had to be amended, and now a building was going to be erected, the design of which none of the public had seen.* He knew that there were complaints, but he did not think it was desirable that the pub- lic, who had no right to form an opinion upon such matters, should have an opportunity of judging of this building. ("Question.") Upon the New Post-office large sums were being expended, yet neither the public nor the House of Commons had seen the design. That was the way in which these questions had to be dealt with by the present First Commissioner of Works. A memorial had been prepared by the Institute of British Architects—in every word of which he cordially agreed,—and presented to the First Lord of the Treasury. It was to the effect that it was desirable upon these questions of great public works, whether by corporate bodies who had to go to Parliament for Parliamentary powers, or works requiring grants of public money, that the selection of the person who had to choose the designs, should not be left to political or party convenience or interest, but that there should be a permanent body in this country which should be the adviser of the person who was at the head of public works, on all matters relating to art. That he believed to be a sound and in- disputable position. The Royal Institute of Ar- chitects was so sensible of the abominations that were perpetrated in the metropolis in the way of architecture—whether by railway bridges, or by ghastly stations, such as Charing-cross or Cannon-street—that they thought it absolutely necessary that something like the foreign system should be introduced into this country, that there should be exercised over great public works some system of Parliamentary control such as was recommended by the House of Commons Select Committee in 1869, and that there should be models and designs exhibited for the public to form their opinion upon before they were executed in brick or stone. ("No!") If there were such a body, composed of the president of that Institute, the President of the Society of Engineers, the President of the Royal Academy, the Chairman of the Metropolitan Board of Works, and a representative of the City, he would ask his dissenting friend whether he was prepared to say that such a body would not be likely to bring about a better state of things than the haphazard happy-go-lucky, ramshackle state of things which existed at present. If Nor- thumberland House was to be pulled down, it was in a great measure owing to the evidence given by this Institute of Architects, for he was able to say, as a prelude to better things, and in hope that the memorial to which he had referred would be adopted, that what weighed most with the committee was the evidence given before them by such men as the late President of the Institute and Mr. C. Barry. He considered that good had been done by the agitation, and he hoped that not only Committees of the House of Commons, but Her Majesty's ministers, might be induced in future, upon questions affecting the architecture and the beauty of the metro- polis, to consult intelligent, enlightened, and able men, such as those whom he saw around him. As regarded the House of Commons generally, he thanked them for having drunk its health. Although that body was diffident in its opinion upon art, and eccentric in its action, if it were

* The readers of the *Builder*, at any rate, are acquainted with it.

asked to vote upon the question, he believed it would decide in favour of the establishment of some such course as was suggested by the memorial of the Institute.

The Chairman next proposed "The Visitors," and said he had hoped that the First Commissioner of Works, who had been perhaps somewhat harshly treated in the last speech, would have been present. He should then have divided the visitors into two classes,—Mr. Ayrton, as the representative of the Executive; Lord Elcho, as representative of the House of Commons; and Col. Hogg, as representative of the Metropolitan Board of Works, would have symbolised the authorities of this country. Mr. Ayrton being however absent, he (the chairman) did not venture to say anything upon that subject, except this, that in all ages of the world the remains of the architecture of every great period and of every great country had become representative of the Governments, the authorities, and the potentates of that country and that time; and he would venture to express a hope that the existing authorities would take care that this reign of Queen Victoria, and the present period especially, should be handed down to future ages, to glory and honour, by the imperishable and noble works of architecture which it should produce. The second class of visitors to whom he would refer were those who represented very eminent and important bodies,—the president of the Royal Academy, as representing art; Sir John Gilbert, as another representative of art, he being the president of the Society of Painters in Water-colours; and Mr. Hawksley, as the representative of the constructive portion of art. He earnestly hoped that those in authority as guides and directors in art, and those who were agents in carrying it out, would make it their great object and study that the architecture, the art, and the constructive power of this country should hand down our age to future generations to honour, as represented by the works which he trusted this generation would be the means of creating. With the toast he coupled the name of Col. Hogg, M.P.

Colonel Hogg, in responding to the toast, expressed the pleasure which he, in common with the other visitors, experienced in being present on that occasion. He had been done the high honour of being asked to propose the next toast, "Prosperity to the Royal Institute of British Architects," coupled with the name of the distinguished president, Sir G. Gilbert Scott, a man who had pre-eminently made the name of the British architect famous throughout the world, and who had devoted his genius and talents to the great and noble work of restoring to their pristine state of beauty those great and ancient fabrics, the magnificent abbeys and the grand old cathedrals, which were erected by the piety of our ancestors to the honour and glory of God. Great and noble were such works for any architect to be employed upon; but to come down to humbler subjects, what would the inhabitants of a civilised country be without architects? They might have to wander over the country like Bedouins, or have nothing but wigwams to live in. There was a peculiar connecting link between the Board over whom he presided and architects, especially in London; for that Board had to effect improvements which they thought might conduce to the benefit of the citizens at large, of course with due regard to economy and to the preservation of ancient monuments, which no man revered more than himself. Animated as he was by constitutional feelings, he would never be the man to lay sacrilegious hands upon any old monument if he did not think the public convenience imperatively demanded it. With regard to the Select Committee of the House of Commons which had been referred to, he trusted the architects would not lay the flattering unction to their souls that their evidence alone carried the Bill; for it was the combined and valuable testimony which was given from all quarters that made a hostile committee give a verdict in favour of the Bill. A clause had been inserted which required that the elevations in the new street should be submitted to the Council of that Institute; and he felt bound to say that he considered that clause utterly unnecessary, that it was put in with very little consideration, and without any evidence whatever. The Metropolitan Board would, however, carry out that provision loyally, and the two bodies, he believed, would so fulfil the duties imposed upon them as to make them creditable to London. One of his reasons for entertaining a decided objection to this clause was that the architect to the Board was a member of the Institute, and was a man renowned in his profession. In proposing this toast he could not forbear paying due tribute to the dead. Amongst their ranks they had had one who was a valuable colleague of his own at the Metropolitan Board, and he was sure he was not doing wrong in saying how deeply they all deplored the loss of Sir William Tite. He was glad to congratulate the Institute on its increasing numbers, and he hoped that they might continue to increase.

The Chairman (who was loudly cheered) said: I rise most sincerely to thank you, Colonel Hogg, for the kind way in which you have coupled my health with this toast. I would say very little on this score, for the more any one knows of this Institute the more convinced he will be that it has a single object in view,—to raise the arts. I think I need hardly say any more, as it might appear like boasting of ourselves, nearly all present being members of the Institute. I thank Colonel Hogg very much for having spoken in such laudatory terms of the president of the sister Institute to that which has signalised itself by some extraordinary works. I may mention the double work of purifying our great river and making it a great ornament to this metropolis. Had I been president of this Institute at the time when the question of Northumberland House was brought forward, I should not have agreed with Colonel Hogg. I regret very much the decision that has been arrived at, for we have few enough public buildings in this country to bear the loss of one, though it may not be in itself a building of very extraordinary merit. I think the great object we should have in view is to preserve anything like a public building in this metropolis, and I would destroy none unless compelled by great necessity. Beyond that I would add nothing, but having said very little about the visitors it is but justice that I should add two or three words. One thing that I would say is this, that whatever faults our Government may have fallen into in respect of public buildings, they are not all to be saddled upon our present First Commissioner of Works. He had nothing to do with the building of the Post Office; it was all arranged, I believe, entirely by his predecessors; and I think a great many other things have come from the Treasury and other sources, through him as their representative, which have not been his own acts. So far as I am concerned myself, I must say that I owe him a debt of gratitude for his urbanity, courtesy, and kindness.

Mr. Cockerell proposed the health of the kindred provincial societies, which were effectually aiding the Institute in raising the status of the profession. He wished also to recommend the Architects' Benevolent Society to the attention of the members of the Institute.

Mr. I'Anson briefly replied on behalf of the provincial societies, and warmly pleaded the claims of the Benevolent Society, detailing one or two pitiable cases in which assistance had been applied for and granted.

Mr. Ewan Christian also appealed on behalf of the Benevolent Society, urging that its sphere of usefulness was considerably restricted by want of funds.

The Chairman said he thought all present could not do better than respond to the suggestions of Mr. I'Anson and Mr. E. Christian. He would suggest that each member of the Institute should increase his subscription to the Benevolent Society in proportion to his ability to do so.

The proceedings then terminated.

FROM THE VIENNA INTERNATIONAL EXHIBITION.

AFTER spending twelve days in carefully studying the various works shown in this great Exhibition (and great and consequently tiring to one who has to study its contents it is), I commence to fulfil the duty for which you have sent me here; namely, that of calling the attention of your readers to whatever I regard as of interest or importance to my fellow architects.

The day was when the architect designed not only the plans for a building, but also the patterns of the various household utensils—of furniture and brass work, of vessels of clay and of iron, and of hangings and rugs,—and while that day has long since passed, it is yet again recurring, and houses in which the taste of the architect is displayed in the furniture and fittings are not now unknown amongst us, and their number is every year increasing. It is then highly desirable that we architects make ourselves familiar with whatever is new and artistic in the way of furniture, hangings, floor-coverings, and whatever constitutes the furniture of an artistic house.

In this, my first report, I shall call attention to a series of little things that appear suggestive of improvements rather than attempt a review of what is offered in competition for honours in any one class; and my own feeling leads me to shun the ordinary method of review in most cases, and that for many reasons, but notably for these:—First, a review should be instructive to those who have not specially studied the class of objects considered. Secondly, the reviewer should give a reason for the faith that is in him; and, Thirdly, reviews are becoming such absurd nonsense that to all thinking persons they are often worse than displays of folly. But reviewers are only human. A man in a strange land, without friends, gladly forms an acquaintance with a fellow-countryman; a friendship springs up; it becomes strong after dinner; and as the reviewer (although generally a man of great literary ability, and with the marvellous quality of being able to write an interesting article alike on anything or nothing) is often strangely ignorant of the subject of which he has to treat, the undue and unwarrantable influence to which he has been subjected leads to praise (in some cases lavish and oft repeated) being heaped upon displays of manufactured goods which are meretricious rather than meritorious in character, while those which are new and of great excellence are passed unnoticed.

I am obliged to make these remarks, for my observations will at times appear so contrary to those made in some instances by the daily press that they could scarcely be regarded as correct, were I not to say what I have said. Without for a moment insinuating that undue pressure, or anything but just motives, brought about such remarks as,—"Mr. —— has a carpet or two that would be obliged to anybody who will inform them where they can meet with their match." Speaking of quite an ordinary and common-place Brussels carpet, such as can be equalled, if not surpassed, in almost every shop in London, a reviewer says,—"The carpet in this room is a contribution from the *atelier* of ——, of ——, and is a *chef-d'œuvre* in its way." Again, speaking of the space allotted to one exhibiting firm which the reviewer pleases to call rooms,—"In one of these rooms stands an inlaid cabinet,—cheap, very cheap,—only four thousand guineas! but nevertheless one of the modern wonders of the world. Austrian, Italian, and French cabinetmakers, past-masters of their craft, come up to it, gaze, walk round it breathlessly, and finally take off their hats to it." Such overdone reviews as these can only have an injurious influence both upon the industrial arts of England, and upon the exhibitors who are thus noticed.

One notable instance of ignorance on the part of a reviewer occurs in the expressions bestowed upon manufactures exhibited by a small English manufacturer, in such a manner as to lead any person visiting the Exhibition to regard them as home productions, while they are the finest works of the East. Not only so, but I learn from reliable authority that nearly every one of these beautiful Eastern carpets was professionally selected for the Exhibition by a well-known ornamentist, at recent International Exhibitions. Unless our reviews are of a different character from some that have already appeared, the progress of our art manufactures will be difficult, if not impossible. If a manufacturer can employ an eminent ornamentist to select, and, by his influence procure, the finest works of India, Persia, and Turkey; and these are to be brought into competition with English works, and our reviewers are to lavish praise upon them as native productions, all competition must come to an end.

I have been obliged to make these observations, as I have before said, or I should appear so contradictory in my remarks as to be perplexing to those who have read some of the current reviews of what I am to write of; and I ask that it be borne in mind that I write as an architect, and not as an ordinary correspondent, nor as a manufacturer. My observations will have reference, almost exclusively, to the art and utility of the object; for utility must always be combined with beauty in the case of articles of furniture, rather than to any other merits that the works reviewed may possess; and I shall not especially consider the method or perfection of the manufacture.

I have said that this paper shall be general;

t where shall I commence in an Exhibition so
rge as that which I have to consider? Shall I
gin at the east, or the west? Entering at the
stern end of the building, at my left is Turkey,
my right Japan. In Japan I find interesting
binets, and many objects of many kinds; but
at here attracts me is the simplicity and
stuess of structure which these cabinets pre-
at,—their picturesqueness being due rather to
quaint disposal of parts than any elaborate
eatment of detail.
Most of these cabinets consist of only straight
ces of wood,—a treatment by which a
ximum amount of strength is gained with the
st possible expenditure of material; for wood
en cut with the grain can be much more
nder than if cut crosswise or obliquely, if the
ne strength is required. But besides the
nplicity and justness of construction displayed
many of these works, I cannot help admiring
e total absence of polish on most of these
ods. All the best of these works are un-
lished, yet a few have been rendered bright,
order to meet the caprice of a European
ste. The treatment of some of these
binets is strange to us, but quaint, inte-
sting, and, in most cases, beautiful. Inlays
an irregular character are inserted into
e work, and, especially barks of various
nds. Smooth barks, as those of the beech,—
th the common and the silver beech,—and
gh barks, both dark and grey, as that of the
ung oak, and of analog us trees, and these,
en used in combination with a just framing,
oduce a very artistic and desirable result.
Some of the plain wood cabinets are mounted
th ornament brass,—with large hinges, elabo-
te corner-pieces to the doors,—with attractive
utcheons; but a cabinet which especially
erests me is one of plain wood, of well-marked
ain, with ornamental brass hinges, corner-
eces, and escutcheons, and also a series of brass
cular ornaments, which are studded irregularly
er the surface of the work. Into these circular
mpositions, which chiefly consist of conven-
nally-treated flowers, little birds are intro-
ced, and these little birds are tenderly wrought
horn, stone, pearl, or whatever is appropriate
the colour desired: yet these are not strong
effect, nor large and glaring, but, on the con-
ary, are so subdued in their treatment that you
ust look at the work closely before they are
pparent.
In another case I observe a work in unpolished
ood with open grain, having the spray of a
ant in gold laquer clinging to it in a truly
namental manner. Mark, the treatment is
namental; the plant is "displayed," and that
the most artistic manner. There is no attempt
ade at producing an imitative rendering of the
ant; it is not naturalistic, neither is it coarse;
is tender, refined, ornamental, and yet it clings
the surface as a convolvulus to its stem.
This is curious, that in Japanese work the
anifest grain of certain woods is very pleasant
some cases the Japanese render the grain
pecially apparent by eating away the paren-
yma of the wood), while in our furniture it is
nerally to me unpleasant; but the reason of
is is we so use wood of strong grain as
cause the form of the object to be hidden or
parently destroyed, while the Japanese never
so; we use a figured wood throughout, while
ey almost invariably frame a wood of strong
ain with a wood of homogeneous character,
less the object has a simple shape—as a cube
parallelogram.
The Japanese also exhibit several works in
ood of close grain, with a pattern, or flower, cut
on them in the most simple intaglio. There
no elaborate cutting away of the ground so as
leave the figure in relief, and no sacrifice of
neral effect by the bestowal of that attention
on detail which should be expended upon the
semble of the object as a whole; but, on the
ntrary, the figure is the result of a vigorous
mple cut, having the sectional form of the
tter V.
I am only going to touch subjects in this letter
a butterfly touches the flowers,—I can only
end a moment on a subject, and make super-
ial remarks.
In going through the Turkish Court, I was
uck with a wooden spoon, the handle of which
rminated in a hand with two fingers raised, and
e fourth in contact with the thumb,—the hand
mbolising the blessing of the Deity as por-
yed in old Mediæval windows and manuscripts.
the centre of the spoon-handle are two Byzan-
ne lilies, and these rest upon a circular disc
om which glory-rays proceed. In the Exhibi-
tion of 1862 in London, I believe that every wooden spoon sent by Turkey, and there were many sent,—was of this symbolic character, and the symbol is this:—The Creator, whose purity is represented by the lilies, and whose glory by the rays, blesses the food partaken of when the spoon is used. But here is the remarkable fact. Constantinople, from whence they are sent, has been Mohammedan for centuries, and this symbolic spoon must have originated in Christian Byzantine art. This shows, in a most interesting manner, how a traditional form may descend, even through many generations, when the spirit of the form has been not only lost, but would not be allowed to exist were the significance of the symbol understood.

In going through the European courts, I see many fabrics, vases, &c., bearing circular, Oriental-looking ornaments, and some of these are very beautiful; but their origin is traceable to a known source. Every Japanese prince has a crest or badge, which is not only wrought upon articles in his personal use, but which all his retainers are obliged to wear. The gardeners here at the Exhibition, the carpenters, the paperhangers, and, indeed, all the Japanese workmen that I have seen here, have a badge of this description on their backs, and these badges are almost invariably circular. The love of the heraldic insignia would engender in the wealthy admiration for circular compositions; and a desire on the part of the poor to possess what, in its distant effect, at least, would appear like a crest, would cause them to give preference to circular compositions, of an ornamental character. In this way I believe we can account for the prevalence of circular ornaments in the Japanese portion of the Exhibition, and we Europeans have cop'ed from the Japanese.

The Japanese show metal vases and teapots of interesting character, but notably vases, which consist of belts of various metals. Thus we have the lower portion formed of a dark bronze, with silver inlay; then a band of tea-urn bronze; then comes green bronze,—like richly-corroded copper, in which verdigris is largely present; then brass of splendid rich low-yellow tone; then white metal, and so on; and all these bands are carefully riveted together, the rivets being of white metal, and conspicuous, yet small, and thus colour-harmony is achieved in the formation of a metal vase. The form of these interesting vases is that of a well-shaped Spanish onion, surmounted with a widely-spreading funnel-shaped orifice.

I am lengthy and discursive, but I like to gather scraps rather than write of objects from which we can learn nothing.

THE ROYAL GOLD MEDAL.

On presenting the Royal Gold Medal for Architecture to Mr. T. H. Wyatt, Sir Gilbert Scott expressed the great satisfaction he felt in being present. He was glad it happened that the award, sanctioned by her Majesty, coincided with the retirement of Mr. Wyatt from the office of president. Mr. Wyatt's family, as all knew, had supplied members to their own profession as well as to the art of sculpture for at least a century. There were ten, to his own knowledge, who had thus distinguished themselves; and he and his brother Sir Digby Wyatt had worthily maintained the reputation of their family. Another generation was before them, and he hoped that their name might be handed down to future generations with, if possible, greater honours. The one characteristic which particularly distinguished Mr. Wyatt, he considered to be his high bearing and gentlemanly feeling, by which honour and dignity were imparted to the profession. His works, the president continued, comprise numerous churches and restorations of churches. In the former class I will only mention one example, viz., the church at Wilton, erected by him for the late Lord Herbert; a work which has the merit of introducing into this country the early style of Lombardy, with all its magnificence of material and workmanship. The other work I would refer to is a restoration of the noble minster of Wimborne, which is, I believe, a great success. Mr. Wyatt has also erected public buildings and institutions, including the fine Exchange in Liverpool, and four assize courts, besides lunatic asylums, hospitals, and gaols. After some further observations to the same effect, the president expressed the great pleasure with which he acted as the hand of the Institute in presenting to Mr. Wyatt this mark of their regard and admiration.

Mr. Wyatt, in reply, said,—Sir Gilbert Scott and Gentlemen,—Though I certainly have had considerable practice during the last three years in expressing my gratitude to the members of this Institute for acts and expressions of good-will and approval, yet I do not feel that on this occasion words come to my aid as I should wish to express my deep sense of this your last and most generous act,—the bestowal of the highest professional honour it is in your power to give. But, gentlemen, if words fail me, I am not the less grateful. To you, Mr. President, I am specially indebted for the personally kind and flattering way in which you have spoken of my works, and the partial and generous interpretation you have put upon my actions. I know well how little these works in themselves deserve the honour, and no one can know so well as I do how much I am indebted to others for what there is of merit in these works,—I may, I believe, say with truth to faithful and attached assistants who have been long with me. In judging these works, however, critics should bear in mind the relative advantages that the younger architect of the present day has had over us of a passing generation. But, sir, if I cannot conscientiously claim merit on the score of realised works, I can and do claim it on the ground of an earnest attachment to my profession, and a constant desire to raise in public estimation the character of that profession. Like one of my predecessors in this honour (Mr. Fergusson), I was intended to be a merchant, and spent two or three of my early years in the Mediterranean, trying to learn the beauties of cottons, coffees, and calicoes! I utterly failed in the attempt, and then my father sanctioned my trying my hand at that profession which had always been my ambition. I need hardly say that a lengthened journey home through Italy and France confirmed my wishes and aspirations. From the first, sir, I felt that if it was not in my power to realise great and meritorious works, it might be in my power to win the confidence and personal regard of my clients, of those who entrusted their interests to my care. I further believed that I might, by consistent and honourable conduct, also win the approval and goodwill of my professional brethren. I am thankful to say that in the first of these objects I have fully succeeded, and am proud to feel that in your award of this medal I have not failed in the last. You have been good enough, Sir Gilbert Scott, to speak of the numerous members of my family who have been architects and sculptors. I cannot but feel a pride in being a member of a family whose tastes and pursuits had associated them with art in any form. The works of some of these (one in particular) have been criticised with much virulence, and little consideration for the taste and fashion of the day, which may have dictated much that he did. I can only hope that in some future generation, when our works are measured by some other standard than our own approval, and our own prejudices, they may be more mercifully dealt with. One word more, sir, and I have finished. It has been thought by some, I believe, (by one at any rate) that as president I should not have accepted this medal so kindly proposed by the council for your approval. Independently of there being abundent precedent for such a recommendation, I felt that this question had to pass the ordeal of the approval of the Institute generally; and that I had no right to suppose I could be a safer guardian of my own honour than you would be. I was the president of this Institute, and not of the council merely, and if the Institute confirmed that proposal, I must be relieved from all responsibility. Gentlemen, it did meet with your cordial and generous approval, and I have now only to say how gratefully I accept such a mark of your approval, so graciously sanctioned by Her Majesty.

We must mention an interesting supplement to the incident just now described. About fifty of Mr. T. H. Wyatt's personal and professional friends made a small subscription, and purchased some plate, which, after being properly inscribed, was presented to him on Saturday last. Sir Gilbert Scott, in the name of the subscribers, expressed the kindly feelings it was intended to convey, and Mr. Wyatt, in his response, showed how fully he appreciated them. Mr. C. C. Nelson, who is always ready to give his time for a friendly purpose, was thanked for the part he had taken in the matter. There were present on the occasion, besides those already mentioned,

Messrs. Christian, I'Anson, H. Currey, E. Sharpe, Geo. Godwin, Cockerell, Horace Jones, Hansard, Boulnois, Charles Barry, and others.

GOLDSMITHS' WORK.

THE gold casket containing the address from the City of London to the Shah of Persia is of oblong octagon form, with a raised domical top, surmounted by the civic arms. "At the four corners of the base are kneeling camels, on whose backs the casket rests." The sides, corners, and lid are composed of pierced work in Persian character, with parti-coloured enamel backgrounds, ornamented with flowers composed of pearls and other precious stones. No opportunity to see the casket was given us, and we decline informing the public on the authority of the manufacturers that it is "without doubt the finest work of the kind that has ever been presented by the corporation on any similar occasion." The notion of employing four camels to carry one little box is rather absurd than otherwise.

PROPOSED NEW RAILWAY ACROSS LONDON.

IN addition to the several railways which already intersect almost every part of the metropolis, a new project is broached of another line to extend across the middle of London from the eastern to the western districts. It is proposed to construct the line upon a novel principle. Unlike the Metropolitan and the Metropolitan District Railways, it is not to be an underground line, but to be carried over and through the various thoroughfares on a high level, on a principle which it is calculated will not involve more than a third of the cost of the underground lines. The proposal is to construct a viaduct on wrought-iron girders, supported on screw piles, by which a very small quantity of land will be required. The length of the proposed line is six miles, stretching across the centre of the metropolis from east to west, and the estimated cost of the undertaking is 2,500,000*l*. Mr. Hamilton Fulton is the engineer who has designed the line.

SCHOOL BOARDS.

London. — At the usual weekly meeting of this Board, the tender of Messrs. T. G. & E. Howard, of 34, Upper Gloucester-place, Marylebone, amounting to 5,395*l*., for the erection of a school to provide accommodation for 570 children, Grove-road, Forest-hill, was accepted, and also the tender of Mr. J. Tyerman, of 27, Cranmer-road, Brixton, amounting to 5,200*l*. for the erection of a school to provide accommodation for 802 children, Orange-street, Southwark.

Sheffield.—A report has been presented by the architect and surveyor to the Board, showing the progress made in the building of the twelve schools contracted for by the Board. It stated that the Attercliffe and Newhall schools were completed, except colour-washing. The Netherthorpe school was roofed, and in a forward state. There was a difficulty at first in getting wall stone. The Philadelphia school was also roofed; but the work was delayed by a strike of slaters. The Walkley school was progressing satisfactorily, the walls having been carried up to the window-sills. There had been some delay in commencing the Attercliffe School, on account of the street drainage, and the depth of the foundations. At Grimesthorpe the masons were waiting until the level of the streets shall be determined. The Darnall, Lowfield, Crookesmoor, and Carbrook schools have been commenced, and the one at Pye-bank would be proceeded with shortly. The report was ordered to be entered upon the minutes.

Leicester.—The architects' committee report that they have received the following tenders for the erection of the school in Elbow-lane, and they recommended the Board to accept the lowest tender (that of Mr. H. Bland), subject to the sanction of the Education Department:—

Mr. T. Duxbury	£4,800 0 0
Messrs. T. & H. Herbert	4,797 0 0
Messrs. Neale & Son	4,677 10 0
Mr. W. H. Kellett	4,662 0 0
Mr. T. Bland	4,590 0 0
Mr. J. J. Sackree	4,463 0 0
Messrs. Osborne, Bros.	4,453 0 0
Mr. H. Bland	4,417 0 0

The tender of Mr. Bland was accepted. The Sites Committee were requested to take immediate steps, by advertisement or otherwise, to obtain a suitable site in the neighbourhood of Maynard-street. Mr. Barrs said that unless a school was soon built on that site, they would have exceeded the accommodation for the 6,000 which they agreed for on one side of the town. The population on the Maynard-street side was increasing very fast.

Derby.—The clerk reported that the Education Department had expressed their approval of the plans for the new schools in Nun-street, forwarded to them for their inspection. He also reported that he had advertised in the Derby papers, and in the *Builder*, for tenders for the erection of the schools. The clerk also reported that the opening of the new Gerard-street schools had been fixed for the 14th of July.

THE ARCHITECTURAL ASSOCIATION IN THE TOWER OF LONDON.

THE last visit of the session was made on Saturday afternoon, thus bringing to a close the half-holiday inspections of important works and public buildings, carried on regularly from the beginning of the year. The Tower of London was visited by one of the largest musters of the session, and the reserved sights, not seen by the ordinary sight-seer, were shown. The party was guided by Mr. Hepworth Dixon, and furnished by him with historical allusions as each notable spot was reached. The White Tower, from roof to basement, including, of course, the round-arched, barrel-vaulted chapel; the Bell Tower; the Council-chamber; Raleigh's Walk; the new sadly bepewed and begalleried church, with its fine Blount Monument (now being cleaned) and its Cholmondeley tomb (deserving careful restoration), and many another bit of the Royal Ward came in for a share of notice. The armour was inspected under the guidance of Mr. Planché, Somerset Herald, who followed through the chronological series that owes its present instructive form,—indeed, a large part of its interest,—to his re-arrangement of the aforetime confused storerooms.

The collection,—not too rich anywhere, and very meagrely furnished in the early portions,—traces roughly the main changes in plate armour adopted in order to repel the varied weapons that are here grouped round the coats they sought to deface,—the whole carried down to the days when metal armour of all kinds became out of date. Mr. Planché had reason to lament at each step the poverty of our national collections in these illustrations of our national history,—alluding to the dispersion of the Meyrick collection with much regret. The highly combustible annexe, liable any day to complete destruction, probably involving the ruin of all the curious and unique specimens we already possess, was remarked on, as also its narrow limits, which will not properly contain the suits in their regular series. Notwithstanding all the defects and fallings short of what it might be, there are too many precious things here to allow any one to contemplate with an easy mind the ruinous risk run day by day. Sanguine people may indeed be comforted by concluding that so obvious a blunder must, in the nature of things, after so many recent warnings, be corrected at once.

THE FREE PUBLIC BATHS, DERBY.

THE Free Public Swimming-baths given by Mr. Bass, as we have already announced, have been opened, after presentation to the Mayor on behalf of the town. There are two baths, which are both swimming-baths—one for men and the other for boys. They are constructed at the south-east point of the Holmes, at the junction of the Mill Fleam and the River Derwent. The baths are each 100 ft. long and 50 ft. wide, the depth of the men's bath being 4 ft. at the shallow end, and graduating to 5 ft. 6 in. at the deepest end; the boys' bath being 3 ft. at the shallow end, and graduating to 4 ft. 6 in. at the deepest end. Attached to the men's bath there are fifty-seven covered dressing-boxes made partly to close, and other offices and conveniences, each box being fitted with seats and peg-rails. The boys' bath has covered bathing-sheds to accommodate seventy-two boys, fitted with seats and peg-rails, and the customary offices. The whole of the bathing-sheds and dressing-boxes are of cast-iron, panelled, with the monogram M. T. B. on each panel. The baths are entirely separated from each other. The attendant's office is at the north-west end, and commands a view of both baths from windows looking on to each. The building and the entrances and walls in the front are constructed of coloured bricks, in an ornamental manner. There will be two mural drinking-fountains at the entrance to each bath, and a clock with two dials, one facing the playground, and the other the new baths, will be fixed in the attendant's office. The swimming-baths are each lined with white glazed bricks set in Portland cement, and the bottoms are laid with Seyssel asphalte. A foundation of concrete is laid under the whole of the baths and buildings. The margins round the baths are 8 ft. 6 in. wide, and are laid with tooled York stone. The original scheme for water supply was to take the water from the "basin" at the Long Bridge by a 9-in. conduit through a filter into the baths, which are built at such a level that the water would run in at one end at the bottom and out of the opposite end at the top, thus ensuring a constant supply and change of water, but owing to the intervention of the Canal Company, who considered their interests would be affected, the scheme was abandoned, and each bath is now filled once a week with clean filtered water, which the Derby Waterworks Company, owing to the extension of their works at Little Eaton, are enabled to do at a mere nominal rate. The two baths hold, together, about 260,000 gallons.

The whole of the works have been designed by Mr. Geo. Thompson, the borough engineer and surveyor, and carried out under his superintendence, the entire cost being about 2,500*l*. Mr. Robert Bridgart, of Derby, was the contractor for the whole of the works, excepting the ironwork, which was performed by Messrs. Stacey, Davis, & Co, of the Phœnix Foundry, Derby.

STRIKES IN GERMANY.

A CURIOUS symptom of the present social condition of Germany is that to the many subdivisions which are distinctive of German newspapers, another has lately been added, that called "Strike News." The space devoted to this subject is generally pretty considerable. Amongst the latest cessation of work we notice that of the workmen of the glass manufactory of F. Siemens, in Dresden, who demanded a rise of 15 per cent., which was refused. The nailsmiths in Rübenau (Saxony), ceased work about six weeks ago. The masters have been obliged to grant a rise of 20 per cent.

PROPOSED TESTIMONIAL TO MR. HENRY COLE, C.B.

A PRELIMINARY meeting of gentlemen, interested in the promotion of art and the industries of this country, desirous of recognising in some personal form the services of Mr. Henry Cole, on his retirement from the direction of the South Kensington Museum, has been held. There were present Sir M. Digby Wyatt (in the chair); Messrs. John G. Crace; J. M. Dodd; P. Le Neve Foster; George Godwin; P. Graham (Jackson & Graham); W. Holland (Holland & Sons); J. C. Horsley, R.A.; H. A. Hunt, C.B.; T. Peard (Hart, Peard, & Co.); J. Scott Russell, C.E.; G. Trollope (Trollope & Sons); H. Woollams (W. Woollams & Co.); and letters of adhesion were received from Earl Cowley; Mr. Edwin Chadwick; Mr. E. W. Cooke, R.A.; Lord Elcho; Professor Huxley; Mr. Beresford Hope; Lord Henry Lennox; Sir Stafford Northcote; Sir Richard Wallace; Lord Clarence Paget; Marquis of Westminster; Sir G. G. Scott; Sir W. Fairbairn; Sir Samuel Morton Peto; Sir Titus Salt; Sir Joseph Whitworth; Messrs. Colin Campbell (Minton & Co.); J. Fowler, C.E.; S. M. Hubert; J. Hawkshaw, C.E.; Lewis & Allenby; A. J. Mundella, M.P.; John Penn; John Webb; Elkington & Co.; C. J. Freake; Hunt & Roskell; S. C. Hall, F.S.A.; C. & T. Lucas; J. C. Macdonald; E. J. Poynter, A.R.A.; George Smith; and many others.

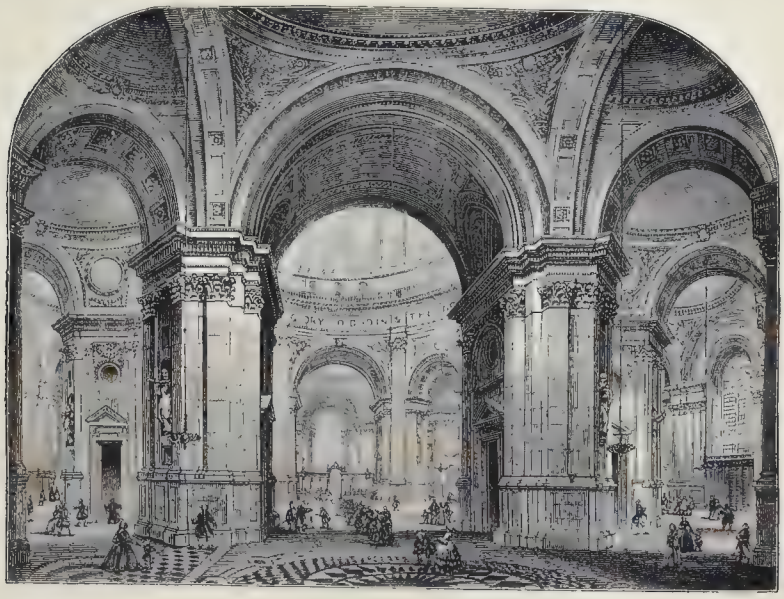
It was agreed that the gentlemen present, and those in the above list, should form a provisional committee, with power to add to their number. Mr. J. G. Crace was requested to act as honorary secretary; and it was unanimously resolved:—

"That having learnt that Mr Henry Cole has resigned the direction of the South Kensington Museum, this meeting is of opinion steps should be taken to obtain a recognition of his useful, energetic, and varied labours, and of the eminent services he has rendered to his country."

A meeting will probably soon be held so as to bring the proposal before the public.



BIRD'S-EYE VIEW OF OLD ST. PAUL'S, SHOWING THE SURROUNDING WALL, GATES, AND STREETS.



INTERIOR OF WREN'S FIRST DESIGN (AFTER THE GREAT FIRE) FOR ST. PAUL'S CATHEDRAL.

View from the Nave.

[See p. 497, *ante*.

THE POPULAR ESTIMATE OF ARCHITECTURE.

ON this subject, Mr. F. Chambers lectured at the Architectural Association a few days ago. We give some portions of his very acute address, and put them under headings, in place of their original connexion :—

1. *As to Doctors and Architects.*—There is some analogy between the profession of medicine and that of architecture. They profess to preserve the sound mind in a sound and healthy body; we, to fit that body with a dwelling suited to its wants, and to adorn it as far as it is capable of ornament. They aim at repairing the ravages of time and disease upon the earthly body; we desire to preserve and conserve the dwelling we have designed, that it shall endure and increase in beauty as in age. The doctor is an expert,—he has inmost knowledge of the details of the construction he has to work upon; for us, also, a knowledge of the anatomy of the dwelling is still more necessary. The medicus is not the chief workman, he deals with a thing created. The architect is, as far as man can be, a creator. The house first conceived in the mind grows into being at the touch of his wand,—a thing of beauty perhaps, but possibly a Frankenstein,—an abortive monster, to hurt and pain him years after its birth, to remain an incubus upon him, haunting him, upbraiding him even in his dreams. He cannot scratch it out, erase it; not even a recording angel can blot it out, unless it fall of its own instability, or the merciful fire-spirit destroy it. The medicus guesses where he cannot see, and if he makes mistakes he shifts the blame; the architect dare not guess,—a false step once made is fatal to his fame. The doctor blunders and stumbles in the dark recesses of viscera and cloacæ, the patient dies, but the much-enduring Mother Nature bears the blame. Not so with us; for every incident that befalls a dwelling, it is the architect that is dragged prisoner to the bar. It is on our defenceless profession that the favour of the press has a special tendency to burst. Whether it be a question of snow melting on the roofs, percolating the slates, and spoiling the newly-decorated drawing-room ceiling; of the pipes bursting from the late hard frost, and inundating the bedroom in the pleasant dawn of a dark December morning; of the swarm of saltatory parasites that detract from the midsummer night's repose of Broadstairs or of Eastbourne; if the water supply be defective, or the gas flickers; if brick walls on clay foundations crack; if the cook has caught cold from sleeping too soon in the new wing, or the groom has typhoid fever, probably from sleeping in an underground closet about the size of a cistern, it is always the architect that is transfixed by the spasmodic sentences of the irate paterfamilias. It certainly is the popular impression that every dwelling-house has been designed by an architect, and therefore that he is the proper victim to crucify for every evil that befalls a house. He it is that stands like an evil genius behind the plumber mending a pipe, and guides his hand to give a dig at another near it that shall soon develope into a burst. He puts the pipes where frost assails them; arranges the roof to retain the snow as it melts, in a sort of hopper, from which its only escape is through the ceiling; or imitates nature by contriving a series of slopes that result in an avalanche on the conservatory just as the azaleas are in bloom. It is the architect who places the nursery over the best bedroom, in order that the pattering of pink feet may encourage in our visitors the good habit of early rising. He locates the kitchen so that the preliminary sniff of cookery may give the guests that general prophecy of the *menu* so provocative of appetite, and the w.c. so that its soft echoes resound on the boudoir, and its *aura* add a perfume to the staircase. Whose fault but his that the coal-cellar is well lighted and ventilated, and the larder is a veritable black hole; that the kitchener makes a torrid zone of the kitchen; that the staircase compels a single file? Now these things have no counterpart in the profession of medicine. The doctor is accepted as a sort of priest. He is supreme; he dictates. If he is wrong in his diagnosis, -alas! human skill is not omniscient, he did his best. Who can avoid the inevitable? His position is firmly taken: he has respect. The supreme ignorance of the laity in physiology raises him; they look up to him, and his decrees have the force of a fiat. But everybody is the critic of the architect. Man is a building animal; the instinct of building is strong in him, as in the beaver or the ant. His earliest play in infancy is to build a mud hut, his first toy a box of bricks. His latest aim, if he prospers, no matter what his occupation, to build himself a dwelling. His enthusiasm takes the form of building, from the huge stones piled up in uncouth circle to mark the site of a battle won, or the spot where lies the body of the dead chieftain, to the college which commemorates Keble, or the gigantic sewer with which a transcendental admirer of Wellington proposed to make his name and fame immortal. Above all, the religious zeal only fully satisfies itself in building a shrine, a temple, or a tomb. Sacrifice to God has done more to cover the earth with works of beauty than all other impulses to build. Destroy the temples, cathedrals, the churches, the shrines and crosses in the market-place and the wayside, and you may walk through the ruined cities as in a garden where the first frost of winter has swept each blossom from its stalk. And this religious zeal makes of its devotees students and art critics. It is the fashion to assume a knowledge if they have it not, to affect the air of a connoisseur, and vex and worry and goad the victim who has ventured to design the church or the village school, until he envies the peaceful life and calm dignity of the parish beadle. The doctor has his assured position, the architect has none.

2. *As to a Client's Appreciation of Services.*—Have you the consciousness of having done your utmost for a client, of having really succeeded to your own satisfaction, in fulfilling even the exactions of your own over-sensitiveness, and then opening the letter which you blindly expect is a little compliment thrown in as a make-weight to the hardly-earned commission :—"Dear Sir,—In the house which I have built at so much cost and trouble, under your direction, I at least expected not to have been annoyed as I have been in the first month of my occupation. My cook complains of the great distance at which you have placed the dust-bin; of the draught in the larder, which gives her cold whenever she has to fetch the meat. One of the large plate-glass sashes in the drawing-room is smashed to atoms by the wind slamming the door. The W.C. on bedroom floor has been choked with a scrubbing-brush, which was accidently thrown down it; but surely you should have guarded me against such a casualty. The painters' work is positively scamped. I find, they have not touched the inside of the keyholes, and have left that part of the window-frames where the sashes slide, and which they supposed out of sight, without a trace of paint. I certainly looked to you to save me these annoyances, and must confess to some disappointment. I hope you will at once come down," &c., &c.

3. *Why Architects are not honoured.*—Because of their unrecognised status,—their imperfect, irregular training,—the want of appreciation on the part of the public of their art and of their services, and the want of division of labour amongst them. The contrast between the nature of the several distinct and very different works which they profess simultaneously to undertake.

4. *As to Education of Architects.*—What can be more promiscuous, more uncertain, than the change which directs most boys into that groove of which the architect's office is the first station? What decides the eventful question, Shall the boy be an architect? Rarely the bent of his taste and fancy; more rarely some evident proclivity and aptitude; generally, much as a boy is made a priest, because there is the chance of a living to be had: so the boy is destined to the T-square, because there is a connexion dimly looming in the future, or the interesting drawings duly sent home at the holidays,—sweet studies of decayed barns and waterbutts,—show such taste for drawing; or, "My son has some fancy for carpentering, sir, so I have thought of making him an architect. There is not one in the family." A month's trial to see how the boy likes it. A new experience,—such fun in the office,—the managing clerk, a comical fellow, who sings such capital songs when the governor is out,—it is all fresh to him, and the work so smooth,—he *will* be an architect, and the premium is paid, and the thing done. Alas! will he be an architect? There is the rub! He will trace drawings, and see them not; copy specifications, and no more read them than if they were sermons. Go forth unto the buildings that are rising, and as a traditional joke say to the foreman of bricklayers,—"That's not bond." He will see stock bricks and iron girders in all variety, and to him they will remain stock bric and nought besides. The principles of constr tion, the life-long fight against the forces nature, the balance of equilibrium he sees n cares not to see; and the three or five ye pass in pleasantry, and perhaps a pretty drawi or two;—and behold our architect-elect! apt, fitted to undertake the work,—to build houses, the churches, the theatres, the scho of his generation. . . . If there were same system in the nurture of that facul which is to develop into the genius of the arc tect, which obtains in the culture of medicine of law; if, in the first place, a year were pass in the builder's workshop, in the practical wo of the operative trades, and the evenings in school of the art-designer; if periodical exa nations took place under the direction of so recognised corporation: let the second year passed in the actual superintendence of bui ings in progress; the third year in the study the practical requirements of each variety building,—the dwelling-house, the factory, t church, the school, the hospital, the hotel, t town-hall. Let him study, also, those questions jurisprudence which now disturb and hinder every step,—Building Acts, sanitary laws, righ of light, rights of adjoining owners. All throu this curriculum let the fine art, the æsthet element, be constant; let every pocket contain pencil, and from the thumb-nail and the shi cuff let him every evening transfer his sketch ornament, or some quaint conceit, to the sketc book. Let the workshop be what the hospit is to the young doctor; the office, the surger the building in progress, the clinical studies the bedside of his patient. He will at the e of his probation have acquired a knowledge the art of building; he will be fitted for bett or worse to fill any of the many posts whi the increasing demands of men for every varie of building are constantly creating.

5. *As to the Manner of negotiating of Architects.*—Are architects lowered in the popular estim tion,—degraded, so to speak, of the high esta which of course we all think they are entitle to, by reason of the multiplicity of their callin of their undertaking to do so many things different, so contradictory in fact, in the character and dignity? A man has his brain fu of visions of the best form of ceiling for t hall, the wall-surface of the new staircase, that delicious bit of masonry which is to be t new drawing-room bay-window; he receives note like this :—"Dear Sir,—The smell we hav noticed once before in our library certainly i creases; it is evident there is something wron in the drainage. Knowing the multiplicity your engagements, I hesitate to trouble you wit this matter, but if you are unable to come dow at once and thoroughly investigate the whol system of drainage, I must apply elsewhere f that assistance which I feel, &c., &c. P.S. It i not the slightest use your sending Mr. —— (you managing clerk). I cannot have that confidenc in his judgment." You all know what thi means. It means that you must give up, n one day perhaps, but many days, to an in teresting investigation of the ancient construc tions of our forefathers in the shape of drain under a country-house, whose every owner fo two hundred years has added a cesspool or two to the ring, which, like the pearls around the emerald, encircle the ancient dwelling. You go down, at every sacrifice, but with the certainty that you can never make a charge which will at all repay you for the work; that the end of it may be utterly disastrous and unsatisfactory that the accursed smell,—born, perhaps, of the devastation of rats,—may elude you like the will-of-the-wisp, and, beaten in the library, reappear,—horror of horrors!—in the nursery or the boudoir; and yet you must do it, or you may find some other man has stepped into your shoes. He will (under cover of the smell) proceed to throw out the bay-window, to add the billiard-room, and the beautiful new staircase, and all those charming creations you had so happily carried out in prospective; and, worse than that, in six months' time, you read in the city press :—"We hear that Messrs. X. & Co. (X. being the drain-persecuted client aforesaid) have purchased a large plot of land in New Victoria-street, and are about to build new premises on a truly magnificent scale, which will prove a great ornament to our city. We understand the designs have been prepared by Mr. Malaria, the architect, whose sanitary investigations are so well known," &c., &c. Where are the limits of our knowledge to be fixed? An architect is indeed in theory the representative

omniscience,—called upon to build a brewery, printing-house, a college, a hospital. He must primed at once with the varied requirements d internal organisations of each building; a lt in detail is a fault indeed. I built a large ovision-warehouse a few years ago. My client d, "I want my smoking-room to be the best London." I thought at first,—having a akness that way,—of parquetry floors and od walls, oak bench-ends, deep ingles tile-ed, and all the accessories that would tell up presenting to my client the perfection of a oking-room. Utterly wrong; it had never uck me that it was not a room for the smoking his leisure hours of Partagas and Intimidads at the City merchant desired should excel all ers, but for the smoking of bacon and hams: nce a new study and exploration of all sorts haunts, dim with the fumes of oak-shavings d the scent of salt pork. How strangely ese diversities accrue! You pass from an hour voted to the choice of drawing-room papers th Madame to take account of the dilapida-ns accrued to a dozen dens in Petticoat-lane. u climb down from the spire of one of Wren's urches, where the rusting of iron cramps has cessitated the reinstatement of the columns of lantern, and pass on to Powell's, to select stained glass for the library windows of ne country-house; make affidavit of the ury to right of light of a scullery window in ctors' Commons; and run down to Southall, report whether so many thousand pounds can lent on the security of the lease of a brick-ld. It is impossible that any man can do these things well. Michelangelo designed laces, carved statues, and painted the ceilings. n one fancy Michelangelo giving evidence as rights of light, investigating the origin of a ain-smell, reporting on the mortgage value of rickfield? These multiplicities have originated m the complexity of our society, but they ould no longer be encouraged. The excellence attainment in one department is imperilled the exigencies of all.

NEW WORKHOUSE AND INFIRMARY BUILDINGS AT BURNLEY.

LARGE new workhouse and infirmary buildings e about to be erected at Burnley, and the undation-stone has been laid with ceremony, e local authorities taking part in the pro-edings. Burnley, which is one of the most sing manufacturing towns in Lancashire, is uated in the north-eastern portion of the unty, on the borders of Yorkshire. It now ntains a population of nearly 100,000, and its habitants have increased to the extent of ,000 within the last fifteen years.

The new buildings and grounds in connexion ll occupy an area of ten acres. The buildings emselves will consist of three distinct blocks, mely, the entrance block, the main workhouse ilding, and the infirmary building. The several ildings, which are in the Italian style of chitecture, will form a prominent structure. he entrance block, which consists of one story ly, is at the east, and contains the porter's dge, also receiving wards for both sexes, gether with clothing-rooms, furnishing-rooms, th-rooms, and other conveniences. The doors d windows have arched heads, the windows ntaining shafts, with foliated capitals. At ch angle of the elevation there are two turrets, hich form the bath-rooms, having pyramidal ofs.

The main block is three stories in height. he elevation of the block contains a projecting ntre, with a square tower rising to the height 70 ft. The central portion contains the ministrative department, whilst the right and ft wings are intended for the male and female mates respectively. Immediately around the trance-hall, in the central portion of the block, e the committee-room, the master's offices, and oms for paupers' clothing, together with a ntral staircase leading to the upper portions the building. Beyond the entrance-hall is e dining-room, which is also intended to be ed as a chapel, with separate entrances for ales and females; and corridors connect it ith the kitchen, scullery, store-rooms, and kehouse, which are in the rear. Right and ft of the entrance, in front of the building, on e ground-floor, are day-rooms for the aged and nbecile of both sexes, whilst the day-rooms r the able-bodied, and boys and girls, are laced at the back. At the rear there are also ork-yards, and airing and exercise grounds. Altogether, there are eight staircases to the first and second floors, leading from the several wards, and all projecting from the main building. The centre of the first floor contains the master's and matron's bedrooms, whilst the dormitories for the different classes of inmates are placed over their respective wards. Corridors run the entire length of the building on each floor, and contain gratings for light and ventilation. There are also screen-gates to ensure a proper separation of the sexes, and glazed openings in the corridor walls to allow of complete supervision of the wards.

The infirmary block is at the west side of the site, and consists of two stories. It contains, on the ground-floor, kitchen and nurses' room in the centre, and sick wards for males and females to the right and left. There is also a dead-house at the north-east angle. The elevation contains a gabled projecting centre and wings, and generally corresponds with the main block.

The workhouse includes accommodation for 500 inmates. The whole of the buildings are of stone, supplied from the Tubber-hill and Burnley-lane quarries. The estimated cost of the building, exclusive of land and boundary-walls, is 17,000*l*.

Mr. Waddington, of Burnley, is the architect; and the contractors are Messrs. Heap, of Burnley, for the masonry; Mr. Roberts, of Rawtenstall, for the joiner's and carpenter's work; Mr. John Shuttleworth, the plastering; Mr. Stanworth, the slating; and Messrs. Belton & Son, the painting and plumbing.

THE PEST HOUSES IN THE NORTH AND PITMEN'S HOMES.

THE North-country papers, in their advertising columns, evidence the pleasing fact that mine-owners in the counties of Durham and Northumberland have at last determined to improve the state of the pitmen's homes, and the worse than barbarous condition of colliery villages. Tenders are now wanted for building a great number of workmen's cottages; and the following graphic description of the state of colliers' homes, by a speaker at the late Miners' Conference, barely sets forth the disgraceful tenure of miners' houses:—

"We can get a house and firing in the county of Durham for 6d. a fortnight, but that was simply the name of it. He could take them to pitmen's houses where there was more than 50*l*. worth of furniture standing, and if there happened to be a bit of carpet 2 ft. wide wanting, they might possibly fall into a hole that would bury them. He knew of a boy lying in bed with a broken leg, and an umbrella had to be put up to keep the rain off him; and men had to rise of a night to bale the water out of their houses. These were the kind of houses they had in Durham, and the system was killing thousands of miners, their wives, and children. He trusted the day was not far off when there would be decent dwellings for the pitmen, which the men would be too happy to pay a fair rental for."

Another miner said "that the houses given by the employers had been a curse to the workmen of Durham. They were of such a character that it was impossible for a man or woman to set a moral example before children, and, for morality's sake alone, the system ought to be altered at once. The whole tenure of miners' houses was unsatisfactory, and mostly the manner in which the tenancy was used influenced the independence of the working men."

Some time since the *Builder* called attention to the state of the Licensed Victuallers' houses in this quarter, that were, in the majority of cases, as reported by the police, unprovided even with w.c., and in a dilapidated condition. This was not only in villages, but in towns, and strangers from decent districts would be horrified to find tenements in so deplorably wretched a condition as to be totally unfit for human habitation. Irish cabins are palatial buildings compared to Durham's indecent hovels. All the laws of health appear to be set at defiance. No provision for drainage, or ventilation, and no convenience of any character supplied.

The medical men, undertakers, and churchyards reap a harvest from this violation of physical laws, on which health and comfort depend; and it is no secret in Durham that thousands who might have reached an average age have been cut off in childhood, and hundreds of thousands have been tormented unnecessarily by diseases.

The mortality amongst children is something frightful, from the poisonous atmosphere. During the last three months no less than 1,373 children under the age of one year have died in the county! The average duration of life amongst the miners themselves is 26 years, as against 40 years amongst mechanics and agriculturists.

The Home Secretary has at last taken action against the capitular city of Durham itself by ordering the removal of ashes and night-soil deposited together from time immemorial in the *ashpits* of the houses. It scarcely seems credible, but the citizens are actually complaining of the expense and annoyance of the removal of this filth, and having to do away with cesspools and provide decent conveniences.

NOXIOUS BUSINESSES.

A SELECT committee of the House of Commons sat last week for the purpose of taking evidence with regard to the subject of noxious businesses in relation to the health of the people, more particular reference being made to the metropolis.

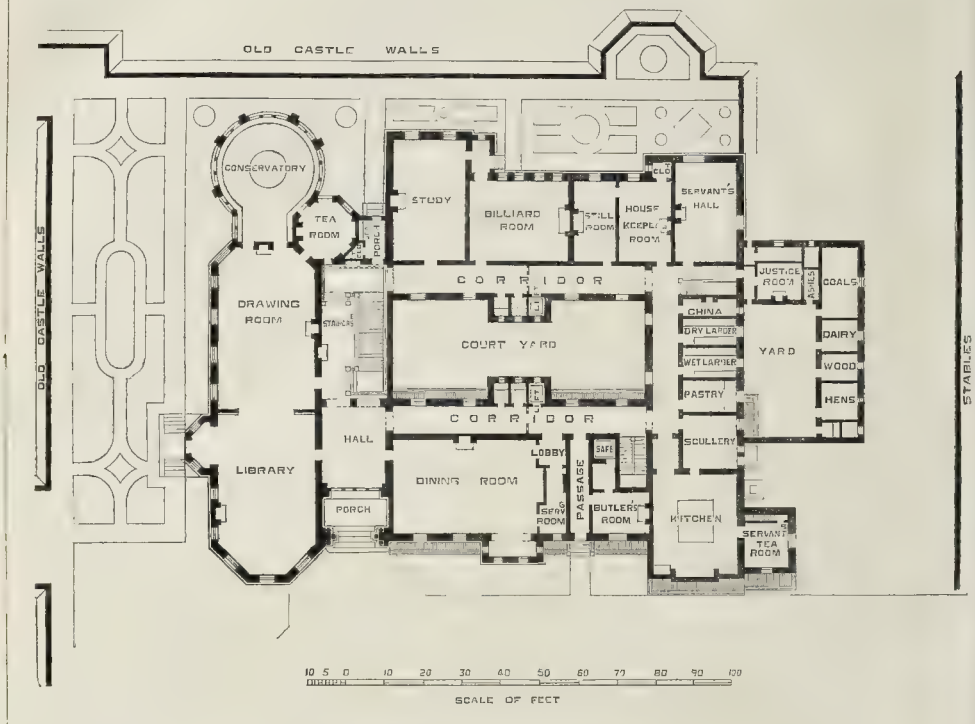
Mr. Whitmore, the medical officer of health for Marylebone, was the first witness examined. He had inquired into the subject of public slaughter-houses, and what was their effect upon the health of those who lived in proximity to them. Judging from the statistics referring to the matter, he found that disease was not more prevalent in the immediate vicinity of these slaughter-houses than in other localities, and his own opinion was that these businesses were not necessarily injurious to health. They did not bring about them any deleterious businesses. The offal of the animals from these slaughter-houses was sold to the poor for food, and it was a great boon to them. Bullock's liver, for instance, was a very nutritive food. There were some slaughter-houses in Marylebone which were not quite situated with a due regard to sanitary regulation. Sometimes these slaughter-houses were placed too near dwelling-houses, and the Act passed in 1844 with regard to this subject was not generally complied with. Where there was not a distance of 50 ft. between the slaughter-house and the dwelling-house he generally enforced more stringent sanitary regulations. From a sanitary point of view, he should regard the existence of ten or twelve public abattoirs as a greater nuisance to the parish than the present system of slaughter-houses.

The medical officer of the Fulham district stated that he did not consider any alterations in the present system were desirable. He was not aware that disease was caused to the people who lived near the slaughter-houses. He had only heard of one or two complaints of the slaughter-houses during an experience of nearly twenty years. He usually inspected these places at the time of slaughter. His official position did not render it necessary that he should give up his private practice, and he devoted to the performance of his public duties such time as was requisite. The local authorities did not sanction the licensing of the slaughter-house unless it was certified by him to be a fit and proper place for that purpose. His sanitary authority was the Fulham District Board of Works. What they called noxious trades did not spring up around slaughter-houses. There were forty-three slaughter-houses in the district of Fulham. His opinion was that the health of those who lived near these places was not injuriously affected.

Mr. C. Legg, member of the Metropolitan Board of Works for Bermondsey, then gave evidence as to whether fellmongering, leather-dressing, and tanning could be considered noxious businesses. He put in a report from Mr. Keates, analytical chemist, who stated that none of the operations of fellmongering, &c., were attended with any disgusting or obnoxious smell. The trade was not a noxious one. Mr. Legg stated that of late years great improvements had been made in fellmongering, with the view to bring it still further from the possibility of being classed in the category of a noxious trade.

One might suppose that there were no noxious businesses.

Antiquarian Relics near Whitby.—Recently several fine specimens of Roman weapons, utensils, and implements have been dug up on the moors near Whitby, adjoining the Guisbrough highroad.



UPSALL CASTLE.—*Plan of Ground Floor.*

UPSALL CASTLE.

OUR engravings illustrate this mansion, now in process of erection for Captain Edmund Turton, on the slopes of the chain of hills forming the northern boundary of the great vale of York, and commanding a view at once of great beauty, variety, and extent. The site is on the actual *emplacement* of old Upsall Castle. The owner had long entertained the project of reconstructing a residence on this spot, combining the charms of position with the memories of the past, and has gradually prepared the way by the erection of extensive farm-buildings, bailiff's and labourers' cottages, and lodges, and by laying out a garden. The building, as now erected, is constructed of hammer-dressed coursed wallstone of a warm-coloured sandstone, from quarries on the estate, with ashlar dressings, from the Leybourn and Whitby quarries, and grey granite sills, &c., from Dalbeatie. The great archway forming the principal entrance is a noble and massive work, entirely in polished granite; the shafts in red, the jambs and arches in grey. Granite is to be used in the internal arches of the hall and staircase, and the stairs themselves will be constructed of oak, carved with heraldic newels. The joiners' work of the principal rooms will be of pitch pine, walnut, and oak combined. The farm-buildings, bailiff's lodge, &c., were carried out under Mr. Goldie's designs, some years ago. The work at present is being executed by Messrs. Weatherby & Rymer, of York, builders, under the direction of Messrs. Goldie & Child, of London. The present contract amounts to about 7,000*l*.

Upsall Castle has many historical recollections. Whether the first castle was built by Roger de Mowbray or Hugh, lord of Upsall, remains a mooted point; Hugh, at all events, was lord of Upsall, and was succeeded (1297) by his son Richard, and (1315) by Galfred and by Hugh. We then come to the ownerships of the Lords Scroope, of Upsall and Masham, a younger branch of those of Bolton, who for upwards of 200 years lived here in feudal grandeur. We may enumerate two earls and twenty barons, one premier, one chancellor, one archbishop, four treasurers, two chief justices, two bishops, and five knights of the garter. Of these we may mention William, created Earl of Wiltshire, who was beheaded at Bristol for being connected with the rebellion when Henry of Lancaster landed, September, 1399. In the reign of Henry V. we have another Henry Lord Scroope immortalised by Shakspeare (see Henry V., act ii., scene 2) :—

"What shall I say to thee, Lord Scroope?"

He was the key of the king's council, and knew the bottom of his soul, though several historians say that the real cause of the rebellion was Richard, Earl of Cambridge. Then Archbishop Scroope, who was beheaded and buried in York Minster; and afterwards Thomas le Scroope, fifth baron, 1459. He left three sons, who *d.s.p.*, and three daughters. Mary, who, 9th Henry VII., 1493, married Sir Charles Danby, bart., succeeded to Upsall. From her it went to her sister, Elizabeth, wife of Ralph Fitz Randolph; and from her to her sister Agnes, wife of Sir Marmaduke Wyville, of Burton Constable. We now find Upsall Castle in the possession of the Constables. How it came so we have no record to bring forward. John de Constable lived here, and being a firm Royalist, had to flee to Holland, when the castle fell into decay, whilst the estate afterwards came, at the Restoration, to William Constable, Viscount Dunbar, who left it to his nephew, Cuthbert Tunstall, who sold it to Dr. John Turton, Physician in Ordinary to the King, 1797. He died in 1806, bequeathing this estate, to Edmund Turton, of Brasted Park, Kent, who died in 1857, and was succeeded by his son, late an officer in the 3rd Dragoon Guards, who married the Lady Cecilia, elder daughter of the 4th Earl of Milltown.

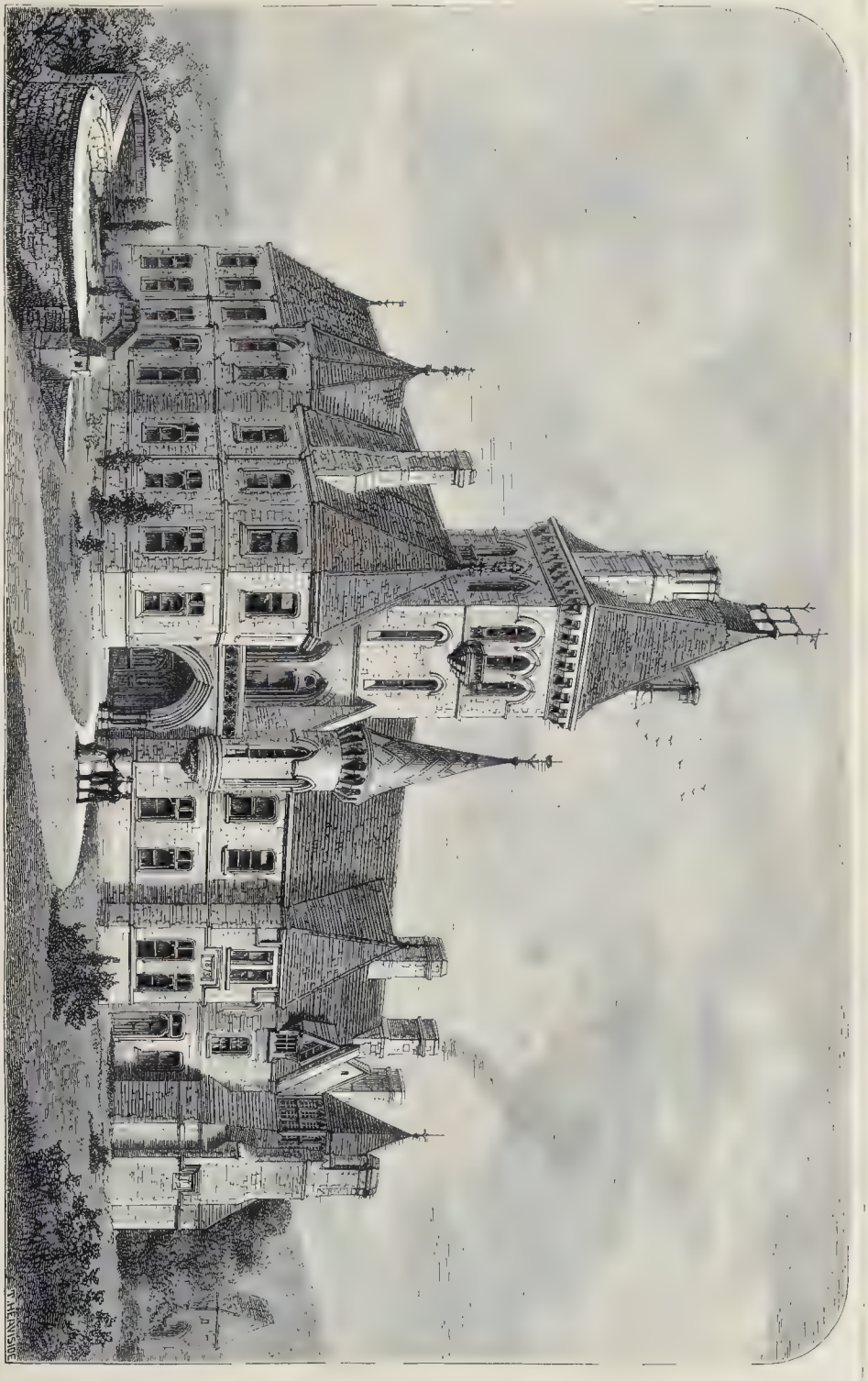
Several coins have been found on the ancient site. A silver penny, Edward III.; a lead coin, of the Empress Plautilla; several copper coins of Carausius, the founder of the British fleet; several coins of Charles I. and II.; sixpence of Queen Elizabeth; silver penny of Henry V.; and a copper halfpenny of William and Mary.

In the ruins were stones bearing masons' marks, already noticed in the *Builder*.

The grounds and gardens have been laid out under the surveillance of Mr. Broderick Thomas.

MANCHESTER SOCIETY OF ARCHITECTS.

THE ninth annual meeting of this Society was held at the Royal Institution, on Monday, June 16th. The report of the retiring council was read, referring to the work done by the Society during the past session, the more prominent matters being the efforts made to promote the education of architectural students, and the technical education of the workmen of the building trades, the arrangement of building contracts, and the endeavours that are being made to induce the City Council to adopt such building regulations as would have the effect of a Building Act, &c. The thanks of the Society were tendered to the Hon. Secretary, Mr. J. Murgatroyd (on his retirement from office), for his valuable services since the formation of the Society. The following gentlemen were elected officers for the ensuing session:—President, Mr. J. Murgatroyd; Vice-President, Mr. W. R. Corson; Hon. Secretary, Mr. John Holden. Council:—Messrs. Isaac Holden, A. W. Mills, G. T. Redmayne, E. Salomons, and T. Worthington.



UPSALL CASTLE, YORKSHIRE.—MESSRS. GOLDIE & CHILD, ARCHITECTS.

NOTES ON FOREIGN PUBLIC WORKS.

FROM several official reports which have been issued concerning important places abroad, we glean a good deal of interesting information relative to public works, which, judiciously epitomised, will not be devoid of interest to the English reader. From Königsberg (Germany) we learn that a new Exchange building on the south side of the river Pregel has been built, the estimated expense of its construction being about 75,000*l.*, which has been raised by the mercantile community. Waterworks for supplying Königsberg with fresh water, which is greatly needed, have been commenced, and it is hoped, by this means, the frequent reappearance of the cholera will be prevented. It is stated that in the construction of these waterworks there is a great want of engineering experience, and even a difference of opinion as to the more advantageous use of clay or iron pipes for the purpose. The estimate of the expense was originally 90,000*l.*, but subsequently it has become evident that as much as 150,000*l.* will be required. It is hoped, however, that these waterworks, when finished, will become an additional source of revenue to the town. Other public works of Königsberg are town clinics and other buildings for medical purposes, as well as the erection of very extensive military barracks. The construction of harbour works at Pillau is being gradually carried out, but the progress is slow. Chaussées are being constructed all over the province, and there are several important railway extensions being carried out. There are, however, it is mentioned, many difficulties in the way of private companies who undertake to build railways, especially in the Russian dominions; and although the East Prussian South Railway is able to pay its expenses and the interest on its obligations, it is not able to pay dividends to the shareholders. It is anticipated, however, that as soon as the Gragewo-Brest line, which will branch off to Odessa and Moscow, is finished, this railway will pay well. The population of Königsberg has greatly increased of late years, and there is a corresponding continual increase in house-rent. Königsberg being a first-rate fortress, the difficulty of building houses outside the gates,—within the range of the fortress,—is extreme, and, in fact, permission from the military authorities to erect any species of building is most difficult to obtain, the condition being always laid on the builder that on requisition from the authorities such building must be immediately pulled down. Few are inclined to risk such an undertaking; and the space of ground within the walls, although large, becomes less available for new buildings; the consequence being that the inhabitants are inconveniently cramped up, to the serious detriment of their health.

The next report refers to Guatemala, whence we learn that the present Government is very anxious to construct a railway between the capital and the port on the Pacific coast (San José), and has entered into a contract with a Mr. Kelly for this purpose. The line will be about eighty miles long, and it is expected will be of great benefit to the commerce of the country. Arrangements have been made for connecting the principal cities and towns of Guatemala by telegraph, which will also extend to the frontier of the neighbouring republic of Salvador, where for more than a year past they have been in possession of this indispensable convenience. It is stated that Europeans can live and work in perfect health in Guatemala, a considerable portion of that Republic consisting of elevated table-lands; while property is secure and the roads are safe. For all articles of taste and luxury, Guatemala sends to France or Germany.

From Syra (Greece) we learn that public improvements are much wanted in that town. The streets are for the most part irregularly and badly paved, and hitherto the system of building pursued has been very careless. Latterly, however, a plan of the town has been drawn by the Government engineers, which the native builders are now obliged to follow; but great difficulties are experienced in any attempt at improving the appearance of the town in regard to its buildings, owing to the negligent system heretofore adopted. There are some tolerable roads leading from the town to a few small villages in the vicinity, where many residents of Syra have country-houses, whither they repair during the hot season. At present the town is very poorly lighted with petroleum lamps. A contract, however, has been entered into by the municipality with a French company for lighting it with gas, and the necessary works for this purpose were quickly commenced. The water-supply is occasionally very scarce, the town chiefly depending on rain-water collected in cisterns from the roofs and terraces of the houses. Water of good quality for drinking is brought into the place in jars from springs at a considerable distance. The harbour of Syra is in need of improvement. At present it is tolerably well sheltered from all winds, except from the south-east, and a mole or breakwater for the protection of the port against this wind has been in course of construction for many years. Unfortunately little or no progress is made towards the completion of this work. Plans for the improvement of Syra are being continually mooted. Recently an eminent French engineer was consulted by the Government on the subject, and more especially as to the best method of building quays terminating the mole or breakwater already commenced, and the construction of a dock; but there appears to be little probability of these works being carried practically into effect for some time to come.

At Palermo (Italy) several important public works are being carried out. Prominent amongst these is the breakwater, which, with the extension of the mole, will give great additional space and security to the port. Another important work is the construction of a short railroad connecting the present railway terminus on the south of the city with the port on the north. It will run round the walls, and will be about three kilomètres in length. This is described as a work of great public utility, which will have a beneficial influence upon the trade of the port. The port of Palermo, it is stated, is quite inadequate to meet the requirements of its actual commerce. To remedy this, the mole, which is already 190 mètres in length, is to be extended about 100 mètres; and to increase the space for anchorage a breakwater is also in course of construction in a line with the mole. The breakwater is to be 230 mètres in length, and it is intended to connect it at its southern extremity with the city by a bridge of stone about 200 mètres in length, which will require a considerable time for its construction. From Italy the next report takes us to Spain. We note that the Spanish Government has granted a concession to an English firm of contractors, Messrs. Chadwick, Adamson, & Coleix, to construct a harbour of refuge in the Bay of Bilbao, in accordance with the plans of Mr. C. B. Vignoles, the English engineer.

It may be stated generally that the plan consists in constructing two vast breakwaters, one running from a point near Santune, on the south-western, and the other from Algorta, on the north-eastern side of the bay, both being considerably outside the "bar," the destruction of which would thus be effected, and a harbour formed whose dimensions and position would render it, according to the opinion of authorities on the subject, one of the finest ports of refuge in the world. In the whole extent of the Bay of Biscay there is no existing port which can fairly be considered a harbour of refuge. The concession for that in the Bay of Bilbao includes no subvention whatever from the Spanish Government, and leaves the cost and risk of construction entirely to the company undertaking it. On the other hand, the terms of the concession are of the amplest description. Fifteen years are allowed for the execution of the work. Still continuing our remarks about Spain, we learn from Teneriffe (Canary Islands) that considerable improvements in the roads of that district have been effected of late, the macadamising system being adopted. Some years since an association was established at Santa Cruz, Teneriffe, for the purpose of building dwelling-houses for the humbler classes, and it has been most active in its exertions in carrying out this object. Numerous small, neat, and convenient houses have been constructed; larger edifices have also been erected, and, being not devoid of architectural merit, have greatly added to the appearance of the town. The labours of this association have, in fact, been of the greatest benefit in the construction of commodious houses. A society has been for some time past engaged, in the Island of Palma, in bringing supplies of water from the mountain-springs to La Dehesa, and as much as 4,000*l.* has been expended in the work. It is significant also to note that in this island what is described as a rather beautiful building has been constructed "for cock-fighting and for balls,"—a queer, conjunction, certainly,—and a theatre has also been built, of small dimensions.

THE BUILDING TRADE AND THE NEW YORKSHIRE COLLIERIES.

THE building trade at the present time is perhaps receiving more benefit from the opening out of the numerous new coal-fields than any other branch of industry, excepting, of course, the business of mining and sinking. Building operations are in many instances greatly retarded by the high price of labour and material; and there can be no doubt that investors as a rule are turning their attention to other modes of utilising their capital than laying it out in cottage property. Another matter highly favourable to building operations is the opening out of new coal-fields which are removed from the bulk of the population or in localities where the existing cottage property is fully taxed with occupants. This is just now especially the case in South Yorkshire, where more new schemes are being projected than were ever before known in the history of the coal trade. It is, perhaps, also worthy of remark that the engine-houses, offices, and other necessary erections are now built in a style which a few years ago was almost foreign to the surface-plant of most of the largest collieries. In what may be termed the midland coal-field, which comprises an area of over 500 square miles, new sinkings are being made in large numbers, which will provide a good deal of work for operatives engaged in the building trades. A glance at a few of the most prominent and largest of these undertakings may not be without interest. At Wath-upon-Dearne, about six miles from Barnsley, a large colliery, which, when opened out, will be second to none in the district, is in the course of being sunk. The Barnsley bed is the one proposed to be worked, at a depth of 300 yards from the surface, and an average thickness of 8 ft. 6 in. Three shafts are being sunk, viz., two drawing and ventilating shafts, each 15 ft. in diameter, and a pumping shaft 10 ft. in diameter. In addition to the lining of the shafts, building operations have already begun, and a range of buildings 90 yards in length, consisting of offices, a residence for the under viewer, and other buildings are in the course of erection. The structures are of stone which is obtained from Newhill Quarry, which the company have purchased. A huge boiler-bed, to take in eight boilers, 30 ft. in length and 7 ft. in diameter, is fast approaching completion. A chimney, 156 ft. in height, is also about to be erected by the firm, which is to be termed "The Wath-upon-Dearne Main Colliery Company." The outlay will be very great, as the surface-plant is being constructed to raise 1,000 tons per day when the colliery is in full working order. Near to Wombwell, about two or three miles nearer Barnsley, fair progress is being made with the sinking at the Mitchell's Main Colliery, where a fine engine-house and surface-plant has been put down. An additional shaft is also being put down by the Manvers Main Company, and also by the Holmes Colliery Company, near Rotherham, in all of which districts the building trade is very active. During the past week, Messrs. Newton, Chambers, & Co., the owners of the Thorncliffe and Chapeltown Collieries, where the serious riots occurred a few years ago, have begun to sink two of the largest shafts in the South Yorkshire district to the Silkstone coal. Already a number of houses are in the course of erection, and it is said the company intend to build between 100 and 200 in all. The Barrow Hematite Company, who recently purchased a large area of coal, have commenced sinking operations at Worsborough, near Barnsley, and intend running the Silkstone seam, which underlies the Barnsley bed at a depth of 380 yards. A good deal of work for builders will be found at and near Worsborough, as the property in that district is all fully occupied. Many other large collieries will shortly be opened out on estates where the coal has recently been secured. In the West Riding district, the same state of things may be met with. In the newly-developed coalfields around Pontefract and Featherstone, a good population is being got together in a district which a few years ago was only known as an agricultural country. Cottage houses have sprung up very rapidly, and will doubtless do so for many years to come.

At Loscoe Messrs. H. Briggs, Son, & Co, Limited, have recently opened a new colliery, which was christened about two years ago by the Emperor of Brazil, whilst on a visit to Yorkshire, the "Don Pedro Colliery." The pit will require from 300 to 400 men and boys to work it, and

Mr. Tadman, of Wakefield, is now engaged in the erection of a batch of houses which, when completed, will amount to 108. The company have now five collieries at work, which are capable of raising from 12,000 to 13,000 tons of coal per week. The collieries which have been at work for some time, have of late made considerable extensions in their premises. The newly-formed Dodwarth and Silkstone Coal and Iron Company are erecting a new engine-house and chimney at Dodwarth Station Colliery, in addition to which over 100 new coke-ovens are either in the course of erection, or are about to be built. Several batches are finished, or nearly so. At the new colliery belonging to Messrs. Craik & Co., at Smithies, near Barnsley, a large outlay has recently taken place. A substantial engine-house and other buildings have been erected, in addition to nearly forty new coke-ovens. The well-known Oaks Colliery Company have recently lighted a large row of new ovens, whilst the Blackie Main Colliery Company, the High Royd Company, the Silkstone Fall Company, Limited, have all just added largely to their numerous coke-ovens, as have also one or two of the owners of iron-works and blast-furnaces.

ANOTHER LESSON FROM THE FIRE.

SIR,—It is a matter of general thankfulness that the rapid combustion of the late Alexandra Palace did not in the loss of a colossal property involve more hideous calamity in the shape of a proportionate loss of life. It has now been seen how some half million sterling may be laid out in preparing a fools' Paradise, to be transformed into "a veritable Pandemonium" at shortest notice, in broad day, and with no better scene-shifter than a careless plumber. The lesson has been costly; thank Heaven! not so costly as it well might have been.

With deep regret for the heavy loss sustained by the proprietors, with admiration of the true British pluck that has moved the directors to restore the ruins, mingles a painful concern for the future. People are anxious to know how far the building is to be simply replaced as it was (that is to say, laid ready for a second fire); how far the lurid light of recent disaster will deter those responsible from making another cage of dry fuel for 20,000 pleasure-seekers.

Besides want of water (remarked on in your able article), there are two conditions for making a big fire out of a small one,—plenty of air, and plenty of combustibles. As to air, the large area, height, and broad surfaces of an Exhibition building must always give facilities that the first breach in the roof can but render perfect. As to combustibles, certainly wood and paper are what we generally use for lighting our fires. But when kindling is the thing of all others to avoid, common prudence requires that such substances (if employed), should be protected, so far at least as not to become *ready agents* of destruction.

Had the floor on which the burning stuff from the dome fell been of planking rendered uninflammable by Burnetising, it would not have served as fuel to the flames. Had the woodwork of the dome itself been similarly prepared, the fire, we may be morally certain, would never have happened. Entertainments might be going on within the building at this moment, and the ghastly "Illumination of the Ruins" need have found no place in the programme. I mention Burnetising as the process I happen to know of. I am concerned not so much with processes as with results.

Of course, the old, old question crops up. The "ha'p'orth o' tar" question. Confessing to my own opinion that such a question is but secondary, where hundreds,—thousands,—of lives may be at stake, I submit that the matter will bear examination from a strictly commercial point of view. Could the proprietors compound with some conjuror for the restoration of their palace as it stood some fortnight since, immediately on receipt of the sum it would have cost to fire-proof every stick and rag in it in 1862, with 5 per cent. interest to date into the bargain,—could we for a moment imagine such a contract duly fulfilled on both sides,—how different would be the financial position! Alas! no magic can change the past; but sharp experience should change the future. With property of enormous value, ordinary precaution dictates either adequate policies (if to be had) in the regular offices, or else something equivalent to self-insurance. The difficulty of insuring so huge and costly a building is of course increased tenfold by its being the only one of its class. At the present stage of matters, it seems premature to speculate how far what was a difficulty may prove to have become utterly impracticable. Still, if anything could smooth the way for insurance, or lessen rates of premium which at best must be exceptionally high, it would be the exclusive use of uninflammable stuff in the reconstruction. Indeed, it is quite conceivable that the annual interest on any consequent additional outlay might be more than met by reduction in premiums. Should insurance companies not afford adequate protection, the imprudence of replacing the structure with combustible matter need hardly be pointed out. CHARLES E. CONDER.

THE THREATENED STRIKE.

SIR,—In your last week's impression, Mr. Broadhurst seeks to justify his assertion that the master builders had promised an increase of wages to the masons this year by quoting a remark of Mr. Lucas at the conference of last summer, to the effect that the masons should have "any price they like." How is it that Mr. Broadhurst does not ask for a shilling an hour for the masons on the same authority, as Mr. Lucas had said a minute before, "You had better have a shilling an hour"? The masters might claim that a reduction of wages had been notified, for the sentence quoted did not end as Mr. Broadhurst would lead you to suppose. Mr. Lucas added,—"but if terra-cotta is used instead of stone, you will not get your present wages." After this not much reliance can be placed on Mr. Broadhurst's statement that other paragraphs are "equally clear." The "other paragraphs" relating to this question are, in fact, point-blank refusals on the part of the masters to entertain the constantly-repeated attempt of the masons to extract a promise of a rise in the spring. The chairman said,—"How can we fix wages for next summer? Who can do it?"

Mr. Trollope said, on another occasion,—"We cannot bind ourselves to what may happen in March, it is simply impossible;" and a few minutes later he repeated, "we cannot bind the future as to a rise of wages." Mr. Lucas, also, said, in reply to a further appeal, "How is it possible for us to settle wages for a future time? You cannot do it."

Mr. Broadhurst, however, once more returned to the charge, and I regret to have to trouble you with a longer extract. Mr. Broadhurst said,—"What is the objection to your saying that we will pay you, to save any deputation, or any circular, or anything of that kind, next spring the 9d. from the 1st of March? . . . .

The Chairman: I can only say, that if you asked for 9d. in March, knowing the trade that is being done in London, it is simply preposterous . . . . . and, of course, we are not asking you to recommend that that shall be the proposition for the next six months (that is, the reduced hours and the 8½d.). That would be an utter waste of time on our part. We are asking you to accept that frankly, as one that is to guide us until some considerable change takes place in the building trade, justifying any advance or reduction. That is what we expect in meeting you in this way, and that you will say frankly whether it is to be so or whether it is not, and that you will not allow us to waste our time in imagining we have made a proposition which you are only going to accept for a few weeks or a few months."

As this is the last occasion on which the subject is mentioned during the interview, I will leave it for your readers to say whether it would not be easier to build upon these extracts a charge of want of faith on the part of the masons in demanding a rise so soon, than to pretend that they imply a promise so strong as to have been the inducement to accept the terms offered.

In justice to the masons, it should be added, that Mr. Broadhurst's statement, made in your impression of the 7th inst., that the masons "have given the employers six months' notice to fulfil an agreement entered into last summer, viz., that if trade was at all good this season, we should have one halfpenny per hour advance," is entirely incorrect. The masons have given notice that they require a rise of one halfpenny an hour, and have based the demand on the increased cost of living, without any reference whatever to an agreement which they knew perfectly well had never been made.

BENJ. HANNEN, Chairman.
The Central Association of Master Builders of London, June 23rd, 1873.

THE GOVERNMENT OF LONDON.

MR. J. S. STORR has contributed a paper to the current number of the *Fortnightly Review*, entitled "The Anarchy of London," which will help on the coming change in the government of the metropolis. Come it must; it is but a question of time, but unfortunately circumstances concur to make that time long. We quote a portion of the paper:—

"If nothing else can be done, and if Mr. Stansfeld and Mr. Bruce are incapable of originating a new and efficient scheme for London, they might at least make an effort to extend to the metropolis the Glasgow City Improvement Act of 1865, which has produced such beneficial results, social, sanitary, and moral, in that city. Up to the passing of this Act the population of Glasgow had been living huddled together in masses, 50,000 persons being crowded into eighty acres. Many of the houses were built without regard to light, air, or decency, and naturally had become mere dens of thieves, paupers, and prostitutes. The municipal authorities came to the conclusion that it was necessary to root out the evil. They applied to Parliament, under the above-mentioned Act, to borrow a million and a quarter; scheduled the bad parts of the city, and obtained powers to pull down and rebuild, or sell any portion, as circumstances suggested. In order to provide the necessary funds for these improvements, they obtained liberty to levy a rate of 6d. in the pound. At the end of the first year this was reduced to 4d. for two following years; then to 3d., and is now on the point of being reduced to 2d. Instead of advertising publicly the districts they intended to demolish, with Scotch canniness they employed a surveyor to buy up '*quietly*' a large amount of property before they did anything, and thus avoided having to pay the increased prices which would have been demanded by the owners had they begun to improve before completing the purchases. They thus succeeded, with scarcely any litigation, in buying to the amount of one million sterling, property, of which they subsequently resold, under restrictions, nearly 400,000*l.* worth at a considerable profit upon its original cost. Having secured the fee simple of the plots required, they commenced by removing fever dens, and other nuisance-swarming, disease-breeding colonies, widening old streets, and driving new thoroughfares through the blind courts and alleys of their ancient city. At the outset the corporation built two blocks of dwellings for the expropriated families; but it was not found necessary to proceed further in this direction. Builders, learning that the corporation were willing to grant leases for 500 years at moderate annual ground-rents, with the right of pre-emption at 22½ years' purchase, during the first three years, rushed in, took whole plots, and built houses on the plan laid down by the municipal surveyor. The two lodging-houses erected by the corporation, one for males and one for females, holding 350 and 150 respectively, had paid them 10 per cent., and the only obstacle to the corporation doing more was their objection to becoming landlords. Before the passing of the Act of 1865, although under their general Acts the corporation had power to demolish houses which were unsafe, they were precluded from condemning dwellings in a bad sanitary condition, and could have done nothing without the powers of compulsory purchase they thereby obtained. The result was, in its financial, sanitary, and moral aspects, alike successful; brothels had been reduced 15 per cent., the haunts of thieves and chronic disease were broken up, and even the whisky-shops were lessened in numbers.

The example thus set by Glasgow was, two years later (1867), followed by Edinburgh. An Act was brought in mapping out the portions of the city to be removed, laying down new lines of thoroughfares, sweeping away whole streets of houses, 200 to 300 years old, and empowering the corporation to borrow 350,000*l.*, on the security of a rate of 4d. in the pound for twenty-one years. Like the Glasgow Act, it had a clause limiting the number of poor to be removed at one time to 500. An adequate provision was thus made, but not until then were clearances effected. The work was thus gradual in its operation, and the inconvenience consequent on removal was thereby mitigated, if not rendered quite inappreciable.

If we turn from the two largest cities of Scotland to our own metropolis, what do we find? A few semi-charitable associations, founded by private enterprise, or by the munificence of a

stranger, to whom the miseries of our London poor were nearer at heart than they would seem to be to our great landowners and employers of labour. These institutions may be briefly enumerated. With a population rapidly approaching four millions, of which, as we have seen, one million has, in the space of twenty years, been turned out of their houses by metropolitan and other improvements, we have the authority of the Lord Mayor for stating that decent accommodation has been provided for only 20,000 persons.

a. The Peabody gifts to the Poor of London, amounting in all to 400,000*l.*, by means of which blocks of buildings have been erected in various parts of London and the suburbs, have, up to the present time, provided accommodation for 847 families, consisting of 3,407 persons, occupying 3,328 rooms, at an average charge of 1s. 10d. per room per week.

b. The Metropolitan Association for Improving the Dwellings of the Industrial Classes has erected, in the most crowded parts of London, six blocks of buildings, accommodating 507 families, consisting of about 2,000 persons. This society does not confine its operation to London and the suburbs, but has erected cottages and dwellings at Ramsgate and Bristol. Its financial success has been uninterrupted. Last year a dividend of 4½ per cent. was declared, besides a sum added to the guarantee fund.

c. The Improved Industrial Dwellings Company, under the able direction of Sir Sydney Waterlow, Mr. Walter Morrison, M.P., and others, has already invested 250,000*l.*, and provides accommodation for 9,000 persons. This society, which offers a favourable example of management to others, pays its shareholders a guaranteed interest of 5 per cent. per annum, and might with advantage be studied by promoters of similar undertakings.

d. The Artisans, Labourers, and General Dwellings Company, under the presidency of the Dean of Westminster, has now been in existence six years. Its share capital is upwards of 52,000*l.*, whilst more than 13,000*l.* have been deposited at a fixed rate of interest of 5 per cent. The shareholders received for the past year 6 per cent. This company also extends its operations to large manufacturing towns, but its most important act has been the purchase of land in the neighbourhood of Clapham Junction Station, where Lord Shaftesbury last year laid the first stone of what he then called the 'workmen's city.' The directors in their report draw attention to the fact that the average death-rate in the houses erected by them was only 6 per 1,000, whilst it averaged in surrounding districts 25 per 1,000, and in some instances more. This is in a great measure to be attributed to the absence of cesspools from, and the careful drainage of, these newly-erected buildings.

If to these efforts we add those of the Marquis of Westminster, Miss Octavia Hill, and Mr. Bullock Hall, which are all the more deserving of admiration and praise because they have been carried on so unobstrusively and so sytematically, we come to the end of our short list of the inadequate attempts to cope with this great want of our times."

ENGLISH WORKMEN AND PERSIAN SECURITIES: A CAUTION.

THE visit of the Shah of Persia to England is of more significance than idle curiosity, particularly as affecting the interests of our skilled artisans, for it appears that the Persian Monarch and his Ministers intend profiting by the example of the Khedive of Egypt and the Sultan of Turkey, by extracting from this country a number of our best workmen, in order to instruct his unskilled subjects in our staple industries, arts, and mysteries.

Already agents have felt their way, and are busy in taking steps to enlist mechanics by seductive offers of wages and golden promises of speedy fortunes in a land "flowing with milk and honey."

Like unto the engagements entered into with Egypt, Turkey, and Russia, binding contracts for almost an apprenticeship term of years, added to the signing away of English nationality, and agreeing to foreign naturalisation, will be exacted; and if the Anglo-Persian workmen reap the like whirlwind their forerunners in Egypt, Turkey, and Russia did, their engagements with our distinguished visitor will afford ample leisure to regret ever leaving the English shores.

As little is known of Persia, we open up the country by a digest from authentic documents sent by English consuls in Teheran, Bushire, Bagdad, and Tabreez, in the shape of replies to inquiries made by the Earl of Clarendon, Secretary of Foreign Affairs, respecting the condition of the Persian Empire, and its industrial classes, and more exhaustive and trustworthy particulars could not be found on these subjects. English workmen would do well to ponder over the consuls' information, both with respect to Asiatic and other foreign states.

Mr. Jenner, the consul at Teheran, gives five reports from Ispahan, Shiraz, Koum, Hamadan, and Kermanshah, drawn up for him by intelligent natives, as well as Europeans. He is inclined to infer from Lord Clarendon's despatch that the information sought for is required with a view to ascertaining which are the countries best adapted for the reception of an immigration of the surplus of the working classes of Great Britain, in so far as the term "working classes" applies to that portion of the population which earns its livelihood by manual labour.

[It may be advisable here to observe, that other consuls take the like view of Lord Clarendon's object; and the diplomatic investigations render the reports still more valuable to the working classes of Great Britain.]

In the manufacture of carpets and shawls, the Persian workmen excel the English. One or two skilled workmen from each English craft might succeed in making a fortune, if they could induce Persian employers to pay them; but a dozen or two would glut the market. No immigration composed of workmen seeking employment as individuals, would lead to anything but disappointment and ruin.

The cost of living upon the pittance which satisfies the Persian workman is so small, and the rate of wages, which is proportionately even smaller, so unremunerative, that no British workman could for a moment compete with the native labourer. One way in which a successful emigration to Persia *might* be possible to those engaged in it, would be "self-sufficing colonies," composed of from 500 to 1,000, or more, members of both sexes. These might thrive, if engaged either in working some of the numerous mines to be found scattered all over Persia; or in manufacturing cotton stuffs, of a quality corresponding to that of the chintzes which form the chief articles of importation to Persia; or silk stuffs for use and exportation, for both of which manufactures the raw material could be procured in abundance, and at cheap rates upon the spot.

Colonies engaged in the above, or other pursuits, and so constituted, like those of Germans in Odessa, or of Swedes and Norwegians in the United States, as to be enabled to till their own land, make their own roads, and provide in every respect for their own wants, would, in the opinion of many persons qualified to judge, meet with success. But before such a colony could be established in Persia, it would be necessary to overcome many prejudices on the part of its rulers, which at present are so deeply rooted as to render success almost hopeless.

The winter diet of a workman consists almost entirely of bread, rice, and bad cheese, with a small quantity of tea in the form of a decoction; and the summer diet is of bread, or "sayfe," or summer produce, *i.e.*, melons, cucumbers, vegetable marrows, egg plants, and various forms of edible gourds. The average wages changed to English money, are about 9½d. a day, and the workman can just manage to keep body and soul together.

As to dwellings. In Persian towns, large caravanserais, built in former times to accommodate a far more numerous population, are generally to be found. These buildings, though mostly in a more or less ruinous condition, can still furnish shelter for a large number of workmen, who are lodged at the rate of from 1s. to 3s. a month. As for furniture, a rough felt for sleeping, and a cooking-pot, suffice for their requirements. The courtyards of mosques, and sheltered corners, form refuges for a large number of the still poorer classes. Of the workmen who are married, some possess a small piece of land, which helps them to maintain their families, and in some cases the wives and children add a trifle to the family pittance by sewing, or by, more frequently, carpet-making or rough weaving. Alms to the poor give further aid, and once a year, for a period of three days, the poorest man may sit down to a comfortable dinner, which is furnished by the devotees of "Hassan and Hossein," which is equivalent, in Persia, to saying, "By all who can afford it." "In short," the Consul says, "though the existence of the working classes in Persia is, according to English ideas, miserable in the extreme, still I have no reason to believe that there is anything like the suffering they are exposed to at home (in England)."

The air of Persia is constantly pure, and the sun almost always bright. Drainage is most imperfect. Dead animals are cast upon the road to be deodorised by the influence of the sun, and the public streets are made the receptacles for everything that is not wanted in the houses. Cholera, small-pox, and typhus fever are the chief epidemics; but as a rule they only make their appearance when everything has been done to give birth to them, and "they cannot be attributed to the visitation of God, but to the imbecility of man."

In the manufacture of shawls and carpets, in brasswork, in enamel on gold and silver, in every species of ornamental work where a good effect is sought for rather than excellency of finish, the Persian work may be said to be good. Everything is done by hand, and left unfinished, rather from an ignorance of the higher principles of artistic work, than from any real incapacity, save in respect to the shawls and carpets, which combine an artistic sense of the harmony of colours with a wonderful perfection of finish and durability. The above remark may almost always be applied to the work of Persian artizans. The ignorance of the workmen is not altogether the result of their want of opportunities of improvement. The love of tradition is very strong, and the only change to be noted is that which is produced by the gradual deterioration which, by a universal law, comes upon nations which do not progress. What is thus said upon the higher branches of work, applies equally to the lower. Everything in Persia follows a geometrical ratio, in its decay.

There is, however, one numerous and powerful fraternity which is never tired of attempting to surpass. Those who belong to it—and they form, in two or three instances, the population of entire districts—are ever striving to excel. They devote every leisure moment to this purpose, and are stimulated to constant endeavour by the fame of those who have attained to eminence in their difficult art. Few Persians of any position but have arrived at a certain skill in this accomplishment, and prime ministers and even sovereigns have owed the greater portion of their celebrity to their extraordinary aptitude in this respect,—that is, "penmanship." The Mirzas are, indeed, the only "class of workmen who take a pride in their work, and endeavour to excel from the sense of honour they have in executing it."

During "Bushiro" no work is ever done, and workmen only receive rations on these days from their employers.

There are also ten entire holidays in the year, on which neither salaries nor rations are drawn. The hours of labour are from about one hour after sunrise to noon, when men break off to dine and rest for about a couple of hours, when they resume till sunset. All classes of labourers live very much alike, in the most frugal manner, and a man who earns his half kran may be taken as an average specimen. His food will be a lump of dates before going to work, some bread (unleavened) and salt fish for dinner, and some boiled rice for supper. The men who earn higher wages possibly wear a better shirt and turban, but nothing more; whatever they save is usually converted into ornaments for their women.

Mr. Surgeon Hakin, writing at Lingah, says, as to remunerative opening for British workmen, unskilled, or the reverse,—to commence with unskilled Europeans, "I do not think they could at all compete in the market at the rates now ruling for native labour; and in the hot season I much doubt if they could continue work for any length of time without injurious effects to their health.

In regard to skilled workmen, there may eventually be openings for men in the boiler repairing and engineering line, where, as superintendents and foremen they would perhaps be able to make a fair living, as they would not be likely—for a long time at least—to meet with native competition."

Mr. Hakeem, surgeon, of Bassadore, states that the only articles of food obtainable are meat, rice, fish, wheat, dates, and "dholl." But the meat is generally of an inferior quality, owing to scanty pasturage.

With regard to the question of healthy lodg-

ings the scanty population of Bassadore live in small houses made of sandstone and mud, and huts made of date-leaves. These houses and huts stand at considerable distance from each other. There are always breezes blowing from one direction or another. Those coming from the north-east and north-west are most prevalent, the former blowing in the mornings and the latter in the evenings. At times the north-east or north-west winds keep blowing for days together (varying from three to seven) in a strong gale. The ground is elevated, and the soil is in some parts rocky, in others calcareous and sandy; so that, as far as drainage and ventilation are concerned, they are in the most satisfactory condition; but to find here a place free from malarious poison is almost an impossibility.

The port of Lingah is most filthy. The houses are crowded together, without any regularity, leaving very narrow, dirty, and sharp-winding lanes, most of which allow one man to walk through them. The walls of the surrounding houses closing in these lanes are very high, and give to the houses an appearance of dungeons for prisoners. These high walls cut off, to a great extent, the excess of fresh air; and there are no arrangements for the removal of the night-soil, &c.: each house, especially those further removed from the sea, has a hollow dug in the privy, in which the dirt collects year after year, and charges the atmosphere with various noxious and poisonous effluvia, which prove a fertile source of the different low forms of fever, outbreaks of cholera, &c.

The dangers attending the action of these miasmatic and poisonous effluvia are, that persons who have resided uninterruptedly for several years in such regions become anæmic and sallow in countenance, weak, and emaciated; they lose all energy and freshness of mind and intellect; become liable to congestions and enlargement of the internal organs, especially the liver and spleen; and, if not removed in due time to healthier regions, they are apt to succumb to the fatal effects of febrile and other low diseases.

Consul-General Herbert, at Bagdad, gives valuable information on all points, and states that the artizans and industrial classes bear the proportion of about 60 per cent. to the other classes. The latter may be said to comprise Government *employés*, ulemas (*i. e.*—professors of religion and law), landholders, merchants, petty traders, dependants, and beggars.

The houses occupied by the artizan and labouring classes vary in accordance with their means. Some are comfortable, but all are badly ventilated, and those of the poorer people are very inferior. All houses are built on the same principle, whether of stone, brick, or mud. The form of the house is a square, or parallelogram, surrounding a court into which the rooms open, and there is seldom any opening to the outside of the building except the entrance-door. The roofs are flat, and on these the occupants sleep in the summer, whilst they also use them for the purpose of spreading on them any article or produce which they desire to dry in the sun. In the centre of the court-yard is a sunk and covered cesspool, into which the refuse-water and off-scourings of the house are permitted to run through a small hole in the ground, and most houses are provided with a well, from which, however, the people seldom drink. The houses consist of only one floor, none having an upper story.

As regards the nature of their engagements with their employers, there is no investment of capital in their case, and no manufactories.

A master artizan works himself with his journeymen and apprentices. The labour market is well supplied, and artizans are, for the most part, so comfortably provided, that they are indifferent to extra work, and are content with that which they know must come to them. They are unwilling on any occasion to hurry themselves, or put themselves out of their way to accommodate a customer. The consul is of opinion that there is no opening in this country at present for the introduction of foreign labour, and that English artizans and workmen should not be encouraged to come independently to this country!

But the country offers the most promising openings for capitalists, both agricultural and commercial; and should it be possible to attract to it the attention of such, their services would offer occasions for the employment of Englishmen, as superintendents, engineers, overseers, and skilled workmen, and probably in the course of time for that of subordinate workmen and labourers.

The purchase power of money, as compared with England, is very difficult to estimate; but the consul is of opinion that, in the hands of people foreign to the country, it is not greater than in England, if so great.

In the present state of the country a foreign workman coming to Bagdad would find difficulty in obtaining lodging, unless in a position to hire a house for himself, and this could be done in the principal towns at the rate of from 10*l.* to 30*l.* a year. The houses are ill ventilated, the drainage is very bad, and miasmatic dirt, overcrowding, and air-poisoning are the rule throughout all the towns of Turkish Arabia in Persia. Even in Bagdad, the capital of the province, the state of the streets is disgraceful, and the lanes in the more remote parts of the town are always in a most disgusting state.

European piece goods are in great demand. Many useful articles in copper and tin are produced, but their finish is bad. So also with goldsmiths' and jewelry work. Embroidery, in gold and silver, is admirably done and is very enduring. Great quantities of elegantly-formed vessels in porous earthenware, which are very useful in a hot climate, are made, but they are very brittle, and again their finish is very rough. So also with a certain kind of glass bottles. The state of the field labourers is very wretched. They are almost invariably overwhelmed with debt to the farmers or landowners for advances, and are consequently miserably poor, and indeed but little removed from the condition of serfs.

The consul says:—"Still, this country offers most promising opening for the employment of commercial and agricultural capital, and on this, as forming an opening for English artizans and industrials, and the improvement of the condition of native labourers, I would wish to lay great stress."

The country, soil, and climate are well adapted to the produce of wheat, barley, and all kinds of cereals,—cotton, jute, hemp, the sunflower plant, and fibre-producing plants generally,—sugar, indigo, and opium.

Persons or corporate bodies investing money in land would need machinery, and would necessarily employ Englishmen, and as their works advanced, the number of these would increase.

Selecting those trades likely to be recruited from England, the rate of wages are per day:—Blacksmiths, 11½d.; bricklayers, 11d. to 1s. 6d.; carpenters, 1s. 6d.; goldsmiths, 2s. 10d.; and coppersmiths, 1s. 10d. Other building, iron, or engineering trades are not known. Food appears to average half London prices.

Almost every Persian is married before he reaches the age of twenty years. The women's apartments are separated from the rest. Water is scarce, but the religious law allows all running water to be considered pure which is a span in depth, and flows sufficiently rapidly to carry away a handful of straw strewn on the surface.

Apprentices commence to learn their trade at eleven years old and remain with their masters until they reach man's estate. Hours, sunrise to sunset, less two hours for meals and prayers. Wages:—Masons, 6d. per day; carpenters, 6d.; blacksmiths, 6d.; painters, 6d.

The labouring classes strictly follow the ordinances of their religion by abstaining from wine or other intoxicating beverages, forming in this respect a strong contrast to the upper classes, who are much given to drinking. Wine and spirits are cheap and good. Strangers on arrival are attacked by low fever. Lodgings are found with difficulty, and rents have nearly doubled during the last five years. Ventilation, cleanliness, and drainage are unknown.

Persians at Tabreez are capable of turning out good and creditable work, but slovenly and clumsy. Being paid by the day, they protract their time as long as possible. Their countrymen prefer cheapness to every other quality, and whoever works for lower wages will receive employment in preference to superior skill.

The untrustworthiness of the Persian character is seen in every class, grade, or calling; and although the labour is low priced, bad workmanship and waste of time make it nearly as dear as it is in Europe. The only occasion when they endeavour to display superior skill is when employed by some authority from whom they hope to receive a reward much in excess of the value of their labour.

The tools they use are all brought from Russia, they are of a bad and cheap description, and would hardly find purchasers in any other part of the world. None of the modern fabrics of Persia are at all equal to those produced in former times. The carpets, felts, and silks have very much deteriorated,—the handsome enamelled bronzes of Ispahan are no longer to be found.

The inhabitants of the cities of Persia are relieved of many of the Government imposts levied on the village communities. The carpenters, masons, and silversmiths are each under their own chief, who is usually in the employment of the governor and nominated by him; any disputes among the members are submitted to his decision, from which there is no appeal. In general, a Persian prefers to suffer any injustice rather than appeal to the Government tribunals.

Persia offers no field for European workmen,—least of all for English, who are, as a rule, the most indisposed to adapt themselves to the manners and habits of other nations. Some few Germans have from time to time endeavoured to exercise their trade at Tabreez; but notwithstanding their thrifty habits and modest expectations, they seldom succeeded in gaining more than a bare livelihood. The natives prefer to employ their own countrymen, who work much cheaper and sufficiently well for their requirements.

Since the above was written every one has heard that, through Baron Reuter, vast undertakings will shortly commence in Persia, in which English capital, as well as an army of English labour, will be required. Shareholders will do well to look forward a little, and learn what their security may be worth under a succeeding sovereign.

SANITARY PRECAUTIONS IN WESTMINSTER.

THE Westminster District Board of works have adopted a report from their surveyor, Mr. R. R. Arntz, with respect to house-drainage, which contains the following valuable suggestions:—All inlets to house-drains and outlets to the main sewer to be thoroughly trapped; soil-pipes to be the only inlets to drains; ventilating pipes with tight joints to go up into the open air clear of the topmost windows (they are T-shaped in the plans submitted by Mr. Arntz to the Board); all other inlets are to be trapped, so that no foul air can enter the house from the drains; all drains to be tight-jointed; neither rain-pipes, water-pipes, nor soil-pipes are to be used as ventilators; water-pipes, whether from cisterns, sinks, or baths, shall discharge into the open air; if at the top of the house into rain-water pipes. All drains shall have a fall of not less than 1 in 60 (1 such in 5 ft.); all drains shall be of stoneware or terra-cotta pipes laid in concrete and jointed; branch drains shall be 5 in. in diameter at the least, if they are of a length not exceeding 100 ft., and the width shall be 9 in. if they are of a greater length. In combined drainage the main drain shall be 9 in. wide at least, if the length is between 10 ft. and 20 ft., and over that distance 12 in. wide. No drain shall go under a dwelling. The surveyor's plans provide that "it shall not be possible to draw water from any cistern or pipe supplying a water-closet for any other purpose than the supply of such water-closet.

LARGE CASTING AT KIRKSTALL FORGE.

THE Kirkstall Forge Company have just made a large casting for the establishment of Messrs. Cammell & Co., Sheffield. At these works was erected some years ago one of the hydraulic forging presses invented by Mr. Haswell, of Vienna, engineer, and made at the Kirkstall Forge. The power of this press is 1,250 tons, and it has latterly been used for the purpose of bending armour-plates. Under the enormous force that was used a short time ago in bending a plate 12 in. in thickness, the top cross of the press was broken, and it is to replace the broken cross that a new and stronger casting has been made. The new cross is about 11 ft. in length from centre to centre of the pillars, the body being 9 ft. 6 in. long by 6 ft. broad. The thickness throughout is 4 ft., or 9 in. more than that of the old cross. For five weeks the men, working overtime, were occupied in making the mould in loam. For the casting about 45 tons of metal were prepared. The melting of the pig iron occupied five hours. An extra fan had also to be erected. The metal was poured simultaneously out of two furnaces, a

eservoir, and three ladles, and this operation as completed in fifteen minutes. When finished, he casting will weigh 38 tons, or about 8 tons ore than the cross it is intended to replace.

THE CITY EXTENSION OF THE METROPOLITAN RAILWAY.

THE works for the extension of the Metropolitan extension from Moorgate-street to Aldgate are immediately to be commenced. The ne will pass under Finsbury-circus, which has lready been boarded off, and a number of men re employed in excavating. The railway will lso pass under Blomfield-street, and Finsbury-hapel and Moorfields Roman Catholic Chapel, hich stand at the two opposite corners of the ircus; but it is stated that neither of these ill be affected by the works. A large number f houses and other buildings will, however, have o be removed in order to admit of the line eing carried under Bishopsgate-street. In iese are included the London Provident Institution Savings Bank, and in anticipation of the emoval of the building new premises for the usiness of the bank have been erected in St. Martin's-lane, a description of which has already ppeared in the *Builder*.

THE "TABARD," SOUTHWARK.

ALTHOUGH every one interested in antiquities ust regret the proposed destruction of the old Tabard Inn," yet that act would not be such a rrible piece of vandalism as has been represented by one or two of the daily papers, which ve described that building as being "pretty uch what it was in Chaucer's time;" whereas e fact is, no portion of the existing inn is of an rlier date than the time of Charles II., the iginal building having been destroyed by the eat fire in Southwark in the year 1676. And ven if ample testimony to this fact did not ist, the architecture of the "Tabard Inn" will elf convince anybody who will carefully amine it that it is not of an earlier date than e reign of Charles II.

We said the same thing in May, 1865, when e property was about to be sold as now,* and e repeat the hope we then expressed, that hen the time for the removal of the old building does come, an inscription, properly shrined, ill be made to tell all comers that here stood, The Tabard" immortalised by Chaucer.

SEWER VENTILATION.

SIR,—I concur in the main with your correspondent, "Oxford;" but he has misunderstood y meaning. It was because the house-drains *uld not be trapped*, if the Liverpool scheme d been adopted, that I objected to it.

In the *Builder* of the 30th ult. an extract of e engineer's report was given as follows:—

In districts where water-closets of this kind ist, the draught would then be entirely down e street ventilators, and up the soil-pipe afts."

In my letter of the 14th inst., "I recommend at the house-drains should be disconnected, for ntilating purposes, from the main sewers"; of ourse that can only be done by trapping them.

During the time I was engaged on the Metropolitan Main Drainage Work, I spent many days the main sewers, and thus had every opportunity of observing the working of the street ntilators, and from the experience thus and bsequently gained I make the following recomtions:—

1. That open gratings may be used in the reets, without any nuisance whatever, in roperly constructed sewers with *a constant* ow.

2. That in *sewers of deposit*, similar to some Liverpool, special means of destroying or assing away the noxious gases thus generated ould be adopted either by the use of charcoalays in the up-cast shafts; or by archimedian rew ventilators; or, by connecting the sewers ith existing tall chimney-shafts, with open atings as inlets at the lower levels in each se.

House-drains should also be trapped outside e houses. Soil-pipes should be placed outside e houses and not inside, and should be ventilated. Waste-water and rain-water pipes should discharge on open gratings with a syphon-trap under, and thus all continuous connexion with the drains would be cut off.

These are very simple precautions, and if properly carried out, sewer-gases may be effectually kept out of our houses.

JAMES LEMON, C.E.

SIR,—The importance of this question is a sufficient apology for any discussion on the merits of proposed plans.

The proposal of the Liverpool borough engineer to make the drains of every house answer the purpose of sewer-ventilators is not a new idea; but I think, as a general principle, is as efficient and as practicable a means as any scheme yet proposed. It must be borne in mind that, however noxious the gases generated and confined in the sewers may be, a constant means of escape renders them practically harmless; simply because as fast as the gaseous products arise they are liberated. It is the confinement in tidal-looked and other systems of sewers which is the evil. It follows, therefore, that the greater the proportion of outlet is, the more effectual is the remedy; and it is also obvious that a distributed number of small openings, as the egress afforded by every house soil-pipe is more effectual than a few large ventilating-shafts placed at greater distances apart along the main line of sewers; in which latter case large areas, drained by secondary sewers and pipes, are little affected by the main draught through the principal sewers to the shafts. I think this is a sufficient reason why any system, to be effectual, should afford a well-distributed number of outlets.

Again: sulphuretted hydrogen, and all the lighter gases, ascend to the higher districts; and if the draught created by shafts, and other means of suction, is confined to the main sewers, only a large portion of confined gas at the higher levels must remain.

But the means proposed by the Liverpool engineer are far from being the best. The borough surveyor of Southampton, Mr. Lemon, is right in questioning the mode suggested. Even the friction of a long 4-in. pipe would retard the escape of gas, and a great portion would rush through the trap.

I will simply observe that ventilating pipes, carried up from soil-pipes, are practically unnecessary, from the principle above urged, and that every soil or waste pipe should be simply disconnected externally to the houses by means of ventilating syphons. I agree with Mr. Lemon, however, that the sewers also should be ventilated separately.

G. HUSKISSON GUILLAUME.

WATER! WATER!

MR. FRED. RICHARD WILSON, who has been appointed sanitary inspector of Alnwick, under the Public Health Act, has divided the union into twelve districts, and has just presented his report on the first of them, "Amble." The following paragraph from it shows that 700 people are badly off for water:—

"The crying want of this place is water. One source is the adjacent burn, into which part of the sewage of the place goes. This burn is dry in summer, and receives intermittently the pumpage of Togston Pit, higher up. The poor people thank it pretty pure when they get the water from this burn at a point above where their sewage discharges into it; but in following the course of the burn I find that higher up it is fouled by sheep and cattle as it traverses the fields as a ditch, and that it receives the sewage from Togston Hall and Togston House. This latter fact is, I believe, not known. 'Quite a scum and settling in the water'; 'Nothing but dirt'; 'We have to seek the holes of cows' feet-marks to get it'; 'It must be bad'; 'We can get slop-water for clarting on here, but not to make any use of'; 'I've seen us go to Bondicar [a mile distant] at eleven o'clock at night: not a drop in the burn when it is bodily dry in summer,' were some of the many expressions with which I was saluted, and evince the straits these poor people are put to for water. The laborious work of conveying water for the whole of this pit village is mainly done, in all weathers, by children."

We described the miserable shortcomings of parts of this district in 1865.*

ARCHITECT'S CHARGES FOR PLANS, &c.

IN the Halifax County Court, Mr. William Henry Howarth, architect and surveyor, Halifax, brought an action to recover from Messrs. Stott, Brothers, manufacturers, Brighouse and Bailiff Bridge, the sum of 48*l.* 8*s.*, for preparing plans, &c., for the erection of a mill. The particulars of the case, as stated for the plaintiff, were that, having heard that Messrs Stott intended to build a mill, plaintiff went to see them, on 28th October, 1871. One of the partners told him that Mr. Bull was their architect generally, but they were not going to employ him any more. He was asked what he would charge, and plaintiff replied that he would do it as reasonably as any other architect. The plaintiff ultimately agreed to prepare the plans and specifications, and to superintend the work, at 1 per cent. on the total cost. He afterwards waited on defendants with the plans, and one of them said, "Oh, I didn't think you had gone so far as that: Bull has been to us lately, but we have not engaged any one yet." On the 1st February, 1872, plaintiff received a letter from the defendants stating that they had never given him any instructions to make the plans, and that as he appeared to be pushing the matter upon them, they would have nothing further to do with him. This action was therefore brought to recover the sum for the work done.

The plaintiff having been examined in support of the statement, Messrs. B. W. Jackson, W. Gray, and M. H. Wardle, architects, were called to prove that the charges were fair and moderate.

Mr. William Holdsworth, contractor, Bradford, said that on one Thursday in December, 1871, he met the defendant James, and on asking him who was the architect of their mill, James replied that Howarth was the architect.

The defence was a denial of any agreement with the plaintiff. He was distinctly told that Mr. Bull was the architect for the mill. They never heard anything more of the affair until the plaintiff sent in the plans on the 18th of November.

Mr. Bull, architect, Halifax, said he was employed to prepare plans for the mill in November, 1871, and he first had some conversation with the defendants about the plans on the 25th October.

The jury returned a verdict for the plaintiff for the full amount claimed.

APPRENTICESHIP SERVICES.

ADAMSON *v.* ROBINSON was an action brought at the Darlington County Court, by Messrs. Robert & Swainston Adamson, of Gainford, builders, to recover 22*l.* 10*s.* from the defendant, a farmer and innkeeper of Summerhouse, under an apprenticeship indenture, for damages for loss of the defendant's son's services as an apprentice. It appeared that the apprenticeship-deed was not made as between the parties, although it was signed by them all. The question arose as to whether the father of the apprentice was liable by the covenants for the son's refusal to serve the plaintiffs. The Court declined to hold that any person not named or described in the commencement could be considered as a party, and held the deed invalid, as it would be very unequal justice to find the defendant in this action bound by general words, when it appeared that the defendant would have no remedy against the plaintiffs for any damage, however serious, which might have resulted to him from a breach of the agreement on their part. For these reasons the judge was in favour of the defendant, giving the plaintiff the option of a nonsuit.

BOX-MAKING MACHINERY.

READING lately the description of a box-making machine in your valuable journal, invented and patented by Mr. Wormesley, of the Carrow Works of Messrs. Coleman's mustard and starch business, is no more than was made and fitted up nearly twelve years ago by myself when employed at Messrs. Cox & Son's wood-carving works, Belvedere-road, who had the manufacturing of a large number of boxes known as postal-boxes, for the conveyance of watches, photographs, jewels, or any light article by post or otherwise. The boxes and outside covering were the invention of a Mr. Wilson, C.E., and the first experiment was tried by G. Greenshields in a common wood-turning lathe. Afterwards it was placed in my hands to improve and fit up the machinery for the cutting of the boxes. The machine consists of at least from twenty to thirty cutters, driven by overhead motion, with gutta-percha straps, and arranged to be set to cut any size box, of any length, width, or depth, as might be required. The wood, after being cut down in widths the depths of boxes, in long lengths, if necessary, is passed tranversely through the machine, cutting its V grooves, and bevelling its ends, severing it from the long length, the two sides and two ends together in each piece one after the other afterwards passing through a second machine, preparing similar grooves on each edge to receive top and bottom. This done, the outsides are covered with a thin canvas paper of the shape required, the tops and bottoms cut and bevelled ready by the machine also of the size required. The box is folded, the contents put in, whatever they may be, and the box is sealed up like an ordinary envelope. After the machine is once set to its proper size, two boys could cut from eight to ten gross of boxes per day. Drawings and particulars of the machinery can be had on application to the maker.

JAMES BREWER.

WORKING PATENTED INVENTIONS IN AUSTRIA.

SIR,—We have just received the following communication from our agents at Vienna, regarding the time for working inventions in Austria.

"Please notice, that although the Ministry of Commerce here have hitherto not refused a single petition for extension of working time for a second and for a third year, they have now suddenly intimated their intention to stop granting third year's grace, to grant second year's grace only in exceptional cases, and not to grant any extensions of working time on patents now being issued."

The above is very important at the present moment, so many patented inventions being within the walls of the Exhibition building which were not made in that country, although patented there.

ROBERTSON, BROOMAN, & Co.

LIGHT AND AIR CASE AT THE "CRITERION."

THE last edition of the many disputes which have occurred during the building of the "Criterion," Piccadilly, for Messrs. Spiers & Pond, is an action brought against the owners of the building on the much-vexed question of obstruction of light, and came before Mr. Baron Bramwell and a special jury, in the Court of Exchequer.

The plaintiff, Mr. Adams, resides next door to the "Criterion," and is lessee of a picture-gallery.

About four years back Messrs. Spiers & Pond, the present defendants, occupied the adjoining house to the gallery, as dining and refreshment rooms, and, desirous of enlarging and improving their premises, they built a high wall a considerable number of feet above the elevation of the picture-gallery, and this cut off considerably the light from the picture-gallery, so as to make it, as alleged, nearly valueless for exhibiting pictures or painting them.

The plaintiff was supported by a number of witnesses.

The defendant's counsel did not deny the darkness or its cause, but contended that the plaintiff had failed to prove that he had had *twenty* years' enjoyment of the light in question, and which proof was necessary to establish his right to the light, or to recover in this action.

Witnesses were called to prove that, previous to Mr. Adams's tenancy of the premises, they had been used as the "Piccadilly Saloon," and that up to 1860 the skylight

* Vol. xxiii., p. 370. The history of the place we re in an earlier volume.

* See vol. xxiii.

over the present picture-gallery was only a small one of 6 ft., and had previously been covered with canvas; and Mr. Adams had enlarged it to 144 ft. dimensions; and that since 1860 the plaintiff had made many other alterations in the building, both in respect to the aspect and size of the windows.

The jury, having gone over both buildings, answered several legal questions put by the judge, and they ultimately, on points of law, found for the defendants, and the judge granted leave to plaintiff's counsel to move to set the verdict aside. This result leaves the dispute very nearly where it stood at first.

THE TRADES MOVEMENT.

Bath.—The masons and labourers are engaged in a dispute with their employers. The masons ask for a halfpenny per hour and a reduction of the hours of labour by one hour and a half. The labourers demand an increase of a halfpenny per hour. The masters offer an advance of a farthing per hour, and a reduction of the hours of labour. If a strike takes place some 2,000 operatives will be thrown out of employment.

Bedford.—At a conference meeting of the carpenters and joiners, as reported in the local *Times*, the following employers attended:—Mr. C. Day, Mr. John Hull, Mr. R. Carter, Mr. T. Spencer, and Mr. G. Haynes; Mr. Freshwater, Mr. Cunvin, Mr. Foster, Mr. L. B. Moore, &c., being absent. Mr. C. Carter proposed that Mr. H. Adams take the chair, which was agreed to. Mr. Carter also proposed that 6d. an hour be asked for; that the time be 56½ hours, with no lunch-time; and that three months' notice be given. Mr. S. Lamb seconded this. Mr. T. Crowther moved as an amendment that they ask for 5½d. an hour at once, retaining the present time of 58½ hours, and at the end of three months 6d. per hour for 56½ hours, leaving off work at one on Saturdays. Mr. E. Pheasey seconded the amendment, which was carried without any opposition. It was then resolved that this resolution should be forwarded to the masters, and that another meeting should be convened for the purpose of receiving their answer.

PATENTED APPARATUS AND ROYALTIES.

GOODWIN *v.* TALL & COMPANY (LIMITED).

SIR,—In 1868 I bought a patent apparatus of Mr. Tall for erecting buildings in concrete which cost me over 200*l.* I continued building with this apparatus in different parts of the country till 1872, when Mr. Tall sold his business to a company. I continued to supply Tall & Co. with iron work as I had done Mr. Tall. I applied to them for payment of an account of 71*l.* for work done, when they claimed a set-off for royalties for buildings erected in King-street, Borough, with the aforesaid apparatus, never having asked me for such a thing before: thus the action.

Judge Bramwell ruled that such a demand could not stand good unless a written document could be produced signed by the purchaser; and contended that if a person purchased a patented article he did so with the expectation of being allowed to use it. The plea of royalties was overruled, and a verdict for the plaintiff returned, on the 2nd inst., at Queen's Bench Court, Westminster.

What makes the action of so much importance to the above company is, if they had succeeded in gaining a verdict they would have had a claim upon all persons using the same machines and who have been doing so for years, the same as myself. H. GOODWIN.

SCHOOL-BUILDING NEWS.

Holborn, London.—The foundation stone of a new school in connexion with the church of St. Alban the Martyr, Holborn, has been laid by Lord Eliot, on a site which had been selected in Baldwin's Gardens. These schools are being built in the midst of a dense population of about 8,300, almost entirely poor; they will be the only freehold school premises in the parish, the area of which is about 500 by 200 yards. The total cost will exceed 6,500*l.* when completely fitted, of which the site, including conveyance, cost 2,000*l.*; work already done, 1,000*l.*, leaving about 3,500*l.* to be provided within the next six months. The architects of the building are Messrs. Mileham & Kennedy, and the work will be carried out by Messrs. Cubitt & Co.

Gloucester.—St. Mark's new schools, erected principally through the liberality of churchmen of the diocese for the two-fold purpose of meeting the educational requirements of the populous and destitute district of St. Mark, and to avoid the necessity of a school board in this city, have been formally opened. The schools, according to the local *Chronicle*, have been erected on the Heathville Estate, at the junction of Sweetbriar and Sherborne streets. Accommodation is provided for 500 children,—200 infants, 150 boys, and 150 girls,—in three separate schoolrooms, each 60 ft. by 20 ft., and to each of which is attached a class-room, 20 ft. by 20 ft. The rooms are lofty, those for the infants being 14 ft. high, and those for the boys and girls an average height of 16 ft. The girls' and infants' rooms are grouped together (that for the infants on the ground floor, and that for the girls above), access being obtained from a large playground by an entrance-hall common to both. The boys' rooms are approached from the street by a roadway 12 ft. wide, enclosed on each side by a dwarf wall with iron palisading, thus keeping them separate from the girls and infants. The boys' school and class-room stand in the centre of the boys' playground, part of which it is contemplated to use for gardening purposes. The schools are built entirely of red brick, are covered with Bridgwater tiles of a dun colour, and have not the slightest pretension to architectural effect, but are built with strict regard to economy. All the rooms have boarded floors and plastered ceilings, the main timbers of the roofs being stained and varnished. The internal walls are struck, jointed, and coloured of a straw colour. The windows are constructed with cast-iron frames and casements. In each schoolroom there are two, and in each class-room one, of Mr. J. Carter Hyde's warming and ventilating grates, the principle of which is to admit a supply of warm fresh air, the cold air being admitted by pipes to the chambers at the back and sides of the grate, warmed by contact therewith, and admitted into the rooms from apertures at the sides of the grate. The foul air is conducted by pipes from gratings in the floors to the ashpit, and by passing through the fire is consumed. No fittings are as yet provided. The contract price for the buildings and boundary walls, which enclose upwards of a quarter of an acre, was 1,413*l.* The contract has been carried out by Mr. J. Meredith, from the designs and under the superintendence of Messrs. Medland & Son, architects.

VARIORUM.

A PAPER on the Ventilation of Buildings, by Mr. W. F. Butler, read before the Society of Civil and Mechanical Engineers, has been published in a separate form (Kell, Brothers). Without contributing to the discussion anything actually new, it includes a considerable amount of information, and may be usefully circulated.

Miscellanea.

The Fire at Alexandra Palace.—The inquest has been held on the body of the man who had the charge of the zincworkers on the roof of the dome, but was not himself on the roof on the day of the fire, and was struck by a piece of burning timber below, which had been wafted to a distance by the wind, on falling on the spot where he was standing looking. No light whatever seems to have been shed on the actual cause or origin of the fire. Only one witness examined (Moore, a police-sergeant, who gave the alarm) seems to have seen the smoke so early as half-past twelve, about which time it was witnessed at Holloway by the writer of this, as we stated before the inquest took place. A flower-woman on her way to Finchley, as she tells us, saw the smoke at twenty minutes past twelve. The architect, Mr. Meeson, was asked whether he did not think it possible the fireworks of the Saturday night, thirty-six hours before, could have set fire to the dome to which he replied in the negative. Two zinc-workers said, of course, that *they* could not have done it. They took their red-hot irons out of the fire at the dinner-hour (twelve o'clock), and cooled them (?) in water: one said he put his in the fender of the firepot, but where the other put his does not appear to have been asked him. They say they first saw the fire from the fields, about twenty minutes or a quarter to one o'clock. The coroner's jury in their verdict state that, "how the said building took fire there was not sufficient evidence to show."

A Step in the Right Direction.—At the last sittings of the Chelsea Vestry, a committee reported that they had viewed the houses Nos. 119, 121, 123, Walton-street; and, under the powers of the Artizans' and Labourers' Dwellings Act, 1868, they recommended the vestry to order the demolition of the whole of those tenements, as being totally unfit for human habitation. Mr. Bird said he never conceived such disgraceful places existed in Chelsea or any other place, and there was no alternative but to order their being razed to the ground. Repairing or patching would be useless. Mr. Jackson said in one of the houses the dust-hole was in the middle of the floor, and all the rooms were in a most filthy condition.

The High Price of Coal and Labour.—At the annual general meetings of John Brown & Co. and Charles Cammell & Co., Sheffield, Mr. Ellis, chairman of the former, stated that the extra cost last year from coal and wages alone amounted to no less than 120,000*l.* From the rise in wages here Continental makers were able to undersell us; and during the last six months he had found it utterly impossible to obtain orders for steel forgings, springs, &c., on the Continent, at prices which would leave any profit. The high rate of wages had almost shut them out of the Continental and American markets.

Archæological Discovery.—An interesting discovery has recently been made on Barbary Hill, between Devizes and Swindon, in reference to the antiquity of "the Druidical camp" at that place. During some excavations a labourer turned up what appeared to the uninitiated a round and clumsy circle of stone. Mr. Helbot, an archæologist, recognised in it the shape of a corn-mill, thought to be of the third century. This stone, it is said, bears a close resemblance to the Fosrician Stone of the Chaldeans. Mr. Helbot is to present it to the Devizes museum.

Self-acting Preserver-Valve in Fires.—Mr. Stewart's self-acting preserver-valve, for the protection of life and property from fire, is constructed with fusible metal, that when fixed in ceilings, or elsewhere, the heat of an incipient fire melts the fusible metal, and opens the valve so that streams of water pour out upon the fire to quench it, while the action of the water sets alarum-bells in motion. The object is the protection of buildings of every description, as well as ships.

Letting Down a Shaft.—The shaft, 125 ft. high, connected with Messrs. Farmer's late vitriol factory, at the rear of Kennington Park, is no more. Mr. Taylor, a builder at Brixton, having taken the whole of this property for building purposes, it was found necessary to take down this shaft, which was effected by undermining, and carried out, we are told, without an accident, and as easily as if it had been lowered with a rope.

A Monster Tent.—Mr. David Davies, of Llandinam, principal proprietor of the Ocean Collieries in the Rhondda Valley, South Wales, has just entertained 3,000 colliers and their wives at Llandinam to dinner and tea, on the occasion of his son, Mr. Edward Davies, attaining his majority. The party altogether numbered about 6,000. The entertainment took place in a tent, 250 ft. by 80 ft. It contained three quarters of a mile of tables, and a mile and a quarter of seats.

The National Gallery.—In reply to Mr. Bowring, in the Commons, Mr. Ayrton said that there had been some difference of opinion between the trustees and the architect as to whether the covering of the iron flooring in the new building of the National Gallery should be of tiles or of wood. The architect was in favour of ornamental tiles, but the trustees preferred wood, and as the latter were to have the care of the buildings it was decided that the covering should be of wood.

Hyde Park-corner.—Complaints having been made by Lord Longford and others to the Metropolitan Board of Works (as well as in our columns) of the blocks to traffic at Hyde Park-corner, and the danger there to life and limb, the Board, at the suggestion of the Chairman, who said he was prepared with a plan to relieve the evil, referred the matter to the Works Committee, with a view to the construction of a new road or roads at the spot in question.

The Girard Avenue Bridge, Philadelphia. A bridge is to be built over the Schuylkill, at Girard Avenue, which will, when completed, form the chief highway to that portion of Fairmount Park in which it is intended to place the buildings of the International Exhibition of 1876. For the following details we are indebted to the Pennsylvania *Engineer and Manufacturer*. The contract for the work has been given to the Phœnix Ironworks, at Phœnixville, Philadelphia. The bridge will be 100 ft. wide, which is stated to be wider than any bridge yet constructed. It allows of seven lines of carriages driving abreast on the roadway, and has two lines of side-walks, about 15 ft. in the clear. The design being that no perishable material shall enter into the construction of the new bridge, it is specified that upon the iron floor-joists shall be laid corrugated iron plates, and that these be covered with asphalte concrete, which, while forming a perfectly water-tight surface, shall yet be tolerably elastic. Upon this is to come a pavement of granite blocks laid in cement. The side-walk will consist of slate or flags, laid in cement, and bordered with bright-coloured tiles. Between the side-walks and the roadways will be placed iron railings of ornamental design, secured to the granite curb-stone. The balustrade in the outer line of the side-walks will have bronze panels worked with elaborate designs. The piers and abutments will be constructed of Maine granite. The dressed work abutments will be constructed of such stone as will give contrast of colour.

The Exhibition Commissioners and their Land at South Kensington.—In answer to Sir H. Hoare in the Commons, Mr. Ayrton said, that being *ex officio* one of the commissioners, he had made inquiries with respect to the leasing for building purposes of certain pieces of land fronting Kensington-gardens, and lying between Queen's-gate and the Albert Hall. The commission, in the exercise of their discretion, advertised the land in question, and it appeared that, in doing so, they had acted entirely within their authority. It was quite a misapprehension to suppose that they had specifically dedicated, or pledged themselves to dedicate, the land to any public purpose. They had let land for the Albert Hall, for the Horticultural Gardens, and for Government purposes; and in doing so they had not exceeded their authority. The Attorney-General said he had no acquaintance with the charters, but it was his duty to know the Act of Parliament, into which he had looked, and from which it could be seen whether the commissioners had acted under their authority. It depended on whether they had discharged certain liabilities prescribed by the Act. As to this he really had no knowledge. Sir H. Hoare intimated that he should take the opinion of the House on this matter.

Exhibition of Leather-work at Northampton.—The construction of the building for the forthcoming exhibition of leather-work at Northampton is being rapidly proceeded with. Mr. Dunkley has the contract for erecting the building on the site offered by the Corporation; that is, on the south side within the cattle-market inclosure. The design prepared by Mr. A. Milne, and accepted by the committee, is for a wooden building 364 ft. long, or from the east to the west wall of the market, by 30 ft. wide; height of walls, 15 ft.; and to ridge of open roof, 25 ft. On the outside the roof will be covered with tarred felting, and inside will be whitewashed and pricked with stencilling. The inside walls will be canvassed and covered with paper. The building will be lighted by a continuous lantern-light in the roof, and artificially by gas, and will also be ventilated by inclined openings in the woodwork of the roof, arranged to admit a free current of air, but to exclude damp and moisture from without. The floor, part of which is already down, will be laid on joists placed crosswise, and will be thus raised from the earth.

New Turkish Baths, Leicester.—These baths, which have been recently built in the Friar-lane by a company, have been thrown open for public inspection. The floors are made of quarries and marble, and the walls of white and coloured bricks, with polished pillars and carved stonework. There are separate dressing and cooling rooms, and four heated rooms of different degrees of heat, the highest of which is to be 200°. In an adjoining room are two shower-baths, and other apparatus of a like nature, including a bath of cold water.

Safe Travelling 100 Miles an Hour.—This is not more than is promised by Messrs. J. H. & J. Reynolds, of Brixton, should the various railway companies adopt an invention just patented by them in England, and for which they are obtaining a patent in the United States of America. This invention is an addition to engines, carriages, and permanent way, to enable trains to reach their termini, it is said, in from two-thirds to one-half of the time usually occupied. A part of the invention consists of a middle guide of wrought-iron, supported on strong standards or brackets. This mid-line is to stop the engine or carriages from going off to the right or left, or moving upward or downward, and even in a collision the carriages are not to be heaped on each other, but kept on the line. The greater security would, they say, enable its staff to run trains at a much higher rate of speed than is possible at present. This invention, they add, in no way resembles the Mont Cenis line, in which the centre rail was for the sole purpose of enabling trains to pull themselves up an exceedingly steep incline.

Opening of the New Town Hall and Bank Park, Warrington.—Warrington has been *en fête* on the occasion of the public opening of the New Town Hall and Bank Park. The purchase of Bank Hall (lately the Warrington residence of Colonel Wilson-Patten, M.P.), and surrounding grounds, was effected by the corporation more than twelve months ago. A private gentleman (Mr. George Crosfield), contributed 9,500*l.* towards the purchase of the property, and the corporation of Warrington entered into negotiations, and the land, 13 acres in extent, was sold to them for 13,000*l.*, and the mansion and grounds for 9,000*l.* Colonel Patten agreed to deduct from the purchase money the sum of 3,000*l.*, and this, with the sums contributed by Mr. George Crosfield, enabled the corporation to purchase the park, or recreation ground, without cost to the town. Nothing has as yet been done with the old mansion, but alterations will shortly be commenced, so as to adapt it to the purposes of a town-hall and offices.

Derby Masonic Hall.—The Marquis of Hartington, M.P., Provincial Grand Master of Derbyshire, has laid the foundation-stone of a new Masonic Hall in course of erection in Gower-street, Green-hill, Derby. The banqueting-room on the ground floor is 45 ft. by 30 ft., in front of which are committee and retiring rooms, at the back the Tylers' residence, with necessary offices. A stone staircase leads to the hall on the first floor, which is 58 ft. by 30 ft.; at the end there will be a semicircular recess, with a half-domed ceiling, to receive the organ. The ceiling is flat, divided into enriched bays, being coned at the sides and ends; in the centre there will be a counter dome, with stained glass allegorically illustrated. The front of the building is of white stone, broken up with red Mansfield pilasters and Corinthian caps. The top is finished off with a balustrade and carved scroll. Mr. Sheffield, of Derby, is the architect, under whose superintendence the work is being carried out. Mr. George Woodiwiss is the builder.

Excursion of the Yorkshire Architectural Society.—The members of this society have had an excursion to Doncaster and its neighbourhood. The first church visited was Arksey, lately restored by Sir G. G. Scott. The party then went to Kirk Sandal, where they also inspected the church, with its Norman remains and old rood-screen; next to the church of Barnby Dun, where the north-west mortuary chapel, with its screens, were inspected. The next stopping-place was Fishlake. The vicar, the Rev. G. Ornsby, kindly received the members to luncheon. They afterwards inspected the church. Proceeding next to Hatfield, they inspected that church. The expedition then returned to Doncaster, when a cold collation was served at the Angel Inn. Doncaster parish church was then visited. The vicar guided the party over it. This concluded the day's proceedings, the party returning to York in the evening.

Lord Leicester and Agriculture.—At the anniversary dinner of the Norfolk Agricultural Society, the Earl of Leicester, lord-lieutenant of the county, offered a premium of 200*l.* for the best essay upon the improvements which have taken place in the agriculture of the eastern district during the last twenty years.

Prevention of Floods.—The object of the Patent Self-acting Flood-gates (invented by Mr. J. F. Smith, of Leicester, architect) is the prevention of floods caused by the stanking up of the water-course by permanent weirs for mill, navigation, and other purposes, and the intention is to remove the weirs and place in lieu thereof a row of these gates right across the river, and so make a movable and self-acting weir. Where the current is very rapid, by increasing the number of gates any amount of water may be allowed to run away as fast as it comes. Among the advantages of this invention are said to be its small cost and its simplicity, and its not interfering with mill-owners' rights, or the navigation of rivers, and scouring and cleansing the beds of the rivers. Floats rise and lift the gates from their cills, and water escapes *beneath* the gates. It is estimated that at least ten times the volume of water will flow beneath the gates in the same time as would run over the top of a weir. As the top water subsides, the gates fall and stop the issue of the water.

The Sheffield Architectural and Archæological Society.—A joint excursion of this Society and the Sheffield Naturalists' Club to Bolsterstone and Bradfield has taken place. Bolsterstone Church, which is being built by Mr. Fawcett, was visited, then Broomhead Hall and the moors above the hall, where several interesting archæological remains occur. Time did not allow of these being visited; but the party managed to see the Bardyke, which marks the site of a battle between the ancient Britons and the Romans, and also the supposed remains of an ancient Druidical circle. Bradfield Church was inspected, and the old Saxon camp near it explored. It is supposed to have formed an outpost of the ancient kingdom of Northumbria. The party afterwards returned to Sheffield. Mr. Bedford and Mr. Fawcett were the conductors of the excursion.

St. Saviour's Church for the Deaf and Dumb.—This church, which has recently been built in Oxford-street, has been opened for Divine service. The building is of brick, with Bath stone facings. We gave a view and particulars of it in our volume for 1871, page 726. Mr. Arthur Blomfield was the architect. The principal portion of the congregation were deaf mutes, and the service was interpreted to them by signs by the Rev. S. Smith, the chaplain. The Bishop of Carlisle preached a sermon, which was translated by means of the nimble fingers and expressive gestures of Mr. Smith. Among those present were the Princess Louise and the Marquis of Lorne, to witness the interesting and curious scene. The amount required to complete the chapel and build a residence for the minister is 2,000*l.*

Improved Cabs for London.—The judges appointed to award the prizes given by the Society of Arts for the improvement of London cabs met at the International Exhibition. There were present the Duke of Beaufort, Lord Arthur Somerset, Lord Alfred Churchill, General Eardley Wilmot, Mr. Cole, Mr. Cassels, and Mr. P. Le Neve Foster. The judges inspected the various cabs exhibited, and agreed to the following course of proceeding, viz., that the cabs should be tried in competition in their various features and in motion in the West annexe of the Exhibition, on Friday, June 27th. On a future day after this trial, the cabs will go in procession to the City and back; they will then be exhibited in Palace-yard, and evidence of their merits and defects will be taken publicly at the house of the Society of Arts.

Will of Sir William Tite.—The will, with one codicil, of the late Sir W. Tite, K.C.B., M.P., was proved, on the 7th inst., by Dame Emily Tite, the relict, Robert Farre Dalrymple, and Francis James, the executors, the personal estate being sworn under 400,000*l.* The only legacy of public interest is one of 1,000*l.* to the Institute of British Architects (as we said would be the case), to be invested and the income "applied yearly in such manner as the president and council for the time being of the said Society shall deem best calculated to promote the study in England of Italian architecture."

Society for the Encouragement of the Fine Arts.—The fourth and concluding *conversazione* of the session took place on Thursday, June 26th, at the Gallery of the Society of British Artists, Suffolk-street, Pall-mall East, and a pleasant evening was spent. The sixteenth session will commence in January, 1874.

Accident. — Whilst some workmen were engaged in pulling down buildings to make extended dock quay-room at Middleton, near Manchester, a sad accident occurred. Two of them were getting up the foundations of a demolished house, when owing to the oscillation caused by a passing coal-train, the gable of a shop fell out upon them, killing one on the spot and seriously injuring the other. Two who were working with them in the shop escaped unhurt.

Restoration of St. Nicholas's Church, Newcastle.—Sir Gilbert Scott has reported on this subject to a local meeting. He proposes to alter as little as possible the architectural character of the edifice, and to bring it into a state of repair with the smallest loss of original workmanship and material. He suggested the division of the work into sections. Resolutions in accordance with this report were unanimously passed, and an executive committee appointed.

Sussex Archæological Society.—At the committee meeting of this society, held on the 19th of June, the place of the annual meeting was decided to be at Winchelsea, on Thursday, August 14th. By the kind consideration of the general manager of the South Coast Railway, a train will run specially to Winchelsea, as the station there is beyond the limits of the South Coast traffic.

Excavations in Lincolnshire. — The remains of the church and conventional buildings of Louth Park Abbey have been disinterred by Mr. W. Allison, who has laid bare the entire plan of the church, chapter-house, cloister-court, and other buildings. The abbey used to belong to the Cistercian monks. The church proves to have been 249 ft. in length, only 20 ft. shorter than the parent abbey of Fountains.

Trades' Guild of Learning.—The Council appointed at the Conference recently held at the Society of Arts, met on Saturday at the rooms of the Working Men's Club and Institute Union at No. 150, Strand. There was a large attendance of members. Mr. H. R. King, bookbinder, treasurer of the London Trades Council, was in the chair.

Royal Horticultural Society.—The provincial exhibition of the above society is opened at Bath, and, notwithstanding the fact that the city is engaged in an election contest of unusual interest and severity, the arrangements are carried out with due *éclat*. The citizens have subscribed 1,900*l.* for a prize fund.

TENDERS

For villa residence, with large music-room (exclusive of excavation), at Harrow-on-the-Hill, near London. Mr. Sidney R. Stevenson, architect.

Rindell	£2,305	10	0
Lander	2,197	10	0
Jelly (accepted)	1,950	0	0

For building a corn-warehouse at the Standard Wharf, for Messrs. Barnes, Bros. Mr. Adkins, architect:—

Epps	£1,297	0	0
Whiting	1,115	0	0
Foad	1,094	0	0
Shrubsole (accepted)	1,023	0	0

For various painting required to be done at the Royal Hospital for Incurables, Putney. Messrs. Chas. Gray Searle & Son, architects:—

Beaumont	£309	0	0
Shaw	295	0	0
Pitman & Cuthbertson (accepted)	279	10	0

For additions to seed-stores, Abbey-square, Reading, for Messrs. Sutton & Sons. Quantities supplied. Messrs. Wm. & J. T. Brown, architects:—

Sheppard	£2,371	0	0
Strong	2,333	0	0
Woodruffe	2,329	10	0
Barnicoat	2,320	0	0
Matthews (accepted)	2,285	0	0

For house and shop, Minster-street, Reading, for Mr. Oliver. Quantities supplied. Messrs. Wm. & J. T. Brown, architects:—

Sheppard	£1,027	0	0
Woodruffe	978	16	0
Matthews	977	0	0
Barnicoat	975	0	0
East	932	0	0

For cottages and entrance-lodge at Kent County Lunatic Asylum. Messrs. John Giles & Gough, architects. Quantities supplied:—

Henshaw	2,300	0	0
Cozens	2,238	0	0
Higgs	2,229	0	0
Gaskin & Godden	2,190	0	0
Furniss	1,995	0	0
Wilson	1,992	0	0

For sinking well and supplying pumps at Kent County Lunatic Asylum. Messrs. John Giles & Gough, architects:—

Tilly (accepted)	£3,267	10	0

For schools for St. Mary's, Sydenham. Messrs. John Giles & Gough, architects. Quantities supplied:—

Thorne & Co.	£3,210	0	0
Sheffield	3,145	0	0
Rankin	3,066	0	0

For a pair of almshouses at Leighton Buzzard, for the trustees of Wilkes's Charity. Mr. Frederick Gotto, architect:—

Agutter	£255	0	0
Gibbons	255	0	0
Cook	224	0	0
Garside & Holdstock	218	0	0
Dawson	210	0	0
Gibbs (accepted)	200	10	0

For the erection of chancel and one bay of nave of the church of St. Augustine, Lynton-road, South Bermondsey. Messrs. Jarvis & Son, architects:—

Thompson	£6,336	0	0
Cooke & Green	6,171	0	0
Tarrant	5,954	0	0
Whitaker	5,825	0	0
King & Son	5,811	0	0
Henshaw & Co.	5,427	0	0
Shepherd	5,036	0	0

For new brewery and offices at Sudbury. Mr. G. Scamell, architect. Quantities supplied by Messrs. Curtis & Son:—

Brown	£5,775	0	0
Tooley	5,746	0	0
Mason	5,605	0	0
Grimwood	5,445	0	0
Warnford	5,100	0	0

For rebuilding Nos. 57 and 58, Lombard-street, and 12, George-yard, Lombard-street, City, for Messrs. Abbott & Co. Mr. Bartleet, architect:—

Brass	£9,947	0	0
Pritchard	9,160	0	0
Ashby & Son	9,074	0	0
Wood	8,980	0	0
Conder (accepted)	8,865	0	0
Kilby	8,764	0	0

For repairs to Paradise House, Stoke Newington. Mr. T. Archer, architect:—

Pritchard	£273	0	0
Boyce	182	0	0
High	165	0	0

For additions to relieving offices, Newington Workhouse, for the guardians of St. Saviour's Union. Messrs. Jarvis & Son, architects:—

Brindle & Co.	£599	0	0
Norman	593	0	0
Tarrant	542	0	0
Lawrence	527	0	0
Oldrey	519	0	0
Kent	494	0	0
Biggs	460	0	0
Robins & Co.	449	0	0
Battley	412	0	0
Castle	398	0	0
Lacy	387	0	0

For Vauxhall New Flour Mills, for Messrs. Mumford. Mr. E. H. Badger, architect:—

Myers & Son	£12,175	0	0
Wilson, Bros.	11,954	0	0
Crocket & Dickinson	11,940	0	0
J. & F. Coleman	11,890	0	0
Rider & Son	11,810	0	0
Hill & Son	11,750	0	0
Brass	11,263	0	0
Nightingale	10,678	0	0
Trollope	10,583	0	0
Macey	10,579	0	0
Henshaw & Co.	10,373	0	0
Jerrard	10,284	0	0

For works at 10, Rathbone-place. Mr. N. E. Jennings, architect:—

Elliss	£952	0	0
Hocking	735	0	0
Nightingale (accepted)	647	10	0

For new warehouse for Sir P. Tait, Southwark-street. Messrs. Fowler & Hill, architects:—

Dove, Bros.	£6,575	0	0
Browne & Robinson	6,350	0	0
Carter	6,280	0	0
Oliver	6,249	0	0
Hart	6,130	0	0
Perry	6,095	0	0
Nixon	5,990	0	0
McLachlan	5,848	0	0
Taylor	5,687	0	0
Chappell	5,496	0	0

For rebuilding first portion of Botolph Wharf, Upper Thames-street, London, including river-wall work, for Messrs. Besley & Wilson. Messrs. Snook & Stock, architects:—

Greenwood & Sons	£27,000	0	0
Coleman	26,154	0	0
Crockett & Dickinson	25,977	0	0
Ryder & Son	25,850	0	0
Perry & Son	23,300	0	0
Munday	22,750	0	0

For a block of offices in Clement's Inn, Strand. Mr. Raphael Brandon, architect. Quantities supplied by Mr. Fredk. Johnstone:—

Myers	£9,980	0	0
Darby	9,573	0	0
Bird	9,185	0	0
Macey	9,162	0	0
Jackson & Shaw	8,875	0	0
Dove, Bros.	8,495	0	0

For repairs, painting, &c., to the baths and washhouses in Endell-street, for the parish of St. Giles. Mr. Geo. Judge, jun., architect:—

Mason	£1,181	0	0
Cowland	886	0	0
Larter	844	0	0
Derby	780	0	0
Patman & Co.	691	0	0
Perkins	649	0	0
Warne	612	17	0

TO CORRESPONDENTS.

J. D.—C. D.—M. E.—J. H.—C. S.—K.—W. F. B.—H. N.—I. J. H. C.—T. R.—Q. R.—J. K—T. H. H.—W.—R. E. N.—M. Mrs. K.—J. R. G.—W. P.—G. E.—J. C. T.—J. H., Manchester charge] —J. M. B. [cannot get what she wants at one jump] —W (see p. 476, *ante*). —"Simplicity" (may be quite satisfied with wha have already said). —G. H. S. (next week).

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The Builder.

VOL. XXXI.—No. 1587.

Sanitary Engineering.

IT has always seemed to us that everything connected with this subject should be of the best quality, whether papers, reports, or books; and when a book is written with the title of "Sanitary Engineering," we look especially to see whether it is worthy of the occasion, and whether it will in every way in which it deals with the subject tend to promote the public health, so that future generations may be enabled to live more healthily than it is possible for us to do under present arrangements. In Mr. Latham's book,* the physiological data upon which all sanitary engineering ought to be based are well stated by the author. The oxygen contained in the air we breathe combines with e elements of the blood, and, so long as life ists, the air and blood are continually flowing wards each other. "The products of the ldation of the blood are expelled by the lungs d skin as carbonic acid and water. A portion, o, of the inspired oxygen combines with the rogen and other elements of the animal sue; and, after this combination, the products e eliminated from the system in the excre- ns. It is the oxygen of the atmosphere alone ich has the power of oxidising and removing e waste of animal life. The nitrogen is merely esent as a diluent, which modifies the stimu- ing effect of the oxygen. Air once used loses vitality, and becomes unfit to sustain life r, too, that is loaded with decomposing matter not sustain life in health, because the ygen of the air is absorbed or used up by the ganic matters which are present when under- ng decomposition. Air, carrying decomposing tter and the germs of disease, is also directly urious, because it becomes the vehicle which ryeys into the human system the organic uments undergoing decomposition. . . . . ter is the agent used for conveying nutrition every part of the animal system; and, after filling this mission, it becomes the vehicle for nveying away all those soluble compounds ich have subserved their purpose in the mal economy. . . . Deleterious matters sent in water, as a rule, act more speedily n those present in the air, because, when con- ed in water, they pass at once by the rapid ocess of venous absorption into the system. . . If the various processes carried on in vegetable kingdom are now considered, we ll find, when studying the physiology of getable life, that oxygen, which is of such al importance to the animal creation, is, ply as oxygen, of no special service to the getable kingdom; but it has been arranged, the good order of Providence, that all the nts, whether air, water, or food, that have served the use of animals, and have ceased promote animal life, have, by this very process, been made fit agents for the support of vegetable life. The vegetable kingdom utilises those waste elements which have been cast off by the animal kingdom, and, after utilising them, retains only those substances which the air or water had originally taken up from the animal, and in its turn again gives up the air, water, and food, in a fit and healthful state for the use of animals," and so the cycle is complete. "The preservation of the health of every class in a community is equally important to the rich and poor. It is important to the wealthy that the poor should be kept in health, for the influence of infection, once introduced into the dwellings of the poor, often spreads far and wide, and is no respecter of persons. It is important to the poor man, as his health is his wealth.

Sanitary laws and regulations are intended to give power to communities which single individuals cannot possess, viz., the power to promote general measures calculated to secure or improve the state of public health, but local authorities are not always imbued with the true spirit of humanity; money considerations are with them often of greater importance than the question of life and health, and it not unfrequently happens that political capital is made out of sanitary agitation. The advocates of filth and dirt appeal to the breeches-pocket,—too often with success. . . . . The authorities in many towns appear to overlook the hard fact, that while they remain inactive, disease and death do not."

The author quotes from the ninth report of the Medical Department of the Privy Council the results of sanitary works in twelve (why only twelve?) towns in England, in which the reduction of typhoid fever and of consumption since sanitary works have been carried out has been very considerable. Summing up the populations of these towns given in the table we find them to be 304,800, or an average of 25,400 each. The reduction of typhoid fever rate has varied in these twelve towns from 10 per cent. (at Rugby) to 75 per cent. (at Salisbury), the average of the whole having been 47½ per cent.; and the reduction in the rate of phthisis has varied from 11 per cent. (at Merthyr) to 49 per cent. (at Salisbury), and has been on the average 30 per cent. The death-rate, however, whatever it is, does not mark the chief benefit of sanitary works: it is the prevention of sickness which is the chief thing, and for every person who dies from a preventible disease, like typhoid fever, twenty-eight other persons (on the authority of Dr. Lyon Playfair) suffer sickness from which they recover. The author estimates the probable effect of sanitary works in this way:—First, the saving in the cost of funerals, which he sets down at 5*l.* each; secondly, the saving by reason of the escape from sickness, with its cost, including the value of the labour lost, which he estimates at 1*l.* each case; thirdly, the value of the labour saved to the country by the prevention of premature death, for every adult male 10*s.* per week, and for every adult female 5*s.* per week, or a mean of 7*s.* 6*d.*, over and above the cost of maintenance. The author made such a calculation in the year 1868, taking the town of Croydon as an example, where, up to the end of the year 1867, 196,000*l.* had been expended in sanitary works, viz., 70,000*l.* for water, 75,000*l.* for sewers and irrigation works (including public baths, abattoirs, and general improvements), and 50,000*l.* for land. By taking the difference in the rate of mortality before and after the works were carried out the author estimates that the expense of 2,439 funerals had been saved, making 12,195*l.*; 60,975 cases of sickness prevented, 60,975*l.*; and as much as 166,929*l.* in value of labour, making altogether in the thirteen years previous to 1868 a saving of 240,099*l.*, which exceeds, very considerably, the whole amount of money expended.

The practical part of the book, however, is in some parts somewhat vague; as, for instance, "In all cases in which rainfall is admitted into sewers, it is found by experience that only a certain percentage of the rainfall finds its way into the sewers, the other portion being either evaporated or absorbed. . . . . In experiments made some years since by Mr. Dickenson, on the rainfall in the district of the Colne, he found, on an average of seven years, that from April to September, inclusive, 93 per cent. of rainfall was evaporated, and 7 per cent. absorbed, equal to 1,192 tons of water per acre evaporated, while but 91 tons per acre were absorbed or filtered into the ground; and from October to March 25½ per cent. of water was evaporated, equal to 360 tons of water per acre, and 1,052 tons per acre were absorbed." Now, Mr. Dickinson did not find any quantity of water or percentage of rainfall that was evaporated, at all. What he did was to fix a Dalton's rain-gauge in a loamy soil containing a considerable quantity of sand and gravel, and to find the quantity of water that percolated to the depth of 3 ft. What became of the remainder is matter of speculation. Probably most of it was evaporated, but in scientific affairs it is preferable to state facts, and leave it open to individuals to make their own deductions from them, the author pointing the way if he pleases. As there is more than one river Colne in England, it would have guided persons interested in this question if it had been stated that these experiments were made at Watford. In the same vague way the author says that "in a district in Warwickshire" he made provision to lead off a rainfall of 1 in. in 24 hours, together with one-half the maximum quantity of sewage in 6 hours, taken at 5 cubic feet per head in 24 hours, and that the sewers were found to be by no means too large. Considering that he had stated on the previous page that the metropolitan intercepting sewers are constructed to convey rainfall at the rate of ¼ in. in 24 hours, it would have been of some interest to know what were the author's reasons for making the sewer sufficient to carry off a rainfall of 1 in. in 24 hours: whether it was because there was no opportunity of making storm-overflows, as is done in the London sewers; and if so, whether the sewer has been in use for a sufficient length of time to prove that that is a sufficient capacity for sewers (at least in that locality) intended to carry off all rainwater as well as sewage, and if not, what provision, if any, was made for the remainder. It appears that Mr. Latham has carried out sewerage works at Dantzic, and we are told that the "geological formation" is principally sand, and the district very flat, and that the author made provision for carrying off ¼ in. of rainfall in 24 hours, together with 2 cubic feet of sewage, per head, in 8 hours.

As to the quantity of water supplied to towns, "taking an average of 120 towns in this country, the author found that the volume of water supplied for public purposes averaged 25 gallons per head. In some cases the quantity was greatly in excess of this average, for as much as 56 gallons per head was supplied, while in some towns it did not exceed 10 gallons per head." The supply of water to towns in this country is divided into that supplied for domestic purposes, that for trades purposes, and that for *public purposes*, the whole of which together amounts to about what the author states. As to the 56 gallons per head, we were not previously aware that more than 50 gallons are anywhere supplied—the Glasgow supply being, we believe, about 50; but in a table showing the volume of sewage of towns the author states that at Croydon the "dry-weather flow" is "56 gallons per head, due to water supply." Considering how Croydon is supplied with water,—that is, by pumping, we believe, chiefly if not wholly,—this seems a very large supply, and as water-closets are there in general use it might mislead some persons into

* Sanitary Engineering: a Guide to the Construction Works of Sewerage and House-drainage. By Baldwin ham, C.E., M. Inst. C.E. E. & F. N. Spon, London.

the supposition that so much water is required for the water-closet system.

The author has found that in small sewers and drains, such as those of 6 in. and 9 in. diameter, a mean velocity of not less than 3 ft. per second should be produced. Sewers of from 12 in. to 24 in. diameter should have a velocity of not less than 2½ ft. per second; and in sewers of larger dimensions, in no case should the velocity be less than 2 ft. per second. Having stated this, he says:—"But in practice it is found that velocity increases in a current as the fluid particles of the stream are removed from its sides or bed: consequently the velocity at the bottom of a channel, or over the invert of a sewer, is the velocity which is really effective in scouring it, and such a velocity is always less than the mean velocity." That is so, except that in such a case as this there is no "practice" as distinct from theory. But what follows seems to be wrong. "For all practical purposes, in the case of sewers, the velocity along the invert of the sewer will be four-fifths of the surface velocity, or nine-tenths of the mean velocity given in the tables."

We do not suppose the author means to say that, in respect of surface, mean, and bottom velocities, the velocities in sewers differ from the velocities in similar channels conveying water; if so, the author should have given us some explanation of that; and the experiments and deductions most to be relied upon show that in ordinary cases the least, mean, and greatest velocities may be taken as bearing to each other nearly the proportions of three, four, and five. These proportions hold good for velocities from 1 ft. to 4 ft. per second. So that instead of the bottom velocity being four-fifths of the surface velocity, it is only three-fifths, and instead of being nine-tenths of the mean velocity, it is only three-fourths of it. If the author had understated the bottom velocity, instead of overstating it, the error might have passed unnoticed; but as the bottom velocity is that upon which the scour depends, it should be pointed out. Besides, the author's own figures are inconsistent with each other. If the bottom velocity were really four-fifths of the surface velocity, it could not be at the same time nine-tenths of the mean, but would be eight-ninths of it.

A table of experiments made by the author on the quantity of water absorbed by sewer-pipes is given, and another table of the "bursting pressure and tensile strain" of earthenware pipes. If for tensile strain we read tensile strength, we see the very great variation in the tensile strength of the material of 21·4 lb. per square inch in one case, and 429·5 lb. in another, a range, says the author truly, sufficiently great to show its uncertainty and variableness.

In laying sewer-pipes it is essential that they should be solidly bedded, and to this end "a recess should be cut in the floor of every pipe-sewer trench in order to receive the socket, or otherwise each pipe is merely supported from socket to socket."

In jointing sewer-pipes with cement, it is very important to prevent it getting into the interior of the pipes, and "the best mode of jointing socket-pipes, under all circumstances, the author has found to consist in forcing into the socket of every pipe several strands of tarred gaskin, of sufficient diameter to fill the socket tightly."

An extremely interesting table is given of experiments made by the author on "the amount of absorption and the strength of bricks," and it is stated, although it does not appear in the table, that a common stock brick, with frog, made at Croydon, had an original thickness of 2·58 in.; but was compressed in the hydraulic press to 1·08 in. in thickness "before it failed"; and another, a picked stock brick, with frog, made at Reigate, had an original thickness of 2·62 in., and was compressed to 1·14 in.; and a perforated pressed white gault brick, with frog, made at Arlsey, was compressed from 2·60 in. in thickness to 1·23 in. "before it failed." The pliability of these bricks is remarkable.

Timber used in sewer-work is treated of, as to the manner of using it, and the strength of timber in general is quoted from the experiments and formulæ of Barlow, but the second case is misstated.

Iron and other metals are also treated of, and a very fair description is given of the characteristics of cast iron of various kinds. Speaking of the difficulty of casting pipes as thin as is required merely to resist the internal pressure to which they are to be subjected, the author says "it will be found that any pipe which can be cast sound in the foundry will bear the ordinary pressure to which it may be subjected in practice," and that "all pipes are made of considerably greater thickness than that required to insure their stability when subjected to a given bursting pressure." But this is true only of very small pipes, 3 in. and 4 in. diameter; larger pipes are constantly cast of thicknesses adequate to resist the internal or the external pressure to which they are to be subjected, according to the situations in which they are to be placed, and with reference to these requirements only, there being no difficulty in the foundry-work in complying with the demand of the engineer in this respect. For instance,—passing over intermediate sizes and thicknesses of metal, and taking an extreme case as an illustration,—a pipe 3 ft. diameter can be and has been cast ½ in. thick. The use of such extremely thin pipes in ordinary cases cannot be commended, of course (although the thickness was quite suitable for the situation in this case) because sometimes large pipes are under more risk of injury from the external pressure than from the internal pressure they have to bear. Notwithstanding what we have just quoted from this author, he goes on to lay down a rule for the thickness of pipes to bear internal pressure, in the following fashion. He assumes the tensile strength of cast iron to be 15,000 lb. per square inch, and says the weight of water is 62·449 lb. per cubic foot. Then follows the formula, involving these two elements, one of which is a round number, which, although sufficient for the occasion, is not even near the exact strength in many cases, and the other is an over-refined statement of the exact weight of water, which is by nearly all engineers reckoned to be 62½ lb. per cubic foot, that being sufficiently near for all practical purposes. The incongruity of the thing is striking.

In describing a planked foundation for a sewer in bad ground, the author says that three lines of "die square" timber, 5½ in. square, were laid longitudinally in the trench, upon which were laid closely wattled hurdles, and in some parts of the work 3-in. planking, which was proper enough, perhaps, under the circumstances; but we advise those who require guidance in such matters never to specify that the timbers are to be die square, but only square, if square they must be, for which, however, there is no necessity. There seems to have been a good deal of water in the ground in which this sewer was laid, and the method of getting rid of it was a good one. Upon the planking sewer-pipes were set vertically, at intervals along the trench, and filled in with clean gravel, their tops being a little above the level of the invert of the sewer. Concrete was then filled in upon the planking, and round about the pipes. The open gravel in the pipes afforded a more open way for the water, and it rose through the pipes instead of forcing its way through the concrete. Small land drain-pipes being laid from the tops of these vertical pipes into the invert of the sewer the water was in that way carried off, leaving the sand behind. This was at Redhill, a work done under the author's direction.

Square junctions of sewers are bad, and it is shown that by checking the velocity of the flow of sewage, deposit takes place at or near the junction, and chiefly on the upper side. The several kinds of apparatus for flushing sewers, described by the author, are very ingenious, but we cannot help thinking that there is something radically wrong in a system of sewers that require artificial flushing. Either that is admitted into them which ought to be kept out, or they are too large, or of a wrong form, or are badly laid; but granting that sewers require flushing, from whatever cause, the author gives some valuable information on the subject. To the ventilation of sewers Mr. Latham is known to have paid great attention, and he goes fully into the subject here; but we recommend all persons who may contemplate the use of charcoal, or other absorbent of sewer gas, in ventilating shafts, to be fully satisfied that the outlets of sewer gas into the atmosphere are not obstructed by its use, because if in any case that results from the use of charcoal or other substance, more harm than good will be done by it.

Gullies and traps are fully illustrated by the author, and tide valves, penstocks, and inverted syphons are treated of, and there is an excellent chapter on the subsoil drainage of the sites of towns. House drainage, "the crowning point of a system of sewers," and water-closet apparatus complete the book.

FROM THE VIENNA EXHIBITION.

MUCH of our British furniture, and a large portion of that from foreign countries, is so situated that the most casual observer cannot fail to see it. For the most part it is arranged into groups occupying the centre of the nave. I am sorry to say that in my opinion but little progress has been made by our cabinet-makers since the last International Exhibition in Paris; but of this I am nevertheless certain, that the British furniture will favourably compare with that from any other nation. Yet in much of this there is a great want of true structural qualities, and in many objects are features which are only consistent in works formed of stone.

Wood is a material having a "grain." The presence of grain in a material gives strength in one particular direction. If wood is cut with the grain it is relatively strong; if across the grain it is weak in comparison. In order, then, that the maximum strength be attained with the smallest expenditure of material, wood should always be "worked" with the grain. Stone, even if in small pieces, can be so arranged as to span large spaces, the arch affording a means of our so doing; but if an arch is cut in wood it is essentially weak, and can only be satisfactorily used with the view of giving form to a space, or as a decorative feature. It must never appear as a part of the structure. Columns and pilasters, with their capitals, are better reserved for works in stone. Whatever is of wood should by its very appearance, reveal the material of which it is formed, and must not look like a wooden model of work intended for fabrication of stone.

Furniture that appears otherwise than wooden formation, can never be satisfactory, and in considering the various exhibits in this class in the present Exhibition, I shall regard them as works which ought, by their form, and by the treatment and arrangement of their parts, to manifest the material of which they are formed. It is not necessary that the structure be in all cases as apparent as in "Pinned" Gothic furniture; yet, on the other hand, all "broken" structural members must be condemned as unsatisfactory. I cannot admit the argument when considering works in reference to nations progress, that they are in a style that requires false expression of structural qualities; for why work in the style? It is no excuse for a bad act that it has been done before, and that some prefer evil to good. It is no excuse for the many having stolen before. It is our privilege to study the works of the past; but it is our duty alike to cull all that is good, and to shun that is bad. Yet when we have discovered works of the past both what is good and what bad, we must not then blindly copy what our forefathers created; for our wants are not theirs, and our knowledge of materials, and methods of working them, should be greater than those of our ancestors.

Our failures in nearly all manufactures in which art is combined with industry, result from want of simplicity in the result achieved. We do too much. We confound together the ideas of complexity and beauty. Whereas that which is beautiful is generally of simple appearance. In furniture, in carpets, in brass work, in almost every branch of manufacture, indeed, we substitute complexity for beauty; whereas extreme plainness would more nearly achieve the result at which we aim. In the little Japanese "colony" here there is a flagpole of considerable height, and one or two little erections,—one being a sort of small house or temple, the other a covered daïs for the performance of music. To me it appears that much is to be learned from these; for in each case we have a most simple utilitarian structure of plain light-coloured unpolished wood; but on the ends of projecting rafters or beams, or on parts of the legitimate and necessary structure there are sparingly dispersed little bits of the most exquisite carving which act as enrichments of a rightly constructed work in the happiest manner possible. The flag-pole is a simple well-finished, clean-looking plain pole; but about 5 ft. from the base projects a member to which the flag-ropes are attached, this member being a splendid bit of bold carving.

In many works in the Exhibition I note excess of finish, and respecting finish also we may learn from the Japanese treatment of wood. A piece of furniture should be an object of utilitarian value, properly constructed, and so treated as to contribute to the general pleasing effect of the room. If detail is excessive in the work, the

general effect is almost sure to be sacrificed, and the object will do little towards furnishing the room. What is wanted is a certain spirited refined boldness in the cutting of the wood, whereby the work shall be vigorous and beautiful when viewed closely, and yet an effective adjunct to the room when viewed as an article of furniture. We can, I feel sure, learn from the Japanese in respect to the judicious mode of enriching woodwork with appropriate and effective carving.

I cannot but think that the elaborate carving of pictorial figure-subjects in wood, especially if the wood has even a slightly perceptible "grain," is simply folly. Wood is a bad material for the display of the sculptor's art; he should work in marble, in stone, or in bronze. Wood is soft, and especially liable to injury, and besides this, works of great finish and delicacy do not accord with the general purpose of household furniture, which consists of objects to be used, and not simply looked at, and these sculptured works of excessive finish certainly do not contribute to the desirable general effect of the piece of furniture of which they form a part. Were I to be the possessor of certain cabinets in which exquisite carving is supreme, I should take the panels out of the doors and frame these as I should marble bas-reliefs, and hang them upon the wall, substituting panels, either plain or of simple treatment, for those which were but misplaced displays of the sculptor's art.

The enrichment of furniture may often be materially aided by the application of well-contrived hinges, lock plates, and metal corner-pieces; but these should be placed on plain members, and serve as enrichments to them, and should yet give strength to the structure.

To the painting of subjects or ornaments, on the sunken panels of cabinets and other works of furniture, I see no objection. On the contrary, they may convert a work of furniture into a poetic expression of thought; but the treatment must be conventional, bold, and flat, in order that it be truthful, and accordant with the purpose which it has to serve. The picture must not usurp a primary place, as it is here secondary to the general effect of a work of which it forms but a part. The good decorator and the true will always avoid obtruding that which should be secondary upon primary notice. If a wall is to be hung with pictures, it must be secondary to the pictures which are to be placed upon it, and it should also be secondary to all works of furniture which are to stand in front of it. In like manner, a work of furniture as a whole, should be secondary to the paintings, and the parts of the piece should be secondary to the entire work. I do not much like the introduction of porcelain plaques into works in wood, especially into those intended for general domestic use. Earthenware never looks like part of the structure; it is too obviously a something applied which is beyond utility, and is too separate from it. All ornament is unnecessary and useless from a strictly utilitarian point of view; but art, grace, beauty commence where utility ends. Art, when applied to utilitarian works is most satisfactory when it brings about the enrichment of what is necessary, and does not apply beauty in the form of something that is apparently altogether superadded to the useful. It is for this reason that I do not quite like the introduction of slabs of earthenware, however well treated, into furniture.

For the same reason, I object to ormolu ornaments when applied to furniture. These are never satisfactory, and are rarely good specimens of careful workmanship. Space is being rapidly consumed, and yet much is unwritten which ought to be written before I commence to apply the principles enunciated to the works of furniture shown in the Exhibition. Yet we may, perhaps, let these remarks suffice, for they touch on the leading points which demand attention when awarding merit or demerit to works of furniture, and I have expressed these my opinions in order that readers may judge of the soundness of my censures or praise. I have no confidence whatever in a review unless the reviewer gives a reason for his opinions.

I come now to the Exhibition; and first, as to constructive qualities in furniture, as illustrations of what is fairly correct and truthful, I would name most of the furniture by Collinson & Lock, the display of Battam, Heywood, & Hanks, and a suite of Gothic bedroom furniture by Jackson & Graham; but I must except the bedstead of this latter suite, as it is structurally wrong. The canopy is large and heavy, and, owing to the mode of support, looks as though it would drop upon the sleepers, and in construction the canopy is very faulty. There is very much that is good in the way of structure about a suite of bedroom furniture by Morant, Boyd, & Blanford; but the projecting moulded portions below the larger panels should be removed, as they are only a drag on the structure, and achieve no ornamental effect.

For excellence of inlaying, the place of highest merit must unquestionably be given to Jackson & Graham; yet even their most elaborate pieces show a little feebleness in effect, although exquisite in detail, or are overdone. The attainment of repose should be the chief effort of the designer. Where there is nothing but enrichment, even if the ornament is of the best, the eye fails to find rest or the mind repose. There is but little inlaid furniture in the Exhibition that I could point out as of just treatment and desirable quantity.

I am obliged to express myself similarly respecting carved furniture from almost every country. The elaborate work of Fourdinois is to me only a wonderful and pitiable example of the misplacement of rare talent, and in no single instance do I find justness of structure skilfully combined with the bold and appropriate carving of such parts of a judicious and necessary structure as are calculated to produce desirable enrichments.

As many exhibits occupy such conspicuous positions in the Exhibition as to command notice, I should perhaps say a word upon them. As a display of articles possessing the greatest number of desirable qualities, I should give good places to Collinson & Lock, and Battam, Heywood, & Hanks. The former firm shows a chimney-piece formed of wood, into which panels are introduced, with little subjects in colour, painted on a gold ground. This work is good, and while there are little faults in some parts of the exhibit, there are many excellent qualities. There is nothing garish, nothing obtrusive, nothing overdone. In Jackson & Graham's furniture, the presence of the arch broken in the manner of the Renaissance is to be regretted; but for delicacy of inlay, this exhibit is matchless. I like the unpolished wood of which the furniture by Morant, Boyd, & Blanford is formed, and the application of brass fittings; but to the porcelain plaques in the doors I take some exception, and I do not think that the cold grey slab of the washstand accords with the cool indigo colouring of the earthen plaques. Cooper & Holt show one or two good things, but the Gothic sideboard is rather overdone in every way, and is somewhat too architectural.

The furniture exhibited by France is altogether too architectural, and is generally overdone with excessive carving. It is, for the most part, meretricious, rather than meritorious, and in nearly all examples structure is ignored, and detail usurps a primary place.

The Austrian furniture is no better than that of France, and it is much to be regretted that here also a meretricious prettiness takes the place of more desirable qualities.

Italy sends only what is bad; Russia little that is good. Our own display is far in advance of that from any other country in true art qualities, and yet it is behind what might reasonably have been expected, some of our best firms being altogether unrepresented.

THE HOURS OF LABOUR AND A WORD ABOUT CAPITAL.

THREE correspondents addressed us last week on the subject of labour and capital. One signing "G. E." says:—"I find the masters want the men to resume work until one o'clock on Saturdays, as it does not pay to open the works and start the machinery for so short a time as at present. Now, sir, would it not be more beneficial to both parties for the working hours to be 10½ per day for five days of the week, and Saturday to be a whole-day holiday"?

The two other writers,—one a mason, the second a joiner,—take higher ground, and urge that they ought to have Saturday as a whole holiday without any increase in the hours of work on other days. They add that they could get any number of their mates to pass a strong resolution to that effect at any time,—unanimously. We have very little doubt about it. It seems to us that it would be very agreeable indeed to have a whole holiday every Saturday. In fact, if our friendly correspondents were to say that if they began work on Tuesday morning and left off on Thursday afternoon it might be even pleasanter still, we should scarcely feel called on to contradict. But can we afford it? Or if employers were willing to pay men for doing nothing the same as if they were at work, could the country afford it? How would a people who amused themselves half the week stand, in the long run, in competition with a people who felt it necessary to attend to the injunction, "Six days shalt thou labour"? We are not preaching. We do not want to contradict. We are only speculating and inquiring. It is amazingly pleasant to do nothing at times and get paid for doing it; but we fear this can scarcely be reasonably hoped for by the bulk of the population,—at present.

Our joiner correspondent, who mentions that he has 16*l.* in the Savings Bank, and is therefore himself a capitalist, makes a foolish observation. He says, "If what the workmen want cannot be had otherwise, the masters *must give up some of their capital.*" This reminds us of a little fairy tale which we once dreamt. It ran somewhat thus:—There was once a nice old gentleman, who, through the cleverness of his father before him, and by dint of hard work himself when he was younger, had managed to obtain a wonderful plant that produced every week a certain number of loaves of bread. But this wonderful plant, which was in a big tub, required to be watered, and manured, and trimmed, and otherwise attended to, in a manner which was beyond the strength of the old gentleman himself: so he called in some of the people living near, who had never been able to get such a tree for themselves, and offered half a dozen of them a loaf a-piece each week if they would cultivate the tree under his direction. The loaves that remained satisfied him; and so things went on very smoothly and pleasantly for some time. One day, however, it occurred to these good people that they were not very well fed, and that it was desirable they should each have two loaves a week; and the old gentleman, when he was told of this, quite agreed with them as to the desirability of what they asked for, and told them he was very sorry they could not have it, because the tree did not produce so many loaves as would be needed. However, his helpers were very resolute about it, and one of them said, if the plant did not produce loaves enough to meet this demand, he must hand over to them the tree; or, to use the words of our correspondent, the joiner, must give up some of his capital. But the old gentleman was rather a sturdy fellow, and was not disposed to let others take away what belonged to him, and what he and his father had worked for: so he made some inquiries, and finding there was another country where the people were quite able and willing to cultivate his plant for him, and let him keep some of the loaves himself, he one night quietly packed up his tub, and carried it right away with him, and for a long time the poor people who had frightened him and his bread-giving plant away, missed very sadly the one loaf each which he had been able to let them have for what they did to help him.

If our correspondent will think over the matter again, he will probably arrive at the conclusion with us that it is a risky thing to tell persons they "must give up some of their capital." People are not usually disposed to give it up: and to urge that it must be taken away from them without their will is to advocate nothing less than robbery.

SOUTHWARK INNS AND THE EARLY DRAMA.

WE have been looking with some care into the mysteries, past and present, of the old Tabard Inn, Southwark, and have taken note of the outside and the inside of it, all round and everywhere. We pried into all the little quaint rooms opening out from the *galleries*, and looked into and out of all the windows, and, what is perhaps more, went into the subject on the spot of the architectural details and chimneypiece mouldings. We have already asserted that old Geoffrey Chaucer with bodily eye never saw this inn as it now stands. Chaucer dated from 1328 to 1400; Shakspeare from 1564 to 1616; Sir Christopher Wren laid the first stone of St. Paul's Cathedral in the year of grace 1675, so that we may fairly take that date as a well-defined and accurately-settled Renaissance art date. There is no evidence whatever of any style of architecture in this inn, Renaissance or Gothic, older than this

last-named date. The handrail and balusters round the gallery, out of which the small quaint bedrooms open, and the chimney-pieces, with their square moulded frames above, and with other mouldings visible here and there, cannot possibly be older than Wren's time. Chaucer, therefore, could never have seen the Old Tabard in its present, or even past and more perfect architectural state. In the old days of stage coaches and ponderous wagons, before railways were thought of, this place and others like it had a real use and purpose, and were in their days just what a railway-station is in ours. That the veritable Tabard might have stood, and did stand, on this very spot is more than likely, and that the arrangements and *plan* of the inn may have been the same is also probable enough; so that we have here a ghostly sort of idea of what the Old Tabard was in Chaucer's day, and certainly we may here see the "ground plan" of his Canterbury Pilgrim starting-place. The ever-memorable "ride" then started from this very spot, so that it is worth note, and remembrance, and memorial. The *original* house,—a *Gothic* house it must needs have been, and there is no vestige of Gothic of any date there now,—is said to have been built by the Abbot of Hyde, who bought the site in 1306. Every trace of his building has certainly disappeared long enough ago.

We have said that we wandered into all the rooms, passages, and nooks and corners of the place, and could but wonder at what "improvement," as time goes on, will do. Some of the rooms, which have been evidently oak panelled, are now covered over with tawdry, vulgar, paper-hanging, and common oil-colour as usual, so that the idea of the rooms is quite gone.

This inn and others like it have another interest well worth a thought. It is to be remembered that they were, in days of yore, the scenes not unfrequently of the "Miracle and Morality" plays, and of the first representations of the great plays of Shakspeare. It seems, now-a-days, difficult to realise such scenes; but there can be but little doubt that, in the yard of this very Tabard Inn, the strolling companies of actors played out in their own fashion the great tragedies and comedies of Shakspeare. *No scenery* was thought of; the actors did all the work. The upper ten thousand occupied those galleries, from which they looked down on the strange scene below them; while the common people, the "groundlings" occupied the courtyard immediately in front of, and on a level with, the actors. A slightly raised platform, even, must have been a rarity from the difficulty of moving it and fixing it. Indeed, to venture on a practical and plain explanation of the matter, it could have been but little more than an ordinary street performance, such as we now see it, with a carpet or cloth, or even straw, for the performers, and payment required of the audience.

It is a curious subject this of the early stage. Shakspeare! was a travelling actor, and literally "spread his carpet" wherever he could. In the inn-yards, as in this Tabard Inn, all was ready prepared, an audience almost certain, and as much of a building as was needful; the performances taking place, be it observed, by *daylight*. Shakspeare's imaginative powers were considerable, that is quite certain; but it may be doubted, indeed, whether *even he* could have imagined our opera-house out of the Tabard Inn ground and galleries!

It is impossible to speak of this Tabard Inn without noticing the fact, not perhaps generally remembered, that there are a number of inns in the Southwark High-street like it, and some of them in a yet more perfect state. There is the Old White Hart Inn, with its double gallery; and the George Inn, with its quaint courtyard, now filled up with railway vans, and the building covered more or less with huge bills and posters, not a little surprising to those who for a moment can forget the present, and live in the past in these fast disappearing places. We would here call attention to one inn, especially, in Commercial-street, Whitechapel, a somewhat neglected locality, so that things in it rest a while. Here, the building is in precisely the same state it was in when first built. The gallery is complete on three sides of its little courtyard, and it would be difficult to select a place more convenient for the purposes of the strolling actor than it is. It gives a far better idea of such a place in its complete state than the Tabard Inn, with its many alterations.

There is another inn of this old build in Aldersgate-street,—the Four Swans, we think it is,—also in very complete and unrestored condition, with its galleries complete, and its court or "ground" in a very primitive state. It is used by market gardeners and other country folk: the railway has not as yet quite ploughed it up. It is a little out of the way.

To return for a moment to the Old Tabard, so puzzling to the restoring architect. Two of its sides only remain, as we have said. We were told that the gallery once ran round the back of the inn, but if so it disappeared long ago. There is a second yard at the back of the building, wherein new buildings are fast pushing the old out of existence. The south side of the inn is modern, but some of the old quaint rooms remain, and to go into the little "parlour," the like of which Dickens so delighted to paint, shows no small contrast to the modern fashionable "restaurant" arrangement. If "comfort" be the one thing needful in English existence, then commend us to the old warm dark wainscoted room, with at least the possibility of avoiding the multitude of draughts for which the modern arrangement is so remarkable and abominable. These old quaint rooms are worth visiting, if not study, by the architectural student, as they evidence what a "comfortable" room is, and how it should be. The chimney-pieces are remarkably good, and well designed, whoever did them, and are put into proper corners, and the windows are not *too* large. It is possible, of course, to make a room too dark, but it is also quite possible to make it too light and garish.

There is one other item connected with this inn, old-fashioned and out of date as it is, that may serve as a lesson to perhaps not a few. It may be impossible to find a building or group of buildings, more "picturesque." Standing in one corner, with galleries and high tile roof opposite, a true *picture* of a building is before you, quite ready for the painter. No imagination is required: it is all before you,—the architect or builder of the structure has built up a picture ready for the canvass. He probably never heard of picturesque architecture, or knew even of the word "picturesque"; but, nevertheless, he accomplished a great artistic feat, for he produced, without, perhaps, knowing it, a built up *picture*. There is little or no *architecture* left: it all lies in the mere masses of quaint building, for, with the exception of the galleries, and a supporting Tuscan column or two, there is no architectural feature or detail left. It is a something curious to dream about as to what a Dutch painter would do here, with nothing but the building as it now is,—a broken-down cart, a few fowls,—of which, by the bye, there is here a splendid collection, in real fine farmyard condition, and a quaintly-dressed woman or two. What a picture, we say, he would make of it all, and what a sum it would bring! But then it takes a Dutchman to do it! So the poor old Tabard must needs, all things considered, die out, leaving not a "sign" behind!

ITALIAN COLOURED DECORATION.

ARCHITECTURAL ASSOCIATION.

AT the last meeting of the session, held on June 27th, the following members were elected as officers for the session 1873 4:—

President.—Edward J. Tarver.
Vice-Presidents.—John S. Quilter, E. C. Lee.
Committee.—G. H. Birch, T. Blashill, H. C. Boyes, T. W. Cutler, J. Johnson, J. D. Mathews, W. Ravenscroft, R P Spiers, J. Sulman, Aston Webb.
Honorary Treasurer.—J. Douglass Mathews.
Honorary Solicitor.—Francis Truefitt.
Auditors.—E. B. Anson, H. Stannus.
Librarian.—Walter L. Spiers.
Assistant Librarians.—R. E Pownall, L. A. Shuffrey.
Secretaries.—Bowes A. Paice, S. F. Clarkson.
Honorary Registrar. John S. Quilter.
Collector.—Edmund Marshall.

At the same meeting the names were announced of the successful applicants for the five-guinea money prizes offered as an encouragement to architectural sketching. It was thus that the committee of the Association determined to expend the small "prize fund" furnished by members and their friends this session, to be distributed in any way that might seem to promise good results. Messrs. E. C. Yates, R. C. Page, and E. J. May have been presented with the prizes, which are given with the understanding that the recipients will spend their holidays in sketching, and exhibit the sketches at the October *conversazione*.

A paper was read by Mr. E. C. Lee on "Italian Coloured Decoration," treating of the Early Greek work in Italy, and the method and manner of the decorations at Pompeii; also of the Early Christian art in mosaics at Rome and Ravenna, &c., the magnificent works in mosaic and marbles at Monreale, Rome, and Palermo. The paper was illustrated by the drawings made during an active student's tim in the south of Europe last year, and entirely the fruit of personal study of the works i question. After the reading of the paper,

Mr. Lonsdale said that the mosaics at Monreal excel those in the Royal Chapel at Palermo, i emphasis, and especially in what may be calle architectural expression. For instance, ther is a broad archivolt indicated at Monreale t the pier arches; at the chapel, the mosaic sub jects are brought close down on the arch moulding. The mosaics in a mosque in Con stantinople (called "The Mosque of Lamenta tion," situated at the far end of Stamboul, nea the Water-gate), he, however, thought superio even to those in Sicily and those at St. Mark's They are probably of the thirteenth century with good and spirited drawing in the figure There are some little domes, subdivided, wit lines carved on plan, having the appearance o shells, and in each cove is a figure,—the whol effect being very charming. These mosaics wi not long be seen by the traveller, for a Gree collector is obtaining by parts the subjects tha please him (particularly the heads), bribing fo the purpose the priests who have the charge o the building. Such works, so rare and in suc danger, and needing careful drawing, shoul one would think, be published by the Arunde Society, or in some similar way.

Mr. Crace, having carefully studied the mosqu referred to by Mr. Lonsdale, could bear testi mony to the beauty of its mosaics, and th destruction being wrought upon them. Re marking on the matter of outlines to mosaic he said that they are rarely black throughout i the best examples: the warmth of flesh tint, fo example, is given even more by the warm re margins than by the tone of the surface. The go grounds at St. Paul's are chilled by the margin with much loss of general effect. Outlined wit red, the general tone will be warm; with indig blue, the very sympathetic gold assumes cold, smoky tone. Turning to another subjec he said that, in thinking of Pompeii, it is to often forgotten that it was a mere holiday cit with seaside villas, the resort of pleasure seekers, and formed (probably for the most part their temporary abodes. This will account f the trifling treatment in the decorations, the ab sence of gravity and dignity, the whimsicalities the odd perspectives, the effort to extend th apparent boundaries of rooms by calling in the ai of illusions, adding to the prevalent sensation o life lived as much in the open air as poss ble. It is not to be concluded from thi that the houses in the other cities of th time necessarily contained wholly simila features. The large use of white lines amon the evenly-balanced strong colours indulge in by the decorating artists of Pompe served a two-fold purpose. They rendere possible the use of these masses of strong colou that could not otherwise have been brought s nearly into contact, and they were also useful fo defining. The knowledge shown of handlin the brush should not escape the student o Pompeiian work. Here, in the actual executio (the handwork of design), are to be see emphasis and sharp precision, adjustmen throughout of the handling to the colours an their part in the design, sometimes almost i relief, and with little blended shading any where; indications of the trained eye and mind and hand driving home the idea of the desig with force so different from that of a mechanica execution.

Mr. Stannus referred to the probable sug gestion of the treatment of the wall surface adopted at Pompeii by an arrangement found i the Ptolemaic temples of Egypt (as Dendera an Philæ),—where the spaces between the column are filled by low screens. These screens would form a dado in the inside; the open space would be the portion filled at Pompeii with blue sky and with fanciful suggestions of landscape o buildings. He instanced a modern English house where this idea has furnished the motive for th wall decoration. Above a tallish dado are seen the bits of near and distant landscape that migh meet the eye in glancing over real screens between the piers of a much-pierced wall. This might, he said, be looked upon as Pompeiian leading followed temperately.

This meeting brought the business of prosperous session to a close.

SHAH NOTES.

THE Shah has not had two finer sights than those provided for him at the Royal Italian Opera House by Mr. F. Gye, with its elegant glass reception-room, and at the Royal Albert Hall, in both cases without cost to the country. The appearance of the Floral Hall, during the gathering of the guests, and the appearance of the house from the stage, were sights to be remembered. The Lord Chamberlain has naturally addressed a warm letter of thanks to Mr. Gye for the successful evening. As to the Albert Hall, it never looked so well. The sight, indeed, was so overpowering that the Shah, who had brought in the Princess of Wales, let her arm drop, and was obviously, to those near, "taken aback," stumbling afterwards to his seat as best he might. The military bands which filled the orchestra and the pretty uniformity of the female chorus (who by the way did not sing quite so well as they looked), added much to the beauty of the remarkable scene. Bad weather quenched some of the external glories of the Crystal Palace; but there was still much that must have delighted him. It is to be hoped the foolish admiration that has been expressed for the diamonds of the Shah and his suite will not tend to increase amongst Englishmen the unmanly and barbaric custom of wearing jewels and gewgaws. Dress is already frightfully overdone by the fairer half of creation, often to the ruin of those they depend on: in fact, in this respect we have nearly reached the state into which France had fallen just before the late tremendous collapse of that country, from which it has so marvellously recovered. The derivation of the title Shah is still matter for speculation. An examination of the whole class of titles to which it belongs,—Cæsar, Czar, Kaiser, Al-cazar, and so on, with probably Jar, or Jehovah, at the end,—would give interesting matter.

THE NEW CHURCH, LECTURE-HALL, AND SCHOOLS, IN WESTMINSTER BRIDGE ROAD.

THE foundation of the new church and schools at the angle of Westminster Bridge-road and Kennington-road, intended as the perpetuation of Rowland Hill's Chapel, in the Blackfriars-road, which is about to be taken down, was laid on Thursday week. The new buildings, which will occupy a site covering 2,680 superficial yards, will involve an outlay of 25,000*l*. The church is to be called Christ Church, and, in addition to the church itself, the block will include schools, class-rooms, and lecture-hall. The buildings will cover the entire area of the site, except a small space at the acute angle junction of the two roads, and near this point will rise an imposing tower and spire, 24 ft. square at the base, exclusive of buttresses, and 220 ft. in height, which has been designed as an Anglo-American international monument, commemorative of the abolition of slavery, and one-half of the estimated cost of this portion of the building has been subscribed in America.

The church itself will stand upon the central and chief part of the land, occupying nearly the whole of the frontage in Westminster Bridge-road, and a considerable portion of that in the Kennington-road. The structure may be generally described as an irregular octagonal centre, of 55 ft. internal span, with four cruciform arms, each arm consisting of a lofty central roof, with side-roofs, in the usual form of clear-storied nave and aisles. The arm fronting the Kennington-road is the longest, and contains the principal entrance. The octagon is carried internally by eight stone pillars and arches, and is continued upwards with corresponding external gables. In each of the lesser sides or faces of the octagon two coupled clearstory windows are shown, each containing three lights. These eight windows will light the internal central space of the church. At the apex of the roof, above the octagon, oak timberwork, covered with oak shingles, will rise to the height of 140 ft. from the ground, and this will serve as a ventilation-turret, in connexion with the openings in the groined wood ceiling underneath. The style is the Geometric.

Internally, the moulded piers supporting the arches of the central octagon will be of white Mansfield stone, with moulded bases 4 ft. high of polished blue stone. In front of each pier will be a detached shaft of Purbeck marble, carried up to the roof, and these will support the wall-ribs of the groined wood ceiling, covering over the central octagon, already alluded to. The height from the floor of the church to the apex of this groined ceiling will be 60 ft. There will be galleries in the nave and transept arms of the building,—those in the former extending over the entrance vestibule below. The gallery fronts will be 6 ft. distant from the piers of the octagon, so that the complete proportions of the latter, together with the moulded arches above, may be freely seen. Spacious stone staircases will be provided for the galleries, and the walls enclosing them will be carried up externally with octagonal-pointed roofs. The communion floor will be 4½ ft. above the level of the main body of the interior, ascended by a central flight of polished blue-stone steps. On either side will be the pulpit and prayer-desk, standing on stone bases, with a similar projection in the centre as a base for a lectern. The space for the choir will be arranged for with stepped platforms, and together with the organ will be screened from the church by perforated stone tracery about 3 ft. or 4 ft. above the communion floor level. The church will accommodate 2,500 persons.

The lecture-hall and schools will be erected on the Kennington-road portion of the site, with class-rooms underneath the schools, and the several apartments in this block will be adapted not only for day and Sunday schools, but also for tea-meetings, lectures, exhibitions, concerts, and public meetings. There are also retiring-rooms and other accommodation in various parts of the buildings.

Messrs. Paull & Bickerdike are the architects, and the contractor for the foundations of the building is Mr. W. Higgs, of Lambeth. The contract for the erection of the superstructure has not yet been entered into; but tenders will be very shortly invited, to include, we understand, alternative quotations of prices for Bath and Portland stone.

THE STATE PURCHASE OF RAILWAYS.

THE discussion on Mr. William Galt's paper "On the Purchase of Railways by the State," was resumed at the house of the Society of Arts, Adelphi, on Thursday evening of last week.

The Marquis of Clanricarde presided, and in opening the proceedings expressed his general concurrence in the scheme of Mr. Galt, notwithstanding all that had been urged against it by Lord Derby, and by others, whose opinions were justly entitled to weight. He felt convinced that the transfer of railways to the State would result in great benefit to the country, and he agreed with those who argued that as to the alleged financial difficulties in the matter, they could easily be removed. He could not coincide with Lord Derby in thinking that even in a time of national depression the possession of the railways would be either a burden or a loss to the State, for he believed they would always be of the highest value to the country. He thought foreign Governments had amply shown us the wisdom of assuming the management of the railways. Difficulties would be readily surmounted, and the result would be highly beneficial to the country.

Mr. Saywell spoke against the scheme of Mr. Galt, but admitted that many reforms in railway management were needed, and that some Government control over the companies was highly necessary and advisable.

Mr. Hyde Clarke, on the other hand, contended that the companies had altogether failed in the proper administration of the lines. He described the financial operation as the simplest matter existing, and he argued that State purchase could not be much longer delayed.

Other speakers followed, among whom

Mr. Brooke argued in support of Mr. Galt's plan, urging, among other things, that the present high prices of provisions were mainly due to the excessive fares charged by the companies for the carriage of goods.

The discussion was then again adjourned.

The Late Mr. Macready.—The sale of the property of the late William Charles Macready, consisting of his books, pictures, objects in marble and bronze, ornamental furniture, and other articles, will take place at Christie's on Tuesday and Wednesday next, the 8th and 9th July. Among the books are many presentation copies, with autographs, and copies of plays marked for the stage by Mr. Macready.

SOMETHING ABOUT SOHO.

THE old proverb, "Birds of a feather flock together," is constantly illustrated by the inhabitants of a large city, who usually congregate in different districts according to their position in life. In London the lawyers have settled in Lincoln's Inn and the Temple, the booksellers in Paternoster-row and its neighbourhood, the weavers in Spitalfields, and the watchmakers in Clerkenwell. Districts of private houses, too, are given over to different classes of inhabitants: thus the streets north of Cavendish and Portman squares were at one time called "Little Bengal," from the large number of retired Indians who dwelt there.

There is always a floating population of foreigners in London. The Germans turn to the east end; the Spaniards, Portuguese, Russians, Norwegians, Swedes, Danes, and Asiatics to the neighbourhood of the Docks; and the French and Italians to Soho. For two centuries Soho has been the foreign quarter *par excellence* of London. It is the spot to which French and Italians first come on their arrival in this country; for as London is the centre of England, so they look on Soho as the centre of London. When it was a fashionable part of town, foreigners lived there, and now that its glory has departed, they are there still. The earliest foreign settlement was made by a Greek colony about the year 1680, who founded the Greek church in Crown-street, which, after passing through many vicissitudes, is now being rebuilt for the service of the Church of England. The subsequent waves of colonisation have been French, the chief of these being the arrival of the Huguenots in 1685, after the revocation of the Edict of Nantes; of the *émigrés* in 1789, after the Reign of Terror; and, lastly, of the Communists in 1871. The late troubles of France have been largely felt in Soho, and the parish has now a greater French population than it has had for years. The changes that successively took place in Paris were all represented in this district of London. When the Empire fell, its friends sought an asylum here; when Trochu turned out of Paris the aged and infirm, and the dissolute women, many of these "useless mouths" came here; when Paris capitulated Soho was agitated to its centre, and the inhabitants were anxious to learn news of their friends, which they still dreaded to hear; and lastly, when the Communists were defeated, those who succeeded in escaping found here a place of safety.

Maitland, writing early in the eighteenth century, says:—"Many parts of this parish abound with French, that it is an easy matter for a stranger to imagine himself in France"; and the same words might be used now, for it is still a sort of petty France. Most of the shops are thoroughly French, and they have evidently been established solely for the supply of the foreign colony. Here are French schools for the education of the young, and wine-shops and restaurants where an Englishman who entered would be looked upon with surprise. The newsvendors sell French papers and fill their windows with the *Petit Journal pour Rire*. The names of the shopkeepers are many of them French, and the names of their trades are written up in that language, so that when walking through the streets, and seeing around us *boulangers, bottiers, coiffeurs*, &c, we may easily fancy we are no longer in England. It is said that the organ-men find here that the "Marseillaise" is the tune that brings the most coppers, and it is ground out accordingly for the edification of the inhabitants. John Thomas Smith, in his "Life of Nollekens," describes *the French Change* as "an old house with pillars before it, then standing on the site of the entrance to the present chapel in Moor-street. It was a place much frequented and indeed surrounded by natives of France who came to England after the Edict of Nantz. Here they met, and communicated with each other upon their several concerns; and hence arose the establishment of the numerous à la-mode beef shops for the convenience of the neighbourhood." Now the restaurants answer the purpose of the "Change" and many of them are the rendezvous of various parties. Here have been arranged a large number of the plots that have shaken the Continent, and here if anywhere the exile may fancy himself again in his native land, for here everything is arranged in the way he is used to, and no English notions are allowed to intrade. There are few tables-d'hôte at these hotels and restaurants, and dinners are mostly served

à la carte. In consequence, the various occupations of eating, drinking, smoking, card-playing, and animated talking are all carried on at the same time. The natives of different countries vociferate and gesticulate in their respective tongues, so that at first entrance the room appears a very modern Babel. Four years ago (in the autumn of 1869) a correspondent of the *Times*, being in search of a good dinner, thought he had found what he sought at one of these restaurants, and, in consequence, wrote a very appreciative account of a dinner, which, he said, was better than he could have obtained at a West-end club, and which cost him a considerably less amount than he would have paid at his club. It is doubtful whether the concomitants of smoke and noise would be agreeable to many Englishmen, but, at all events, Mr. Kettner, of Church-street, has had the letter reprinted in large letters, and has placed two copies of it in his window. The French quarter is chiefly confined to Soho, but it extends northwards to Rathbone-place and Charlotte-street, and southwards to Leicester-square, where the inhabitants sun themselves and fancy they are walking on the Boulevards or in the Champs Elysées. Foreigners are found as far west as Regent-street, and on the east as far as Drury-lane. The population consists chiefly of a fixed French colony, who are employed in businesses and workshops of various kinds, and besides these are a large number of ever-changing inhabitants. The Italians who greatly frequent this district are principally opera-singers, artists, couriers, &c., and these are essentially a shifting population. Here live the Italian peasants from the neighbourhood of Monte Casino who sit to our painters as models for Madonnas and brigands, till their faces become too well known. Besides those who live here, most of the foreigners who lodge in other parts of the town are pretty sure at some time to find their way to Soho. The majority of the population are industrious and well-disposed, but the district is a centre to which resort large numbers of the dangerous classes. Disreputable women pour out in the afternoon and evening from the different streets into Coventry-street, Regent-street, the Haymarket, and Leicester-square. "Petroleuses" whose doings have caused the deepest horror to be felt wherever they have been heard of, and Communists whose hands are dyed in blood, have found a shelter here, and here is printed the infamous paper *Père Duchêne*. Soho has been a city of refuge for the promoters and sufferers in every European revolution for the last half-century or more, and, like the Cave of Adullum, it shelters "every one that is in distress, and every one that is in debt, and every one that is discontented." All these elements, however, are dangerous to the well-being of the country, and the London City Mission have commenced a good work by opening in Greek-street a *Salon des Étrangers*, where the friendless and distressed foreigner may obtain help and counsel. Missionaries visit the restaurants and attempt to counteract the poison that is prevalent. One of the means adopted for bringing about a good spirit among these foreigners is the arrangement of social meetings. At one of these for Italians there were present no less than ten men who had been condemned to death for political offences. In August, 1871, an entertainment was given to foreigners attending the services of the Foreign London City Missionaries by Mr. Leaf, at Park-hill, Streatham, at which sixteen nationalities were represented. Great amazement was caused in the neighbourhood of Soho when cards of invitation were handed round to all classes of the community. Republican and Monarchist, Orleanist and Imperialist, Communist and Italian Revolutionist, were there, and one of the Italians had been imprisoned seventy-seven times, and three times condemned to death for political offences. During the day Germans sang chorales and part-songs, and Italians danced the tarantella and other national dances. When the day was nearly done, and the party, who had thoroughly enjoyed themselves, were about to separate, Mr. Leaf said a few words, which were received with great enthusiasm. "Shouts of every description rang out on all sides: the *hochs* of the Germans, the *bravos* of the French and Italians, with indescribable yells of delight from the Manilla men, mingled with the English hurrah, made up a most extraordinary medley of sound." Before leaving, each person received from Miss Leaf, at the hall-door, a bouquet of flowers and a book; and thus ended a worthy attempt to bring about brotherly love in the midst of the discordant elements which were all at hand.

We will now pass from the present to the past state of the district. In the middle of the seventeenth century it consisted of a succession of fields called Kempe's-fields, Coleman's Hedge-fields, and Dog House-fields, and the place was known by the name of Soho as early as the year 1632, and in 1636 some people were living at the "brick-kilns near Sohoe." These dates dispose of Pennant's assertion that, on the death of the Duke of Monmouth the admirers of that unfortunate man changed the name of King's-square to Soho, or So-hoe, because that was the word of the day at the battle of Sedgemoor (1687). The fact probably being, that Soho was taken as the watchword on that field because it was the name of the place where the Duke lived. Soho seems, for many years to have been esteemed a vulgar designation; but at last, like Piccadilly, which encroached upon and finally pushed Portugal-street out of existence, it became the only recognised name. The etymology of the word is difficult, but the following seems a plausible explanation. "Soho" was the old equivalent of "Tally-ho," and the Soho-fields probably took their name from the fact that they were the commencement of open country after passing St. Giles's-pound, where the hunters met on their way to Marylebone, Bayswater, &c. This view seems to be corroborated by the name given to one of these fields, viz., Dog-house, because if the kennels were kept here nothing was so likely as that the neighbourhood should obtain the hunting name of "Soho."

The parish was carved out of that of St. Martin's-in-the-Fields in 1678, the thirtieth year of Charles II.'s reign; but the church was not erected until some years after. The inhabitants had previously laid the foundation of a chapel-of-ease in Kempe's-fields, which, after the formation of the parish, was proceeded with as a church. The building occupied some years, and at last it was consecrated in a hurry, before everything was finished, by Bishop Compton, on March 21, 1685-6. It was dedicated to St. Anne, the mother of the Virgin Mary, in honour of the Princess Anne, daughter of the reigning sovereign. It is not known who was the architect of the church; but it is believed to have been the work of one of the pupils of Sir Christopher Wren. The exterior is peculiarly unsightly, and it has been said that the steeple was constructed in imitation of that of a Danish church, to do honour to the Princess Anne, who was Princess of Denmark. The present tower is not the original one, but was erected by Cockerell in the year 1806. The interior is not without merit, and the ceiling is remarkable for its rich tracery. A year or two ago an entrance was made to the church from Princes-street by the reduction of the churchyard-wall and the formation of a flight of steps. One of the first seat-holders was Catherine Sedley, the mistress of James II., who, in this same year 1686, was created Countess of Dorchester, and had a house furnished for her in St. James's-square. In 1756 the unfortunate Theodore, ex-king of Corsica, was buried in the churchyard under the name of Baron de Newhoff, of Chapel-street, at the expense of an oilman, who said "he would for once bury a king." Horace Walpole erected a tablet to his memory. There is also a tombstone in the churchyard to William Hazlitt, who died in Frith-street, with a bombastic inscription, written by an unwise admirer of the great critic. There is an interesting view of "King's or Soho square," by Sutton Nicholls, dated 1720, in which Rathbone-place is marked as Rawbone-place, and a windmill is shown at the top, where Windmill-street is now. When Nollekens, the sculptor, was a little boy his mother often took him to walk by the side of a long pond near this windmill, and a halfpenny was then paid by every person at a hatch belonging to the miller, for the privilege of walking in his grounds. Percy Chapel, which has lately been pulled down, was built on the site of the windmill, and the spring, which supplied the long pond before it, was hidden in the cellar of a house behind the chapel. Percy Chapel was built for the Rev. Henry Mathew, afternoon preacher at St. Martin's, who lived in Rathbone-place. This gentleman was a patron of artists, and many celebrities were to be met with at his house. William Blake, the artist, would read and sing his poems there, and he was always listened to with profound silence. Flaxman decorated Mr. Mathews's library with models of figures in niches, and Oram, the assistant of Loutherbourg, painted the window in imitation of stained glass. It is said that the three rebel lords, Lovat, Kilmarnock, and Balmerino, resided in Rathbone-place at different times. The north side of the Oxford-road was then unbuilt upon, and between Hanway-yard and St. Giles's there were thirteen large and fine walnut trees. Pennant gives a very bad account of the neighbourhood. He says, "I remember it a deep hollow road, and full of sloughs: with here and there a ragged house, the lurking-place of cut-throats: insomuch as I was never taken that way by night, in my hackney coach, to a worthy uncle's who gave me lodgings at his house in George-street but I went in dread the whole way."

Between the years 1674 and 1681 the district of Soho was surveyed by Gregory King, an eminent architect of those days, who projected the square and adjacent streets, and Dr. Rimbault suggests, with much show of reason, that the old name of the square, viz., King's-square, was given to it by this architect, and not in honour of the sovereign. The reserved portion of the square was originally laid out with great care, and in the centre was a fountain, with figures at the base emblematical of the rivers Thames, Trent, Humber, and Severn, the work of Caius Gabriel Cibber. Nollekens said that he "often stood for hours together to see the water run out of the jugs of the old river gods . . . but the water never would run out of their jugs but when the windmill was going round at the top of Rathbone-place." The statue represents Charles II., but has been claimed for James II. and the Duke of Monmouth. When the square was first built, and for some years after, it was one of the most fashionable parts of London, and at one time four ambassadors lived in it. In 1681 there were eight inhabitants, of which six were the Duke of Monmouth, Colonel Rumsey, Mr. Pilcher, Mr. Broughton, Sir Henry Inglesby, and the Earl of Stamford. The Duke of Monmouth's mansion was on the south side, and some way back from the footpath. "The gate entrance was of massive ironwork supported by stone piers, surmounted by the crest of the owner of the house; and within the gates there was a spacious courtyard for carriages." The house, which is thus described in Smith's "Nollekens and his Times," was handsomely decorated within. The panels of the walls were elaborately carved, as were the chimney-pieces. "The staircase was of oak, the steps very low, and the landing-places were tesselated with woods of light and dark colours." The house was purchased by Sir James Bateman, and his son Lord Bateman let it to the Comte de Guerchy, the French ambassador. Afterwards, the place was let on building leases, and Bateman-buildings were built on the site. In 1690, Evelyn went with his family "to winter at Soho, in the great square"; and Addison makes his friend, or rather everybody's friend, Sir Roger de Coverley, the Worcestershire baronet, live in Soho-square, "when he is in Town." The great admiral, Sir Cloudesley Shovel, was lost off the Rocks of Scilly on the night of October 22nd, 1705. His body was found, and buried by the fisherman, but was afterwards brought to London, and lay in state at his house in this square previously to its being interred in Westminster Abbey. Gilbert Burnet, Bishop of Salisbury, lived here in the year 1709, and the notorious Duke de Ripperda, who was born a German, was for a time Prime Minister of Spain, and died a Mussulman, lived here in 1728. We have already mentioned how fashionable a place Soho-square formerly was, the following is a list of some of the noblemen who lived there in the seventeenth century:—Lords Berkeley, Byron, Carlisle, Falconbridge, Foley, Gainsborough, Grimestone, Howard, Leicester, Macclesfield, Mansel, Morpeth, Nottingham, Onslow, Peterborough, Pierrepoint, and Pigot. Alderman Beckford, twice Lord Mayor of London, lived in a house at the east corner of Greek-street, and on the occasion of his second mayoralty, he feasted the poor of the parish at his house. Field-Marshal Conway, Horace Walpole's correspondent, occupied a house which is described as on the south side of the square, and at the right-hand corner from Greek-street. A house at the south-east corner of the square has a fine staircase with noticeable railings. George Colman the elder lived at the corner of Bateman-buildings. Carlisle House, originally the Town mansion of the Earl of Carlisle, and afterwards occupied by the notorious Mrs. Cornelys, was situated at the corner of Sutton-street. It was originally of considerable size, and has since

been divided into two or three houses, and the banqueting-room at the back, with its figures of Minerva, and other heathen deities, is now used as St. Patrick's Roman Catholic Chapel,—a chapel, by-the-bye, which Nollekens, the sculptor, attended on fine Sunday mornings. Mrs. Cornelys was a German, who came over to England about 1756, and a few years afterwards commenced her career at this house. She seems thoroughly to have understood the requirements of the dissipated portion of society, and for some years she catered for them with success. Her first move seems, according to the following newspaper cutting, dated February 18th, 1763, to have been an attempt to conciliate the servants of her patrons:—"On Saturday last, Mrs. Cornelys gave a ball at Carlisle House to the upper servants of persons of fashion, as a token of the sense she has of her obligations to the nobility and gentry, for their generous subscription to her assembly. The company consisted of 220 persons, who made up fourscore couple in country dances; and as scarce anybody was idle on this occasion, the rest sat down to cards." Balls, masquerades, and concerts were continually given by her to subscribers, and brilliant companies attended them. On the 27th of February, 1770, a magnificent masquerade was given by the gentlemen of the Tuesday Night's Club at Carlisle House. The Duke of Gloucester was there, as were nearly half the peerage. The celebrated Miss Monckton, known to some of the present generation as Old Lady Cork, "appeared in the character of an Indian sultana, in a robe of cloth of gold and a rich veil. The seams of her habit were embroidered with precious stones, and she had a magnificent cluster of diamonds on her head. The jewels she wore were valued at 30,000*l.*" Mrs. Cornelys decorated her house at considerable expense, and took care that the alterations should be described in the public papers:—"It is said the alterations and additions . . . . performing by Messrs. Phillips and Shakespeare, together with all the new embellishments and furniture adding thereto by Mrs. Cornelys, will this year alone amount to little less than 2,000*l.*, and that, when finished, it will be by far the most magnificent place of public entertainment in Europe" (1765). Another paragraph reads,—"We are told that Mrs. Cornelys, amongst her other elegant alterations, has devised the most curious, singular, and superb ceiling to one of the rooms that ever was executed, or even thought of." The "Circe of Soho-square," as she was called, occasionally got into trouble, and in 1771 she was indicted before the grand jury for keeping a disorderly house; yet in this same year she had devoted a portion of the profits of her first harmonic meeting to the purchase of coals for the poor of the parish. The opening of the Pantheon took off many of her chief patrons, and in 1772 she was made a bankrupt. She was still, however, giving her entertainments in 1777; but her visitors had greatly fallen off, and in 1779 the establishment was managed by Mr. Hoffmann, a confectioner of Bishopsgate-street. For nearly twenty years it struggled on as a "Temple of Eloquence," and as a "Town Ranelagh." Mrs. Cornelys retired for a time into obscurity, then appeared as a "vendor of asses' milk," at Knightsbridge, and at last died in the Fleet Prison, on August 19th, 1797.

On the opposite side of Sutton-street stood Falconberg House, afterwards the infamous White House, and now occupied as a portion of Messrs. Crosse & Blackwell's large establishment. Here lived Mary Cromwell Lady Falconberg, Oliver Cromwell's third daughter. She died on March 14th, 1712, and left this house and all other property in her power, away from her husband's relatives. Sutton-street takes its name from Sutton Court, Chiswick, the country-seat of the Falconberg family. The White House had a very unsavoury notoriety for many years, and one of its chief attractions to a certain class consisted in its having a courtyard within the large gates, so that visitors might drive in and alight unseen.

Next door to the old White House is a large and handsome mansion, till lately occupied by Messrs. D'Almaine, the pianoforte-makers, and now belonging to Messrs. Crosse & Blackwell. It was formerly tenanted by a Duke of Argyll, afterwards by an Earl of Bradford, and then by Speaker Onslow, who held his Parliamentary levées in the principal drawing-room. The ceilings of this noble house were painted by Angelica Kauffmann and Biaggio Rebecca.

Perhaps the house with the most pleasing associations is the one with large windows in the south-west corner of the square (No. 32), now occupied by the Dental Hospital. It was the chief rallying point of the scientific men of the world for the many years that Sir Joseph Banks occupied it. George III. was never more thoroughly King of England than Banks was king of English science during the forty-one years he was President of the Royal Society. Sir Joseph, like his royal master, had a will of his own, and insisted on having his own way; but he gave up his whole life to the advancement of science, and heartily welcomed all distinguished foreigners under his hospitable roof. Whenever Omai, the Tahitian, who was brought to England on the return of Captain Cook's second expedition, lost himself in the London streets, he used to call out "Sir Joseph Banks! take me to Sir Joseph Banks!" and some passer-by was sure to know the worthy baronet's residence. Miss Banks, Sir Joseph's sister, lived with him and his wife, and she was well known in society as a character. Two anecdotes of her enable us to call up a pretty vivid picture of her personal appearance. Her dress was quite out of the fashion, and she frequently told the following story of herself:—Wanting a particular song, she was told by the woman who vended her stock of halfpenny ballads at the Middlesex Hospital gates, that if she went to a printer in Long-lane, Smithfield, she would probably obtain what she required. Off she trudged to Smithfield, where the printer gave her a book containing a number of songs. Upon her expressing her surprise (when the man returned her eightpence out of her shilling), at the number of songs for the money, the man said, "What, then, are you not one of our chanters? I beg your pardon." So much for her appearance out of doors; the other anecdote relates to her dress indoors. Miss Banks and Lady Banks, in compliment to Sir Joseph, who took great interest in the production of wool, had their riding-habits made of that material, and wore their habits on all occasions. They went to visit a friend in the country, who had invited a large dinner-party to meet them, and sat down in their riding-habits. The next morning they appeared at breakfast in the same costume, and till their visit was ended they always appeared, to every one's astonishment, in these habits. Miss Banks so approved of this style of dress, that she gave her habit-maker orders for three habits at a time, which were called Hightum, Tightum, and Scrub. The first was her best, the next her second best, and the third her every-day one. Miss Banks could be a little crusty when she was put out, and on one occasion, when a distinguished man came to Soho-square a quarter of an hour before dinner-time, and caught her putting away her "things," she gave him a very sharp answer. The visitor made the innocent remark, "It's a fine day, ma'am," to which Miss Banks answered "I know nothing about it; you must speak to my brother upon that subject when you are at dinner." Sir Joseph Banks possessed a very fine library, and unequalled botanical collections, which are now in the British Museum. His librarians were, first, Dr. Solander (whose chief property was said to consist in the possession of a large number of dress waistcoats), then Dr. Dryander, usually known as "Old Dry," and, lastly, Robert Brown (the *Botanicorum facile Princeps* of Alexander von Humboldt), to whom Banks left a life interest in his library and collections. The Linnean Society, whose librarian Brown then was, moved to this house from Gerrard-street about the year 1822, and continued in it until 1857, when they transferred themselves to their present quarters at Burlington House.

At the north-west corner of the square is the world-famed Soho Bazaar, which owes its great success to the business-like habits of John Trotter, the brother of Sir Coutts Trotter. The building was previously used as a huge store-house for the reception of supplies which Mr. Trotter had under his care when he held extensive contracts with the commissary-general. After the great war, the commissariat had grown to such an extent that it was formed into a special Government department, and these store-houses were emptied. Trotter's active mind suggested to him the idea of establishing in the house a bazaar which was then an entire novelty in Europe, and his humane heart made him turn it to benevolent purposes by careful regulations. The bazaar turned out a much greater success than was expected. We must now dismiss the square, and pass on to the consideration of the claims to our interest of some of the streets of Soho.

Peter Cunningham chides Pennant for stating that Greek-street was originally called Grig-street; but there is no doubt that it so appears upon some of the old maps and engravings, and Dr. Rimbault thinks it probable that it was so called after the Christian name of Gregory King, the surveyor. However, Sir John Bramston, K.B., who had a house here from 1685 to 1694, describes it in his Autobiography as "Greeke-street in the Soho." The name is supposed to be derived from the Greek Church in Hog-lane, now and since 1762 called Crown-street; but there does not seem ever to have been any entrance to the Church from Greek-street, so it must remain a moot point whether Greek is a corruption of Grig or Greg, or whether Grig was a corruption of Greek. The church in Crown-street was originally raised by the Greek refugees, who settled in Soho-fields about 1680, under the leadership of the Archbishop of Samos. Bishop Compton took great interest in the little colony, and under his auspices the church was dedicated to the honour of St. Mary the Virgin's death. About the year 1700 it fell into the hands of the French Protestants, with whom it remained for about thirty years. Hogarth has represented the old church in his picture of "Noon," and the figure coming from it is said to have been a good likeness of the Rev. Thomas Hervé, who was minister from 1727 to 1731. After the Huguenots left the church it passed successively into the possession of several sects. In 1819 it was on the point of being converted into a low dancing-saloon, but happily was purchased by the Rector of St. Anne's, refitted, and solemnly dedicated in honour of St. Mary the Virgin. It is now being rebuilt from the designs of Mr. R. Herbert Carpenter and the late Mr. William Slater. Pennant observes that "Mr. Wedgwood vindicates the propriety" of the name Greek-street, "by making it the repository of his figuline ware, founded on the chastest Grecian models, and executed in the truest Attic taste." Sir Thomas Lawrence lived in the street from 1799 to 1804, and Gainsborough's "Blue Boy" was the son of a wealthy ironmonger who lived at the corner of Greek and King streets. Jonathan Buttall, father and son, were friends of Gainsborough, and after much controversy, which is still going on in the pages of *Notes and Queries*, there is reason to believe that the famous portrait was not taken, as supposed, from young Buttall, although the picture, as well as many other of Gainsborough's drawings, was in his possession for some years. Buttall ran through his father's property and was made a bankrupt in 1796, in which year his possessions were sold, with the exception of the "Blue Boy," which was withdrawn because no one would give sixty guineas for it. Frith-street takes its name from Mr. Fryth, a builder; but in an old engraving it is called Thrift-street.

Carlisle-street was originally called Merry Andrew-street, then Denmark-street, then King's-square-street, and lastly it took its present name from the Howards, earls of Carlisle. King's-square-court, a little passage leading out of Carlisle-street, still retains its old name. At the corner of this court Agostino Carlini, the sculptor and keeper of the Royal Academy, lived and died. Giuseppe Ceracchi, Mrs. Damer's master in sculpture, worked in Carlini's studio, when he first came to England. He ended his career under the guillotine in Paris in 1801. The painter David, with whom he had lived in intimacy, was called to speak to his character, but declared that he knew nothing of him beyond his fame as a sculptor.

Dean and Compton streets were both named in compliment to Henry Compton, Bishop of London and Dean of the Chapel Royal. At the house afterwards divided into 42 and 43, Dean-street, lived and died Francis Hayman, one of the first members of the Royal Academy, and well known for his designs in illustration of Don Quixote. Hayman and Quin the actor were inseparable friends, and were frequently drunk together. One night in attempting, arm-in-arm to cross the road, they both fell into the kennel. After lying there a minute or two, Hayman began struggling. "Hollo! what are you at now?" stuttered Quin. "At? Why endeavouring to get up, to be sure," replied the painter, "for this doesn't suit my *palate*." "Poh!" replied Quin; "remain where you are. The watchman will come by shortly, and he will *take us both up*." No. 75, now occupied by Messrs. Robert & William Wilson, wholesale tin-plate workers, was formerly the residence of Sir James Thornhill. This is a noble old house, with handsome rooms and a fine staircase, the floor of

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which is laid down with marble. The walls are painted to represent columns, with figures leaning over a balustrade. These are supposed to have been the work of Hogarth, and the figure of a lady to represent Jane Thornhill, to whom Hogarth was married at Paddington on March 23, 1729, when she ran away from her father's house, then in Covent-garden. The staircase is now floored over, and serves as a store-room. George Henry Harlow, the painter of the memorable picture of the Kemble family, died at No. 83, on the 4th of February, 1819, in his thirty-second year. Another artist who lived in this street was old Nollekens, the father of the Royal Academician. The little theatre, which was lately so successfully managed by Miss Oliver, has passed through many vicissitudes. It was long known as Miss Kelly's Theatre, and has since borne the names of Soho and New Royalty.

Wardour-street is supposed to have received its name from Lord Arundel of Wardour. Its greatest inhabitant was the illustrious Flaxman, who lived at No. 27, from 1781 to 1787. The great sculptor was chosen as a parish officer, and John Thomas Smith often saw him, as one of the collectors for the watch-rate, with ink-bottle in his button-hole, collecting the rate. George Morland's father, who was a clever painter of heads in crayons, lived in Chapel-street, Wardour-street. Princes-street takes its name from Prince Henry's military garden, which was situated near where the street now is.

Newport-street and market take their names from Newport House, the residence of Montjoy Blount, created Earl of Newport by Charles I. Sir Joshua Reynolds, before he went to Leicester-square, lived on the north side of the street, and "Feedera" Rymer on the south side. Carte, the historian, lived at "Mr. Ker's, at the Golden Head." Horne, the poulterer, or "Turkey merchant," according to his son, Horne Tooke, had a shop in Newport-market; and Orator Henley "orated" there before he moved himself to Clare-market.

The last place that we have to mention is Gerrard-street, which has many pleasant associations. It takes its name from Charles Gerard, the first Earl of Macclesfield, who died in 1694. When Prince Henry's military garden was closed Lord Macclesfield obtained possession of it, and after erecting himself a house he let the rest of the ground for others to build a street. The disreputable Lord Mohun was living at Macclesfield House when he fought his famous duel with the Duke of Hamilton, a duel in which both principals were killed. One of the earliest of the distinguished men to inhabit the street was Dryden. His house was on the south side, and is now numbered 43. The Society of Arts have placed one of their tablets on the front of the house to point it out to passers-by. In Dryden's dedication to Lord Leicester of "Don Sebastian" he calls himself a poor inhabitant of his lordship's suburbs, whose best prospect is on the garden of Leicester House. The house now occupied by the Westminster General Dispensary (No. 9) was once the Turk's Head, where Johnson and his literary friends founded, in 1764, "The Club," known as the "Literary Club" since Garrick's death. The members met every Monday evening at seven o'clock for supper. In 1772 the day of meeting was changed to Friday, and dinner took the place of supper. The club remained at this house until 1783, when the landlord died, and the tavern was discontinued. Edmund Burke, one of the members, lived in this street. J. T. Smith often looked down from his window at dawn of day to see whether the great orator had left his drawing-room, where night after night after he had left the House of Commons he was seen seated at a table covered with papers, attended by an amanuensis, who sat opposite to him.

A step from the north to the south side of Gerrard-street takes us out of the parish of St. Anne's, Soho; therefore we will here end our notices of a district which has been famous for nearly two centuries, during a portion of the time as a fashionable neighbourhood, and during the whole time as the chief foreign quarter of London.

Death-rate, St. George's, Hanover-square. Dr. Corfield, the medical officer of St. George's, Hanover-square, reports that for the week ending the 17th ult., the death-rate in the parish was only 9·2 per 1,000. During the five weeks ending the 24th ult., the death-rate was only 15·42 per 1,000.

THE NEW RECTORY HOUSE BUILDINGS, NEWINGTON.

DURING the last few months the erection of a new rectory-house in connexion with the parish church of Newington has been in progress, and the building has so far advanced that it is now ready for covering in, which will be effected in the course of next week.

It is situated in Kennington Park-road, the site being that formerly occupied by Canterbury House. The new structure, which partakes of a mixed Gothic style of architecture, is a prominent feature amongst the buildings in that thoroughfare. It is built of red Fareham brick, with Bath stone dressings. The Kennington Park-road elevation is 48 ft. in width, and 35 ft. in height to the cornice, above which there is a lofty central pointed dormer or gable, 19 ft. in height, terminating with a cross, with a smaller dormer of similar character on each side, the extreme height of the elevation being 54 ft. The central portion of the cornice is ornamented with Minton's encaustic tiles in panels, and in the other portions of the cornice on each side there are also encaustic tiles of a similar character, but of smaller dimensions, and diamond-shaped. The principal entrance to the building, which is at the north-west angle of the elevation, has stone piers on each side, from which springs a Gothic arch, also in stone, over the doorway, with an outer arch above it of red brick. Over the entrance there is a projecting cornice, in brick, with a band of ornamental tiles running across the centre. The windows are all triplet, with stone heads, mullions, and transoms, and those on the ground floor are arched over with brickwork. There are two other principal elevations, uniform in their general character with that just described, that on the north side having two prominent gables, whilst that overlooking the grounds of the building, at the opposite side of the Kennington Park-road frontage, has prominent bay windows at the south-east angle, projecting from the main body of the elevation, and carried up to the top of the building.

The interior of the building is spacious, and contains several large and handsome apartments. The basement is devoted to the domestic offices, and contains a commodious kitchen, butler's pantry, larder, &c., together with manservant's bedroom, servants' room, and other conveniences. The ground-floor contains a spacious dining-room, 24 ft. by 16 ft., and a corridor, 8 ft. in width, separates it from the drawing-room, 22 ft. by 16 ft.; at the rear of which there is a study, 14 ft. by 16 ft., together with several other apartments. The first-floor contains several bedrooms, dressing-rooms, and bath-rooms, divided by a corridor uniform with that on the ground-floor. The second-floor contains the servants' bedrooms.

The architect is Mr. Ewan Christian; and Messrs. Downs & Co., of Union-street, Borough, are the contractors. The estimated cost of the building is about 3,000*l.*

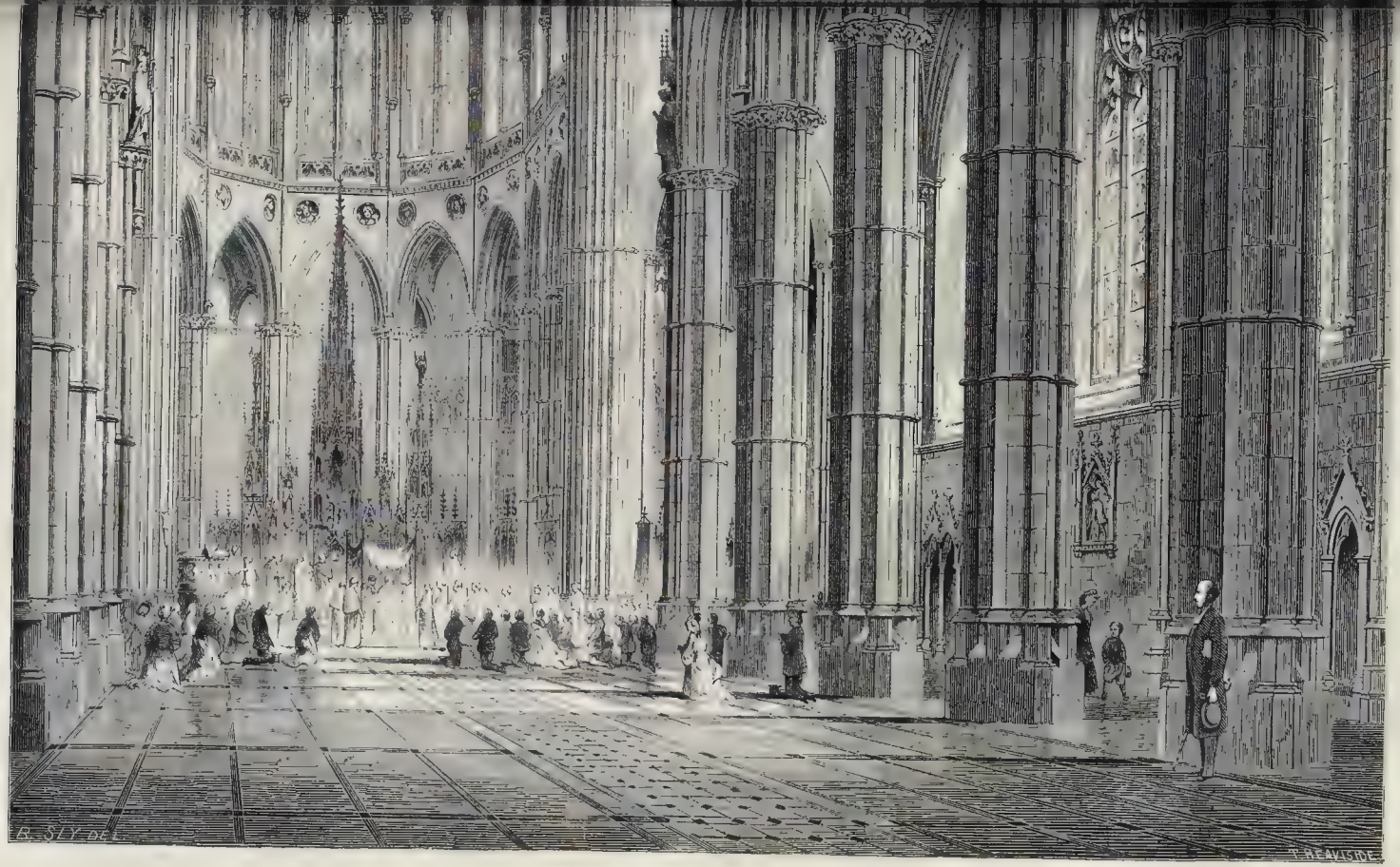
The intended new parish church, in lieu of the old one, which is about to be taken down for the widening of Newington-butts, will be erected on a site on the north side of the new rectory, and immediately adjoining it, three houses in Kennington Park-road, with the land and gardens attached thereto, having been purchased for the purpose. The principal frontage of the new church will be in the Kennington Park-road; and the edifice will be unusually large, covering an area of 192 ft. in length by 73 ft. in width. Mr. Christian is the architect for the church, as well as the new rectory-house.

AS TO LABOURERS' COTTAGES.

RECENTLY Dr. Acland, the Regius Professor of Medicine, Oxford, delivered another of his lectures on Public Health, in the large theatre of the University Museum, the special subject of which was "Labourers' Cottages in Town and Country, Past and Present." In commencing his lecture, Dr. Acland said he should betray the trust which was imposed upon the Professor of Medicine—a trust probably at no period so grave as at the present—if he were not to say at once that it was his firm conviction that the nature of the bodily frame of man, and the care of that bodily frame was scarcely second to the care of the spirit, of which the frame was but the casket. Reverting to the further consideration of the question of the prevention of damp in cottages, Dr. Acland showed a specimen of a Chinese brick sent him from a palace in Pekin, and he regretted that the expense attending the carriage, as well as the manufacture, would not permit the more frequent use in England of the bricks with glazed surfaces, some of which he exhibited and explained. He spoke of the quantity of water that was absorbed by bricks, and illustrated the statement with an interesting experiment and the detailing of an anecdote. The effect of the anecdote was that a woman once told him that if she threw water upon her bricks to wash them, it never came off again. That was, he said, because it was absorbed in the brick; and he remarked that often it was evaporated therefrom, and entered into the lungs of all who were in the house. He enforced that nearly all the water that was absorbed in the bricks of a floor often came out again, and was injurious to the health of the inmates of a house. Another public source of disease was lead-poisoning, caused by reason of water being made to pass through lead pipes. He showed and explained what he said was an admirable invention for doing away with this evil in covering the interior of the pipe with a coating of tin. Dr. Acland said that all this showed the importance of small details. The whole subject was made up of details. It also showed them that there were certain principles which ought to be observed in building construction. The only reason why the evils of which he had spoken existed, was the ignorance of some, the wilfulness of others, and the inattention of the Legislature, and, he would add, the unwillingness of the people to learn. The journals had found great fault in this matter, but he had not seen one journal with sufficient intelligence to appreciate the facts. Great fault had been found with the Government, who had been charged with dilatoriness in sanitary matters. The Royal Sanitary Commission had been blamed because it did not send assistant commissioners into every town and district to inquire into the existing state of things which was well known to all. They had only to look at what was the remedy. The Government had done something to produce a remedy, which, if only the people would use it, would bring all these troubles to an end in a short time. The population of this country required air; they were a free-breathing people. Within the last century six-million acres had been enclosed—land upon which the whole of the public had a right to assemble for recreation. Whilst the population had trebled, all this had been taken away. He did not impugn the operations of the Enclosure Commissioners. We were beginning too late to understand that these public acres were not for individuals or individual corporations, but for the people at large. That matter now rested with the people. In the year 1871 a Bill passed through Parliament, which was so little noticed, that the fact of its third reading was not even mentioned when it passed through the House of Lords, by which all the chief offices in relation to the public health were united in the Local Government Board, and in the following year, by an Act only found fault with for its pettiness and narrowness, by which medical officers of health were appointed for the whole country. By that Act every portion of the country, every cottage, every hamlet, every village, and every town was necessarily under the sanitary supervision of a medical man. Having described in detail the duties of a medical officer of health under the Public Health Act of 1872, the learned lecturer said we were going through a great revolution in sanitary matters. Things were gradually sinking into the hands of the people. Now it was the people's business, and those who had for many years been imploring the people for their own sakes, to seek these matters out might now hold their peace. The matter rested with the people themselves.

The Chapter House at Westminster.—In the Commons Mr. B. Cochrane asked the First Commissioner of Works whether it was intended to complete the Chapter House at Westminster and to carry out the original design of filling the windows with stained glass, and restoring some of the paintings on the walls. In reply, Mr. Gladstone said it was not in his power at present to give a complete answer on the point. When the dean had sufficient time to make known to the Government the whole of his views on the subject of the Abbey, they would receive the earnest consideration of the Government.





CHURCH OF ST. PHILIP NERI, ARUNDEL, SUSSEX: INTERIOR, LOOKING EAST.—Messrs. Joseph A. Hansom & Son, Architects.

CHURCH OF ST. PHILIP NERI, ARUNDEL.

THIS remarkable church, erected for his Grace the Duke of Norfolk, E.M., and of which we give an engraving in our present number, is composed of a nave, 97 ft. long and 33 ft. broad; two aisles 12 ft. broad, and the same length as the nave, transepts 94 ft. across by 27 ft.; a large chancel, three side chapels, sacristies sufficient to accommodate easily 200 persons; three confessionals, baptistery, and a tower which is eventually to be surmounted by a spire, rising to a height of 280 ft. It is devoted, we need hardly add, to the Roman Catholic faith. Entering at the fine west door, we find ourselves under the organ gallery, which occupies the westernmost bay of the nave and aisles, or a breadth of 57 ft. To our left is the tower entrance, and to the right the baptistery, an octagonal structure. The remaining five bays of the south aisle communicate alternately with three confessionals. The aisles are lighted by three-light tracery windows, at present devoid of stained glass. The south transept contains in the gable wall a niche and canopy, 32 ft. high, holding a statue of St. Philip, the patron of the church; and on either hand a two-light window, filled with stained glass, commemorative of the life and death of the Saint. In the south-east corner of this transept is the door leading to the sacristies, which are singularly complete. Crossing the transept, and to the east of it, are the chancel and three side chapels, one on the south and two on the north side. The clustered columns and arches on the entire round of the chancel, the space behind forming an aisle. This arrangement produces good effects of light and shade. In the spandrels are twenty-two medallion heads of patriarchs and high priests of the old and new law, commencing with Adam, and ending with Pius IX. Above are eleven two-light windows, representing the nine choirs of angels. When we say that each figure in these windows is 9 ft. high, and that their magnitude is not perceptible without carefully comparing sizes, some idea of the general dimensions of the structure may be gained. At present the altar in the chancel is only of a temporary character; but it is intended to erect one in the chancel, and one in each of the three chapels, in character with the church. In the north transept is a five-light tracery window, depicting the principal events in the life of the Virgin Mary. Looking from the chancel steps westward, the eye is immediately arrested by a fine circular window, 17 ft. in diameter, intended to commemorate the mysteries of the Rosary. Below this is an organ, which is spoken of as one of the finest in England. The spandrels of the nave contain medallion heads of twenty-four English saints. The clearstory windows have double tracery, but at present they are only glazed with plain cathedral glass, and this applies to all the windows except those in the chancel and two transepts. The west end and tower doorways are rich in carving and sculpture. There are smaller and simpler ones in the transepts.

A view of the exterior, with its pinnacles, flying buttresses, gables, and flèche rising to a height of 140 ft., we have already given.* Standing as it does above the town, it has an imposing effect, from many points appearing the principal object in the landscape. There are over sixty niches outside the building; but at present none of them contain statues. The whole of the church is groined with Bath stone and chalk, and we may add that the effect of the chalk against the Bath stone, as lovers of Westminster Abbey can testify, is most pleasing. The walls are exteriorly of Box Hill, and interiorly of Corsham Down stone, with a brick core.

Messrs. Joseph A. Hansom & Son, of London, are the architects; and Messrs. Myers & Sons the contractors. The stained glass and metal work are by Messrs. Hardman & Co., of Birmingham; the sculpture is by Messrs. Farmer & Brindley; and the organ by Messrs. Hill & Son. In the flèche is a fine-toned bell, weighing half a ton, by Messrs. Taylor, of Loughborough. Mr. J. Reed is the clerk of the works, and Mr. Addis the builders' foreman.

New Theatre in New York.—A 200,000-dollar theatre, it is reported, is being built on Broadway, New York, of which Mr. Dion Boucicault takes a ten years' lease, at the rate of 25,000 dollars per annum.

* Vol. xxx., pp. 44, 46.

THE JERSEY BANKING COMPANY'S NEW PREMISES AT ST. HELIER'S.

THIS building is being erected by Messrs. Fallaize and Tostevin, of St. Helier's, Jersey. It occupies an excellent site, at the corners of New-street, and Library-place, and has been designed by Mr. John Hayward, of Exeter, architect, who carried out the restoration of St. Ouen's and Trinity churches, Jersey. The style of architecture chosen by the designer is new to the island, as applied to secular buildings, and is Early Geometrical, with a deal of Early French Gothic in its type.

The building as a whole is of native granite, the walls being of the pink, and the quoins of the gray variety. All the dressings to the windows, the cornices, &c., are of Portland stone, and the whole of the carved and sculptured work will be executed in the same material. The columns in front of the mullions of the various windows are of polished red Aberdeen granite, but which the *Jersey Express* does not think any better than their own native granite.

All the capitals upon these columns will be carved, and the label moulds stopped by carved bosses and corbels. The treatment of the ornamentation upon the ground-floor windows will be similar to the upper ones, excepting that the foliage upon the capitals will be somewhat more ornate upon the lower row. Between the two floors there will be carved and enriched cornices running the entire length of the building. This, when executed, will be a prominent feature upon the two fronts. Immediately over the doorway is a tympanum, within which will be carved a shield, bearing upon its field the arms of Jersey, with bunches of emblematic foliage, the rose, shamrock, and thistle springing from either side. The carved work is in the hands of Mr. Harry Hems, of Exeter.

TEMPLE RELICS FROM GOLGOI.

THE enormous collections made by General Di Cesnola for the Metropolitan Museum, New York, are being gradually unpacked and exhibited in temporary quarters, and are exciting wonder, incomplete as the arrangement yet is. The *Nation* (N.Y.), in bringing the exhibition before its readers, reminds them that on the night of March 6, 1870, the American Consul was informed of the unearthing of a colossus and some minor pieces in the environs of Athienau (an inland town at the back of Larnaca), where the French antiquary De Vogüé had already dug with slight result. Immediately leasing the ground in the name of his chief dragoman, our representative began his explorations, and by excavating towards the valley, instead of uphill, from the trenches of De Vogüé, he quickly struck the foundations of the ancient temple. This sanctuary soon yielded its whole contents to the lucky explorer, among which were a *thousand statues*. It was a small shrine, only 30 ft. by 100 ft. in the length of its sides, buried about two yards deep in a hard clay apparently partly formed from its own walls of unburnt brick; no part of the building above the foundations was preserved, and bases of columns were found only at the doorways; its earthen walls, wooden pillars, and perhaps wattled roof, had decayed, while the statuary, sharply broken as if by an earthquake or a sudden iconoclasm, was mostly adjustable with ease, and perfectly fresh in surface. Into this limited quadrangle the hieratic art of Phœnicia, Egypt, Greece, Assyria, and probably Persia had settled through an incalculable period of time, sometimes sharp in type and definition, sometimes mutually mingled, with the most incalculable inflections and disturbances. This populace of images now bodily in New York is the noblest part of the booty from Cyprus. No figure distinctly assignable as the divinity-in-chief has been found; the supreme patron cannot even be named with certainty, but everything points to the worship of Aphrodite. This remains conjectural, but meantime the honours of the statuary are borne off by figures not divine, but those of priests or worshippers. Upon these, differing as they do from all sculpture elsewhere obtained, and of periods incalculably remote, the attention is fixed, in a perfect maze of curiosity, study, comparison, suggestion, reminiscence, and surmise.

One head, that of the colossus *par excellence*, especially excites wonder and conjecture. From its enormous almond eyes, which, if properly placed, would hang in the air between 30 ft. or 40 ft. above the ground, it is hard to say how many centuries look down upon to-day. The fragments of the statue to which it belonged have not been identified with certainty, and it is seen as the enormous capital to a very modest shaft. Its necessary altitude would seem almost too great for the height of so small a building, and although it was found within the walls, it may possibly have been before reversal a watcher without the door. In this head the Cypriote type, which we soon learn to trace by a comparison of the other sculptures, is seen in its blankest distinctness and most exaggerated measure. The colossus in question has long flat eyes, receding forehead, and acute facial angle, the weakness of the chin disguised by the ample fan of a beard, which, though covered with a bag, reveals the four ringleted locks in which it is divided; the nose is swelled, slightly aquiline, and pointed; Assyrian curls appear under the edge of the cap, which is that of a large number of the statues, and similar to the one worn in Cyprus to this day. It is a close bonnet, fitting to the head, and running up to a point; in this case, the jugular flaps, which might be drawn down over the ears, are returned closely over the cap; in other statues the same jugularies are tied in front with an ornamental knot, and the point is often decorated with the head of an animal. The mouth of the giant is fixed in a half-moon smile, common to most of the statuary. This eternal rictus of a thin flat lip on all the archaic faces present begins, after a detailed examination of the museum, to haunt the mind. From its rigidity it is, even when unmalicious, not reassuring. It bears a slight resemblance to the expression in archaic Greek sculpture; but what is very curious is that, for a perfect correspondence, we must go completely over to the early art of Italy. It is Etruria, in figures such as those mortuary recliniig ones from Cervetri, preserved in the Campana room of the Louvre, which yields us these receding foreheads, acute profiles, and all-promising amiability. This correspondence is an item of evidence in the theory skilfully maintained by Mr. Stillman, of the identity of the Etruscans with an ancient race of builders and sculptors, who carried the tide of primitive art eastward through Greece, the other Mediterranean islands, and Asia Minor.

THE WORKS ON THE RAILWAY TUNNEL UNDER THE MERSEY.

THE important railway engineering works for connecting Liverpool directly with Birkenhead by means of a railway under the Mersey, are now actively in progress, and when the works now going forward are completed, there will be railway communication between Cheshire, Wales, and Liverpool, *viâ* the sub-marine route across the Mersey, without change of carriage, which may be regarded as an important achievement in railway engineering. This is, indeed, the first instance of a railway being carried under the bed of a wide navigable river on any large scale, and the tunnel now in course of construction may therefore be regarded as the pioneer of railway submarine engineering. When this project was first broached, strong doubts were expressed as to the possibility of its being carried out with safety in consequence of the immense volume of water flowing into and out of the Mersey, and it was believed by many that there would be insuperable engineering difficulties in driving the tunnel at a sufficient depth below the bed of the river, but these doubts have been proved to be groundless. The crown of the tunnel will be at an average depth of 30 ft. of solid rock below the bed of the river. On the Birkenhead side of the river a working shaft 37 ft. in length, and 8 ft. in width, has been sunk to the intended depth of the railway level of the tunnel, which is 95 ft. below high-water mark. The tunnel from the Birkenhead station to the shaft on the margin of the river, will contain two lines of rails; but under the river there are to be two single tunnels with one line of rail in each. The object of this is to promote better means of ventilation; and it has also this further advantage, that it gives a greater space between the crown of the tunnel-arch and the river-bed than would be otherwise secured. Each of the tunnels will be a mile in length from shaft to shaft; but the actual width of the submarine tunnels will be three-quarters of a mile in length, being the breadth of the Mersey at that point where the tunnel will cross under the river from the Cheshire to the Lan-

cashire shore. The tunnels will be 15 ft. high from the railway level to the crown under the river's bed. Although, as has already been stated, the tunnel will pass through very hard sandstone-rock, of which there will be an average depth of 30 ft. between the bed of the river and the crown of the tunnel itself, it will be faced with Staffordshire blue bricks set in Portland cement, in order to prevent the possible percolation of river-water; and whilst the works are in progress pumps will be kept going on both sides of the river. As the tunnel passes entirely through the sandstone-rock the excavating operations under the river will necessarily be heavy, and these are intended to be carried out by the Diamond Boring Machine Company. This apparatus is said to be capable of excavating about 16 yards per week, and it is expected that a heading 9 ft. high and 9 ft. wide, will be driven under the river to the extent of 1,300 yards within the next twelve months, and that both the sub-river tunnels will be completed and ready for traffic in the summer of 1875. On the Lancashire side at Liverpool, the tunnels, by means of the Mersey line under the town, will be connected with the new joint Midland and Great Northern station about to be opened in Liverpool. The engineers under whose superintendence the project is being carried out, are Messrs. C. D. Fox and J. Brunlees.

SELF-TUITION.

BY A JOINER.

SCARCELY any one ever resorts to the practice of self-instruction who can command the means to employ a tutor and the time to take advantage of his assistance. It is very agreeable to be taught by a competent instructor, and pleasant, when one is puzzled by a difficult problem, to turn for assistance to one who can explain it satisfactorily. Still, the pupil whom the schoolmaster generally finds easiest to teach is the one who applies himself to master the why and the wherefore of his exercises; and therefore we must come to the conclusion that self-tuition imprints more lastingly on the mind that which we take upon ourselves to learn. The student who has no person to help him over his difficulties must give his subject more attention, and, having once mastered it, retains it for ever. What we have explained to us evaporates soonest from our minds; but what we find out for ourselves will obviously remain with us, to be ready at memory's beck, because we were compelled, in order to master it, to give it the necessary repetition, without which there will be no lasting.

There is a close resemblance between the accumulation of wealth and the attainment of knowledge, and most men have a yearning for both. But to win either one must be possessed of patience and perseverance,—virtues indispensable to those who desire wealth or knowledge, and with many seemingly very difficult to attain. Our store of knowledge, as of wealth, will be in proportion to the amount of our patient industry. How many will say that their want of success in attaining knowledge is to be attributed to their want of patience, and not to that of intelligence? Many exhibit a laudable desire, manly and honest, to learn some favourite art, but have a great dislike to the drudgery necessary to go through in order to accomplish their object. Some take up a book with great determination, but after a little while begin to lose patience, and throw it down in despair. It would be well at such a time to call to mind the maxim "That which is easily gained is generally thought the least about." Young men who have a wish to add to their knowledge by means of self-tuition should bear in mind what has been accomplished by those whose names are to be found in the foremost ranks, and should take a lesson from the biographies of those of whom it has been proved that they raised themselves in the world, in wealth and honours, by simply teaching themselves. It has been said that one needs only to know the alphabet to learn whatever else one wishes. If this be so, a man who knows how to read well may feel assured that a great power is at his disposal for the attainment of information. It is in the reading and careful digestion of what a person has read that the whole secret lies. Many who would make excellent progress by reading sparingly and carefully skim over the pages as if their sole object was to get to the end of the book as soon as possible. They are satisfied with an *idea* of what has been written. They never stay to consider the point of a sentence, even though the words where the pith of it lies are in italics before them. A dictionary should be consulted on every occasion where the meaning of a word was only partly understood, and the Greek or Latin roots sought out, and the knowledge thus obtained applied to the passage under consideration. One of the chief difficulties to be got over is the frequent repetition of hard technical words which necessarily occur in books of self-instruction, but these can only be mastered by patience and the practice I have just mentioned. An impatient, careless reader is sure to get tired and disheartened over such words; but let such a one recollect that a very important step will be made in advance by the proper comprehending of a single page or even a paragraph. If it take a week to master a page or a paragraph he should let it have a week, and then ask himself what progress he has made. If it take a year to attain a thorough knowledge of a wished-for accomplishment he should let it have a year's constant study. Words derived from foreign sources will leave but a slight impression on the mind if their origin as well as their meaning have not been sought after. The history of one word will often throw such a light upon what the student is studying that it will both please and gratify him, and stimulate him to exertions increasing and unbegrudged. The stem or termination of one word is the stem or termination of many, and the study of words themselves, their origin, transformation, corruption, and the tracing of them to their several sources will be found invariably as pleasant an occupation as the reading of a romance. I might say, more pleasant, because it would lack excitement and yet contain as much novelty. Philosophers have thought it worth their while to write volumes upon words alone, and he who in his studies will pass a single one satisfied with the sound of it and what he has understood from the context will find it impossible to succeed in self-tuition, and he will lose some of the most pleasing facts in literature by neglecting to inquire all about it.

Men who work by the aid of rules which they have picked up, and who put them into practice every day without inquiring into the why and the wherefore of such rules, are never sure that they are right; and when by the aid of these they have accomplished their allotted task, they are often known to express surprise at how true the rules have worked. Had they been masters of the why and the wherefore of the rules previously, they would never tremble for fear of not applying them exactly as they had been taught. How often do we hear the superficial mechanic exclaim, when something comes his way that he had partially learned, but never gave a single thought to after the first effort at comprehension,—"Wait, now. Let me see. Oh! what makes me forget it? I know the rule; for that So-and-so showed me how to do it"? and after two or three attempts to recall the words in which it was explained, he has to confess that he has forgotten them, and excuses himself with the sighing remark that he has very bad retention. It is not the memory that is at fault in hundreds of cases like this. The failure occurs through the neglect of turning the problem over in the mind until the why and the wherefore of its construction are thoroughly understood. One who will never rest satisfied until he is master of the whole fact need never burthen his memory with the exact words which explained it; for, knowing the fact, he can demonstrate it in words of his own, which will be sure to recur to him on recollecting the truth alone.

The business of an instructor is to simplify technicalities, and by oral demonstration, attitude, gesture, and *constant repetition*, cause his pupils to comprehend what he is trying to explain. If he be clear and explicit, and we arrive at the knowledge of the fact with him, it is ten to one that we take it as a conclusion which we were expecting, and for which we paid money, and a notion takes possession of us that this is a natural consequence, and that we are under no obligation to the tutor or to the words he used for our knowledge. This makes us careless, and prevents us from setting the proper value on what we have just received for our money; and because we gave money for it,—perhaps a trifle,—we think as little about the knowledge as of the trifling sum expended upon it; and although the subject may be a most important one to remember, it is often lost sight of because it seemed to us so easily obtained.

But if, on the other hand, one comes to the conclusion to try what he can learn from books alone, he must feel that words only must be his guide. Yet that they are but words must also be another reflection; but to make these words convey to his understanding a knowledge of the facts (which they will surely do if examined properly) which they are meant to demonstrate, one has to follow the course which a teacher of others is obliged to follow. He must "read, mark, learn, and inwardly digest." He must adopt the repetitions of the tutor, fancy the attitudes and gestures the writer would employ if he were demonstrating his lessons by word of mouth, and when through all this he succeeds in solving the problem, and looks back at all his trouble, he will think something about what he has attained. This is self-tuition, and without it, to a great extent, no person will advance in knowledge even by the aid of a tutor. The tutor's duty is to explain that of the pupil, to sift his explanations, compare, and re-examine until no doubt remains. But the great advantages of entire self-tuition are, that it will make us confident,—sure of what we direct. It will lead us to be satisfied that the course we have adopted in carrying out this or that plan is correct. We are enabled to handle the rules, and, if necessary, make new ones, for by self-tuition the mind is made as sharp as a needle's point, and the will rebels against advancing unless everything is clear before it, new ideas are formed according as we understand the old, and as we undermine the darkness with which we are struggling, volumes of light will tumble in upon us in periodical avalanches, if I may use the word, which will cause within us a tumultuous joy, the more gratifying because our knowledge has been achieved by our own individual exertions.

But apart from these advantages, derived from self-instruction, it points out the path which leads to a commendable life, by giving beneficial and healthy employment to the mind. Also, when we compare the little we know with the much the writer of the lessons has laid before us, we are sure to become more humble, and self-conceit will not fail to get a wholesome check whenever it rises to the surface. It will also make us lay more value upon our leisure time, and teach us to economise it, and utilise every spare hour or half-hour. I once read of a man who boasted that he added thousands of words to his vocabulary, by studying them on the way between his residence and the place where he did business. There are numbers of working men who get by heart useless and vulgar songs and airs, which they keep singing and whistling at their work to the great annoyance often of their mates, when they could have their minds occupied with the contemplation of some useful problem. There is no mechanic or labourer who has not his mind unoccupied for hours every day, which could be turned to the improvement of his mind, without retarding his work. It is easy for a joiner to try up his stuff and think, and not very difficult for a mason to work a moulding, or square a block of stone, and do the same. I need not point out the advantages derived from this practice, in a moral sense; for he who is generally in a state of mind bent upon self-improvement will find that he cannot spare any for the purpose of thinking ill of his neighbour.

Those who earn a living by daily mental labour will, I believe, find it more difficult to follow the plan of self-tuition than those engaged in a mechanical calling. The constant drag upon the brain day after day, and the monotonous repetitions required in most commercial occupations, create a distaste for the resumption of brainwork during leisure hours; and many have dispositions so constructed that a single irregularity or thought of an existing error in their books or calculations will occupy their attention, to the exclusion of what they may have a wish to study. But there are men who can leave their business heads at their respective offices, and resume their studious ones without the difficulties I have mentioned, and thus triumph over the obstacles which would dare bar their advancement. There are hundreds of examples in history of men who, although following a mental occupation, were nevertheless successful in self-tuition. The consequent inscribing of their names upon the rolls of fame, and the attainment of wealth and honours, were the results of patient application perseveringly pursued.

From the ranks of manual labourers, too, mechanics and others have sprung, men who have been successful in self-tuition, and whose lives should be studied by those who are dis-

atisfied because knowledge will not tumble in pon them by merely glancing at a book. I hall take one for example, and in order to conomise space, leave the reader to seek for hers in their biographies. Ben Jonson, it is id, worked at the building of Lincoln's Inn ith a trowel in his hand, and a book in his ocket. This is very suggestive. The ignorant nd the idle of that time, as of to-day, sneered erhaps at his thoughtful countenance, and ought light of his studious habits; but his ame lives to be honoured by his countrymen as sweet recompense for labour done. While izing on the expressive exclamation which for epitaph is inscribed on his tomb, I thought myself that the life of this great man was an ample of patience and perseverance; that he uld allow his mind to dwell upon the beauties literature, and direct it so as to benefit by the ift of his thought, even though employed in e not very congenial occupation of laying headers and stretchers." To be sure, he was ssessed of genius, but genius has been defined patience.

Much has been said on the subject of providing ubs where working men could meet to have a at together, read the newspapers, play bagatelle, cards, &c., during their leisure-time; but though I am not altogether opposed to such aces of resort, still I am of opinion that much aluable time can be wasted in them. A course self-tuition will answer more effectively the rposes which it is supposed these will achieve; r, to learn, one must study attentively, and e best place to do this will be found to be e's own home. The most that can be done for oung men at such places will be to supply them ith periodicals, newspapers, and often frivolous mpany, keeping which leave no solid benefits hind. Periodical reading is novel reading, and nstant newspaper reading not much better. he former details the romance of days gone by, d the latter records that of to-day. Wading rough the horrid details of a murder actually mmitted will only create a feeling of pain at e utmost, and the report of a scandal and its tendant gossip takes up valuable time—at ast, valuable to all working men, who have so uch need of extending their knowledge for eful purposes. Novel reading excites the taste r mystery, and leads us to view mankind as ne author does, which, in most cases, is purosely intended to be incorrect; and the more reposterous it would seem, the better for the le of the book. He who is persistent in novel ading will find it will not lead to either appy or beneficial results, and unless for ositive relaxation, feasting upon the works even our best writers is absolute waste time. If one's observation be close (and self-uition will make it so), one can imagine novelty nough by studying for recreation the acts of nose with whom one comes in contact. City horoughfares will supply us with vanity, rivolity, mendicancy, profligacy, misfortune, nd ignorance, on the one hand; industry, onesty, perseverance, tact, modesty, and all the ther ingredients that go to compose a novel, on ne other. A couple of hours' ride or walk into ne country will introduce a man seeking recreaon to a rural scene and rustic life, if he be fond f such scenes. A gentleman's demesne, with s broad lands and pictures of wood and water, ill and dale, will supply him with materials for descriptive sketch; and after he has contemlated these, he can then start with his pair of yers, lordly or lowly, his villain, honest man, lown, sage, and all the tag, rag, and bobtail hat go to make up the small fry of a novel; nd before a writer would have time almost to oint his pen, one could be, in fancy, at the end f a hundred similar scenes such as a writer of ction could lay open to his view. And all this ashioned from people and places which one may ave met and seen. From the people specially man could choose characters enough to amuse im, and, by the aid of his mimicking powers, nake them talk and strut before him on fancy's tage until satisfied. And this without the abour and excitement caused by rushing hrough a novel with his brain on fire and his breath in his mouth.

Tramways in Brompton.—A strong opposition is organised, and with good reason,—against the proposed formation of a tramway along the Brompton-road through Knightsbridge. If the projected Bill should become law, the road in parts will be impassable.

THE LEEDS SCHOOL-BOARD SCHOOLS.

AT a recent meeting of this Board, Mr. Woolley read the report of the Sites and Buildings Committee, which recommended acceptance of the following tenders for the school buildings and boundary walls of the Burley-road school:—Excavators', bricklayers', masons' work, and carpenters' and joiners' work, Messrs. Longley Brothers, 4,692*l.* 9s. 6d.; smiths', founders', and ironmongers' work, Messrs. Heaps & Robinson, 366*l.*; slaters' work, Mr. W. Pocock, 329*l.*; plasterers' work, Mr. W. Garlick, 145*l.*; plumbers', gas-fitters', glaziers', and painters' work, 347*l.* 18s. 9d.; total, 5,880*l.* 8s. 3d. The committee also recommended increase of the clerk of works' salary from 2*l.* 2s. to 2*l.* 10s. per week, and confirmation of the appointment of Mr. W. H. Thorp, architect's assistant, at a salary of 80*l.* per year. Mr. Woolley, in answer to a question, said the accommodation at the Burley-road school would be for 705 children, and the average cost per head, including architect's commission, would be 8*l.* 15s. 1d., which was less than any of their other schools, excepting Jack-lane. The report was adopted.

At a subsequent stage of the proceedings, as reported by the *Yorkshire Post*, the chairman asked Mr. Woolley for some particulars respecting the progress of the new schools. He said that he had been at Saltaire in the present week, when he went over the very fine schools there, and he observed that the school-rooms were long and very narrow. The schoolmaster told him that he was very glad that the Leeds School Board had made such a stand in favour of broader schools, for he felt the inconvenience of the narrow system.

Mr. Woolley said that the Board would be glad to hear that their action in regard to the width of schools was appreciated by a teacher at Saltaire, who had had practical experience of the narrow schools. With regard to the three schools that were being erected, he was glad to say they would be ready for occupation in a short time. The Bewerley-street School, he thought, would be a model school, both with regard to architecture, workmanship, material, and accommodation, and it would be at a reasonable cost, as he would be able to show them by figures. From a statement which had been drawn up with regard to the cost of the six schools actually building or contracted for, and which was partly read by Mr. Woolley, the following is given:—

School.	Children accommodated.	Total cost of buildings.	Total cost per child, including commission, at 10 square feet per child.	Total cost of school and site.	Total cost per child at 10 square feet.
		£. s. d.	£. s. d.	£. s. d.	£. s. d.
Bewerley-street, Hunslet District	854	9,083 15 8	10 12 8	10,461 9 8	12 5 0
Primrose-hill, North District	675	6,380 17 1	9 8 9	7,801 6 7	11 10 9
South Accommodation-road, Hunslet	660	5,802 14 9	8 15 10	8,386 4 5	12 14 1
Jack-lane, Hunslet	579	5,068 14 0	7 9 3	6,309 0 0	9 2 10
Beeston, Holbeck	419	3,936 2 0	8 15 4	4,559 8 6	10 3 1
Burley-road West	705	6,174 8 3	8 15 1	7,905 18 7	11 4 3

The Rev. J. H. F. Kendall, commenting on Mr. Woolley's remarks, said he hoped Bewerley-street School would not be a model school, for several reasons. It appeared that it was going to cost over 12*l.* per child, and only the other day he received a communication from Middlesbrough of a very excellent school there that was going to be built for 4*l.* 10s. per head. The large rooms were too broad for their length, and the class-rooms were too big compared with the large rooms. Another thing, there was no communication internally between the three departments, and he thought that a defect. He also thought the covered playgrounds were going to be much more expensive than they need be.

SALE OF HOUSE-PROPERTY IN LEEDS.

SEVENTEEN lots of surplus property purchased in connexion with the street improvements of the Leeds Town Council were offered for sale by auction, on behalf of the corporation, by Messrs. Hepper & Sons, of East Parade. Eight of the lots were sold for an aggregate of 11,538*l.* 5s.

Lot 1 was a corner site at the junction of Kirkgate with Call-lane, having a frontage of 29 ft. 8 in. to the former, and 43 ft. 5 in. to the latter street, comprising an area of about 82 square yards. This lot is at present used as a licensed public-house. Sold for 50*l.* per yard; total, 4,100*l.*

Lot 3 was a shop, house, and yard, having a frontage of about 14 ft. to Kirkgate, in the occupation of Mr. G. Walker, 66 square yards. Sold for 27*l.* per yard; total, 1,782*l.*

Lot 4. A shop site, having a frontage of 27 ft. 6 in. to Call-lane, 56 square yards. Sold for 15*l.* per yard; total, 840*l.*

Lot 7. A shop site, having a frontage of 20 ft. to Call-lane, 94 square yards. Sold for 14*l.* 10s. per yard; total, 1,363*l.*

Lot 8. The workshops, brewhouse, and outbuildings, situated in the Regent Inn-yard, containing 102 square yards. Sold for 6*l.* per yard; total, 612*l.*

Lot 9. A corner site, overlooking the Corn Exchange and the junction of Call-lane, Market-street, and Duncan-street, having a frontage of 69 ft., about 78¼ square yards. Sold for 19*l.* 10s. per yard; total, 1,525*l.* 17s. 6d.

Lot 16. A plot of land, lying between the property of Mr. Walter Stead and Albion-street, having a frontage to such street of 22 ft. 6 in., 9 square yards. Sold for 25*l.* per yard; total, 225*l.*

THE NEW BOARD SCHOOLS IN ROSS.

THE ceremony of laying the memorial stone of the new Board schools for the parish of Ross, Herefordshire, has taken place in the presence of a large number of spectators. The stone was presented by Mr. George Pearson, architect to the Board. After the Education Department had approved of the plans drawn up by Mr. Pearson, twelve contracts were sent in, the lowest, that of Mr. William Bowers, of Hereford, at 4,697*l.*, being accepted. The money for erecting the building and purchasing the site will be borrowed at 3½ per cent. interest, payable in equal annual instalments spreading over fifty years. Some time in March the contractor commenced the work, and the foundations have been put in, and the work fairly advanced. The site is in Cantilupe-road, and comprises an area of 3,200 square yards, purchased for 1,000*l.* The surface was much out of level, the difference between the levels in the Cantilupe-road and Henry-street being 12½ ft. The site having been quarried a few years ago necessitated a portion of the foundations being carried a depth of 17 ft., being more than the height of the schools to the wall-plate at the Cantilupe-road level. The foundations are in concrete. The walling is of local stone with shoddy face, and pointed with black mortar. The dressings are to be of Corsham Down Bath stone. A tracery window to the board-room will add to the ornate appearance of the edifice, and there is a bell-cot 60 ft. in height. The dimensions and accommodations are as follow:—

Boys' School	61 by 20	120
,, Classroom	20 by 18	
Girls' School	61 by 20	120
,, Classroom	20 by 18	
Infants' School	80 by 22	180
,, Classroom	20 by 22	
Total, at 12 ft. superficial area for each child		420

The boys' and girls' halls, used as cloak-rooms, will be 20 ft. by 18 ft. There will be retiring-rooms, lavatories, and the usual out-offices, with sanitary arrangements. The open spaces will be appropriated for playgrounds, and there will be covered sheds for open-air recreation.

English Artizans and the Vienna Exhibition.—Ten artizans, representing various trades of the town, and selected by the Birmingham Chamber of Commerce to report upon their respective industries at the Vienna Exhibition, have left for Vienna.

DEFECTIVE DRAINAGE OF PENGE.

FLOODING OF HOUSES.

THE inhabitants of Penge have, for some time, been in a state of much consternation arising out of the defective drainage of the district, by which several of the houses have been flooded, doing considerable damage; and last week a public meeting of the ratepayers was held on the subject, when it transpired that the evil was traceable to the misconstruction of the sewers. Amongst those present were several members of the Lewisham Board of Works, in whose district Penge is situated.

Mr. Elkington, one of the members present, and who stated that he laid down the sewers in the National Freehold Company's estate, near Penge, observed that as the sewers were now constructed, it seemed as if there was an attempt on the part of the designer to oppose the universal laws imposed by nature. He had been trying, for instance, to make a quart go into a pint-pot, and attempting two or three times to make water go up a hill. The sewers had not been laid down on a right principle.

On the part of many present a strong hope was expressed that an improved state of things would soon be brought about. The hamlet was rapidly increasing, and already the lower part contributed a large amount of money to the Lewisham Board of Works. In answer to an inquiry, it was stated that an independent surveyor who had been appointed to examine the sewers had already commenced the duties, and was now at work.

WALLS AND FLOORS OF RACKET COURTS.

SIR,—In answer to your correspondent, "H. D. E.," respecting the best materials to plaster the walls and floor of a closed racket court, I beg to suggest trowelled Portland cement for the walls, and the same material, left rough with the hand-float, for the floor. I used this to the whole of the internal walls of the New Standard Theatre, Bishopsgate, six years ago; and I have no doubt the worthy proprietor, Mr. J. Douglass, will allow your correspondent to inspect, and form his own opinion as to its suitability. D. J. TUHEY.

SIR,—In answer to "H. D. E.," as to walls of a racket court, good Portland cement,—Messrs. Bazley, White, & Co.'s best special,—rendered in one coat; fine sand, trowelled to a fair surface, half and half in one coat, thoroughly saturating the brickwork before applying the cement; and for specimens of same done by me, eight open courts and one closed, at college, Harrow-on-the-Hill; six open courts, Hailybury College, Hertford Heath, and other courts; Prince's Club, Hans-place, Sloane-street,—all good specimens: they have stood the hard balls these twelve years, a good test. WILLIAM PULHAM.

SEWER VENTILATION.

SIR,—The question of sewer and house drainage ventilation is a matter of grave importance. It has not hitherto received that amount of attention and anxious inquiry which it fairly demands, and I am glad to find a discussion opened in your columns by a gentleman of Mr. Lemon's standing, who must have had considerable experience in this subject. Many towns are quite at a stand, and the great evil of non- or badly-ventilated sewers and drains is in full force, in consequence of there being no satisfactory solution of the difficulty.

Respecting sewer ventilation, I am in a position to record a successful experiment by a gentleman in the midland counties, who owns a large factory in a populous town. A connexion was formed from the main sewer to a factory-shaft, 80 ft. high, by about 200 ft. of 6-in. stoneware pipes, the joints being in cement; and when I tested it, it was producing marked effects, by withdrawing at least 100,000 cubic feet of air every twenty-four hours. The result is eminently successful, and the action is energetic and constant, as proved by the "test-pipe." Such a volume withdrawn continually must cause a great change of air in the sewer in the locality of the connexion. The action of the chimney-shaft does not cease with the closing of the factory, but is continued (of course with diminished power), not only during the night, but for days after, which action is proved by a simple test. So long as the temperature of the air in the chimney is higher than that of the external air, so long will there be a circulation resulting from the different densities of warm and cold air.

I believe there are now some half-dozen or more of these shafts in operation in the same town, and they are all equally effective, and work without interruption.

Objections have been made to this system. Some allege that these gases are not destroyed, and that they will descend and again prove a nuisance. This is a mistaken idea; for the heat of the air in the base of the chimney would destroy much of the noxious quality of the gases, and the smoke, which is principally carbon, would absorb a great deal; but, independently of these agencies, the high temperature of the *ascending* air of the shaft causes so great a rarefication that it acquires a buoyancy which causes it to rise so high that it is carried "clean away," and then the oxygen of the air soon converts the noxious gases into perfectly inert compounds. The provisions for the disposal of such emanations are so complete that we need not fear any evil consequences when so discharged into the air. All gaseous matter becomes so thoroughly mixed with the vast ocean of air, and so diluted and changed in its properties, as to become quite harmless. GEO. H. STAYTON,

Borough Engineer, Ryde.

NEW DOCKS AT SHARPNESS.

A BRIEF description of these docks will be interesting. The new entrance to the docks will be at what is known as Holly Hazel Pill, and outside the entrance will be a couple of open timber piers, running out nearly to the low-water line, the heads of which will be about 400 ft. apart. The entrance itself will be 60 ft. wide. Next to the entrance is the tidal basin, 550 ft. long and 300 ft. wide. Then comes a lock 320 ft. long, with three pairs of 60 ft. gates; the sills of the two next the tidal basin being at the same level as the entrance, and the other 24 ft. below the top water of the canal. The lock is made of such a length as to enable the large-sized vessels to pass into the canal, and by having three pairs of gates, the ordinary sized craft will pass through with a considerable saving of water. Next to the lock is the discharging dock, 2,200 feet in length, of varying widths, and occupying an area of 13½ acres. The depth of water will vary from 28 ft. 6 in. to 24 ft., but will remain at one level. The dock gradually narrows towards the swing-bridge, connecting the rails and roads on both sides; beyond this is the cut to join the existing canal, which will be about 720 ft. in length. For the accommodation of vessels requiring repairs at Sharpness, a graving dock is also being constructed. This will be about 350 ft. long, with a varying width of from 50 ft. to 80 ft.

INTERESTING DISCOVERY IN WORCESTER CATHEDRAL.

A DISCOVERY, which is likely to prove interesting and instructive, has just been made within the ancient precincts of the College-hall, known to archæologists and antiquaries as having been the refectory or dining-room of the monastery formerly connected with the cathedral, and in modern times appropriated as a school-room for the college boys. The cathedral authorities, anxious to enlarge the accommodation of the school, had given directions for the removal of the somewhat unsightly orchestra at the east end of the hall, and during the progress of the work, as described by the local *Herald*, some of the plaster having fallen off, a small piece of moulding was observed underneath, which led to the discovery of a reredos of great antiquity and magnificence. To remove the whole of the plaster was a work of some delicacy, great care being necessarily required not to injure the moulding. In the space thus cleared there is a central panel in the form of a quatrefoil, 11 ft. 6 in. in height, containing, it is believed, the figure of our Saviour, but it is in so mutilated a condition that this cannot with certainty be ascertained. On one side of the figure there is a shaft in the later Norman style, with capital and base, but on the other side the upper portion of the corresponding column is gone. The spandrels appear to have contained emblems of the four Evangelists, their outlines being sufficiently revealed to lead to that conclusion. The whole of the emblems, as well as the central figure, have been chipped flush with the wa that is, the reredos has been sacrificed by so Vandal plasterer, who wished to make a smoo wall. On each side of the central panel there a two niches with groined canopies in a good sta of preservation, but the figures, for which th were clearly intended, have disappeared. Abo these niches, again, there are indications richly-crocketed canopies, with pinnacles a buttresses, the whole indicating elaborate pai and costly workmanship. It is thought pr bable from the patches of colouring and t tarnished lustre of the gilding, which still s vives the destroying hand of time, and the s more ruthless hand of man, that the discove is one of considerable importance in an arch ological and historic point of view, as indicati one of the earliest and most splendid specime of art connected with the cathedral.

It should be added that on the south side the reredos there is an *aumbry* or receptacle the wall containing an oak shelf curiou honeycombed with age and rot.

THE MANCHESTER TOWN-HALL CONTRACTS.

THE question of the Town-hall contracts h been considered at some length by the Ma chester City Council. The town-hall sub-cor mittee reported that tenders for the completi of the town-hall had been received as follow G. Smith & Co., London, 131,371*l.*; Ma Foggatt, Cheetham-hill, 105,833*l.*; R. Neill Sons, Manchester, 97,850*l.*; and T. Clay & Se Droylsden, 93,500*l.* Mr. Waterhouse, the arc tect, reported that his estimates for furnishi the building in accordance with his designs, a the summary of specification already read them (except that for the windows red deal substituted for teak), amounts to 114,05 Before the quantities were taken, in fact, August, 1870, his rough calculations for th work amounted to 91,370*l.* 7s. 10d., which, owi to the rise in labour and material, would pr bably be represented by 103,000*l.* at the prese time. This showed a discrepancy of 11,00 between his present and former rough calcu tions. The committee resolved to recomme to the council to accept the tender of Mess Clay & Son. After a discussion the report w adopted unanimously.

THE PROPOSED TESTIMONIAL TO MR. HENRY COLE, C.B.

SIR,—The proposed testimonial to Mr. Hen Cole seems to me of such exceptional interest all classes, that I do not hesitate to offer n own very cordial expression of approval. For is not only in the decorative arts and art man factures that his influence has been so lo potent, but, as it seems to me, his indomitab energy and thoroughness have beneficial affected every branch of art, science, and comme school education.

No one familiar with my name in connexio with the institution of which Mr. Cole is th head will suspect me of crediting the manag ment with infallibility; but whilst I am awa that many of the positions originally and do matically assumed have, in the light of i creased knowledge and experience, been suc cessively abandoned as untenable, so much h been accomplished in other and newer direction that these early failures must count as nothin in comparison with the magnitude of later suc cesses. The South Kensington Museum h been brought to its present magnificent propo tions in the teeth of such virulent opposition and persistent ridicule as would have discour aged and disgusted most men, and again which no ordinary man could have successfull worked. It is now in itself a monument fo national pride, which should ever be associate with the name of its founder, and in the pre sence of which all personal envy, malice, an uncharitableness (and there has been too muc of each) must for ever stand abashed. Th cause of popular art has triumphed, and art i the narrow sense of architecture, painting, an sculpture—the exclusive art of wealth an nobility, the art which is alone the great man's possession—no longer proudly claims its fals pre-eminence.

By the labours of more than twenty years Mr. Cole has proved that the true mission o art is not to minister to the luxury of the few but to ameliorate the condition of the many.

at it should enter into the humblest life, and deem poverty itself from some of its most volting and squalid wretchedness. Therefore, trust that whatever form the proposed testi- onial may be made to take, it will be limited r no class restrictions, but be at once an aphatic, unanimous, and adequate expression the nation's gratitude through the voice of e people. C. HENRY WHITAKER.

We wish to draw attention to the fact that a eeting will be held at Willis's Rooms on Friday, e 11th inst., at three o'clock, to consider the bject. The Marquis of Westminster will reside.

ROPOSED INCREASE OF DOCK ACCOMMODATION AT CARDIFF.

A SPECIAL meeting of the Chamber of Commerce, says the *Bristol Times*, has been held for e purpose of considering the desirability of oreasing the dock accommodation of the port Cardiff. Mr. Batchelor read a paper, in which e elaborately detailed a scheme for constructing w docks on the waste land between Cardiff nd Penarth. To carry out this scheme, he stimated that a sum of about 750,000*l.* would e required, and the bulk of this amount he roposed should be supplied by the various railay and other companies having an interest the development of the port. The remainder, out 250,000*l.*, he suggested, could be raised y the public. Several members of the chamber xpressed their concurrence in the scheme, and was unanimously agreed that the present mount of dock accommodation is totally inadeuate. The chairman, however, thought the me had not yet arrived for increasing the ccommodation to the extent proposed by Mr. atchelor's scheme, and he expressed his opinion hat the new basin in course of construction ould meet the present requirements. Ultiately, the following resolution was carried *em. dis.*: "That, in the opinion of this meeting, is absolutely necessary that additional dock ccommodation should be provided with the ast possible delay."

TRADE DISPUTE ANENT BACK-DAY MONEY.

ON Tuesday the whole of the masons emloyed by Messrs. Robson & Son, of Durham, icked up their tools from the new works of the ale Training College, and their stated grievance that employers have no right whatever to btain what is known in the North as "a running-a-day-in-hand." The "*Dorum*" masons conend that whatever the custom may be in other ounties it is not in accordance with trade usages their own city, and they are determined to esist its introduction.

Messrs. Robson, having received the legal otice from their men, determined on their side maintain the principle of a back day in hand, nd the men have since got work elsewhere. ad times!

HE METROPOLITAN BOARD OF WORKS AND COMPENSATION.

IN the Sheriffs' Court for the county of Middlesex, a two days' protracted inquiry has occuied the attention of a special jury and a rmidable array of Q.C.s to determine what ompensation should be allotted for nearly the estruction of a whole street.

The evidence and arguments would occupy early the full space of the *Builder*, but the ollowing digest of the case contains the facts s elicited.

Messrs. Tubbs & Lewis, the plaintiffs, are lastic web manufacturers, in Old-street and Vilderness-row, and their warehouses are of reat magnitude, employing some 500 hands, nd the Metropolitan Board of Works required he claimants' premises for a new street, cutting hrough the line of warehouses. The plaintiffs laimed no less than 70,000*l.* for damages and alue of their lease, and the surveyors for the Metropolitan Board of Works endeavoured to ut down the claim to the lowest valuation, 9,822*l.* As usual in cases of this nature, surveyors on the other side valued the damage omewhat differently from the defendants, and ssessed it at abont 63,741*l.*

The jury went over the property, and the assessor, Mr. Manisty, Q.C., very considerately left the valuation in the hands of the jury, who, after a deliberation of nearly an hour, awarded the sum of 45,054*l.* as compensation for the buildings.

DECLINE OF IRON SHIPBUILDING IN ENGLAND.

THE unmitigated rise in the prices of iron, coke, and coal, added to the extra wage of labour and reduction of hours, is being felt.

The employers in the iron shipbuilding trade at Sunderland, on the Wear, have been compelled to give notice to their hands for a reduction of wages to the extent of 10 per cent. on all the different classes of "iron men," and of sixpence per week on the wages of shipwrights and joiners. It is a fortnight's notice expiring on Saturday week.

The trade, usually so brisk on the "Wear," is now in a very depressed state, there being few orders for new steamers in the market.

That this altered state of the shipbuilding yards in the North will speedily reach the Southern and Western ports seems likely; for on Monday morning last Blackwall and the Isle of Dogs were far from being so active as of late, and there has been a rumour in this quarter that shipowners are finding iron ships too expensive to charter or freight, and intend returning to the wooden vessels and ancient masts and rigging.

THE TRADES MOVEMENT.

Exeter.—The carpenters and joiners have resumed work, after having been on strike for two months, for a reduction of the hours of labour from 58 to 54 per week, and an increase of 5½*d.* per hour in wages. They now go in to work for 56½ hours per week, and each man is to be paid according to his skill.

Bristol.—The operative labourers employed at the extensive buildings of the Midland Railway sheds, Barton-hill, have struck work, the reason being that one man employed by the firm refused to become a member of the Labourers' Union.

Leamington. — The Leamington Builders' Association met to consider whether a conference should be held with the operatives, who have been on strike three months. The men demand that 54 instead of 56½ hours should constitute a week's work, and an advance of wages. The meeting was opposed to a conference.

Sheffield.—A mass meeting of engineers, who are agitating for an advance of 2*s.* per week, and a certain provision in the scale of payment for overtime has passed a resolution, declining the masters' suggestion that arbitration should be resorted to. A strike was the inevitable result.

Lydbrook. — The masons working on the Severn and Wye branch of railway, now in course of construction at this village, sent in a formal demand for an advance of wages to the extent of 6*d.* per day. The present wages are 5*s.* a day, or 30*s.* per week. The rise, if granted, will bring them up to 33*s.* per week. They assert that if it is not complied with by Saturday they will then cease to work on the line.

THREATENED STRIKE.

THE Master Builders' Association, in deference to an earnest appeal from the Labour and Capital Department of the Social Science Association, have issued a circular to the committees of the masons and carpenters, consenting to receive a deputation from the men, with the view of discussing the matters in dispute, so as to avert, if possible, the impending great struggle between capital and labour. The members of the Social Science Association have addressed circulars also to the committees of the men, as well as to the masters, inviting them, in the interests of all parties, to use every effort to endeavour to settle the dispute, either by arbitration or mutual compromise. We warmly endorse the recommendation.

SIR,—I have a particular aversion to controversy by correspondence, but it is necessary for me to trouble you once more in order to clear myself from what would appear to be a gross misstatement. I fully exonerate Mr. Hannen and the committee of employers from any intention to wilfully misrepresent anything that occurred at our interview in July last, and I am sure Mr. Hannen and the other gentlemen will give me credit for equal respect for the truth. I do not think Mr. Hannen has damaged my quotation by giving the remainder of the paragraph; for if, since last July, terra-cotta had taken the place of stone, masons would not be seeking an advance of wages, but would most probably be searching for other sources of employment; but inasmuch as terra-cotta has not taken the place of stone, I might fairly be excused for holding the promise good. Permit me to give in full one other paragraph to which I have previously referred. In reply to question, Mr. Lucas says,—"When you make a demand on me for 9*d.* in March, I should try to get a few of those fellows that are working for 6*d.* down in the north. With all your power, you will not keep men at 6*d.* in one part of the country, within a few hours by rail off London, when they can get 8½*d.* or 9*d.* here, if it can be [shown] they will be fairly treated; but if they increase largely there, and there is plenty of work here, you will get an increase there is no doubt." As Mr. Hannen supplied a quotation for me, I will return the favour. I admit Mr. Trollope said it was impossible to bind themselves to what may happen in March; but his reason against a definitive promise was the uncertainty of our commercial prosperity, and instanced the promise made to the building operatives in 1865 for an advance of wages, to commence in the spring of 1866, and the difficulty they (the employers) experienced in making good their promise, through the financial failures of that memorable year. Myself and colleagues saw the force of Mr. Trollope's reasoning, and were content to bide our time; but, happily for us, the spring of 1873 has not witnessed commercial calamities like those of 1866. Terra-cotta has not superseded stone; the men of the north are still clinging to their native districts; in many instances they have (this summer) had their wages increased and working hours reduced, numbers of the towns working forty-eight hours and a half weekly for wages varying from 30*s.* upwards. If the above facts do not constitute promise, it is strongly implied. Our impression of their meaning was this:—"Do not insist on absolute promises, but should trade be good, no doubt you will get the advance." Personally, I would willingly submit to the decision of any impartial person whether or not I can be charged with misrepresentation. For myself, I am deeply pained that any misunderstanding should have occurred. Still more grieved am I that up to the present time no peaceful solution of our differences has been found, knowing that the best interest of both parties is seriously menaced by the prospect of a strike.

H. BROADHURST, Stonemason.

SCHOOL BOARDS.

Newcastle.—The Snow-street School-Building Committee recommended the acceptance of Mr. Whichello's tender for 9,600*l.* for the erection of the Snow-street Schools. In reply to Mr. Luckley, it was explained that Mr. Whichello had originally tendered for 9,450*l.*, but had afterwards discovered that he had made a mistake of 1,000*l.* On the architect (Mr. Johnson) having effected certain alterations in the plans, Mr. Whichello had submitted the present tender. The tender was accepted.

ARCHITECTURAL ASSOCIATION OF IRELAND.

AN ordinary general meeting was held at the Rooms of the Association, 212, Great Brunswick-street, Dublin, on Thursday evening, the 26th ultimo, the president, Mr. J. J. O'Callaghan, in the chair.

Mr. R. C. Millar read a paper on "Levelling," explaining the level, and mode of using the instrument. In the discussion which followed, Mr. J. Longfield, C.E., described a field-book very much in use in America, in which there are but three columns in place of five, and the reduction of the levels is done as the survey proceeds.

As this was the final meeting of the session, a ballot then took place for the election of a committee and officers for next session, Messrs. Allen and Swan being scrutineers, which resulted as follows:—

President.—Mr. J. J. O'Callaghan.
Vice-President.—Mr. W. M. Mitchell.

Committee.—Messrs. Chas. H. Brien, Thos. H. Longfield, Daniel J. Freeman, R. S. Swan, J. L. Robinson, Geo. C. Henderson, Wm. Butler, W. G. Doolin, and R. D. O'Brien.

The members of the committee so appointed, who were present, then retired, and on returning submitted the following list of officers to the general meeting, which unanimously confirmed their election :—

Treasurer.—Mr. Daniel J. Freeman.

Librarian.—Mr. W. G. Doolin.

Auditors.—Messrs. J. Holmes and W. Fennell.

Hon. Secs.—Messrs. Thos. H. Longfield and John L. Robinson.

CHURCH-BUILDING NEWS.

Hastings and St. Leonards.—The chief stone of the new church to be erected in Priory-road, on the West-hill, has been laid. Mrs. Mendham, (sister of the Rev. W. T. Turner, Ore), has purchased a site, and completed arrangements for the erection, at her own cost. The spot chosen is just north of Belle-vue-terrace, at the point where the new Plynlimmon-road joins Priory-road. Messrs. Jeffery & Skiller, the architects, designed a building in the Early English style, comprising nave, aisles, chancel, tower, and vestry, and affording seats for 340 persons. Mr. John Howell was chosen builder, and his men commenced work in January last. The walls had reached the floor-level about Easter, and it was then intended to lay the memorial stone; but a legal difficulty having arisen as to the patronage of the new church, a delay occurred until the matter was satisfactorily settled. The walls, meanwhile, had been proceeded with, and have now attained a considerable height. At the east end the work was suspended. The commemorative stone was placed just above the floor-line of the chancel, below the east window.

Winkleigh.—Considerable progress has been made this year with the restoration of All Saints' Church, under the architect, Mr. J. F. Gould, of Barnstaple, and his clerk of works. Exteriorly, the church is almost complete, little requires to be done, and already a greater part of the glazing is put into the new windows; the glass being supplied by Mr. Pepper, of London. Some time, however, must elapse before the interior is thoroughly restored; but a good deal of the work is in a forward state, and although no seats are yet to be seen, and the marble and alabaster pulpit is not in position, nevertheless much of the heavy constructional work has been got over. The oak work of the various roofs appears to be nearly complete. The roofs are rich in carved work, some of it old, but much new, and these are being made more elaborate by the chromatic decoration that is being applied to them. This is now in the hands of Mr. J. Thorne, of Crediton, decorator. The carved bosses, wall-plates, crestings, angels, and the front faces of the ribs,—these lay very close to each other,—are painted, whilst the body of the roof is left plain. The decoration of the north aisle is almost complete, and the Loosedown aisle is now in the hands of the artist; the nave has yet to be commenced. The floors are all laid ready to take the seating, and the tiles for the avenues, supplied by Messrs. Minton, Hollins, & Co., of Stoke-upon-Trent, have arrived. Most of the carved wood and stone work in connexion with the outside and inside of the church is complete; and the carving of the oak seat-ends, of which there is an unbounded selection of designs,—scarcely any of the bench-ends being alike,—are being proceeded with. The decorative treatment the inside walls are undergoing is a revival of ancient sgraffiti work. The colours used in this ornamental plastering, at Winkleigh, are Spanish brown, for the ground, with light grey Bridgwater lias lime surface. This work upon the north aisle walls, and the north wall of the nave, is finished, the ornamentation taking the form of running bands of varied designs. The architect has been assisted in the manipulation by his clerk of works, Mr. George Vickery. The sculpture of the tympanum, over the south-west doorway, is now under consideration, and the subject having been decided upon, we believe it is to be at once proceeded with. The bells, by Messrs. Mears & Stainbank, of Whitechapel, arrived several months ago, and, to the number of six, were hung in the places they are to occupy in the tower. It is deemed advisable, however, not to ring them until the church is finished, and the new work has had time to settle. Mr. J. Dendle, builder, of Barnstaple, has the whole of the carpenter's and joiner's work in hand; and the seating is being made principally at his workshops in that town, and under the eye of the architect, who also has offices at Barnstaple. Mr. Harry Hems has in hand the contract for the sculpture and the carving, in wood and stone. Mr. Pinckard, the donor of the funds for carrying out this work, is represented by the Rev. W. T. A. Radford, M.A., of Down St. Mary.

Wentworth.—The foundation-stone of a new church, to be erected by Earl Fitzwilliam, in memory of his lordship's parents, has been laid at Wentworth. Mr. J. L. Pearson, of London, is the architect, and the contractor, Mr. W. G. Booth, of London. The edifice will be 40 yards in length, and will be built of Dunford Bridge and Darfield stone. At the west end will be a porch leading into the nave, which is 46 ft. wide. There will be north and south transepts and two side aisles. At the east end of the church will be the chancel, 19 ft. by 25 ft.; and a vestry, 12 ft. by 17 ft. The space between the nave and the chancel will be occupied by the organ and choir on one side, and on the other by the pew of the Fitzwilliam family. Over that portion of the church between the nave and chancel a tower will be raised to the height of 87 ft.; from the tower a spire will be carried to the height of 96 ft., making the total height from the floor-line 103 ft. There will be a large clock on the north side of the tower. The stonework inside will be of dressed ashlar.

Great Gransden.—The old church of Great Gransden has been reopened after restoration. The roofs throughout (excepting that of the south porch) have been taken off, repaired, and newly leaded; the old north porch has been replaced by a new one, with provision for the heating-chamber; and a new organ-chamber and vestry are added on the north side of the chancel, with a large arch opening into the chancel, the vestry being separated from the organ-chamber by the old rood-screen. The windows of the aisles and clearstory have been repaired, and reglazed with glass of agreeable tints, and ample provision is made for ventilation. A new floor above the apex of the tower-arch is added for the ringers, and lighted by new quatrefoil windows on the north, south, and west sides of the tower. The tower, now no longer needed as a vestry, has been thrown open to the church; the arch is the original one, and under it is placed the font. The whole of the internal stonework has been cleaned and re-faced. A new stone string-course is added the whole length of the nave on both sides, and moulded stone corbels to the nave roof. The internal walls have been faced anew with stucco. Original oak open seats have been utilised, and new ones made to correspond. The seats and nave piers up to the springing of the arches had at some time or other received a coat of thick black paint; this necessitated in the case of the seats the steeping of every portion in strong solutions to effect its removal, and in the case of the piers the actual reworking of the stone. Round the walls of the aisles is a panelled dado or wainscot. It has a moulded and battlemented capping about a foot above the top of the seats. The floor of the nave is paved throughout with red and blue tiles, in various patterns; the chancel being paved with Maw & Co.'s tesselated pavement, and the altar-space of the same material, but more costly. The entrance to the churchyard has been improved by the new boundary-wall being brought nearer to the road, and new stone piers, with dwarf stone wall and low ornamental fencing fixed upon it. The whole of the works have been carried out (under the superintendence of Mr. G. Vialls, architect, London) by Mr. Brown, of Lynn; the stone-work having been executed by Mr. Wade, of St. Neot's. The original contract exceeded 2,500*l.*, but as the work proceeded it was found that considerable additions would have to be made to render the restoration complete, the carrying out of which brought the total cost up to 3,187*l.*

University College Architecture.—The following is a list of prizes presented in Professor T. Hayter Lewis's class on June 27th :—Fine Art (senior class). Donaldson silver medal, H. Saxon Snell, jun., of London; certificate, Frederick W. Sturge, of Gloucester. Junior class. Prize, Frederick W. Sturge, of Gloucester; certificate, H. Saxon Snell, jun., of London. Construction (senior class). Donaldson silver medal, W. H. Haynes, of London. Junior class. Prize, H. Saxon Snell, jun., of London.

SCHOOL-BUILDING NEWS.

Faringdon.—A schoolroom just erected on t Lechmere-road has been opened. The work h been carried out by Mr. Williams, of Abingdc from the plans of Messrs. Lansdowne & Shc land, of Swindon. The entire cost has be about 800*l.* The style is Early Gothic, a there are two entrances—one for boys and o for girls,—and two separate play-ground The building has been erected in the form the letter T, and it is well-lighted and ventilate From the roof are suspended four star burne of six jets each. The roof is open timber, stain and varnished. The school is built of loc stone, with Bath stone dressings. A lar clock has been presented to the school by Mess Abel, jewellers, Market-place. Mr. Walte M.P., was present, and addressed the meeting.

Burford.—The foundation stone of a ne school and school-house at Burford, has be laid by the Hon. Miss Rushout, sister of Lo Northwick. The edifice, which is to be erecte from designs by Mr. Ernest A. Day, of Wc cester, will comprise a school-room, 32 ft. 18 ft., and a class-room, 16 ft. by 12 ft., wi a house for master and mistress; the whol with the play-ground and garden, occupyi half an acre of ground, which Lord Northwi (at whose sole expense the school will be bu and maintained), has purchased from the rect of Burford, besides a portion of half an ac of glebe land on the Lockyey, which h lordship has also given. Mr. Page Manson, Tenbury, is the contractor for the brick, ston and plaster work; the woodwork will be execute by his lordship's staff of carpenters, under th superintendence of the foreman, Mr. S. Dover The site is central and convenient, being clo to the rectory and the church.

Aldeburgh.—On opening tenders for buildi new schools here, according to plans and specifi cations, prepared by Mr. Barnes, of Ipswic the tenders received were found to be fou viz., from Mr. Luff and Messrs. Gibbon Ipswich; Smyth & Sons and Wright & Son, Aldeburgh. The lowest (1,243*l.* 5s. 2d.) wa that of Messrs. Smyth & Sons, and this wa accepted. The promises of cash to the prese time amount to about 1,300*l.*, *i.e.*, supposin the present National Schools realise the su expected: thus it is hoped everything is pr vided for the successful carrying out of th proposed scheme.

Dartmouth (Devon).—The School Board of th borough of Dartmouth are building their firs school, for 140 boys, 140 girls, and 85 infants, i an open part of that town, called the Highe street. The foundation-stone was laid by M Mark Fox, J.P., &c., the mayor, who attende with the council and its officers in state for th purpose, on Wednesday, the 18th ult. Ther was also a public luncheon, over which Mr. T. Matthews, chairman of the School Board, pr sided. Mr. Thomas Lidstone, of Dartmouth diocesan surveyor, is the architect; and th Messrs. Winsor, Nunn, & Rowe are the contrac tors. The cost of the buildings, after deductin the value of some old materials re-used, i 1,637*l.* 14s. The buildings are to be complete in six months.

Publications.

Effective Sections of Girders. By A. D. DAWNA [C.E. No. 25, Walbrook. 1873.

ARCHITECTS have often felt the want of ready calculated sections of girders, suitable for a spans and all kinds of building. Mr. A. D. Dawnay, to meet this want, has just now issue a sheet of them which can scarcely fail to b found useful. The iron used is supposed to b equal to a tensile strain of 20 tons per squar inch, and the girders are designed with th plates and angles most readily obtainable.

Plan of the Temple Church, London. By T GOODMAN, Cliff-town, Southend, 1873.

Mr. THOMAS GOODMAN has published a plan o the Temple Church, as the first of an intende series of illustrations of the round churches handed down to us from the Order of Knight Templars. The plan has been executed b actual measurement, so as to distinguish th more ancient portions of the church from th rest, and also to afford a comparison of th building with others of the same class. Th author says it has been "prepared with grea care," and, after some examination, we full

mit the correctness of this assertion. It is a ry interesting plan of a supremely interesting ilding.

THE *Leisure Hour* has some pertinent obser- tions on "The Spirit of Unrest."—"There is a erish spirit about which, while it seems to omote a kind of activity which some admire, really not the spirit of strength, and is no n of healthy growth. It is well to be wake-, but there is a wakefulness which is a symp- n of disorder. It is well to pursue an occupa- n, but there is an eagerness of pursuit which sorbs us with excessive intensity. It is well light the candle, but it is unwise to burn it at th ends. It is well to work, but it is possible r work to pass into such a strain to toil that e workman is consumed before he has any ght to be worn out. And is not the spirit of ese times one of unrest? The temper in nich men live and work seems to become more portunate, and to spread its contagion. It vades even those places which have long joyed repose. There is, no doubt, still some fference between the pulse of life in town and the country; but the difference is gradually sappearing. We take pride to ourselves for aving covered the face of the land with rail- eys, and by means of the wire brought remote stricts into immediate communication with ne metropolis and each other. . . . . In riving to be masters everywhere, we make rselves universal servants. And our boast of berty is seen in the creation of a new species slaves. We are ground by the machinery ith which we affect to supersede or assist bour, and wear ourselves out in the prosecu- on of that which is intended to save us from ouble."

Miscellanea.

Trial of Street Cabs at the Interna- ional Exhibition.—A trial of the street cabs hich have entered the competition set on foot y the Society of Arts, has taken place at the nternational Exhibition, in the vacant ground n the western side of the building, and was onducted by the committee by which the wards are to be made. The trial was merely reliminary to others that are to follow. Im- rovement of the Hansom seems to have been he object on which most of the competitors ave set their hearts, though why this should be o we can hardly see. To get rid of the two- wheeled cab in all its forms as a dangerous uisance would be more desirable. The writer f this has several times seen the cabman, and nce the passenger, pitched out of it headforemost ver the horse, on occasions when the animal uddenly stumbled and came down, throwing up ehind and forward round the wheels the body f the cranky and dangerous "safety" vehicle. Besides, it is either insufferaby draughty, or close nd stuffy. No doubt as a close box the pitching ut of the passenger might be prevented at the ost of the window-glass,—and of the victim's ace; but the whole thing is an abomination. In he competition there are but few four-wheeled abs. The most noteworthy example possesses, t is maintained, the great advantage of being sed, open or closed, with scarcely any trouble, nd without any complicated mechanism likely o get out of order. The judges will give their wards on a future day, but of course, in a matter like this, the ultimate decision will rest with the public.

Ships' Lights and Board of Trade.—Mr Harvie, manufacturer of ships' lights, has had printed at the Glasgow City Steam Printing Works, and circulated, a letter to Mr. T. Gray, assistant secretary, Marine Department, Board of Trade, showing how the abortive results of the recent ship light competition were occasioned; also the past blundering and incom- petency of the Board of Trade regarding ship lights. In this letter Mr. Harvie shows why he declines from self-respect to take any part in the renewed competition which has been called for. As we have here only one side of the question, of course we are not in a position to express any opinion on it.

Dorchester Borough Surveyorship.—It is stated on good authority, says the *Dorset Chronicle*, that Mr. John Wood has relinquished the office of surveyor under the Town Council. Several of the former candidates for the post have been communicated with.

Outbreak of Fever at Wrington. — An alarming outbreak of fever has occurred at Wrington, according to the *Bristol Times*. The medical officer of the Chard Sanitary Authority says, that when residing at Wrington, and during the years 1868, 1869, and 1870, the vestry, at that time the sewer authority, defeated every attempt he made to put the village in a sanitary condition. In vain he pointed out to them that the whole village was a subterraneous hotbed of sewage deposit, requiring only a little stimulus to cause it to again break forth into a severe epidemic, such as the one which visited it in 1866, in 1868, in 1870, and from which it is now suffering. About 150 cesspits and the cleansing of two slaughter-houses ran into the water- courses, and the effluvium at times was sicken- ing and pestiferous. The very village pump, which is now supposed to be the cause of some of the fever, in 1870 had sewage soaking into it, and the same may be said of many of the wells. Mr. Scarth, the present rector, who came into the living in 1871, would not reside at the rectory until he had succeeded in obtaining a perfect system of pipe drainage. This was finished in November, 1872, but up to the present time very few of the houses have been connected with it, and a house drain even connected with a sewer, if improperly trapped, is a certain producer of fever—a mere distillery of poison. This is only one of many villages, in a most unsanitary state, in the Axbridge Union. An independent officer of health should be appointed.

Society for Improving the Condition of the Labouring Classes.—The annual meeting of this society has been held at Willis's Rooms, the Earl of Shaftesbury in the chair. The report read by the secretary, Mr. C. Payne, stated that the society had been exceedingly successful in all its operations. The chairman said the society was a model one. Its promoters had proved that houses could be erected at a certain cost, in which the poor could live in comfort and decency. Their example had been followed by the Peabody trustees, Sir Sydney Waterlow, and by many workmen's societies. It had been found that the adaptation of houses was a cheap way of providing good rooms for the poor, enabling them to live in tenements without disease, disorder, or overcrowding. The great mass of the people desired improved dwellings, and he was certain that wholesome houses enabled the poor to earn more money, as they were less liable to illness. This society and other organisations were doing, and had done, much good, but he felt they had scarcely commenced, and certainly had hardly touched the great evil of overcrowding. What was wanted were dwellings for the very poor, whose incomes were about 10s. or 12s. a week. The well-paid artisan had plenty of house accom- modation, but the very poor were crowded together in ill-ventilated rooms—two, three, and even four families in one room. The Right Hon. Cowper-Temple, M.P., Canon Conway, and others addressed the meeting.

Public Abattoirs for London.—Dr. Letheby, medical officer for the City of London, was examined recently before the Select Committee of the House of Commons on noxious busi- nesses, and gave evidence strongly in favour of the abolition of private slaughter-houses and the substitution of public abattoirs similar to those of Paris, Berlin, Edinburgh, and Glasgow. He recommended that the Whitechapel butchers should repair to Deptford, where the Corporation of London had plenty of space, and he suggested that the north-western and western portions of the metropolis might for the present be served by the abattoirs in the neighbourhood of the New Cattle-market, Copenhagen-fields. When asked whether the metropolitan butchers would not feel that a certain responsibility was taken off their shoulders if animals were slaughtered at public abattoirs, he replied that the most respectable men in the trade now dealt largely at the Dead Meat-market. Dr. Letheby added that he saw no reason why an immediate sani- tary reform might not be carried out by utilising Deptford and Copenhagen-fields until abattoirs in the outskirts of the metropolis could be provided.

The North Cambridgeshire Cottage Hospital.—Miss Trafford Southwell has just announced an additional gift to this hospital of 5,000*l.* to the endowment fund, and an annuity of twenty guineas during her life. Miss South- well has contributed in all 16,000*l.* to the hospital besides her annual subscription.

An Order of Merit, Scientific, Artistic, and Literary.—Earl Stanhope, in the House of Lords, on Friday in last week, moved an address, praying her Majesty to institute an order of merit for those who had deserved well of their country in literature, art, or science. The order of the Bath, his lord- ship remarked, had no doubt been greatly extended, but its civil department was confined to persons in the public service. It had not always been so, for Sir Joseph Banks had in his day received the red ribbon. The absurdity of the present rule might be shown by a single illustration. The Queen had been advised to grant the Bath to Professor Owen, because he held a salaried appointment under the Crown; but he apprehended that it would not be in her power, under existing rules, to confer a similar distinction upon an equally eminent man, Sir Charles Lyell. As for the contempt which was sometimes poured upon stars and ribbons, he could only say that similar language might just as well be applied to the flag of England. Earl Granville, while very much agreeing with the noble earl, saw great practical difficulties in the way of carrying his motion into effect, and adduced a few weak arguments against the motion, which was negatived without a division, after Lord Houghton, as a sort of compromise, had urged the further extension of the Order of the Bath.

The Musical Education of the Blind.—An enthusiastic and crowded meeting, on behalf of the Royal Normal Academy of Music for the Blind, has been held in the Mansion House, under the presidency of the Lord Mayor. Amongst those present were the Marquis of Westminster, Lord Shaftesbury, Sir Rutherford Alcock, Sir T. Gladstone, Sir H. Johnstone, M.P., Mr. Alfred de Rothschild, and various other influential gentlemen. Letters of apology for non-attend- ance were received from Mr. Edwards, M.P., who enclosed 100*l.*, the firm of Messrs. Roths- child enclosing 300*l.*, and others, enclosing sub- scriptions. The Lord Mayor, in course of his address, remarked that the experiment was not a new one, as for some time a small college had been established at Sydenham, and he entirely agreed with those who had watched the growth of the college that it should be so enlarged as to be able to accommodate those who applied to it throughout the United Kingdom. It was hoped that when the college was out of debt it would be made almost self-supporting by the payments of the scholars. Appropriate resolutions were unanimously passed in favour of the object in view,—the opening of a subscription-list, and aiding the committee to raise 25,000*l.* required for the establishment of the college on a perma- nent and enlarged basis for the higher and musical education of the blind. The committee have already collected 6,000*l.*, and about 1,000*l.* more were collected at the meeting.

The Fracture of Cast-iron Pier Cylinders. Mr. J. C. Trautwine, in a communication to the *Journal of the Franklin Institute* on the fracture of cast-iron pier cylinders, says:—"It is not, perhaps, generally known to the profession that cast-iron cylinders, composed of sections bolted together through inside horizontal flanges, and filled with concrete, as is usual when employing them for bridge-piers, &c., have, in several instances in the United States, split or cracked asunder entirely around the circumference, under the influence of severe cold weather. The reason of this, I presume, is that the outer and more exposed cylinder tends to contract to a greater degree than the inside and more shel- tered concrete, and that the hold which the inside flanges have upon the solidified concrete in which they are embedded, prevents the con- traction from taking place without rupture of the cylinder. Unless suitable means be applied to prevent this, the efficiency of such cylinders may be much impaired. It has been suggested that an inside lining of vertical wooden staves, projecting inward as far as the flanges do, will be an effective remedy. Other methods will no doubt present themselves. My object is merely to give greater publicity to an important fact."

Devon New Police Offices and Barracks, to be used as the head quarters of the Devon Constabulary, have just been completed at Exeter, at a cost of about 5,000*l.* The entire building, as well as the external fittings, have been carried out from the designs of Mr. E. H. Harbottle, of County Chambers, Exeter, archi- tect. The clerk of works was Mr. James Jerman, of Exeter. The builders were Messrs. Moass, of Exeter.

Greetland and West Vale Mechanics' Hall.—The foundation-stone of a Mechanics' Institute has been laid here. The work was commenced in March last, and has progressed rapidly. The total cost, including land, is estimated at 2,900*l.*, and the building is to comprise a large hall for public entertainments on the first floor, having an orchestra, gallery, and waiting-room accommodation. The ground-floor is set apart for news-rooms, class-rooms, offices, and other conveniences. On the lower level of the basement are to be the keeper's residence, fire-engine rooms, and cellaring. The lower end of the structure will be left unfinished for the present, but it is intended at some future time to erect a shop and dwelling-house at this point. The style of architecture is Italian, freely treated, and the edifice is being carried out from the designs of Messrs. Horsfall, Wardle, & Patchett, Halifax.

The Royal Academy.—The *conversazione* on Wednesday evening last was a brilliant gathering, and a great success. A list of the persons present known in the ranks of art, science, literature, wealth, and fashion, would fill a page. Friends of the Academy look with some interest for the result of the election of a secretary. Amongst the candidates, we hear of Mr. John Piggott, jun., Mr. W. Leverton Donaldson, Mr. J. Leighton, and Mr. Critchett. The architectural class appears to be making fair progress as to numbers. Some of our student readers should inquire into the regulations and scope of the class, and see to what extent it might be useful to them. When facilities are provided, and not taken advantage of as they should be, the ardour of those who would strive to increase such facilities is repressed, and harm is done.

Chester Cathedral.—The Dean and Chapter held, as usual, a Chapter meeting last week, when, in consequence of the absence of their architect, Sir Gilbert Scott, their deliberations in regard to the future work of restoring the cathedral were considerably limited, but the following resolutions were agreed to, and orders given:—That the present roof of the choir should be decorated according to designs submitted by Messrs. Clayton & Bell, and approved by Sir Gilbert Scott; and that the walls of the choir should be scraped. No decision as to the position of the screen separating the choir from the nave was come to, but it is understood that the dean and chapter are unanimously in favour of restoring the screen to its original position, and removing the present heavy and unsightly structure.

Building Accident at New Reservoir, Malvern.—At the last Local Board meeting the surveyor gave an account of an accident at the new reservoir to an arch, from the too quick striking of the centre, the arch not having been turned forty-eight hours. More centres to carry on the work were on their way from Warwick to Malvern at the time of the accident. He had no idea that the centre would be struck so quickly by the contractor, or certainly would not have allowed it. He considered the materials used were of a first-class nature. Mr. Haddon, architect, and a member of the Board, said he found the design perfect. He thought the contractor deserving of censure for not properly centreing the arches. There was not sufficient concrete used, but that did not affect the cause of the accident. Mr. Archer thought the mortar was not of sufficient strength, nor the concrete properly made.

Proposed New Midland Institute and Coal Exchange for Yorkshire.—The members of the Midland Institute of Mining Engineers, says the *Sheffield Independent*, have been desirous that a building large enough to accommodate a number of persons, should be erected in some part of the Yorkshire coal-field. The council of the Association or Institute have the matter under consideration, and it is not unlikely that an appeal will be made to the district coal-owners for the purpose of erecting a building which will also act as a sort of coal exchange, with offices, &c., at which the representatives of the various collieries can meet and transact their business. At present there is no public building to represent the trade, and business has chiefly to be transacted at hotels and inns in the various towns.

Large Bricks.—Colonel Andrew Derrom, of Paterson, U.S., has taken out a patent for forming bricks into very large blocks, to be used in the erection of buildings in sections.

A Water-Saw.—In a report on the mechanical inventions shown at the International Exhibition, *à propos* of the sand-blast, the Rev. A. Rigg, says the *Newcastle Courant*, suggests that there may be a property in water which has not been utilised. "While standing," he remarks, "near a new steam-boiler, which was being tested under water-pressure, and when the load was near its maximum, a small and (except when the sun shone upon it so that the light was decomposed) imperceptible jet appeared: the writer was about to pass his finger across it, when the workman said, 'Don't do that, sir; a boy had his finger cut off with one of those jets.' Might not a jet of water be used as a saw?"

The Recent Conviction of Carpenters for Conspiracy.—A memorial has been addressed to the Home Secretary asking him to take steps to procure the release of the three carpenters convicted at the Central Criminal Court for intimidating a fellow workman in the employ of Messrs. Jackson & Shaw, builders; but a reply has been received to the effect that the right hon. gentleman regrets that there is not sufficient ground to justify him in acceding to the prayer of the memorial.

The Palace of the Mikado of Japan destroyed by Fire.—The *New York Tribune*, of June 13th, describes the burning of the great palace of the Mikado of Japan. It was caused by a lady-in-waiting to the Emperor's bride having knocked over a mageer of charcoal, which fell on the Emperor's bed, and a fire destroying a building valued at 2,000,000 dolls. was the result. Native troops and firemen were at hand, and preserved order, but could do little else.

Kensington Vestry-hall.—It is proposed to make certain alterations and additions to this building, to form new board and committee rooms, and generally to improve the office accommodation. The vestry, at their ordinary meeting on Wednesday last, issued instructions to Mr. Alfred Williams to prepare plans, &c., for the contemplated works.

The Statue of Sir James Outram for India.—The bronze equestrian statue, by Mr. J. H. Foley, R.A., of Sir James Outram, commissioned for India, has been set up on a temporary wooden pedestal in Waterloo-place, Pall-mall. It weighs seven tons. In a few weeks it will be shipped for India.

TENDERS

For the reconstruction of Matthews-road, Walton-on-Thames. Mr James Bateman, surveyor:—

Gardener	£759	0	0
Nicholson & Goddard	578	5	0
Farley	561	0	0
Stewart	550	0	0
Pratt	430	0	0

For new additions to Rose Bank, &c., at Reigate, for Mr. R. Russell. Mr. J. F. Mathews, architect. Quantities supplied:—

Nightingale, Brothers	£2,451	1	0
Cook	2,425	0	0
Scragg & Waycott	2,327	9	0
Holdsworths	2,087	10	0
Barnes*	1,970	0	0
Higginbottom	1,928	10	0
Willcox (accepted)	1,650	0	0

* House and carriage-drive only.

For erecting new schools and master's house, at Dalham, Suffolk. Mr. E. B. Blatchley, architect:—

Rowling & Sharp	£470	0	0

For works, Grange Park-road, Leyton, for Mr. Read. Mr. J. Knight, surveyor:—

Bulford (accepted)	£315	10	0

For nine warehouses, in Dantzic-street, Thorniley-bow, and Well-street, Manchester, for Peverley & Blakey. Messrs. Edmund J. Sherwood & Richard Thomas, jun., architects. Quantities supplied. (The excavating and basement stories already let to Samuel Adshead for the sum of 1,350*l.*):—

Warburton	£10,450	0	0
Clark	9,920	0	0
Davis	9,710	0	0
Joseph Thompson	9,650	0	0
Southern	9,335	0	0
Foggett	9,317	0	0
Williamson	9,200	0	0
Greenup & Co.	9,140	0	0
Davison	8,997	0	0
Thomas	8,960	0	0
John Thompson	8,898	0	0
Rutherford	8,840	0	0
Wood	8,722	0	0
Johnson	8,699	0	0
Herd	8,637	0	0
Scarlett, Brothers	8,585	0	0
Holt	8,560	0	0
Neil & Sons	8,547	0	0
Adshead (accepted)	8,500	0	0

For alterations and additions, Buckhurst, near Wokingham, for Mr. C. T. Murdoch. Mr. Edward Power, architect. Quantities supplied:—

Perry, Brothers	£7,237	0	0
Barnicoat	7,021	0	0
Shrives & Son	6,946	0	0
King & Sons	6,672	0	0
Silver & Sons	6,584	0	0
Brass	6,481	0	0
Scrivener & White	6,474	0	0
Newman & Mann	6,444	0	0
Fish	6,310	0	0
Colls & Son	6,287	0	0
Simpson	6,209	0	0
Hibbins	6,175	0	0
Adamson & Sons (accepted)	6,095	0	0
Niblett & Sons (withdrawn)	5,646	0	0

For rebuilding the premises of the London and County Bank, Aldersgate-street. Mr. C. Jocelyn Parnell, architect. Quantities by Mr. James Schofield:—

Moreland & Co.	£9,175	0	0
Cooke & Green	8,790	0	0
Simpson	8,727	0	0
Perry & Co.	8,395	0	0
Rider & Son	8,342	0	0
Conder	8,295	0	0
Hill & Sons (accepted)	8,234	0	0

For building St. Luke's Church, Cambridge. Mr. William Smith, architect:—

Fast	£3,462	0	0
Sharp	3,310	0	0
Clark	3,260	0	0
Bell & Sons	3,189	0	0
Brown	3,175	0	0
Horsman	3,100	0	0
Loveday	2,958	0	0
Thoday (accepted)	2,888	0	0

For building new schools, at Lene, Leicestershire. Mr. William Smith, architect:

Richardson (accepted)	£368	0	0

For restoring church, at Hargham, Norfolk. Mr. William Smith, architect:—

Ward (accepted)	£470	0	0

For ten cottages, Angel-road, Edmonton. Messrs. Kennard & Buck, architects:—

Slegg (accepted)	£1,200	0	0

For buildings at the London Jute Works, Ponder's-end. Messrs. Kennard & Buck, architects:—

Linzell & Son	£2,410	0	0
Bayes & Ramage	2,374	0	0
Rist & Brown	2,2 6	0	0
Field & Sons	2,170	0	0
Crook & Wall	1,920	0	0
Ditto, in concrete (accepted)	1,826	0	0

For new Wesleyan chapel, at Raunds, Northamptonshire. Mr. W. Ranger, architect:—

Perkins	£3,730	0	0
Fletcher	2,989	0	0
Richardson, Brothers	2,890	0	0
Strether & Lovell	2,784	0	0
Smith & Son	2,770	0	0
Coates	2,753	0	0
Vickers	2,740	0	0
Holdsworth	2,349	0	0

For the erection of a villa residence, at Lower Sydenham, for Mr. G. Gough. Mr. W. S. Sams, architect:—

Byth	£850	0	0
Eathey	770	0	0
Nightingale	746	0	0
Blackmore & Morley	693	0	0
Wagner (accepted)	677	0	0
Aitchinson & Walker	675	0	0

For villa, on Plot 12 E., Crystal Palace Park Estate, for Mr. Evans. (Revised tender.) Mr. John Norton, architect. Quantities by Mr. S. J. Thacker:—

Tibbitt, jun. (accepted)	£1,087	0	0

For works, Canal-road, Hoxton (Contract 1), for Messrs. Dottridge & Barr. Mr. C. S. Aubrey, surveyor:—

Bulford (accepted)	£729	0	0

TO CORRESPONDENTS.

O E.—J. L. B.—M P.—Professor L.—Revnd. A. L.—F. H M.—Quondam.—J. & Co.—H. Son, & H.—S. & T.—R.—H. C.—J. H.—H. R. W.—A. W.—F. H. C. (offer would be useless).

We are compelled to decline pointing out books and giving addresses

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the writer, not necessarily for publication.

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The Builder.

VOL. XXXI.—No. 1588.

Ancient Pottery.

GREAT is the antiquity of the potter's art; too great, indeed, for computation. There were potters at work in ancient Rome; in olden Etruria; in heroic Greece; and before those dim old times in Babylonia, Assyria, and Egypt. They were busy with their clay, and wheel, and clever hands, when Alexander was conquering the world; when Cyrus sat in his chariot, victorious; whilst the fifty Greek princes were building the good ship *Argo*, by the side of the blue sea at Iolcos; whilst Nebuchadnezzar browsed in the fields; when the Queen of Sheba came to Solomon, with her spices, and gold, and precious stones; whilst Job sat shaven, with his mantle rent, on the ashes, discoursing with Eliphaz, Bildad, and Zophar; when Samson showed Delilah "all his heart"; when Jael put her left hand to the nail, and her right to the workman's hammer; whilst Joseph wore Pharaoh's ring on his hand, and ruled all the land of Egypt; whilst Rebecca stood at the well, dipping her pitcher into the water for the steward and his camels; in a word, long before those peaceful, pastoral days, when Abraham sat at the door of his tent, in the heat of the day, looking out upon the radiant plains of Mamre, dotted with his flocks and herds, men-servants and maid-servants, camels and asses. In all this time, and in all these places, scarcely two potters worked alike. The Scriptures make frequent mention of these industrial artists, and always as though they were free to fashion their clay as they chose, to finish their work or throw it away, to make vessels of honour or dishonour, to form them or break them. Jeremiah tells us he was commanded to go down to the house of the potter, and continues, "Then I went down to the potter's house, and, behold, he wrought a work on the wheels. And the vessel that he made of clay was marred in the hand of the potter; so he made it again another vessel, as seemed good to the potter to make it. Then the word of the Lord came to me, saying, "O House of Israel, cannot I do with you as this potter?" saith the Lord. "Behold, as the clay is in the potter's hand, so are ye in mine." In consequence of the licence thus given by the nature of the material, every man's work must have been, in some slight particular, idiocratical. At this distant day, keramic critics can not only distinguish the pottery of one ancient people from that of another, but, in the case of Roman and Greek work, assisted by inscriptions, they can occasionally name the pottery in which it was executed; and, though still more rarely, the name of the artist who made a particular specimen. We will follow one of these skilful critics, Dr. Birch, through a work on keramic products, which he first issued a few years ago, but has now enlarged and revised, entitled "A History of Ancient Pottery."* We must follow him warily, however, because he has to take for his premises the insufficient, and sometimes inaccurate, descriptions given by travellers, English, French, and German, supplemented by references to piles and piles of archæological journals in various languages, only verified occasionally by the sight of specimens in available museums.

Dr. Birch's first chapter groups together Egyptian and Oriental pottery. After deducting a somewhat lengthy account of brick and brick-making, of terra-cotta sarcophagi, and inscribed cones, we may obtain a tolerably clear idea of the diversity of purposes for which the ancient Egyptians employed pottery, and of the numerous forms it assumed to meet the calls upon its services. Where we should take a cask, the ancient Egyptian thought of a vase; and where we should require a casket, he thought only of another vase of another form. Where we should employ a bucket, or a hod, or a pot, or a pan, or a pail, he took always his vase or clay vessel. Half-buried in the floor of his cellar stood the great jars that held his supply of salted geese, salted fish, or meats; and resting in stands, or rings, stood open-mouthed vases for oil, honey, and wine. In conical jars he kept his dates and figs; in cylindrical jars his paints. He made vases to hold the mummies of his sacred birds, and to hold the entrails of the dead; and he formed toy-vases, two inches high, for playthings for his children. Amphoræ, or two-handled vases, he used for incense, or matters to be carried in procession, or as offerings to the gods; three-handled vases for water; and jugs with one handle for milk, and water. His daughters kept the cosmetics for their wheat-coloured skin in a jug with a spout to it; but we will not look beyond this sacred mystery. We feel, as the Doctor evidently wishes his readers to feel, that every purpose had its specially-shaped vessel; but we also feel, as all his readers will do, that the illustrations should have been selected and arranged so as to show the different forms and assist the inquirer in distinguishing them. We are told, too, of deep dishes for bread, roast meats, and water-fowl; of pots for ointments or salves; jars for spices and drugs; drinking-cups; but they all remain, like dissolving views, blended with one another, for want of more definite illustration. There are, it is true, several specimens figured, some singly and some in groups; but they do not convey the special information that a student first wants, and without which he must grope about in the dark. Here and there, too, a note adds to the confusion of ideas, instead of explaining difficulties. Still describing Egyptian pottery, Dr. Birch says, "Different clays were applied to particular uses. The cruse, or ancient Egyptian lecythus, a vase adapted for holding a small quantity of liquid, probably oil to feed lamps, or medicaments, of which only a small quantity was required, was of a brown or black paste. These vases seem to have been in use in Palestine, one having been found amidst the ruins of Tyre; and their clay and varnish enable us to comprehend the nature of the Semitic potteries. Some are of a light red-coloured paste. . . . . Other vases, as well as jugs or bottles, with oval bodies and narrow necks, are made of a black clay; and one specimen, with a compressed globular body, has a lustre indistinguishable from the lustrous glazes of Nola and Vulci." And then, as we think we have mastered these facts, our eye is attracted to a note which contradicts all we might infer from the mention of this last specially-glazed Egyptian vase, saying, "This unique vase is probably Greek." To the seasoned archæologist, of course, such stumbling-blocks would be mere pebbles in the path. We speak only in the interest of inquirers.

In the chapter on Assyrian Pottery we come once more upon the glowing accounts Mr. Layard brought home from Nineveh concerning the terra-cotta tablets, cylinders, and prisms of the Assyrians, telling the history of the great monarch, Tigleth-Pileser, or detailing the campaign of Sennacherib against the King of Judah, or the dedication of the Birs Nimrud, by Nebuchadnezzar, to the seven planets. Here, again, we have lengthy mention of bricks and brickmaking. All that Sir H. Rawlinson, Rich, and Porter observed in the course of their respective travels is set down anew, with reference to the potter's gradual progress. "The state of the arts in Babylon and Egypt," the Doctor remarks, "helps to elucidate some obscure points in the history of brickwork. At the large temple at Warka, Mr. Loftus found an edifice built of cones 3½ in. long, laid horizontally, apex and base alternately, and embedded in a cement of mud and straw. Some of the cones dug up on the platform had straw still adhering to their sides. The clay o these bricks was of a dingy yellow, but many had their bases dipped in black or red paint. By means of these colours they were arranged in ornamental patterns of diamonds, stripes, and zigzags." Of Assyrian pottery proper, there is a group figured, as well as the small heart-shaped vase Mr. Layard found built into the back of a wall at Nimrud, and a bowl found in the same great centre; and that is all.

Greek pottery is the real stronghold of the Doctor. He devotes half his substantial volume to its history, and gives it upwards of seventy illustrations. There are 20,000 specimens of Greek vases ranged on the shelves of European museums for him to handle; or, as some reckoners have it, 50,000. Of these 2,000 are in the British Museum, ready to hand. Here, again, a few illustrations to the point would have been of service. It is not enough that he has told us of the great tubs, or casks, called *pithoi*; of *amphoreis*, or casks of a small er size of *phialai*, or saucers; of *pinakes*, or plates; of *chytroi*, or pots; of *oinochoai*, or jugs. He should have shown specimens of all these articles of pottery. To be sure there is a *pithos* figured; but it is only a representation of that to which Diogenes retired, found figured on a fragment of a lamp. Only a handle of an *amphora* is illustrated, and so on. We feel the real valuelessness of all classifications when we come upon such a passage as this, albeit it is illustrated with a very attractive group of vases:—"The next style has been designated by various names, as Carthaginian, Corinthian, Egyptian, Phœnician, and Doric. It is, however, better to comprise all these varieties in the general term of Archaic Greek." Perhaps it is better to be clear of the possibility of a wrong guess; but is this the measure of our discernment in these matters? A Rickman, ready with "An Attempt to Discriminate" &c., is clearly wanted in this department of antiquities. However, not to dwell on weak places, we pass on to hear what Dr. Birch has to tell us of the patchings and mendings of the numerous vases found in ancient tombs in Southern Italy:—

"Almost all those in the museums of Europe have been mended, and the most skilful workmen at Naples and Rome have been employed to restore them to their pristine perfection. Their defective parts have been scraped, filed, re-joined, and supplied with pieces from other vases, or else completed in plaster of Paris, over which coating the restored portions are painted in appropriate colours, and varnished so as to deceive the inexperienced eye. But, either through carelessness, or else owing to the difference of process, the restorations have one glaring technical defect: the inner lines are not of the glossy hue of the ancient glazed ones, and there is no indication of a thick raised line, which follows the original outline in the old paintings. Sometimes the restorer has pared away the ancient incrustation, and cut down to the dull-coloured paste of the body of the vase. In some rare instances, a figure has been painted in a light red or orange oil paint on the black ground, or in black paint of the same kind

* History of Ancient Pottery, Egyptian, Assyrian, Greek, Etruscan, and Roman. By Samuel Birch, LL.D., F.S.A., &c. New and revised edition. London: John Murray, 1873.

on an orange ground. But in all these frauds, the dull tone of colour, the inferior style of art, and the wide difference between modern and ancient drawing and treatment of subject, disclose the deception."

All this is sad. Pietro Fondi manufactured sham ancient vases at Venice and Corfo. The Vasari family, in Venice, followed suite. Even Wedgwood is impeached. There is a "Flint Jack," it appears, in this department of antiquities, as in most others. But are we sure that more than emulation was intended by either of these firms?

Considerable pains have been taken to arrive at the correct age of Greek vases, by comparing them with paintings on the walls of tombs, coins, and other phases of art. Vases of the Doric style, with maroon figures upon yellow grounds, are ascribed by different authorities to the three or five centuries, B.C. Black-figured vases are indicated, by the subjects represented on them, as belonging to the sixth century B.C. Those with red figures are ascribed to the same date. Vases with monochrome paintings, in which there is no distinction of sex, have been assigned to the ninth century B.C., after which date the painter Eumarus made the innovation of distinguishing the sexes. Vases with three-quarter faces are supposed to be about the age of Pericles, B.C. 464; those with full faces, of the time of Alexander of Pheræ, B.C. 369–4, because full faces appear on coins of that date. Those exhibiting expression of countenance are assigned to the days of Apelles, B.C. 313. Transparent draperies are supposed to indicate the age of Polygnotus, or B.C. 436. But all these dates are disputed. The Duc de Luynes, without committing himself to figures, adopts this succession: First, the Doric or Phœnician vases; then those that are covered with a coating or eugobe, like these, of which the black is false, and the glaze pale; next, those with vigorous, massive, archaic, black figures; then imitations of these, more brilliant and better finished; after these, those with red figures, or with black outlines, and figures on a white ground; and lastly the *bizarre* imitations by the potters of Lucania, Messapia, and the Bruttii. And, of course, this classification is equally open to question. As soon as we come to inscribed vases, much of this uncertainty vanishes, because the characters are almost conclusive testimony. The dialect is another guide. With these aids, then, if we cannot distinguish the actual goblet from which Heracles quaffed his "solemn draught of true religious wine," before he set out to rescue Alcestis, or the cup which held the magic drink Medea gave to Jason, or those that Hebe filled with "nectarous ænomel," we may, at least, without fear of error, refresh our eyes with vases made 700 years B.C., showing the hunt of the boar of Kalydon, or the nuptial dance of Ariadne, or the combat over the body of Achilles, and hundreds of kindred subjects. There are two kinds of inscriptions—painted and incised. They were placed anywhere—on the legs of figures, on the various objects represented, or over or under them, or on the handles, or foot, of the vessel. Instead of writing on a vase, as a Staffordshire potter might do, "For a good boy," the Greek potter wrote, "The boy is handsome," and instead of "A present from Margate," he wrote on the prize vases, "I am a prize from Athens." The artist put his name often to his work; so did the potter. "Such never made Euphronios," wrote a potter depreciatingly of a rival. "The son of Ergotimus, Eucherus, made it," wrote another, more reverently bringing in his father's name. "Hail, and drink this," is written on a cup. "Drink, and do not lay me down," is on a boat-shaped vessel found at Vulci. Another, with foliage painted on it, says, "Nickolaos is handsome; Dorotheos is handsome; seems to me that the one and the other is handsome. Memnon to me is handsome and dear." One vessel is inscribed "The most beautiful female." May we set this down as an offering to a bride elect? "I am the cup of Kephisophon; if any one breaks me, let him pay a drachm; the gift of Xenokrates," wrote a careful potter, at the dictation, probably, of a more careful purchaser. About fifty names of potters have been observed. Sometimes the potter was also the painter. But as a rule, after the potter had formed a vase on the wheel, an artist took it in hand, who traced the subject to be painted in outline, and then handed it to the painter, who, Dr. Birch thinks, executed the whole subject in outline, and returned it to the artist whon incised lines were required. Then it was given to a modeller, who added such parts as were moulded. Then to a fireman, who took it to the furnace, and brought it back perfected. A fireman, for the furnace, and packers, to pack up vessels for exportation, were also employed, it is supposed, in large establishments. There were potteries in several places in Asia Minor, in the Grecian islands, Corfu, Athens, Korinth, Delphi, Patrai, Megara, Laconia, and in some other parts of the continent of Greece, and in several of the old cities of Italy.

To the last part of this section of his work, we must admit, to be fair, Dr. Birch has given exactly the kind of illustration we require for those portions previously mentioned. From twenty to thirty small diagrams make clear, to any capacity, the difference between, we will say, a *prochoos* and a *kotyliskos*, or an *olpe*; or between a *lekythos* and *bombylios*, which no verbal description could do. He has given exactly the kind, we repeat, but not a sufficient quantity. There are still many vessels alluded to in the text, as mentioned by ancient writers, the forms of which must remain hopelessly obscure in the minds of most readers, for the want of illustration. Some vases are illustrated, we must add, without sufficient reference to them in the text, to permit of their identification.

Concerning Etruscan pottery there is not so much to be said. The remains are scarcer; the field smaller. As in the Greek examples, it is the silent tomb that has treasured up most of the specimens that have come to light. We are not to infer, however, that the vessels found in sepulchres were always made for the purpose of being deposited in them, for it is clear that they were simply buried with them as part of a national custom. There are four colours found,—brown-ware, black-ware, red-ware, and yellow-ware. But the Etruscans never attained the excellence in pottery that they achieved in goldsmith's work and engraving on gems.

In a much more copious and certain fashion is Roman pottery treated. From bricks and tiles up to the dainty cup inscribed BIBAMVS PIE, "Let us drink piously," or AMO TE CONDITE, "I love thee, O stored One," the subject is well investigated. Here, as in the Greek section, the Doctor can speak with authority out of his own scholarship and knowledge, instead of merely standing at the stirrup of a traveller, as it were, and gleaning from his talk such observations as relate to the pottery he has seen in the distant lands he has visited. There are as many tiles mentioned as would pave a palace-court; as many lamps as would be required in a triumphal procession; sufficient vases to serve a banquet, or stock a villa; and so on, in equally wholesale quantities, through the various forms of pottery. Homely, indeed, read some of the inscriptions found on the amphoræ mentioned,—"The best Dripping," "Pickle," "Grease," &c. Pleasanter to read is a legend on the neck of one found on the Aventine Hill, *Fabriles Marcellæ, n[ostro] ad felicitatem*, "The workmen of our Marcella to wish her joy"; or on that of another found in the gardens of the Villa Farnese, "Mamertine wine from the cellar of L. Purellus Gemellus." Far from being prized in Imperial Rome, earthenware was looked down upon as a very inferior article. "Gold," says the satirist, "has driven away the vases of Numa, and the brass vessels of Saturn the urns of the vestals and Etruscan earthenware." The bright coral-coloured ware we admire so much went "out of fashion" in Rome. "In the early times of the republic," the Doctor summarizes, "even persons of wealth used only pottery at their meals, as well as for other domestic purposes; but the increase of wealth caused vessels of bronze to be made for many uses for which pottery had been formerly deemed sufficient. In warmth and comfort, however, homely earthenware must have far surpassed the frigid magnificence of services of plate. Under the Empire, glass was used, even by the poor, for drinking-cups, while the rich disdained meaner materials than gems, precious metals, moulded or engraved glass. Earthenware was left for the service of the gods, and the tables of the poor." This was not very respectful towards the celestials, but perhaps it was prudent; and perhaps, also, incorrect.

There are four varieties of unglazed Roman pottery,—yellow, red, grey, and black; and in these such wide differences of colour as to constitute a fifth variety, if not a sixth. The yellow varies from almost a greyish-white to a reddish hue; and the red from a salmon-colour to coral. Pliny mentions eight seats of the manufacture. "The services used at a Roman entertainment," continues Dr. Birch, "presented the same spectacle as those of persons possessing wealth and taste at the present day, to which the potteries of Staffordshire, of Sèvres, Dresden, and China contribute their respective portions. The most exquisite enjoyment was derived from the contemplation of a variety of the products of the human mind and hand, which please by their association and improve by their presence." We are tempted to pass along the tables and lift up some of the chief vases to discern the potters' names. Perhaps, we think, we may find one made by the father of Virgil, who was a potter. Here, let us say, is a bowl of red Samian ware, bearing the name of Divix, by the side of a figure holding a cup. Here is a red glazed cup inscribed in raised letters, BIBE AMICE DE MIO, "Drink, O friend, from my cup." Here is a red plate, with white beaus dressed in oil upon it, for which Martial said the entertainments of the wealthy might be refused. Here is a small black vase, inscribed REPLE ME COPO MERI DE ET, "Fill me up, host; wine is wanting." It would be easy, in this way, to dream through a summer's day.

Celtic, Teutonic, and Scandinavian vessels hold a very different place in the author's regards. Three illustrations, and less than a score of pages of letter-press, suffice for all the notice that is accorded them. They have come to the front within the last few years, and, as yet, have made themselves no place in the esteem of an antiquary whose sympathies are so entirely with the South. A gallant hero, in northern story, boasted that neither the wife he loved nor the arms he bore were fit for any other man. And the same might be said of his pottery. Northern vases are urns, low, wide-mouthed, and sturdy. They have no long graceful necks, no inviting handles, no ready lip; no story, nor legend. At the most they are adorned with a herring-bone pattern, and a couple of clumsy ears, or perforated with holes for thongs, by which they were slung up in the rude huts of their owners. But for all that, those who stand by at the opening of the old graves on the moors and hills, whence these urns are chiefly obtained, as far as our own country is concerned, view them with as much rapture as a Roman antiquary would pour out over a "find" in a catacomb, or a European light upon a vase of ancient Jewish pottery in Palestine. The southern pottery ably represents the southern sunny life, spent in gardens and vineyards, gatherings and games, and conquests; and the crude northern ware is equally communicative concerning the rude life of its owners, their strong rough hands and ways. As we look upon the last we realise the cold, the mists, the bogs, the sunless forests our Celtic ancestors had to deal with, and in its want of beauty see the reflection of their homes in their embanked camps, their continual defence, and poor resources. We can find in it neither pride of work, nor possession, nor indeed any knowledge of letters, for neither potter nor proprietor has placed his name upon any specimen that has yet been found.

In conclusion, Dr. Birch says truly that the pottery of a race may be compared with those fossil remains by which man endeavours to learn the age of the earth, for it bears with it internal evidence of the stratum of human existence to which it belongs. "A due knowledge of the great distinction of the various products of the art of pottery amongst the ancients is essential to a perfect knowledge of the relative antiquity of races and sites. The use of letters is comparatively recent, the glyptic and graphic arts only exist in these later forms as exercised on unperishable materials; but in every quarter of the world fictile fragments of the earliest efforts of the human race lie beneath the soil, fragile but enduring remains of the time when the world was in its youth." And so he sets us down in the far-off days "when all the world was young," in the centuries anterior to those in which Mr. Chaffers and other writers on Mediæval pottery take us up. More method, and a more systematic selection of the illustrations would have made the work perfect. As it is, a multiplicity of facts are gathered together, much as a heap of shards might be preserved by a careful curator, certain that all are valuable, but having no special place for them to be seen to advantage in. Nevertheless, it would be difficult to point to a more worthy authority on the subject.

The Cerne Abbas Highway Surveyorship.—There were ten candidates for this vacant surveyorship, and at the last meeting of the Highway Board, Mr. Richard Hawkins, of Piddletrenthide, was appointed.

LECTURES AND LESSONS ON ART.

MR. F. W. MOODY is as the voice of one crying in the wilderness. In the midst of an age sunk in Gothic barbarity, worshipping the grossest artistic materialism, and overrun and bewildered by swarms of ignorant and self-confident critics, blind leaders of the blind, who rejoice in ugliness and abortion for their own sake, one prophet, at least, is to be found who has not bowed the knee to Baal, and who, true to his high mission,—

"Among the faithless, faithful only he,"—

holds aloft the light which will guide us to all artistic truth. If we are betrayed into speaking somewhat "in Cambyses' vein," this must be looked on with indulgence as a humble and very possibly unsuccessful attempt to emulate the tone and style of our enthusiastic author. Mr. Moody's first volume of lectures,* delivered at the South Kensington Museum, now laid before the public, might in fact be shortly described as an assertion of the superior excellence, beauty, and refinement of every branch of art of the Cinquecento period, accompanied by a general onslaught upon everything and everybody else, interspersed with rules for drawing the acanthus-leaf. This is, at least, the general impression likely to be made upon weak minds by a perusal of the book. The more particular impression paramount above the rest is, that all "critics" are born idiots. Indeed, the wrath of Mr. Moody against all persons whom he comprehends under this term has in it something of the sublime, in its intensity and persistence. We should be sorry to have to count how often the obnoxious term is flourished before the reader's eyes: we only remember it comes wherever the hard words occur, and that is very often indeed. It is some consolation to those who are thus gibbeted, to know that they have no lack of companions in misery, as it is evident that the word "critic," as used by Mr. Moody, signifies any one and every one who is unfortunate enough to have ideas or predilections about art diverse from those inculcated by him.

The eight lectures contained in the volume now published deal with "social and physical accidents," "modern theories," and "education," in the first three; the four following are devoted to the consideration of the principles of composition and application of ornamental art; and the final lecture deals with "material." The remarks on the peculiar hindrances, in modern life, to the cultivation of an artistic feeling and sympathy, arising from social organisation (or want of organisation), as well as on the influence of climate, are what most of us will agree with, and are indeed points which have been remarked upon often enough before. Lecture II., "On Modern Theories," is in the main an attack on the realistic school in art, and contains much in which we heartily concur. The idea that if an artist wishes to paint a Scriptural subject "he must set out at once for the Holy Land, and there, by the aid of the best commentators, endeavour to find the exact scene he has chosen to illustrate," &c., is, in regard to the highest ideal object of art, the appeal to the feeling and imagination, unquestionably an absurdity; and we may sympathise with Mr. Moody when he professes himself "really ashamed to state anything so obvious as that the beauty of a story does not consist in its truth in the sense that the facts related actually took place; and that half the stories of the old mythology are allegories which are as true now as ever they were." It is only fair, however, to distinguish between the treatment of what is accepted as pure myth, and what comes more or less perfectly under the domain of historical fact. Modern criticism and topographical research have brought Eastern scenes and customs, for instance, much more vividly home to us than was the case two or three generations ago, when a dromedary and a palm supplied all the localisation that was demanded or thought of; and if the object of a painter is to bring before modern spectators something of the reality of what they accept as a genuine historical fact, he will certainly gain power towards this end by a study of local characteristics, scenic and human. And this kind of object in painting is not by any means useless or contemptible; it comes with a force of its own to many minds which would be entirely unimpressed by an assemblage of ideal and idealised figures, of no special character or race, however noble in expression and composition. The mistake of those who have been termed "pre-Raffaellites" (a word which might as well be dropped, now that the most distinctive and objectionable mannerisms which disfigured the movement have been dropped also by all its ablest adherents) lies in regarding this realism, a very important and powerful element in a certain class of paintings, as the "be-all and end-all here," and ignoring the fact that there is a higher ideal of painting, appealing entirely to the imagination and feeling of intellectual people, and in which facts are of quite secondary consequence, or are only made use of as the bare material or occasion for the display of a great idea. In regard to this highest ideal art mere correctness of accidental facts is of no consequence; and Thorwaldsen retorted with perfect justice against those who objected to his being employed to carve saints and apostles, because he did not believe in them, "Neither do I believe in the gods of Greece," whose imaginary being had furnished motive for some of his finest works. Regarding the ideal and the realistic as the two opposite poles of art, Mr. Moody gives us in the continuation of this chapter a "scale of art," in which the various characteristics of each of these opposite branches are tabulated, with a certain degree of truth, but with a bias which is amusingly displayed in the line devoted to colour, which is described on the "realistic" side in the words "tendency to be poor"; "accidental and staring": a description which, in our author's point of view, we presume includes Rossetti and Madox Brown! And this bias is still more pronounced when we are told (page 35) that "if a pre-Raffaellite says his system is true, and all others false, you have but to admit his existence and classify him, and you at once see that he will be of no use to you, for he can teach you nothing." We have an idea that some of the artists included under that awkward title could teach Mr. Moody a good deal. In the remarks as to the supremacy and importance of the human figure as the highest medium of expression in art, and the influence which the study of it has in raising men's tastes above any mere peculiarities of fashion in art (page 36), we are, on the other hand, entirely with him; and we must quote also with satisfaction the note (page 28) in which reference is made to the absurdity of the artists and critics of the realistic school in landscape claiming Turner as of their school, and classing his wonderfully poetic creations therewith: a species of critical blindness which is almost inconceivable on the part of persons possessed of ordinary senses and perceptions.

Lecture III., on "Education," is, to a great extent, an attack on what is termed "the academic system," and contains a good deal of not very new, but perhaps not the less necessary, truth, especially as to the general want of intelligent direction in schools of art, and the consequent waste of time on the part of multitudes of pupils in stippling up drawings to a high finish for mere show, learning really nothing, and doing no valuable art-work. It is suggestive that the last protest of this latter kind which we had occasion to notice came from a disciple of the opposite school* from Mr. Moody.

The lecture No. IV., on ornamental art, is a plea in favour of the value and importance of symmetry and even distribution in ornament, a point on which a protest is much wanted, as a balance to the erroneous declamation of the modern worshippers of Japanese art, concerning which it is here roundly said that "it requires no intellect to design in this style." This is true enough; but an eye and feeling for colour it does require to emulate the effect of Oriental ornament in this respect; and it is unfortunate, moreover, that while Mr. Moody thus attacks the shibboleth of one artistic set, he is at the same time ready with a shibboleth of his own, with as little reason. Even granting it to be true that we are to "dismiss from our minds all notion that it is necessary or desirable that ornament should have an illustrative or didactic purpose" (which is rather too sweeping a principle), it by no means follows that "to condemn a piece of ornament because it is made up of nondescript dolphins, of labels, and winged griffins, and make jokes upon so incongruous an assemblage, shows that the critic has not yet commenced the study of art." We suppose it is in pursuance of the predilections here hinted at that Mr. Moody has tagged his own book with ornamental head and tail pieces of griffins with the corners of towels in their mouths, and such other things, of which we must say roundly that we never saw such trash admitted as decorative adjuncts into a book published by a professed ornamentist. We do "condemn" such weak, commonplace "motives" in design, and are prepared to "make jokes" on them, in defiance of Mr. Moody. It is on the same principle that the panels on the wall of the School of Science have been designed; and we must say that we have seldom seen a large amount of ornament spread over a wall with so little of novelty, invention, or interest as in this case. It might with equal justice be retorted on the author that "it requires no intellect to design in *that* style," for it is nothing more than the working up of old and incongruous details of cinquecento ornament. Mr. Moody, in denouncing the narrowness and prejudice of a school of designers in opposition to himself (among whom are some very able men) shows to the full as much narrowness and prejudice in his turn, and with just as little reason.

The suggestions on the treatment of drapery in Lecture V., and those on the elements of ornament in Lecture VI., are useful and suggestive as starting-points for young designers to work from; and perhaps starting-points are all that can be usefully given in such matters; for all that is to be of any value must be worked out from the student's own feeling, on the basis suggested to him. A disproportionate importance seems to us to be attached to the correct drawing of the acanthus-leaf in Lecture VI., several pages being devoted to it. It would be more germane to the matter to have suggested some broad principles as to the invention and treatment of conventional leaf-ornament of a new type; but the author rightly recognises that the Greek acanthus-leaf is no mere imitation of nature, but a generalised symbol of a class of vegetation. We may, however, have many such symbols, derived from many different types in the vegetable world. In proof, we suppose, of the superior excellence of Italian and Classic ornament, we are told in one of these lectures that it is almost impossible to get workmen to execute Italian ornament well, whereas plenty can be found to execute Gothic ornament. Perhaps some Gothic architects would tell a different story; but it is odd that the author really cannot see that the fact, if it is one, is simply due to the present prevalent taste for Gothic, which leads the majority of art-workmen to study its forms in preference to others. Twenty or thirty years ago the case would have been just the reverse. The conclusion of Lecture VI. gives us a list of things that are useful and suitable as parts of ornamental design, and a pretty box of toys it is; as "tools, musical instruments, arms, masks, sceptres, fasces, ribbons," and a great deal more, with the concluding observation that "the thyrsus and ornamental details all form ornament of a very high order in Roman, Cinquecento, and, I may add, in Oriental art, as well." Against which last passage is appended a defiant note that "critics gravely assert that such things, more especially architecture, ought not to be represented at all. We seem to have reached a climax in the philosophy of art," &c., &c. In regard to the common employment of architectural details in some kinds of ornament, especially stained glass, we have often "gravely asserted," and we gravely assert again, that such a treatment is an entire misapplication, and we will judge Mr. Moody from no worse works than his own. If the stained glass windows exhibited a year or two ago in the International Exhibition, and now (we believe) on one of the staircases at South Kensington, do not convert their spectators to our view of the subject, nothing will.

The chapter on the "Proper Distribution of Ornament" (Lecture VII.) presents us at the outset with an illustration of "an example of advanced architecture," in order to show the student how and where ornament should be distributed. We should like our readers to see this specimen of what is recognised as "advanced architecture" by Mr. Moody: some of them would certainly sympathise with our feelings on reading in the same paragraph that "architecture will form the subject of a series of lectures." Before that time arrives, let us trust that Mr. Moody's views as to what constitutes "advanced architecture" will be modified; and that he will

* Lectures and Lessons on Art: being an Introduction to a practical and comprehensive Scheme. By F. W. Moody, Instructor in Decorative Art at South Kensington Museum. London: Bell & Daldy.

* The Rev. St. John Tyrwhitt, in his "Lectures on Art."

arrive at a truer perception also of the genesis of Gothic architecture than to describe it as a style which "discarded square, massive forms for those which imply flexure and ramification,—qualities completely at variance with those of stone"; a remark which implies about as total a misapprehension of the subject as could well be compressed into a single sentence. In some other matters in this and the next lecture, as to the painting of elaborate pictures on ceilings, where they cannot be properly viewed, for instance, and as to the imitation in one material of construction only suitable for another material (arches in wood, panelling in stone, &c.), it seems to be considered enough argument to say that all artists, in all ages, have done it; which, if true (and it surely is not), only proves that there has been a great deal of bad taste and bad art in the world.

We fear the result of a perusal of these lectures must be the conclusion that their author, while making violent and in some respects just attacks upon the prejudices of a certain school, is himself possessed by prejudices as strong, and antipathies as narrow, as any of the members of that school. It was charged against one of our chief historians that he was "too sure of everything"; the chief Government Instructor in Art seems to us open to the same charge; and he would be likely to do more for his pupils, and encourage a broader and deeper feeling for art, if he could only believe that there are genius and excellence in other schools than the cinque-cento, and if he were not quite so certain that he is right and everybody else is wrong.

NOVELTIES AT THE INTERNATIONAL EXHIBITION.

RECENTLY a very interesting addition was made to the Exhibition at South Kensington in the opening of the Queensland Annexe, which is in itself a complete and compact, although a small exposition. The products of this rich and fertile section of our Australasian Colonies have been admirably arranged in a court opening from Room XII., on the eastern side of the Exhibition buildings, in close proximity to the School of Cookery. In describing the locality, the thought occurs that it is scarcely creditable that the daily "Key" should retain, to the embarrassment of visitors, the effete titles of certain courts. The "Belgium Supplementary Court," improperly so called, is this year appropriated in three divisions to the colonies of South Australia, New South Wales, and Victoria, a small space in the central room being devoted to New Zealand. The Queensland Exhibition is located in what was formerly the entrance to the "East Machinery Annexe."

To Mr. Daintree, Agent-General for the colony of Queensland, praise is due for the collection and arrangement of colonial products in this court; and credit must also be given to his able lieutenant, Mr. Kennedy, for his ready politeness in communicating all the information that inquiring visitors may desire.

The first class of exhibits to attract attention on entering the Queensland Annexe are the varieties of indigenous timber produced by the colony. They are very numerous, and strike one as being in a sense peculiar. They include woods that may be useful for scantlings in land buildings, or in shipbuildings; many of them, of fine grain, are beautifully marked, and admirably adapted to cabinet-making purposes; but, on the whole, they give the idea of being rather intractable, and of being all hard to work. There is nothing among them that comes near in quality, for the purposes to which such woods are applied, to Miramachi yellow pine, to red pine, pitch pine, Dantzic, or Memel. The Queensland timbers have, notwithstanding this objection, a variety of decided merits. The country, from its vast area and the diversity of soil, climate, and altitude of its lands, has a greater variety of timber probably than any other of the Australian colonies. The Eucalipti tribe is now established as well entitled to confidence, when applied to building purposes, for its hardness, toughness, and durability. The *Eucalyptus pilularis* reaches a diameter of from 24 in. to 40 in., and a height of from 60 ft. to 80 ft. It furnishes excellent timber for house carpentry. The *Euc. hæmastoma* has a diameter of from 2 ft. to 4 ft., and grows to about 90 ft. in height. It furnishes first-class timber for shipbuilding and wheelwrights' purposes. Numerous other trees of the same family give good timber for various uses, some of them being very durable underground and in water. The *coniferæ* include some very fine trees, of the real character of which, however, a true idea cannot be conveyed from specimens in a small exhibition. The *Araucaria Bidwillii* (Hook), or native Bunya Bunya, has a diameter of from 2½ ft. to 4 ft., and reaches a height of more than 200 ft. The wood is strong and good, and full of beautiful veins, and is capable, it is stated, of being worked and polished with great facility. The cones, that grow with their apex downwards, are very large, and are used as food by the natives. Another tree of the same species, the *Araucaria Cunninghamii*, has a diameter of from 3 ft. to 5 ft. 6 in., and attains a height of 200 ft. This tree covers immense tracts of land, both along the coast and in the interior. The timber it produces is used extensively in the colony for building and other purposes. Sawyers get from 65s. to 70s. per 1,000 ft. for cutting it, some of the trees yielding as much as 10,000 ft. of saleable timber. Numerous other trees, or sections of them, are shown in the Queensland Room that are suitable for house or shipbuilding, or for railway timber, or for ornamental purposes. The Queensland Exhibition contains a large number of admirably-executed photographs, some of them coloured, that give an excellent idea of the scenery of the country, and of the habitations of the colonists, and many of their pursuits. The Exhibition includes an excellent selection of examples of the productions of the colony in cotton, maize, wheat, and other cereals, sugar (thirty-two samples), capital manufactured tobacco, silk, hides, boots and shoes,—a very interesting well-filled case, wool, Angora goat's wool, gums, rocks, soils, including numerous varieties from cretaceous rocks and alluvial soils; a fine show of serpentines, rough and polished; varieties of copper and tin ores; metamorphic ores; palæozoic marbles, various in vein and colour, some of them very beautiful; lead ore; Devonian slate and soils; Queensland coal, mezozoic coal; a case of very lustrous opals, in a crude condition, emeralds, rubies, and other gems; numerous large agates, that are almost as common in Queensland as pebbles are in some other places. There is also a good display of preserved meats, wine, and other products of the colony, and an excellent display of preserved beasts and birds. Among the varieties of Queensland coal, the Allora seam is got at only 45 ft. from the surface, and requires no pumping. It contains 69·31 per cent. of carbon. Among other curiosities the Exhibition has some beautiful coral accretions, emus' eggs, &c.

As apology for the lateness in completion of the Australian Exhibition, the proverb may be quoted, that "it is a far cry to Loch Awe." Good though the apology may be, it does not neutralise regret that our colonists should only make their display when the exhibition is half over. Queensland, as we have stated, is on view. South Australia is in a forward state, and, if we mistake not, Victoria is ready for the public; but New South Wales, alleged to be the oldest and richest of the Australian colonies, is still in a very backward, unfinished condition. The manifest cost in time, labour, and money that has been incurred by the colonists induces, naturally, great regret that they have not been better up to time. Thousands of visitors to the Exhibition have paid their first and last visits, without having had the chance of seeing what our Australasian colonies are capable of doing, and of examining their marvellously rich productions.

We have been favoured with a private view of the space devoted to South Australia, New South Wales, and Victoria, and transcribe a few notes, made on the occasion of the visit.

In the South Australian department there is a very fine display of metallic products, particularly in copper, bismuth, tin, and the native ores, from which these metals are extracted. The Moonta mines exhibit great wealth in purple and yellow ore, bell-metal ore, purple sulphide, and quartz, chloride of copper, and copper pyrites, of which pieces will be shown above a ton weight. The South Australian exhibit shows also an abundance of iron ore, red, brown, and hematite, specular and micaceous, with a quite wonderful variety of wines, spirits, liqueurs, and even beer. They make also a good show of tallow, as may be supposed, and their show of wool, in fleece and in cases, cannot, we venture to think, be surpassed in the world. One of their exhibits, of a totally different character, is a drawing-room table of mosaic inlaid marble work, very remarkable from the variety and number of the pieces, and marvellously beautiful in the combination of the varied specimens. The fleeces shown by Mr. C. B. Fisher are well worth attention, as are also the cases of dried apricots and raisins, and, especially, the wheat and flour, which are very fine indeed. The panoramic view of the city of Adelaide is an interesting object in this Exhibition.

Passing from South Australia, the middle compartment, devoted to New South Wales, with a small corner to New Zealand, is not yet ready for inspection. New Zealand is so far well represented in the cases that show the uses to which the *Phormium tenax*, or New Zealand flax, can be applied. The case has specimens of fine damasks, diapers, huckabacks, table-cloths, sheets, towels, ropes, cords, twine, thread, and almost everything, indeed, that can be made out of a fibrous product; they are of such excellent character as should incite Belfast to look to its laurels.

In the Victorian section visitors will find one of the most interesting objects in the whole Exhibition in the cabinet exhibited by Mr. Peter M'Lean, cabinet-maker, formerly of Dumfries, now of Melbourne. Mr. M'Lean has expended many years of his life upon this elaborate buffet. It has five compartments immediately over the base, and three compartments above these, each enriched with carvings in alto-relievo. The work is a pictorial history of the foundation and progress of the colony of Victoria. The extreme panels of the under portion represent the aboriginal inhabitants: at one end a chief of the Yarra-Yarra tribe, ensconced in a shield panel of decayed gum-trees, native birds and animals, snakes, iguanas or lizards, and wombats; the other end-panel contains a female native, carrying a picaninny, and is enriched like the other. The pilasters at the outer corners represent native trees. On the two receding doors, on each side of the centre panel, are representations of an emu on the one, and of a kangaroo on the other. The principal panel in the centre represents the first step in the civilisation and settlement of the colony, by a tableau depicting the encampment of Mr. Batman and party, about 1835, and their meeting with Buckley, a castaway seaman, who had been many years with the natives, of whom a group is shown encamped in the distance. The mouldings are enriched with entwined English and native ivy, which is also carried round the outline of the upper portion. The pedestals at the ends of the upper portion have a carved figure of Peace at one end, and of Plenty at the other. Each figure is ensconced in a panel enriched with fruits and flowers, and the insides are veneered with native woods. The pilasters of the doors are also enriched with fruits and flowers, and the friezes of the cornices with native flowers, surmounted by full-sized cockatoos in position, playing with wreaths of ivy. The centre, between composite columns in carved work, represents the progress of civilisation in the development of pastoral, mining, agricultural, and horticultural interests, art, and commerce; and above there is a semi-circular panel, in which a solar eclipse is represented by a variety of native woods, inlaid. The arch is surmounted by a native eagle-hawk.

The fine arts are as yet too young in Australia to possess numerous distinctive examples of remarkable excellence; Victoria, nevertheless, has its fine-art section, which includes landscapes in oil, photographs, lithographs, chromo-lithographs, water-colour drawings, pen-and-ink sketches, specimens of heraldic painting, &c. In miscellaneous art there are numerous exhibits of great merit in maps, engravings, book-binding, of first-rate character; printing, colonial-made paper, electrotyping, stereotyping, clocks, die-sinking, and other departments. In the section for wood, and manufactures from wood, there is a very large number of exhibits, the raw material including imported as well as native timber, but the furniture, pianofortes, casks, blinds, fishing-rods, drawing-boards, &c., are all of colonial manufacture. In metals and minerals a rich display is made; the varieties, including iron ores, potter's clay, tin, antimony, copper, lead, bluestone, granite, freestone, limestone, flagging slate and coal, with specimens of pottery ware, bricks, tiles, terra cotta, &c. Numerous specimens are also shown of gold and tin ore, quartz, carbonates of copper, with cases of native diamonds, sapphires, rubies, topazes, emeralds, garnets, aquamarines, and numerous other gems.

During the last week the Russian Court, situated opposite the entrance to the School of Cookery, has been opened to the public. The

ıssian collection of exhibits is quite a *multum parvo*. If they had been arranged strictly cording to their respective classes, they would ıve been dispersed to various remote parts of e Exhibition buildings. Brought together into e room, like the Indian exhibits, and arranged, they are, in a series of little groups, they rnish an interesting epitome, and command a ıgree of concentrated attention that could not ve been given to them if they had been spersed.

Under the first division, fine arts, there is me excellent statuary, including a number of ry spirited bronze statuettes, embracing pas- ral, sporting, equestrian, and other subjects. ıis little collection is in itself well worth a sit. Belonging to the second division, manu- ictures, the Russian Court contains a number superb examples of gold brocade, silver rocade, gold brocade with silver lilies, silk ocade in ancient and modern Russian, and in ysantine and other styles; military ornaments dress, shoulder-straps, sword-knots, girdles, d decorations. In one case the ribbons of enty-five different orders are displayed, and aplets with prayers beautifully interwoven. In e same division there is a fine display of iron and eel, of cutlery and edge tools, files, arms, and of rgical instruments, equal in finish to the pro- ictions of Sheffield and Birmingham. Class 12, bstances used as food, is well represented by trophy of potato grit, samples of wheat, flour, e, barley, sugar, dried and crystallized fruits, ney breads, mushrooms, shrivelled green peas, anna and the insect that produces it, groats, otato-flour, dried fish, cheese, rapeseed oilcake, aseed oil, turnip oil, tobacco, and numerous her curious products.

The Exhibition includes some specimens of t-metal work in chased boxes, cups, caskets, d vessels of various kinds, alike beautiful and rious. An iron tray inlaid with brass, richly d delicately chased, is a very fine example of t-metal work. Reverting to another class, ere is a great display of wines, spirits, liqueurs, uit essences, preserves, and other products.

Scientific inventions include a very delicate fferential barometer, invented by Professor endelieff.

This little assemblage of products is well orth a visit. The room is decorated with avey's patent felted fabric.

FROM CAMBRIDGE.

THE little semi-antiquarian club, the Novio- nagians, of which our readers have before now eard, spent a joyful day or two in Cambridge ast week. Mr. Clay, M.A., of the University ress; Mr. Rogers, of Peterhouse; Mr. Aldis Wright, of Trinity, the demolisher of Simonides; nd Professor Meyor, of St. John's, were amongst neir distinguished guides, and many interesting ings of course were seen. The newness of everal parts of the town is striking. Sir G. G. cott and Mr. Waterhouse have each had a long nings, and are still "carrying on." The Chapel f St. John's, by the former, and the new buildings t "Keys," by Mr. Waterhouse, one front of which s illustrated in our present number, are amongst heir best works. Portions of the latter, especially n the Tree Court (a capital picture altogether), emind one of Chambord & Blois. There is a very ood window by Heaton, Butler, & Baynes, in the hapel here; but of the reredos, with its mosaics, ve can scarcely speak so warmly. The new lodge, s the master's residence is called, a commodious uilding of red brick and stone, from the draw- ngs of the same architect, is nearly finished, at he cost of some 10,000*l*. The interior decora- ion, Mediæval of course, are slightly gloomy.

A clever window, though a little over-green, he work of Morris, Moore, & Co., has been set p in the Chapel of Peterhouse College, in nemory of Mr. Druce, a rising barrister, who ell from his horse, and was killed a year or so go. The Munich glass in the windows of the hapel is not benefited by the contrast. Some ther glass in this same college, also by Messrs. Morris, is very agreeable in colour and senti- ment. Amongst the MS. treasures of Peter- house is a codex, with reference in it to the reigning king, Charlemagne, and with a blank for the name of the queen, which serves to date it, as nearly as may be, A.D. 775. The illus- trations include representations of angular- headed openings, straight-lined arches, so to speak, as well as semi-circular arches, and are very interesting. Trinity College, of course, oc cupied the visitors some time, and several of its rarities were overhauled. What a noble gallery it is, nearly 200 ft. in length, and well proportioned as to height and width. It is curious to notice here that Milton commenced "Paradise Lost," in a dramatic form: the *personæ* are jotted down at the head of the MS. The MS. of "Lycidas" is also here. In this library, too, hangs a plan of the Great Court of the college, believed to have been made in the time of Henry VIII. The walls are shown by double lines, not coloured in, and the references are in Latin. Thorwaldsen's statue of Byron, with its over largely-developed feet and ankles, as if in bravado against the real circumstances, and several very fine busts, had to be looked at in this library. Bacon, Newton, and Barrow are three of the great names of Trinity. The ceiling of the Hall has been decorated in colour, in parts a little wildly, and the decoration of the walls is to follow. The specimens for the latter already executed promise well. Here Mr. Arthur Blomfield has the direction. The windows, from designs by Mr. Holiday, will aid the general effect. Amongst the old glass is a portrait of the ill-treated Richard III., damned to everlasting fame by one William Shakspeare. The new buildings at Trinity Hall (quite distinct from Trinity College) are making good progress, under Mr. Water- house, and will probably be less criticised than those of King's, where in a stone-fronted building Sir G. G. Scott has introduced Hampton Court chimney-shafts, very well executed, by the way, wholly of red brick, producing a little disagree- ment of effect.

The chapel here, of world-wide fame, the Saxon work at St. Benedict's, and the Norman work at St. Sepulchre's, were duly examined; the story of Hobson's choice was told at his Conduit; and the decaying mulberry-tree asso- ciated with the name of Milton duly gazed on; and then all were glad of rest and refreshment.

The dinner which naturally follows these outings was held at the ancientest of Cambridge hostels, the Bull, with its print-covered walls. Mr. Chas. Hill, F.S.A., presided, and was helped by Mr. Francis Bennoch, Dr. Diamond, Mr. Godwin, Mr. Henry Stevens, and other members of the club, in his endeavours to thank their good guides who had enabled them to see so much in a short time; and it was explained that Mr. S. C. Hall, Mr. Joseph Durham, A.R.A., Mr. Lawrence, Mr. Butterworth, and some other stanch supporters of the State of Noviomagus, had been kept by other calls from their accus- tomed places.

THE GLASGOW BARRACKS AGAIN.

THIS ill-starred contract has at length, it is hoped, reached its preparatory stage towards much-desired oblivion. A court of arbitration is now sitting at the Westminster Palace Hotel, in such mysterious seclusion that an awe-struck worshipper by book and pen was only permitted,

"With 'bated breath and whispering humbleness,"

to gaze upon it for a moment, and then dis- appear, confounded, among the heathen non- arbitrating world. The Glasgow "ne'er-do-weel" is an epic in itself. Look at its rising, its culmination, and its decline. It first began with a squabble in a contractor's office; then went into a court of law; then into the surveyor's depart- ment of the War Office, to disturb the *dolce far niente* of the Olympic deities there; then into the House of Commons, to vex the placid soul of the War Minister; and finally into the "three- menjous" Star-chamber of arbitration!

The arbitrators are Mr. Horace Lloyd, repre- senting the *jus civile*, Mr. Henry Arthur Hunt, and Mr. R. M. Ordish, C.E. The question which they have to try is the dispute between the Secretary of State for War, as advised, and Mr. John Kirk, of Woolwich, respecting the contract for erecting barracks at Maryhill, near Glasgow. As the proceedings were about to commence, Mr. Clulow, from the solicitor's side of the War Office, told the writer that he should most strongly object to any person taking notes as the representative of the professional press. His dislike, he said, was founded on the circumstance that "he once gave a reporting gentleman some facilities," which that grace-forsaken outcast "misused," and, consequently, he, Mr. Clulow, had "made up his mind to never again allow a reporter to be present at any arbitration in which he was concerned if he could possibly help it." Mr. Clulow was reminded, in tremb- ling accents, that the much humiliated, half- frightened being who was then quivering beneath his storm-laden frown, had nothing whatever to do with the ungrateful wretch who had so scandalously "misused" the omnipotent lawyer's "facilities;" and earnestly begged that Mr. Clulow would be merciful. With him all reporters must in future professionally die. Upon re-enter- ing the room, after a few minutes' absence, Mr. Clulow had used the "misused" to some pur- pose. Mr. Lloyd told the writer that, "one of the parties had objected to him; and, when that was the case, he always allowed the objection; so that the gentleman would have to retire, as no reporting would be permitted." He did retire; and, in retiring, reflected upon the grandeur of power, and the strong temptation to "misuse" it, as Mr. Clulow's unmannerly reporter did. If the powers of the earth had carried out the *lex talionis* all round, after Mr. Clulow's draconic fashion, what an angelic profession the law would now be! Mr. Kirk's representative did not object; and one would think that, if any side had anything to conceal it would be the con- tractor's. But the contractor blows through the other end of the speaking-trumpet. "Let day- light well into it," says he. "Oh, no; not for the world," says Mr. Clulow; and Mr. Clulow is the legal representative of the public in the War Department!

On Tuesday, the 24th ult., Colonel Barttelot, himself an old dragoon, complained to the Secre- tary of State for War, in the House of Commons, of the neglected state of the unfinished barracks. Mr. Cardwell, in an answer that must have been humorous, replied that the barracks "was one of the properties which, having fallen into Chancery, had become an eyesore. The contractor failed to do his duty, and that led to suits in Chancery. The litigation, however, had now come to an end, and arrangements were being made for a new contract."

These Glasgow barracks were intended to be the model infantry barracks of the day. Every- thing had been studied and worked out with the greatest care; and, the contract once signed, all was confidently looked forward to, to go as merrily as a marriage-bell. The Government had purchased thirty acres of ground at Garioch, by Maryhill, near the song-famed Kelvin-grove, about two miles and a half north-west of Glasgow. Of this quantity eight acres were to be built upon to afford accommodation for between 600 and 700 rank and file, with a full complement of officers, married men's wives and children, officers' servants, &c. There were also to be staff-sergeants' quarters, married quarters, chapel-school, and an entirely new feature in barrack life, an out-pensioners' department. The canteen was to be very complete, and to partake partly of the character of the co- operative store, with regard to quantity and prices. There was to be a gymnasium, well found in every respect, having, in conjunction with it, a racket-court, a fives-court, and a skittle-alley. The married people were to be entirely by themselves, with an infant-school close to them; whilst the serjeants were, also, to be "liable" to very superior lodging and amusements. There was, furthermore, to be a prison,—the home of the dreaded "Provo.,"—small but compact, with offices, detention-room, a labour-yard, and a dozen cells. The walls were to be of local sandstone, except the dress- ings, &c., which were to be of freestone. Asphalte was to be used whenever practicable, together with fire-proofing and rolled-iron joists. There was to be a hospital, too, as perfect in its way as such a building could be made, whilst the whole of the ground was to be enclosed by a rubble-stone wall, turreted for external defence. The whole of the buildings were designed under the direc- tion of Lieut.-Col. Murray, R.E., and his branch of the War Department; the Army Sanitary Committee taking charge of the warming and ventilating part. The contract was for 100,000*l*., and ground was broken in 1869, the intention being to have had the barracks ready for occupa- tion sometime in the summer of 1872.

The first great "split" was upon "rubble." What is rubble? Captain Percy Smith, R.E., the officer in charge, held one opinion, Mr. Kirk another; and this is a question the arbitrators will have to settle,—with several others.

The Alterations in the Shire-hall, Hereford.—Sir John Walsham raised a laugh at the Prestcign Quarter Sessions, by observing that although some 400*l*. or 500*l*. had been spent in altering the Crown Court of the Hereford Shire- hall, with a view of improving its acoustic pro- perties, they were now found as bad as ever.

CHESTER WORKHOUSE COMPETITION.

AT a meeting of the Chester Board of guardians on the 5th, the design sent by Messrs. Perkin & Sons, of Leeds ("Castrum"), was selected. The chairman said, in proposing it,—

"In reply to our advertisements, we received between thirty and forty different sets of plans. The building committee went through those plans, and reduced the number to thirteen. These were afterwards handed over to Mr. Culshaw for his decision as to the three best plans, and he, after careful consideration, selected 'Castrum,' 'Cestris,' and 'Alpha,' and recommended next to these two, plans of local architects, signed respectively 'Rusticus' and 'Wheatsheaf.' I am sorry that one of those plans was not adopted, for being the production of local men the committee were naturally anxious, if their plans suited, that they should win. We had, however, employed Mr. Culshaw, and we were bound to adhere to his decision. Mr. Littler, Mr. Carter, Mr. Parry, and myself, who were appointed on the sub-committee to examine the specifications, went through them line by line, and we had no hesitation in saying that the one we selected is by far the best. The specification is most strict, and is as much against the builder as any I have ever gone through."

We fail, by the way, to recognise any merit in the last-named fact. The specification should no more be "against the builder" than against the committee.

A CHURCH OVER A RAILWAY.

THE Marquis of Westminster and the Hon. and Rev. Robert Liddle, the incumbent of St. Paul's, Knightsbridge, with full Masonic honours, on Wednesday in last week, laid the foundation of a church immediately over the Metropolitan District Line, running from Sloane-square to Victoria Station.

It may not be out of place to here observe that the underground railway has left the "cuttings" in a very unsightly and dangerous condition, and the parishes of Chelsea and Pimlico, although forced to sell streets of houses for the lines, have, wherever the Metropolitan District Railway cuts through, been left with tenements suggesting a "siege in chancery." The late Marquis of Westminster learnt too late the mischief to his tenants; and only when the project of the West-end Junction Railways that were to destroy some 4,000 houses on the Grosvenor estate, and some tens of thousands of houses from Soho up to the East End, with a destroyal of Christ's Hospital for a central terminus, reached a committee of the House of Commons, did the new Marquis take steps to back up the remonstrances of his tenants. One clause in the West-end Railway Bill empowered the company to pull down a whole city of houses, on condition of a corresponding number being erected. The railway committee were so befogged as to believe that the railway engineers intended building up the same number of houses they would pull down ere the turn-out of some 10,000 Grosvenor tenants and lodgers. A slight history of that which was in store for London reveals the fact, that Christ's Hospital was actually sold for over one million of pounds, and the House of Commons committee agreed that the East End of London should be demolished. And, moreover, the Government supported this slaughter.

The "West-Enders" now stepped in, and with a help that saved their Eastern brethren. Mr. Boodle, the solicitor to the Marquis of Westminster, took steps to prevent the destroyal of the Grosvenor estate, reaching from the Marble Arch to Regent-street; and the Marquis, in the House of Lords, assisted by Lord Cairns and others, put a stop to the line on the south side of Oxford-street. A million of money, hard coin, was offered to the Marquis of Westminster for his interest in the razing of the houses. Mr. Boodle and the parishioners requested their superior landlord to make a clause in the Railway Act that before one house was pulled down another should be provided for the outgoing occupiers. This provision was a "nailer." Promises would not build, and where were building sites to be found? The way being thus cleared, a sale of the surplus lands over and by the side of the Metropolitan District line has taken place, and the Marquis of Westminster has purchased the upper ground, and is giving it away for the foundation of churches.

Mr. R. J. Whitehorns, the architect of the new church, and Mr. Laidler, the clerk of the works, as well as the builders, Messrs. Cowlands have had a bad foundation to surmount. The concrete is 20 ft. below the pavement line, and the nearest depth to the crown of the railway arch from the floor line is 13 ft.

If ever the railway company have occasion to widen, heighten, or alter their line in this section, the architect of the new church of St. Paul's has placed a rock against the future engineer.

The Marquis of Westminster, in a pithy address to the parishioners, explained the position of affairs, and said he believed that the worshippers in the new church would not feel the vibration from the trains, and as it was the first church built upon a railway, he hoped other sites might be utilised for the like good purpose.

The contract for the shell of the church is for 6,000*l.*, and Mr. Liddell has promises of large sums for the interior.

SCHOOL BOARDS.

Reading.—The committee recommended that the sum of 5,540*l.* 9*s.* 6*d.* be expended in providing a new school-house in Coley-street, including the purchase-money of the site, architect's commission, and other expenses. The contract of Messrs. Wheeler, Brothers, for 4,193*l.* 10*s.*, was received for acceptance, subject to a deduction of 47*l.*, if local tiles were used. They also recommended that a sum not exceeding 5,419*l.* 15*s.* 6*d.*, be expended in providing a new school-house at Katesgrove, including the purchase-money for the site, the architect's commission, and other expenses. The plans had been approved by the Education Department, and the borrowing of the money sanctioned as proposed. The report was unanimously adopted.

Dronfield.—It was resolved that the following contracts for the erection of schools and master's house at Cross-lane, Dronfield Woodhouse, be accepted. The Cross-lane school, Dronfield:—Masons and bricklayer's work, Messrs. Clubley & Stringfellow, 3,100*l.*; joinering, Mr. J. Badger, 1,084*l.*; slating and plastering, Messrs. Harrison & Chadwick, 350*l.*; plumbing and glazing, Mr. J. B. Corrie, 430*l.*; making a total of 4,964*l.* The Dronfield Woodhouse school and master's house:—Masonry and bricklaying, Messrs. Clubley & Stringfellow, 1,560*l.*; joinering, Mr. J. Badger, 489*l.*; slating and plastering, Messrs. Harrison & Chadwick, 160*l.*; plumbing and glazing, Mr. J. B. Corrie, 163*l.*; making a total of 2,372*l.*

THE TRADES MOVEMENT.

London.—At a meeting of the committee of Master Builders, held on Wednesday, the 9th inst., four members were balloted for to meet the masons at eleven o'clock on Monday next, and the joiners at three o'clock on the same day, to discuss the proposal for an arrangement made by the committee of the Social Science Association. The same four masters who met the masons last year were appointed.

——At a crowded meeting of journeymen masons, Mr. H. Broadhurst (in the chair) stated that they had received a very important communication from the Master Builders' Association, which he hoped would lead to a peaceable settlement of the present dispute. He then read a letter from the Master Builders' Association, stating that they had received communications from the Labour and Capital Department of the Social Science Association, and also from the carpenters, asking that a conference might take place between the masters and the men, so as to avert, if possible, the threatened strike. In accordance with this request, they were willing to receive deputations both from the carpenters and masons. Mr. Spencer said he thought they ought to be very thankful to the Social Science Association and the Master Builders' Association for the kindly spirit they had shown, and he moved,—"That a deputation be appointed from the meeting to wait upon the employers." Mr. Nisbet said that the employers' letter was an invitation to meet to consider the recommendation of the Social Science Association that the question be settled by arbitration. It would be very important, therefore, for the meeting to draw a distinction between sending a deputation to discuss the question of arbitration, which would be very different from sending them to discuss the question on its merits, and the points in dispute. The chairman said the communications provided for a friendly settlement, if possible, before falling back on arbitration. Mr. Kinnaird and other speakers addressed the meeting, strongly opposing any power being given to a deputation to go and agree to a settlement by arbitration. It was then resolved that a deputation of five be appointed to wait upon the Employers' Association. It was further resolved that "The powers entrusted to the delegates be reserved." The names of the delegates were Messrs. Broadhurst, Nisbet, Kinnaird, Spencer, and Bowman.

Bristol.—The operative labourers have appointed a sub-committee to draw up a general code of working rules for the future guidance of the men and masters; the rules are to be submitted to the Master Builders' Association.

Bedford.—The carpenters and joiners, reports the local *Times*, have considered the terms offered by the employers, viz., a rise of a half-penny per hour, with an hour for breakfast, no lunch-time, and leave at one on Saturdays. The men agreed to accept the terms, with the exception of the extension of the breakfast hour from half an hour to an hour, as they prefer leaving work at 5.30 to 6 in the evening. They also give notice that another halfpenny per hour will be asked for in the spring of 1874, as it is considered that the advance already conceded is not sufficient now that the number of hours for work has been reduced from 58½ to 56. The stonemasons of the town have recently held a meeting, at which it was resolved to apply to their employers for a rise of a penny per hour, the present rate being 5½d. The bricklayers also intend moving in the same direction, their wages being hitherto about the same as the rate paid to the carpenters, so that each branch of the building trade will be affected in turn by the new movement on the part of the workmen.

WATER AS FUEL.

A PATENT for "An improved method or process and apparatus for securing the combustion of fuel and the utilisation of the gases arising therefrom" has been obtained by Mr. J. Ramsden, of Lightcliffe. His apparatus is now in operation, and is thus described by the *Halifax Guardian*:—Mr. Ramsden burns steam; and the means used to effect its combustion are very simple. As the appliances are so far merely for experimental purposes, they are of a miniature description. On a bed, about 5 ft. square, stands a small double-cylinder steam-engine of ordinary construction. The boiler which supplies the motive-power is a mere toy, being about 2 ft. 6 in. long and 15 in. or 16 in. diameter, of the single-flued Cornish pattern, the flue being about 6 in. diameter. Instead of the ordinary furnace-fire bars for burning coal, there is a coil of small iron-piping which takes three turns round the inside of the furnace or flue. In this pipe are drilled eighteen small holes of about one-sixteenth of an inch diameter. These holes are so arranged that when steam is admitted to the coil it rushes out through them, forming a circle of jets which meet in the centre of the furnace. Across the front of the fire-hole or furnace runs another small pipe with two more jets directed into the flue. Immediately in front of these two latter jets are two brass nozzles, the orifices of which are scarcely discernible, connected with a vessel containing petroleum. There are cocks to regulate the supply of petroleum and steam. As the boiler must necessarily be cold to begin with, and as steam is the fuel to be burned, recourse is had to a small auxiliary boiler in which a little steam is generated by ordinary means. This generator is temporarily connected with the coil inside the furnace, a tap is turned, and the steam rushes out of the jets. At the same time another tap is turned, and the petroleum issues from the nozzles. A light is then applied to the petroleum, and instantly the steam is decomposed and ignited, and the furnace is a roaring blast of flame. In a few minutes steam is up in the boiler, and becomes independent of the generator first used. The result is startling and wonderful. The effect of the rush of steam from the jets is to draw the petroleum through the nozzles, and petroleum or any other hydro-carbon having the power to decompose steam, the interior of the flue becomes a furnace of great heat. So intense is this heat that, although steam rushes through the coil, it becomes almost white hot in a very few minutes. A not less important feature of this invention is its adaptability to illuminating purposes. The large quantity of inflammable gas generated would, if not intercepted, escape unconsumed. To utilise this waste Mr. Ramsden brings the steam-engine into operation, geared to a small rotary fan, sending it into a closed vessel containing petroleum. From this receptacle it is conducted to a gasometer, and used exactly in the same manner as ordinary gas. This gas has no smell, and literally no smoke. Its cost, adds our authority, is ridiculously small. Mr. Ramsden contends, and with a show of reason, that it cannot cost more than 9d. a thousand.

THE TEMPLE OF JERUSALEM AND TREE WORSHIP.*

AFTER the text of my work on "Tree and Serpent Worship" had been completely printed off, and the sheets were in the hands of the binder, it occurred to me that I had once dreamt of something very like the gateways at Sanchi having connected with the Temple at Jerusalem.† I consequently turned back to the passages in Josephus and the Talmud bearing on the subject, and read them with more care than I had hitherto done, and having protracted these descriptions on paper, I very soon arrived at the conclusion that I was not mistaken. An erection very similar to the Sanchi gateways certainly stood in front of the Temple as re-erected by Herod, and was meant to have been a reproduction of the brazen arrangements of Solomon's Porch, as executed by Hiram of Tyre.‡

The passages in Josephus bearing on the subject are the following:—

"The Temple had doors at the entrance, with lintels above, extending to a height equal to that of the Temple. They were adorned with coloured veils or curtains, on which purple flowers, with trellis-work, were embroidered. Upon this, but lower than the crowning moulding of the wall, a golden vine was spread out, with its branches hanging down from a great height, and executed with such a profusion of material as to strike the spectator with astonishment, as well from the art displayed as from the magnitude."§

The corresponding paragraph in the "Wars of the Jews" is as follows:—

"The first gate of the Temple was 70 cubits high by 25 cubits broad; but this gate had no doors, for it symbolised the heavens, every way open and everywhere visible. Its front was covered with gold all over, and through it the first part of the house itself, which was the largest, was everywhere visible, as well as those parts about the inner doors which were also covered with gold. . . . . But at the gate of this Temple, as already mentioned, was all covered with gold, as was the whole wall about it. It also had golden vines upon it, from which clusters of grapes hung down equal in height to that of a man."‖

These passages are too rhetorical for the purposes of a restoration, and the heights, as usual with Josephus, are very much exaggerated. The Talmud is, in this instance, at least, much more exact and detailed. Its description is as follows:—

"The gates of the propylon were 40 cubits in height and 15 cubits broad, and above these were five richly-carved beams of ash or oak. The lowest of these extended a cubit either way beyond the pillars of the doorway, while the one next above this was 1 cubit longer either way than that below it, so that the upper beam of all extended to 30 cubits. Between each beam there was a row of course of stones.

Transverse beams of cedar (in the Venetian edition of the Talmud it is said 'of stone') were carried from the wall of the Temple to this portico, or propylon, to support it"—literally that it might not start from the perpendicular. "Golden chains were hung to the beams of the portico, by which the candidates for the priesthood went up to see the crowns, because it is said by Zachariah, vi. 14, 'And the crowns shall be to Helem, &c., for a memorial in the Temple of the Lord.'"

"A golden vine was spread over this gateway of the Temple, and was carried upon the supporting beams. Whoever vowed a leaf, or grape, or bunch of grapes, brought and suspended it from it [the vine]. Eliezer, the son of Zadok, says, it thus happened the 300 priests were employed on occasions when it had to be removed."¶

From these paragraphs it seems perfectly evident that the object therein described was not a door or gateway in the ordinary sense of the term, but a frontispiece or propylon, partly in wood, and partly in stone, standing by itself in front of the main building. When protracted with the dimensions given in the Talmud it does not seem that it could in any essential respect be different from the representation of it in the annexed woodcut. In so far as the restoration is concerned, it is not of the least consequence whether the transverse beams of support were of stone, as the Venetian copy has it, or of wood, as they are said to have been in all the more modern editions I have had access to. If of wood, they would have been mortised into the five beams. If of stone, the ends of them are the square blocks over the pillars seen between the beams.

The pillars were certainly in stone, and it is probable that the square block represented as

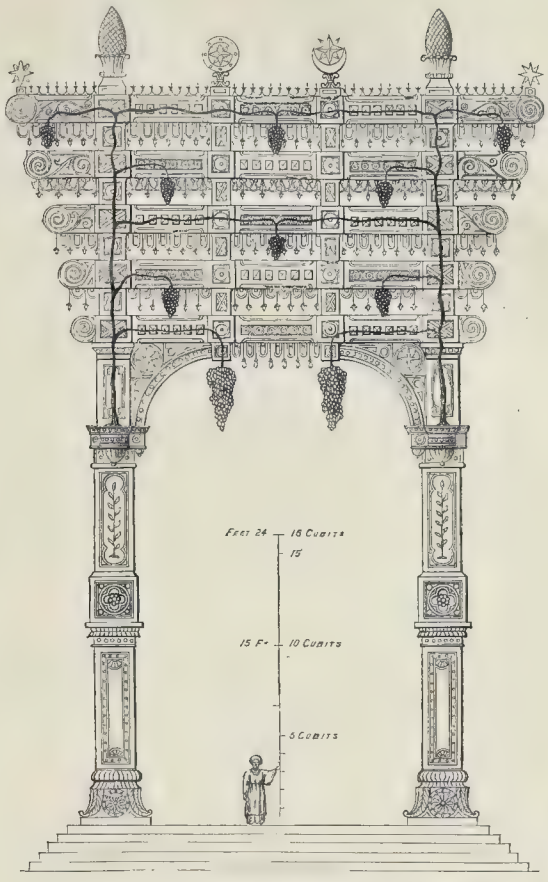


Diagram of the Gateway of Herod's Temple at Jerusalem.

the centre of them was also carried back to the wall. Indeed, without these constantly recurring points of support, the whole could not only have been, but would have looked frail and unstable to an unpleasing extent. With them there is no difficulty either in the construction or in artistic effect.

The golden chains that hung from the beams are easily understood. Their forms are repeated so often and in such variety in the stone architecture of the East, that many other varieties might have been chosen besides those represented in the diagram. Nor is the vine a difficulty. As, however, the drawing is meant to explain the construction, not to illustrate the beauty of the object, I have represented the vine realistically and without leaves, though aware that its treatment must have been conventional, and leaves an indispensable accompaniment. It would, however, be easy to add these, and to double the number of bunches of grapes if necessary; but, as it stands, the diagram is probably sufficient to explain the form and construction, and to show that it really was only a gigantic and elaborately-adorned trellis placed in front of the Temple to support the Sacred Vine.*

From various indications it is easy to perceive that such a form of architecture must have been familiar to the Jews at the age of Herod, even supposing that the frontispiece of Solomon's Temple was not of a similar construction. There are, for instance, in the British Museum, a series of imperial coins of Cyprus, all of which represent, with more or less distinctness, just such a gateway, as forming the entrance to the Temple of the tutelary goddess of that island. The annexed copy of a coin of Septimius Severus is



Coin of Septimius Severus.

even more like the gateways at Sanchi than that at Jerusalem, inasmuch as it is attached to a circular enclosure, which, making allowances for the defects of coin representations of architecture, may fairly be assumed to be intended for a similar temenos.

In this instance there seem to have been five beams, as at Jerusalem, but the two upper and two lower are joined together without any intermediate blocks, and it is only the centre one

* Forming Appendix I. to the second edition of my work on "Tree and Serpent Worship."

† True Principles of Beauty in Art, by the Author, p. 295.

‡ The translators of the Vulgate, and of our English version of the Bible, were so entirely ignorant of architecture or of architectural terms that it is impossible to restore Solomon's Porch from their translations. Our knowledge of the subject has so immensely increased of late years that, with the assistance of a good Hebrew scholar, I would have no hesitation in undertaking it, with great confidence of success.

§ Antiquities of the Jews, xv. 3.

‖ Bell. Jud., v. 4.

¶ Middoth of the Mishna, iii. 7, 8. Professor Chenery, than whom no one is more competent, has kindly assisted me by revising this translation, and approves of it as it now stands.

* The vine is used realistically, as in this diagram, as an architectural ornament to the doorway of the Temple of Baalsamin at Siah, belonging to the time of Herod (De Vogué, "Syrie Centrale," Plates II. and III.), and both realistically and conventionally in the recently-discovered Palace of Chosroes at Meshita ("Land of Moab," by Dr. Tristram, woodcuts 22, 38, and 39). Where are the connecting links between the two?

FREE WARWICK

which is separated from the others by these characteristic features whether in wood or stone.

The interest of this form of gateway with reference to the present work arises, in the first instance, from finding an almost forgotten form of architecture existing at Jerusalem and in Cyprus, which attained its highest development at Sanchi, but which now prevails in China and Japan and the Indo-Chinese countries to an almost unlimited extent, though long ago forgotten in the West.

The form is alone sufficient to prove that these gateways were originally always executed in wood, but we have also numerous representations of them in the bas-reliefs at Sanchi and Amravati, which are unmistakably wooden erections, without any admixture of the more permanent material. The example at Jerusalem may thus be regarded as a transitional example, being composed partly of wood and partly of stone, and the Sanchi Gateways still therefore maintain their positions as the first examples known to have been wholly executed in stone.

It is also curious to observe how nearly the Syrian and Indian examples approach each other in date. Herod began to rebuild the Temple in the eleventh year of his reign, nineteen years before the Christian era, and finished it in eight years. This gateway would certainly have been one of the last adornments added, if, indeed, it is not wholly subsequent; but at all events we may assume that it belongs to the tenth or twelfth year preceding our era. The South Gateway at Sanchi, as explained in the text, was erected during the reign of the first Sâta Karni, A.D. 10 to 28. The two examples are consequently certainly within forty years of one another. They may be even more nearly contemporary.

The great interest, however, of this Gateway, as connected with our present subject, is rather mythological than architectural. At all events, it certainly does not seem to be stretching the argument too far to say that the Sacred Vine, which was the principal cause of its erection, was a reminiscence of that Tree Worship which, under the name of the Asheerah or Groves, played so important a part in early Jewish history anterior to the time of Hezekiah. Whatever its meaning may have been, this Vine certainly was the principal object that met the eye of the worshipper on approaching the Temple of Jerusalem, and it was for its display that this richly-adorned Gateway was erected. Nor can it be said that an image, to which it was considered a meritorious religious act "to vow a leaf, or a grape, or bunch of grapes," and which was entrusted to the charge of 300 priests,* was a mere architectural adornment. Whether it symbolized the heavens, as Josephus seems to insinuate,† or whether it had any deeper or more recondite meaning may be left for future investigations. In the meanwhile, however, there is certainly more in it than has hitherto been "dreamt of in our philosophy."

JAMES FERGUSSON.

* The commentators are generally agreed in considering this expression as hyperbolical, and suggest 30 instead of 300. There is, however, no mistake in the words of the text, nor, so far as I can see, any improbability in the number assigned.

† The expression in the "Wars of the Jews," v. 4, it must be confessed, seems to refer rather to the curtain which hung from it than to the structure itself, but the words quoted above from the "Antiquities" seem to refer to the gateway.

OFFICIAL REPORT UPON BRICKMAKING.

SOME interesting information is contained in the reports, just issued, of the factory inspectors with regard to brickmaking, which, until the passing of the Act of 1871, did not come under the supervision of these inspectors. Brickfields in England, it is stated, are for the most part small; but near the banks of the Thames, as far down as the mouth of the Medway, and up that river to Maidstone, there are a nearly continuous series of larger fields, in which the Factory Act Extension Act has for some time past been satisfactorily observed. Several instances of hardships suffered by children are mentioned, and amongst them that of one gentleman, now managing director of important works, who computes that, working from five a.m. to nine p.m., he, while under nine years of age, lifted 45,000 bricks per week, each brick weighing ten pounds, or over three tons per 1,000. He was frequently so exhausted that he had to be carried on the "moulder's" back to and from his home, three miles' distance. Objection was taken to the operation of the Factory Act in regard to the brickfields, on the ground that this was an open-air occupation, carried on during only part of the year, and liable to constant interruptions by wet weather; and the weight of the objection founded upon the effect of the weather has been in some measure recognised by yielding a concession to brickmakers to work occasional overtime. The factory inspector, however, states that the wonder is that even this concession should have proved sufficient. On a fine day the work is carried on with almost feverish activity. Sunburnt men desperately run their top-heavy barrow-loads hour after hour under the heat of the sun; the little barrow-loader (happily now not a child of seven or eight years of age) is busily at work, while women quickly rough-shape the lumps of clay, and supply the moulders next to them. On a wet day, however, all is changed. The scene is desolate. Not a brick is made. Before the application of factory-law, the custom was to make up for this enforced idleness during wet days by some fifteen or sixteen hours' hard work when the weather was fine; and the question was, could brickmaking be profitably carried on if these hours were cut down to those which constitute a Factory Act day. Apparently the answer has been given in the affirmative, it being shown that when work was thus pressed forward it was not simply to make up for bad weather, but for sheer idleness and time wasted in dissipation. The "brickies," it appears, are not the most scrupulously steady class of men, and possess a lively appreciation of the delights of "beer and skittles." The amount of beer they consume seems almost fabulous. One master has allowed ten pints of beer a day to each "setter." Many of the master brickmakers are publicans, and some even have public-houses in their own fields, in order that they may extract profit out of the idle hours of their men. With regard to the usual length of day worked by these men, it is stated on good authority that 10½ hours will get out of a man all the good work that is in him; and this is suggested by the fact that a large brick company in the Kent district are erecting a great number of cottages on their ground, rather than impair the efficiency of their operatives by allowing them to travel some distance to and from their homes. A large brickfield is not a place which facilitates inspection by the officer appointed under the Act. The huts or "stools" may perhaps be miscellaneously situated on some tawny flat, in or around which a greater part of the juvenile labour is carried on. Each of these is, practically speaking, a separate "factory," in which the gang, possibly composed chiefly of the family of the "moulder," is hired, paid, and controlled by him. He, in his turn, receives so much per 1,000 for the bricks, and is obliged to get his profit as he can. All business is transacted at a central hut, called the "office," whence the foremen start upon their rounds through the "stools," and here the moulders attend, should they have to bring children to be registered, or school-books to be inspected.

With regard to the brickfields of Essex, Suffolk, and Norfolk, they do not appear to be of sufficient dimensions to rank under the Act as "factories." The inspector who visited them states that he found labour "in its undisguised form," severe for men, and cruel for children. The youngest child he found was a boy six years of age, who worked in July from 4 a.m. to 8 p.m.! Pug-mills are not general in Essex and Norfolk; the earth is trodden by children, who are kept to work tempering a heap of clay from morning till night. They also serve the maker with clay, being obliged to lift quantities nearly equal to their own weight. They have also to wheel away the bricks and place them on the "bakes"; and the inspector states that he has seen double-made barrows, capable of taking off fifty bricks at a time, wheeled away by two children, one in the shafts, the other acting as leader, and vigorously pulling, harnessed like a little donkey. It is very unsatisfactory also to note in connexion with these brickfields, that the wages are paid in the public-house. The landlady calls out each man's score, the week's earnings simply change hands from landlord and brickmaker to the landlady, and the poor children have to wait for their small portion until a balance is struck. Habits of drunkenness are thus fostered at a very early age. With regard to the excessive intemperance of these brickmakers generally, a remarkable statement is made, viz., that as much as 15s. a week is paid by one man for drink, whilst 5s. represents the sum given to the wife for the support of the household.

ST. PAUL'S CATHEDRAL.

SPECIMENS OF THE IRON WORK.

GENERAL views of St. Paul's are numerous enough, but representations of its varied and multifarious details are scarce. We propose from time to time to give a few specimens which will serve to show the beauty of many of them. The ironwork, illustrated by the accompanying engravings, from drawings from the original in St. Paul's Cathedral, is the work of the celebrated Smith M. Tijoue, who executed all the beautiful ironwork in the cathedral. It is to be regretted that we have so little information of this artist. Both in design and workmanship the wrought-iron work here as a whole is not surpassed in this country. It seems more than probable that Sir C. Wren himself gave sketches or suggestions for this work, as he did for the other details in the cathedral.

The larger drawing represents one quarter of a panel, filling the upper part of one of the doors to stalls, and drawn to one-third full size; the smaller one represents a portion of the chancel railings: a scale is shown to this last for convenience.

GONVILLE AND CAIUS COLLEGE, CAMBRIDGE.

THE new buildings at Gonville and Caius, of which we give an illustration of the King's Parade front, were completed about three years ago, and consist principally of fellows' and undergraduates' rooms on three sides of the first court, with frontages to King's Parade, Trumpington-street, and Trinity-lane.

For the benefit of the general architectural effect of the new buildings inside the court, the fellows relinquished the retirement of their private garden, which is now surrounded by a low balustraded wall. The first court, or Tree-court as it is sometimes called, is thus made twice as wide as it would otherwise have been with great advantage to the buildings; the general effect of which is very good.

The external walls are built of Casterton stone, with dressings of Ancaster. The style adopted may be called Jacobean, with the addition of a French element or two.

The demolition of the old buildings which occupied the site, involved the disagreeable necessity of removing one of the three celebrated old gates of the college, the Gate of Humility." A new doorway, however, occupies the exact position of the old gate, and, it must be said, the antiquarian interest of the latter had been so greatly destroyed by successive reparations in compo that very little of the original work remained.

The new buildings were carried out under Mr. Waterhouse, whose work included a partial renovation of the master's lodge, and an addition to the chapel of an apsidal end. The windows of the latter are filled with stained glass by Messrs. Heaton, Butler, & Bayne, from cartoons by Mr. Henry Holiday; and the reredos has lately been enriched with mosaic figure-subjects by the same firm. The general contractors were Messrs. Trollope.

SEWER VENTILATION.

SIR,—While practical men are debating what is the best way to ventilate sewers and drains, it may be well to ask a question which does not appear to have a place in their thoughts.

Does not the ventilation of sewers and drains *increase very considerably, and to a dangerous extent*, the amount of evaporation and evolution of noxious gases?

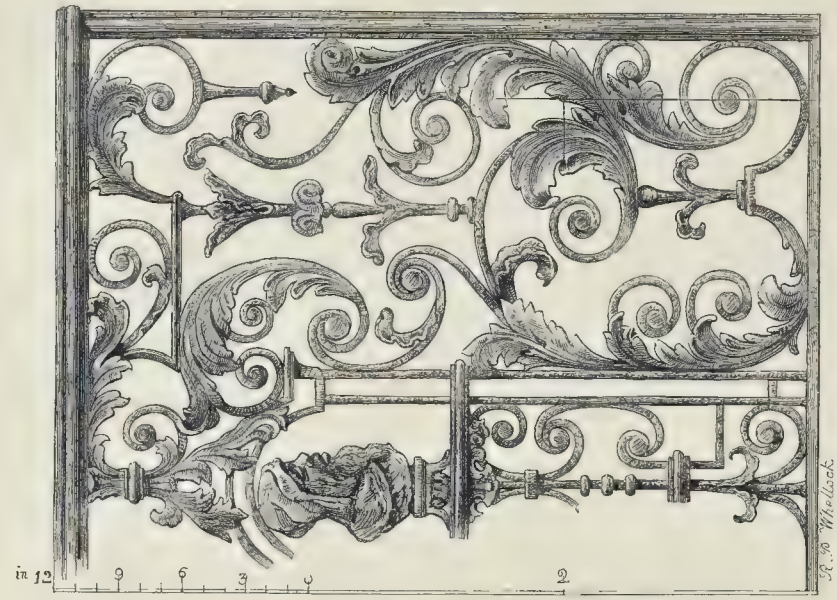
If a stagnant or a tide-locked sewer is considered as a retort producing foul gases, surely it is much more so when not only is free egress afforded to those gases, but increased means are given for their formation.

No doubt the stagnant atmosphere of a sewer is saturated with its vapour, but a current of air is more favourable to evaporation, and will be highly charged with vapour (too highly charged, it is evidently thought, to be trusted to issue from shafts near attic-windows). It is clear this system of diluting a poison by diffusing it in the air we breathe cannot be trusted too far. Only a few years since we thought we could diffuse safely in our rivers all the liquid and solid contents of our sewers, but who will advocate that plan now? The Thames was a notable example to be avoided, but did not the fact of its being so well ventilated contribute much to the obnoxious condition of the surrounding atmosphere?

I have an opinion as to the direction in which the solution of the whole problem may be found, but as it does not assume a practical form I refrain from occupying more of your space.

F. H. M.

New Masonic Hall for Guisborough.—The foundation-stone of a Masonic Hall has been laid, with the usual Masonic ceremonial, at Guisborough.





ST. PAUL'S CATHEDRAL: SPECIMENS OF THE IRONWORK.



GONVILLE AND CAIUS COLLEGE, CAMBRIDGE.—MR. ALFRED WATERHOUSE, ARCHITECT.

VILLAGE CHURCHES.*

I HAD the honour, last October, of reading before the Church Congress at Leeds, a paper on "Modern Town Churches." The subject on which I have been requested to address you, although it follows naturally as a sequel, must necessarily be of a narrower compass, and of less vivid interest. I shall, therefore, I trust, be pardoned if the remarks I have to make upon the present occasion are somewhat desultory in their character; that they will also be in part somewhat technical will not, I hope, need an apology before an Architectural Society.

But although the churches of our great towns form a subject of more exciting interest; although the neglect from which our city populations are suffering renders the theme one of the widest practical importance, and the opportunities which such buildings afford for grand effects, stimulate strongly the architectural imaginations, there is yet a point of view from which the village church has an interest all its own.

It is not therefore unnatural that our village churches should be the especial pride of our national architecture. Our cathedrals, with some noble exceptions, are surpassed by the great churches of Continental cities; our abbeys, themselves centres of agricultural life, which were once the glories of England, have passed away, but the village churches still remain, so far at least as the hand of the *restorer* has spared them, as the finest monuments of the architectural genius and the practical piety of the past generations of Englishmen. The village is next to the family, the simplest and least artificial of all the forms of social organisation, and it has continued on, through all the changes which religion and politics have undergone, in the main unchanged. It still consists essentially of the same elements which constituted the little primitive community from which it takes its origin, and it forms to this day, as it did at the first, the unit of all political association. There is, moreover, as far as I know, no country in Europe where the village has retained so much of its primitive importance as England. Nowhere has the influence of the great towns been until quite recently so little felt. The Englishman is after all essentially a countryman, and country life is not more the birthright of the gentleman than it is the aspiration of the successful man of business.

The village church has, besides, a peculiar interest of its own. It is the only public building which a village, as a rule, possesses. It is the central point of the common life, the building which typifies the oneness of the little community. Cities have beside their great churches, or their cathedral, their town-halls, their market-halls, their assize courts, their theatres, all connected in different ways with the common life to which they minister and which they symbolise, but the village has only its church and its churchyard. Here alone all meet on equal terms, and with an equal right, as members of the little society, of which the church forms naturally the centre.

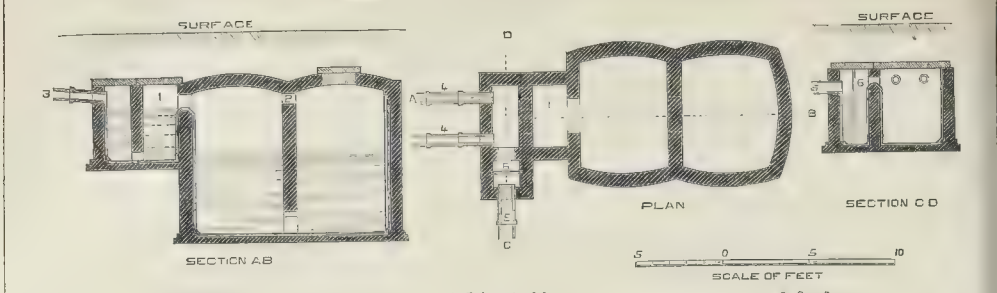
These reflections may serve to invest our subject with a proper dignity. They are considerations which were never absent from the minds of those who first founded and created our ancient parish churches. They are not always,—I regret to say,—so prominently in the minds of their successors; and this will lead us at once to a consideration of a very practical character, and one which is too much overlooked. I mean the great importance of the choice of site. The old builders placed their churches with wonderful skill. In the flattest, the least accentuated country, they always succeeded in giving their building something of character and importance, from a judicious selection of the ground. They almost always found some little knoll, some slight elevation, which might give to the church an advantage worthy of its character, and impart a certain amount of dignity to the simplest erection. This point is far too much neglected now. As a rule, the architect, the man who ought to be able to judge of such matters, is not called in until the site has been secured, and he has then to make the best he can of it. The site is too often some useless corner, which can be bought cheap, or be presented without sacrifice. The architects, too, I am bound to say, fall in only too readily with such a system, and design their buildings as if every site was an absolute plane. Should the site possess a decided slope, or any marked configuration, it is specified that the earth is to be removed from the elevated portions, and deposited to fill up the lower ground. The building so erected has the effect of a toy-church, set down upon a little tray prepared for it. You feel that the designer would have set it down upon the level if he could, or you may very easily fancy that the whole thing has been bought, as it stands, from a wholesale dealer in ready-made churches. The look of an old village church is something quite different; the building and the site here belong to each other; the church seems to grow upon the hill side of the knoll, grasping, as it were, the ground with its great buttresses, like the spreading roots of an old tree. You could not readily imagine it on any other site; it belongs to the place just as much as the aged yews which grow beside it. Much may be done by help of a well-chosen site, even with a poor building, and this is one point which I would urge, especially upon those who do me the favour to listen to me to-day, because the choice of site rests in most cases with the promoters of church building, with the clergy and gentry, rather than with the architect. It is perfectly astonishing what a difference may be made by a judicious choice of site in the effect which a building will produce, and in no case is this so important as in village churches, where we have no imposing dimensions to give dignity of themselves, and where nevertheless the importance of the building, as the centre of the whole village, renders it necessary to give to it the utmost accentuation that we can.

A central tower placed at the intersection of the transepts is seldom advisable in a village church, except where, from some peculiar circumstances, the monumental character takes precedence of the practical consideration of convenience, yet that form of it, which is frequently found in Normandy, where the tower stands over the chancel, and the sanctuary proper lies east of it, is often very suitable, and is always beautiful, if only one point be attended to, —the eastern limb must not be too short. Indeed, our sanctuaries are generally made too short: they are too often cramped to the minimum which the bare necessities of administrating the communion require, and even the clergy, if there are several, have often great difficulty in avoiding an unseemly jostling. This and many other faults of our modern churches are encouraged, I am sorry to say, by the Church Building Societies; and until they alter their system, and give their grants on the total area of the churches, instead of on the number of fixed pews which can be squeezed into them, it is, I fear, useless to preach improvement in this respect. It is none the less our duty, as architects, to protest against a system to which, more perhaps than to anything else, the unsatisfactory character of our new churches is to be attributed. It may be laid down as a general rule, that our modern chancels are too short; too short for a well-proportioned architectural effect, as well as for the proper performance of the ceremonies, and it is certainly the worst possible policy to curtail them still further, both in appearance and in actual area, by adopting what is called the apsidal termination. I should be the last to deny the marvellous beauty of a complete chevet, with its processional path sweeping round it, and its radiating chapels leading up to a fine climax in the Lady Chapel. But there are several things to be borne in mind when one comes to the question of *small* apses. One is the great difficulty of roofing them satisfactorily. They really require groining. I do not think that even those French ones which have timber roofs are ever quite pleasing, and the attempts which have been made to accommodate English types of roofing to apses, are in my opinion great failures. Then, again, you require very much greater height to give dignity to the interior. The great east windows of our English type may spring at the level of the roof eaves, and sweep boldly into the gable; the highest point of the windows of the apse must be someway below the eaves. Unless, therefore, the height is very much greater, the effect has nothing like the dignity of the square end. The internal appearance, too, is always meagre where the light is admitted, as necessarily in an apse with a wooden roof, at a much lower level than that of the highest part of the interior. I know that considerations of artistic effect weigh but little with architects who are thinking of the graceful sweep of their compasses upon the plan, and clients to whose ears "apse" and "apsidal" have a pretty ecclesiological jingle; but I think the fact that you require greater height, and therefore greater expense, to produce an equal result, ought at least to appear to our common sense. It should further be remembered that in an apsidal chancel, the apse must be in *addition* to the length, not in deduction of it. The chancel should most certainly be as long as a square-ended one, with the apse in addition.

In refitting an old church the high screen is, no doubt, more imperatively required than in a new building. In a new church convenience may often be allowed to over-ride tradition. There would be less objection artistically to a low screen if we were allowed to erect above it a rood-beam and rood. By itself a low screen looks insignificant and wanting in dignity, and is but a very poor and enfeebled descendant of the Iconostasis and the Jubé. There is no doubt the chancel-screens had in all ages a practical purpose—the protection of the chancel from thoughtless or profane intrusion. This, too, was the purpose of the introduction, under Archbishop Laud, of altar-rails and gates. These were ordered to be sufficiently close to prevent the entrance into the sanctuary of dogs, which, if we may judge from pictures, were as frequently to be seen in English churches as they still are in some Highland kirks. We have almost abandoned the use of close and gated altar-rails, and no one will regret the change; but this makes it only the more necessary to have an effectual fence at the chancel arch. It is not seemly to see, as one often does, the sanctuary invaded by a party of ladies and gentlemen, however ecclesiological, criticising the reredos, and handling curiously the embroidery of the frontal; bringing to mind the line which ends, "where angels fear to tread." And the necessity of a proper fence to the chancel will become more felt as our churches become more used. I hope the day is not very far distant when it will be quite the exception to find a parish church locked up. It is told of Thomas à Becket that when he was withdrawing into his cathedral followed by the murderous bands, the clang of whose armour was audible along the cloisters, a monk who was with him closed the door by which the Archbishop had entered the church, and began to lock and bar it. Thomas stopped him at once. "The church," said he, "is not a castle; it shall never be barred up upon my account," and ordered the bolts to be unfastened. Upon what trivial grounds, for what paltry considerations, is that too generally done now which St. Thomas, even in the extreme necessity of self-defence, forbade. It is pleasing to observe that the number of churches, even in this country, which are habitually kept open is everywhere upon the increase, but it is certainly undesirable to leave the chancel and sanctuary wholly unprotected from careless intrusion, or even worse. It is further to be hoped that the naves of churches may be made more and more serviceable for other purposes than those of direct worship. I was present upon one occasion at a missionary meeting held in the nave of Ely Cathedral; and every one present must have felt that the surroundings gave a tone of dignity to the assembly which a concert-hall or the ball-room of an hotel, would not have supplied. And if the education of this country should unfortunately become separated altogether from any true religious teaching, I do not think that anywhere so well as in the naves of our churches could the children be assembled for that definitely Christian instruction which the public schools had ceased to supply. The influence of the place would go a long way to take off from the dryness of school-work, and would be the best possible set-off against the obvious disadvantage of the divorce of secular and religious education.

There are some principles common to all periods of art which modern architects, in mere caprice, or in fretful striving after novelty, sometimes venture to depart from. Ever since civilisation commenced it has been the rule to finish the interior of the building with all possible care. Every ancient building, whether of Egyptian, Greek, Roman, or Mediæval times, was carefully faced internally with wrought stone or plaster, and decorated in colour, or it might be encrusted with marbles and mosaic. The notion of leaving the interior of the building as rough and rugged as the exterior generally must be, has, from a very early date, been abandoned by civilised man. It has now been revived. The fashion to which ignorance and necessity obliged our rude forefathers, is now adopted by many of us of choice. This queer reaction against modern refinement

* From a paper read by Mr. G. G. Scott, M.A., at the meeting of the Lincoln Diocesan Architectural Society, in Louth.



1. Filtering beds.
2. Air-vent.
3. Rain-water inlet.
4. Rain-water pipe.
5. Overflow.
6. Trap.

RAIN-WATER TANKS.

would perhaps be intelligible as a mere reaction, if it were not oddly enough confined to church architecture. It is very difficult to see why the interior of a church should be made, as it often is, to resemble an ancient cairn, or a modern grotto. We see new churches whose interiors are faced with rough stock brickwork, relieved, perhaps, by lines of red and black, after the manner of the so-called Turkish Baths, and others where the rudest rubble is pointed with the blackest of artificial mortar, ingeniously combining the harshness of barbarism with the disingenuousness of civilisation. It is a duty to protest against making our churches the field for the exhibition of such vagaries. Let those who, satisfied with feeble refinement, can find no relief, but in still weaker affectation of barbarity, confine their tastes to their own drawing-rooms. Let them build their own rooms with rough brick or uncoursed rubble if they like it, but let our churches be spared. Unfortunately, the evil is not confined to new buildings. Numbers of fine old churches have been stripped internally, and reduced to a nakedness compared with which Puritan whitewash is decency.

In many small churches the stained glass must always be the principal point of the decoration, but so much is spent at the present day upon reredoses, that it is evident that there is room for the introduction of higher art than glass painting admits of. The money which is spent upon many a reredos, even in small country churches, would have procured a real work of art full of instruction as well as of beauty, neither of which is generally afforded by the altar-pieces at present in fashion. Indeed, the aim of most reredoses seems to me to be, to express as little as possible with as much parade as possible, with most of them it is as hard to describe of what they consist, as it is to ascertain what idea they are intended to convey. They are not exactly arcades, and not exactly panels, not exactly walls, and not exactly niches. They have about them something of the shrine, and something of the sideboard, something of a tomb, and something of a mantelpiece; sometimes you are surprised by a little bit of half Byzantine Mosaic, and sometimes by an ingenious arrangement of Minton's *paving* tiles. Nothing comes amiss provided it makes a certain amount of show, does not hide any part of the east window, and expresses nothing in particular.

LEAKAGES IN WATER-PIPES.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

AT a meeting of this society, held in New York on March 19th, Mr. Joseph Whitney, C.E., of Cambridge, Mass., presented the subject of "Leakages in Water-pipes," illustrated by specimens of defective water-pipes from the Cambridge Waterworks. He desired to make a simple statement of his own operations and experiments. The great and growing increase in the consumption of water is a matter of the first importance in the management of waterworks. Scarcely a report relating to waterworks is issued which does not refer to it, and as something quite unaccountable, still no systematic effort is made to ascertain its cause. Some years since his attention was called to the subject in Cambridge, where, for three years preceding the water-pressure had been growing less, thus causing much inconvenience and insecurity in case of fire. This was ascribed to the great number of users from one main, an 8-in. pipe, in a particular house: the water scarcely rose to the second story, by night or day. After inquiry, a series of observations were made with syphon-pipe and pressure-gauge, to determine the cause. These were made in the morning, when the consumption was nearly nothing; and in one case by shutting off certain sections from the main, say a 4-in. or 6-in. pipe, a large leak was revealed where the pipe, laid in a street filled with oyster-shells, had parted. In another case, when the gate was closed, the water in the syphon at once rose 16 ft., equal to about two stories of an ordinary house,—the pipe, about 600 ft. long, and laid upon a marsh, was examined, and the leak found in a joint, where the two parts had been entirely separated by a settlement of one section. These and other leaks detected similarly were closed, and thus, without any increase of size in the main, an additional head was secured of 35 ft., which gave a full supply to each house in that locality. Observations were afterwards made upon the water in the reservoir, in the night-time, which showed still a leakage. By continued experiments upon the pipes throughout the city, nearly 200 leaks of from 1,000 to 2,000 gallons each per hour were found. The necessary repairs were made, and thereby the average daily consumption per head was reduced from 85 to 35 gallons, which is not more than one half that in most cities. Leakage of this character may exist a long time without being known; thus, it may start when the water is first let on, and the water find a passage through some blind channel into the sewer; it will not be seen at the surface, unless thus upward and outward is the easiest course.

It is quite probable that this subject concerns other cities than Cambridge, and furnishes a satisfactory reason for the great increase in the consumption of water, and the corresponding growing demand for supply, which more or less embarrasses public authorities. It is said that in the city of New York, the consumption is about one hundred million gallons per diem; if so, he was sure at least fifty millions were wasted through unrecognised leaks into the sewers and surrounding rivers. In Boston, more than seventeen millions of gallons are supplied, where eight millions should suffice. It is a fair presumption that one half these great amounts being but waste, its corresponding cost in the construction and operation of water-works, may be saved: surely examination, complete and exhaustive, should be made to determine whether this is presumption or fact.

Refreshments at Public Places.—Perhaps the biggest price ever paid for a refreshment contract has just been given by the restaurateur of the Crystal Palace, who has commuted the payment of 2½d. a head on every visitor to the Palace into a fixed annual sum of 25,000*l.*! As this must, of course, come out of the pockets of the refreshed, the question, after all, arises whether the inducement to the public to go to a place where they would be well and reasonably fed, would not bring a greater return to proprietors than an annual subsidy such as that mentioned.

RAIN-WATER TANKS.

IF you think the above illustrations of a rain-water tank, with filtering compartment, which I am now constructing, of any service to your correspondents on this subject, they are at your disposal. I believe the principle of its construction is not an uncommon one, although I know no example of its application

THOS. DINWIDDY.

THE CRUCIFORM SUN TEMPLE AT CALLERNISH, ISLAND OF LEWIS.

THE perfect preservation of this curious and remote prehistoric circle of standing stones, with its avenue from the north and its rows of standing stones towards the east, south, and west, affords as graphic an illustration as Stonehenge of sun worship in these islands of the sea; and may not such a perfect cruciform erection throw "a dim religious light" on the present "orientation" of our Christian worship and symbolism in church architecture?

The following description, with measurements and observations made on the spot, may be of some interest to the tourist and the archæologist. "These phantom forms of antediluvian giants," from their dread weird-like character, seem to have been left untouched by the many generations of islanders who have passed away. Since the ancient heathen worshippers left this "high place,"—a bed of peat-moss 5 ft. thick, only recently cleared away by the proprietor, Sir James Matheson, had grown year by year around the base of these standing stones. From a measurement made 150 years ago, by Martin, it would seem that less than the sixteenth part of an inch was about the yearly growth of this peat-moss; but many years may have elapsed before the formation of moss began upon this knoll, after it was left desolate.

The only relics of the forgotten worshippers found when the peat moss was entirely removed were two curious, built, sunk altar-chambers on the east side of the great gnomon or centre stone of a circle, having a built drain also from the same flowing towards the east. The standing stones are not hewn or dressed in any way, but are great upright blocks of gneiss, the prevailing rock from Butt of Lewis to Barra Head. The dimensions of the great stone gnomon are 16 ft. 2 in. high, by 4 ft. broad, and 1 ft. thick placed in the centre of a circle 40 ft. in diameter, formed of twelve stones averaging from 10 ft. to 13 ft. high. From this circle a row of stones projects eastward 38 ft.; another row southward 69 ft., and another towards the west 43 ft. Then we find the grand meridian avenue from the north, extending in that direction from the circle 270 ft., formed of a double row of standing stones 27 ft. apart. Walking up this avenue at twelve o'clock noon, and looking towards the great centre stone while the meridian sun throws his rays right athwart it, one can hardly fail to see the great object for which this rude memorial was erected. Whatever aspirations may have attended the use of the curious built chambers with their drain towards the rising sun, they certainly convey a graphic idea of what the Bible tells us about the sacrificial worship paid to Baal.

Martin gives an account of the extinction o

l the fires in the Western Islands, as in Ireland, Baaltine-day, *i.e.*, the day of Baal's fire: only payment of the tithes to the Druids were the es rekindled in each family, and never till en. "On this day malefactors were burnt beeen two fires: hence when they would express man to be in a great strait they would say,—Ie is between two fires of Bel,' which in their nguage they express thus, *Edir da hin beaul, Bel.* Those contiguous fires were also used e purifications and expiatory punishments.—*artin's Western Islands of Scotland*, p. 105. ere we have an idea of the use to which these o sunk altar-chambers might have been put prehistoric times. Their position and conruction seem adapted for these ancient rites. *Edinburgh.* JAMES KERR.

ROPOSED AQUARIUM FOR HASTINGS.

AT the monthly meeting of the town council Hastings, on the 4th inst., an important ommendation, presented by the Roads Comittee, was adopted. Owing to the increased affic to and from the pier, it has been thought cessary to widen the roadway and parade, by tending the sea-wall to take in the recess now isting opposite White Rock-place, within two ndred yards of the pier. A report, prepared the borough surveyor, Mr. W. Andrews, put e cost of a wall of stone and concrete at 000*l.* As a triangular space, about 600 ft. ng by 50 ft. wide (tapering to 10 ft.) would be closed, and as additional sub-space could be d to the westward under the existing parade, c. Alderman Howell suggested that a baseent floor-space might be created, in which an uarium, tepid salt-water baths, or similar quisites for a marine resort, might be formed. ie proposal having met with the unanimous sent of the corporation, the committee recomended that a premium of 100*l.* should be fered for the best design for utilising the ace, whilst providing for the widening of the adway and parade. A discussion arose as to e restrictions which should be put upon the mpetitors. It was stated that the committee sired to leave the matter entirely open, the uncil itself forming an opinion whether the an would be likely to cause damage, by rowing the sea on the adjacent parade, or ould be injurious to the lodging-houses oppoe, by the adoption of any erection which ould be higher than the present level of e parade. The preparation of details was mitted to the surveyor, with instructions to vertise in the *Builder* and other journals for signs and plans.

RAILWAY WASTE LANDS.

THE Metropolitan Railway Company have at gth begun to dispose of that portion of their aste land which lies along the King's-cross-ad. A large strip between Baker-street, Lloyduare, and the steps leading up to Granvilleuare, has been taken by Mr. Kellond, builder, Paddington, and the workmen are "putting e foundations in." That expression in this se must be taken with the proverbial grain of t; for, instead of putting "in," it is putting n" that is being done. All this ground was oken up to make the tunnel for the railway, d it has been lying waste for the last fifteen sixteen years. It has long served as a playound for the juvenile street-arab and kingob population. For years it has been a kind no-man's land, the police declining to interfere one side, because it was "private property;" d the company's servants declining, on the ner side, to meddle, because it "was the busiss of the police to maintain order for the blic." In the corner immediately adjoining . Dean's, the Union Tavern, there is a dwarf rrel-ventilating shaft for the railway, which ll have to be carried up as the houses rise. The first batch will consist of five eight-roomed uses on the south side of Granville-square, to place those that were removed for the railway. ere are to be about forty houses in all, mostly the small tenement character, with the excepn of the eight-roomed ones, which are intended be let for 50*l.* a year. This rebuilding will lude the filling up of the gaps in Baker-street d Granville-place, which, on account of the wds of disorderly idle boys, have long been esor s to the locality.

It is satisfactory to find that a change for the tter has come over the policy that so long ed the land management of the Metropolitan Railway Company. All along from opposite Clerkenwell workhouse,—that worn-out, decrepit disgrace of the parish,—a well-built line of houses and shops is arising. In some of the front elevations adjoining the corner of Exmouth-street variegated courses of brickwork and a little ornamental setting may be observed. This is more especially the case opposite the newly-erected fire-engine station at the corner facing the House of Correction, Coldbath-fields. Along the north-eastern front of the prison wall some houses have been built, and preparations for more are in progress.

There is an opening here for a very serviceable improvement. It must be mentioned that there is a large carriage traffic from the West, along Guildford-street, Russell-square, by the south-western side of the prison wall, up Baker-street, Lloyd-square, to the roads converging at the Angel, Islington. When anything special is going on at the Agricultural Hall, the steep ascent of Baker-street is literally crowded by the carriages of all the world of London, royalty downwards. Now, at the junction and crossing of King's Cross-road, opposite the Union Tavern, there is a very nasty dog's hind-leg turn, which often capsizes unmindful cabs. Whereas, if a curve were taken from the prison corner, over the jutting tongue of Baker-street, the danger of the place as it is at present would be entirely done away with. The ground is at present uncovered, the railway company having erected a monster hoarding, and let it out as a pictured advertising station.

THE TUNNELS IN THE MERSEY.

SIR,—In the "Tunnels under the Mersey" described in your paper of the 5th, would it not be an improvement if the two tunnels were made inclined, in opposite directions, sufficiently to enable the trains to run by their own weight, without steam, or even without an engine attached, and so keep the tunnels clear of steam? J. MACKENZIE.

METROPOLITAN BOARD OF WORKS.

AT the meeting of the Board held last week, a report was presented from the Building Act Committee, on a letter sent to them by Mr. Hayward, district surveyor of St. Martin-in-the-Fields, and St. Anne, Soho, in respect to the erection of a wooden scaffolding or framework for advertising purposes in West-street, Upper St. Martin's-lane. The committee recommended that the necessary proceedings be taken to test the question of the legality of such erections.

Mr. F. Fowler moved the adoption of the report, considering it highly dangerous that boards should be put up on the fronts of houses for advertising purposes.

Mr. Lawrence said these boards were very inflammable, and might lead to serious consequences.

After a discussion, the report was adopted, and proceedings ordered to be taken.

St. Paul's.—A letter from Mr. Daw, of the Sewers Office, Guildhall, was read, containing the following:—

"I am directed by the Commissioners of Sewers of the City of London to acquaint your hon. Board that, after a negotiation extending over several years, they have arranged with the trustees and the ecclesiastical authorities of the Cathedral Church of St. Paul for the improving and widening of the public ways at the north-west and south-west ends of the churchyard, by laying into the public way all the land shown on the plan, and which is at present enclosed by the cathedral railing. This railing will be removed from around the open area, and a line of kerb of the same level as the footway paving, with ornamental granite posts, will be placed around the part not laid into the public way, thus affording not only a large additional accommodation for the carriage traffic, but also giving increased opportunity for viewing the splendid western front of this metropolitan church. This improvement, the importance of which, for the general convenience of the public, the Commissioners consider can be scarcely overrated, is settled to be completed for the sum of 15,000*l.*, exclusive of professional expenses."

"BOX-MAKING BY MACHINERY."

SIR,—Having seen a letter signed "James Brewer" in your paper of the 28th ultimo, with reference to Machinery for Box-Making, hinting that he had invented something similar to my machine twelve years ago, will you do me the favour to insert the following facts?

I immediately took steps to ascertain whether there was such a machine to be seen, and sent to Mr. Brewer to hear where it was. This Mr Brewer could not tell, neither could he show the party any drawings of the machine as stated.

I beg, in conclusion, to say that I shall protect my patent rights to the fullest extent.

JOSHUA WOMERSLEY.

THE CITY GUILDS.

THE Educational Officer of the Society of Arts (Mr. C. Critchett) in his report to the Council on proceedings in connexion with education during the past year, says:—

"One of the principal objects of the conference held last year was to endeavour to enlist the aid of other public bodies, notably of the ancient and powerful City companies, or Trade Guilds, of London in this undertaking. It was known that many,—though not all,—of these companies possessed large revenues, and it had been observed, especially of late years, that most laudable anxiety had been shown by those to whom the responsibility of administering these revenues had been committed, that they should be made use of, to a considerable extent, for the public advantage, and particularly for encouraging, in some mode, the trade or craft which was now, or had been at some recent period, the occupation of most of the members.* Under these circumstances, and knowing the earnest desire felt by the courts of some of these companies to use the wealth committed to them for really laudable objects, and not to squander it, as had been too often done in former and unenlightened times, in useless if not injurious charities, the Council made an appeal to these guilds to aid them in this undertaking. I cannot but feel that, considering that the whole system is new, and that notwithstanding every effort to make it public, it is as yet but little known; that, moreover, it is, or was till recently, perfectly untried, and that consequently its success had not been assured,—I say, considering all these circumstances, I think the City companies have, on the whole, very fairly responded to the appeal made to them. The Fishmongers' Company, always amongst the first in every truly liberal undertaking, has given us a donation of fifty guineas, and the Mercers, Drapers, Vintners, Salters, Coachmakers, Spectacle-makers, and Cloth-workers have all given contributions. The last-named company, the Cloth-workers, have it in contemplation to take a much more important step and to establish scholarships in their own branch of manufacture, but as the details have not yet been settled I am unable to say exactly what will be done; but I believe it has been determined that the Society's technological examinations shall be made use of as the means of deciding upon the merits of the respective candidates for these scholarships."

WHAT IS IT COMING TO?

SIR,—I send you the following advertisement clipped from a local paper published in a town not 55 miles from London, merely expressing my wonder as to what the advertiser feeds upon, and what kind of a being he must be to be able to do all "that lot" for the money,—"in town or country," and to "scale," too! REVEAL.

"HOUSE!—HOUSES!!—PROPERTY!!!

A Four, Six, or Eight Roomed House, in Town or Country, for 15*s.* Drawings accurately prepared (to scale) in accordance with the bye-laws for the same, consisting of Ground and Chamber Plans, Elevation, and Section. Tracing, 5*s.*; Specification, 7*s.* 6*d.* extra. Private House Drain Plans, each 5*s.* 6*d.* Drawings and Specifications prepared for New Works, Alterations, or Repairs.

Mr. ———, Surveyor, &c."

GOODWIN *v.* TALL & COMPANY, LIMITED.

SIR,—We have just read Mr. Goodwin's letter, which appears in your impression of the 28th ult. The misstatements which that letter contains are so glaring that they can only be attributed to the fact of Mr. Goodwin being a layman instead of a lawyer, and having consequently entirely misunderstood the judge's summing-up. The shorthand writer's notes of this summing-up are now before us, and they do not contain one word about a written document being necessary to establish the right to royalties. At the conclusion of the Company's case Mr. Goodwin's counsel raised that point, but it was over-ruled by the judge. The judge simply alluded to the unbusiness-like manner in which Mr. Tall carried on his business, and to the special circumstances of this particular case.

Mr. Goodwin failed on one of the other points of the set-off, and had to pay such of the costs of the action as related thereto. His object in inserting the letter in your columns is manifest; and we think it right to mention, that in the event of any other persons disputing their royalties, the Company will fight the question as vigorously as before; and we believe that in other cases where the transaction was arranged in a more business-like manner, with better success.

ASHURST, MORRIS, & Co.,
Solicitors for Tall & Company, Limited.

THE ROOKS OF LONDON BRIDGE.

SIR,—I have lately been informed that a considerable fund has accumulated in the City from an obsolete annuity, which was instituted for the purpose of supplying the rooks about London Bridge with sticks with which to build their nests. As rooks have long since deserted that busy spot for more quiet quarters, the supply of sticks was stopped, hence the accumulation of funds. Can the money not be applied to the purpose of supplying "stacks" or "stocks" with which "humans" might build a "rookery" for their own habitation? The poor of the City are not well treated by those who have charge of the distribution of the City's charities. I know an old lady, seventy-four years of age, more than sixty of which have been spent in and around the ward of St. Michael Bassishaw, who is the widow of a freeman, now dependent upon the gifts, &c., of the ward, which have been at times reduced by her being compelled to leave the ward on account of the pulling down of dwellings to make way for offices, &c., and the very gifts are almost swallowed up by the rent of a single room, it being a condition that the recipient shall reside in the City, and, if possible, in the ward. Why cannot they be allowed to live out of the City? G.

* As an instance of this may be mentioned the course of lectures recently delivered under the auspices of the Stationers' Company, by Mr. Ellis A. Davidson, and the Rev. Arthur Rigg, on the arts of printing, type-founding, paper-making, engraving, and wood-cutting. The demand for tickets was so great that the lectures were repeated.

PROFESSIONAL INQUIRIES.

SIR,—Having received estimates for works in the country, the committee appointed wish to have the list of quantities priced out and placed with them, and not leave them in the architect's hands. Is it usual for the committee of a public work to have them or get them attached to the contract, which they could at all times see, or is it the custom to leave them altogether in the architect's hands?

When a schedule of prices is delivered, is it usual to put the price of the material at per foot or yard only, or carry out the prices in full, adding them up at the end of each column, so that the total should show the exact amount at which the tender was sent in? The following are copies of the conditions affecting the question:—

"The quantities are to be taken conjointly with the drawings and specifications, in framing the estimate.

The contractor to send back one of the bills of quantities he is supplied with priced, so as any additional work required may be executed upon the terms of contract, or any work named in quantities, and not required to be done, may be deducted at the price allowed."

Supposing a tender sent in for a lump sum, would the contractor, assuming there be an error in quantities in his favour, have to make a deduction from his tender?

INQUIRER.

ST. MARY'S, NEWINGTON.

SIR,—In your notice of the new rectory now in progress for St. Mary's, Newington, it is stated that the church, also, is to be erected from my designs. That is not so; Mr. James Fowler, of Louth, having been appointed architect by the committee to carry out a design sent in by him in competition with five other gentlemen. I made a report upon the designs submitted, but the committee have nothing to do with the rectory house.

EWAN CHRISTIAN.

KITT'S COTY HOUSE.

FOR the first time, on the evening of the 6th of May,—when the Ancient Monuments Bill was accepted by the House of Commons,—I happened to visit this ancient relic, a kistvaen, as Dr. Borlase believed it to be, on a hill about a mile north-east of Aylesford, in Kent. It is engraved in Dr. Stukeley's "Itinerarium Curiosum," second edition, folio, and in Higgins's "Celtic Druids"; also, more accurately, in the London Archæologia, page 116, where the large stone, seen by Stow, the antiquary, A.D. 1590, recumbent seventy paces north-west of this relic, is engraved also. This stone has disappeared, but the four stones of the monument remain intact. In Stukeley's plan this recumbent stone is described as the general's grave, and Dr. Stukeley also referred to another stone in the vicinity, marked in his plan as the coffin stone. The writer in the "Archæologia," vol. ii., describes the covering stone of Kitt's Coty as being 11 ft. long and 7 ft. wide. It rests on three stones, about 6 ft. 6 in. from the ground. The two side stones are described as being respectively 8 ft. wide and 2 ft. thick. The centre stone, placed about midway between the two side stones, is about 6 ft. 6 in. high, 2 ft. 10 in. wide, near the top; 5 ft. 6 in. in the middle; and 5 ft. at the bottom. It touches the covering stone and the side stones also. The recumbent stone may have been a fourth supporter, or, perhaps, an upright pillar standing apart.

The "Iter Curiosum" contains a view also of the fallen cromlech of Kitt's Coty, which I saw in a field near the road. It is not engraved in this volume of "Archæologia," but the stones at Addington, some miles westward, which I saw, are engraved in it accurately, and these relics are described also.

CHR. COOKE.

CHURCH-BUILDING NEWS.

Chesterton.—The need of a church in St. Luke's district is so urgent that a committee decided to commence building at once, and to continue as funds come in. The lowest tender,—that of Mr. Thoday, of Cambridge,—was accepted. The chancel and three bays of the nave (omitting the north aisle) are to be built for 2,880*l.*, in white Cambridge brick, with stone dressings. The number of sittings will be about 480. This is, of course, only a first instalment. It is desirable that the north aisle should be built with this first portion, and the number of sittings thus greatly increased. The estimate for the entire church, omitting tower and spire, is under 5,500*l.*

Stafford.—The work selected some time ago for a memorial of the late Mr. Thomas Salt was a further restoration of the Norman Church of St. Chad, Stafford, which the late Mr. Salt desired to see completed, as he had himself promoted and greatly aided its commencement. Plans for the purpose have been furnished by Sir G. Gilbert Scott, who restored St. Mary's and Castle Church some thirty years ago. There has been much delay in maturing the arrangements for commencing the work. Sir G. G. Scott's principal clerk, Mr. King, attended recently on behalf of the architect, who has lately been suffering from over-exertion, and in consultation with him the committee determined at once to proceed with the work as soon as tenders can be obtained, though, from the limited amount of the funds in hand, only a portion of it can be undertaken at present. This portion will consist of a thorough restoration of the nave, outside and in, with the removal of two houses which now obstruct the view of the west end of the church from the street, and the erection of a suitable entrance-gateway. These works will, according to the architect's estimate, quite exhaust the money in hand, which at present scarcely exceeds 700*l.* The committee are desirous, if they had the means, to include in the restoration the re-erection of aisles which formerly existed, and without which the effect of the restored nave will lose more than half its power, because it will be necessary, when the arches and pillars have been renewed, as at present intended, to block up the openings again with temporary brickwork. This would be avoided if further contributions came in at once for the erection of aisles.

Cookham.—The new church at Cookham Union is in the Early English Gothic style of architecture, and is dedicated to St. Mark, and designed to seat about 200 persons. It consists of a nave, north and south transept, and chancel. The outer walls are of rag stone, with Bath stone dressings. The roofs are covered with plain tiles, relieved by ridge crests. The walls internally are stuccoed. The roof is of open timber work. The seats in the body of the church are of stained deal, whilst the furniture of the chancel is of oak. The windows are filled with cathedral glass, of two tints. The west end of the church is finished with a bell-cot of Bath stone. The organ is built by Mr. H. Jones, of West Brompton. The church is supplied with a heating apparatus by Mr. W. Blowfield, of Maidenhead. The ironwork of the Communion-rails and elsewhere was executed by Mr. Tuck, of Maidenhead. The church was erected from the design of Mr. C. Cooper; and Mr. W. Woodbridge was the builder. The sole cost has been borne by Mr. Hibbert, who also gave the organ.

Cheam.—The foundation-stone of the new church of St. Philip, Cheam-common, has been laid. The site was liberally presented by Mr. H. Lindsay Antrobus, and the plans were prepared by Mr. R. H. Carpenter, architect. The lowest tender (that of Messrs. Shearburn, of Dorking) has been accepted.

Thornbury.—Littleton Church, Thornbury, having become unsafe for use through age and disrepair, it has been resolved to take it down and build another. The new church will be built on similar plans to the old one, under the direction of Mr. Pope; indeed, the materials of the old building will be used in the construction of the new, whilst the seats and internal fittings of the place will be used most probably as they are. It is estimated that the rebuilding will cost 1,200*l.*

Greenhithe.—Steps are about to be taken for the restoration of the tower and nave of Swanscombe old parish church. The cost of restoration, amounting to 1,761*l.*, is defrayed by Professor Erasmus Wilson, formerly of Greenhithe. A memorial window, designed by Messrs. Wailes, of Newcastle-on-Tyne, will be inserted in the east end of the north aisle by the committee. The architect is Mr. Jabez Bignell, of London; and the builder, Mr. W. Gumbrell, of Dartford.

Balcombe.—The church here has been re-opened after restoration. The additions have been erected by Mr. Dancy, builder, from designs supplied by Mr. Ewan Christian, at a cost of about 2,300*l.*, including fittings. To provide sufficient accommodation the architect has caused the north aisle to be turned into the nave, adding to it a chancel, thus extending not only the width but the length of the church. A new north aisle and vestry have also been built, the vestry being separated from the chancel by an organ chamber, and the old organ having been removed from the west gallery under the tower. This gallery has also been removed, and in its place is the font, the tower being now made into a baptistery. The seats which are open benches, are partly new, and are of stained deal, but the seats for the choir, in the chancel, are of oak. The chancel is paved with encaustic tiles of a dark colour, while the aisles are of ordinary red paving-tiles with a black border. The new work is all in the early fourteenth-century style. The pillars and arches are composed of local sandstone dug from the quarries in the neighbourhood. In the chancel arch the small shafts are of red Devonshire marble, and the corbels are finished with carvings and crowned heads. The centre has the simple old roof, but both the new aisle and the chancel are of open timber with trussed rafters, sealed with plaster in the aisle, and with board over the chancel. The church is now calculated to seat about 300 people, and is heated in winter by means of Hayden's patent warm-air apparatus. The reredos has been enlarged in character with the new chancel by having let in a centre panel. This reredos was the gift of Mr. J. Hankey, who also presented the additional centre panel. This panel is of russet marble, with a border of alabaster and coloured marbles. On it is a cross of Italian alabaster and a gold mosaic circle in nimbas. An additional piece of burial-ground taken from the adjoining park, has been given by Mr. John Hankey.

Eastwick.—The small church of Eastwick has been rebuilt and reopened. It was at first intended to restore the old fabric only, but as the preliminary work of restoration progressed it was discovered that certain portions of the church were so much decayed as to render the entire reconstruction necessary, and hence the church, with the exception of the tower (which has been newly faced) was rebuilt, through the liberality of Mr. J. Hodgson, of Gilston Park, at a cost of something like 3,000*l.*, from designs of Mr. A. W. Blomfield. The church, which is built of flint, with Casterton stone dressings outside, and Ancaster stone inside, is 50 ft. long by 20 ft. wide in the nave; the chancel is 34 ft. by 14 ft. 6 in. wide, and the tower reaches the height of 50 ft. The whole of the woodwork is of plain English oak, grown within twenty miles of the church. The sittings are made to accommodate 135 persons. A new coloured east window has been placed in the church by the rector, the Rev. John Reeves Purcell, in memory of his mother. The subjects illustrated are the Crucifixion, the Resurrection, and the Ascension. The font is of Caen stone, with red Mansfield columns, and the pulpit is built of Ancaster stone, with Mansfield dressings. A new chancel organ, by Beverley, of London, has also been added to the church at a cost of 150 guineas. The whole of the work has been done by Messrs. Green & Son, builders, of Stanstead.

Butterton.—The new church of Butterton near Leek, has been opened for divine service. The order of architecture is Modern Gothic, and there is one side aisle. The stained east window is the gift of Mrs. Byrom, of Leek. Mr. Christian was the architect, and Messrs. Bassett & Wilson of Sheen, were the builders. The contract, including bells and other extras, amounted to about 1,700*l.*

Beckington.—The Church of St. Gregory, at Beckington, has undergone a restoration, and has been reopened for divine worship. The interior walls have been divested of their coating of plaster and whitewash, and have been "pointed" throughout. The old windows have given place to new tracery ones, which, with two exceptions, have been filled with tinted cathedral glass. The north aisle roof, which was formerly flat, is a new and open one, while the other portions of the roof are repaired and retiled, and the floor, doors, and benches are entirely new. There is a new pulpit of Bath stone, simply carved. The tower, which had been closed for a considerable time, has been opened, and the groined roof renovated. The organ has been removed to a chapel on the south side of the chancel. Over the tower or west entrance there is a new painted window, the gift of Admiral Elgell, C.B. It consists of double lights, representing incidents in the life of the Saviour, commencing with the Nativity and ending with the Ascension, with figures of angels in the tracery. A new four-light painted window has been placed in the wall on the north side of the chancel. It contains figures of the four evangelists. Both windows are the work of Messrs. Horwood, Brothers, of Frome. The latter window, together with a reredos in three panels, has been presented by the rector, the Rev. Sainsbury Langford Sainsbury. The reredos is the work of Mr. Earp, of Kennington. The centre panel contains an alabaster cross on a groundwork of mosaic, and the other panels contain sacred monograms. The chancel roof has been divided into panels and illuminated by Messrs. Horwood, Brothers, from designs supplied by the architect, Mr. James St. Aubyn, of London. Four lamps have been placed in the chancel, by Mr. J. W. Singer, of Frome. There

new heating apparatus by Messrs. Riming- & Son, of Skipton. The contractors were ers. F. P. & G. Brown, of Frome. The total has been about 1,000*l.*, exclusive of works ·t. The organ has been rebuilt and enlarged Mr. H. J. Prosser, of Road. The instrument been illuminated by Messrs. Grant, Brothers, hapmanslade.

SENTING CHURCH-BUILDING NEWS.

ockton.—The new Unitarian Chapel, the dation-stone of which was laid in November has just been opened. The chapel will mmodate 300 persons, and provision has made for the erection of a gallery to seat more. The chapel and schools have been from the designs of Mr. E. E. Clephan, kton, at a total cost, including land, of 0*l.*

nwerby.—The plans for the proposed chapel school, which are to stand on the site of the ent buildings at Steep-lane, have been pre- d by Messrs. Horsfall, Wardle, & Patchett, alifax, and are in the Italian style of archi- ire. The school is to be built first, and when is completed service will be held in it until chapel is rebuilt. The principal front gives entrance doorway, approached by an easy t of five steps. The doorway has pilasters ach side and pediment over. On each side square-headed window. In the second stage, the door, is a triple window having circular ding, and on either side a single circular- ied window. On either side of the building range of five square-headed windows on the floor, and five circular-headed ones to the nd. The vestibule has an entrance to the ery at each end. The chapel proper will be . by 39 ft., having galleries all round, and ding accommodation for over 500. There be no pulpit but a rostrum, having in front baptistery and communion. In rear of the el is the school, 50 ft. by 26 ft., and having t communication with the chapel. Over the ol are class-rooms.

dford.—The chief stones of a new Wesleyan el have been laid at Southend, a new suburb Bedford. The edifice, the style of which is ly English, says the *Bedford Times*, is to be t of Warrington hammer-dressed stone, with h stone dressings for the window mullions door jambs, and surmounted by a bell et. The entrance porch will have a frontage Offa-road, and the building set back from pthill-road. The interior walls are to be of ted stucco, with 4 ft. 6 in. wainscot; open tie roof up to the collar-beam, where it will e-iled; open seats stained and varnished, ing backs, providing seats for 260 persons, third of them free; rostrum instead of pit, with doorway in the rear, leading to the ol-room, which, capable of accommodating y children, may be thrown open to the el if required. The building will be lighted four windows, on either side, of cathedral s, and a stained four-light window at the h end. The estimated cost of the whole, uding the site, is 850*l.*, of which a large pro- tion has been raised. Mr. C. Day, adds our nority, is the architect, and, in conjunction Mr. L. B. Moore, the builder. The chapel be lighted by gas.

ettenhall Wood.—The new Congregational pel has been opened. It has a frontage of t. to the main road. The style of architec- is Gothic, of the geometric period. The ing and dressings are of Codsall stone, the ier rock-faced, the latter tooled. The in- al dimensions of the chapel are 66 ft. long 3 ft. wide, and 27 ft. high to the ceiling. A ery has been erected at the end over the rance-lobbies. The roof is in a single span, ceiled at a level with the collar-beams. The n timbers which are exposed to sight are ned and varnished, the spandrels being ed out in colour. The principal front is ded, having a central entrance, and over are double-light tracery-headed windows, with se-window in the centre. At the north-east le is a turret, carried up to a height of 70 ft., upper stage of which has arched openings on four sides springing from stone shafts, with ved foliated capitals, surmounted by a cornice, n which the spire springs. A clock is to be d in the turret, the dial being placed in the ning of the upper stage. The side windows the chapel are double light, with tracery ds. The whole of the glazing is with cathedral ed glass. The accommodation is provided for about 400. Vestries and lecture-rooms are arranged for, but it is not intended to erect them at present, a temporary vestry having been built. The contract for the building, including heating, boundaries, and other expenses, is about 2,000*l.* The builder is Mr. Cockerill, and the architects are Messrs. Bidlake & Fleeming, all of Wolverhampton.

Burton.—The new Wesleyan Chapel, Devonshire Park, has been opened for divine service. The building is a Gothic structure, and is situate a short distance from the Palace Hotel. It is intended to seat about 700 persons, with accommodation for a number of Bath chairs round the pulpit. It has an open roof, and all the woodwork is either stained and varnished, or varnished. The windows are bordered with crimson-coloured glass. In the chancel there are three memorial windows to the late Rev. Thomas Shaw, John Milligan, and Mrs. Fisher. The cost of the buildings and fittings is, we are told, about, 5,000*l.*

Peckham-rye.—A Wesleyan chapel is being erected in Barry-road. The building will be Early Gothic in style. The principal elevation is towards Barry-road, and the entrance is by a projecting porch in the centre of the elevation. On each side of the entrance there are two small double lancet windows, and over the entrance there are two three-light traceried windows, with a large traceried rose-window above them, and at the apex of the elevation three small lancet windows. The arches over the doorway and windows will be of Luton brick, and the dressings of Bath stone, the main portion of the elevation being of yellow stock brick. At the south angle of the elevation the tower with spire, rises to a height of 105 ft.; the tower, 14 ft. square at its base, being carried up to a height of 30 ft. There is an octagonal turret at the north angle, 12 ft. in diameter and 50 ft. in height from the ground level, containing gallery stairs. The lower portion of the side elevations, containing the aisles, has six square-headed windows, above which are six tracery-headed windows to the galleries. Buttresses, coped with stone, are carried up between the windows to the full height of the aisles and galleries. The building is carried up above the gallery roof to a height of 40 ft., and contains six clearstory windows on each side. The entire length of the edifice, including the chancel, is 120 ft., and its width 52 ft., and the extreme height to the apex of the roof 60 ft. The chancel, which is apsidal in form, contains three traceried windows. Internally the structure contains a nave, aisles, galleries, chancel, and vestry. There are iron columns, with cast-iron capitals, from which spring stone moulded arches. The interior will have an open timber roof of stained deal, and open stall-seats and pulpit composed of similar materials, the walls being of stucco work. Schools, uniform with the chapel, are intended to be erected immediately adjoining the latter. The contract price of the chapel, exclusive of the galleries and spire, and schools, is 4,550*l.* The architect is Mr. Charles Bell, of London; and the builders are Messrs. Nutt & Co.

Macclesfield.—The foundation-stone of a new Baptist chapel, about to be erected in St. George's-street, has been laid. The chapel, which is to cost 2,500*l.*, will be 54 ft. long, and 40 ft. wide. The basement will be built of Tegsnose pitch-faced wallstones throughout, and will comprise a schoolroom, 37 ft. by 33 ft. 6 in., and four class-rooms and infant-rooms, besides accommodation for heating apparatus, and tea-meetings. The chapel, which is to be in the Italian style of architecture, will be built of brickwork, with stone dressings, and will have a double-entrance doorway facing the street, with semicircular heads and pillars; the approach will be by ten steps, leading to a lobby and staircase. On the chapel-floor the minister's and deacons' vestries will be arranged; every available space is to be engaged for seating accommodation, and the galleries will occupy three sides of the building, a singers' gallery to be erected immediately over the vestries. The pews have stall ends, leaning backs, and bookboards. The front of the chapel will be set off with stone pilasters at each corner, moulded cornice, and frieze over the entrance-door, in addition to which will be a tier of five windows above with pilasters, griller cornice, blocks and arches, to be finished with three small spirelets. The chapel, which is to accommodate between 500 and 600 people, will be well lighted in every part. The architects are Messrs. T. Horsfield & Sons, Halifax, and the builders are Messrs. Burrows & Moseley, Macclesfield.

SCHOOL-BUILDING NEWS.

Bradford.—The new buildings of the Bradford Grammar School have been opened by Mr. W. E. Forster, vice-president of the Council. The cost of the structure has been about 8,000*l.*, and accommodation has been provided for 400 boys. Mr. Forster, in the course of his remarks, said he believed the work of the Endowed Schools Commission would be found to have been much more successful than was anticipated. He referred to Eton as an institution having a tendency to abolish class distinctions, at any rate in education. He rejoiced in the provision for the teaching of religious subjects in the Bradford Grammar School, and thought the religious difficulty had been dealt with by the Government in the best way, viz., that such instructions should be confined to lessons from the Bible, while at the same time parents were at liberty to withdraw their children from such instruction if they so desired.

Tibberton.—The new parish school, which has just been built from the designs by Mr. W. J. Hopkins, architect, has been opened for use.

Ipswich.—The formal inauguration of the schools which have been erected by the Ipswich School Board took place last week, when the schools on the Wherstead-road and in Argyll-street were visited in state by the Mayor and other members of the Corporation, the members of the School Board, and of other public bodies. They have been erected, as we have before described them, by Messrs. E. & E. C. Gibbons, from the designs of Mr. Butterworth; Mr. Oliver Gibbons having the superintendence of the work. The cost of the block of schools was about 3,600*l.*, and the number of children they are intended to accommodate is 800,—boys, girls, and infants.

Caterham.—The new schools at Caterham, which have been built under the School Board, have been opened. They consist of a boys' and girls' school, to accommodate 125 in each, with class-rooms attached. Residences for the master and mistresses adjoin. The whole cost was about 2,500*l.* The architect was Mr. R. Martin, of Caterham.

Torrington.—The School Board school buildings have been opened. The site is a piece of ground in the centre of the town, in continuation of the new terrace recently built by the Okehampton Building Company, and facing the newly-erected villas on the Rolle property. The style of the elevation is simple and of an Early English treatment, and the buildings comprise an infant school to accommodate 100, flanked on one side by a school for boys, and on the other side by a school for girls, each of the latter giving accommodation for 120 children, making a total provision for 340. The exterior facing of the walls is of local stone, and the dressings are of stone procured at Hamden Hill. The slate on the roofs is partly Delabole and partly Welsh, laid in alternate longitudinal rows, the lighter hue of the one relieving the sombre dulness of the other. The building is surmounted by a bell-turret at the junction of the roofs, containing a well-toned bell. The extreme point of this structure is at least 40 ft. from the ground. The infants' room is lighted by two large four-light windows, and the boys' and girls' schools by three-light windows in the gables, with side windows over the desks. These desks, which are of pitch pine, are ranged longitudinally with the building, and have a very neat appearance. There is a gallery also fitted with desks. The dimensions are as follows:—Infants' school, 40 ft. by 20 ft.; girls' and boys' schools, each 44 ft. by 18 ft. The total cost of the buildings, exclusive of the land, for which alone 170*l.* were paid, has been about 1,300*l.* The architect was Mr. Alexander Lauder; the engineers, Messrs. Garton & King, of Exeter; and the builders, Messrs. Medland, Grant, & Eastmond, of Torrington.

Marston.—The South Marston new National Schools have been opened. They are built in the Early English style, of local stone; and have a bell-turret rising to a height of 40 ft. The interior consists of a schoolroom, 37 ft. by 18 ft.; a classroom, 14 ft. by 14 ft., with a gallery for the infants.

Stokesley.—New schools have been opened at Skinningrove. The site was given by the late Earl of Zetland, and the Messrs. Pease instructed Mr. France, of Mr. Marske, to design schools to accommodate about 300 children. The total cost of the schools will be about 1,500*l.*

Tenbury.—The foundation-stone of a new school and school-house at Burford has been laid. The edifice, which is to be erected from

designs by Mr. Ernest A. Day, of Worcester, will comprise a school-room, 32 ft. by 18 ft., and a class-room, 16 ft. by 12 ft., with a suitable house for master and mistress; the whole, with the playground and garden, occupying full half an acre of ground, which Lord Northwick (at whose sole expense the school will be built and maintained) has purchased from the rector of Burford, besides a portion of half an acre of glebe land on the Lockyey, which his lordship has also given. Mr. Page Manson, of Tenbury, is the contractor for the brick, stone, and plaster work; the wood-work will be executed by his lordship's carpenters, under the superintendence of the foreman, Mr. S. Dovery. The site is central and convenient, being close to the rectory and the church.

Nottingham.—The memorial-stone of new school and class rooms in connexion with Addison-street Congregational Church has been laid. The schools are being constructed from designs prepared by Mr. Gilbert, and will consist of a main room, 46 ft. long by 25 ft. wide, with five class-rooms. There will also be rooms for coffee and tea meetings, &c. The building, which will be of Bulwell stone, with dressings of Ancaster stone, is intended to form part of a group of which it is intended at some future time a new chapel shall constitute the centre, in place of the present iron edifice.

Jump.—The foundation-stone of a new Church of England school at Jump, near Wentworth, has been laid. The building, which is to be erected at the sole cost of Mr. George Dawes, will, when complete, accommodate about 220 children, and the expenditure will amount to about 600*l.*, including the cost of the school itself and the master's residence. The erection will be of rubble-stone. Mr. V. Broadbent, of Hoyland, is the builder.

STAINED GLASS.

Holywell Church.—A new east window, constructed by Messrs. Hardman, of Birmingham, has just been placed in this church, to the memory of the late vicar, the Rev. H. B. Walton. The subject is "The Crucifixion," and the cost of the window, which has been defrayed by subscription, was 110 guineas. The glass from the old window will be utilised at the west end of the church.

St. Saviour's, Eastbourne.—A stained-glass window has recently been put up in the north aisle of this church. The design illustrates the scene described in St. Luke, x. 38—42: "Jesus answered and said, "Martha, Martha, thou art careful and troubled about many things; but one thing is needful, and Mary has chosen that good part, which shall not be taken away from her." The work has been executed by Messrs. Clayton & Bell, of London.

Church of Alvechurch.—A memorial window has been placed in the east end of the chancel of the parish church, to perpetuate the memory of the late Venerable Archdeacon Sandford, rector of this parish. It comprises three lights, and the subject chosen for delineation is the Passion of our Lord. Each light represents two events; the central portrays the Crucifixion and Ascension. The work was executed by Mr. Gibbs, of London.

Dymatt Church.—The east window of this church has just been filled with painted glass, as a memorial to the Rev. Wm. Hyde, a late rector. It consists of four lights, divided by a transom in the upper tier. The subjects are the Adoration of Christ by the Shepherds and the Baptism of our Lord by St. John, each subject embracing two lights. Through the lower lights runs one subject only, that of the Last Supper. In the centre tracery-light is the escutcheon of Hyde, and in the sides are angels with scrolls. The ornamental portion of the window consists of canopy-work, suitable to the subjects, and in harmony with the architecture of the window. The work has been executed by Messrs. Bell & Son.

St. Mary's, Beverley.—A stained-glass window has been placed in the south side of the nave aisle of this church, by the widow and three sons of the late Mr. T. F. Champney, solicitor. It consists of three lights and tracery, of the Perpendicular or fifteenth century style of architecture. The dexter light contains the subject of the Adoration of the Magi. The centre light represents the departure of the mother of Jesus, weeping, from the scene of the Crucifixion, supported by the beloved disciple St. John, and followed by other spectators. The third or sinister light illustrates the Saviour in the Temple expounding the law to the doctors. The work has been carried out by Messrs. Hardman & Co., of Birmingham.

Chagford Church, Devon.—A stained-glass window has just been added to the parish church of Chagford. The window was designed and executed by Messrs E. & S. Beer, of Exeter. The subjects treated are, in the first light, Michael and the Archangel, and in the second, St. George and the Dragon, both being under decorated canopies, whilst in the principal opening is a cross interlaced with the sacred monogram. It is a memorial window, put up at the cost of Mr. E. S. Baily, of Whiddon Park.

Linslade Church, Buckinghamshire.—The east window of this church has been filled with stained glass, the gift of Mr. James Hadley, of Watford, formerly a parishioner and churchwarden. The window is one of four lights, with one large tracery piece and several much smaller. The subjects are four principal events in the life of our Lord, with their types above. They run thus, beginning on the dexter side,—the "Nativity," with the "Finding of Moses" above it. Then follows the "Baptism of our Lord," with its figure above, the "Passage of the Israelites through the Red Sea." The next subject is the "Crucifixion," which is made to balance in its drawings with the other subjects. Its type is "The Brazen Serpent in the Wilderness." The last subjects are the "Resurrection," and over this Abraham's sacrifice, and the ram caught in the thicket by his horns. The large tracery-piece has a figure of St. Cecilia, attended by angels. The colouring throughout is quiet, and non-architectural canopies are placed over the subjects. It is the work of Messrs. Heaton, Butler, & Bayne, of London, the artists who stained the west window of Berkhampstead Church. There is no dedicatory inscription on the window, as there ought not to be in that part of the church. The inscription is written on a white marble slab below the chancel, in the body of the church, and runs thus:—"The stained glass in the east window of this Church of St. Barnabas was set up by James Hadley, to the glory of God, and in affectionate remembrance of his only daughter, Elizabeth Sarah Ann, who died at Watford, Octob. 16th, 1872, aged 16 years, and was buried at Old Linslade,—Blessed are the pure in heart."

Sheepstor Church, Dartmoor.—A memorial window to the late Rajah Sir James Brooke has been opened in this church. The rajah's last residence,—Burrator,—was in the parish of Sheepstor, and in the churchyard of that secluded moorland village his body lies.

VARIORUM.

"THE Trial of Sir Jasper," by Mr. S. C. Hall, F.S.A., is the title of a temperance tale in verse, announced to be published by Virtue & Co. The prospectus promises twenty-five engravings from drawings by Messrs. E. M. Ward, R.A., Mrs. E. M. Ward, Alfred Elmore, R.A., Thomas Faed, R.A., W. C. T. Dobson, R.A., Sir Noel Paton, R.S.A., Sir John Gilbert, A.R.A., George Cruikshank, John Tenniel, W. Cave Thomas, Gustave Doré, Birkett Foster, G. H. Boughton, P. R. Morris, N. Chevalier, Walter J. Allen, H. R. Robertson, E. Sherard Kennedy, John Morgan, James Orrock, H Auclay, and F. D. Hardy. This alone will make the book a remarkable shilling's-worth. The author writes,—

> "We ask—and have the aid of Art, to show
> The height and depth of this the country's curse:
> To tell, with emphasis, what all should know:
> For Art can give a living force to Verse.
> Here are the Artist-Aids; impressive teachers:
> Social Reformers: high and holy Preachers,
> Whose painted sermons he who runs may read:
> Who speak the tongue of all mankind indeed.
> Blessed be they who use God-given powers
> To till the soil to plant the pregnant seed
> That lends the moral desert fruit and flowers."

Mr. Hall has undertaken a good work.—A writer in the *Garden* gives some instructions for forming a small out-door fernery. He says, "There are few small gardens where an opportunity does not exist for the making of a picturesque hardy fernery. Often, if there is no better place, the rubbish-hole or nook may be turned to good account. If there be nothing else, a space behind the bushes, and between them and the boundary-wall, will be found useful. Send a little walk by one of the larger bushes into one of these unseen places; make a tiny winding valley, letting the walk through it emerge at another convenient point. The main point I wish to show by my sketch is, that in this tiny vale a good effect may be obtained without resorting to the masses of brick rubbish, &c., that one sees in so many gardens. Steep flanks of impossible rock are by no means necessary for ferns; on the contrary, they do not thrive so well on such structures as in such a place as is here represented. They are, indeed, perfectly at home on lowish banks, if the soil be suitable, and there are enough rocks and stones used to keep the ground moist where needful. A more picturesque effect is secured by a few well-chosen half-buried stones than by the quantities of ill-chosen or ugly ones that are so frequently used. Indeed, if the choice lies between the common style of rocky fernery, and the level ground, it is much better to choose the latter. In the hardy fernery it is too much the fashion to plant ferns alone, as if they only enjoyed such a position. There are many lovely hardy flowers which are wood-haunters and shade-lovers as well as ferns, and by planting these among the ferns, a much more interesting result, and a much higher beauty, are produced than if we only plant ferns. Such noble plants as *Cypripedium spectabile* and *Trillium grandiflorum* thrive better in the moist free soil and the partial shade suited for ferns than in ordinary borders. Saxifrages, primroses, lily of the valley, snowflakes, and hardy cyclamens are a few of the many plants that will associate beautifully with ferns, and that will lend a high degree of interest at all seasons to this miniature garden.——We get from *Cassell's Popular Educator* for July, a few lines about the extraction and refining of copper:—"The extraction is effected by exposing the ore heated on the hearth of a reverberatory furnace to the action of the air. The copper becomes a sulphide, whilst the iron becomes an oxide. This oxide is removed with the quartz, as a fusible slag. During this process the furnaces emit a dense cloud, known as *copper smoke*. It contains fumes of arsenious, sulphurous, sulphuric, and hydrochloric acids, and is consequently extremely deleterious. After the ore has been submitted to this *calcining* process for some time the heat is raised, and the fusion of the ore determined. The copper sulphide, mixed with some iron sulphide, sinks to the botton of the furnace, forming the *matt*, which is then drawn off into water by which means it is granulated. This *coarse metal* is again roasted, and the remaining iron thus oxidised; ore rich in silica is added, and the whole fused. The oxide of iron and the silica form a slag; and the copper in the form of a subsulphide—*fine metal*— (Cu_2S), is drawn off and cast into pigs. It only remains to free the metal from the sulphur; this is accomplished by submitting the pigs to a heat in a reverberatory furnace just insufficient to fuse them. The metal at the surface thus becomes oxidised, and when fusion takes place this action occurs -

$$Cu_2S + 2CuO = SO_2 + 4Cu.$$

Thus the copper is obtained. It still requires to be *refined*. For this end it is again fused in order to oxidate the last traces of foreign metals, which are removed as slags; and to reduce any oxide of copper, the trunk of a young tree is thrust into the molten mass, the gases liberated from it deprive the oxide of copper of its oxygen, and thus the metal is procured in its pure state; this last process is termed *poling*. The appearance of copper is well known, but when pure, as produced by the electrotyping process, it possesses a beautiful pink colour. It is very tenacious, ductile, and malleable. It melts at about 1,090° Cent., and is capable of some volatilisation, imparting a green tint to the flame. At ordinary temperatures air has no action upon copper, but if heated a cupric oxide is formed, which, as it contracts more slowly than the metal beneath, comes off in scales. If ignited, finely divided copper will burn like tinder into the black oxide."

The Mill Memorial.—The Mill Memorial Committee have resolved—"That a statue of Mr. John Stuart Mill be erected in some public situation or building in the metropolis, and that the fund be further devoted to the foundation of scholarships, open to the competition of both sexes, in mental science and political economy, or otherwise in the promotion of mental and social science, subscribers being at liberty to mention their preference as to which of these objects their donations shall be applied to." The executive committee, includes Mr. Stansfeld, M.P., Sir John Lubbock (hon. treasurer), and other men of influence.

Miscellanea.

The Discovery at Worcester College Hall. . Noake, the historian of Worcester, says of s discovery that after a close examination of details, he is inclined to agree with Mr. Hop- us, the architect, that it is not a reredos at . In the first place, he supposes that the ste: ce of a reredos and altar in a monastic ectory would be unique. Secondly, there is trace of an altar there. Thirdly, there are ther sedilia nor a piscina, both of which ually accompany an altar. It is true there is aumbry, or cupboard, with a basin-like ex- ration at the bottom of it, which at first view ks like a piscina, but on closer inspec- n it seems that the basin had been roughly oped out after the removal of one of the tiles ich cover the bottom of the cupboard. For at purpose this was done does not appear, l if ever there was a hole communicating rough it to the ground, this, of course, would re been a piscina, though not necessarily for lesiastical purposes. There is, therefore, no id reason, he thinks, for supposing that an ar ever stood in the college hall, or that the autiful and interesting relic just discovered is thing more than a fine specimen of wall coration, designed to grace and adorn that l of the apartment at which the prior, sub- or, and chief officers of the monastery sat, on igher level or dais, raised some feet above rest of the floor. The entire thing is Early glish, in which some features of a transitional aracter may be traced. It is to be hoped t in the wholesale destruction of antiquities ich has been made of late, and is still taking ce at the cathedral, this fine old relic is not med to be of the number, and that the sculp- e may be left alone, just as it is—neither tored nor destroyed.

Opening of the Isle of Man Narrow uge Railway.—There are at present in struction in the Isle of Man two lines of way, one leading from Douglas to Peel, and other from Douglas to the south of the nd, leading to Castletown, and one to Port n. These lines are of peculiar interest at present time, from the fact that they con- ute, in Great Britain, one of the largest, if the largest, systems of railway communica- n constructed on the narrow gauge system. ntracts were entered into by Messrs. Watson Smith, for the construction of lines from uglas to Peel, and from Dublin to Castletown d Port Erin, undertaking to complete the line m Douglas to Peel by the 1st of July. Accord- ly, that portion of the company's lines has been mally opened. The day was observed as one holiday and rejoicing throughout the whole nd. Amongst the well-known persons who k part in the proceedings were the Duke of therland, the Hon. Francis Stanley and Lady nley, Mr. H. E. Loch (Lieutenant-Governor the island), Mr. John Pender, M.P., Mr. orge Stewards, and a large number of the cials and members of the legislature in the nd.

The Easter Island Idols.—A block of ne from Easter Island, Polynesia, has been posited in the Jardin des Plantes at Paris. It presents the head of an idol, rudely carved, d weighs 3,000 kilogrammes. The nose ne is a yard in length. This must be one of se depicted in our illustration in the volume the *Builder* for 1870, p. 10. Mr. Martin pper, it may be remembered, with reference hese gigantic stone figures, suggested the idea at such figures, on a small island in the midst a wide ocean, where no similar stone appears exist, seemed to indicate that the Pacific nds thereabouts formed but the tops of the ls of a submerged continent, which at one ne existed there as dry land. In our own misphere we seem to have something like the verse of this, the present continental land ving been recovered from the ocean which wed over it in the glacial or winter era, as we y call it, to a height of many hundreds of t, leaving only island highlands above water, it as, at present, and in an era *not* glacial, but e a perpetual summer, the Pacific islands stud ocean which covers an ancient continent.

Mr. Hodgkin.—We mention with great gret the death of Mr. Hodgkin, who has en- ved for many years illustrations for the *ilder*. He died last week, of consumption, at comparatively early age of 51. Mr. Hodgkin s a very estimable man, always to be relied on.

Memorial Chapel for Trent College.—On the "speech day" at Trent College the foundation-stone was laid of a new chapel, in memory of the late Mr. Francis Wright, who was the principal founder of the college. During the five years that the college has been open the church accommodation for masters and boys has been only of a temporary character. The new chapel will be built to correspond with the architecture of the college, and to be a prominent and ornamental object. Up to the present time about 2,500*l.* have been either received or promised. Plans of the proposed edifice have been prepared by Mr. Robinson, of Derby, but the builders have not yet been appointed, nor has it been definitely determined what amount it will be judicious to expend; but the total cost will probably be not less than 3,000*l.* It is proposed that the building shall be 73 ft. long and 30 ft. wide. There will be an entrance-corridor and north and south corridors, a library or vestry, an organ-chamber, and two transepts. The nave will be in one span. There will be open benches of pine. The building itself will be of red brick, to correspond with the college, with stone dressings and tile roof, ribbed and boarded, and will accommodate about 300 persons.

The Cadger's Latch.—The house yard-gate here is fastened with a common latch, dropping into the common figure 4 hasp. It was the custom of hawkers, beggars, and other species of the genus Cadger to lift the latch, walk into the kitchen, and have all the game to themselves. I interfered with the procession of cadgers through the gate. A second figure 4 hasp is driven in above the original, with the face downward, and so far distant that there is just room, and no more than room, for the latter to slide out between them. The latch goes up and down furiously, the gate is kicked and thrust, but never opened, for not one of the cunning rogues has cunning enough to lift the latch very gently, so as to slide it out from between the hasps that catch it either way if it travels a hair's breadth too far.—Abridged from *The Gardener's Magazine.*

Rhayader Workhouse Competition.—At the last meeting of the local Board of Guardians, the report of the Local Government Board's architect was received upon plans delivered in competition for the new workhouse buildings by Messrs. Haddon, Brothers, Mr. E. H. Lingen-Barker, and Mr. Stephen W. Williams. The matter had formed the subject of discussion at the meeting held on the 4th ult., but was postponed in order to obtain the opinion of the Local Government Board as to the merits of the three plans. Mr. Lingen-Barker's plans were placed first, it being stated that they were not only better arranged, but capable of being carried out for less money than either of the others. The second place was awarded to Mr. S. Williams's design. After some discussion, the matter was again postponed.

Hiram Powers.—This well-known sculptor has died at Florence. He was born at Woodstock, Vermont, U.S., July 29th, 1805, was waiter at a hotel, traveller for a tradesman, and apprentice to a clockmaker at Cincinnati. He received his first instruction in modelling from a Prussian sculptor, and in a short time learned to form busts and medallions. At Washington, Mr. Longworth enabled him to start, in 1837, for Florence. He produced, in 1838, his figure of "Eve," followed by the "Greek Slave," exhibited in the London Exhibition of 1851. Among Mr. Powers's other works may be named "Il Penseroso," "The Fisher Boy," California," "America," statues of Washington and Calhoun, busts of Chief Justice Marshall, Adams, Webster, Van Buren, and others.

Mr. A. O'Connor.—We are sorry to hear that Mr. Arthur O'Connor, the well-known glass-painter, is, through long mental and bodily illness, in very distressed circumstances. Several gentlemen, to whom the circumstances of Mr. O'Connor's painful position are known, have formed themselves into a committee for the purpose of receiving subscriptions in aid of Mr. O'Connor and his family. Mr. Stanley Lucas, 84, New Bond-street, acts as hon. secretary.

Wood Pavement.—A movement has been set on foot to cover the whole of Pall-mall with the Improved Wood Pavement recently laid in the Strand, on Ludgate-hill, Chelsea Suspension Bridge, St. James's-square, and King William-street. Neighbouring inhabitants appreciate its quietude.

Story's Statue of "Jerusalem."—Mr. W. W. Story, the American sculptor, whose studio has for many years been one of the things to be seen in Rome, recently deposited for a short time, at Holloway's Galleries in Bedford-street, Strand, a figure of "Jerusalem." The statue is on its way to Philadelphia, where it is to be placed in the new building of the Pennsylvania Academy of Fine Arts. It is cut in a fine block of white Carrara marble, slightly toned, and stands on a pedestal of grey marble from the same extensive quarries. The city is represented by a female figure clothed in flowing drapery, having the phylactery on her head with a letter on it, which, perhaps, was used because it is the initial of Shiloh.

Organs for Clifton.—The great transept organ at St. Paul's Cathedral is now being removed by Messrs. Bryceson, Brothers, & Morten, previously to completion at their factory and re-erection in the Victoria Assembly Rooms, Clifton, Bristol. London will, therefore, lose one of its largest organs, and this instrument will again be devoted to orchestral music, as at the Panopticon, for which Institution it was constructed in 1853. The large organ in Christ Church, Clifton, lately much damaged by the falling of the pinnacles from the tower during a storm, has now been completely restored and considerably enlarged by the same firm, who have also erected an organ in Mediæval case in Emmanuel Church, Clifton.

A Government Mining Engineer for Central India.—After making upwards of twenty bore-holes, and sinking two shafts, the Government has been successful in finding coal of an excellent quality for locomotive purposes, in the central provinces of India. One shaft has proved 52 ft. of coal at a depth of 149 ft.; and the other, 32 ft. at a depth of 180 ft.; whilst every one of the bore-holes has revealed coal. The mineral extends over a surface area as much as 60 miles in length, by from 15 to 20 miles in breadth. To develop and superintend the working of this wide district the Indian Government has appointed Mr. Walter Ness to be their mining engineer.

Accidents.—During a very heavy storm and gale recently, a partially erected house at Brynhyfryd, Pentre, fell to the ground. The walls were up ready to receive the roof. The loss is about 50*l.*——Five men have been somewhat seriously injured at the Clippens Shale Oil Works, near Johnstone, in Scotland, by the falling of a large archway of brick built over a kiln. The building was scarcely completed. The men were seated at their meal inside when the catastrophe occurred. The walls stand intact. The accident is attributed to the state of the weather and the softness of the mortar.

Relief for London 'Bus Horses. — Some clever mechanic has invented a drag by which he can stop in a very short time a vehicle going at full speed, and he stores up the impetus and renders it available for starting the vehicle again so soon as the drag is removed, something on the same principle as Captain Moncrieff uses the recoil of the gun to restore it to its proper position. The inventor deserves the medal of the Society for the Prevention of Cruelty to Animals.

Destruction of a Synagogue by Fire.—It is announced in the *Jewish World* that the synagogue at Bordeaux, one of the finest possessed by the Jews of France, has been totally destroyed by fire. Some neighbouring houses were attacked. The damage done, some consider, will amount to several hundred thousand francs. The temple was repaired and redecorated three years ago, at a cost of 190,000 francs. The building was insured for 140,000 francs. The ill-fated structure was erected in 1810.

Removal of a City Church.—A vestry of the parish of St. Martin Outwich has been held, to consider a letter from the Bishop of London, having reference to the removal of the church, the benefice being united to that of St. Helen, Bishopsgate. The bishop required that the bodies under the church should be removed, and the church taken down. It was resolved to close the church at once.

The Conversazione of the Royal Institute of British Architects, held on Thursday evening in last week, passed off very agreeably. Sir G. G. Scott, as President, received the visitors. There was a fair collection of works of art and industry.

New Dock Works at Stockton.—The increasing trade and shipping at Stockton-upon-Tees have led the Town Council of that borough to determine upon the construction of a new dock, and with this view they have resolved to instruct an engineer to report upon several schemes which have been proposed for making a dock at Portrack Slake, a suburban district on the banks of the Tees, about a mile from the town.

Worcester Diocesan Architectural Society.—The first excursion for the season of this society has taken place in the neighbourhood of Ledbury. The programme included the churches of Preston, Much Marcle, Kempley, Dymock, and Donnington, with the *entrée to* Homme House and its grounds, as also to the parsonage-house at Much Marcle, by permission of Colonel Money-Kyrle and the Rev. A. W. Chatfield.

Hardening the Surface of Steel.—Mr. G. Armes, of Rochester, New York State, has shown that the surface of steel may be hardened, without hardening the mass of the metal, by placing the steel,—a cylinder for example,—upon an engine-lathe, and, while it is in motion, bringing into contact with it an emery wheel, rotating at a velocity of above 1,800 revolutions a minute.

The Coal Famine.—The continuous strikes and dearness of labour have led in the mines of Blanzy (Nord) to the adoption of a self-acting coal-boring machine, which excavates the same quantity as twenty men. The inventor is, we believe, Mr. Robert Winstanley, the younger, who patented his invention two or three years ago. The machine is reported to work admirably.

The Sewerage of Pemberton.—The local Board have approved of the sewerage scheme submitted by their engineer, Mr. Williams, and resolved to apply to the Local Government Board for power to borrow 18,400*l.* to carry the same into effect; and that the engineer be instructed to proceed with the detail plans and sections to be submitted for the approval of the Local Government Board.

Rebuilding of the Church of St. Nicholas, Newcastle-upon-Tyne.—It has been resolved to rebuild St. Nicholas's Church, Newcastle, on the old site, if funds to the amount of 5,000*l.* can be guaranteed. Already upwards of 4,000*l.* have been realised, exclusive of the old materials. Mr. Drewett voted against the old church being pulled down.

The Port of London Sanitary Committee. In the Court of Common Council a report has been adopted, at the recommendation of the Port of London Sanitary Committee, suggesting the appointment of a medical officer at a salary of 400*l.* per annum, and an inspector at a salary of 120*l.*

Whitechapel Baths and Washhouses.—The committee have reason to believe that the vestry of Whitechapel will undertake the future management and maintenance of the baths, if handed over free from debt, and in thorough repair. Upwards of 1,300*l.* have already been subscribed.

Wesleyan Schools and Chapel for Clapham.—Messrs. J. Nutt & Co., builders, are erecting new schools (Wesleyan), to be connected with a chapel to be erected hereafter in the High-street, Clapham, and the foundation-stone was to be laid on Thursday by the Earl of Shaftesbury.

Stained-Glass Memorial for St. Cuthbert's, Darlington.—One or more stained windows (including the east window), are to be erected in St. Cuthbert's Church, Darlington, as a memorial of the late vicar.

TENDERS

For alterations and additions to a canon's house at Norwich. Mr. R. M. Phipson, architect:—

Newall	£1,786	10	0
Hawes	1,670	0	0
Rogers	1,260	0	0
Spinks (accepted)	1,250	0	0

For building Stownpland vicarage, Suffolk. Mr. R. M. Phipson, architect:—

Crowe	£907	0	0
Andrews & Son	884	0	0
Gibbons	872	0	0
Luff (accepted)	868	0	0

For additions to the Norfolk County Lunatic Asylum, Thorpe, near Norwich. Mr. R. M. Phipson, architect:—

Newell	£9,783	0	0
Wilkin & Curtis	9,738	0	0
Lacy	8,350	0	0
Hawes (accepted)	8,280	0	0

For additions and new fittings to stables, Watford, Herts. Mr. Fredrick Sparrow, architect:—

Waterman (accepted)	£134	10	0

For additions to Johnston Hall, Pembrokeshire, for Mr. E. Carrow. Mr. E. H. Lingen Barker, architect:—

Thomas	£390	0	0
T. & J. Lloyd	393	5	6
Edwards	370	0	0
James (accepted)	329	10	0

For alterations to warehouse, Buccleuch-street, Barrow-in-Furness, for Mr. Henry Whiteside. Mr. Howard Evans, architect:—

Hird	£338	10	0
Grodwell	336	8	5
Saddler & Wood	330	0	0
Waddington & Son (accepted)	379	10	0

For building stable and new lantern light, for Mr. Dixon, Swan Tavern, Lancaster-gate. Mr. G. Western, architect. Quantities supplied:—

	Stable.			Light.		
Hearn	£890	16	0	£42	8	0
Temple & Foster	785	0	0	30	10	0
Oldrey (acceptd.)	761	0	0	25	0	0

For board schools at Reading. Mr. Joseph Morris, architect. Quantities supplied:—

Coley School, for 638 children.

Stephenson	£5,201	0	0
Claridge	4,530	0	0
Gibson Bros.	4,295	0	0
Wheeler Bros. (accepted)	4,193	0	0
Simpson	4,176	0	0
Matthews	4,169	0	0
Sawyer	3,993	0	0
Moore	3,856	0	0
Clacy	3,315	0	0
Groome	3,034	0	0

Katesgrove School, for 678 children.

Stephenson	£4,633	0	0
Claridge	4,324	0	0
Matthews	4,073	0	0
Gibson Bros.	3,990	0	0
Simpson	3,887	0	0
Moore	3,659	0	0
Sawyer	3,494	0	0
Groome	3,474	0	0
Clacy	3,340	0	0

Accepted for the Separate Trades.

Higgs (bricklayer and mason)	£1,719	10	0
Poffley (carpenter)	1,136	0	0
Margrett (smith)	531	19	0
Harriss (plumber, &c.)	199	0	0
Harris (plasterer)	103	0	0

For public-house, at Woodcote, Oxon. Mr. Joseph Morris, architect. Quantities supplied:—

Geater	£405	0	0
Godwin	383	19	0
Goodey (accepted)	378	0	0

For rectory house, All Saints, Wokingham. Mr. Joseph Morris, architect. Quantities by J. E. & A. Bell:—

Poffley	£3,625	0	0
Woodroffe	3,465	0	0
Silver & Son	3,385	0	0
Woodbridge	2,989	0	0
Pither *	2,868	0	0

* Accepted, subject to alteration.

For house, lodge, and stables, at Winkfield, near Ascot. Messrs. Roper & Ogle, architects. Quantities by J. Kennedy:—

Hobson	£3,484	0	0
Burford	3,343	0	0
Woodward	3,170	0	0
Watson	3,116	0	0
Sharpington & Cole	3,067	0	0
Nye	2,933	10	0
Henning & Son	2,783	0	0

For re-building three warehouses in Wood-street, City, including sub-basement, part of fittings, &c. Mr. Herbert Ford, architect:—

Scrivener & White	£12,930	0	0
Myers & Co.	12,690	0	0
Conder	12,344	0	0
Kilby	12,329	0	0
Browne & Robinson	12,270	0	0
Perry Bros. (too late)	12,210	0	0
Stumpson & Co. (too late)	12,194	0	0
Colls & Son	12,010	0	0
Henshaw & Co.	12,010	0	0
Perry & Co.	11,837	0	0
Brass	11,446	0	0
Gammon & Son	11,308	0	0
Adamson & Sons (too late)	10,783	0	0
Downs & Co.	10,750	0	0

For Welsh Wesleyan chapel and school, Llandudno. Mr. George Felton, architect. Quantities not supplied:—

Humphreys	£1,790	0	0
Griffiths	1,713	0	0
Hughes & Jones	1,700	0	0
Williams	1,467	0	0
Roberts	1,450	0	0
Pritchard	1,356	10	0

Amended Tenders.

Williams	£1,443	0	0
Roberts (accepted)	1,400	0	0
Pritchard	1,348	0	0

For alterations to Rose Bank, Sudbury, near Harrow, for Mr. M. Nixon:—

Shapley	£308	0	0
Waters	272	0	0
Longmire & Burge (accepted)	235	0	0

For intercepting drain connecting drainage of buildi with public sewer, at North Surrey District Schoo Anerley. Mr. A. G. Hennell, architect:—

Goddard & Nicholson	£322	16	0
Huma	235	0	0
Goodard	233	10	0
Amer	230	0	0
Brooks	229	0	0
Cole	222	10	0
Hubbard	220	0	0
Potter	216	0	0
Rigby	203	0	0
Taylor	199	13	0
Jackson	195	0	0
Alcock	185	0	
Woodhams (accepted)	175	0	
Riches	172	10	0
Gardner	149	0	0
Fowler & Cluck (withdrawn)	107	0	0

For new warehouses, St. Bride-street. Mr. Alb Bridgman, architect. Quantities supplied:—

Shepherd	£1,825	0	0
Perry	1,800	0	0
Ennor	1,668	0	0
Bracher & Son	1,650	0	0
Elkington	1,440	0	0

For the restoration of Rowner church, Hants. Frank E. Thicke, architect. Quantities by Mr. G. Mumby:—

Chase	£1,093	0	0
Cooper	992	0	0
Senior	969	0	0
Ring	915	0	0
Rapley & Son	865	0	0

For alterations, repairs, painting, &c., to Shoredi Town Hall. Mr. Robert Walker, architect:—

		Double Sashe	
Helbronner & Co.	£2,280		
Marsland & Sons	1,470	£195	
Toms	1,437	195	
Cohen	1,210	240	
Bishop	1,197	183	
Botting	1,150	187	
Wagner	1,150	107	
Warr	1,083	175	
Sawyer (accepted)	970	192	
Hunt	946	133	

For enlargement of building at the Royal Masonic Institution for Boys, at Wood Green. Mr. J. W. Ra son, architect:—

Fish	£2,987	0	0
Humphreys	2,750	0	0
Aleard	2,726	0	0
Anley	2,714	0	0
Cenen	2,675	0	0
Webber	2,577	0	0
Turkington	2,529	0	0
Gould & Co.	2,510	0	0
Johns	2,480	0	0
Tingell & Co.	2,427	0	0
Cohen	2,400	0	0
Hames	2,397	0	0
Calley & Son	2,395	0	0
Robins	2,390	0	0
Mann	2,390	0	0
Botting	2,377	0	0
Wagner	2,375	0	0
Warr	2,339	0	0
Boyce	2,135	0	0

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The Builder.

VOL. XXXI.—No. 1589.

The Local Government Board and possible Disease.

AN important Minute has just been issued under the signature of Mr. John Simon, the medical officer of the Local Government Board, calling attention to the march of the Asiatic cholera towards our shores, and containing suggestions as to the sanitary precautions which are most incumbent upon us in the contemplation of such a calamity as its arrival. The Minute is extremely full and clear in indicating the one main element of danger of infection from cholera. But it may be said to be even more eloquent in its silence than in its speech. While speaking in the name of the Local Government Board, it contains a more incisive condemnation of the waste of time, waste of opportunity, and neglect of legislative action for which the intelligent part of the community has loudly called a year and a half ago, than even the repeated remonstrances contained in our own pages have implied.

The responsibility for local defences against cholera, both as regards water-supply and as regards local cleanliness and refuse removal, is stated, Mr. Simon remarks, in the local sanitary authorities, urban and rural. "These authorities are all by law so constituted as to represent, in their respective areas of jurisdiction, the will of the local ratepaying population; and such population has had almost absolute means of deciding for itself whether the district which it inhabits should be wholesomely or unwholesomely kept."

In this instance, grave with the weight of official authority, is summed up the main defect in the action of the Local Government Board. The measure of national defence has been dealt with by throwing an infinitesimal responsibility on each independent district. If disease were capable of such distinct local restriction that each sanitary district would be alone the sufferer from its own neglect, something, though very little, might be said in defence of this principle. Each Union might be said to have a sort of right to pay the penalty of its own disease, if it chose (as is generally the case) rather to run that great risk than to augment its local rates. But, unfortunately, no such *cordon* can be drawn. One black sheep could infect the whole flock, even if all the other sheep were white, which is far from being the case in the present instance. The county, or great engineering district, nine-tenths of which were in a carefully protected state, would be exposed to great and possibly fatal danger by the condition of the remaining tenth, left as a seed-bed of disease. The evil, as we have before stated, lies in the treatment of sanitary measures on non-sanitary principles. The health of the country has been postponed to the political views of a certain school. It is little to the purpose to discuss how far those views are right or wrong. They are matters of speculative policy, embraced, by those who hold them, with a mild and self-contented fanaticism; and the main arguments in their favour are either based on metaphysical statements which are open to endless contention, or supported by predictions of good results which yet remain altogether in the cloudy regions of unfulfilled prophecy. But let that pass. It is precisely because of the controversial nature of these views that we insist on the practical folly of their application in a case of the present urgency. It is to act in the same way as if, on the threat of an invasion, the Ministry were to omit the items of army and navy from the estimates of the year, to save that great outlay on their budget, and to intrust to every parish the duty of organising its own local defence. It is a return from the organisation of our police force to the old system of "Charlies,"—venerable watchmen, provided with lanthorns and rattles,—and private patrols for those who chose to afford them. This is what, in other words, Mr. Simon points out as the result of the legislation of 1872, as regards the protection of the public health.

"It is greatly to be wished," the Minute continues, "that the former of these alternatives," that is, the wholesome keeping of each district, "had, from long ago, been the desire of every local constituency in the country:" no sentiment can be more irreproachable. It does not, however, strike us as one that is altogether novel. We have heard something like it before. We have some faint idea of having echoed such a sentiment, in one phrase or another, for at least a quarter of a century. We feel a sorrowful and respectful sympathy for the writer who, aware on the one hand of the great danger which he has to face, and knowing, better than most men, how the precautions which science suggests have been persistently and wilfully neglected, is yet precluded, by official decorum, from doing more than indicate the ineffective state of the law. "It is greatly to be wished," we may add, that the President of the Local Government Board had realised, "long ago," the fact that there is such a danger as pestilence, and that the heavy responsibility of a Minister who professes to take measures in protection of the public health, is not to be shuffled off on to the shoulders of 600 or 700 local "authorities," to whom new titles have been given, but to whose ever sluggish action Government has refused to apply that stimulus which would have been at once so simple and so certain.

No one who is familiar with the subject can doubt that, by the introduction into the Act of 1872 of the principle of reporting, not to local authorities, who only care to save money, but to an official superior, who, in his turn, should have been placed in relation with the medical officer of the Local Government Board, a constant, steady, intelligently-directed pressure would have been brought to bear on the local authorities throughout the country; the result of which would have been a very different state of preparation for the reception of the Asiatic contagion, or any other scourge with which we may be visited. "It is certain," says the Minute, "that in very many places the conditions of security are wholly, or almost wholly, absent." That is the judgment of the Local Government Board, expressed in the Minute which it issues for the guidance of the public, as to the results of Mr. Stansfeld's Bill! We had the unusual advantage of the thorough arousal of the public of the country to the danger of our sanitary condition. We had the advantage of a state of opinion which would have welcomed any efficient measure, and would have sanctioned any necessary outlay. We were begged to leave the matter to the Minister, on the ground that he was thoroughly aware of the danger, and was taking the proper steps to obviate it. With more or less hopefulness we were reduced to Hobson's choice. The Government passed their Bill; to them has been left the responsibility of carrying it out; and they now calmly tell us, that "in very many places the conditions of security are wholly, or almost wholly, absent."

"It is to be hoped," the Minute proceeds, "that in all this large class of cases the authorities, under present circumstances, will do everything which in the remaining time can be done to justify the trust reposed in them by the Legislature for the protection of the public health." It is mentioned in Holy Writ, as the great merit of Abraham, that he was one "who against hope believed in hope." We wonder whether the quotation occurred to the mind of the writer of this despairing Minute. We take exception to one phrase here used. It was not in the local authorities that the Legislature reposed trust. Parliament may lie open to much criticism, but hardly to satire so keen as this. It was in the Ministers that Parliament reposed trust, and it is upon them, and not on local guardians, that the responsibility falls. Parliament did no more than place in the hands of the Ministry the powers which they declared to be ample for the protection of public health. In our opinion they asked far too little. In unquestioned fact they have made no efficient use of what they obtained. The justification of the trust reposed in them by the Legislature is therefore a problem for the solution of the Local Government Board. Mr. Simon confirms the justice of our least favourable anticipations of the working of a measure which has left the conditions of security, in very many places, "wholly, or almost wholly, absent."

The ninth paragraph of the Minute is devoted to another of those remarks which are at once so true and so old, and which, as addressed to the local authorities, so much resembles the pouring of water on the back of a duck:—"It is important for the public very distinctly to remember that pains taken and costs incurred for the purposes to which the memorandum refers cannot, in any event, be regarded as wasted trouble and expense. The local conditions which would enable cholera, if imported, to spread its infection in this country, are conditions which day by day, in the absence of cholera, create and spread other diseases,—diseases which, as being never absent from the country, are, in the long run, far more destructive than cholera; and the sanitary improvements which would justify a sense of security against any apprehensive importation of cholera would, to that extent,—though cholera should never reappear in England, give ample remunerative results in the prevention of those other diseases." Not a week passes over our heads without some fresh illustration of the truth of this statement. Human life is a costly product. The resistance value, to use the terms of the political economist, of the humblest labourer can not be set down at less than 300*l.* or 400*l.* He must have cost that to the country,—probably more. When we add the cost of education, and thus ascend step after step of the social ladder, the cost of life increases. Again, even in cases of diseases that are not fatal, there are great waste and cost,—loss of time, medical attendance, and too often diminished vigour of constitution. All this has been urged over and over again. We apprehend that it is about as useful to present here a view to the majority of the local sanitary authorities, in order to induce them to incur expense for sanitary purposes, of their own motion, as it would be to read to them the choicest dialogues of Plato, in the original Greek.

The statement of the medical officers of the Local Government Board is of value in another

respect. It tends to diminish, so far as the voice of experience can do so, one formidable cause of danger in cases of epidemic diseases, and especially in the case of cholera, namely,—panic. One great evil attending the discussion of the subject is, that the statements which ought to lead people to be wise in time, too frequently only cause them to be foolish when it is too late. Panic is the natural sequel of negligent and stupid confidence; and the arguments which are calculated to remove the latter often have no other effect than to increase the former. But it is well to have it distinctly stated, with all the authority of modern science and of official status, that "cholera in England shows itself so little contagious, in the sense in which smallpox and scarlatina are commonly called contagious, that, if reasonable care be taken where it is present, there is almost no risk that the disease will spread to persons who nurse and otherwise daily attend upon the sick." Advice of this kind is of serious value. It tends to prevent that demoralisation which is so often the accompaniment of pestilence. The two highly contagious diseases named by Mr. Simon may be called, the latter the terror of the parent, and the former the terror of the physician. They differ in this respect,—contagion in scarlatina, is of the most subtle kind. It may be conveyed, and in our own knowledge no doubt has been conveyed, in a letter from a house containing a patient. But it appears to depend exclusively on the transmission of some particle, however invisibly minute, of the skin thrown off by the patient during recovery. If this be prevented, no infection,—using the terms as distinct from contagion,—or transmission of distinct particles of matter need be feared. Thus, too, the danger of contagion does not arise in the early stages of the disease. Small-pox, on the other hand, though practically less contagious or infectious than scarlet fever, is communicated no one knows how, or, at least, no one knows exhaustively how. It is, therefore, more formidable to the medical man, because he does not know how to make himself secure against its spread. But he does know an almost certain preventive to its fatal virulence, and he can tell when this preventive—the use of vaccination—has been employed. Small-pox, too, like scarlet fever, rarely recurs. The patient who has once suffered an attack very rarely experiences a second. Cholera has no such self-compensating power. It recurs again and again, perhaps with increased facility of attack. But we have the advantage of knowing that, in this country, the contagion of its very destructive spread may be prevented by sanitary measures. There are certain causes which, especially when the weather is hot and close, and fruit is abundant and cheap, tend to produce self-generated cholera. In some seasons the predisposition to this form of disturbance seems to be far more active than at others. The absence of ozone in the air and a low electrical tension are so closely connected with the virulent activity of cholera as to suggest certain precautionary or remedial measures. Thus the wearing of silk, which confines the electricity of the body, and raises its tension, is a valuable safeguard. But the one great infective power of cholera is found to reside in any fluid that passes from the person of the patient, or in any water that is in any way contaminated by such fluid. It is here that the infection of cholera is so directly checked by the precautions of sanitary science. The use of disinfectants in the sick chamber, in the drains, and in every spot that can possibly be contaminated as above mentioned, is the first point. The careful watching of the source from which any water used for domestic consumption is derived is the second, and is one of equal importance. Those unsuspected filtrations from drains, sewers and dust-heaps, which so often make their way to the spring, the well, or the pump-cistern are the sure carriers of choleraic poison. As to this, in the present state of medical science, no doubt is entertained. That peculiar mode of contagion is the specific danger of the cholera as regards its communication. Known to be the case, it may be watched against as successfully as are the different methods of contagion by which scarlatina is propagated. But the care must be as watchful and minute in the one case as in the other.

With regard to disinfectants, we can hardly take upon ourselves a responsibility which is studiously avoided by the Minute of the Local Government Board. We are at a loss to understand why, in such a paper, the question which every one who reads it with care will first put should be left entirely unanswered. The first practical service which a central medical authority might be expected to render to the public would be, one would think, to name the most effective, most certain, least costly, and most accessible disinfectants. We may mention, in raising our voices to demand efficient information on this point, one great advantage which is possessed by the old-fashioned and somewhat cumbrous disinfectant, chloride of lime, namely, that its pungent and wholesome smell is of great advantage in proving its presence. It is one of those chemical articles which are conspicuous by their absence. It is of no use to say it is used when it is not, and, in nine cases out of ten, this is a matter of very great importance. Condy's disinfecting fluid is an article of extreme value. Its cost is, to some extent, an obstacle to its free use, but we are able to bear testimony to the truth of the power which it is stated to possess. The use of carbolic acid, again, has most rapidly spread, as a disinfecting agent of great power,—and one which, under certain circumstances, and under experienced medical direction, can be used on, and within, the living subject with success. Chlorine, the gas used in bleaching, and evolved from chloride of lime, is a powerful disinfectant. Dr. Domett Stone has just published a very simple recipe for its production, which cannot be too generally known. It may be made by mixing in a bottle two tablespoonfuls of common salt, two teaspoonfuls of red lead, half a wineglassful of strong oil of vitriol, and a quart of water. The bottle to be kept tightly stopped, in the cool, and in the dark. A little of the fluid exposed in a saucer, sprinkled about, or soaked in sheets of old linen and hung up, rapidly destroys offensive or dangerous effluvia. A new disinfectant has lately been introduced, and is highly spoken of by the same authority, under the name of chlorozone, which is a permanganate from which oxygen and chlorine are simultaneously liberated, in the nascent state. The action of these two powerful gases is thus combined, and it is stated that, both for deodorising and disinfecting, it is sustained for a considerable time. This fluid is in use in several hospitals, and has the great advantage of being the cheapest disinfectant, it is said, in the market. We are not attempting to pronounce an opinion as to the relative merit of these several safeguards to human life. Each is good, and reliable, and we hardly like to bring before our readers the broad hints which the Local Government Board has thus given them to take care of themselves, without at least indicating in what manner they may be able to do so.

It is, indeed, one thing to make such proper provision for the sanitary condition of the country as can only be effected by a certain amount of initiation on the part of the Government, and another baldly to recommend the purchase and use of disinfectants. That any serious effort to perform the first urgent duty will be made by the present members of the Local Government Board experience forbids us to hope. If anything could induce the adopting of the sound motto, "Sanitary reform must be conducted on sanitary principles, and not as a matter of electioneering politics," it might be thought to be the utterance of such a note of alarm as that to which we are now calling attention. But we fear, from the experience of the last eighteen months, that it is far more likely that the Minister will be content with the issue of this Minute, and may even regard it as a meritorious public service, rather than read in it, as a clear-sighted man must do, his own condemnation for occasion wasted and opportunities neglected. Such as it is, however, we desire to give every aid in our power to its publicity. And there is this to be said further, that no sanitary arrangements of a public nature can be adequate to allow any one to dispense with the caution and the care of private sanitary arrangements. First among the latter ranks the use of disinfectants. However perfect be the order of water supply and of sewage, chemical agency must always be requisite under certain conditions. That chemical agency can be best applied by the householder; and if such be the general rule of sanitary appliances, the need becomes tenfold urgent when any infectious disease appears or is likely to appear. Had all our local poor-rate guardians suddenly become converted into sanitary reformers; had they taken alarm for their own lives, or had they for once counted the cost of preventible disease; had the medical profession furnished a well-ordered and hierarchical body of inspectors, and engineers and architects been consulted with a liberal wisdom throughout the land, still would it be needful to cry,—Disinfect. We commend Mr. Simon's Minute to the thoughtful reflection of all serious and prudent men.

THE NEW CURRIERS' HALL BUILDINGS.

THE new hall and buildings for the Curriers' Company, in London Wall, which are now in course of erection, will, when completed, be a striking feature in the neighbourhood. The materials used are stock-brick with Bath-stone dressings. The building will have a spacious basement, with two stories above and dormers, and the entire height of the principal elevation to the top of the dormers will be 40 ft. from the street-level, the width of the elevation being 50 ft. The principal entrance, as well as the elevation generally, will have an imposing appearance. The entrance is supported on each side by massive piers, with stone bases and capitals. The inner part of the arch over the entrance is of stone, with an outer arch above of brick, the whole surmounted by a pediment, containing the arms of the company in the centre. On each side of the entrance there are ornamental lamps. There are two double and two single windows in the right side of the ground-floor entrance, and one single window on the left side, all having brick arched headings, with stone mullions and jambs. The upper windows are very lofty, those in the first story being 15 ft. in height, divided into compartments. A large central oriel window projects 18 in. beyond the main frontage. It is divided into fifteen compartments, and is formed in combination with the two central windows on the ground-floor.

The interior of the building is very commodious. The basement contains the housekeeper's apartments, wine and other cellars, and domestic offices. The ground-floor will consist of the clerks' offices, waiting-rooms, and other apartments. The "hall" itself, which is, of course, the principal apartment in the building, is on the first floor. It is approached by an ornamental staircase 9 ft. in width, and formed chiefly of carved and twisted oak, with a massive oak hand-rail. The dimensions of the hall are 33 ft. by 20 ft., with retiring-rooms on each side. The windows in this apartment, which include the large oriel window already described, are filled in with stained glass containing the arms of the company, together with those of the several masters and benefactors of the company. The chimney-piece will be a special feature in the apartment, consisting chiefly of old carved and twisted oak, and in the higher central portion will be placed the arms of the company, consisting actually of those which were dug up after the Great Fire of London. On each side of the company's arms there will be twisted columns in oak, and above these an ornamental cornice, surmounted by a Gothic termination, with small carved oak columns and finials on each side. There are also double columns in oak in the lower portion, on each side of the fireplace. Surrounding the walls of the apartment there is an oak dado, and the ceiling is in panels consisting of geometric patterns. It may be stated that the furnishing of the hall is intended to harmonise with its interior artistic decorations, and that the designs for the furniture have been supplied by the architects. The second floor will contain the apartments of the hallkeeper or beadle of the company.

The vacant ground in front of the hall, which contains an area of about 5,200 superficial feet, is intended to be covered with buildings harmonising in their architectural character with the building now in progress, and when these are completed the entire block will highly improve the architectural character of the neighbourhood. Messrs. J. & J. Belcher, of Adelaide-place, London Bridge, are the architects, and Messrs. Perry, Brothers, the contractors.

Fall of York Station Roof.—A train of carriages was being shunted into York Station, when, owing to defective coupling, a horse-box left the metals and came into contact with four of the pillars, knocking them down and breaking down a portion of the roof to the extent of 50 yards by 30 yards, which had covered the departure-platform of the station. A portion of the roof alighted upon a train standing with carriages, but no persons were injured.

THE VENDÔME COLUMN, PARIS.

THE average Gaul is apt to consider his decoration,—Order of the Rouge et Noir of Monaco, or Golden Scimitar of Tunis,—as of more importance in society than his coat. Were Paris to be engulphed to-day in some great cataclysm, it is probable that the Parisians would first erect an Arch of Triumph on the morrow, and then think of lodgings. At any rate, they have housed a few public services in barns, left the ruins of the Commune painfully apparent in nearly every outskirt, boarded up the heap of stones that was the Ministère des Finances, made the Tuileries more unsightly than the pétroleurs left it, and concentrate their energies on the useless column which every Frenchman is supposed to contemplate with swelling pride and patriotism. Scarcely was the restoration voted before the central square of the Place Vendôme was screened from public view, and the inclosure thus made invaded by upwards of 100 masons and engineers. By the courtesy of an official superintendent the writer of this was admitted within the penetralia, and furnished with some notes relating to the re-edification of the column, which may possibly be of some interest to English readers.

The masonry work is only just commenced. There are more difficulties in the way of this part of the undertaking than most uninitiated outsiders imagine. It is imagined that the foundation and pedestal base can be built like an ordinary wall. This is impossible. From motives of economy it is intended to utilise the stonework of the old column, at least all those portions of it which have not been excessively attenuated or deformed by the demolition. Two-thirds of the materials can be so used; the remaining portion of the work will have to be executed as at the first erection of the column. But even among the two-thirds judged serviceable there are only two steps absolutely intact. The others require to be repaired, and will be replaced or rejointed by means of cement in the Place Vendôme itself. But this reparation is not the most difficult operation. The interior of the column is formed by huge square blocks of stone pierced at intervals with large holes, into which are soldered cramp-irons that hook the outer bronze plates by a species of horseshoe eyelet attached to the inmost surface of the plates in the foundry. The problem to be solved now is one that requires the nicest precision. The masonry of the column must be reconstructed in such a manner that every hole in every block of stone shall correspond with the eyelet of the bronze plate which is to cover it. To render errors all but impossible it has been decided that the raising of the stone frame and the fitting of the metal cover shall proceed at the same time. Thus the column will rise clothed, not as before, first naked stone, then dressed in the legends of the Napoleonic era. M. Normand, one of the architects employed on the re-edification, has succeeded in disinterring the plans which served in 1810 for the primitive construction of the monument. This gaide indicates many processes to be avoided, their results being proved by experience to have rendered the old column less stable than it might have been. Thus the dilatation of the metal was not sufficiently allowed for in 1810. In 1873 another method is adopted. It has already been said that every metal plate is fitted in the interior with two or three ledges pierced vertically, and thus forming eyelets. In raising the columns brass tenons will be mounted in the stonework to correspond with the eyelets; and each tenon will be pierced vertically to correspond with the holes in the metal ledges. These holes will be shaped ovally, so that the bolt which passes through both may be moved by the dilatation of the metal without endangering the monument. The tenons will be in close contact with the column; therefore in order to pass the bolt through their holes and those of the metal ledges a small groove will be cut in the stone, thus leaving the corresponding holes uncovered. In this wise all soldering, &c., will be avoided, and the expansion, which in a spiral circumference of 268 mètres might amount to 30 centimètres, will be reduced to the smallest possible figure, by this fractioning of the metal coat and its disposal. At this moment the architects are studying the quality of the materials already amassed, in order that the complement may be as far as possible identical in nature. It is probable that the quarry used sixty-three years ago is now exhausted; but this matter is of slight importance.

The completed column will be surmounted not by the little bare-legged Cæsar placed there in 1864–65, but by the old statue, relegated to Courbevoie, of the Emperor in *grey redingote* and jack-boots, with the arms crossed in the legendary attitude. The statue is considerably injured, but not irreparably. The new column is not likely to be inaugurated before the end of the year.

Paris.

COMPETITIVE DESIGNS FOR MUNICIPAL BUILDINGS FOR THE BOROUGH OF LEICESTER.

MR. T. H. WYATT has reported on the ten designs referred to him, and has selected five of them "for the ultimate choice of three by the council," having special reference to this clause in the instructions:—"The council beg to reiterate that *the practical every-day convenience* of the building arrangements should be the principal consideration in judging of the merit of each set of plans, the limited outlay precluding excessive architectural display." Mr. Wyatt says:—

"Of the five necessarily rejected, I have set aside two on the ground of non-compliance with *important* clauses in the instructions issued to architects, viz., the design bearing the motto, 'Confranando Incrementum,' for having the open parade ground for police only 430 square yards instead of 'about 700 or 800 yards,' as required, in addition to other defects which I thought important; and the design marked 'Simplicity,' for not having the ground-floor story (containing the borough court and other offices attached to this department) 'level with the point marked A on plan of the site,' but, on the contrary, having it raised some 11 ft. or 12 ft. above it (practically one story). I especially regret having to do so in this case, for in an architectural point of view the elevations, &c., are incomparably the best of all, and the town will thus lose the opportunity of realising a most picturesque and *refined* public building; but I feel that, as a matter of equity to the other competitors, I have no choice."

The five designs placed alphabetically are by Messrs. Goddard & Spiers, Mr. Hames, Messrs. Ordish & Tralen, Messrs. G. G. Scott & J. O. Scott, and Mr. Wilkinson, on each of which he gives a short report.

In accordance with a wish expressed on the part of the council, he has not attempted to specify the order of merit, though he says he has formed a very decided opinion in his own mind as to which of the five sets would, with the least amount of important alterations, give a convenient and satisfactory result.*

The following table is appended:—

Cubical Quantities in each of the Five Sets referred to Corporation.

Designs in Alphabetical Order.	Cubic Feet.	Prices at which each Design would work out to realise the amount in next column.	Amount approximate to sum proposed to be expended.	Sum allowed by instructions to architects.
Goddard & Spiers	1,043,761	7d.	£30,443 0 7	£30,000 0 0
Hames	928,333	7¾d.	29,977 8 5	,, ,, ,,
Ordish & Tralen	980,232	7¼d.	30,632 5 0	,, ,, ,,
Scott	953,580	7½d.	29,799 7 6	,, ,, ,,
Wilkinson	1,166,782	6¼d.	30,384 19 0	,, ,, ,,

ARCHITECTURAL COURTS, SOUTH KENSINGTON.

Two remarkable courts for the South Kensington Museum, filled with equally remarkable objects, have been opened. We shall endeavour, before long, to give a complete idea of them. It is not enough to say that each court is 135 ft. long, 60 ft. wide, and has a total height of 83 ft. They certainly constitute one of the bravest things done at South Kensington, and completely realise Brobdingnag.

THE BUILDING TRADE IN LONDON.

THE conference between the committee of master builders and the deputations from the masons and carpenters failed to have a good result. A compromise as to the time when the ½d. per hour advance should be made seemed possible, but the employers insisted on the necessity for making the pay-hour on Saturday one o'clock, instead of twelve, adding, that the men, if they chose to do so, could stop work at twelve o'clock, but they would not be paid until one o'clock. The deputation said, while they had power to effect a settlement upon the wages question, they had no power to agree to any increase in the hours of working; and they also further considered that the trade, as a body, would repudiate, under any circumstances, an alteration in the working hours on Saturday. The employers then proposed that both the wages question and the one hour time on Saturday should be referred to an independent arbitration. This proposal was declined by the deputation, on the ground that they had no instructions to consent to any arbitration, and also knowing that the trade, as a body, were opposed to outside arbitration upon trade disputes.

At meetings of the men, held afterwards, the proceedings were reported, and the offers of the masters were rejected. It is understood that certain firms will be struck against on, this, Saturday, without further notice, unless concession is made by the employers in the meantime.

The question at issue,—one o'clock as pay-hour instead of twelve,—is so very small that the public fairly ask why should either party be obstinate when the evil result of obstinacy may be so great. Why not split the difference and say half-past twelve? We have made some inquiries, and find that the difficulty is caused in this way:—Money cannot be had from the bankers on Saturday morning till a quarter past nine, even if the bank be near. A large amount has to be changed into silver, divided into parcels, and sent off to the various jobs, and there again divided for each individual. In many cases, as we are assured, it simply cannot be done by twelve o'clock. An obvious inquiry is, Why not obtain the money on Friday? But this involves leaving large sums, —in some cases thousands,—all night at the place of business, and the masters, naturally enough, object to the risk.

A meeting of the masters is to be held on this Friday, 19th, and the sub-committee will report the result of the conference held with the masons' and carpenters' deputations, and will recommend the line of action to be taken thereon by the employers. It has been decided by the committee that they will receive no more deputations from the men, unless they come prepared either to settle points in dispute or to have the whole question referred to arbitration.

On Wednesday last, a meeting of the London and Provincial master builders was held at the Westminster Palace Hotel, Mr. Hannen in the chair. Nearly 100 provincial associations of master builders were represented either personally or by letter.

The immediate object of the meeting was the establishment of a general association of the master builders throughout the country, having for its object the protection of its members against all unjust demands of the workmen.

A long discussion ensued, resulting in the establishment of a General Association of Employers in the Building Trade for the essential protection of its members; the adoption of a code of rules for the government of the association; and the appointment of a council.

THE PROPOSED MUSEUM AND FREE LIBRARY IN SOUTH LONDON.

THE preliminary steps for the erection of a museum and free library in South London are now being taken, and on Thursday, the 3rd instant, a meeting was held at the Westminster Palace Hotel to take into consideration and determine upon the purchase of a site in the New Kent-road, near the Elephant and Castle, having a frontage of about 250 ft., and a depth of 400 ft., thus occupying an area of nearly two acres and a half.

Mr. Samuel Morley, M.P., treasurer of the land fund, presided, and said that he was very much interested in the undertaking, and should contribute towards the funds for the erection

* Our review of the ten designs will be found p. 553, *ante*.

of the building. He observed that the museum and free library would, of course, cost a large sum of money, but it would tell morally, socially, politically, and in other ways on the mass of the population in the midst of which it was proposed to erect it.

The proceedings at the meeting were confined chiefly to the suitability of the site which had been offered, and it appeared from the statements made that the gentleman who owns the land does not care to part with it, except on the understanding that it is required in the interests of the people of South London, and that for that purpose he is willing to part with it for 8,000*l*. It was agreed that no site in South London could be more central or convenient, inasmuch as the Elephant and Castle was the converging point alike for omnibuses, tram-cars, and railway trains, and situate about a mile from the river, it had right and left of it the densely-populated portion of South London. Several speakers urged that, as it possessed these advantages, they could not do better than purchase it, but it was ultimately agreed that a number of influential and practical gentlemen should pay a visit to the proposed site, and give their candid opinion as to its desirability for the purposes of a museum and free library before any final decision was come to for its purchase. The chairman, accompanied by a number of other gentlemen, agreed to inspect the site with the object named. It was incidentally stated at the meeting that it had been roughly estimated that the building to be erected on the proposed site would cost 50,000*l*.; and Mr. Clements, the honorary secretary to the undertaking, said he had not much fear but that they would be able to build the museum for South London much sooner than the Government built the Bethnal-green museum.

VISIT OF BUILDING OPERATIVES TO WESTMINSTER ABBEY.

ON Saturday, July 12th, the workmen of Mr. V. Hibbins, of Surbiton, were conducted over Westminster Abbey by Dean Stanley and Lady Augusta Stanley. The party were shown the building in which Parliament first assembled, then, by Poets' Corner, through the several chapels, and back by the main building to the Jerusalem Chamber, halting frequently on their way at the tombs of monarchs, statesmen, and poets, listening with evident attention to the short but pithy dissertations on the lives of those enshrined therein. Tea was afterwards provided for the visitors.

Mr. Mark H. Judge (foreman), in proposing a vote of thanks to the Dean and his lady for their kindness and liberality, said the visit would be remembered by all as one of interest and instruction. By such visits as these they were brought face to face with the past history of their country, and they learnt of the vast amount of thought and labour that had been expended in building up the English nation. This would draw them out from themselves; it would make them forget the line that separated class from class, and "class" would be lost in "country."

Mr. Conelley (plasterer) seconded this vote of thanks, which was warmly adopted.

The Rev. Dean acknowledged the vote, and said it gave him great pleasure to assist them in acquiring a greater knowledge of the past, for such knowledge to a great extent led to the wise action of the present. It was very gratifying to him to see workmen with an intelligent desire to know more of their ancestors, and he should be ever ready to help them as far as lay in his power.

DWELLINGS FOR UNSKILLED LABOURERS.

AT a recent meeting of the Special Dwellings Committee of the Charity Organisation Society, Dr. Greenhill said, that the question of providing suitable dwellings for mechanics might be considered to be in great measure solved, but no sufficient answer had yet been found in this case. Benevolent individuals had done something, and were on no account to be discouraged, especially as they were never likely to be numerous. Building societies had succeeded in some places; but these were not likely to prevail to any great extent, or to provide for the lowest class; indeed, it was often anything but a boon for a poor man to be the owner of his house. Then there were societies. He believed that these were the best agency. Companies, charging rents of 5s. to 10s. per week, could be carried on upon a strictly commercial basis; but when the rents were from 1s. to 5s., it was almost impossible to make new buildings answer commercially. He knew of no instance as yet. Some encouragement should be held out to them. In France, the late emperor exempted improved dwellings below a certain rent from rates and taxes, for a term of years. He thought that something of the same kind might be done in England. Then societies and individuals might be further encouraged by loans on favourable terms. In 1865 he had had an interview with Mr. Gladstone, then Chancellor of the Exchequer, and had been encouraged to hope that money would be advanced by Government, at 3½ per cent., for this purpose, but the interest ultimately required was 4 per cent. Government might give more encouragement than this. There should be a power of calling in the money with six months' notice at any time, if the Government was not satisfied with the way in which it was being applied. This sounded arbitrary, but was really only a proper security for the right use of the money, and the power would not be exercised without real occasion. Then, too, the legal expenses of a loan might be made as small as possible. At present the conditions were, he would not say vexations, but very tedious, complicated, and expensive. It was necessary to apply to three different Government offices,—the Public Works Loan Commissioners, the Board of Works, and the Treasury. The fees and legal charges, too, were so numerous, that the cost was certainly made a maximum, instead of being, as he thought the special circumstances warranted, reduced to a minimum. He would like to see the loans available either for repair and adaptation of existing premises, or for erection of new ones, under suitable regulations for securing that the work be properly done and be maintained. No doubt there were objections, and some very valid ones, to such encouragements; but the case was so difficult and exceptional that the ordinary rules of political economy ought not to be pressed. It was, no doubt, possible to provide tenements, because the people were now living somewhere, but something decent and healthy was wanted,—something that would not disgrace a Christian country. He would move "That it is expedient that encouragement be given by Government for providing proper tenements for the poorer classes (1), by the exemption from rates of tenements below the rent of 4s. or 5s. per week; (2) by giving greater facilities for obtaining loans from the Government for building or providing tenements at 2s. or 1s. 6d. per week.

Mr. Gatliff thought it necessary to have a distinct movement to provide for this class of persons. The cost of building under the Metropolitan Building Act was such that it could not be done to pay commercially; but from his experience in dealing with upwards of 500 shareholders for the last thirty years, he felt sure that there were plenty of persons who would be content with the same interest as the funds paid if their money was employed for this purpose. He agreed that the Government might be called on to lend at less than their present rate. The present terms were 4 per cent. and forty years to repay. 1*l*. 1s. 6d. per cent. per annum was required to pay off the principal in that time; it was necessary, therefore, to earn more than 5 per cent. with the money on these terms. The exemption from rates, he thought, would be strongly opposed from all sides. The Baroness Burdett Coutts had invested 100,000*l*. in this work, and the Peabody trustees had 500,000*l*. to spend, the yearly returns from which were to be devoted to the same object; if, then, only the poorest class were admitted to their houses, they would form a nucleus for the movement, and would not come into competition with more purely commercial schemes. A client of his, at Hammersmith, had tried providing single rooms for the occupation of families. He had built them about 15 ft. square, four rooms on a floor, with washing accommodation on the landing. Each room was provided with kitchen-range, gas, two iron bedsteads, and two berths in the wall for children; but he was obliged to charge 3s. 3d. per room to get 4 per cent. on the outlay, and as this was above the average rent for a single room in the neighbourhood, though the accommodation was far superior, they had not let. Improved accommodation was not appreciated.

Mr. Bosanquet stated that, under the 35 & 36 Vict., c. 79, the Public Works Loan Commissioners were authorised to make loans to sanitary authorities at the rate of not less than 3½ per cent., or at such other rate as in the judgment of the Treasury might be necessary, to enable the loan to be made without loss to the Exchequer, on the security of any fund or rate applicable to sanitary purposes.

Mr. Cowper-Temple said that it was vain to expect any exemption from rates for such dwellings. Exemption would only establish a feeling against these dwellings in any district, instead of in their favour, as the committee would desire; but it was very important that there was a precedent for Government loans at 3½ per cent. for sanitary purposes. This was sanitary work of the best kind; they could, therefore, fairly ask for loans on the same footing. The tediousness of the present process might also fairly be brought before the notice of the Government for improvement.

After further discussion, Dr. Greenhill could not agree with Mr. Gatliff as to the expediency of companies restricting their dividend. He feared it would only prejudice the movement. He was prepared to withdraw the first part of his motion.

The resolution was then put and agreed to in the following form:—"That in the opinion of this committee it is expedient that encouragement be given by Government for providing proper dwellings for the occupation of labourers earning wages not exceeding 20s. per week, by giving greater facilities than now exist for obtaining money from the Public Works Loan Commissioners for building or providing such dwellings."

THE SHRINES OF THE HOLY LAND.

LAST Monday evening the Marquis of Bute lectured at the Tower-hill Catholic Schools, Chamber-street, Great Prescott-street, Minories. The subject chosen was "The Shrines of the Holy Land." The Hon. the Master of Herries took the chair, and, in introducing the lecturer, said that the object was to inaugurate the More and Fisher Institute, which had been founded for the improvement of young men in the neighbourhood of the Docks and Tower-hill, which name was taken after that of the Bishop of Rochester and Thomas More. The subject chosen for the lecture was of no second-hand acquaintance with the Marquis of Bute, but was the result of personal observation of the countries he was about to describe.

The Marquis of Bute, who on rising was loudly cheered, said he was sure that in speaking to a Catholic audience about the Holy Land he would stand excused if he confined himself to one side of it, about which little was heard in this country, namely, the actual appearance which the places presented to the pilgrims who resorted there. He would not enter into any of the discussions or controversies which had been raised about particular places or events, or into any matters of that kind, historical, sublime, or ennobling; or the reason why it was called the Holy Land. He would very briefly describe the appearance of the shrines to which pilgrims resorted, and would keep himself to the three chief holy places in the Holy Land,—Nazareth, where our blessed Lord was conceived and lived as a boy; Bethlehem, where He was born; and Jerusalem, which He selected in order to work redemption in the midst of the earth. As concerning Nazareth, although the greater part of Christ's most divine life was passed there, it was now least resorted to. It was a country in the North of Palestine through which travellers passed going to or coming from Jerusalem. The town of Nazareth was perfectly small and quiet, and had lost all the fame which was formerly attached to it. In that town, he believed, the chief of the inhabitants were Christians. The Church of the Annunciation was built like an old castle, in order to keep off the attacks of unbelievers. It was a great square building, with windows high up, and rather handsomely decorated within in the Italian manner. The roof was supported by four great pillars. The shrine of the Annunciation was in a sort of cave or cellar. The walls were covered with silk, and the floor was paved; on the left was a pillar, broken through, and one of the rubbishing traditions asserted that the fracture was caused by the wing of an angel; on the ground beneath the altar was a cross, to be kissed by pilgrims, because it was on this spot that the Blessed Virgin stood at the unspeakable moment when she became the mother of our Lord. Over that there were three little lamps fastened on the table, and behind them three courts of arms,—those of Godfrey de Bouillon, who refused to be King of Jerusalem, because, as he said, Christ was the only Son of Zion; five golden crosses on a silver ground; the Order of the Cross and St. Francis;

and that of the Five Wounds. Bethlehem was situated about two hours' walk south of Jerusalem. The road leading to it was, in the estimation of all Christians, holy, because of the Virgin having passed over it so many times, carrying our Lord, and for this reason those pilgrims who were strong enough never rode, but walked. The Church of the Nativity was one of the most magnificent in the Holy Land,—the last work of restoration having been done at the expense of Edward I. It had an enormous convent like a citadel attached to it, which was divided between the Roman Catholics, the Greeks, and the Armenians. Pilgrims had to enter, as was usual in such places, through a low door covered with iron plates. The Catholic altar and tabernacle were most gorgeously decorated. Perhaps of all the places in the Holy Land this was approached with the greatest devotion, because it was the one which excited people the most. Jerusalem was essentially the Holy City. Most of the pilgrims caught their first glance at it from the north, and it was there that King Richard refused to look upon it because he was unable to deliver it from the pollution of the unbelievers. The Church of the Assumption, remarkable as the place where the Virgin was raised from the dead, seemed to be a matter of little importance, so great were the other things that were round about it. At the Church of the Holy Sepulchre, the large square before it was paved with stones, which were all cracked, owing to the number of Christians who had been burned alive upon them. Immediately opposite the church was the mother-house of the Knights of St. John, a building in a state of great ruin. In shape it was like the Temple Church, in the metropolis, which was built in imitation of it. The sepulchre was a little ugly building with a dome shaped like an onion. The sepulchre itself, the actual and real tomb of Christ, from which He rose, was in the inner part, and was a place about 6 ft. square, the ceiling of which was entirely covered with gold and silver lamps. Before a sort of marble slab, which covered the couch or *localis* upon which the body of Christ lay, Christians knelt and prayed. This was continually being washed with ottar of roses, or rose-water, and there were in it little drills through which the tears of believers trickled. This was the great centre towards which Christendom had turned, and it was there that occurred the quickening of His body, of which the Scripture gave no description, and of which man could form no conception.

COMPLETION OF THE WANDSWORTH AND FULHAM BRIDGE.

THE WANDSWORTH BOARD OF WORKS AND THE BRIDGE COMPANY.

THE Wandsworth and Fulham new bridge, which has already been described in the *Builder*, is now completed, and will shortly be opened for traffic, along with the new roads connecting it with Chelsea and Fulham on the north, and York-road, Battersea, on the south. At last week's meeting of the Wandsworth Board of Works a letter was read from Mr. Jennings, secretary to the Bridge Company, submitting a proposal to the Board to the effect that it would be a great convenience to the public if notice-boards indicating that the route by the bridge was the direct one to Chelsea, Brompton, and the West End, were affixed to some of the lamp-posts at a few of the principal corners, and the letter expressed the willingness of the Bridge Company to place only notice-boards of such size and design as the Board might approve. It appears that the local committee saw no objection to this being done; but on the matter coming before the Board last week, the chairman and one or two other members strongly opposed the lamps being used for any such purpose, the chairman remarking that it was not altogether out of regard for the public that the application was made, but rather that the bridge should pay. He added that the bridge was a toll bridge, and if the Board acceded to the application, he did not see how they could refuse a similar application from any tradesman who might desire to extend his trade by directing people to his shop by notices on the lamp-posts It resolved itself into a question of principle whether it was desirable to allow the lamps to be used for any such purpose. Some members present contended that the application ought to be granted to meet the public convenience, but the Board ultimately resolved that the permission asked for be not granted.

ENMORE CHURCH, NEAR BRIDGWATER.

THIS church has recently been re-opened, after the whole of it, with the exception of the tower, had been rebuilt. A north aisle, 15 ft. wide, and 38 ft. 6 in. long, has been added, a sufficient portion at the west end being divided off by an ornamental wood screen, to serve for a vestry and organ-chamber. The lofty tower, of the Perpendicular period, has been substantially repaired at the expense of Mr. Broadmead, of Enmore Park. As there was evidence to show that the top of the angle stair turret was incomplete, and had originally possessed pinnacles, these have been restored, and the other pinnacles of the tower made good. The chancel arch has not been disturbed, although the rest of the body of the edifice has been entirely rebuilt. The old Perpendicular windows, and many of the ancient oak benches, have been re-used, and the rood-screen repaired and reinstated. The beautiful south porch doorway has been re-inserted, and its missing base replaced. The new nave, with porch, and the chancel, are on the old foundations, built of rough local stone, and Ham Hill dressings. The new roofs are of the Somersetshire type, having pointed barrel-boarded ceilings, with moulded ribs at intervals. The chancel has a tile pavement, designed by the architect. The Jacobean pulpit has been cleaned and fixed on a plain Ham Hill base. The chancel benches are of oak, with moulded and shaped ends. The reredos is of Corsham Down stone, the cost of it being jointly borne by the rector and by Mr. Jaggars, of Enmore. There is also a new font, of Corsham Down stone. The warming of the church is contrived by means of one of Porritt's underground stoves.

The total cost will probably be about 1,500*l.*, a considerable portion of which has been defrayed by Mr. Broadmead; the rector also contributed handsomely to the cost of rebuilding the chancel.

The architect is Mr. Ferrey, F.S.A.; and the contractor is Mr. Maurice Davis, of Langport, Somerset.

FEMALE TEACHERS OF DRAWING. PARIS.

THE first examination of female candidates took place last week at the École des Beaux-Arts. The tests are severe, and the competition lasts more than a week. In the first place, they are required to execute in six hours, including luncheon-time, a piece of ornament from the plaster, and their success or non-success determines their admission to compete this year.

Those admitted are required to produce an entire figure after the antique, such as the "Diane Chasseresse," the "Diane de Gabie," or the "Venus de Milo," three sittings of six hours each being allowed for each work. After this proof of the aspirants' classical attainments, they are required to produce an ornament derived from forms of the vegetable kingdom. The trials terminate with oral examinations, the pupils being required to correct a given design, point out its good and bad features, and quote the principles of art in each case, and rules observed or violated, before a jury. The successful candidates are assured of employment.

THE FIRE-RESISTING QUALITIES OF BUILDING STONES.

IN a paper on the "Fire-withstanding Qualities of Building Stones," Dr. Adolph Ott, of New York, who has paid much attention to this subject, remarks:—

As a class, limestones, from this point of view, are the worst building material of any of the natural stones, as they calcine with great rapidity when exposed to a high temperature,—a fact which has lately received abundant confirmation at Boston and Chicago. Amongst limestones, too, it should be observed, the varieties known as "dolomites" are the worst, as the presence of the magnesia in them lowers the degree of temperature requisite to the accomplishment of the calcination and disintegration of the stone.

Referring to the property of granite, gneiss, and other nearly-related primitive rocks to crack and fly when exposed to the radiant heat of a neighbouring fire, a fact which has also received abundant verification at the recent great fire in America, Dr. Ott attributes the peculiarity to the expansive force of the water, which all these rocks contain in their fissures.

Amongst natural stones, Dr. Ott gives the highest place in regard to fire-withstanding qualities to the sandstones, which are composed almost wholly of quartz, a material fusible only at extraordinarily high temperatures. Artificial stones,—such as those formed of Portland and other cements,—also rank very high for building purposes in this respect, as their composition, silicates of lime and alumina chiefly, renders them quite as capable of resisting the action of fire as the sandstones themselves.

SHEFFIELD CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE following will be the proceedings of the Congress:—*Monday, August 18th.*—Assemble at the Cutlers' Hall at 2 30 p.m.; reception by the Mayor and Corporation with an address; visit to the Shrewsbury Monuments in the parish church, to Sheffield Manor, and to Broomhall; his Grace the Duke of Norfolk entertains the Congress at dinner at the Cutlers' Hall, at 7·30 p.m. *Tuesday.*—By railway to Beauchief Priory and return to Sheffield; by railway to Worksop Priory, and drive to Steetley and Thorpe Salvin. *Wednesday.* — Excursion to Roche Abbey, the Church of Laughten-en-le-Morthen and St. John's; visit to Rotherham Church and the Bridge Chapel. *Thursday.*—Excursion by special train to Berry Bridge for the Roman Station at Stark; thence by road through Huddersfield to Almondbury, Castle-hill, Woodsome Hall, and Kirkburton, and return by Shipley Station. *Friday.*—By railway to Conisboro, to view the Castle and church; drive to Edlington and Tickhill Castle, and thence to luncheon at Doncaster, at the invitation of the Mayor and Corporation. *Saturday.*—Carriage excursion to the remarkable earthworks at and near Bradfield, and to the church; thence by Bolterstone to Wortley and Wharncliffe Lodge and Chase. Papers to be read each evening.

CONDITION OF THE METROPOLITAN POLICE CELLS.

THE report of a sub-committee of the Social Science Association on this subject has been issued in a printed form. It states that the total number of police stations in the Metropolitan district is about 150, and in the City, 6. On the whole, the committee are of opinion that, with the important exception of the *darkness* of the cells, which does not apply in the district of the *City* proper, the condition and arrangements of the Metropolitan police-cells do not require material alteration, and that they are, as a matter of fact, far less open to unfavourable animadversions than some recent statements in the public prints have implied. The want of light (except in the City) is the one main defect which the committee commend to the attention of the authorities concerned. Except in this respect, the general management of the police stations appeared to the committee to be creditable to all parties concerned.

OPENING OF THE FIRST LONDON BOARD SCHOOL.

ON Saturday last, at Old Castle-street, Whitechapel, the formal opening and handing over of the first school actually built by the London School Board took place. The Board had previously adopted and taken under its auspices upwards of seventy schools of various magnitude, but the Old Castle-street School was the first of which the site had actually been bought and the building erected by the Board itself.

Immediately after Lord Lawrence's arrival, Mr. Charles Reed, M.P., led his lordship over the interior of the new building for a careful and thorough inspection.

Mr. Charles Reed then opened the formal business by informing his lordship that it was his (Mr. Reed's) duty, as chairman of the Committee of Works, to hand to him the key of this school, the first of 73 now building, and rising rapidly to completion. These schools were being built under the provisions of the Elementary Education Act of 1870, for the reception of 102,600 children, — the number which was declared to be in immediate need of the means of efficient instruction in the metropolis. The Board had at the present time 156 schools, with an ample staff of teachers and

pupil-teachers, ready to occupy the new school buildings, and all the children of these schools were paying a weekly fee. The Finance Committee had reported the cost of these operations to be up to the present time not quite five-eighths of a penny in the pound in each year, and the outlay upon sites and buildings was spread over 50 years; the money raised bearing interest at the rate of 3½ per cent. per annum. This particular school was intended to meet the wants of a most densely-populated part of the metropolis, situated, he might say, on the boundaries between the City and the Tower Hamlets. It had been built by Mr. High, upon the design of Mr. Biven, and was capable of accommodating 396 boys, 396 girls, and 480 infants. Mr. Reed, in conclusion, congratulated Lord Lawrence upon his being able, after three years of laborious work, to witness the accomplishment, so far, of a great educational enterprise.

SCHOOL BOARDS.

London.—Mr. C. Reed, M.P., brought up the report of the Works Committee, which was received, and which stated, in reference to the transfer of the Shakspeare-walk Female Charity School, York-place, Ratcliff Highway, that on the 11th June last a resolution was passed for the purchase of a site for a school in Brewhouse-lane, Wapping, into which the children at present in the Shakspeare-walk School could be transferred. Tenders had now been invited by the committee for the erection of a school to accommodate 324 children, the amounts of which are as follows:—

Manley & Rogers	£4,449	0	0
Scrivener & White	4,370	0	0
A. Killby	4,290	0	0
Newman & Mann	4,275	0	0
Wicks, Bangs, & Co.	4,254	0	0
W. Brass	4,221	0	0
A. Sheffield	4,167	0	0
J. Perry & Co.	4,000	0	0
T. Ennor	3,989	0	0
W. Shepherd	3,836	0	0
W. H. & J. Mansbridge	3,749	0	0
W. T. Nixon & Son	3,726	0	0
W. Crockett	3,720	0	0

Some slight alterations in the plans have since been made which will reduce the cost of the building by 360*l.*, and as a provision of 300*l.* is made in the contract for the erection of a house for the mistress, the net amount of the reduced tender of Mr. W. Crockett, of King's-road, St. Pancras, will thus be 3,060*l.* The committee recommend the acceptance of this tender, a further provision of 300*l.* being made for the erection of a house for the mistress. Cost of site, 1,400*l.*; cost of building per head, 9*l.* 8s. 10d.

Tenders have been invited for the erection of a school to accommodate 707 children, on the site in Richard-street, Poplar, the amounts of which are as follows:—

A. Killby	£6,380	0	0
J. Sewell & Son	6,290	0	0
Wicks, Bangs, & Co.	6,246	0	0
J. Hearle	6,236	0	0
G. Lima	6,180	0	0
T. Ennor	6,090	0	0
J. Perry & Co.	6,009	0	0
J. High	5,996	0	0
A. Sheffield	5,873	0	0
J. Kirk	5,840	0	0

The committee considered it desirable to make certain alterations in the plans of this school, which will reduce the cost of the building by 510*l.*, and an amended tender has now been obtained from Mr. J. Kirk, of Warren-lane Wharf, Woolwich, amounting to 5,300*l.*, which the committee recommend the Board to accept. Cost of site, 4,089*l.* 0s. 4d.; cost of building per head, 7*l.* 9s. 11d.

Tenders have also been invited for the erection of a school to accommodate 588 children, on the site in James-street, Camberwell, the amounts of which are as follow:—

Newman & Mann	£6,923	0	0
Dove, Brothers	6,875	0	0
Scrivener & White	6,843	0	0
W. Brass	6,655	0	0
E. B. Gammon & Sons	6,229	0	0
G. Stephenson	5,522	0	0

In this case also the committee have reduced the cost of the school by 560*l.*, and they now recommend the acceptance of the tender of Mr. G. Stephenson, of Beaufort-street, Chelsea, amounting to 4,962*l.* Cost of interests already purchased, 1,422*l.* 16s.; cost of building per head, 8*l.* 8s. 9d.

On the 18th December last, Mr. M. P. Manning was appointed architect for the school to be built on the site in Cottage-row, Bermondsey, upon the usual terms of payment, viz., a commission of 5 per cent. on the cost of the building. The school was originally designed to accommodate 1,500 children, but in consequence of a reduction in the deficiency of the school accommodation in the district, it was subsequently decided to build for 1,000 children only, and the architect was instructed to replan the school accordingly. A further alteration in the plans was also necessitated by the discovery of a sewer running across the site. The committee accordingly recommend that a fee of 50 guineas be allowed to Mr. Manning, in addition to the usual commission, for the extra labour incurred in consequence of the above alterations.

On the 12th June, 1872, the Board approved the amended "rules for the planning and fitting up of Board schools." Rule 19 provides that the words, "School Board for London—Public Elementary School," and the name of the school, shall be placed in a permanent and legible manner on the face of each school-house. The committee consider that the words "Public Elementary School" are unnecessary, as it may be taken for granted that every school provided by the Board is a public elementary school. They therefore recommend that this alteration in the "Rules" be sanctioned by the Board.

The committee also recommended the appointment of Mr. C. W. Stephens, as a senior draughtsman in the architect's department (in lieu of Mr. H. W. Dale, resigned), at the same salary, viz., 140*l.* per annum.

The committee lastly recommend that the salaries of the undermentioned officers in the architect's department be increased as follow:—

Chief draughtsman	Mr. T. J. Bailey	£240 to £250	per an.	
Senior	,,	Mr. J. Howes	140 to 160	,,
Junior	,,	Mr. J. Harland	80 to 100	,,
,,	,,	Mr. W. Murray	80 to 90	,,
,,	,,	Mr. J. Lackie	80 to 90	,,
,,	,,	Mr. W. A. Green	80 to 90	,,

The committee's recommendations were accepted. At a subsequent meeting of the Board, it was resolved that the tender of Messrs. Aitchison & Walker, amounting to 6,070*l.*, for the erection of a school to provide accommodation for 822 children, in Bell-street, Marylebone, be accepted; and that the tenders of Messrs. Sidebottom, Edwards, Coleman, & Co., and Hammer, for the supply of 15,000 desks, at prices varying from 17s. 6d. to 1*l.* 1s. each, be accepted.

Glaisdale.—The Local Board appointed Mr. E. Smales, architect, to prepare plans for the new school and superintend the works in connexion with its erection; the architect to do the work for 2½ per cent., as he had agreed to do. The appointment stood between him and Mr. Armfield, architect, who named 5 per cent. as his commission, and it was decided in Mr. Smales's favour by the casting vote of the chairman.

Northampton.—The tenders for the erection of the Spring-lane Schools were received. There were eight in all, viz., Messrs. J. Ireson, W. Redshaw, D. Ireson, Dunkley, H. Martin, J. Watkin, and Claridge (Banbury). The highest was for 5,207*l.*, and the lowest (accepted) that of Mr. Joseph Ireson, 4,050*l.* Mr. Walker, the architect for these schools, in answer to a question, said he supposed that they would be completed in six months. With respect to the Vernon-terrace Schools complaint was made of the architect's delay. The Clerk said he understood Mr. Bland would advertise in the local papers and the *Builder* in the current week for tenders. Mr. Wright proposed that the matter should be referred to the sites and building committees to take the earliest steps to obtain tenders, and to make any communication to the architect they thought necessary.

Stainland.—The Board proceeded to the selection of plans, four sets of which had been sent in, for the proposed new Board school at Bowling Green. The Chairman moved that the one signed "Incognito" be accepted. This was seconded by Mr. Mellor. Mr. Sykes observed that it was certainly the best in its internal arrangements. The plan was passed without opposition. Mr. Ainley then observed that if the plan was passed by the Educational Department he supposed it was proposed to build a school on the Bowling Green, to accommodate 300 children, at a cost of 1,500*l.* On examining the plans, he did not think for a moment that a school to accommodate that number could be built for that sum. One architect in his specification said the materials were to come either from Elland Edge or Crossland Moor. If the stone were brought from those places, instead of being 1,500*l.*, it would be double.

THE NEW COURTS OF JUSTICE.

MR. WAIT, in the House of Commons, asked the First Commissioner of Works whether the revised designs and plans prepared by Mr. Street for the New Courts of Justice had been received and approved; and whether he anticipated being in a position to announce to the House before the close of the session that the contract had been signed and the building handed over to the architect.

Mr. Ayrton said that the Treasury had approved of the contract entered into to carry out the revised designs and plans proposed by Mr. Street; but he was not prepared to state the exact time when the contract would be signed. He was not able to fix the day when the building would be handed over to the contractor, and still less would he be able to fix a day when the session would be brought to a close, so that he could not state whether he should be able to intimate before the close of the session that the building had been handed over to the contractor. The best opinion that he could form, however, was that the contract would be signed in about a month from that day.

CHESTER WORKHOUSE COMPETITION.

SIR,—Having recently carried out a contract under one of the competitions for the new Chester Workhouse, I had some idea, providing the same architect were successful, of sending in a tender for the erection of this building, in consequence of which I have watched for the result with some degree of interest. I find that a design has been selected by the committee, and I also notice that, in proposing the matter in due form, the chairman thought well to make the following "rather remarkable statement:"—"Mr. Littler, Mr. Carter, Mr. Parry, and myself, who were appointed on the sub-committee to examine the specifications, went through them line by line, and we had no hesitation in saying that the one selected is by far the best. The specification is most strict, and is as much against the builder as any I have ever gone through."

Now, it appears to me that the foregoing remark, which was quite uncalled for, has a material tendency to instill into the minds of all honest builders feelings of indignation and contempt. Who the gentleman is, or what he is, I do not know, but I have certainly come to the conclusion that he cannot be very well acquainted with the respectable portion of the trade at least. I may add that, any man of business, before sending in a tender, would, for the sake of protection, deem it necessary not only to insert a strike clause, a bad-weather clause, and an arbitration clause, but a clause also which would prevent Mr. Chairman and his colleagues from exceeding their duty. A TWENTY YEARS' SUBSCRIBER.

ANTIQUARIAN VISIT TO BERKHAMSTEAD.

THIS town, which possesses much that is interesting to archæologists, has been visited by an excursion party of gentlemen from London. The party proceeded to the Castle Grounds ruins. After taking a survey and a walk round, the Mount was ascended, and on the top Mr. G. T. Clark gave a discourse on the ruins.

Mr. Parker, C. B., made a few remarks supplementary to what Mr. Clark had said.

The party then accompanied the Marquis of Hamilton to his mansion, where his lordship and the Countess pointed out many objects of archæological interest, one of which, dated 1611, had been discovered in the recent alterations there made. Mr. Parker said the house was of the Elizabethan style, and it could be made a very good Elizabethan house. The rector, by request, also read in the hall an extract from his book, the "Antiquities of Berkhamstead," descriptive of the house, as given by Camden, the historian, who called it "Berkhamstead House."

The company thence repaired to the King's Arms Hotel, where luncheon was provided. Mr. Clark presided. Mr. Cobb invited the company to the Rectory, where there might be seen Cowper's well, and a painting of his birth-place by Mr. Wm. Claridge, of Berkhamstead. The company thereupon visited the Rectory and grounds which were very interesting.

Under the guidance of Mr. J. H. Parker, the church was next visited. Many of the changes made in the restoration by Mr. Butterfield were strongly condemned by Mr. Parker, as out of keeping with proper restoration. The rector gave information in reference to the brasses and tombs, and pointed out the tablet in memory of the poet Cowper in the chancel, on which are lines by Lady Walsingham. On the invitation of the Rev. E. Bartrum, the Grammar School, which was founded by Dean Incent in the reign of Henry VIII., was visited.

The party then separated, having spent a very interesting day.

MESSRS. TRÜBNER'S PREMISES, LUDGATE HILL, LONDON.*



NEW WAREHOUSE IN LUDGATE-HILL.

THE new premises of Messrs. Trübner & Co. occupy a site purchased from the City Sewers Commission, being part of the surplus land remaining in the hands of the Commission after widening Ludgate-hill. A large building, erected some years ago for the purposes of the Gilton Club, and which is at the rear of this site, was also bought, and the whole now forms an extensive range of premises laid out as a publishing and bookselling establishment.

The shop on the ground floor of the new building, and which is devoted to the ordinary wholesale and retail trade, is 16 ft. high, and has a gallery running round at the height of 8 ft., so as to divide the wall-space into two equal parts, every portion of which can be reached without the use of ladders,—a point of great practical importance where the stock of books arranged on shelves amounts to about 30,000 volumes. The fittings generally are of Honduras mahogany, French polished. The wall-space where exposed is finished in Parian cement. The lobby, giving access to the ground floor from Ludgate-hill, has a pavement of white marble, with a centrepiece in encaustic tiles by Messrs. Maw & Co.

The basement walls are built in Portland cement, and the floor is of Barnett's asphalte, laid on concrete in order to secure dryness, as this story was required to be used at once for the storage of books, which occupy the whole space except that used as a receiving department, which has an entrance in Little Bridge-street. Nearly every portion of the basement is well lighted by means of Hyatt's illuminating grating (an American invention which is used to cover the front area) and by glass slabs in the floor of the shop.

The departments for Government contracts and for foreign and American exports occupy the ground floor of the rear premises, the department for books in the Oriental languages being on the gallery of the shop before alluded to.

The counting-house, with the office of the Belgian Consulat-General, is on the first floor above these departments. The stories above are fitted up for the storage of bound and unbound books.

All the several stories have communication by means of lifts in addition to the staircases, and the various departments communicate with each other and with the counting-house by means of speaking-tubes.

The front elevation towards Ludgate-hill consists chiefly of Portland stone and white Suffolk brickwork, tuck-pointed with red mortar. The ground story has pilasters of red Mansfield stone, on plinths of blue Forest of Dean stone, and surmounted by figures of elephants, which carry the corbels that stop the ends of the cornice. The cast-iron story-posts are fluted, and form the reveals to window and doorway. The shop front is recessed 2 ft. from the line of frontage in order to afford space for persons standing, and to give better means of lighting the basement. The iron revolving shutters are fitted in the transome below the upper light. The general character of the design is round-arched Gothic, with an Oriental tendency in several of its parts. The octagonal shafts to the windows are of red Mansfield stone, hollowed on each face. No cornice, in the ordinary sense, is designed, but the upper story is marked by coupled windows and projecting octagonal shafts carried on corbels and supporting pinnacles with domical caps, an ornamental parapet running between them.

The works have been carried out from the designs and under the superintendence of Mr. Blashill, of Old Jewry-chambers, architect, by the contractors, Messrs. Ashford & Brightmore. The carving was executed by Messrs. Farmer & Brindley.

* See Illustration, p. 567.

THE NEW RAILWAY STATION AT PRESTON.

PRESTON, which is perhaps the most important town on the railway route between London and the North, as regards the traffic which converges there, has hitherto possessed a most inconvenient station, altogether inadequate to the large number of trains belonging to the London and North-Western and other leading companies which arrive at, and are despatched from it daily. A change, however, is at length about to be made, and the London and North-Western and Lancashire and Yorkshire Companies, who are the joint owners of the station, and the several lines radiating in different directions from it, have determined upon the construction of a new and greatly enlarged terminus and buildings in connexion therewith, which, when completed, will make the Preston Station one of the largest and most important in the country.

The plans for the new station and buildings, which include the erection of a hotel, have been prepared by Mr. Baker, engineer in chief of the London and North-Western Company, and the works will be carried out under the superintendence of Mr. Carr, the resident engineer at Preston. The works, which in their entirety are of considerable magnitude, were commenced on Monday last by Messrs. Cooper & Tullis, the contractors; and here it may be stated that Messrs. Cooper & Co. were not the original contractors. The works were to have been constructed by Messrs. Brooks & Garside, of Bolton, but circumstances led to new tenders being invited, and it is understood that the fresh contract is considerably in excess of the former one, in consequence of the cost of labour, and buildings of every kind having augmented in value in every direction.

The station, as enlarged, will occupy an area of upwards of six acres in extent, and will be carried under and across Fishergate, the principal street in the town, by a stupendous iron-girder bridge stretching along that street over the railway. The enlargement of the station involves the removal of the engine and carriage sheds to the west of the approach to the present station from the south, together with other buildings belonging to the company as well as to private owners, which will be demolished for the purpose of widening the line, and providing the required space for the enlarged station. The earliest portion of the work will consist of the demolition of the existing bridge or tunnel by which the railway is at present carried under Fishergate in a northerly direction; and when this is done, the line will be widened at this point by the construction of eight lines, instead of only two, as at present, together with the erection of the large bridge over the railway already referred to. Mr. C. D. Burgh, who is at present executing the great iron-girder bridge over the Tay, at Dundee, two miles and a half in

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length, is also the contractor for the bridge at the Preston station. The girders of the bridge will measure 125 ft. long, 8 ft. deep, and 2 ft. thick, and will weigh about 80 tons each, and six of them will be required in the construction of the bridge, the piers of which will be of solid masonry. There will be separate and distinct booking offices, with waiting-rooms, refreshment-rooms, and other offices on the east and west sides of the line respectively, the passing traffic north and south being divided from each other. There will be a main central platform 1,100 ft. long and 24 ft. wide, running the entire length of the area of the station, together with four other platforms running parallel with it. There will also be access to and from the station both at the north and the south. The station will be covered in by an elliptical roof, in several divisions, consisting chiefly of iron and glass. This roof will be about 700 ft. in length, or nearly two-thirds the length of the entire station area.

The hotel will be a prominent feature amongst the rest of the new station buildings. It will be situated on a plot of ground belonging to the company at the south-west angle of the entrance to the station, with which it will be directly connected, the principal façade being on the south side of Fishergate, with a large area in front, a portion of which will be ornamentally laid out as a garden, whilst the remaining portion will be set apart as a cabstand. The building will be in the Italian style of architecture, the materials being red brick, with stone dressings. It will be large and commodious, and has been designed to contain accommodation for more than 200 visitors.

The entire cost of the station, including the buildings and hotel, will be about 120,000*l*.

THE DOCTOR AND THE ARCHITECT.

SIR,—In your impression of June 28th you print some portions of a paper on "The Popular Estimate of Architecture," which, although it seems to be in a popular style, and somewhat funny, yet deviates a little from exactness in one respect. With your customary fairness I know you will allow me to say a word or two about Mr. F. Chambers's reference to a profession equally honourable as his own, although it always seems to please the public to fling a jest or sarcasm at it, and any one is sure to raise a laugh if he crack a joke at the Doctor's expense. The analogy Mr. Chambers draws between the science of medicine and the art of design is rather a lame one, and will not bear discussion; but it is to his bold description of what *he considers* the science of medicine that I wish to take special exception. He says, "The medicus guesses where he cannot see, and if he makes mistakes he shifts the blame; the architect dares not guess,—a false step once made is fatal to his fame. The doctor blunders and stumbles in the dark recesses of viscera and cloacæ; the patient dies; but the much-enduring Mother Nature bears the blame." I put it to the candour of your readers, sir, whether these are not, speaking gently, rather thoughtless words? "The medicus guesses where he cannot see" conveys the idea that in Mr. Chambers's opinion medicine is a very uncertain art, because, perhaps, he thinks physicians are not active enough in their treatment. They leave too much to Nature, he believes, as he afterwards says she bears the blame of their errors. Mr. Chambers has never heard the motto of one of our oldest physicians,—"*Nimia diligentia*,"—or he would not find the fault he does. Sydenham, the great English Hippocrates, says, "I often think that we forget the good rule 'Festina lente,' that we move more quickly than we ought to do, and that more could be left to Nature than we are in the habit of leaving to her." To imagine that Nature always needs the aid of art, is an error, and an unlearned one too. If it were so, she would have not provided for the human race as much as its preservation demands. Sir John Forbes, in his work on "Nature and Art in the Cure of Disease," insists on this view, which may explain to Mr. Chambers why the physician has no need to guess, and likewise disclose to him what is often the highest point of art in the treatment of disease; viz., a masterly inactivity which declines all uncalled-for interference with the operations of Nature, yet guides and directs them towards the desired end. This is art under the influence of reason, and not mere "hit or miss," as Mr. Chambers evidently imagines.

He further says, "The doctor blunders and stumbles in the dark recesses of viscera and cloacæ, the patient dies," &c. (is this inevitable?). This is at once untruthful, and needlessly coarse. A well-educated physician cannot be said to "blunder and stumble," guided as he is by the ever-increasing light of science and modern discovery. He cannot always be brilliant. He is compelled often to "make haste slowly." We have not yet arrived at the pitch of cutting off heads and putting them on again; nor can the most skilful "Medicus," as Mr. Chambers chooses to call a plain doctor, supply brains to those who do not possess them, a line of practice which would be rather remunerative.

What Mr. Chambers exactly means by a medical man "stumbling in the dark recesses of viscera and cloacæ" I cannot precisely fathom; but he should know that medical men do not invariably diagnose from the excreta of their patients, and that the "ars urinarum" is an extinct one now. Anyhow, the idea pervading Mr. Chambers's sentences is one which proves him to have a very low estimate of the science of medicine, and that his respect and courtesy for its practitioners is very small indeed. Why does he imitate *Menenius*, in the play of "Coriolanus"? Has he "an estate of seven years of health," that he will "make a lip at the physician"? (Act ii., scene 1.) I sincerely hope he has; for then he can "throw physic to the dogs"; but surely he need not wish to send the doctor after it. No one dispassionately comparing architecture with medicine can doubt which has done most for our race,—for this ought to be the measure applied to everything, and every man; unless we live to do our race real good and permanent service, we had better not live at all. With Mr. Chambers's remarks about the education of architects I fully concur. It is, as he says, "promiscuous" and "uncertain"; but still I am inclined to think that in the exercise of an art pure and simple,—such as architecture, poetry, painting, or the like,—a learned training is unnecessary. Inherent talent is the artist's best pass; but for the "medicus" remains the plodding, hard work,—the wear and tear of brain (men's lives being of greater worth than any building) belonging to a learned profession. I would finally remind Mr. Chambers that to a physician an error is a fatal occurrence which no amount of subsequent skill can atone for. He cannot shift the blame, or throw all the onus on to nature. The doctor has his assured position, says Mr. Chambers; and if he had not, how could he have the confidence of his patients? A good architect has the confidence of his clients, and rightly; but the smatterer in either art or medicine, of course, has none. But medicine secures fit men for practical work by searching examinations, and grants to them only licences and diplomas. Were this system of test applied to our architects in embryo we should hear less of failures and mistakes. I trust I have not said too much, but the subject is a very interesting one. I have not either intended to be unjust or unkind in my estimate of Mr. Chambers's remarks. I read them as a casual reader, but if I have offended in the letter, he must believe the spirit of my animadversions is friendly. If he turns to his Goethe he will read:—

> "Der geist der medecin ist leicht du fassen;
> Ihr durchstudirt die gross und kleine Welt,
> Um est am Ende gehn zu lassen
> Wie's Gott gefallt." *Faust.*

GEORGE GRAY JARVIS
(Formerly Student of Guy's Hospital).

THE NEW SCHOOL BUILDINGS AT RUGBY.

THE chapel and gymnasium buildings are the result of the late tercentenary, when subscriptions were raised among old Rugbeians for improving the school buildings. The racket-court and the new schools had already been built,—the former by a general special subscription in the school, the latter at the cost of the masters under Dr. Temple, chiefly on the site of some houses which were purchased and pulled down. The racket-court is 65 ft. by 32 ft., and 30 ft. high to the plate, with five courts against three of its outside walls, and an open gallery above an entrance-porch and dressing-room on its fourth side. The gymnasium is 100 ft. by 45 ft., and 23 ft. high to the wall-plate, with a crypt beneath it for workshops. An entrance-porch, dressing-rooms, and two staircases to galleries which run round three sides of the building are placed together at one end. [illegible] glazed lantern in the centre of the roof receive[s] the climbing-mast. The fittings of the interio[r] are by Mr. Maclaren, of Oxford. The chape[l] which had already been several times enlarge[d] and altered, was chiefly the work of Mr. Penros[e] who has built the school infirmary. As it r[e]quired further enlargement, it was resolved t[o] take down the greater part of it, and to rebuil[d] it on a larger scale. The two western bays an[d] porch of the old chapel have been retained, wit[h] slight alteration. The whole of the two-ligh[t] windows, as well as the three-light east window in the new part, are features from the old chape[l] They have been preserved and built into th[e] new walls on account of their containing m[e]morial and other stained glass. The building[s] have been designed by Mr. William Butterfield[,] architect. The original Rugby School build[ings] are of white brick and stone. The ne[w] ones are of red brick and stone, and of whit[e] and red brick and stone intermixed.

PROPOSED NEW DOCKS AT CARDIFF.

A PROJECT has just been brought forward fo[r] the construction of new docks at Cardiff, whic[h] are stated to be urgently necessary, in conse[-] quence of the inconvenience arising from th[e] insufficiency of the present dock accommodatio[n] Another reason for their construction is, that s[o] so many additional collieries are opening in th[e] district, the output of coal will shortly be muc[h] larger than it has been during the past few year[s] At a meeting of the Chamber of Commerce hel[d] last week on the subject, Mr. Bachelor, one o[f] the members, explained the plans for construc[t]ing these new docks on a quantity of waste lan[d] on the margin of the river, situated betwee[n] Cardiff and Penarth, in the neighbourhood o[f] the new railway now making between those tw[o] places. It appears that to carry out this projec[t] a capital of about 750,000*l*. will be required, an[d] it is proposed that the bulk of this amount, t[o] the extent of 500,000*l*., should be raised by th[e] several railway companies interested in the de[-]velopment of the port, and that the remainin[g] 250,000*l*. should be raised by the public. Severa[l] members of the chamber warmly supported th[e] proposal as explained by Mr. Batchelor, it bein[g] admitted that the existing dock accommodatio[n] is totally inadequate to the requirements of th[e] port. It was ultimately resolved that, in th[e] opinion of the meeting, it was absolutely nece[s]sary that additional dock accommodation shoul[d] be provided with the least possible delay. Th[e] plans submitted by Mr. Batchelor were thos[e] which the chamber thought it was desirable t[o] have carried out, and a committee was appointe[d] to take the necessary preliminary steps in ord[er] to carry out that object.

VENTILATION OUTLETS.

SIR,—In answer to your correspondent seekin[g] information on the above subject in your column[s] a few weeks ago, I beg to extract the followin[g] from Dr. Parkes's "Practical Hygiene," 2n[d] ed., p. 117:—

"*Outlets.* The place for the outlets is a mos[t] important consideration, as it will determine in[,] great measure the position of the inlets. [If] there are no means of heating the air passin[g] through them, they should be at the top of th[e] room; if there are means of heating them, they may be at any point. If not artificially warmed[,] the highest outlet tube is usually the point o[f] greatest discharge, and sometimes the only one.

(*a.*) *Outlet Tubes without Artificial Heat.*—[T]hey should be placed at the highest point o[f] the room; should be enclosed as far as possible within walls, so as to prevent the air being cooled; should be straight, and with perfectly smooth internal surfaces, so that friction may be reduced to a minimum. In shape they may be round or square, and they must be covered above with some apparatus (the cowl, hexagon tube &c.), which may aid the aspirating power of the wind, and prevent the passage of rain into the shaft. The louvred openings are not the best."

My own opinion is, that they should be at the top of the room under all circumstances; and that there is no subject more important for the physical prevention of tubercular diseases in particular,—the consumption that decimates our population,—than the satisfactory solution of the problem of ventilation and warming, and its enforcement where control can be exercised.

J. WARD, M.D.



WINDOW AND GRILLE: NATIONAL PROVINCIAL BANK OF ENGLAND, NEWCASTLE-ON-TYNE, BRANCH.

MR. JOHN GIBSON, ARCHITECT.

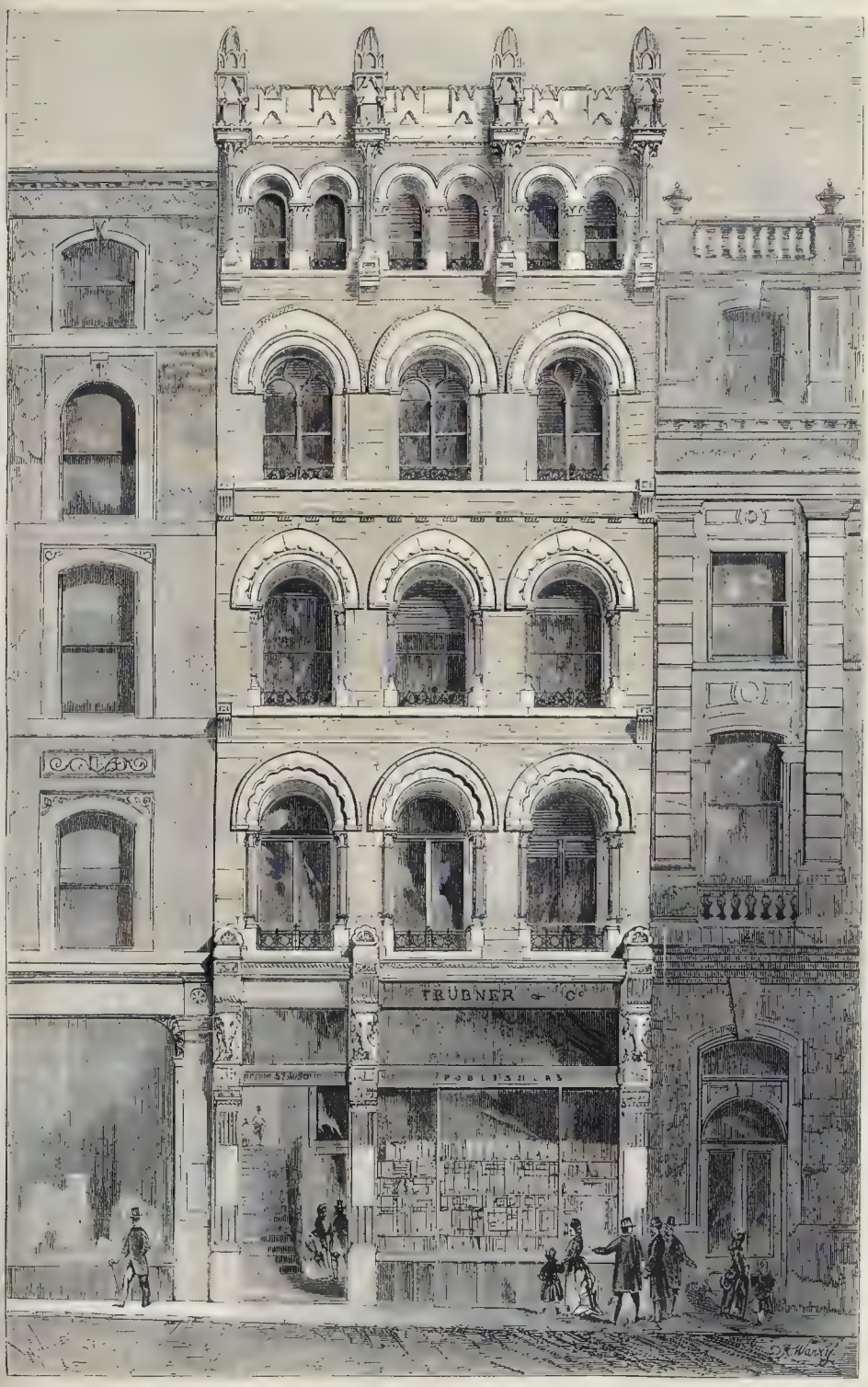
WINDOW AND GRILLE:
NATIONAL PROVINCIAL BANK OF ENGLAND, NEWCASTLE-ON-TYNE.

IN our last volume we published a view of the building erected for the Newcastle-on-Tyne branch of the National Provincial Bank of England,* from the designs of Mr. Gibson, and alluded particularly to the large windows on the ground floor. In our present number we give a view of one of these windows, with its wrought iron grille, adopted in lieu of shutters, as promised on the previous occasion. The column on each side is of polished red granite.

* See vol. xxx., p. 783.

FOREIGN SPECS.

THE shareholders in the company for building markets and abattoirs for the city of Berlin, many of them English, have come to grief. The company appears to have been robbed, as usual we might almost say, right and left by agents. If Englishmen, instead of sending their money abroad, were to employ it at home, they would not merely play a more patriotic part, but would find it pay better five times out of six. With many the promise of a good return is, unfortunately, everything. If Russia, for example, were to offer 10 *per cent.* for money wherewith to damage this country in the East, there are plenty of Englishmen who would lend it.



BUSINESS PREMISES ON LUDGATE HILL. MR. BLASHILL, ARCHITECT.

[See p. 563, *ante*.



IN AND ABOUT THE REGENT'S PARK.

It was a happy thought of the man who first called the parks the lungs of London; without them this great city would have but poor means of oxygenating its life-blood for the sustaining of the ceaseless throbbings and muscular exertions of its mighty heart; and it is therefore impossible to over-estimate their value to those of its inhabitants who can in them alone obtain the fresh and health-bearing breezes their overworked bodies and minds so much need.

Regent's Park is now situated in the midst of the town, and yet it is only a thing of yesterday, —a creation of the first quarter of the nineteenth century. It is essentially a people's park, and has never been a fashionable lounge, like St. James's Park used to be, and like Hyde Park is and has always been. The inhabitants of London owe to George IV. the greatest improvement of their city that has ever been effected, hardly excepting the more recent and imposing improvement of the embankment of their river, and it is right for his fame that Regent-street and Regent's Park should bear his name, and perpetuate his claim to their gratitude in this particular.

The great borough of Marylebone takes its name, not, as might be supposed, from "Mary the Good," but from the little brook, which once ran from Hampstead by Primrose-hill through Marylebone Park to Marylebone-lane, crossed Oxford-road, near Stratford-place, and Piccadilly near Hay-hill, and then ran through St. James's Park by Buckingham Palace to Tothill-fields, and fell into the Thames at a place called King's Scholars' Pond, a little below Chelsea. This was the Tybourn, and the manor was sometimes called by the same name, but the church being dedicated to the Virgin in the year 1400, it came to be spoken of as St. Mary-le-bourne, afterwards corrupted to St. Marylebone. An anonymous writer in the *Gentleman's Magazine* for 1809 rashly affirms that the church is called in old writings *Santa Maria de Ossibus*, but the topographer Lysons proves this assertion to be incorrect, and shows that in the *Valor* of Pope Nicholas, written in the reign of Edward I., it is called Ecclesia de Tyborne, and in records of the reigns of Henry VIII. and Edward VI., it is called Tyborne, *alias* Maryborne, *alias* Marybourne. In the last century this place was a small village cut off from London, and in 1728 the *Daily Journal* informed the public that "many persons have arrived in London from their country-houses in Marylebone." However, houses gradually encroached upon it, and there was reason to fear that all fields around would in course of time be swallowed up, and divided amongst the builders. The first sign of this change was the proposed plan of a new road from Islington to Paddington through Marylebone Fields, which was made in the year 1750, and about twenty years after Marylebone Gardens were closed, the site being now occupied by Beaumont-street, part of Devonshire-street, and part of Devonshire-place. John Thomas Smith states that the orchestra stood on the site of the house No. 17, Devonshire-place. When the Marylebone-gardens were closed in 1777 or 1778 they had been occupied as a place of public entertainment for considerably more than a century. In Pepys's Diary, under date 1668, there is the following notice of the place: "Then we abroad to Marrowbone, and there walked in the garden; the first time I ever was there, and a pretty place it is." Balls were given by the nobility at these gardens; and Elizabeth Robinson, afterwards the celebrated Mrs. Montagu, was one of the gayest and fairest of the revellers. Dr. Doran relates, in his "Lady of the Last Century," that before the dancing began the ladies' fans were thrown upon the table, and the men then drew them for partners, each taking for his own the lady to whom the fan which he had drawn belonged, and which he again presented to her. The manners of society in the last century were very different from those of to-day, and few things strike us now as more odd than the general practice among our ancestors of frequenting public gardens, and the easy *abandon* they adopted there. In the Marylebone-gardens there was a large plunging-bath used by fashionable nalads, who, donning a bathing dress, took headers and gambolled in the waters. Lord Dupplin wrote a couple of verses on Miss Robinson's achievements in this way. J. T. Smith, in his "Book for a Rainy Day," gives a chronological account of the doings at the gardens, and prefaces it with the following information. "The carriage and principal entrance was in High-street; the back entrance was from the fields, beyond which, north, was a narrow winding passage, with garden-palings on either side, leading into High-street. In this passage were numerous openings into small gardens, divided for the recreation of various Cockney florists, their wives, children, and Sunday smoking visitors. These were called the French gardens, in consequence of having been cultivated by refugees who fled their country after the edict of Nantes. I well remember my grandmother taking me through this passage to Marylebone-gardens to see the fireworks, and thinking them prodigiously fine." Persons were accommodated in these French gardens with tea equipage and hot water at 1d. per head.

When James I. granted the manor of Marylebone to Edward Forset in 1611 he reserved the park in his own hands, and here he entertained foreign ambassadors with a day's hunting, as Queen Elizabeth had done before him. In the Board of Works accounts for 1582 there is a payment "for making of two new standings in Marebone and Hide Parkes for the Queenes Majestie and the noblemen of Fraunce to see the huntinge." In 1646 Charles I. granted Marylebone Park to Sir George Strode and John Wandesford, by letters patent dated Oxford, May 6, as security for a debt of 2,318*l.* 11s. 9d. due to them for supplying the king with arms and ammunition. After the death of Charles no attention was paid to the claims of these gentlemen, but the park was sold by the Parliament to John Spencer on behalf of Colonel Thomas Harrison's regiment of dragoons, on whom it was settled for their pay. The money paid was 13,215*l.* 6s. 8d., including 130*l.* for the deer (124 in number of several sorts) and 1,774*l.* 8s. for the timber, excluding 2,976 trees marked for the navy. At this time Marylebone Park was disparked, and it was never again stocked with deer. At the Restoration, Sir George Strode and Mr. Wandesford obtained possession of the park (with the exception of the great lodge and sixty acres of land, which had been granted for a term of years to Sir William Clarke, secretary to the Duke of Albemarle), and held it until their debt was discharged. The park was subsequently leased to Henry, Earl of Arlington, in 1668, and to Charles Bertie and others, in trust for the Duke of Leeds, in 1696. Several new leases were granted, and the last of these to fall in was that of the Duke of Portland, which expired in 1811. A survey of the estate, then called Marylebone Park Farm, was made in the year 1794, by order of the Treasury, under the direction of Mr. John Fordyce, when it was found to contain 543 acres and 17 perches. It was at first intended to build entirely over the open fields, but we owe the Regent's Park to the admirable suggestion of Mr. White, of Devonshire-place. This gentleman drew up a plan for Mr. Fordyce, the surveyor-general of the Crown lands, in which he proposed that only the lower part of the site of Marylebone Park should be built upon; that the buildings should terminate northwards with a grand crescent of half a mile in span, in the centre of which, fronting the end of Harley-street, should be erected the new parish church of Marylebone, to which there should be an approach by a street continued from Harley-street; that the remainder of the ground should be restored to its original purpose, and converted into a park of three miles in circumference. This scheme was afterwards modified, but the thousands who enjoy the *rus in urbe* of the Regent's Park should remember that all honour is due to "Mr. White, of Devonshire-place," at whose suggestion a healthful resort was provided for the inhabitants of London in place of rows of bricks and mortar. Before passing from the old to the new park, it will be necessary to say something about the manor-house and the old church of Marylebone. The manor-house stood at the south end of the park, near the site of Devonshire-mews, and was used in olden time as a palace where those distinguished persons who were invited by the king to assist at a stag-hunt were entertained. It went out of the possession of the Crown when the manor was granted by James I. to Edward Forset, and was probably then in part rebuilt, although when it was pulled down, in 1791, it retained traces of the architecture of Queen Elizabeth's time. It was wholly of brick and was surmounted by a large turret containing a clock and bell. There are four drawings of the house in the "Crowle Illustrated Pennant" at the British Museum, by Rooker. The first of the series is a view of the principal front, which consisted of a very large body with two wings, a projecting porch, and a deep dormer roof; the second shows the back or garden front, which was flat, with a bay-window at each end, and five gables to the roof. The third drawing taken from the hall shows the grand staircase and the balusters decorated with richly-carved foliage; and the fourth exhibits the tesselated decorations of the staircase itself. For many years previously to its destruction the house was occupied by a highly-esteemed boys' school, which was kept first by Monsieur De la Place, and afterwards by his son-in-law, the Rev. Mr. Fountayne. Mr. Fountayne was a man of some note in his day, and his son became Dean of York. He was a friend of Handel and other celebrities, and it is told of him that he once made a very *mal à propos* speech to the great composer. He was walking round Marylebone Gardens with Handel, when, upon hearing some music which he could not understand, he observed, "This is d—— stuff." Handel at once answered, "It may be d—— stuff, but it is mine." Mrs. Fountayne was little esteemed by J. T. Smith, who speaks of her in his "Book for a Rainy Day" in the following uncomplimentary terms:—"She was a vain, dashing woman, extremely fond of appearing at Court, for which purpose she borrowed Lady Harrington's jewels. Indeed, her passion for display was carried to such an extreme that she kept her carriage, and that without the knowledge of her husband, by the following artful manœuvre. As the scholars were mostly sons of persons of title and large fortunes, she professed to have many favourites, who had behaved so well that she was often tempted to take them to the play, which so pleased the parents that they liberally reimbursed her in the coach and theatrical expenses, though she actually obtained orders upon those occasions from her friend, Mrs. Yates, by which contrivance she was enabled to keep the vehicle in which they were conveyed to the theatres. Mrs. Yates, however, was amply repaid for her orders by the number of tickets which Mrs. Fountayne prevailed on the parents of the scholars to take at her benefits." Mrs. Fountayne had an old parrot, clad in a flannel jacket, which was so accustomed to hear its mistress's general invitation to strangers who called to inquire after the boarders, that it began crying out, as soon as they entered, "Do, pray, walk into the parlour and take a glass of wine"; but it often showed a want of discrimination by inviting all comers alike to regale themselves in the parlour.

The old church of Tybourn, dedicated to St. John, stood in a lonely place near the highway,

close by the site of the present Stratford-place. It was subject to the depredations of robbers, who frequently stole the images, bells, and ornaments, so that, in the year 1400, Bishop Braybrooke granted a licence to remove the church farther north, to the High-street, opposite the present Beaumont-street. The new church was dedicated to the Virgin, and was then called St. Mary-le-bourne. Its interior is shown in one of Hogarth's plates of the "Rake's Progress," where the rake is introduced at the altar with the rich old maid. This church, being in a ruinous condition, was taken down, and a new one built in its place in 1743, which, in 1817, on the day of the consecration of the new church in the New-road, was converted into a parish chapel by Act of Parliament.

Regent's Park occupies 372 acres (and its terraces and canal 80 acres additional) out of 543 acres of the old Marylebone Park When the new park was laid out, much expense was saved by the building of terraces round the enclosure and by the letting some part of the land to certain gentlemen who were willing to build villas for themselves within the grounds they were to rent. These and the gardens of the Royal Botanic Society and the Zoological Society do not injure the general effect, but rather add to the beauty of the place.

Soon after the expiry of the Duke of Portland's lease, which made it possible for the Crown to do something with Marylebone-park, the building of the new Marylebone church in the New-road, opposite York-gate, was commenced. The first stone was laid on July 5th, 1813, and the church was consecrated on Feb. 4th, 1817. It was designed by Thomas Hardwick, and cost 60,000*l*. The interior, though spacious, is not equal in architectural design to what the portico and general external appearance would lead a visitor to expect. Cornwall-terrace was built by Decimus Burton, in 1823, and Hanover-terrace, by John Nash, in 1825. The Colosseum, which is now empty and falling to decay, was built by D. Burton, in 1824, for Mr. Hornor, a land surveyor, who made sketches for the panorama of London from the top of St. Paul's, which were afterwards carried out by Mr. E. T. Parris and his assistants on 46,000 square feet of canvas. The excellent panoramas of London and Paris, the Swiss cottage, and the mountains seen from its windows; the stalactite caverns, the diorama of Lisbon, and numerous other attractions, made the Colosseum, for many years, one of the most favourite resorts of the sightseer. Unfortunately it was an ill-paying speculation to the proprietors, and at last had to be closed.

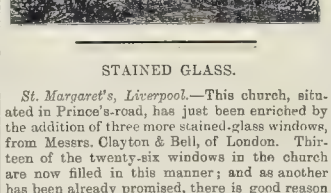
The hospital of St. Katherine's, at the Tower, founded *circ.* 1148 by Matilda, wife of King Stephen, and augmented by Eleanor, Queen of Edward I., and by Philippa, Queen of Edward III., was removed to the Regent's Park on the construction of the St. Katherine's Docks. The present hospital and collegiate church was built in 1827 from the designs of Mr. Ambrose Poynter. The tomb of John Holland, Duke of Exeter (who died in 1447) and his two wives, and a pulpit of wood, a gift of Sir Julius Cæsar, were both removed from the old hospital. Great complaints have been made at various times on account of the removal of this charity from a poor neighbourhood to a rich one. Does it do its full amount of good?

Practical zoology has always been popular among all classes of the community, and few places are so thronged on a public holiday as the Zoological Gardens. Upwards of 20,000 persons visit them on Easter and Whit Mondays. On these occasions there is a great press at all the gates, and at Easter of the present year a new entrance was opened opposite Primrose-hill. The Zoological Society was instituted in 1826, and two of its principal founders were Sir Humphry Davy and Sir Stamford Raffles. The inner circle of the park surrounds the Botanic Gardens founded by the Royal Botanic Society, which was incorporated in 1839. The conservatory in these gardens was designed by Mr. Decimus Burton, and has lately been enlarged by the addition of an east wing. The west wing is not yet put in hand for want of sufficient funds. The grounds are very tastefully laid out so as to deceive the eye into the belief that they are much larger than they really are.

The Royal Toxophilite Society have a ground for practice at the Archer's lodge; and in the winter the London Skating Club are allowed to flood this ground, so as to form a shallow lake of ice for skating on. The various villas dotted about the park are Holford House, St. Dunstan's, St. John's Lodge, The Holme, and South Villa. Holford House formerly belonged to Mr. James Holford, but is now a Baptist College. St. Dunstan's Villa was built by Mr. Decimus Burton, for the Marquis of Hertford, who, when a boy was taken by his nurse to see the figures of Gog and Magog, at Old St. Dunstan's Church, in Fleet-street. At the sale of the old materials of this church, the marquis bought for old acquaintance' sake the clock and these two figures, which struck the hours and quarters, and placed them in his new home, which he called in their honour St. Dunstan's. The ornamental water in the park is very prettily arranged, and those who make use of the boats that are now provided for them, find it pleasant, though circumscribed. It has been long a favourite resort of skaters, and on January 15, 1867, a fearful accident occurred through the breaking of the ice, by which about 200 persons were immersed, and nearly forty of them lost their lives. The depth of the water has since been reduced to about 4 feet.

Of late years the park has been, in common with the other metropolitan parks, considerably improved. It has been thoroughly drained, so that the dampness of the clayey soil is greatly obviated. Mounds have been raised in various parts, and shrubs planted upon them. A portion of the central avenue has also had its sides opened, and laid out as elegant Italian gardens, which are well supplied with the flowers of the season, and kept in order with the greatest elegance and taste. The trees are healthy but small, and need attending to, so that their growth may be increased. The soil is probably poor, but some means should be tried in order to see whether a finer growth of tree may not be obtained. There are no fine trees in the park, and in many places the avenues require thinning. Forest gardening is much neglected in this country, and when a tree dies, or is blown down, a stripling of the feeblest description replaces it to grow to its full size long after all who saw it planted are dead and buried.

This park is always full, but on Sundays and holidays it really swarms with pleasure-seekers, who find in its trees, grass, and flowers a very fair substitute for the fields of the country. Still the numbers that are now to be found there are not unexampled in the same place, for it is on record that 50,000 persons have been at one time in the Marylebone Fields, on a fine Sunday evening, to hear the preaching of Whitfield.



STAINED GLASS.

St. Margaret's, Liverpool.—This church, situated in Prince's-road, has just been enriched by the addition of three more stained-glass windows, from Messrs. Clayton & Bell, of London. Thirteen of the twenty-six windows in the church are now filled in this manner; and as another has been already promised, there is good reason for supposing that in a few years the remainder may be in like manner completed. Two of the new windows are over the choir, and contain figures of the Evangelists; the third is in the north aisle, and consists of figures of St. Hilda, St. Werrburga, and St. Ebba. The funds for this window have been raised by subscriptions, and it has been placed in the church in memory of Sister Alice, who died of fever nearly a year ago, contracted while visiting the poor in the district of St. James-the-Less. The painting of the roof, nave, and aisles in St. Margaret's is to be proceeded with immediately, Mr. Robert Horsfall, the founder of the church, having promised 2,000*l*. for this purpose.

Bampton Church.—A memorial window has just been placed in the east window of the chancel, to the memory of the late Mr. R. W. Southby and Mrs. Southby, of Bampton. The subjects are various scenes in the life of our Saviour, including the Crucifixion and Resurrection, executed by Messrs. Lavers, Barraud, & Westlake, of Bloomsbury. From the chancel the window is seen to great advantage, but from the western portion of the nave the effect is marred by the Norman arch at the entrance to the church.

Ross Church.—The Ogilvie Memorial-window fund amounts to 220*l*., and it is expected will reach 300*l*. The principal subjects of the present window will be re-composed, with additions, so as to cover the whole window. The work is being executed by Messrs. Baillie & Mayer, the design of the tracery being gratuitously supplied by Mr. R. E. Parchas, of London. Mr. Hards, of Ross, mason, has contracted to complete the work. The reredos has, for the present, been abandoned, on account of the insufficiency of the funds.

Rothbury Church.—The east chancel window of this church has been filled with stained glass, by the directions, and at the expense of, Mr. James William Dixon, of West Lodge, Clapham Common, Surrey. The window is of the early period, and is in three lights. The design comprises the following subjects:—In the centre opening is represented in the upper part the Lamb and flag, below which is the resurrection of our Saviour, with the disturbed Roman guard, an angel in a panel bearing a scroll, "I am the resurrection and the life." Then follows a group illustrating the crucifixion, with the three Marys, St. John, and Mary Magdalene at the foot of the cross, finishing with an ornamental panel of rich design. This opening, like the other two, is enclosed by a border of foliage. In the dexter is represented the raising of Lazarus, in the upper group, the angel under which is bearing a scroll, "Thy brother shall rise again." In the lower group is shown the Nativity, with text, "Unto us a child is born." A panel similar to the centre one finishes this opening, which is enclosed within a foliage border. In the sinister side opening is shown, in the upper panel, the raising of the widow's son at the gate of the city of Nain, the text below, borne by an angel, "Young man, I say unto thee, arise." The lower panel contains the Adoration of the Magi, or wise men's offerings, with text, "We have seen his star in the East," finishing with a panel corresponding with the other two. The inscription across the three openings at the base of the window, reads, "Dedicated as a thank-offering to the glory of God. Amen. By James William Dixon; A.D. 1873." The work is by Messrs. Baillie & Mayer, London.

Paynton Church.—The four-light window at the west end of this church has just been filled with stained glass, illustrating, under rich canopies, the Acts of Mercy. In the tracery are angels bearing scrolls. It is the work of Mr. Pepper, of Euston-road.

St. Mary's, Halifax.—The east window of this church has now been filled with stained glass, from the works of Messrs. James Ballantine & Son, Edinburgh, at the cost of Major Stocks, of Upper Shibden Hall. The window is to the memory of his late father, Mr. Michael Stocks, the founder of St. Mary's Church; and the subject is the angel announcing to the shepherds the birth of Christ. The window is in five lights. The centre light contains the figure of the angel, which, of course, is the prominent feature of the window, whilst below, on either hand, are five shepherds with their flocks. This is the fourth stained window which has been inserted in this church,—two having been placed in the north aisle, and one at the west end of the south aisle. It is also in contemplation to fill the west window.

Bristol Cathedral.—The south transept window of this cathedral has just been filled with painted glass, a memorial of the late Mr. T. O. Tyndall, of the Fort, Clifton. It is a window of six lights and tracery. In the latter has been represented a subject illustrative of Rev. vii. 9,—the Lord in majesty, with adoring saints and angels; and in the main lights six scenes from our Lord's life,—namely, the Nativity, "Consider the Lilies," the Last Supper, Bearing the Cross, the Entombment, and the Angel and Mary at the Tomb. The panels are formed in canopy work. In the smaller tracery pieces have been introduced the shields of Tyndall and Elton, and the two coats impaled. The work has been carried out by Messrs. Bell & Son, of Bristol.

Tamworth Church.—Mr. F. Willington has placed three stained-glass windows in the clear-story of this church. The stone work has been

ne by Messrs. Mitchell, of Tamworth, under e direction of Messrs. Mileham & Kennedy, of ondon. The glass has been made at the works Messrs. Morris. The first window from the st end of the church represents the marriage Edith, the foundress and patron saint of the urch, with Sigtrig, King of Northumbria. In e two inside compartments are seen Sigtrig d Edith: the former is putting the ring on her ft hand. In the outer compartments are seen thelstan taking Edith by the right hand to ve her away; and Ella, Bishop of Lichfield, in golden cope, blessing the marriage. Athelstan as the brother of Edith. The second window presents Edith, whose nunnery was (according Speed) in the Castle of Tamworth, as a lady bess, with a crozier in her hand, her nuns ound her, and the Virgin and Child, the Virgin ing the patroness of the Benedictine order. he third window has a double subject—William e Conqueror, resting on a mighty sword, pre- nts the Castle of Tamworth to Marmion; his nd is stretched across the window to present e deed of gifts. The third and fourth com- rtments represent Marmion asleep, and Edith riking him with her crozier in revenge for the juries done by him to the nunnery. At the p of each window is a panel having reference the design. In the easternmost, a gallery, the blem of Sigtrig; in the second, the tower of lith's Nunnery; in the westernmost, the Castle Tamworth. On the canopies are written the mes of the persons represented below. In the uare compartments beneath are the shields, or ats of arms, of the persons represented, or hers connected with the county and place.

THE WORKMEN'S CLUB MOVEMENT.

OPENING OF GROSVENOR CLUB, PIMLICO.

THE Marquis of Westminster presided on ednesday in last week at the formal opening an institution the establishment of which is derstood to be the first attempt in this country connect church life with social life, through e medium of a club, in such a way as to enlist e influence of the church in support of the ub without patronising it or in any way com- omising its independence. The institution is George-street, North Audley-street, in the ar of St. Mark's Church, with which it has ternal communication. The Marquis of West- inster offered the ground at a low rent, to be ld in trust for the benefit of the parish and ighbourhood, making it a condition that there ould be erected a building to contain rooms for ssion purposes, for the use of working men, as ll as for parochial, sanitary, provident, and her civilising objects.

On the site offered, which has a frontage of ft., with a depth of 64 ft., there has been ected in brick, with some stone mouldings, a ty building with Gothic façade, which is re- ved by two oriels embracing windows of the st and second floors. The building, designed Mr. Withers, has cost 6,000*l.*, of which 1,000*l.* ve yet to be raised. This new institution, ich is a continuation of the block of industrial ellings erected largely through the exertions the Rev. J. W. Ayre, the vicar, contains a ge number of rooms. In the basement is a chen which it is intended to utilise, not only connexion with the club, but in effort to pro- le the poor with good and cheap mid-day als. On the ground-floor is a large room for ssion services, mothers' meetings, and other rposes connected with church work. On the t-floor is a still larger room, a club-room, ich is divisible by three movable partitions o four compartments,—for papers, refresh- nts, bagatelle, &c. There are several smaller oms, some of which it is hoped will be hired benefit-clubs, while others are arranged in tes for occupation by persons employed in work of the Church and the schools; and at top are two large rooms, lighted from the f, suitable for class-rooms. It is hoped that receipts from tenants, from the club, and m the letting of the rooms will meet the nual charge upon the building. There are ee equally prominent entrances to the façade, d one of these is reserved exclusively for the ub-rooms, which will be quite isolated by the ernal arrangements; and the other two rances give access to the church rooms and se allotted to tenants.

We may here mention that the annual meeting the members of the Working Men's Club and stitute Union has been held in the Hall of the Society of Arts, John-street, Adelphi. The meeting was not very numerously attended, but amongst those who did attend were a number of ladies, and a sprinkling of working men. The Marquis of Lorne occupied the chair, and on the platform were Lord Lyttelton, Sir H. Johnstone, M.P., Mr. Mundella, M.P., Mr. T. Hughes, M.P., and Mr. W. Johnston, M.P. Mr. Hodgson Pratt read an abstract of the report, from which it appeared that 74 new clubs had been reported to the council during the year, raising the total number to 535. In London the number had increased from 52 to 76, and 15 of the new clubs had affiliated themselves to the Union. As regarded the metropolis, the principal event of the year had been the opening of the Grosvenor Club in Pimlico, which had its origin in the liberality of the late Marquis of Westminster. It has about a thousand members, so that it is quite self-supporting.

ST. JOHN'S GATE, CLERKENWELL.

SIR,—About thirty years ago the first appeal to the public for the preservation and restoration of this memento of former times was published in your journal. The *Times*, *Athenæum*, *Gentleman's Magazine*, and other leading organs of the press kindly urged the claims of the structure, on historical and architectural grounds. During the whole of the period, to the present time, the protection of the gate has been under my care, and each occupier, impressed with the importance of not mutilating its remains, has avoided injuring its ancient character. The result has been, that the interest in the building has been increased,—not only its associations, but pecuniary value,—and the press and the public will be gratified to learn that their endeavours for its preservation have not been without reward. The English order of the Knights of St. John have, by purchase, regained possession of the freehold, and the gate will no longer be humiliated as a tavern, so that—

> "Gin and beer long sold here,
> Will be discarded without a tear."

The modern knights, imbued with the same love of order and charity as their ancestors, will complete the restoration of the old gate; and when restored, it will no longer be hidden from the public gaze, but face an important thoroughfare, viz., the new street now being formed from Old-street to Oxford-street. Permit me to thank you, sir, the press, and the public, for the energetic and disinterested assistance in rescuing this building from spoliation, if not from destruction. The success of the movement will teach a lesson to all lovers of early history, that by fighting for the maintenance of British relics, the time may come when they will be, if not restored to their former uses, at least preserved for ages yet to come.

W. PETTIT GRIFFITH, F.S.A.

PROFESSIONAL INQUIRIES.

SIR,—The committee alluded to by "Inquirer," having entered into a contract the provisions of which are unusual, one can hardly say what is *usual* under such provisions. The following replies may, however, meet his object:—

Question 1.—"Is it usual for the committee to get the bills of quantities attached to the contract which they could at all times see, or is it the custom to leave them altogether in the architect's hands?"

Answer.—It is not usual for a committee to have access to the contractor's priced bills, but this contract expressly states that they "are to be taken conjointly with the drawings and specification in framing the estimate." They are, moreover, to be sent back priced as a basis for settling the extras and omissions. They are, therefore, as much part of the contract as drawings and specification; and, in the absence of any stipulation that they are to be deposited with the architect for his use, the committee can surely claim to have access to them.

Question 2.—"When a schedule of prices is given is it usual to put the price of the material at per foot or per yard only, or carry out the prices in full?"

Answer.—Prices in a schedule are put at per foot or yard only,—to carry them out, "adding them up at the end of each column," would be to make a priced bill of quantities, which is not the same thing as a schedule of prices.

Question 3.—"Supposing a tender sent in for a lump sum, would the contractor, assuming there be an error in quantities in his favour, have to make a deduction from his tender?"

Answer.—Usually no cognisance would be taken, as between committee and contractor, of errors on either side, but here the quantities are made part of the contract, and in the absence of a clause providing for the case of discrepancies between drawings, specification, and quantities, there is a fine opening for a dispute. I have no doubt that the contractor could claim *full* payment for all errors that are against him, and must allow the amount of errors in his favour less a fair profit on each item. B.

THE CHAPTER-HOUSE AT WESTMINSTER.

SIR,—With reference to the question lately addressed by Mr. Baillie Cochrane to the Prime Minister on the subject of the decoration of the Westminster Chapter-house, will you allow me to ask whether, in the opinion of those competent to judge in the matter, it would be *really* advisable, taking the *Captain* and "Rogers" windows recently placed in the Abbey as indicating the point which the revival of the art of glass-painting has reached in this country, to launch into any expenditure for the present on this particular head of decoration? For my part, seeing what consequences have already resulted from the introduction into the church of modern stained glass, I cannot conceal from myself the fact that the effect of such expenditure would be not only disappointing but positively disastrous.

The subject is really deserving of the most serious and prompt attention; as regards the interior of the Abbey itself, it is a *vital* question. Confident, therefore, that Sir G. Gilbert Scott can never approve of the sight of those rich mouldings, with which the Abbey abounds, being snatched from us one by one by shutting out daylight, I cannot but hope that the attention of the Dean and Chapter will be directed, with the view to a remedy, to those terrible losses of the effects of light and shadow, which the true artist laments, that have been already effected by the introduction of modern memorial windows. SOLICITUS.

ARCHITECTS AND THEOLOGY.

SIR,—The other day I heard Mr. G. G. Scott read, at the Lincoln Architectural Society, his paper on "Village Churches," part of which was published in last week's *Builder*, and I wish to be informed if Mr. Scott is a Roman Catholic, or Anglican? I have not the slightest prejudice against the former, and shall think just as well of Mr. Scott whatever the reply may be; but I think the truth might as well be known. Mr. Scott wants high chancel screens to fence off the clergy and their chancel from the laity, urges the sacredness of the chancel, and advocates the setting up of the rood. The rood, I need scarcely say, consists of the body of Christ upon the cross, with figures of saints at the foot, a group which, having become a banner of the Romanists, our bishops will not allow to be raised in our churches. Mr. Scott said,—"Pugin somewhere lays it down that the man who says he likes Gothic architecture and does not approve of high screens, is simply a liar. *The expression is forcible, but true.*" I can scarcely believe that Pugin ever "laid down" such a thorough stupidity; and on the other hand, I am unwilling to give up the belief that, if Mr. Scott reads it a second time, by the light of the logic he learnt at college, he will withdraw his endorsement. PROTESTANT.

PROVINCIAL CHURCHYARDS.

SIR,—Whether I am of a melancholy disposition or not, I like to wander amongst the graves in old church-yards, there to chew the cud of reflection over the ashes of departed worthies. The northern counties of England possess many such sacred precincts,—Lancashire especially,—where lie the remains of many whose names no Englishman would "willingly let die." But what shall be said,—what language ought to be used,—to characterise the condition of many of these graves, shamefully neglected and befouled as some are? I strolled the other day into Rochdale Churchyard to find the grave of "Tim Bobbin" heaped upon with ashes from a neighbouring cottage, from which issued ragged and dirty children asking "*largesse*." In some churchyards,—the one facing the Town-hall, Oldham,

for instance,—there was, when I was there last, every inch of the surface covered over with cinders, not a blade of grass, a tree, shrub, or any living specimen of the vegetable world, to be seen. This fashion of covering up all walking surfaces with cinders has been adopted in the various new schools recently built, where children playing easily kick it up, and thereby become so dirty in a short time that their mothers scarcely know them. If the managers would add to the cinders some good Portland cement, a surface might be made which would be clean, waterproof, and pleasant.

E. G.

"STORY'S STATUE OF JERUSALEM."

SIR,—Referring to your paragraph as above in last week's *Builder*, I take the liberty of informing you that the letter which is placed on the phylactery on the head of Mr. Story's beautiful statue of "Jerusalem" is the Hebrew equivalent to *sh*; is termed "shin"; it is the initial of the word "Shadie," meaning "Almighty," and does not refer to Shiloh (as you suggest). This "shin" is placed upon *every* phylactery used by the Jews during the recitation of our morning prayers, to remind us of the omnipresence of God. JOSEPH LAMBERT.

CONCRETE SYPHONS ON THE CANAL "QUINTURO SELLA."

IN consequence of the short time (four months) which was allowed for the construction of the extension of the branch canal, Quinturo Sella, from Mortara to San Georgia, and the scarcity of bricks, the Canal Cavour Company determined to accept the proposal of Signor Giuseppe Frattini (who has successfully introduced his use of concrete into Italy, for the construction of hydraulic works) to build all the syphons for the passage of existing irrigation channels under the new canal in cement concrete. The *Journal* of the Society of Arts says, these syphons, which vary in diameter from 0·25 to 1·00, are circular in section, and are moulded on a wooden cone about 6 ft. in length, which is drawn forward as the work proceeds. Three syphons, of oval section, 2·00 in width by 1·60 in height and 20 metres in length, have also been constructed by Signor Frattini, and are probably the largest works of this class which have ever been made.

The cement used is that known as "Ciment de la Porte de Franca," made at Grenoble, the quick-setting (*à prise prompte*) being mixed with the slower-setting quality, in certain proportions, according as it is required to hasten the setting of the work. The ballast and sand should be clean, and when easily obtained, the granite chips from a stone-cutter's yard add considerably to the strength of the work. A few hours after completion, such work, struck lightly with a hammer, was found to ring like a bell.

A GIGANTIC TIP.

NOTHING to do with horse-racing. No quiet intimation of the winner of any "coming event." Nothing to do with bribery, from the new Canadian Loan to the feeing a policeman. "Nought o' t' scoart." The "tip" I refer to is Lancashire for "Rubbish may be shot here," and is situated adjoining the Queen's-road, Manchester, where it crosses a little valley near the Rochdale-road. The road here was first formed by making it on the usual embankment, and railed in, leaving the valley some 20 ft. to 30 ft. deep on either side. The land belongs to the corporation, and they invite the delivery of all kinds of rubbish: literally, every kind is received,—the contents of middens, night-soil, garbage from the markets, road-scrapings, builders' rubbish, old tin-ware,—anything which has bulk, no matter what,—for the purpose of levelling up this valley, which is of very considerable area, so as to make it "*good building-ground for working people's cottages.*" As soon as enough surface is formed on which to build a street, a street is built, and tenanted; but many of the tenants do not stay in them long, nor do they leave of their own accord, being in such cases *carried out*. They go to "that bourne whence no traveller returns." I visited the spot on Sunday, July 13th; and as I approached it by the Queen's-road, the wind, which blew over it towards me, filled my mouth and nostrils with one of the most abominable stenches it was ever my misfortune to come in contact with. I became ill, with vomiting and purging, and was glad to get away again as quickly as possible. I stayed there, however, long enough to observe that the poor unfortunates who live in its precincts must have but a sorry time of it, and to believe that the medical men had no sinecures there. What ought to be said, however, in deprecation of the conduct of a wealthy corporation, who, for the sake of gain, deliberately set sanitary laws at defiance, and make an otherwise healthy district a hot-bed of disease,—at a time, too, when cholera is approaching us from the Continent? Pray, sir, give us your powerful help towards remedying this great evil, and beg of the Government,—if necessary, a sanitary commission,—to investigate and determine, as some time since in Liverpool.

E. G.

THE COLE TESTIMONIAL.

THE meeting at Willis's Rooms, on the 11th, was entirely successful. The Marquis of Westminster, who presided, gave a pithy account of Mr. Cole's career. Lord Houghton moved, with his usual skill, and Lord Granville seconded, the first resolution, Mr. Colin Minton Campbell supporting it:—"That it is desirable, on the retirement of Mr. Cole from the direction of the South Kensington Museum, to recognise in some permanent form his great services to the public."

Lord Clarence Paget proposed, and Mr. Godwin seconded, a motion,—"That public subscriptions be invited to carry out the foregoing resolution." Both were carried unanimously; and then, on the motion of the Duke of Sutherland, seconded by Mr. J. G. Crace, a large committee was appointed. A well-deserved vote of thanks to the chairman, moved by Sir Digby Wyatt, and seconded by Mr. Horsley, R.A., closed the proceedings. Several large subscriptions were announced in the room, including Mr. C. J. Freake, 100*l.*; Mr. H. A. Hunt, C.B., 100*l.*; Sir Joseph Whitworth, 100*l.*; but it was clearly understood that even shilling subscriptions would be gladly accepted.

That no time might be lost, the committee held a meeting immediately after the close of the general meeting, and elected an executive committee of eighteen.

A meeting of the executive committee was held at Grosvenor House on Tuesday last, when Mr. Crace was elected hon. secretary, and it was determined to invite co-operation in all the principal provincial towns. The subscriptions already promised amount to about 900*l.*

NEWTON'S OBSERVATORY.

SIR,—I do not know whether you have noted the removal of the observatory from the top of Sir Isaac Newton's house, near Leicester-square, but unfortunately it is the fact. It is said that it has been exported to America. The house is, I believe, in all material points but this, intact. We reproach the new countries with a want of veneration, but surely the seeds of this failing must have been sown in Old England. Would not such a relic have been preserved, reverently preserved, by any other people in Europe? VIGILANS.

THE NEW BRIDGE HALL, BARNSTAPLE.

THE Barnstable-bridge Trust, having funds, considered it advisable to buy the adjacent property running down the Strand, upon the left-hand side of the bridge on entering the town; and, having secured some 140 ft. by 70 ft., demolished the miserable old houses that occupied the site, and have, in their stead, erected a pile of buildings, affording a river front. The edifice is intended to supply a want long felt in Barnstaple for convenient municipal offices; Messrs. Gould & Son, architects and borough surveyors of Barnstaple, prepared the plans embodying the ideas of the Trust. The contract was let to Mr. J. W. Hunt, builder, Exeter. The contractor commenced the work in November, 1862, and the edifice is now so far complete that the scaffolding has all been taken down, and the hoarding removed. The interior is in a forward state. The style of the building may be termed Early Geometrical, and the river frontage consists of a façade some forty yards in length, broken by four gables of varied height and pitch, and by a small turret of teak, covered with lead. The angle of the building at the corner, adjacent to the bridge and strand, a
facing the square, is semicircular. The Stra
front comes flush up with the pavement, and
similar in elevation, although varied in detail,
the river front. The materials used in the co
struction are mainly Bridgwater brick, relieve
throughout with dressings of Bath stone. T
plinth forming the basement is of Pilton stone
a material looking like granite, and the ro
are slated. The principal hall is 50 ft. lo
25 ft. wide, by 50 ft. high, and has an ope
timbered roof, varnished and stained. The tow
part of the building, at the west end, is used
bonded cellars, and for this purpose four exte
sive vaults are provided. Upon the exterior
the building there is a fair sprinkling of carvi
in the Early English style. The carved wo
upon the river front, and upon the side of
building next to the bridge, is complete; b
that upon the Strand elevation, and upon
angle towards the square, is, we believe, ta
left in block until funds admit of its be
carried out. The carving has been executed
Mr. Harry Hems, of Exeter.

FALL OF BUILDINGS.

Fall of a London Warehouse.—Great ala
was recently created in Watling-street and nei
bourhood, by a loud report proceeding fr
No. 7, Watling-street. It was found that
back floors of the building, stored with a la
quantity of valuable woollen goods, had fallen
from roof to basement. Fortunately no one
upon the premises at the time. The hou
which is a very old one, was undergoing repa
and some interference with the foundations, i
believed, led to the accident.

*Falling of Vaults at the Market-hall, Birmi
ham.*—For some time past a number of wo
men have been engaged in constructing n
vaults, and enlarging the old ones, underna
the Market-hall, Birmingham. Misfort
seems to have attended the progress of
work; for, a week or two ago, some of
arches of the vaults gave way. These were
paired, and the ordinary work was continu
Three of the new arches near to the Worcest
street end of the hall, however, have since gi
way, and the roof of the vaults, which forme
portion of the floor of the hall, about 30
square, fell in. Fortunately there was no
injured, the workmen having previously left.

SECRETARYSHIP OF THE ROYAL ACADEMY OF ARTS.

THE election of a secretary to succeed
Knight, R.A., took place on Thursday, the
inst., and Mr. Eaton was chosen. There w
upwards of a hundred candidates, and the
test was a severe one, Mr. C. Critchett, ed
tional officer of the Society of Arts, being sec

WATER SUPPLY.

THE report for June, of Mr. Frank Bol
Water Examiner, is very interesting. We le
from it that the New River Company h
provided additional steam power, mains,
high-service reservoirs, which were required
the high-pressure constant supply of the Me
polis Water Act, 1852, and after the passing
the Metropolis Water Act, 1871, they under
the construction of a new service reservoir
Highgate (336 ft. above Trinity high-wa
mark), as a further addition to their powe
affording effective constant service.

The East London Company turned on
constant supply on March 25th. The own
of houses have been compelled to amend th
fittings, and the district is now under re
improvement.

The Southwark and Vauxhall Company
constructing covered service-reservoirs at Ni
head, to contain 18,000,000 gallons, and erect
additional engine-power for high-pressure c
stant supply.

The West Middlesex Company are giv
constant supply to a number of houses, on
application of the owners, who have provi
fittings according to the Board of Trade regu
tions of the 10th of August, 1872.

The Grand Junction Company have comple
a high-service reservoir near Kilburn.

The Lambeth Company are actively carry
out extensions and improvements in their wo
At Molesey, the construction of reservoirs

g proceeded with, to contain 110,000,000 to 000,000 gallons of water, with pumping- nes, to fill them to a level of 12 ft. above the .

the precautions relative to waste-pipes, ained in the following clause of the Board of e Regulations, 1872, is carried out in its rity, it will confer a great boon on the con- r, by preventing contamination from the s generated by sewage, which otherwise are mely liable to flow back into the cisterns, become absorbed by the water:—

gulation 14.—"No overflow or waste pipe, than a 'warning-pipe,' shall be attached y cistern supplied with water by the com- , and every such overflow or waste pipe ing at the time when these regulations into operation shall be removed, or, at the n of the consumer, shall be converted into ficient 'warning-pipe,' within two calendar hs next after the Company shall have to the occupier of, or left at, the premises hich such cistern is situate, a notice in ng, requiring such alteration to be made."

GLAZED ROOFING TILES.

—Having advertised in your columns and also in *mes* for *glazed* tiles for roofing, but without success, uld feel obliged if any of your numerous readers be kind enough to furnish me with such informa- s would enable me to procure them without delay.

A. Tweedale.

RDS OF THE INSTITUTION OF CIVIL ENGINEERS.

e following premiums have been awarded:—

A Watt Medal, and a Telford Premium, in books, Charles Augustus Hartley, for paper on "The Delta Danube, and the Provisional Works executed at lina Mouth."

Telford Medal, and a Telford Premium, in books, es Dean, for memoir on "The River Clyde."

Watt Medal, and a Telford Premium, in books, to Head, for paper on "The Rise and Progress of Locomotion on Common Roads."

Watt Medal, and a Telford Premium, in books, to m Anderson, for description of "The Aba-el-Wakf Factory, Upper Egypt."

Telford Medal, and a Telford Premium, in books, lliam Thomas Thornton, C.B., for essay on "The ve Advantages of the 5 ft. 6 in. Gauge, and of the -Gauge for the State Railways of India."

Telford Medal, and a Telford Premium, in books, onel William Henry Greathed, C.B., R.E., for his t of the Practice and Results of Irrigation in rn India."

Telford Premium, in books, to John Milroy, C.E., per on "Cylindrical or Columnar Foundations in ete, Brickwork, and Stonework."

A Telford Premium, in books, to William Pole, F.R.S., for "Notes on the Rigi Railway."

The Manby Premium, in books, to Thomas Sop- un., M. Inst. C.E., for paper on "The Mont Cenis l."

HE ALBERT MEMORIAL CHAPEL.

the occasion of her Majesty and the Princess ice visiting the Albert Memorial Chapel, e purpose of inspecting Baron Triqueti's e of the late Prince Consort, which is the ing work of the costly decorations that the interior of this interesting building, *Vindsor Express* thus described the edifice ow appears:—

e sarcophagus is of oblong shape, adorned with sculptured bas-reliefs. On its top is the statue of nce, sculptured from the finest statuary marble. ng angels hold a pillow on which rests the head of nce, who is attired in a Mediæval suit of armour irt of mail; the chain and badge of the most noble of the Garter are on his breast; his right hand a sword partly drawn from the scabbard, while at reposes his favourite hound. An inscription cut marble, and gilded, runs thus:—'Albert, the Prince t, born August 26, 1819; died December 14, 1861. in the Royal Mausoleum, at Frogmore. "I have the good fight. I have finished my course."' Few are aware of the magnificence of the interior of apel. Its adornment has been in progress for years, much of it at the cost of the Royal children. en mosaics cover the beautifully-arched ceiling with aces of gold and colour. The windows are filled in ained glass, and tell the story of the Prince Con- ancestry. Again on the west wall are placed, in , the figures of those sovereigns and distinguished s connected with the building of the castle and the ; but even more remarkable are the works of art adorn the walls beneath the windows. Here Baron ti displays some splendid specimens of a compara- new art, namely, that of marble new inlaid work, round the building runs a tableau of Scriptural s, the figures being about life-size. The most marble has been selected to adorn the chapel, only wants its marble floor to render it complete."

oods in Somersetshire.—Mr. Grantham's t on the floods in this county in 1872–73, aid upon the table of the House of Commons iday last, and ordered to be printed.

* Have previously received Telford Medals.

CHURCH-BUILDING NEWS.

Marlborough.—Ogbourn St. Andrew's church, in the hamlet of Rockley, has been opened for divine service. It is built of Sarsen stone and flint, with Bath stone breastwork, and hollow walls, 14 in. thick, at a cost of 1,300*l.*; the contractor being Mr. Barrett, of Swindon. The land was given, and a large portion of the funds found by Mr. W. Tanner, of Rockley House; the interior decorations being principally the work of Mrs. Tanner.

Mitcham.—The chief stone of a new church, Christ Church, Singlegate, Mitcham, has been laid by Mrs. Harris, of Gorringe Park, Mitcham. Mr. and Mrs. Harris having expressed their intention to build a permanent church, the vicar, with other gentlemen, formed themselves into a committee, and in December, 1871, passed resolutions to co-operate in the erection of a permanent church "capable of enlargement." Mr. and Mrs. Harris then, through their surveyor, Mr. Green, of Chancery-lane, were put into correspondence with Messrs. F. & H. Francis, the architects, who submitted plans, one of which was selected, the estimate of cost being 2,600*l.*, including heating and lighting, and to accommodate 400 adults and 150 children. Ground belonging to Emmanuel College, Cambridge, with adjoining land, forms the site. A preliminary statement was issued by the committee, dated the 14th May, 1873, showing a balance in excess of cost over subscriptions of 589*l.* 15*s.*, this being attributable to the difference between the estimated building cost of 1872 and the present, the former being 2,600*l.*, and the latter 3,225*l.*, exclusive of lighting and heating. All preliminaries being arranged, the chief stone, as we have said, has been laid.

Alton.—The Lord Chancellor has laid the foundation-stone of a new church at Alton, Hants. His lordship on the occasion said, that the outward fabric of a church should be as good and as beautiful as it was possible to make it—not for the sake of such outer beauty, but for the sake of the symbol represented in the work they were seeking to accomplish by the erection of such a building.

Kington.—Some excitement has been caused in Kington, on account of the apparently dangerous condition of the parish church. The north part of the edifice has been taken down in order to enlarge it, and from the appearance of the north side, especially the pillar which supports the chancel arch, it was thought that it would be unsafe to hold public worship in it. The state of the pillar and foundation had not been noticed till about ten o'clock on Sunday morning, and the congregation were coming up to church, when they were told by the vicar and churchwardens that there would be no service that day. Workmen were at once engaged to prevent the wall from settling down any further. After examination by the builders, and by Mr. W. A. Coombes, one of the architects of the Royal Ecclesiastical Commissioners, it was confidently stated by them that there would be no more settlement, and that the church will be perfectly safe and fit for public worship.

Oundle.—The chancel of Barnwell St. Andrew's church has been re-opened, after undergoing repairs and alterations, under the direction of the Rev. G. W. Huntingford, the rector; and Mr. Edward Browning, architect, Stamford. The floor has been concreted and re-paved with Maw's encaustic tiles; a new stone screen has been erected, dividing the church from the chancel, with perforated crosses, and surmounted with brass ornaments and rails; in the centre of the screen are two brass gates, and in the sanctuary part of the chancel are two brass standards, each containing eleven lights; in the choir part are some brass standards for lights; in the centre of the communion table is a brass cross, inlaid with a topaz set in gold, and on each side of the cross are two candlesticks, filled with large wax candles. The reredos is hung with drapery, and part of the floor carpeted. The old monument which stood in the chancel, to the memory of Nicholas Latham, the founder of many charities, has been removed and restored. In taking down the monument, a piscina was discovered, which has been restored. On the north side of the chancel, a new chapel is built, which is called the Latham Chapel. It is divided from the chancel with an oak screen. The builders for the work were Messrs. Halliday & Cave, of Oakham; the brass work, hangings, and carpets were supplied by Messrs. Jones & Willis, of Birmingham; the painting, graining, &c., by Mr. Daniel Stevens, of Barnwell.

SCHOOL-BUILDING NEWS.

Stanford-on-Teme.—The new school for the united district of Standford and Orleton has been opened for the scholars. The school was built from the designs of Mr. E. Day, of Worcester, architect; the masonry and carpenter's work being done by Messrs. Bradbourne & Lewis, of Clifton-on-Teme, and the ornamental stonework by Mr. Forsyth, sculptor, Worcester.

Highworth.—The new national schools at South Marston have been opened. South Marston is a district chapelry of the parish of Highworth, containing about 400 inhabitants, and three miles from Highworth. The new schools have been erected on a plot of land forming one corner of Mr. Bell's Park, near to the old school, and in about the centre of the village facing the Shrivenham road. The buildings form a group in the Early English style. The walls are built of the local stone, faced with Swindon stone, the dressings of the doors, windows, bell turret, and chimney shafts being of Corsham Down Bath stone. The internal arrangements consist of a school-room, 37 ft. 6 in. long, by 18 ft. broad, with a class-room, 14 ft. square; the height of both rooms being 15 ft. 6 in. to the ceiling. There are distinct entrance-porches for the boys and girls, with cap and bonnet rooms attached. The school and class rooms are fitted up with Colman & Glendinning's Eastern Counties patent desks, which are contrived to allow of their being used as desks, either flat for working, or sloping for writing and drawing, or they may be converted into a backed seat, or two of them placed together form a convenient table for tea-meetings, &c. The desks stand on a stepped platform, and on their being removed and placed against the side walls, by means of hinged flaps in the floor of the platforms, an infants' gallery is provided, the flaps forming the backs of the seats. Cutting-out tables, mistress's desk, cupboards for work, books, music, &c., black-boards, and other modern appliances for teaching are provided, including a box of models forming a small museum of natural and artificial objects. The works have been carried out by Messrs. William Drew & Sons, of Highworth, from the designs and under the superintendence of Mr. James Schofield, of London, and have been erected and completely furnished, at considerable cost, by Mr. Bell. They are designed for 120 children, reckoning 8 ft. super. for each child, according to the requirements of the Committee of the Privy Council on Education.

Bescot. — New schools for Darlaston and Wednesbury are proposed to be erected. They are intended to provide education for the population of Fallings Heath and portions of Wednesbury, King's Hill, and Darlaston, and will materially lessen the need for a School Board for Darlaston. The new buildings, when completed, are estimated to cost 1,200*l.*, of which 980*l.* have been already subscribed, including a donation of 500*l.* from the Mills family.

Ipswich.—The schools which have been erected by the Local Board, and described in the *Builder*, have been inaugurated by the opening of the schools on the Wherstead-road and in Argyll-street, which were visited in state by the Mayor and other members of the Corporation, the members of the School Board, and of other public bodies.

Torrington (Devonshire). — The new school erected by the Local Board has been opened. The site is a piece of ground in the centre of the town, in continuation of the new terrace recently built by the Okehampton Building Company, and facing the newly-erected villas on the Rolle property. The style of the elevation is simple, of Early English treatment, and the buildings comprise an infant-school to accommodate 100, flanked on one side by a school for boys, and on the other side by a school for girls, each of the latter giving accommodation for 120 children, making a total provision for 340. The exterior facing of the walls is of local stone, and the dressings are of stone procured at Hamden-hill. The slate on the roofs is partly Delabole and partly Welsh, laid in alternate longitudinal rows, the lighter hue of the one relieving the sombre dulness of the other. The building is surmounted by a bell-turret at the junction of the roofs. The extreme point of this structure is at least 40 ft. from the ground. The dimensions are as follows:—Infants' school, 40 ft. by 20 ft.; girls' and boys' schools, each 44 ft. by 18 ft. The total cost of the buildings, exclusive of the land, for which alone 170*l.* were paid, has been about 1,300*l.* The architects were Messrs.

Garton & King, of Exeter; and the builders, Messrs. Medland, Grant, & Eastmond, of Torrington.

FROM SCOTLAND.

Edinburgh. — At a conference which the Chalmers Memorial Committee have had with Mr. Steell, that gentleman explained that the delay in the execution of the statue had arisen from his attention having been very much occupied with the Albert Memorial; that immediately on that work being sent to the foundry, which it would be in a very short time, this monument would have his first and undivided attention. The committee had submitted to them designs for the pedestal, and expressed a favourable opinion of one which, in the plain massiveness of its character, seemed to be in keeping with the object in view. As tending to enhance the appearance of the statue, it was resolved to obtain estimates for the execution of the pedestal in Peterhead granite.——At a recent meeting of the Edinburgh and Leith Engineers' Society, Professor Fleeming Jenkin was unanimously appointed president, and Mr. Alan Brebner, C.E., and Mr. Alexander Leslie, C.E., vice-presidents for the ensuing year. The secretary at a subsequent meeting read the third annual report, which stated that the condition of the society generally during the past year had been very satisfactory, giving the council good hopes of continued prosperity in the future. Fifteen members had joined during the year, and six had resigned, so that the total number on the roll at present was sixty-four, as compared with fifty-five at the corresponding date last year. The financial statement showed a balance in favour of the society of 34*l.* 10s. 9d. The report was approved. The chairman delivered the closing address. He then proceeded to read a paper on "Our Lighthouse System." After noticing that the first lighthouse of modern times was that at the mouth of the Garonne, which was erected by the French in 1584, he gave an interesting sketch of the building of many of the Scotch lighthouses, and stated that there were now sixty-four of these, which had been raised at a cost of 900,000*l.* He also described the different reflecting and refracting lights in use, the various burners and oils employed, and gave other details regarding lighthouse apparatus.

Glasgow.—The Kibble Crystal Palace, in the Royal Botanic Gardens, has been opened as a place of public amusement. The palace will supply a want long felt in the city. Not only will it be devoted to orchestral concerts, but it will also be used for lectures, flower and other shows,—and, in short, everything that appertains to the amusement of the public. —— Some time ago the subject of providing suitable hall accommodation for the use of the organised trades, was before the Glasgow Trades Council, but in consequence of various other important matters coming up, was not pushed forward. Another effort is to be made to raise the necessary amount of money—17,000*l.* or 20,000*l.*,—which it is estimated will be requisite to complete the proposed building. Should the funds be procured, it is intended to have a hall equal in size to the City Hall, two smaller halls suitable for labour exchange, reference library, and reading-room, and a suite of about twenty rooms, in which committees of the various trades could hold their meetings.

Jedburgh.—It is understood that the Marquis of Lothian, acting on the recommendation of Mr. Anderson, architect, Edinburgh, has further resolved to remove the belfry from the tower of Jedburgh Abbey, for the safety of that part of the building, and it is expected that buttresses will be put up to support the north wall of the tower. The octagonal part of the belfry is of a much earlier style of architecture than the greater portion of the tower, and seems not to occupy its original position.

Dundee.—The chief stone in commemoration of the restoration of the Old Tower, Dundee, and the presentation of a peal of bells just erected in the structure, was laid on the 24th of May, in the presence of a large assemblage. The restoration of the tower was begun about three years ago under Sir Gilbert Scott, and the original details of the architecture have been reproduced. The cost of the restoration, which will amount to about 8,000*l.*, has been defrayed chiefly by the inhabitants, while the balance is to be paid by the Town Council. In a document placed in the foundation-stone, it is stated that the tower was founded in 1189 by David, Earl of Huntingdon, in commemoration of his being saved from shipwreck in sight of Dundee when returning from the Holy Land, where he had been on a third crusade with Richard I. of England. The new bells required were provided by six local gentlemen, the cost being about 720*l.* The memorial stone was laid by Provost Cox, and the bells were then set a-ringing in honour of her Majesty's birthday.——A commission for the Carmichael Monument, which is intended to occupy a prominent position in front of the Dundee Exchange, was intrusted, after a competition, to Mr. John Hutchison, R.S.A. The design on which the selection proceeded was a statue under life-size, and, as the work is intended to be executed on a colossal scale, the artist is now about to commence the large model from which the bronze castings will have to be made. In representing the old engineer, Mr. Hutchison has aimed at being thoroughly realistic. He has not thought to invest the plain, homely Scotsman with any artificial graces of classic drapery, but has reproduced him in such attire as he was accustomed to go about in, and in connexion with objects suggestive of his special claims to public recognition. He sits in a posture slightly stooping, with head bent forward, and eyes gazing right in front, with an intent expression, indicative of mental pre-occupation. The statue is to be placed on a pedestal of red granite.

Aberfoyle.—The foundation-stone of a memorial cottage, to the memory of William Glen, author of the well-known Scottish song, "Waes me for Prince Charlie," has been laid at Craigmuck, Aberfoyle, for the benefit of the poet's widow and daughter. Mr. Simpson, architect, Stirling, has given his services gratuitously.

Crathie.—A memorial window has been put in at the parish church of Crathie, by direction of her Majesty, in honour of the late Dr. Norman Macleod. The window is opposite the royal pew. The stained glass, according to the *Weekly Scotsman*, is not well adapted to its present position, and the figures are too large for the small hillside church, besides darkening the interior to a very inconvenient degree. It is believed that the present glass will be replaced by some other design, and that a lighter and brighter style of decoration will be adopted.

VARIORUM.

"HODGE PODGE" (Williams & Norgate), is a newspaper in rhyme, so to speak. Advertisements, accidents, House of Commons, reviews, are made the subjects of Byronic verse, and formed into a continuous poem. The work displays a considerable amount of cleverness and some boldness of thought.——"A 10*l.* Tour: with Sketches of Travel and Sport. By Cairn Sorgh (Wyman & Sons, Great Queen-street)," introduces the country of the Ardennes, and shows how an agreeable month can be spent at small cost, by those who choose to "manage." Some notes of fishing and shooting are introduced, and the whole is very pleasantly written. ——"God's Providence House: a Story of 1791. By Mrs. G. Linnæus Banks. London: H. S. King & Co." has now taken the shape of one compact volume in the Cornhill Library of Fiction. This of itself shows that the story has already passed the ordeal of criticism, and we can of our own knowledge add that it is a very clever and interesting book, superior to the ordinary run of novels. The scene is laid in and near the quaint old city of Chester, the characters are marked and natural, and the interest of the story is maintained from beginning to end. —— "Sewage: Intermittent Downward Filtration separately or in combination with Surface Irrigation. By J. Bailey Denton, C.E. Edinburgh: Edmonston & Douglas." This is a reprint of a paper read at a meeting on "Rivers Purification," held at Edinburgh in January last. In reference to the trial of Mr. Bailey Denton's process at Merthyr, at the instance of the Lords Justices of Appeal in Chancery, he says:—

"The results of intermittent filtration at Merthyr show—First, that crops of an ordinary agricultural character can be grown on the surface of the filtration areas at the same time that the sewage is applied to them; second, that the return by the sale of crops, *calculated on the total amount of money expended in the necessary works*, exceeds that derived from any instance of surface irrigation yet recorded; and, third, that the process may be carried out without nuisance, or, in fact, without the escape of any objectionable odour recognisable twenty yards from the place of application. Hence the objections anticipated by the Rivers Pollution Commissioners have been severally met and refuted. I should also state that the Merthyr filtration areas have now been in use about two years, and that the purifying power of the soil remains unimpaired."

Mr. Denton states that, comparing ord surface sewage irrigation, *per se*, with a bined system of irrigation and intermi filtration, in the way explained, the ori outlay will be found to be somewhat great the latter case than when either proce adopted by itself; but the return per acre i case of the combined system will be four exceed very largely that from irrigation or filtration alone.

Miscellanea.

Serious Explosion of Gas at Halifa The residents in Colbeck-street, Hanson near Pellon-lane, Halifax, were lately st by a sharp explosion at about half-past o'clock at night, and much excitement caused thereby. It was found that an exp of gas had occurred at the house No. 5, and the damage done was serious. The hou question had stood empty for nearly months. The gaselier had been taken d and the main being not turned off, and the not plugged, hence the escape. A match been struck, and the gas, which had perme through the house ignited, and a terrible plosion occurred. The force of the expl was upwards, and the result was that the of the windows to the two front bedrooms blown out. The stonework was sent flyin all directions, the spouting and cornice whirled into the street, and portions of the skin of the walls to the adjoining houses stripped off. By the fall of the heavy st the area railings were bent and battered directions, and the head-stone over the door broken. The roof, of grey slate, judging its disjointed and broken condition, appea have been lifted bodily up, and then to fallen back again into its old position. houses on either side were much shaken, had the plaster knocked off the walls in va places. Workmen were employed to make the damage, but so shaken was the front that it became necessary to take part down, in order to re-build it in a firmer ma

Opening of a New Reservoir at Darl ton.—The new reservoir belonging to the S ton and Middlesbrough Waterworks Com has been opened by Mr. H. Pease (chairm the company), at Fighting Cocks. The quantity of land covered by the reservoir i acres and a half; the length at water 500 ft., breadth 310 ft., giving a water ar three acres and a half. The mean dep 14 f., and the greatest depth of the p trench is 34 ft., being 17 ft. below the n surface or land, the height of the embank being 17 ft. Provision was made fo reservoir storing 11,036,000 gallons of w the weight of which is 50,000 tons. The has to be raised from the Tees at Darling the reservoir, which is 50 ft. above the le the river; but the fall from Fighting Coc Middlesbrough is 160 ft. The pumping eng which are situated above Darlington, near Grange, are four in number, each of 100-h power. The water is conveyed to Fighting C by three mains, the pipes being 12 in., 1 and 24 in. in diameter. The new reservoir hold a little more than double the quantit the two old ones. Mr. Robinson, of the fir Robinson & P'Anson, has been the engine the work, the contractors being Messrs. Robi & Marshall, and Mr. Hawksley the consul engineer.

Hyde Park-corner.—The solicitors to Marquis of Westminster have suggested to Metropolitan Board of Works that the wide of the upper part of Grosvenor-place a junction with Piccadilly would form a com scheme in connexion with that now under consideration of the Board, for improving traffic accommodation in the neighbourhoo Hyde Park-corner and Hamilton-place; state that his lordship is prepared to under at his own cost, to the extent of 2,000*l.*, part of the scheme which represents widening of Grosvenor-place, provided a p for the deposit of the excavations be given of cost in the Green Park within a reason distance.

New Hospital at Beccles.—The founda stone of this new building has been laid. R. King is the builder, and Mr. J. L. Clem the architect.

Works at Alderney. — The Duke of merset has called attention in the House Lords to the report of the select committee last session on the works in Alderney, and red for any minute or report which will lain the intention of the Government regard to the maintenance of these ks. The question, he said, was whether se works were to be given up, and the 00,000*l.* already spent on them entirely lost, whether they were to be repaired in some . Viscount Halifax, in reply, said he was py to be able to inform the noble duke that, er duly considering the report which had n drawn up by the engineer of the Admi-y, the engineer of the War Office, and the l engineer, who had inspected the works in stion, the Government had come to the con-ion that Alderney might, in case of war, be ood place of observation, and that it would be well for our commerce if it fell into the ds of the French, or into the possession of other foreign nation, and they had therefore ded to maintain these works. He had been n to understand that the works could be t up for between 5,000*l.* and 7,000*l.* a year, that the necessary repairs could be carried for between 100,000*l.* and 150,000*l.* The e of Cambridge suggested that the repairs ht be carried out to a great extent by means convict labour, and thus the expense might reatly reduced.

Machine-laid Roadways and Fire-proof ildings. — Mr. R. Stone, the patentee, a ranged to lay down, by a self-acting hine, a specimen of his wood pavement and rete foundations in King William-street, , leading from London Bridge to the Bank. s process, as described by the patentee, s the gravel and cement direct from the s, lifting them 20 ft. in the air, whence fall into a gauging hopper, under which is a wheel which mixes the particles while dry, passes them on to a wet wheel, which ixes them. From thence the material es through a feeder into a working per, and by a leveller is brought under ller carrying a pressure-power of 200 lb. to square inch. While in a fluid state the le body is compressed into a solid slab, more able, he says, than stone, warranted water-f and never to crack or give way. The cost id to be 35 per cent. less than the ordinary of laying roads, besides being laid in less a one-eighth the time. The patentee's com-tion roadways, mixed with chemicals and pared Portland cement made from Halkin ntain and flint stone, laid plain or fluted, noiseless and not slippery, exceeds granite, ays, in durability, and at less than half the . Fire-proof floors and ceilings are laid er Mr. Stone's patent processes.

Ditchingham Country Hospital, Bungay. Hallows Country Hospital has been opened. a large block of buildings situated near the way station at Ditchingham, and has been ted in connexion with the House of Mercy hat parish, and under the auspices, and nly by the exertions, of the rector of the sh, the Rev. W. E. Scudamore, and his coad-rs the Sisters of Mercy. The edifice itself he exterior presents no very imposing ap-rance, being built entirely on the ground-. The rooms throughout are lofty and well ed and ventilated. There are two large ls—one for male and the other for female ents—containing six beds each. Between beds are screens, on which the artistic s of the "Sisters" (whose handiwork they is displayed. The walls of the room are her adorned with suitable prints and illu-ated texts; shelves of books are also to be . There are couches and easy chairs for the f convalescents, whilst a table in the centre he room is spread with scrap-books and erials for various games. Besides these is there is the surgical ward, the surgeon's , the dispensary, the operating-room, lava-s, private rooms for the nurses and sisters, estic offices, and the hospital chapel.

St. Giles's, Newcastle-under-Lyne.—The olition of the late structure has disclosed the that there have been already three edifices ted to the tower,—one, of course, contem-neous with it. In removing the rubbish, s to get the level of the floor for the new ling, some specimens of tiles, supposed to s old as the twelfth century, were taken

National Health Society. — The first annual report of this Society, read at its general meeting on 12th June, has been issued in a printed form (Office, 9, Adam-street, Adelphi). This society was begun in July, 1871, by a few friends, who met together at the house of Dr. Elizabeth Blackwell, "to consider the propriety of forming an Association for promoting Sanitary Knowledge," and a resolution was passed to form "A National Health Society, whose object shall be the promotion of health amongst all classes of the population." Mr. Toulmin Smith is the secretary. The society has already been engaged in useful work, and the committee hope to arrange, for the coming autumn, sets of Lectures at Islington, Kensington, St. John's-wood, and Stamford-hill, or where they may find that circumstances render it advisable. They invite assistance from all interested in this wide field of work, whether as lecturers or teachers, by the reading of papers, the teaching of classes, or the formation of teaching centres in different neighbourhoods, and will thankfully receive gifts of books, reports, and appliances for the library, and for teaching.

Rotherham.—A numerously-attended public meeting has been held in the lecture-hall of the Rotherham Mechanics' Institute, for the purpose of considering what measures should be adopted to carry out the projected restoration of the parish church in this town. The chairman said that the object of the alterations in the church was increased accommodation,—the making of such accommodation as would be available. At present the nave, galleries, and ground floor accommodated just 800 persons, but if the plans of Sir Gilbert Scott were adopted they would be able to find accommodation for 1,130 adults. The cost of the alterations would amount to 5,000*l.*, exclusive of the architect's charges and the "inevitable extras," which would, no doubt, increase that sum to 6,000*l.* Sir Gilbert Scott was down last week, and he found that much more must be spent upon the exterior of the edifice than upon the seats, and he also found that the spire had very much decayed in the interior. The exterior was repaired some ten years ago, and was now in very good condition. Resolutions in support of the object of the meeting were adopted.

St. Helen's Town-hall.—A meeting of the St. Helen's Improvement Committee was held on the 10th inst., in order to receive tenders for the erection of a local town-hall. Our readers will doubtless remember that Mr. Urmson, of Liverpool, who originally tendered for the work, and whose tender was accepted, was eventually obliged, in consequence of the delay in commencing the work and the enormous advance in the price of building materials, to decline the tender unless an advanced price was given. The corporation, however, were indisposed to give this advance, and the consequence was that fresh tenders for the work were solicited. These were opened at the meeting. Nine builders tendered, viz., Messrs. Grindrod & Hargreaves, Tomkinson & Son, G. Rome, Jones & Son, Roberts & Robinson, T. Urmson, Burroughs & Son, all of Liverpool; and W. Harrison and G. Harris & Sons, of St. Helen's. The tenders ranged in aggregate cost from about 30,758*l.* to 28,316*l.* It was ultimately decided to recommend the council to accept the lowest tender, that of Mr. G. Rome, of Liverpool, the sum being 28,316*l.*

York-gate.—In compliance with a resolution of the Metropolitan Board of Works of the 16th of May last, their Works Committee have considered the letter from Mr. J. R. Planché, *Somerset Herald*, on behalf of the British Archæological Association, calling attention to the desirability of the preservation of York-gate, Victoria Embankment, and of its utilisation as an additional means of communication with the Embankment. The committee are of opinion that the Board should refrain from touching the gate. They therefore recommend "That Mr. Planché be informed, in reply to his letter, that the Board are not prepared to take any action with reference to the gate." The report was agreed to without discussion.

Regulations of House Drainage.—The Board of Works for the Westminster District, under the guidance of Mr. R. R. Arntz, their surveyor, have issued a useful paper of conditions for the regulation of house drainage, and Mr. Arntz supplements it with a sheet of plans and sections.

The New Reservoir at North Malvern.—The Malvern Local Board have written to Mr. Hawksley, C.E., asking him to give his opinion as to the future security of the new reservoir at North Malvern, when constructed according to the plans of the town surveyor. Mr. Hawksley stated his terms to be ten guineas per day and travelling expenses. The contractor of the tank, Mr. J. H. Clark, of Warwick, has stated to the Local Board that he has surveyed the reservoir works, and, "setting aside the whole company of amateur builders, and that august body, the British public, to neither of whom he addressed himself on building subjects," he states that, so far as thirty years' experience gives weight to confidence, he had not the slightest doubt of the structure, when finished, fulfilling all the intentions and expectations it was designed to. He was glad to hear that they proposed calling in Mr. Hawksley to give his opinion.

Mahogany.—The official statistics which record our trade in mahogany of late years are not devoid of interest. Referring to the imports of this article, we find that in 1848 the amount imported into this country was 31,668 tons; and in 1852, 41,090 tons. The imports for the following years are steadily maintained, and, indeed, the trade seems to be characterised by an absence of fluctuation. In 1861 the amount imported was 53,798 tons, which is the highest amount we note as being received in this country in one year; for subsequently to 1861 the imports appear to have somewhat declined. With regard to the sterling value of these imports, we find that the amount was in 1856, 419,936*l.*, and in 1861, 568,916*l.* From these figures it will be seen that the import trade in mahogany is rather a valuable one.

Wisbeach.—The Wesleyan Chapel, a large structure erected about forty years back, has been re-opened, after undergoing a complete renovation of its interior. New pewing and other fittings have been provided, and the large galleries which formed a complete amphitheatre in the chapel, have been removed and lower and lighter galleries inserted on three sides only, a new end wall, with appropriate architectural features, being erected behind the pulpit. The windows have been reglazed with tinted cathedral glass; those behind the pulpit with grisaille glass. The ceilings and walls have been decorated in distemper, from the designs of the architect, Mr. Tait, of Leicester. The public hall, a large building in the Greek style of architecture, is about to be renovated, under the direction of the same architect.

St. Luke's, Chesterton, Cambridge.—We mentioned in our last that this church was about to be proceeded with. The mode of selecting an architect in this case was somewhat unusual. There was a large committee, consisting of about forty members. Six architects were named, but instead of giving all these architects the trouble to make special drawings for the proposed new church, they were simply requested to send a portfolio of drawings of some of their works, and it was then left to a sub-committee to examine and report as to whose style of work they preferred. Mr. W. Smith, of the Adelphi was ultimately selected. If a committee cannot agree upon any one name, the above course seems a sensible one. At any rate, a great deal of lost labour was avoided by it.

Works at Harrow.—The contractors commenced excavating for the foundations of the public hall on Tuesday last, and must get it finished by Christmas next. ——We learn from the *Harrow Gazette* that the first of the Lyon tercentenary commemoration buildings has just been begun,—the gymnasium, which is to be erected in the rear of the old school buildings, and quite close to the racket-courts. The builders are Messrs. Kindell & Lander. ——The Natural Science Schools will be begun very shortly, on the plot of ground to the north-east of the new schools. We understand the contract of Messrs. Woodbridge & Lander has been accepted.

New Cemetery for Darlington.—Owing to the increasing population and development of this borough, the town council have found it necessary to provide a new cemetery at the north end of the town, a site for which has been presented to the town by the Messrs. Pease. At a council meeting held on the 10th inst. a resolution was passed appointing Mr. G. G. Hoskins, of Darlington, architect for the chapels and lodges.

Stockholm Wood Trade.—We learn from Stockholm that the rise which has taken place there of late in the price of charcoal must necessarily affect the exportation of wood goods; while another not inconsiderable influence on this branch of export must be the operation of several large steam works established in Stockholm for the manufacture of carpentry goods. This manufacture is becoming one of very great importance. The goods chiefly made are mouldings, panelling, door and window sills, window-sashes, doors, entire dwelling-houses, and other buildings. In this manufacture many parts of the raw material which would otherwise be wasted are utilised.

Connexion of Workmen's Questions with Politics in Spain.—A meeting of 3,000 workmen was held at Alcoy, an important manufacturing town in the province of Alicante. The men resolved upon a strike. The next day they proclaimed the Commune. Riots ensued, and some manufactories were reported to have been burnt, as well as the town-hall and other buildings, and the mayor of Alcoy and other officials killed and wounded,—the bodies of the dead being dragged through the streets, and other atrocities committed. At Barcelona, too, an attempt was made by workmen to imitate the Alcoy movement by burning the churches and other public edifices, but it was scouted by the mass of the workmen themselves.

Fire at Whitechapel.—The extensive works of Mr. Little, builder, situate in Size-yard, High-street, Whitechapel, have been on fire. Owing to the large quantities of timber that became ignited, the reflection was visible in all parts of the metropolis. On the arrival of the engines, the attention of the firemen was directed to a large stack of timber that the flames had not reached, and their efforts to save it from destruction were successful. Had it been otherwise, the fire must have extended to the premises of a wholesale rag and waste-paper merchant, in which case the houses in Old Montague-street would have been placed in great danger.

The Bradford Sewage Works. — These works are about to be handed over, according to previous arrangement, by the Bradford Corporation to the Peat Engineering Company for the defecation of the sewage by that company for twenty-one years, without cost to the Corporation. The system adopted to purify the sewage is said to be that of filtration through charcoal, or more properly through a mixture of clay and peat burnt together and afterwards pulverised. The works are now practically completed, and Mr. Neill, the contractor, has handed them over to the Corporation.

"Steam Superseded."—"We have spoken, in a preceding number," says the *Journal du Havre*, "of an extraordinary discovery announced by *Galignani's Messenger* of Paris, it being nothing less than an agent destined to entirely replace steam. The inventors of this process are MM. Brachigny and J. Deschamps, domiciled at Rouen, 9, Rue de Sotteville. They pretend, by the aid of their apparatus, which works without coal or any other combustible, to replace the present machines, whatever be their power. Their invention, they say, is equally applicable to land industry and to navigation."

Gallery of Illustration.—The tenancy of Mr. and Mrs. German Reed is about to expire at the Gallery of Illustration, which, after the 31st of the present month, will cease to exist as a place of public entertainment. Mrs. Reed, we are glad to hear, will resume her entertainment as usual next season, and has already had several offers of premises situated in the centre of town, and better adapted to give effect to her admirable productions. We may add, that on the 31st instant, the last day of performance at the Gallery, "Mildred's Well," "Our Garden Party," and "Very Catching," will be given twice.

The Princess Mary's Village Home.—At Addlestone, in Surrey, the foundation-stones have been laid of three additional cottages in the Village Home which has been founded under the patronage of the Princess Mary of Teck as a refuge for little girls,—the children of convicts. The home is built in a large field bought between two and three years ago by Miss Cavendish. The home now accommodates seventy children out of 300, to whom it is intended to extend the benefit of the institution.

Surrey Archæological Society. — The annual excursion of this society has been held, the route selected being a fresh one to the majority of the members. The rendezvous was Wallington Station, near Croydon, and the order of the day was to proceed thence, in wagonettes provided for the purpose, to Carshalton Church; from there, by Merton Abbey, to Merton Church, and then to Cæsar's Camp at Wimbledon, winding up with a visit to the residence of Mr. Peek, M.P. This programme was faithfully carried out, and, in the result, afforded a day's excellent entertainment.

Proposed Restoration of Reigate Parish Church.—An influential meeting has been held in Reigate to consider the propriety of restoring the parish church, and to hear the report of the architect, Sir G. Gilbert Scott, on the subject. The Bishop of Winchester presided. The architect's report, which estimated the cost of the various necessary works at 6,300*l.*, was read, and appropriate resolutions promotive of the object of the meeting were unanimously passed, including the appointment of a committee to collect subscriptions and carry out the work of restoration.

Extension of Railways.—A company has just been registered under influential auspices, to assist the French in constructing certain public works of European utility. It is named "The French Railways General Extension Company, Limited," and has been founded with a capital of one million, of which three-fifths have been subscribed by the founders. It is proposed to build a railway direct from Calais to Marseilles, for which concessions and subsidies have been obtained from the departments traversed, and hereafter to engage in other enterprises.

Chimney Sweeping.—The following may be of use to persons living in the country:—A chimney, with a sharp bend, for many years caused great inconvenience. As it could not be swept from the bottom with the ordinary country apparatus, a cord was attached to the rod, just below the brush, and passed through the ring of a 20 lb. weight, placed on the floor, and it was swept with the greatest facility. The weight was placed so as to make the required curve, and the cord held by an assistant.—SENEX.

Northamptonshire Architectural Society. On the 22nd and 23rd inst. this architectural society will hold its yearly meeting, in conjunction with the Architectural Society of the County of Leicester, at the town of Coventry. During the two days there will be a public temporary museum at St. Mary's Hall, Coventry. The programme of the proceedings includes a public meeting at St. Mary's Hall on the 22nd inst. in the morning, with a paper by Mr. Fretton on the antiquities of Coventry.

Opening of the New Leeds Bridge.—The mayor of Leeds, on the 19th inst., formally opened the new Leeds Bridge, at the bottom of Briggate, erected in place of the old and dangerous one, which for many years occupied the site. With its approaches, the new structure—a bridge of a single span,—has been erected at a cost of 15,000*l.*

Sculptures for Newcastle. — Mr. D. W. Stevenson, of Edinburgh, has completed four colossal figures, which are to be erected in front of the new police courts, in Pilgrim-street, Newcastle-on-Tyne. The figures represent Justice, Truth, Mercy, and Peace. They are each 7½ ft. high, and carved in freestone.

Persian Railways.—The English engineers have completed the survey of the first fifty miles—viz., from Teheran to Kasvin—of the proposed line of railway from Teheran to Resht, on the Caspian. Part of them have left for Resht, to commence surveying thence towards Kasvin.

Silbury Hill.—The *Bristol Times* reports that Silbury Hill, Wilts, a mound of little value, except in an archæological point of view, although covering an area of 7 a. 3 p., with a height of 135 ft., has been bought by Sir John Lubbock for 500*l.*

TENDERS

For alterations and additions to No. 83, High-street, Clapham. Mr. Robert P. Notley, architect:—

Ball	£775	0	0
Phelps & Rice	758	0	0
Snelling	744	0	0
McLachlan	729	0	0
Clement (accepted)	580	0	0

For new stabling, &c., at Down Place, near Guildford, for Mr. W. F. Faviell. Mr. Henry Peak, architect. Quantities supplied:—

Pollard & Son	£2,922	4	7
Garnett	2,537	0	0
Lynn & Dudley	2,500	0	0
Barnes	2,419	0	0
Strudwick	2,393	0	0
Jarrett	2,390	0	0
Mason	2,389	0	0
Nye	2,355	0	0
Loe	2,340	0	0
Collyer	2,200	0	0
Goddard	2,184	0	0
Sawyer (accepted)	2,170	0	0
Warr	2,149	0	0
Brett	1,950	0	0
J. Mitchell & Son	1,899	0	0

For villa residence for Mr. George Wells, Bedford. Quantities supplied. Mr. John Usher, architect:—

Carter	£2,026	0	0
Spencer	1,869	0	0
Hull	1,835	0	0
Foster	1,790	0	0
Garvin	1,767	0	0
Litchfield	1,765	10	0
Freshwater (accepted)	1,725	0	0

For new workhouse buildings, Wellington (Salop) Union. Messrs. Bidlake & Fleeming, architects:—

Oliver	£13,958	0	0
Lovatt	13,288	0	0
Everall & Morris	13,281	0	0
Simpson	13,092	0	0
Paterson	12,644	0	0
Millington	12,562	0	0
Horsman	12,143	0	0
Moore	11,748	0	0
Chapell	11,281	0	0

For Hadley Schools for the Wellington (Salop) School Board, including boundary-walls, outbuildings, playground, &c. Messrs. Bidlake & Fleeming, architects:—

Espley & Son	£2,885	0	0
Whittome	2,749	0	0
Oliver	2,579	2	6
Millington & Son	2,549	8	4
Moore	2,536	18	6
Birrell	2,534	0	0
Cross	2,470	0	0
Jones	2,464	0	0
Paterson & Sons	2,431	18	6

For four cottages, at Pirton, near Hitchin, Herts, for Mr. Stafford Allen. Messrs. Habershon & Pite, architects:—

Leatherdale & Son (accepted)	£585	0	0

For the erection of a residence and stabling at Shortlands, for Mr. J. Kerby. Mr. Charles J. Shoppee, architect:—

Crossley (accepted)	£1,745	10	0

For alterations and re-seating Christ Church, Woburn-square. Mr. Henry Hall, architect. Quantities supplied by Mr. S. J. Thacker:—

Alterations, &c.

Tibbitts	£1,675	0	0
Cox & Sons	1,655	0	0
Aitchison & Walker	1,625	0	0
Phillips & Son	1,398	0	0
Simpson	1,222	0	0
Axford	1,193	0	0
Henshaw & Co.	1,184	0	0
Patman & Fotheringham	1,175	0	0
Hill & Sons	1,164	0	0
Hobson	1,145	0	0

Re-seating.

Aitchison & Walker	£1,767	0	0
Phillips & Son	1,625	0	0
Cox & Son	1,519	0	0
Simpson	1,425	0	0
Axford	1,360	0	0
Hobson	1,288	0	0
Patman & Fotheringham	1,256	0	0
Henshaw & Co.	1,230	0	0
Hill & Sons	1,174	0	0

For a first-class swimming-bath, for the Commissioners of the St. Marylebone Baths and Wash-houses. Mr. H. Saron Snell, architect. Quantities supplied by Mr. R. W. Griffiths and the architect:—

Lacy	£4,852	0	0
Bridgman, Nuthall, & West	4,769	0	0
Harris & Sons	4,768	0	0
Simpson	4,700	0	0
Howard, Brothers	4,450	0	0
Wall	4,390	0	0
Temple & Forster	4,324	0	0
Newman & Mann	4,320	0	0
Perry, Brothers (accepted)	4,250	0	0

For new schools, Wraysbury. Mr. Fredk. W. Albury, architect:—

George	£1,910	2	6
Oades	1,900	0	0
Gibson	1,800	0	0
Kelley	1,799	0	0
Reavell	1,750	0	0
Wright & Co.	1,725	0	0
Watson	1,687	0	0

For alterations at the Rose Bank, Fulham, for General McMurdo, C.B. Mr. Geo. Saunders, architect:—

Wagner (accepted)	£317	10	0

For the erection of schools and class-rooms for 400 children, with teachers' residence, at Downham Market, Norfolk, for the Downham Market School Board. Messrs. Mumford & Tennant, architects:—

Brown	£3,850	0	0
Fast	3,799	0	0
Bennett, Brothers	3,642	10	0
Bardell, Brothers	3,470	0	0
C. Bennett	3,449	0	0
Hubbard (accepted)	2,929	0	0

The Builder.

VOL. XXXI.—No. 1590.

The Past Session of the Institute.



THE printed reports of the proceedingsat the meetings of the Royal Institute of British Architects during the Session 1872-3, comprise fifteen communications, or "papers," on variousclasses of subjects connected with architecture, without counting the presiden-

address at the commencement of the session. ay be suggestive to glance at the general ing of these communications, and the indi- ons which the Institute reports in general ey in regard to its relation to modern archi- ural progress.

he first consideration which suggests itself is o the proportion of time devoted to different ses of subjects; and here we find the pre- derance greatly in favour of what may be ed specially "practical papers." Out of the nber of communications above quoted, eight ne under this class; two belong to what may ermed the "literary" type of paper, one is ely archæological, and the remaining four ne deal with architecture as an art. In the ceding session, it may be observed, the prac- l was still more markedly prominent; nine ers out of fifteen coming under that category, l the sessional proceedings only presenting ee papers which could fairly be classed as rchitectural" in the sense here used; two of ich, again, being the essays on Barking Con- nt and Manor House, which gained the Peek ze, might be as correctly termed "archæo- ical"; a classification which leaves but one rely architectural paper for that session (that Mr. Brewer, on "The Revival of Gothic Archi- cture in Germany and Holland"). This ten- ncy towards the purely practical and engineer- g side of the profession in the Institute papers, ll appear satisfactory or otherwise, in propor- n as we regard architecture in the light of a siness carried on by persons whose duty it is insure the convenience, comfort, and health of eir clients and the public, or as an art the ject of which is to produce beautiful ornament d impressive *coups d'œil* in our streets and uares. Business men, and writers of news- per articles, will no doubt take the former ew of the matter, for which there is much be said; the more so inasmuch actual know- dge and experience in practical matter are ore easily formulated and communicated to hers than talent or originality in artistic de- gn. Nevertheless, we are inclined to think hat the scale has dipped a little too much on he practical side of late in the Institute pro- grammes; and that a somewhat larger propor- tion of papers in relation to architecture as an art, either in its past or its possible future developments (especially of illustrated papers), might be of value in eliciting new ideas, as well as in giving a greater interest to meetings, the tendency of which of late has been to become rather "dry."

Of the practical communications, four have dealt with the important subject of the warming and ventilation of buildings. M. Pauli's remarks on the ventilation of hospitals, *apropos* especially of the hospitals at Ghent, planned under his direction, went to advocate the use of the system of impulsion of pure air into buildings, in place of the more ordinary ventilation by the exhaustion or escape of vitiated air. This paper called forth a critical notice by Mr. Barber (engineer), in which the merits of the impulsion system, especially in obviating draughts from crevices, doors, &c., were admitted, while it was contended that the system of exhaustion or "aspiration," must, from its comparatively simple and economical character, form in general the most ready and obvious means of ventilation. Mr. Barber's own paper "On the warming of public buildings," discussed the merits of four classes of warming systems,—hot-water, steam, stoves, and gas-stoves; the peculiar advantages and difficulties of each system were shortly and comprehensively stated, and a plea was put forward, based on what the lecturer had seen carried out in Denmark, in favour of a more extended trial being given to gas as a heating agent for private dwellings, and its possible advantages in point of economy as well as convenience. This is a suggestive and sensibly-written paper, and worth the attention of those interested in the subject; a phrase which may be said to include all who build houses for themselves or others. The paper by Dr. Hayward, of Liverpool, which in its complete form is not yet in the hands of members, was a protest in favour of the systematic ventilation of all dwelling-houses by air passed from the outside, through a heated chamber, conveyed thence to the several apartments, and then collected into a general exit shaft. There is much that is ingenious in the details of Dr. Hayward's plan, and it is satisfactory to find a medical man giving such practical attention to a subject so intimately connected with the healthfulness of dwellings; but his scheme, complete and symmetrical as it is, was felt to be open to practical objections, and savoured somewhat too much of sacrificing everything else in a house to the ventilation. Any one, however, who has a "hobby" of this kind, is likely to do good rather than the reverse by drawing attention to it; and it must be admitted that an over-attention to ventilation is *not* the besetting sin of modern domestic architectural practice.

The papers on "The Valuation of House Property in London," by Mr. I'Anson, and on "Arbitration," by Mr. Banister Fletcher, will have a permanent value in regard to the subjects of which they treat, as the opinions and experiences of gentlemen well up in their respective subjects. In the latter paper and the discussion following it, the desirability of referring disputes connected with the profession or the building trade to those who are able to understand the details of the case themselves, rather than to those who can only give a legal opinion upon facts supplied to them, and which they only imperfectly understand, is well brought out. The two remaining practical papers approach nearer to the subject of architectural practice properly so called: that read by Mr. Statham on "Architecture practically considered in reference to Music" points out the unsuitable construction and plan of many of our large halls and other buildings for music, and offers suggestions for a new treatment of these in some cases; at the same time admitting the difficulty which might be experienced in combining satisfactory architectural effect with practical suitability in such cases. The practice, it may be remarked in passing, of taking some one class of buildings intended for a special purpose, and going systematically through its requirements, is one which might be advantageously carried out oftener than it is; and we might have valuable papers on such subjects as picture-galleries, theatres, conservatories, or any other class of structure requiring special treatment for a special end, by those whose attention had been particularly directed to it; and it may be observed that novelty and originality of architectural treatment might very well result from a more intimate consideration of what is really required in any particular class of building. The last on the list of practical papers is Mr. Seddon's on "The Shoring of Grosmont Church Tower," a very useful contribution, giving the methods employed in dealing with special difficulties in one of the most responsible tasks in which an architect can be engaged,—the preservation and reconstruction of an old and interesting but decaying edifice.

Of the two contributions of what we call the literary type, Mr. Roger Smith's paper, which meets us first in the list, "On Professional *Esprit de Corps*," is quite up to the mark of the literary paper in point of style, and has the merit (not always belonging to papers of this class) of dealing with a subject which has not been much handled, and on which there was a good deal to be said. That the feeling referred to in the paper is by no means as prominent in the architectural as could be wished, and as we see it in some other liberal professions, is unquestionable; and the reasons in favour of a change in this respect were brought forward in a forcible and, at the same time, temperate spirit. One point especially, that was touched upon, deserves consideration from every architect anxious for the honour and dignity of his profession,—the duty of exercising a careful discrimination in regard to the choice of pupils who intend ultimately to follow that profession. Much of the unsatisfactory status of the profession in England, when we get below the first rank of eminent men, may be traced to the readiness of too many architects to accept any pupil with whom an adequate premium is offered, regardless of the consideration whether he is one likely to become a credit to the profession, or to prove in any way suited for it. A hint thrown out in the discussion on this paper also deserves consideration; that an architect who wants an opinion on a special subject, such as iron construction, should be able to submit his calculations, just as a solicitor submits a case to counsel, endorsed with the amount of fee, to some professional brother competent to give a definite opinion. Such a division of intellectual labour might be of the highest advantage in the carrying out of great works: in fact, it is resorted to occasionally at present, but only in an "under-the-rose" kind of way, and not as part of a professional system. The other paper which we class among the "literary" contributions, though its author, perhaps, would not concur with us, is that of Mr. J. B. Waring, on "The Laying Out of Cities." This is partly in relation to some suggestions offered by the author in regard to the rebuilding of Chicago, on a plan of concentric circles: to which were also added some general principles in regard to design in architecture. The "concentric circle" scheme is not new; and as to the principles of design nobody can say that they are not perfectly true; but when we meet with such vague sentences as that "convenience and utility depend mainly on the whole block of building, and include attention to comfort, facility of access to various parts, sound and light," we must say this is about as true (and as profitable) as to say in a word "that a building ought to be conveniently planned," which no one will dispute. We must

regard this as one of those neatly expressed collections of truisms which may serve to pass away an evening pleasantly, and be described as "an elegantly written paper," but which cannot claim much real value as contributions to the study of architecture.

The one archæological paper of the session, by Mr. J. S. Phenè, "On the Result of a recent Investigation into Ancient Monuments and Relics," is one of some interest, referring chiefly to remains illustrating ancient rites of sepulture, &c., in Great Britain, chiefly in Scotland and on the border.

Coming to the papers on strictly architectural subjects, we may characterise as a contribution of a very useful and interesting kind,—Mr. Heathcote's paper on "Old Halls in the Neighbourhood of Manchester," which gives us information, in a very readable form, concerning some specimens of domestic architecture possessing much local character and interest, with which the author has himself become acquainted, and which are probably not very much known to architects whose practice lies mostly in the south of England. The paper is illustrated by a map of the locality, showing the relative positions of the buildings referred to, and by one or two neat and pleasing lithographic views, which remind us of a wish we have before felt, that the illustrative element found a larger place in the printed reports of the Institute proceedings. One drawing is generally worth pages of description in relation to any architectural subject; and we should presume the Institute are not so near the margin of their funds or their revenue that they could not afford to illustrate a paper of this kind a little more fully than is commonly the case. Mr. Cole's paper on "Sgraffito Decoration" was a communication also of a class of which we would gladly see more. The various ways of producing and applying ornament to buildings are so infinite (we may say), and every competent illustration or suggestion as to the practical process or the æsthetic treatment of ornamental work is so certain to be interesting, that it is surprising this element of ornamental design should have been kept so much in the background during recent sessions. Without admitting all that was said in favour of sgraffito on this occasion, and without by any means giving our adhesion to the peculiar type of ornament brought forward, we must characterise this as one of the most interesting papers of the session, and hope that subjects of this fascinating description will find more place in future programmes. An interest of another kind, but as purely related to the artistic side of architecture, belonged to the paper read by the veteran honorary member, the late Mr. Taylor, who came forward,—a representative of the past generation of Classic architects,—to give anew his impressions and facts as to the buildings in Rome, which he was one of the first to familiarise English students with. To the younger men of the present generation, bred up almost exclusively to Gothic work, some of the information in this paper must have been as new as when it was first given to the world. Mr. Brewer's full and well-written paper on "The Churches of Brittany," is one of the same class, dealing with masterpieces of Gothic, as Mr. Taylor dealt with those of Classic, architecture: but here, again, we cannot but feel that, to those who may have neither visited the country, nor been able to be present on the occasion of the lecture, a few illustrative sketches would have centupled its value in the printed proceedings, and it would have been better worth while to have condensed the paper itself for the sake of getting these in, than to have printed at full length descriptions of buildings which only make the architectural reader's mouth water, and which a few lines with the pencil would have illustrated better than a page of print.

Taking the past session in the main, we find its contributions characterised by practical common sense, and an absence of pretension for the most part, which is as it should be. We may be allowed to express a hope that in the forthcoming session these qualities may be equally conspicuous, in combination with a somewhat larger and fuller attention to, and illustration of the artistic side of the noble art of architectural design. Two other points may be noticed as calling for improvement: it would be well if the distribution of the papers to members followed more closely upon the date of their being read. The paper of Mr. Phenè, for instance (the last one printed), read on the 19th May, does not reach the members in its printed form till about the same time in July. Two months are certainly a longer time than need be occupied in getting out a paper of these dimensions; but we may surmise that the fault often rests as much with the authors, who are tardy in furnishing illustrations, revising manuscripts, and correcting proofs, as with any one else. The other point, which we have frequently noticed, is an unfortunate deficiency in correctness and force of grammatical construction and style in the wording of the reports of debates, &c. These are necessarily, in most cases, much abridged, and we are conscious of having read very curious English in not a few cases in these reports, and have caught sentences innocent of nominatives, or varied by involutions of construction which ought not to be allowed to occur. The character of architects as masters of English composition does not, we fear, as a rule, stand very high; at all events, the central institution should set a good example in these respects, and pay due regard to purity of style in the use of the English language. In this point the late president, at least, was *sans reproche*, and his address at the opening of the session, though propounding no very striking and original views, was expressed, like everything we have heard from him, in language as well composed and idiomatic as it was direct and to the point.

COAL AND THE COMMITTEE.

THE report of the committee on coal may be regarded under two aspects: one is, that of its intrinsic value, as bearing upon the protection of the consumer from any future rise in price, of a nature at all similar to that which occurred last winter; the other is the simpler view of the result of the inquiry as regards the accumulation and record of facts. It is under the latter aspect that we now desire to regard the subject.

We may mention, in the first place, that one feature of very great promise has been elicited in the course of the evidence. So important is it, that we much desire to have some practical confirmation of its accuracy. And that the more so, because it would show a far-sighted wisdom, and a real appreciation of the ultimate interests of their class, on the part of the working colliers, which is very sharply contrasted with their adherence to other views of a directly opposite tendency.

The point to which we refer is the expression of the opinion that the men, as well as the masters, hope for the introduction of coal-cutting machinery. For masters to do so, and for the public to do so, is just, wise, and natural; for the men to do so is no less just and no less wise, but it is far less natural. It is stated, and with justice, that the hardest, most painful, and most dangerous labour, is the "holeing" or "getting" of the coal. This is, in fact, the forlorn hope of the attack on the fortress of which we seek the spoil. In all mining, including railway tunnel work, the piercing of the headway or first opening is the part of the operation, which limits the time, and to a great extent regulates the cost, of the operation. But in collieries there exists the special feature of the shallowness of the bed of material which it is desired to extract. As the thicker and richer seams, in which mining is easy, are successively exhausted, it becomes yearly more and more important to work those which are thin, so as hardly to allow of the introduction of the body of the miner between the roof above and the floor beneath the carbonaceous deposit. Here, therefore, the labour becomes awkward and painful, the miner often actually lying on his side and working out the coal before him by horizontal blows of his pick. To introduce a machine which should perform this very painful duty is thus, mechanically and financially considered, a very great desideratum. For the industry of the collieries, considered as a whole, no desideratum can be more important. By taking off the pressure from the throttle-valve of the work, all the other branches of the industry of the colliery will be stimulated, and the general outcome of the enterprise can be increased almost at will.

But it is precisely against any improvements of this nature that the face of the working man of this country has hitherto been most firmly and constantly set. From a national point of view no error can be more lamentable. But we speak, not of what ought to be, but of what is. It will be a bright day for the whole field of British industry when the main body of any branch or class of workmen shall come to consider it desirable to obtain machinery to perform the limiting work of that industry, leaving to human toil only the portion of the labour which demands, at the same time, human skill, a practised judgment. But no one can be practically very familiar with English workmen without being aware how thoroughly exceptional such a state of things would be. It is the most dangerous part of the work which is generally most jealously claimed by the workman as his special task. Not only so, but in very many instances improvements which have the sole object of diminishing risk, or even of certainly averting danger to human life, are most strenuously resisted by those whose lives would be, in all human probability, prolonged by the introduction. It is unnecessary to cite the safety-lamp as an example. Not an explosion occurs in a colliery without evidence, or at events suspicion, of a careless and wilful neglect of the well-known rules of self-preservation on the part of the miners. In some cases the injudicious use of powder causes explosions. But, in the great majority of instances an open light, or an unlocked safety-lamp, betrays the actual, murderous neglect which has clad a district in mourning. This tampering with danger, or rather courting of danger, as a protector of the rate of wages paid to him who faces it—for this is the real explanation of the strange phenomenon—is not confined to the coal miner. It existed, within our own experience, in the far less hazardous profession of the diver. When the metal helmet, supplied with air by means of an air-pump, was first introduced, it rested on the shoulders of the diver. It formed, in fact, a sort of portable diving-bell, under the protection of which this workman could walk about on the bottom of the sea, without being confined to the small area covered by the actual bell. So long as he remained upright, he was safe, and enjoyed great convenience. But if, by any chance, he should fall, the water would rush in, the air would be expelled, and the helmet, intended for his safety, would become the instrument of his death. It was, we believe, the work, either in whole or in part, of that worthy and conscientious public servant, the late Major-Gen. Sir C. Pasley, R.E., to introduce a great improvement on the original diving-helmet; and to insure the life of the diver under almost any contingency. The improvement consisted in a water-tight macintosh dress for the diver, which terminated in continuous boots or stockings for the feet, was bound tightly round the wrists, and was screwed, by a set of flange pieces, under the neck-piece of the helmet. The diver, thus attired, could assume any attitude under water. Two of Sir Charles Pasley's divers, engaged on the wreck of the *Royal George*, at Gosport, actually came to blows on the subject of some spoil they were rescuing from the wreck, and one of them knocked the other down,—at the bottom of the sea, be understood,—without any ill results. With the original helmet it would have been all over with the diver in such a case. To the introduction, so obvious a means, not only of comfort but security, the professional civil divers raised every kind of opposition in their power. They found out that any man could dive in Pasley's helmet. They felt that their craft was thus thrown open to a considerable extent. And they preferred to keep it close,—life in hand.

A similar opposition was raised to the introduction of certain safeguards, mechanical in one instance, and electro-magnetic in another, against the inhalation of the minute particles that are produced by a certain process of grinding steel tools. The grinders formed a special class, readily to be recognised by their unhealthy appearance, no member of which was said ever to exceed the age of forty. Limited in this stern method, they enjoyed a comparatively high rate of wages; and they steadily resisted those efforts to remove the deadly character of their occupation, which would have had the effect of throwing open the craft to more numerous followers.

We have no doubt that the special experience of many of our readers will suggest parallel cases of danger. The special difficulty of his craft is often the point most cherished by the craftsman. He rejects the offer of insurance,—not of what we call life insurance, or the payment of a sum at death, but actual prevention of danger,—because it removes that grim sentinel who stands at the door of the trade, and thus, in the opinion of the craftsman, keeps up his rate of wages.

From this experience we fear that the statement that men, as well as masters, look forward to the introduction of coal-cutting machinery with desire, is too good to be true. If not, it

ld be made as extensively known as pos-
. Not only is it due to the honour and
it of the miners that such should be the
, but the result will be very rapid and satis-
ory. If our own mechanical engineers are
to take the hint, it need only be given in
rica to bear almost immediate fruit. If the
utive industry of our Transatlantic cousins
ally assured that their inventions will com-
d a sale in this country, we shall not have
ait many months for good coal-cutting
ines. We are reminded of one of the most
ious and beautiful instruments which it
fell to our lot to handle, which America
to this country not many months ago. We
ot say that it was one applicable to coal-
ng, although but small modifications would
er that the case. But the very original
ination of drill and spiral spring to which
refer was a surgical instrument, chiefly
icable to dental surgery. By its means an
ator, giving motion to the drill in the
ary way, by a treadle, could direct the
t at any angle or at any distance as easily
it were a pencil; and thus could remove a
on of a tooth with far more ease and celerity
by the ordinary method. We are not to be
that a state of engineering proficiency that
produce so perfect a machine for perforating
th in the head of the living man can need
hing but certitude of remuneration in order
oduce a mechanical "getter" for coal.

verting from that part of the report which,
ear, is too good to be true, to the earlier
ments, we find only four merchants enume-
d among the thirty-seven witnesses examined
re the committee. Of the rest, fourteen were
rnment inspectors or official witnesses, nine
esented colliery proprietors, seven repre-
ed the working colliers, and one witness
e as to the iron and steel trade. From the
f witnesses, which thus includes no carrier,
railway manager, and no member of any
of persons specially interested in direct
ibution, it would appear *à priori* what
d be the nature of the facts likely to be
ed. We do not conceal our opinion that the
y has thus been given to the special branch
nquiry in which the family consumer is
directly interested. The general state-
ts which such a body of witnesses was able
ve may be of great value, but they are not
e which directly go to the explanation of so
den and disproportioned a rise in price as
winter witnessed. The out-put of coal in
? is stated as being some 8,000,000 tons in
nce of that in 1871, the latter being now
n at 117,186,278 tons. This is very close
, although not quite amounting to, the out-
which, in 1865, Mr. Jevons estimated would
hat for the then future year 1871. For 1872
put-put of the coal-fields in Great Britain is
d at 123,386,758 tons, which is somewhat
xcess of Mr. Jevons's estimate for that year.
n we find so close a coincidence, over
a length of time, and in figures of so serious
amount, we cannot but remark that it is
ordinary that we should have been taken
wares. The Coal Commissioners of 1871
ll in their power to produce a confidence,
ch the result shows to be, as we predicted at
time, a false confidence. Year after year the
tical calculations of Mr. Jevons have hitherto
ed remarkably close on the truth. All that
learn, then, from this part of the labours
he committee is, that a well-known rate
ncrease has continued for so many months
e. Persons to whom the subject is new may
ider that the statistics now put forward are
ding and novel, and explanatory, to some
nt, of the panic of last year. But our
ers will find little but that which may re-
h their memory, and carry their observation
ttle further than our later articles on the
ect. In 1861, our output of coal was
millions of tons. The rise to 123 millions
ons in 1872 was foreseen, foretold, and ought
ave been expected. All that we are told of
great activity of the iron trade; the develop-
t of new districts, such as that of Cleveland;
liability of interruptions to our supply by
al or by physical causes, was well known
re. It is summed up in the rate of increase
nicled and predicted in our pages. Why it
ld have led to the trebling of the price of
ehold coal in London last winter is the part
he story where the connexion fails, and as to
ch we are all deeply interested in obtaining
rmation.

We must not blink the ugly facts, that all the
on which any prudent engineer can feel that we are authorised to count as existing within practical reach in our known coal-beds, going down to a depth of 2,700 ft., at which level a temperature of 122° Fahr. is constant, is a total of 39,000 millions of tons of available, and 22,000 millions of possibly or partially available coal; and that, in the event of the maintenance of that rate of increase of consumption as to which Mr. Jevons's calculation has been so remarkably verified, the last ton of the 39,000 millions would be extracted in seventy-three years from the present time.

As against that menaced exhaustion of our supply may be set the probability of the limitation of supply by the increase of cost. Between these two limits, we showed some time back, the ratio of price and quantity must adjust itself. This, no doubt, is what it is now doing. But the point which it chiefly concerns us to understand is, how it should be by such violent and sudden movements that a foreseen compensation should take place. Unforeseen causes may produce sudden results. But there have been no unforeseen causes at work. On the contrary, everything has been clearly seen beforehand. Some of us may have had the misfortune to be called Cassandra-like in our predictions. It may have been hoped everywhere that there was a screw loose in the calculations. Unfortunately they have not proved to be excessive. This is all that can be urged, and this is no reply to the inquiry why the disturbances should have been so violent.

Mr. Elliot, who, as a member of the Coal Commission must have been fully aware not only of the facts of the case, but of the extent to which they were foreseen, urges that the strike of thirteen weeks in Wales threw the supply in arrear of the demand, and that it has never since been able to overtake it. Mr. Bell, the President of the Iron and Steel Insititute, on the contrary, attributes the entire rise to the development of the demand for iron manufactures, and for chemical works. The experience of these gentlemen, it should be remembered, is derived from rather different sources. But with regard to the effect of the strike, it should be borne in mind that it was, to a certain extent, self-compensating. The great demand for the South Wales coal was that made by the South Wales Ironworks. One supply ceasing, the other industry stopped. We all remember how the furnaces were blown out. Indeed, the great strength of the strike consisted in the fact that some ten thousand colliers, by abstaining from work, could keep four or five times that number of ironworkers idle. This was the great element of pressure which the leaders of the Union endeavoured to bring to bear on the country. The connexion of this with the coal supply of London is extremely obscure. We do not say that it does not exist. We do not say that it is not direct. But we do say that, if so, it is of extreme importance that it should be detected; and it is most unfortunate that it is just this point of connexion between known facts, as to which we look in vain for definite information.

The coal taken for domestic consumption in 1869 was estimated in round numbers at 18 millions of tons. If we add the consumption for gas and water works, and for railways, we bring the amount up to 28 millions of tons. The output for that year was 107 millions of tons, ten millions of which were exported, and the balance went to ironworks, smelting, manufactures and steam navigation. At the same rate of distribution, the demand for house coal in 1873 would have been under 21 millions of tons, and as the rate of increase for domestic consumption will rather follow the ratio of increase of population than that of increase of activity of manufacture, we may safely say that 20 millions of tons of house coal are in excess of the demand of last year. This coal, for the most part, is supplied by certain well known beds; it comes from sources specially worked for the domestic consumer; it is sent to London and the other great centres of consumption by definitively organised services, and is taken to our doors by a specially arranged and generally a very economical mechanism.

It is with this special mechanism,—this production and distribution of less than 20 per cent. of the produce of our coal-fields,—that the alarmed householder is chiefly concerned. What reply is it to him to tell him how the iron of the Cleveland district is increased in production? Does the manufacture of that iron demand the Wall's End or the Silkstone coal that the citizen burns to cook his dinner or to warm his drawing-room? Has the iron-master suddenly offered such a price to the household coal-merchant as to induce him to leave his regular customers in the lurch? We are not assuming that such is not the case; but, if so, it ought to be known. As far as our own experience goes, coal differs from coal as much as other minerals differ among themselves. All coal will burn, but that which burns in one furnace, or for one purpose, will not, without loss and waste, burn in another. That the consumption of steam coal, indeed, has a relation to the production of house coal, is *primâ facie* to be expected. What we want to know is, what that relation is. The comparatively small amount of coal used for domestic consumption is such as to render such an inquiry imperative, if not easy. 'And it is here we cannot too distinctly repeat, that London has been looking to the committee for special information, while the committee has been only busied in collecting general information, which is anything but new.

Mr. Robert Tennant, who offers the thoroughly sound advice to the coal-dealers that they are killing the goose for sake of the golden egg, gives evidence as to rise in prices at the pit's mouth from 1871 to 1873. The West Yorkshire average shows a rise from 5s. 8d. in 1871 to 13s. 1d. in 1873. The Durham average rises from 7s. 5d. in 1870 to 15s. in the month of June in the present year. Household coal in London, in the same period, rose from 18s. 6d. to 45s., and we are far from admitting the latter to be the highest price paid last winter. But take it as such. In 1870, we may take it that the conveyance and distribution of coal bought at the price paid at the pit's mouth in Durham cost, including coal-merchant's profit, 11s. 1d. In 1872 and 1873, the sum left for these purposes, *after paying a double price to the coal-owner*, was 30s. This is a fact which it is hard to explain on the general grounds of the continued activity of British commerce; and neither we, nor the consumer of coal, nor the British public at large, will be content, or ought to be content, till this part of the case is explained.

THE FUTURE OF SOUTH KENSINGTON MUSEUM.

A RUMOUR reaches us that Mr. Lowe intends to place South Kensington in the hands of the governing body of the British Museum! If there be any truth in this alarming statement, an immediate and strong protest should be made. This would be a step backward with a vengeance. The British Museum is a grand institution, with noblemen, gentlemen, and scholars connected with it, but the principle which has ruled, and does rule, there, is entirely opposite to that which has made South Kensington the most useful, delightful, and popular institution in the kingdom. At the British Museum, the inquiry apparently always uppermost in the minds of its managers is, how seldom can we let the public in, how can we keep them away? Holiday-time is coming, can't we close the doors for a wash-up? The reading-room is getting very popular; can't we disgust and drive off by annoying regulations some of those who are using it? At the South Kensington, on the other hand, it is impossible to deny that the one ruling desire displayed is to attract and interest the public. The work has been done, not as if by Government officials at fixed salaries, whether they worked much or little, but as if by private speculators, whose sole chance of payment depended on the popularity of the establishment. Open it every day: get a constant succession of fine things. What, still many who cannot get here because of their daily avocations? Very well, then, open it at night: and at night it is open, to the delight and advantage of thousands to whom otherwise it would be unknown.

The writer of this, when a boy, once, with the temerity of ignorance, entered the British Museum, on a Saturday which he had set apart for it. Sir Henry Ellis, who was then the Chief there, very speedily came up to him with, "How dare you, sir, enter *our* house on a Saturday?" and the intruder with a whispered protest against the pronoun, was glad to escape from the threats of the irate knight. We do not suppose that the expulsion would be effected in the same brusque manner now; but the principle of exclusiveness and personal consideration still rules in Great Russell-street, and it will be a sad day when that is brought to bear on South Kensington, and puts out the lights.

NOTES ON FOREIGN PUBLIC WORKS.

IN the *Builder* of June 28th, we gave some interesting information under this head, which may usefully be supplemented by further facts of a similar character. Thus, from a report on the state of Algiers during the past year, we learn that 3½ millions from the war contribution have been allowed for public works, of which the most important are the routes from Algiers to Constantine, traversing the south of Kabylia, which will be of great service both as a military road and as a means of opening out the country; also the route from Bougie to Sétif, through the gorge of the Chabet-el-Akhir; from Bougie to Tizie-Ouzon, uniting the great and little Kabylies, &c.; together with the completion of the harbours of Oran and Phillippeville. From Cherbourg, we learn that public works may be said to be at a standstill; even those which had been voted not having been commenced. The construction of a line contemplated for important strategic communication between Cherbourg and Brest, has not even been traced, and, in fact, a spirit of enterprise in carrying out public improvements seems much wanted. It is stated, however, that the labourer has no difficulty in finding employment here, and his wages, as well as those of the artizan, have materially increased. Referring to another French port,—Havre,—we note that no change has yet taken place with regard to the improvement of the port. The want of funds has prevented the works for widening the entrance of the harbour and completing the quays which have been commenced; and although the new Bassin de la Citadelle has been of great service, additional quay accommodation is much needed. Other improvements are also required. The docks, some of which are in the centre of the town, are quite unprotected; and it is mentioned that hardly a night passes without some one being accidentally drowned therein. Again, hardly any portion of the quays is provided with covered sheds, and valuable goods have to lie out exposed to the wet. Considerable building operations are taking place in the town, and the quarter nearest the sea, which was formerly occupied by fortifications, is being quickly covered with dwelling-houses, most of which are of a greatly improved character, architecturally speaking. The erection of a new English church, the foundations of which were laid before the late disastrous war, is being actively carried out, and it is anticipated that the building will be completed by the end of the year.

Our next remarks will refer to Italy. From Venice we learn that, with regard to the improvement of the port, the works for deepening and widening the channel leading from the harbour to the sea at Malanocco proceed regularly; and the large steam-ships which now come up to the port can reach the city without the necessity of lightening. A Bill will also be presented by the Minister of Marine of Venice to Parliament, for the construction of a second graving-dock of lesser dimensions than one in construction for ships of war, but capable of receiving corvettes. As it is proposed to construct it with the savings from 11,000,000 of livres which have been voted for works required to improve the arsenal, there is little doubt that the matter will receive the sanction of Parliament. This dock will be open for the reception of merchant-ships as well as ships of war, which will be of great benefit to the port, as merchant-ships requiring the use of such a dock to effect their repairs are obliged to be taken for that purpose to Trieste or to Malta. Railway works are also being actively carried out in this part of Italy. The newly-projected lines of railway from Venice, Castelfranco, Basseno, and Trent, by which the distance of Venice from the Brenner will be shortened by 58 kilom., and a new line from Venice to Portoguaro will no doubt be approved by the Minister of Public Works; and, considering that the construction of these new lines will be beneficial to commercial and public interests, there is little fear of their being thoroughly carried out.

We get some information as to public works in Peru. With regard to the National Exhibition building at Lima, the plan of this was sanctioned by vote of Congress in 1869, and subsequently the foundation stone was laid. The Exhibition palace is described as one of the most graceful and stately buildings in the capital of Peru. It stands at the distance of about a mile from the Plaza Principal, or principal square, where are also the Cathedral and the Government House. The latter was the first palace built by Pizarro after his settlement in Lima. The Exhibition grounds and garden behind the palace stretch for a length of above 600 yards alongside the Lima railway track. In front of the palace is a large space, 225 metres long by 172½ metres wide, to which there are three entrances. Generally speaking, the Exhibition palace and grounds are very fine. Of Callao (Peru), we learn that the sanitary condition of that city is anything but perfect, and to remedy this imperfection a sewerage scheme has been drawn up by Mr. T. C. Clarke, C.E. Mr. Clarke's plan consists of, first, a main outlet for sewerage; second, pumping station for lifting the sewage; 3rd, line of main sewage; fourth, branch sewage; fifth, flushing and ventilation of sewers. The expense of carrying out these works is estimated at 92,000*l.* odd. The station for pumping (to be worked by a windmill, with an auxiliary steam-engine), is to be placed at the Callao side of the river Runac; and by this provision is made for 750,000 gallons of water per diem, for the inhabitants of Callao, which cannot fail to prove highly beneficial, as an adequate water-supply has hitherto been greatly needed. Mr. Clarke's plan generally has been received with favour by the municipality of Callao, who will doubtless carry it into practical effect. Dock construction is also a feature of the public works of Callao. A large mole and dock are being constructed under the superintendence of Mr. J. Hodges, C.E., nearly 1,000 men being employed upon the work. Railway enterprise, again, in Peru, is most active. It is estimated that new lines are now in course of construction in the country to the length of nearly 1,500 miles, costing, on a rough estimate, about 30,000,000*l.* Many of these lines are being constructed by Government, and cannot fail to prove of great benefit to the trade and commerce of the country. There are already working a few English railways in Peru, but their operations cannot be said to be of much importance. It is calculated that there are now in the country railways traced with an aggregate length of 2,979 English miles, and a total value of 71,671,875*l.*, and that to every ten square miles, and for each thousand inhabitants, there is one English mile of line. This certainly speaks well of railway enterprise in Peru. Not only does the State take a most active interest in the matter, but private individuals are also sufficiently enterprising to engage in the construction of new railways, and an immense amount of capital is invested in this way.

Sweden, as we all know, is chiefly renowned for its mining industry; but it appears that few or no public works of any importance are being carried out in that country. It may be noted, however, as interesting to the building trade, that of late years a profitable trade has been carried on in Sweden by exporting wood in a manufactured state, such as prepared flooring, window and door frames, &c., which have been in great demand, and not only shipped to the United Kingdom, but to Australia, and these have realised remunerative prices. The manufacture of wood for paper-pulp, which is quite a new product, has already assumed large dimensions as an industry of the country. During the past year also large investments have been made in the purchase of forest property, both in Norway and Sweden, by Norwegian capitalists, the prices given being high. In consequence of the high prices ruling for home firewood and coals from the United Kingdom, attention in Sweden has also been directed of late to the desirability of utilising the peat, which is found in great quantities in certain districts of the country. In one district, not far from the capital, a bog, estimated to contain 15,000,000 cubic feet of peat, is about to be worked as fuel. The construction of new railways is also being carried on with a moderate degree of activity in Sweden, and great national improvements are anticipated to ensue from the greater conveniences afforded to trade by improved means of transport and communication.

Romney Marsh.—The appointment of expenditor and engineer of this level has been obtained by Mr. H. D. Good, for several years one of the principal assistants to the borough surveyor of Brighton. There were 75 candidates. The late expenditor, Mr. J. Elliott, retires on account of ill health, on a superannuation allowance of 200*l.* per annum.

ART-UNION OF LONDON PURCHASES.

THE following works have been selected b
prizeholders since the publication of our fir
list:—

From the Royal Academy. The Monk's Walk, J.
Thom, 200*l.*; In the Lledr Valley, North Wales, J. Sy
150*l.*; On the Lledr, North Wales, R. Harwood, 75
Windsor Castle from the Canal, J. Adam, 60*l.*; St. Cat
bert's Monastery, G. C. Stanfield, 60*l.*; In the Path to t
Warren, C. Hancock, 60*l.*; Rogues in Bond, J. Ritchi
50*l.*; Evening after Rain, J. Parker, 50*l.*; An Iri
Weaver, A. Stocks, 50*l.*; Street in Cairo, H. Pilleau, 40
Pat Humphrey's Pride, J. Grey, 35*l.*; Holiday on t
Heath; Summer Day, late W. S. Rose, 30*l.*; A Ra
Slum in Venice, J. O'Connor, 30*l.*; Good Words for t
Young, J. B. Bedford, 25*l.*; The Green Pool—Bettws
Coed, F. Talfourd, 20*l.*; On the Lledr, near Bettws
Coed, F. Talfourd, 20*l.*

From the Society of British Artists.—Nichnacke, W
St. Nicla, E. A. Pettit, 75*l.*; Fishing-boats Get
Out, J. J. Wilson, 75*l.*; Mountain Burn, Argyleshire,
C. Ward, 40*l.*; Little Em'ly, *vide* "David Copperfield
T. Roberts, 35*l.*; Solitude, Walter H. Foster, 30*l.*; Sun
on the Brathay, near Ambleside, C. Smith, 30*l.*; Crossi
the Common—Winter, G. A. Williams, 30*l.*; Evening—
the Upper Thames, W. Gosling, 30*l.*; Music in the Wood
D. Pasmore, 25*l.*; Evening, J. Danby, 25*l.*; The Pa
Through the Wood, Alfred Cole, 25*l.*; Oh, What
Tangled Web, &c., A. J. Woolmer, 20*l.*; Hard Words,
W. Haynes, 20*l.*

From the New British Institution.—Folkestone Beach
November, E. Sampson, 55*l.*; Near Edenbridge, Ke
late W. S. Rose, 40*l.*; A Prince Rupert Cavalier, P.
Morris, 20*l.*

From the Crystal Palace Picture Gallery.—View
Dartmoor, T. Fyne, 40*l.*; By the Side of the Stream,
F. Stark, 35*l.*

From the Water Colour Society.—Sunrise on the Ea
Hill, Hastings, Collingwood Smith, 30*l.*

From the Royal Scottish Academy. Lochranza Castl
Arran, W. Beattie Brown, A.R.S.A., 45*l.*

THE PROPOSED MUSEUM IN SOUTH
LONDON.

IN the *Builder* of last week we gave the pa
ticulars of a preliminary meeting held at t
Westminster Palace Hotel respecting the pr
posed Museum and Free Library in South Londo
when a number of gentlemen were requested
pay a visit to a site which had been offered
New Kent-road, near the "Elephant and Castle
for 8,000*l.* On Thursday, the 17th instant, t
site in question was visited by the gentlem
appointed at the meeting to ascertain if it w
suitable for the purpose. Amongst them wa
Mr. S. Morley, M.P., and Messrs. Bevington
Clements, Shaen, Clapham, the Rev. G. Murph
and Mr. Kerr, the secretary. Subsequently
meeting was held at the residence of the Re
Mr. Thompson, when matters of finance a
other general subjects in connexion with t
proposed institution were discussed, and it w
ultimately resolved that no purchase of la
should be entered upon until a fund of 10,000
has been promised, and that the donors sha
decide upon the site. A sub-committee was al
appointed at the meeting to arrange for a
construction of the committee, with the view
carry out the above-named resolutions.

THE DRAINAGE OF DUBLIN.

THE national poet of Ireland never wro
more truly than when he characterised the fa
of Ireland as a wayward fate, weaving ever h
web of discord. Without politically speaking
her tyrants, who were said to have joined
hate, while their opponents never joined in lov
we might point out that the only tyrants Irelan
has at present to contend against are native
born tyrants, who are ever and anon eithe
opposing or obstructing measures designed fo
her sanitary and social elevation. When no
actually engaged in opposing measures of refor
and city improvement, a number of her civi
representatives are carrying on a partisan war
fare, in which the cause of the quarrel is that
huge jobbing transaction is intended, eac
party fighting tooth and nail for their friend
Eventually one after another of urgent public
improvements falls through, or is postponed t
an indefinite time, to be taken up again at a
increased expenditure.

An "astounding discovery" was made a fe
days since by the Main Drainage Committee, o
opening the tenders of the different contractor
who proposed to execute the Dublin mai
drainage works. The engineers who furnishe
the Dublin corporation with statement
estimated the cost sometime since at abou
300,000*l.* A perusal of the different tender
will be instructive; they include well-know
English and Irish contractors. Newell & Rob
son, of Westminster, for the entire work
968,800*l.*; Edington & Son, Glasgow, for con
tract No. 1, 479,949*l.*; Doherty, Dublin, for ditto

8,152*l.*; for contract No. 2, 178,647*l.*; for contract No. 3, 178,355*l.*; or for the entire work, 5,154*l.*; Meade & Son, Dublin, for contract No. 3, 254,185*l.* 17s. 11d. (mark the 's. 11d.!); Wardrop & Son, Dublin, for contract No. 2, 278,300*l.*; Pearson, of Kennington, London, for the entire work, 968,000*l.*; Webster, London, for the entire work, 935,333*l.*; Messrs. Pickering, Blackfriars, for the entire work, 0,900*l.*; Smith, Finlayson, & Co., Westminster, for the entire work, 890,000*l.*; Furness, for the entire work, 973,000*l.*; and Jameson, Wilson, & Co., for contract No. 1, 392,026*l.* The highest tender, or we may say tenders, reach to nearly a million, and the lowest to three-quarters of that sum. The lowest is more than double what the corporation expected would be the amount.

The projected main drainage works of Dublin have been determined on for several years, and the amount of progress made might almost be written down as *nil*. As soon as the model corporation of the British empire made the recent discovery, through their main drainage committee, they came to the following resolution:—

"That in the opinion of the committee these tenders, the lowest of which is very nearly three times the estimate, are so excessive, and beyond the capacity of the citizens to bear, that we make a special report to the Council; but, before doing so, we call on the engineers to make such reports as they may think fit in explanation of the extraordinary cost."

The upshot most likely will be, the adjournment of the work *sine die*.

The engineers will, of course, report to the committee; and the Main Drainage Committee will report again, and all concerned will keep on reporting, and the ratepayers will have occasion to report, in view of an increase of taxation; but the most serious report of all will be most likely be the mortality report in the Registrar-General's returns.

THE CHESTER WORKHOUSE COMPETITION.

We continue to receive letters of complaint on this matter, but cannot give them space. Messrs. Nelson, of Leeds, authors of "Alpha," urge with some justice that "the building committee by obtaining the specifications from the authors of 'Castrum' about a month or five weeks after they had got those of 'Alpha,' gave the authors of 'Castrum' an opportunity of getting to know on what grounds the Board applied to them for a specification after having already obtained and examined a specification from the authors of 'Alpha,' and thus placed the specification first obtained by the Board at a very great disadvantage." The author of the design marked "Simplicity" has sent a protest to the Board, as might naturally be expected.

ACCIDENTS.

Fall of Three Houses at Abergavenny.—A portion of three large houses, recently erected in Frogmore-street, have fallen. Luckily there were only the foreman, a mason, and two lads, at work on the building. They fell, but were fortunately extricated without any serious injury. The portion of the building which fell was made of concrete, and it is thought that it had not become sufficiently cemented, and from rain must have got loose in the body. The builder, Mr. White, has thus incurred a loss of over 500*l.*

Accident on a Railway Embankment at Portsmouth Dockyard Extension Works.—A temporary line of rails has been constructed across the entrance from the steam basin to the floating basin at a height of about 25 ft. It is to be used for the conveyance of material from one side of the basin to the other, is about 100 yards in length, and is supported by wooden piles with iron girders, with the exception of some 30 ft. from one side of the embankment. The line has never before been used, and a question will necessarily arise as to the right of the men employed at the works to use it until it had been properly tested and certified. A train, consisting of an engine and five trucks, loaded with earth, backed on to the line, passing safely over that portion which was properly supported, but when about 15 ft. from the side of the embankment, and on that part beneath which there were neither timbers nor girding, the line suddenly gave way. Two of the trucks, which, with their contents, weighed about five tons each, fell with it, and dragged the other three trucks with the engine. Four men were on the driving-box of the engine, two of whom either jumped or were thrown on one side, and so escaped with serious injuries. The engine-driver and the rope-runner, however, fell beneath the engine, and were so frightfully injured that when removed from the *débris* they were quite dead.

Fall of a Platform at Hanley.—At a corner-stone laying ceremony at Hanley, in the Potteries, a platform, upon which were a number of ministers and others, fell to the ground. It was 3 ft. high, erected against the wall of the chapel for the Welsh Presbyterians. While the Rev. J. Hughes, of the Established Church, was speaking, the platform went down with a crash. The Mayor of Hanley and several ministers fell, but not to the ground. Fortunately no person sustained injury beyond a shaking.

FOREWARNED, FOREARMED.

"An important minute has just been issued by the medical officer of the Local Government Board, calling attention to the march of the Asiatic cholera towards our shores, and containing suggestions as to the sanitary precautions incumbent upon us in the contemplation of such a calamity."—*Builder*, July 19, 1873.

How to escape the foul disease
That is surely travelling o'er the seas,
  Is a thought for men to ponder;
Once planted, forsooth,—the foul plague-spot,—
Conditions of life are heeded not,
  And the world looks on in wonder.

In wonder, aghast! and pain and woe,
To see the rich with the poor laid low—
  The West with the East-ender;
And to feel that the curse which thus begins
To punish Society for its sins,
  Is from God—that He is the sender.

Stir! stir! There is work for all to do,—
The thriving many, the pampered few,
  And the heads of the State,—don't doubt it,—
If they can but act with resolute will
To check the dominant growth of ill,
  In order to utterly rout it.

There are lepers and lazars about the town,
Dragging humanity down and down,
  To a lower and lower condition;
And they may not be cured by virtuous freaks
Of vestries, or bigots, or dreamers, or "beaks,"
  In however high a position.

There are sewers to cleanse and lands to drain,—
An incubus now upon health and brain,—
  And fields to be sown for the reaping;
And refuse to clear and hovels to raze,
Where men never see the light of the days,
  Like vermin in darkness creeping.

There are shoeless urchins, and dirt-grimed swarms,
Endowed with graces might rival the charms
  Of many a titled beauty,
That a little Christianly thought could save
From fell disease, and an early grave,
  If Society did its duty.

Oh, yes; there is work to be done, God knows!
In diminishing human ills and woes,
  But the "hands" are few in number;
It is so much more pleasant to loll at one's ease,—
To herd with the drones, than strive with the bees,—
  In semi-unconscious slumber.

Infatuate dullards! Soon or late
A wail on the air, a blast at the gate,
  Will scatter your pillow of roses;
And the heaving rocks move to and fro,
And the pent-up waters gush and flow,
  But not at the touch of Moses:

They will come when least dreamt of with tumult and roar,
To wither your hopes, and surge round your door,
  In the hour of your pleasure and riot;
And, the prophets despised that came to warn,
There'll be gnashing of teeth on that fatal morn
  Of the Lord's avenging fiat!

G. LINNÆUS BANKS.

SCHOOL BOARDS.

London.—Mr. C. Reed, M.P., on a former report of the Works Committee, moved:—

"That a sum of 100 guineas (in addition to the usual commission) be paid to Mr. M. P. Manning, the architect for the Cottage-row (Bermondsey) School, for the extra labour involved in replanning the school."

He explained the circumstances which had involved the extra work; and the resolution was then agreed to. Mr. Reed then brought up a report of the Works Committee, which was received, and which contained thefollowing as to opening of permanent schools:—

Contracts.—On the 13th of November last, the Board accepted the tender of Mr. John High, amounting to 8,995*l.*, for the erection of the Old Castle-street (Whitechapel) School. Acting under the resolution of the Board of the 6th of November last, the committee have since sanctioned extras on the contract, amounting to 168*l.* 1s. 9d., and they now recommend that the orders for these extras be confirmed by the Board:—

Accommodation of School	1,272				
Total cost of site	£11,683	0	2 =	£9	3 9 per head,
,, building	9,163	1	9 =	7	4 0 ,,

On the 28th of March last the Board accepted the tender of Mr. W. Higgs, amounting to 358*l.* 10s., for the erection of a wood and iron building on land adjoining the Harwood-road (Fulham) site. Extras have been sanctioned by the committee, amounting to 33*l.* 15s., for strengthening the structure with iron ties, and also for extra foundations, which were necessary in order to make the building secure. The committee recommend that these orders for extras be confirmed by the Board. [The recommendations were agreed to.]

Tenders.—The Works Committee invited tenders for the erection of a school to provide accommodation for 822 children, on the site in Bell-street, Marylebone. The following were the respective amounts: W. Wigmore, 7,869*l.*; G. S. S. Williams & Son, 7,858*l.*; G. S. Pritchard, 7,829*l.*; T. Niblett & Son, 7,804*l.*; J. Grover, 7,715; Scrivener & White, 7,675*l.*; W. H. & J. Messenbridge, 7,570*l.*; Aitchison & Walker, 7,565*l.* The committee considered it desirable to make certain alterations in the plans of this school, which will reduce the cost of the building by 1,405*l.*, and an amended tender has now been obtained from Messrs. Aitchison & Walker, of Portland-yard, St. John's-wood, N.W., amounting to 6,160*l.*, which the committee recommend the Board to accept. [Cost of all interests, 8,479*l.* 8s. 9d.; cost of building per head, 7*l.* 15s. 4d.]

Ipswich.—Mr. Westhorp said the committee as to the St. Mary Elms School had examined the plans and specification. He was not quite satisfied with the elevation, but the committee had not conferred with the architect, as they were waiting for the return to Ipswich of the chairman, Mr. Ransome. The matter stood over. A certificate that 53*l.* 19s. 3d. was due on the Trinity School was presented by the architect, Mr. Hubert, at the last meeting; Mr. Cowell, who had examined the bills, &c., moved that that amount be paid to Mr. Cunnold, the contractor: carried. There now remains due on the school 39*l.* It was also resolved that Mr. Hubert's commission, amounting to 37*l.* 7 s. should be paid.

Carlisle.—The plans committee reported that they met the architect on the 7th inst., and instructed him to reduce as far as possible the cost of the proposed new schools by changing the material to be used and altering the elevation. It appeared that the total cost might be so reduced as to be about 3,000*l.* The architect also suggested that if the committee desired to reduce the cost still further, they might build of concrete instead of brick. The committee then instructed him to examine buildings of this kind at Workington, and to report to this meeting of the Board. Mr. Birkett presented the following report:—

"Gentlemen,—By your request I inspected some concrete buildings in Workington yesterday. The walls of this material can be made very thin, and if properly executed are perfectly watertight, and of exceedingly sound construction. The price is about the same as brickwork, but as less material may be used (1 ft. thick of concrete being as serviceable in a wall as 1 ft. 6 in. of brick, and no stone heads, sills, arches, or other dressings being required), I roughly estimate, not having had time to go carefully into the cost, that a saving of 450*l.* or 550*l.* might be effected by using this material, over and above my reduced estimate. I do not, however, think the appearance of these buildings good, they have an unconstructive, cast appearance which is displeasing to me. I should certainly prefer a brick building, which I think would also (except for cost) be more satisfactory to the public. If, however, on account of the excessive price of other building material, and of the difficulty of obtaining skilled workmen, you think it desirable to build with concrete, I shall have no difficulty in at once carrying out the work.—I am, Gentlemen, your obedient servant,

DANIEL BIRKETT.

In reply to members the clerk said that the original price, according to the tender, would be 4,450*l.*, and the first reductions made by the architect amounted to 1,431*l.*, leaving the cost about 3,000*l.* After a brief conversation it was decided to consider the items of reduction in detail. First was the substitution of machine-made red brick in the interior for white fire-brick. This reduction was viewed with favour, and its consideration raised the question whether brick or concrete should be the material used in

building. Mr. Hannah expressed himself in favour of concrete, cemented with Portland cement and painted. Both Mr. James and Canon Prescott objected to concrete, both on account of the annual expenditure which would be required, the inferior appearance which the school would have, and the undurable nature of the material. After some discussion it was decided that the whole matter should be considered in committee.

Caldbeck.—A letter from the Education Department was read, approving of the sites of the Caldbeck, Hesket-new-Market, and Fellside Schools. It was resolved to advertise for plans for the respective schools. Steps were ordered to be taken for the purchase of the Fellside School site. The other sites are free, owing to their being portions of the common and waste lands belonging to the parish.

OPENING OF NORTHAMPTON CATTLE-MARKET.

THE new Cattle-Market and the Exhibition of Leather Work, in the new hall already described, have both been opened by the Right Hon. George Ward Hunt, M.P.

The day was observed very much as a holiday among the workpeople of the town, and the local *Mercury* and *Herald* give lengthened reports of the proceedings.

The principal entrance to the market is between two lodges on the north side, the one for offices, and the other as a residence for a market attendant. Between these are two sliding gateways, each 20 ft. long, divided in the centre by a large pier, which is surmounted by a gas-standard. Inside, to the right, on the west side, are the covered pig-market and large beast-sheds, and behind these, close to the boundary-wall, are the horse-stand and horse-run. The extreme left side, to the east, is wholly occupied with sheds for beasts. In the open area are the pens for beasts and sheep; roads run from north to south and from east to west. A central object is a large fountain, and behind it, in a straight line, is the entrance-tent of the Leather-Work Exhibition, the building for which extends from east to west of the inclosure. The exact area of the market is five acres. The ordinary level of the land has been raised between 3 ft. and 4 ft., and surfaced to form a foundation for the pavement, with local stone and sand. All the roads have been made in a durable manner. On the 9-in. covering of local stone, courses of stone and slag were laid; then a course of Hartshill granite, and finally of gravel. For the ground-work of the pens asphalte was intended to be used, but its durability was questioned, and blue bricks were substituted. They are bedded in mortar and grouted in Portland cement; in the sheep-pens they are laid flat, and in the beast-pens on edge, of a herring-bone pattern. The pig-market is paved the same as the sheep-pens. The ironwork of the sheep-pens is bedded in York stone. They are 2 ft. 8 in. high, and are of two different sizes, two-thirds of the entire number being 10 ft. by 9 in., and the remainder 18 ft. by 10 in. They occupy a total space of 128 ft. by 90 ft., are divided into 244 pens, and afford accommodation for 5,280 animals. The ironwork of the beast-pens is of course of a much stouter description. The main pillars are 4 ft. 8 in. high, and the size of the pens 18 ft. square, and 18 ft. by 12 ft. They occupy a total space of 144 ft. by 76 ft., are divided into seventy-two pens, and will accommodate 1,296 head of cattle. The pig market is 208 ft. by 30 ft., and is divided into forty pens of similar construction as those for sheep, and gives space for 500 pigs. There are a number of sheds for beasts and horses on the east and west sides, averaging 35 ft. by 16 ft., and 35 ft. by 12 ft. respectively. The beast-sheds will accommodate about 150 animals, and the horse-sheds between fifty and sixty. Loose horse-boxes are also provided at each corner of the market. The horse-run on the west side, behind the pig-market, is 382 ft. by 62 ft. It was pitched first of all with local stone 9 in. thick; then followed 3 in. of broken stone, a quantity of slag, and topped with 3 in. of sharp gravel. The horse-tie, 304 ft. long, is fixed on the west boundary wall; the standing place between it and the run is 12 ft. wide, and is pitched with 4-in. granite cubes. In the centre of the market is the large fountain, which is constructed of Mansfield stone, with red granite polished columns. It stands 9 ft. high, and will throw a jet to an altitude of between 15 ft. and 20 ft. Six of Macfarlane's self-acting drinking troughs, from 25 ft. to 30 ft. long, are also to be placed at different points of the markets. Gas is laid in, posts for lamps having been fixed both in the open and covered markets. Besides the entrance at the north, there are also entrances from the east and west. Within the inclosure there are five acres, but the market proper does not quite cover the whole, as the space at the southern extremity, on which the Exhibition building stands, about a fourth or fifth of the total area, has been left for future appropriation if required. The surveyor, Mr. E. F. Law, prepared the plans for the construction of the market. The tenders for the construction were as follows:—Messrs. Halliday & Cave, Greetham, Oakham, 15,800*l.*; Richard Dunkley, Blisworth, 11,444*l.*; Edmund Roberts, Weedon, 12,550*l.* 14s.; Lawrence D. Moore, Harpur-street, Bedford, 13,670*l.*; John Watkin, St. George's-street, Northampton, 11,770*l.*; T. & R. Cosford, Northampton, 12,600*l.* Mr. Dunkley's tender was chosen. Previously eight tenders were received for making the new roads and iron fences, and the lowest, Mr. R. Dunkley's, at 2,444*l.*, was accepted, on condition that that portion of the road marked on the plan "not to be constructed" be made by Mr. Dunkley at any time, if required, at the same ratio of prices as the other roads included in the tender. The market is finished according to the original plan, the only departure from it being the substitution of blue bricks for the pavement instead of asphalte.

ARCHITECTURAL EXAMINATIONS.

AT the last meeting of the Institute of British Architects, the secretary stated that, of the twenty candidates who had presented themselves for examination in the proficiency and preliminary classes of the architectural examination, the following gentlemen had passed, viz.:—

In the Proficiency Examination (Artistic Section), H. G. McLachlan, F. P. Johnson, H. H. Stannus, and J. W. Rounthwaite. (Scientific Section),—Josiah Conder, F. P. Johnson, H. H. Stannus, and J. W. Rounthwaite.

In the Preliminary Examination,—W. C. Field, H. Branch, John Cowell, C. T. Holmes, H. M. Mavor, W. W. Roberts, R. T. Conder, H. W. Moore, W. J. N. Millard, H. R. Perry, L. T. Waller, and W. S. Jackson.

PROJECTED PIERCING OF MONTMARTRE.

RESIDENTS in Paris, making mountains of most of their mole-hills, after the approved Chauvin fashion, have long been in the habit of regarding the steep north-western slope of Montmartre as a very perilous precipice indeed, albeit, the declivity is in reality far less abrupt than was that of Holborn-hill. Many schemes have been at different times set on foot for piercing the miniature Cenis. The Communist Wedel, shot at Satory, had spent his life perfecting a plan, according to which the railroad was to have for points of departure the square Montholon, pass under the *butte* Montmartre, and abut on the Bois de Boulogne. Another project, framed by the committees of the ninth and eighteenth arrondissements, consists in the establishment of a line which shall commence at the Place Pigalle, plunging under the *butte*, after a few hundred yards, and terminate in the centre of the plain of Clignancourt. The advantage of this latter scheme is that it could be realised in a shorter time and at less expense than the first. There is yet another project, elaborated by M. Baudier, C.E., and for the adoption of which the Montmartre quarter is now petitioning. The line would commence at the lower level of the Rue du Martyrs, and the station would be established in the Rue Lebas, whence the tunnel would extend under the whole length of the Montmartre slope to appear on the other side beyond Clignancourt Church, and thence continue to St. Ouen. Communications in this quarter of Paris are scarce and primitive, and it is expected that the Municipal Council will not decline to do something for so democratic a quarter. Some of the narrow streets built on the side of the *butte* would disgrace the worst part of a third-rate fishing town.

Hambledon.—The schools at Frieth, in the parish of Hambledon, Bucks, have just been considerably enlarged and improved, under the directions of Mr. H. Lovegrove, of London. Mr. T. Corby, of Great Marlow, was the builder.

A VISIT TO THE SCHOOL BOARD SCHOOLS AT DEPTFORD.

THE London School Board had not been many months elected before mutterings both loud and deep were heard because of their alleged do-nothing policy. Reports of their discussions were palpable enough in the newspapers, but there were no signs for a time of schools being built, or of the children that needed the interposition of the Board being sent to school. We will not ask now whether this impatience was reasonable. The Board had a great work before them, and considered it necessary to bestow thought and care upon the foundation of their work. These preliminaries disposed of, the Board has entered, after due inquiry as to the most desirable sites, &c., upon the important work of providing the additional school accommodation required in the various educational divisions within the scope of the London Board. These divisions are ten in number, the operations in which are directed, under the supervision of the Board, by as many divisional committees. The ten divisions are further subdivided into sub-districts, and, ultimately, into 450 blocks. There are now in progress, under the orders of the London School Board, 73 new school-buildings, for the accommodation of 100,600 scholars. The divisional committees have in their employment 117 visitors to carry out the purposes of the Act.

The School Board division of Greenwich is much more extensive in area and population than even the far-reaching Parliamentary borough. The educational division extends from the Thames on the north, to Penge, Sydenham, and Eltham, on the south, and from Hatcham, on the west, to Plumstead, on the east. The complete division is, for administrative purposes, parcelled out into five subdivisions. One of these, the western, to which the following notes mainly refer, embraces the town of Deptford, and the districts of New Cross and Hatcham. For the Greenwich division there are ten visitors employed; three of these are engaged in the western subdivision exclusively. This subdivision is further separated into nine blocks, duly set out upon the London Board's office maps.

The following, according to the educational census, taken under the direction of the London School Board, are some of the principal facts bearing upon the additional elementary school accommodation required for the ten divisions comprised in the London School district. The total number of children in the district from three to thirteen years of age is 681,101; of these that are not attending school, there are 176,014, and that have not valid excuses for not attending, there are 60,940; half of the children represented to be at work, or 19,099, should be at school; the total number requiring accommodation is computed at 478,718; there is existing and projected accommodation for 350,920 children, and it is proposed to provide schools for 100,600 additional, or for 451,520 in all. In some subdivisions there is an excess of school accommodation that is not available for the adjoining subdivisions in which there are deficiencies, more or less. The City of London division is the only one of the ten that has an aggregate excess of accommodation (for 1,418), in all the subdivisions, taken together. Notwithstanding this it is thought desirable, the distribution being unequal, to provide accommodation for 500 additional children in the City of London division.

In the Greenwich division there are 52,327 children from three to thirteen. Of these 10,767 are attending schools at which the fees are at the rate of 9d. per week or upwards; 1,196 are attending public institutions, 40,358 require accommodation in elementary schools; 29,320 are attending such schools, and 11,028 are not attending; after deduction of those who are ill, disabled, too young (that is under five years of age), working, or in the country, there is a residue of about 4,000 who are not attending school through neglect or inability of parents or guardians. It is proposed to provide additional accommodation in the Greenwich division for 6,650 children.

The School Board has now been fairly at work in the western subdivision for twelve months past. In a general way the Board schools are each of a triplicate character, the three divisions being respectively for boys, girls, and infants and babies, the last class being of children from three to five years of age. On reaching the age of five years the babies are promoted, and become "infants." On attaining the age of

gen years, they are again promoted, and arated into "boys" and "girls," and taught reafter, classified, according to their respective es, and to their attainments and capabilities.

The Board has now established in the western Deptford subdivision three of these complete mentary schools, and has either already built, resolved to build, five school-houses for the ommodation and instruction of the boys, s, infants and babies, they have already thered together, and that may hereafter seek mission, or be required, under the provisions of Act, to attend school. Two of the new ool-houses are roofed in, and will be ready occupation in a few weeks; another, at nder-street, Hatcham, is progressing; at ghes's-fields the foundations of another have n laid; and the arrangements for the erection chools at Tanner's-hill, Wotton-road, and in er localities, are in a forward state. These ools, supplemented by the existing school ommodation, having *efficient* public, denominal, and private schools only in view, will, it xpected, suffice for the educational wants of ptford, New Cross, and Hatcham, for a few rs to come.

n the beginning the School Board has comnced the organisation of schools in anticipation the erection of suitable buildings, and have ed wisely in hiring, temporarily, the most able premises available for the commencet of real work, waiving for a time the *sine non*, under Article 51A of the Government ucation Department, that each child should e 8 square feet of floor space, and a minimum 80 cubical feet of space. These proper uirements the Board is hastening to provide, if the new buildings now so near completion he Deptford, or western, subdistrict of the enwich division, are a fair sample of others, s satisfactory to be able to state that a ral allowance of floor, and certainly of cubical ce, is to be provided for the children in the v elementary schools.

One of the new schools in the western subision is in the Creek-road, Deptford, and is first, we believe, that will be opened that is t from the designs of Mr. E. R. Robson, hitect to the London School Board. Messrs. ke & Green, of Southwark, are the conctors, and the cost will be somewhere about 00*l*. The style is intended to harmonise with sting buildings, and structures that have disoeared that formerly abounded near the river e of Deptford, that were erected about the ie of Queen Anne. External appearance or siderations of style have not, however, been owed to hamper or interfere in any way with venience or accommodation. The principal ade, 90 ft. in length, faces the Creek-road to north; the buildings also include a side g, with an east front, 150 ft. in length from Creek-road front. The south and west sides the school grounds are inclosed by boundaryls, the space between such walls and the ool buildings, 128 ft. long by 63 ft. 6 in. le, being devoted to separate playgrounds, tions of which are in each case covered, for s, girls, infants, and babies. The playgrounds also supplied with cap and cloak rooms, .s, and lavatories, for each class. The accomdation provided is for 210 boys, 210 girls, and infants and babies. The principal build-, fronting Creek-road, has the boys' covered yground on the ground floor, communicating arched openings with the open-air playund. The first floor contains the boys' oolroom, 56 ft. 5 in. by 22 ft., and two senior ssrooms, 24 ft. 6 in. by 22 ft., and 22 ft. by ft. 6 in. The accommodation for girls on the ond floor is precisely similar in extent. On ground floor there are towards the north nt a living-room and bedroom, with other veniences, for the care-taker, and a mana-'s-room. Behind these, in the side wing, are babies'-room, for children from three to five ars of age, 30 ft. by 26 ft. 6 in.; next to it infants' schoolroom, 40 ft. by 26 ft. 6 in.; d beyond that an infants' classroom, about ft. 6 in. square. The infants and babies will altogether on the ground floor, which will laid with wooden blocks, 4 in. square, and ood up, upon concrete. The boys' entrance is om the principal north front, and the girls' d infants' entrances, each separate, are from east front. The rooms are fitted with yd's patent ventilators, that operate by the at of the stove. The vitiated air is carried by separate flue and discharged from an iron ating under the neck of the chimney-stacks. e buildings are not pretentious in ornamentation, but are sightly and substantial, built of good stock brick relieved with picked red brick. The principal front has double ogee gables, and an appropriate cornice is carried round between its first and second floors. The roof is relieved by dormer windows at the front and tympanum windows on the inner side.

The children of each class may be said to be already collected and under instruction, that are to occupy these spacious rooms. In two of the classes,—boys and girls,—the full complement are ready, and in the class of infants a good nucleus. Mr. Richmond, an efficient School Board master, with an assistant and five pupil teachers, is now conducting, with much success, a boys' Board school that occupies temporarily the schoolrooms connected with the Congregational Church, High-street, Deptford. This may be called a "first-class" school, the maximum fees of 3d. and 4d. per week being paid. There are 270 boys on the books, and no room for any more in the premises now occupied. The average attendance is more than sufficient for the full occupation of the boys' portion of the new premises. Miss Baird, an accomplished trained teacher, from Dundee, assisted by four pupil teachers, conducts a board school for the girls that are to be transferred to the new building in Creek-road. Applicants for admission to this school have to be sent away every week, from inability to accommodate them in the "Alliance Hall." A number of the girls are taught in the rooms of an adjacent private house, that are, in a sanitary point of view, totally unsuited to the purpose. There are 216 scholars on the books; the fees are 2d. and 3d. per week, books being also provided by the Board in this as in all the other Board schools. Miss Baird will nearly, if not quite, fill her rooms in the new building from its opening. The remaining school from which the children will be transferred to Creek-road, is the infants' school and babies' nursery, as it may properly be called, under the able direction of Miss Gray, assisted by four pupil teachers. The temporary premises occupied by this school were the dancing and retiring-rooms of an old public-house in Copperas-lane. Miss Gray's present premises are totally inadequate for the accommodation of the children for whom admission is asked. She has 187 on the books, and an average attendance of 148, which is higher than in some of the other schools.

Of an entirely different class to any of the schools referred to, and the most important and interesting of any school established in the western subdivision of Greenwich is that opened for boys, in Hales-street, High-street, Deptford. The temporary premises occupied are in close proximity to some of the most disreputable quarters, and the lowest class of the population of the town. The school is kept in a large, grim-looking room, with its floor about 4 ft. below the street level. The first lessee is Ned Wright, the converted burglar, who holds religious services, and conducts a Sunday school in the room. The permanent home of the Board school for this special class of both boys and girls will probably be in the new buildings in Hughes's-fields. There are 184 boys on the books, ont of whom an average attendance of 106 is obtained. The most slender attendances are on Monday—the pence day—and Friday. The fee is one penny per week. The boys are of the street Arab, gutter children, unmistakably worse than neglected class. The school opened with 82 boys, of whom only nine knew their letters. Anyone who saw those 82 boys, every one poorly clad, some nearly naked, most of them bare-headed, bare-footed, unkempt, and dirty, when they were admitted, might have been tempted to use the despairing apostrophe:—

> "Can hope look forward to a manhood raised
> On such foundations?"

Anyone visiting the school now will answer the inquiry by a confident affirmative. Mr. Runciman, the master, is a fine young Scotsman, who has utterly lost his native accent, full of life, zeal, and energy, "to the manner born" for the important work he has in hand. In less than six months he has brought on many of these poor boys from learning their letters to reading with expression, writing neatly, casting out bills of parcels quickly and correctly, singing sweetly, with light and shade well marked, and to other humanising and civilising attainments. This school is, in fact, the beginning of the work of civilisation among the class of children that attend it. The School Board has no better work to do anywhere than here, and nowhere have they more hopeful and impressible material upon which to operate than here. This class of boys is, indeed, almost preternaturally acute, and remind one of the declarations of the overlookers at the Chatham Dockyard,—"We can make clever skilled labourers of these men (the convicts), in half the time we could of the men who never go wrong." At the *first* lesson in drill that they received from Sergeant-Major Sheffield, the Board's drill instructor, out of above 100 boys there were not half a dozen that either provoked the order to "fall out" for misconduct, or to be relegated to an awkward squad for clumsiness. With the greatest alacrity and precision they took open order in four files, the "front rank man" "covering" the three behind him. First movement, as you were; second movement, attention; stand at ease; and other changes were gone through with rapidity and neatness, the sergeant acting as fugleman.

Visitors to the Hales-street School, or others of its class, will have little difficulty in making up their minds on the moot point as to free schools or fees. Both classes of school are needed in a complete system. A great majority of the scholars in the ordinary Board schools are *not* of the neglected class. They have, for the greater part, been drawn from private, and some from public, schools, many of such schools being inefficient alike in accommodation and teaching. The Board is improving greatly, indisputably, the general character and efficiency of elementary instruction, but very many of the scholars that have been brought together in their schools are manifestly, from their appearance, the children of parents in fairly comfortable circumstances, who live in cleanly homes, and are surrounded by wholesome family influences. It would be riding the principle of human equality to death to insist upon the Board schools being "common" to all classes, or to contend that the children of either sex that belong to the class taught at Hales-street School should be drafted into the ordinary Board schools. The class is special, and demands, we venture to think, special treatment, in separate *free* schools. The association of such children with the other classes referred to, mere instinct pronounces most unbefitting.

The question of fees and arrears of fees, is not in a satisfactory state in the Deptford, any more than in other of the school districts. Masters and mistresses are forbidden to allow arrears of fees, and when they do permit arrears, they do so at their own risk. Some of them who have their hearts thoroughly in their work, and have faith in the parents that they will make the arrears good, do take upon themselves the risk, and also take in children under three years of age, on the generous and humane consideration that one or other of the elder children in a family could not attend school unless they were allowed to bring the younger with them. The ordinary or legal mode of dealing with children whose school pence are not paid is to send the child home on the second week. The Board visitor finds the child at home, and it may be that a summons issues against the parent for not sending the child to school. The child may be sent back, and the same process be gone through *ad infinitum*, unless the Board exercises the powers conferred by the much-vexed 25th section, of remitting fees, or the powers conferred by the 26th section of providing free schools.

The other Deptford school erected by the London Board is a Gothic structure, from the designs of Messrs. Elliot & Warren, of Westminster. Mr. W. Shepherd, of Bermondsey, is contractor for this school; and Mr. Nicol is clerk of the works to the Board for it, and also for the Creek-road school. This school will accommodate the western part of Deptford, and a portion of the New Cross district. The principal front is to the east, and faces, at a short distance from it, the North Kent railway, near the entrance to the New Cross Station. Here, as at Creek-road, the accommodation for boys and girls is precisely similar. Their rooms are situated in the principal block of the building, the boys on the first, and the girls on the second floor. The infants' and babies' rooms are on the ground floor, in a back wing running along Edward-street, to a point near its junction with Woodpecker-road. The boys and girls have each a principal school-room in the centre, 38 ft. 4½ in. by 21 ft. 6 in., and two class-rooms at the ends, one 37 ft. 3 in. by 20 ft., the other 27 ft. 3 in. by 20 ft. The infants' school-room is 60 ft. by 38 ft., with a class-room 28 ft. by 18 ft. The babies'-room is 28 ft. by 18 ft., and communicates with the large room of the infants' school. The covered playground of the boys

✠

occupies the ground floor of the main building, and is 10 ft. 6 in. in height; the boys' rooms are 16 ft. 6 in. from floor to ceiling, and the girls' 15 ft. The different classes of school are well supplied with lavatories, cloak and cap rooms, and other necessary conveniences, and spacious covered and open playgrounds are provided separately, one for the boys, the other for girls and infants together. The principal front is agreeably relieved by the two staircases which project from the front; the boys' staircase, to the west, is in a rectangular tower, the girls' staircase has an oriel front; each is covered with a high-pitched roof, with metal finials. The front has some very good ornamental brickwork, in dog's-tooth cornice, tartan panels, and friezes, in which quatrefoil panels of freestone are introduced. A cast-iron eave gutter is moulded, and does duty effectively as part of the cornice. The head master and manager have rooms in the western wing.

The teachers and scholars that are to take possession of this building also in the course of next month are now at work in the vicinity in temporary premises. The boys' and girls' schools are carried on at present in the large room under the new Wesleyan chapel in New Cross-road. Mr. Collins, the indefatigable and accomplished master of the boys' school, will have occasion, on the day he takes possession of the new school, to write upon the lintel, as is done upon the Paris omnibuses when they are full, "*complet*." He has 350 scholars upon his books now, and an average attendance of upwards of 250, which will fill all the three rooms. Many of his scholars, however, come from the directions of Old Kent-road, Hatcham, and Peckham, and if the new Board school in progress at Hatcham achieves anything like the reputation that Mr. Collins's school has done, the pressure upon him may be somewhat relieved. He has an assistant-master and six pupil teachers. The fees are 2d. and 3d. per week, in this and the adjoining girls' school, which is under the management of a very zealous, persevering, and painstaking young lady, Miss Simpson, who hails from as far north as Morayshire. At present, Miss Simpson, like Mr. Collins, is "cabined, cribbed, confined," and, in the new premises, will have her discomforts greatly diminished, and be surrounded by circumstances much more conducive to success in her work. Miss Simpson has 250 scholars on the books, and an average attendance of 160. She has the help of an assistant-mistress and four pupil-teachers. The third division of the new school, the infants and babies, is at present located in an erection close to the entrance to the new schools from Woodpecker-road. This school occupies the most suitable of any of the temporary premises that we have seen. The rooms are light and airy (they were put up for a wire-worker), but have the disadvantage of a thin front wall, and too much glass, which make them cold in winter. One of the rooms is, moreover, on an upper floor, which is, a serious disadvantage in premises occupied by infants and babies. Miss Young, the clever head of this department, will, doubtless, be very pleased in removing her interesting charge to more eligible premises, and in being able to admit the little applicants whom she has now to reject most unwillingly, from want of space to accommodate them. Miss Young has 250 children on her books, and an average attendance of 160. She has the assistance of four pupil teachers. The fees are 1d. per week.

From a tour of inspection and inquiry, and the collection of much trustworthy evidence, we have excellent reasons for believing that in Deptford the London School Board are doing some good work, wisely and well.

POSITION AND PROGRESS OF ARCHITECTURE.

Now there is a lull in the storm of adverse criticism so recently directed against English architects and architecture in some sections of the periodical press, it seems desirable to endeavour to present a fair and unbiassed view of the matter, such as can be freely accepted by all not determined to abide by foregone conclusions.

It is difficult to arrive at the motives which have actuated these attacks, the special features of which are well known to readers of the *Builder*. Nothing new has been said, but what in a less perverted and less exaggerated form, and in a friendly generous spirit, might have been welcomed as a contribution to a better order of things; but what *has* marked these criticisms throughout, has been an offensiveness and hostility which, in their persistence, might almost have deen deemed organised, their chief object appearing to be the desire to create opprobrium in the public mind against a profession upon which the dignity of a country so much depends as represented by its architecture. The at all times easy task of fault-finding and ultra-criticism seems to have been one quite *con amore*, and accomplished with great zeal and satisfaction; but what has been the gain to English art thereby it would be difficult to decide. Indeed, we shall not be going too far in saying that, but for the usual result of all overstated cases in failing to produce the impression intended, the one conviction *sought* to be produced was that English art, as seen in its architecture (though other branches have not been spared) had reached a point of "degradation" and effeteness which indicated that the time had arrived to write "*delenda est*." We leave, however, these critics for the more immediate purpose of this article, with the one remark, that in nothing is the unfairness and want of generosity in their motives more seen than in the fact that the numerous rejoinders to which architects have from time to time addressed themselves, as seen so abundantly in the pages of the *Builder*, have been wholly ignored!

What, then, are the *real* facts of the case as to the present status of architectural art in England, and the past conditions which have produced it. The question is not whether modern English architecture has failed to reach a point satisfying the highest expectations, and equal to the art-excellence of past periods, but whether, looking at the steps of its development, it has been equal to the opportunities presented. Historically, it must be remembered that our modern architecture dates its growth from a period of almost absolute dearth of true art in England, and cannot even yet be said to have had a half-century's existence. The reign of George IV. witnessed the first attempt at the "revivals" by which architecture in England has since been chiefly characterised. The actual study of ancient Classic remains, and the publication of Stuart & Revett's "Athens" gave the impetus to an attempt at a genuine "Classical revival," which for purity of spirit and the love and reverence manifested for Greek art of the purest type, and not as given to us through Roman and Renaissance forms, gave a promise which it is greatly be regretted,—looking at the ability and genius it evoked in minds of the finest temper,—was not encouraged to its due fulfilment either as to architecture or sculpture. Then came the "Gothic revival," which, with far more vigorous and, in a sense, natural chances of adaptation and success, soon attained great hold, and has left an impress upon English art which cannot die out, but which cannot altogether be regarded as having solved all the problems demanded by modern, as contrasted with Mediæval, requirements. It cannot be denied, however, that these revivals have carried English art into many successful and beautiful results, such as had not for a long time appeared as products of native genius. A third movement may now be said to have taken place in what may be termed an "Eclectic revival," in which, while neither Classic nor Gothic forms,—pure and simple,—have ceased to compete for public favour, the vast extension of modern art-knowledge has brought about a possession of almost world-wide forms of art, which with astonishing and the most elastic adaptation have appeared in recent architecture; enough to puzzle the future archæologist as to our precise period in history, and much of which might be classed under the heading of "Curiosities of Architecture." Nevertheless, the fact remains that there has been a rapid growth in all art matters, and if results have not been altogether consistent and satisfactory, yet the causes for admiration and congratulation, looking at the circumstances of the case, far outweigh those of censure and dissatisfaction; and stagnation, much less retrogression, is the last charge that can be made. Under the conditions which have prevailed throughout these developments of modern English architecture the surprise is not that results are so *bad*, but so *good* as they are. Nor can it, we think, be safely contended that the architects of the present time are inferior to those of the previous generation now passing away, and if seemingly so, it is due rather to the ripening evils of a bad system, than any lack of ability; for in extended art knowledge, in the general level of accomplishments, in great facility of picturesque design, and in a decorative skill till recently all but untried, our architects, in the new buildings of all sorts which have sprung up in all parts of the country, have shown no falling off, but quite the reverse. And it may be added that in other parts of the world English architects have been to the fore, and more than held their own.

But our architects would be the last to affirm that past progress and results have been wholly satisfactory to the lover of art, or for the entire honour of the country, or that present tendencies are likely to prove more so. To none are the evils which have afflicted the development of their art so patent as to themselves: none are less anxious to avoid a healthy criticism, and none would more thoroughly welcome such changes in the whole system of art-culture as would promise riddance from influences which may be said to have choked much true art, and which have gone a long way in producing the failures which have attended our art-progress.

The unanimity which now marks the conclusions of thoughtful men in the profession as to the one thing needful to give architecture its true status among us is a hopeful sign that the movement cannot long be delayed in the right direction.

B.

LODGES, ROUSDON, DEVON.

IN our present number we give illustrations of two pairs of cottages, erected to form lodges at the east and west entrances to Rousdon, Devonshire, for Mr. H. W. Peek, M.P.

Each pair of cottages is arranged under one roof, covering the road and forming a shelter or gateway at each end of the grounds. The windows over the gateways command the approaches.

The rooms are large and the accommodation very complete. The walls of the lower story are of large flints (quarried on the estate), with Bath stone dressings. All the external woodwork is oak. The roofs are of red tiles, and the upper story is weather-tiled in the old English manner.

Mr. Moass, builder, of Exeter, has carried out the four lodges for 2,800*l*.

Messrs. George & Vaughan, the architects, have erected, at the cost of Mr. Peek, the parish church of St. Pancras, Rousdon, adjoining the site to be occupied by the mansion.

ST. MICHAEL'S BUILDINGS, CORNHILL.

THIS property belongs to the city of London Real Property Company. Some very old houses until recently, stood on the site on which this large block of buildings is now being erected. In excavating for the foundations, a very curious old crypt, and some Early Norman arcading were found, as mentioned by us at the time. There were also evidences of a very severe fire on the crowns of the old arches, and no doubt this must have been "the "great fire of London," as the building then being pulled down must have dated back to that period.

The new block of buildings has three fronts, the one represented in the accompanying engraving being in St. Michael's-alley, Cornhill. The other fronts are in Bell-yard and Corbett-court. They are in red Suffolk brick, with bands of blue Staffordshire bricks, and Portland stone, with terra-cotta cornices and dressings. The Corbett-court front is supported on piers of polished red and grey granite, and the Bell-yard front on piers of the same material, and massive iron columns. The building consists of two tiers of vaults formed of iron and brickwork, and four floors of offices, with housekeeper's rooms. Iron enters very largely into its construction, and the landings and passages are all of Yorkshire stone, carried on cast-iron ornamental bearers. The staircase is of ironwork, with handsome balustrade, and has stone treads, and is so constructed that each step can be taken off and replaced, without the slightest interruption to the traffic or derangement of the construction.

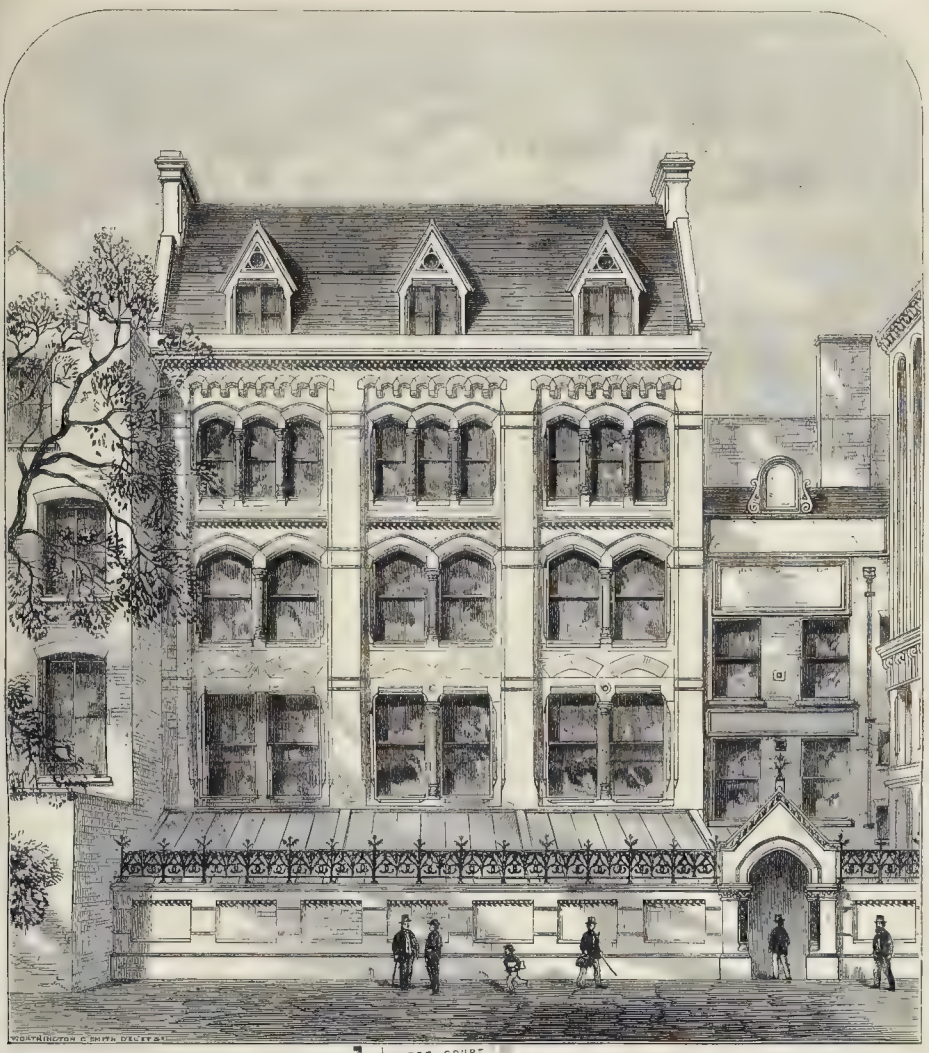
The building is being erected from the designs and under the superintendence of Mr. Edwin A. B. Crockett, at an estimated cost of about of 13,000*l*. The builders are Messrs. W. Henshaw & Co.; and the clerk of works is Mr. C. J. Jones.

Repaving Blackfriars-road.—The Metropolitan Board of Works have granted a loan of 3,000*l*. to the St. Saviour's Board of Works for the purpose of repaving Blackfriars-road.





LODGES, ROUSDON, DEVON. FOR MR. H. W. PEEK, M.P.—MESSRS. GEORGE & VAUGHAN, ARCHITECTS.





ST. MICHAEL'S BUILDINGS, CORNHILL.—MR. EDWIN A. B. CROCKETT, ARCHITECT.

COAL AND IRON IN AMERICA.*

In the later of the two volumes now before s, containing the third and fourth annual reports f the Geological Survey of Indiana, made during he years 1871 and 1872, Mr. Cox states in his ntroduction, as to the prosperity and rapid xtension of the mining and manufacturing ndustries of the state of Indiana, that districts hat were but yesterday covered by a primeval orest, or only broken here and there by the uiet pursuits of the husbandman, have been wakened by the whistle of the locomotive and he puffs of the stationary engine; coal-begrimed iners throng the streets of mining villages of a ear's growth, and the work of mining and ship- ing coal is pushed forward with an energy and eal that are unprecedented in the West, and far utstripping the hopes of the most sanguine ntilitarian.

The number of mines in the block coal region as greatly increased in all the counties, and he demand for coal is still greatly in excess of he supply.

The benefits derived from this invaluable ossil fuel are not confined alone to the limits of he coal-field, but by means of the numerous ailroads which penetrate its domain, all parts f the state, as well as the leading cities of the eighbouring states,—Chicago, St. Louis, Cin- nnati, and Louisville,—have their manufactures timulated by this most valuable of all minerals.

At the present rate of progress of mining in ndiana, a few more years will develope an end- ss chain of mines over the entire area of the oal-field from Warren county on the north to he Ohio river on the south, with a belt of blast- urnaces girdling the zone of block or iron- melting coal.

The old iron furnaces are all in blast, and naking good yields of iron.

An account of the manufacture of spiegeleisen, pecular or glittering iron, on the Bessemer rinciple, is given in the report, by Mr. Hugh Hartmann. Professor J. W. Foster, of Chicago, n letters on the new era "dawning upon the reat industrial resources and mineral wealth" f the state of Indiana (first published in the *New York Tribune*), gives, especially in his letter n "American Bessemer Steel Rails," dated hicago, 11th March, 1872, an explanation of he Bessemer process of steel-making.

In this comprehensive description of the simple process," Professor Foster says that the 0 or 15 per cent. of spiegeleisen which is llowed to flow into the mass of decarbonised on in the "convertor," is, up to the present me, mostly manufactured in Germany, and rought from there to Indiana.

Having been employed in that country during series of years with an Iron Works Company, pecially producing the above-mentioned kind of on, Mr. Hartmann gives an explanation of the anner in which the manufacturing of the piegeleisen is, at the present time, produced.

The spiegeleisen, specular or glittering iron, a pig metal which breaks into more or less rge mirror-like facets, and was formerly pro- uced by charcoal, out of manganiferous iron es, its singular peculiarity being due to the resence of 10 to 12 per cent. of manganese, on hich the Bessemer process depends for its uccess. The hot-blast furnaces were of small utlines, but always in splendid working con- ition. The stacks of the well-known Meisener tahlberg Iron Works, and others in that cinity, were built as follows:—

Total height of furnace	35 ft.
Height of tuyeres above bottom	1 ft. 3 in.
Height of hearth	5 ft.
Height of boshes	9 ft. 5 in.
Diameter of tunnel head	3 ft.
Diameter of boshes	9 ft.
Diameter of upper part of hearth	2 ft. 8 in.
Diameter of lower part of hearth	1 ft. 11 in.

They were conducted with hot-blast air of om about 300° to 480° F., the air forced into he furnace through two tuyeres of 2½ in. to in. diameter, under a pressure of 1½ lb. to lb. per square inch. The average consump- on of charcoal, per 100 lb. pig metal, was bout 118 lb. to 120 lb.; the average daily pro- uction during the year, 9,000 lb., or 4½ tons. n the practical working of the furnace the pathic ores yielded about 38 to 40 per cent. of on.

But, on account of the devastation of the orests and of the scarcity of hard wood suitable for conversion into good charcoal, this fuel, soon after the year 1859, proved insufficient for the large production of spiegeleisen wanted; therefore, they were compelled to make great efforts in replacing the charcoal by coke made from well-prepared bituminous coal, as a reducing agent, there not being in the iron-manufacturing region a coal sufficiently free from sulphur and other deleterious materials to allow its use in a crude state. The spiegeleisen made with charcoal was a very valuable metal, due to the purity of the ores, entirely free from sulphur and phosphorus, and we all know that no metallurgic skill has thus far been able to expel these deleterious ingredients from any ores or coke, or prevent them from passing into the pig-iron.

The first development of the spiegeleisen manufacturing, by means of coke, was attended by many difficulties, which at times seemed almost insurmountable. The first trials of all were met with many and great difficulties, calling forth the highest skill of the engineers, and at the same time with many expressions of doubt; and when at last it was definitely known that the science of metallurgy had overcome the greatest obstacles, there still remained in the minds of ironmasters an aversion to the new metal. The iron had to be introduced into the market, and its merits made known, and iron-masters, reluctant to experiment with a material of such different quality from that they had been accustomed to use, must be induced to try the new metal. The first thing was to test its value, and bring it to the favourable notice of the ironmasters. Experiments were made, and proved that its freedom from sulphur and phosphorus, on the one hand, and the presence of manganese on the other, produced a metal unequalled in value by any known to commerce, except the small quantity produced by means of charcoal. Quantities of the new iron were soon introduced into the rolling-mills and other works, and the unanimous verdict of all who tried it was to the effect that it was preferable to the best iron previously known, and the only kind which would enable Bessemer steel manufacturers to bring into execution his (Bessemer's) manner of manipulating. Ever since that time the demand has exceeded the supply.

In describing the millstone grit district of the coal country in Indiana, the reporter describes a curious production of nature apparently, called the "Jug Rock," from its supposed resemblance to a jug, an illustration of which is given as a frontispiece. In the vicinity, a high ridge of millstone grit terminates within a few yards of the East Fork of White River, from the top of which there is a projecting mass of conglomerate sandstone, called the "Pinnacle," which stands 170 ft. above the level of the stream. Cyclopean blocks that have broken off lie around the foot of the ridge in every conceivable position. On the north side of this ridge, the conglomerate has been cut through by disintegrating forces, which left, at some distance from the main ledge, the tall mass of rock, named the "Jug Rock." It is 42 ft. high, and supports, on its top, a flat projecting layer, which is called the "stopper." Just above the bulge of the jug are irregular lines of stratification, known as false bedding. The lower part is thickly set with quartz pebbles.

* Reports of the Geological Survey of Indiana. By . T. Cox, State Geologist, assisted by Professors Collett, obbs, and Warder, and Dr. Levette. Indianapolis State rinter. 1871-1872.

THE BROMPTON AND FULHAM ROAD.

As a continuation of the great central east and west boulevard of Piccadilly, this leading route runs on to Knightsbridge, in a south-west direction, alongside the Green Park, and by Hyde Park-corner, so far as Wilton-place. The open expanse is all that could be desired; but at this point, and as far as Albert-gate, it is constricted by the advance of six or seven shops, on the south side, as far as Charles-street. Thence to Brompton-square the mean width is over 100 ft., having on the north side a raised terrace, formerly planted with fine trees, lately and ruthlessly cut down. Opposite the Oratory the "Bell and Horns" public-house divides the noble Cromwell-road continuation from the Fulham-road, which latter at this juncture is reduced to 30 ft. of driftway and 18 ft. of footway, and here the road takes a due south tendency, for about 300 yards, *in a serpentine form*, as far as Marlboro'-road. Private houses and forecourt gardens form the border on the south side, and two conterminous parallelograms (called Alexander-square) on the north side, the mean width of roadway being 33 ft., and of the two side footways 20 ft. (53 ft. in all). From Marlboro'-road, for half a mile, again in a south-west direction, the width of the road and footways averages 64 ft. The only constrictions of free thoroughfare that call for improvement are those noted above, and which are bordered, except at two points, by open grounds or forecourt gardens.

Now nothing could be easier than to rectify the narrow juncture at this point by simply excising from the projecting front gardens a width of 10 ft., to be added to the straightened road, commencing and determining with an acute angle. On the salient side there are in all eighteen houses, which might be compensated for a reduction of 10 ft. at most; on the opposite, north side, the public square should be dealt with in a similar manner, so as to secure a public thoroughfare of at least 64 ft. equable width. In dealing with the square, however, there need be in reality no apparent diminution of extent; for the external range of trees might be preserved, and a footway of 10 ft. formed, bounded by the present iron railing, thus forming, as in Piccadilly (which was done through the *Builder*) an umbrageous and agreeable promenade.

It does appear strange that an open and great leading thoroughfare should be spoiled by so short a strait. We know that the capacity of a pipe or tube is limited to its narrowest constriction; and so of the *angusta via* adjacent to the "Bell and Horns."

Now it must be taken into account that all the front gardens along the Brompton and Fulham roads have been covered with shops in advance of the houses, and that the sixteen frontages herein referred to, with perhaps not a dozen more along the whole range of two miles, remain unappropriated. If left much longer these also will be shopped, and no improvement of road can be made afterwards.

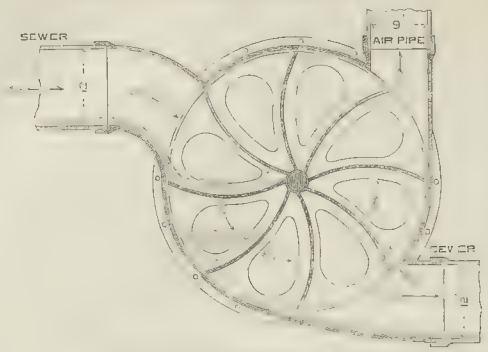
Some of us can remember the Brompton and Fulham roads shrubbed and wooded suburban outlets; ay, even the New and St. Pancras roads to the City (about forty years back) a timbered and sylvan rural boulevard. Now it is a continuous street of five miles from Edgware-road to Moorgate-street, the border gardens being wholly utilised and built over. Q.

BRISTOL SEWAGE WORKS.

MR. R. RAWLINSON, C.E., held an inquiry on the 17th instant on behalf of the Local Government Board relative to the application of the Bristol Board of Health to borrow 20,000*l.*, the excess of the estimate for making sewers in Bristol. Many difficulties being incurred in the execution of the work, the original estimate was exceeded, and the sum of 20,000*l.* was needed in order to meet the extra cost.

Mr. Ashmead, surveyor, handed in a report as to the making of the estimate and the carrying it out by the contractors. In March, 1867, it was estimated that the sewerage works for the city would cost 27,000*l.* The works were not proceeded with until 1871, and then the cost of materials was higher than previously. The foundations for the drains were also found to be bad in some places, and extra work had to be done under the order of the surveyor, the result being that by the time the walls were completed the original estimated cost had been exceeded by 20,000*l.*, the sum it was desired to borrow. Mr. Rawlinson remarked that it was not a pleasant thing to have an estimate exceeded by 20,000*l.* in this manner, but it did not follow that the money had been improperly spent. It appeared that, with the exception of work to the extent of 200*l.* or 250*l.*, the whole of the work was according to contract. There were no orders in writing given by the surveyor to the contractor for the performance of extras, as they should have been, according to the contract.

Mr. Rawlinson said that no doubt these extras might be litigated to any extent, but whether the town council or the contractor would be the better, or whether they would be both plunged into the quagmire together, he was not prepared to say. He had been an engineer all his life, and he might look at one side of the question while another person regarded it differently; but if contractors were always to be held hard to the contract, it would be severe upon the strong ones, while the weak ones would entirely fail, and their security would have to be called upon. Mr. Rawlinson further stated that he should recommend that sanction be given to the borrowing of the money, for he had heard nothing to make him adverse to it. If the surveyor felt that he had not reported the matter sufficiently to the committee, no doubt he would do so in the future. The inquiry then closed.



Vertical Section.—Ventilation of Sewers.

VENTILATION OF SEWERS.

THE diagram represents one of a series of fans placed in the line of a sewer, with an air-pipe from it, supposed to be in connexion with the atmosphere above the houses. By causing the sewage to fall into the fans on one side near the top, and to escape on the other side at the bottom, they are made to rotate, draw air out of the sewer, and force it up the pipes into the atmosphere. The fans, therefore, are self-acting; and, if properly constructed and fixed, will not get out of order. If, in addition to the usual drain communications, pipes are laid from the open air into the sewer, at points midway or nearly so between the fans, it is evident that the air-currents, established along the sewer by the rotation of the fans, will remove the gases as they emanate from the sewage. Thus the power of the water flowing in the sewers not only carries off the sewage, but by falling into the fans, with air-pipes to and from the sewers in connexion with the atmosphere, it is made available for ventilating the sewers as well.

JOHN PHILLIPS.

THE ENORMOUS GROWTH OF HACKNEY, AND ITS SANITARY CONDITION.

THE annual report, for 1872, of Dr. Tripe, the medical officer of health for Hackney, which has just been issued, gives some interesting statistics as to the great increase in building and the population of Hackney, as well as its present sanitary condition. The statements contained in the report may be regarded as the more authoritative, from the fact that Dr. Tripe is also President of the Meteorological Society. It appears from the report that an enormous increase has taken place in the population of the district of late years, and that whereas in 1801 there were only 14,192 inhabitants, the population had increased to 124,951 when the census was taken in 1871. These returns show that during each of the seven decades up to 1871, the population has increased, within the respective ten years of each decade, to the extent of about 40 per cent. Since 1871 building has being going forward in the neighbourhood at a most unexampled rate, showing that the expansion and increase of the population in this portion of the east of the metropolis is still rapidly going forward. The chief sanitary work performed during the year in accordance with the Sanitary Act, consisted of the examination of the rooms, yards, outbuildings and cisterns, or water-butts, of 6,126 houses, which were either occupied by two or more families, or by persons belonging to the poorer classes. In these 6,126 houses there were 26,111 rooms, excluding washhouses, in which 8,812 families resided, and 45,652 persons. The number of houses in which nuisances were discovered was 2,517, which was about 42 per cent. of the number of houses inspected, and 3,290 of these houses required some works to be effected, or disinfection to be performed, to render them safely habitable.

The report next refers to the writer's communications with Mr. Ayrton and other parties respecting the lakes in Victoria Park, and the improved regulations for bathing, and states that, after a good deal of correspondence, the lakes have been cleansed, and are no longer injurious to health. It also further states that the medical officer had had an interview and correspondence with the secretary of the Regent's Canal Company as to the cleansing of the canal and basins leading thereto. The medical officers of Shoreditch and Bethnal-green joined him in the application, and the result was that the canal and basins had been cleansed. During the past year the mortality had been unusually small. The sanitary state of the parish generally was good, several prosecutions for carrying on offensive trades having led to their mitigation or abolition.

NEW WESLEYAN CHAPELS FOR THE METROPOLIS.

A NEW Wesleyan chapel is about to be built in Oakley-terrace, Old Kent-road, Camberwell, and the memorial stones, two in number, were laid on Thursday, the 17th, by Sir Francis Lycett and Mr. Lightfoot respectively. The building will be in the Romanesque style. It will be built of yellow stock brick, interspersed with red, and with ornamental stone capitals. A flight of stone steps leads up to the entrance, and over the doorway, which has a massive circular projecting heading, will be a handsome arched window. Galleries will run all round the interior, which will be fitted with open pews and a platform pulpit. The building will hold 1,000 persons. Underneath the chapel will be a spacious schoolroom, with tea-room and superintendent's room adjoining. The entire cost of the building, including the site, will be 6,500*l*. Mr. C. Bell, of the Strand, is the architect, and Messrs. Wright & Goodchild, of Croydon, are the builders, their contract amounting to 4,515*l*.

Sir Francis Lycett incidentally stated during the proceedings that the Metropolitan Chapel Building Fund, aided by other grants, was about to be made use of for the purpose of erecting fifty chapels in the metropolis within ten years, and that within the last three years eleven chapels had been built, and sites had been secured for twenty additional chapels in different parts of London, several of which would shortly be proceeded with. The sum of 170,000*l*. had already been spent in the erection of these chapels and the purchase of sites for others.

NEW POLISH NATIONAL MUSEUM.

NEAR the little town of Rapperswyl, on the Lake of Zürich, rises the steep rock whose summit is crowned by the ruined castle, the cradle of the house of Habsburg. It has lately undergone complete restoration, and is intended to be the seat of the new "Polish National Museum," founded by Count Plater. In the castle-yard an iron and bronzed monumental column, surmounted by the Polish eagle, has been erected, to indicate to the visitor the future destination of the building, and to denote likewise the fact that Polish "nationality" has found an asylum on the hospitable soil of Switzerland. In a long succession of halls and rooms is arranged a collection of archæological and numismatical mementos of Polish history—sculpture, paintings, weapons, old manuscripts of kings and distinguished men of the Polish nation; amongst the latter of which we find the correspondence and testament of Kosciusko, and the monster address (120 ft. long, and covered with 100,000 signatures) of the English people to the Poles in the year 1831. The collection also contains Polish standards and colours of different ages, the glass drinking-cup presented by the city of Dantzig to King John Sobieski, and other equally valuable objects. The catalogue numbers at present but 500 different articles, nearly half of them relating to the revolution of 1830; but relics of Polish history continue to flow in almost daily from all parts of the world.

PRESENTATION TO THE CHAPEL OF THE NEW LAMBETH WORKHOUSE.

THE new Lambeth workhouse, which has now for a considerable time been in course of erection, has been at length completed, and is intended to be opened shortly. At the meeting of the guardians last week, a letter was read from Mr. Henry Doulton, son of the late Mr. Doulton, who had been chairman of the Board for many years, and who died recently, to the effect that the family were desirous of placing an organ in the chapel of the new workhouse as a memorial of the deceased. The offer was unanimously accepted, and the organ will at once be erected, and placed in the chapel in anticipation of its opening.

STATUE OF SIR JAMES OUTRAM.

A FINE equestrian statue, in bronze, by J. H. Foley, R.A., has been erected temporarily in Waterloo-place, between the Guards' Monument and the Duke of York's Column. The monument represents Sir James in the act of suddenly reining in his charger, and leaning with his right hand on the horse's quarter, looking back, as in a moment of excitement, gazing eagerly at some object that has attracted his attention behind him.

The expression of his face is very fine, and the attitude most effective, being unstrained, bold, and life-like. The horse is finely modelled, too; the neck contracted, and the head curbed quickly in, the partially-open mouth and expanding nostrils being particularly true to nature.

The general appearance of the statue is extremely good from all points of view, and that is very high praise. The work is cast by Messrs. Masefield & Co., and is sharply defined, the veins on the horse's neck, for instance, and the flowing main and tail, being, as details ought to be, bold, and yet unobtrusive.

RAIN-WATER TANKS.

SIR,—I have had rain-water tanks with filter-beds on the principle described and delineated by Mr. Dinwiddy, constructed and in use for many years, but instead of the small receptacle for the unfiltered water, I provide a space of larger size, equal to, if not greater than, that provided for the filtered supply. Mr. Dinwiddy would find his receptacle fill faster in a heavy shower of rain than the water could get through a good compact filter, and thus be liable to overflow. I divide an oblong tank into two nearly equal divisions, that for receiving the rain immediately from the pipes being the largest. Across the bottom is a trench sunk in the floor, and filled with sand and gravel; from the bottom of this trench, or filter-bed, rises the partition which separates the two qualities of water, having small holes close to the bottom, through which the water gets from one side of the filter-bed to the other. The water is thus made to descend through a bed of sand and gravel on one side of the partition, and ascend through a similar bed on the other. As the purity of the water depends greatly on the slowness of this movement, the larger reservoir for the unfiltered water is thus a great advantage, and also prevents disturbance of the filter-beds, which would inevitably occur in a narrow, confined space, such as that shown in Mr. Dinwiddy's plan.

WILLIAM HAY.

PROFESSIONAL INQUIRIES.

SIR,—Will any of your readers inform me if there is anything unreasonable, or out of the usual course of the profession in an architect providing bills of quantities for certain works, and notifying the surveyor's fee at the end of the said bills?

Also, *provided* the builder requires a *second* set of drawings and specification, is the architect justified in making an extra charge for same, or notifying the same on the bills of quantities?

A.

"ARCHITECTS AND THEOLOGY."

Sir,—It appears to me that the criticisms made your correspondent "Protestant," in last ek's *Builder*, on Mr. G. G. Scott's paper read ore the Lincoln Architectural Society (where t gentleman alludes to chancel-screens), are le of the mark. Mr. Scott most carefully plained his reasons for protecting the chancel m profanation by a high screen, and added t "there would be less objection, artistically, a low screen, if we were allowed to erect over a rood-beam and a rood." Mr. Scott may sibly have referred to the rood *complete*, but r correspondent has assumed the term neces-ily to imply the representation of the Crucifi-on with the figures of St. John and St. Mary the sides. Whereas, a broader meaning for term is simply a cross (Saxon, *rode*), and re are many churches in England where se have been erected within the last twenty rs either over the chancel-screen or on a m; so there is no *novelty* here. With respect the crucifix and the attendant figures, it is ficult, perhaps, to get over the prejudice sting in many minds on account of their use Roman Catholic churches. I fail, however, to that any doctrinal point is involved in the ption of the rood complete, and nothing can e greater dignity and impressiveness to the ehoid of the chancel. For every æsthetic son, and from a common-sense point of view, igh chancel-screen, *designed so as to be as n as possible*, is most desirable. Screens are uable aids to the architect: they afford scale the interior, serve to connect one part with other, and, in the case of the rood-screen, tainly give the appearance of extra length to church. There is no room for doubt on this er point, because in those cathedrals where y have been swept away (Durham, a notable tance) the building appears shorter than ore the alteration. I am, of course, aware t these cathedral screens were not per-ated: still, the same principle holds good. ere is a successful modern chancel-screen of ss to Mr. Street's noble church of All Saints, ton, which is surmounted by a floriated cross y; but, considering the elaborate character he accessories, the crucifix, &c., would, archi-turally speaking, be an improvement. Really, rchitects of the English communion are to be dged in the narrow grooves dictated by ra-Protestantism, they will have to dispense gether with many beautiful ornaments to rches perfectly harmless in themselves, and ose only fault (if fault it be) is that they are o nsed in Roman Catholic churches. Pugin, h his characteristic acuteness, readily saw artistic value of high screens.

Edmund B. Ferrey.

THE BOROUGH SURVEYORSHIP OF SOUTHAMPTON.

The special committee, to whom Mr. Lemon's er requesting that his position for the future ght be considered, with the view of making h mutual concessions, without increase of ary, as would satisfy the council and himself, s referred, has reported that, at a meeting of committee, the following propositions were omitted by the surveyor: -

1st. Increase of salary to Mr. Morgan to 130*l.* per um; 2nd. Appointment of writing-clerk at a salary of per week; 3rd. Borough surveyor to be allowed a sulting practice as a sanitary engineer out of the ough."

The surveyor added the following reasons why said his applications should be acceded to:—

1st. The execution of capital works to the value of 004*l.*, including the Schools of Science and Art; 2nd. S.C. works, 10,000*l.*; 3rd. Saving by Mr. Guillaume's ry per annum, 100*l.*; 4th. Saving by sewage works at tform, 800*l.*; 5th. Efficient performance of general ies; 6th. Large and important works at Portswood, in future; 7th. Large saving by private improvements.'

The committee saw no reason for departing m the existing arrangements made upon Mr. mon's appointment as to private practice. At urther meeting of the committee Mr. Lemon de the following propositions:—

The borough surveyor may have consulting practice of the borough, the necessary staff for official work y to be provided by the board. 2. To go back to the ie arrangement as with my predecessors, viz., 230*l.* per um salary; to be paid extra for all new works and all tters in connection therewith, with private practice of kinds without the borough. 3. Increase of salary on se conditions as to staff in No. 1; three years' arrange-nt in every case."

The committee resolved unanimously that, on condition Mr. Lemon would agree to con-ue in his office as at present for three years at least, from the present time, they recommend the Urban Sanitary Authority to increase his salary 100*l.* per annum. It was also resolved unanimously to recommend the increase of Mr. W. B. Morgan's (the assistant surveyor) salary 30*l.* per annum; and, further, having regard to the duties in the surveyor's department, they recommended that Mr. Lemon be authorised to employ a clerk in his office at a salary not exceeding 30*l.* per annum. Mr. Lemon stated that he accepted the condition referred to in the resolution relative to himself.

THE DISPUTE IN THE BUILDING TRADE.

Although it is by this time a twice-told tale, we must record that at a general meeting of the members of the Central Association of Master Builders, held last week, at 2, Westminster-chambers, Mr. B. Hannen in the chair, the following resolutions were declared to be carried by a majority of the meeting:—

"1. That, considering all the circumstances of the trade, the association recommends its members to continue to pay wages in shops and yards at twelve o'clock on Saturdays; and at out-door jobs, the payment of wages to take place as soon after that hour as practicable, according to distance.

2. That wages at the rate of 9d. per hour be paid from and after the first Saturday in August next."

The adoption of the above resolutions concedes the full demands of the men, and averts the threatened strike. We have received a number of letters which serve to show that the action of the Association is not regarded with very friendly feelings throughout the country. The following will serve as an example.

"SAVE ME FROM MY FRIENDS."

Sir,—

"Ill fares the trade, to threat'ning ills a prey,
Where wealth increases, and the *men* decay."

I have ventured slightly to alter Goldsmith—the "*men*" fairly representing the present condition of a large class known as "small builders." I unfortunately belong to that class, and have been laying the flattering unction to my soul, that the Master Builders' Association was *defending* the interests of the trade in *general*, but I have suddenly awoke to the great fact that they are defending the interests of the trade in *particular*, in other words, of the "wealth" which increases.

It now transpires that these gentlemen who get all the cream of the trade and of the prices, finding themselves too busy to resist the demand of the men, without arbitration accede to their request,—a request which they, with the class of work and the prices they are fortunate enough to obtain, can perhaps afford to pay, but which, with the hard-fought competition of small works among a class who do not always pay 20s. in the pound, is simply ruin to the man who tries to conduct a respectable business, paying a full price for the labour he employs, rather than be suspected of "oppressing the hireling in his wages."

An Enemy to Combinations.

BUILDERS AND THEIR MEN.

Last week, James Fitzgibbons, a labourer, residing at 56, Devonshire-street, Lisson-grove, was summoned to Marylebone police-court by George Byfield, of 6, Egbert-terrace, St. George's-road, Regent's Park, contractor, "For that he did unlawfully molest and obstruct the said George Byfield by following him from place to place with a view to coerce the said George Byfield, against the statute," &c. Complainant proved that he was a sub-contractor under Messrs. Welbourne, the builders, to do certain brickwork at Kilburn, and that he employed defendant, amongst others, as labourer, and that on June 25, when the men were going to breakfast they came in a body and asked for an increase of a halfpenny per hour upon what they had previously received, making in the whole 6d., which he refused to give, when the defendant, with others, said they had work in the country and wanted their money, which was not given them, and that on the next morning the defendant and four or five others came about ten o'clock and again asked the complainant for their money, which he refused to give them until one of the Messrs. Welbourne returned. The men, after using some threats, went away, and did not return until half-past one, when the defendant was taken to the police-station, and the inspector refused to take the charge, but advised a summons. Mr. Pain, in cross-examination, elicited that the men only came for money that was actually due to them, that they were employed only by the hour, and that he had a right to discharge them at any moment by paying up to the end of the hour then broken into, and that on the 26th, when defendant and others came, complainant told them to wait until one of the Messrs. Welbourne came, and that they asked for money so as not to stop on the premises, and that he gave them 1s. to get some beer. At this stage Mr. D'Eyncourt suggested to Mr. Pain that he had carried his cross-examination quite far enough, and as it was admitted the men could be dismissed at any moment by the master, it was nothing but fair the men should have the same privilege, and that they ought then to have been paid. And that although there might be faults on both sides, he did not think that this was a case to which the Act applied, and dismissed the summons.

CHURCHES OVER RAILWAYS.

Sir, I see in your journal of the 12th instant that the Marquis of Westminster, on the occasion of laying the foundation-stone of a new church at Knightsbridge, is reported to have stated that this was the first instance of a church built over a railway. Will you allow me to state that such is not the case, as I myself watched with much interest similar difficulties cleverly overcome some four or five years back, on the building of St. Paul's Church, St. Leonard's-on-Sea, immediately over the Hastings Tunnel,—this in very shifty, bad soil. The depth from the bottom of the foundations to the crown of the tunnel must be about the same as in the case you referred to. The architect was Mr. John Newton. There is no vibration experienced, and no settlement has occurred. K.

AN ARCHITECT'S CHARGES.

At the Sussex Assizes, held at Lewes last week, a case (Hill *v.* Money) was heard before Mr. Baron Pigott, and presented some features of interest to the profession. Mr. Garth, Q.C., appeared for the plaintiff, Mr. Day, Q.C., for the defendant. The action was brought by an architect residing at Brighton, against a surgeon practising at Brighton, to recover for work and services rendered, and on an account stated. The plaintiff, Mr. John Hill, said, that hearing the defendant had taken a piece of ground of the Brighton town council, he spoke to him in reference to what he meant to do with it. In September, 1870, he wrote to him a letter (produced), in which he offered to prepare plans and specifications, take out quantities, and generally to superintend the work, for a commission of 1½ per cent., the commission usually charged by the profession being 5 per cent. Dr. Money subsequently brought him a sketch for a single house, on which he prepared plans and specifications, which were approved. The Doctor then brought him fresh sketches of buildings to occupy the land, from which plans were prepared, which were also approved of. The Doctor afterwards said he would have three houses erected in carcase, and for these witness got out plans, specifications, and quantities, and advertised for tenders. The lowest tender was 2,552*l.*, which the defendant thought was too much, and then instructed witness to furnish him with plans of the houses finished, the height of the rooms to be reduced, and the character of the buildings to be altered generally, so as to diminish the cost of erection. This necessitated an entirely new set of plans, specifications, and quantities. When these were prepared, a Mr. Kemp, a builder, of Brighton, took the contract at 3,84l*l.*, to be paid by acceptances. He had to employ Drake's Concrete Company, of London, to do the walls; but as they required cash, Messrs. Drake arranged direct with Dr. Money, and tracings were supplied to them, for which he charged 10*l.* 10*s.* Cross-examined by Mr. Day: Had been in business nearly a year when he began working for Dr. Money. Defendant never gave him any idea that he was only prepared to spend 5,000*l.*, and that the plans must be prepared accordingly. Messrs. Drake commenced their portion of the the work under the builder, but afterwards arranged to be paid by Dr. Money. One or two minor items in the account having been admitted or withdrawn by the learned gentlemen engaged in the case, the charges in dispute were resolved into two, viz., 10*l.* 10*s.* for the tracings supplied to Messrs. Drake, and 25*l.* 15*s.*, being at the rate of 1 per cent., or two-thirds of the commission originally agreed upon, on the carcases of three houses which plans had been abandoned by defendant. Mr. Henson, an architect, with offices in Brighton, said he had heard the evidence of the plaintiff. His charge of 1½ per cent. was very moderate. The rule of the profession was, that if plans were prepared by an architect and not approved of, they were not charged for, if he carried out the work on substituted plans; but if a client brought sketches from which an architect prepared plans, he would certainly charge for them. The charge of ten guineas for the tracings supplied to Messrs. Drake was rather high; half that sum would have been enough. Mr. Day, in a caustic speech, ridiculed the idea of the defendant employing a young and unknown architect to do what he liked with a piece of ground, without saying how much he intended to spend; or of an architect, who understood his business, preparing plans, and being quite ignorant of the limit of cost he was to go to. He also condemned in strong terms the conduct of the plaintiff in serving Dr. Money with a debtor's summons, knowing full well that a gentleman in the defendant's position would agree to almost any compromise rather than be made a bankrupt. As regarded the tracings supplied to Drake and Co., the fact was they never required them, and the plaintiff could give no date or evidence that he had ever supplied them. Messrs. Drake simply continued the work on the same drawings with which they commenced, looking afterwards, however, to Dr. Money for payment instead of to Kemp. The different plans were prepared by plaintiff at his own suggestion, he being, as was perhaps natural, anxious to get business. The defendant was called, and deposed that the various alterations made in the plans were proposed by the plaintiff. When the work was about two-thirds completed, it was arranged for him to pay Messrs. Drake direct, and there was no necessity for fresh plans. When he was served with a debtor summons, he paid 51*l.*, gave a bill for 100*l.*, and agreed to leave the balance for reference. The learned judge said that this was one of those cases which ought never to be brought before juries for settlement. The jury, after a short consultation, returned a verdict for the plaintiff for 25*l.* 15*s.*, but disallowed the item of 10*l.* 10*s.* Baron Pigott peremptorily declined to certify for costs.

St. Alban's Abbey.—The restoration of St. Alban's Abbey, before long, it is said, will have to be suspended, as the greater part of the 15,000*l.* already collected for repair, has been expended, and subscriptions come in more slowly than was hoped by its promoters.

"THE TUNNELS UNDER THE MERSEY."

SIR,—In your issue of the 12th a correspondent suggests it would be an improvement if the tunnels under the Mersey were made inclined in opposite directions, and I suggest in furtherance of that object, and for its successful application, and free from all objections, that at a distance of about 200 yards from the end of each tunnel at the lowest level, there be a reverse gradient to overcome the difference in levels at each terminus, between the arrival and departure platforms, and thereby obviating the necessity of steps between those platforms.

STUD. INST. C.E.

CHURCH-BUILDING NEWS.

Pipe-and-Lyde.—The dilapidated, but interesting old parish church of Pipe-and-Lyde has been undergoing almost total demolition, in preparation for a rebuilding or restoration. The nave and tower have been entirely razed to the ground, but the materials will, as far as possible, be made available in the building which is to be put up, and in which all the original features will be reproduced. The corner stone of the new tower has been formally laid by the bishop of the diocese. The restoration is being carried out from plans prepared by Mr. Kempson, architect, by skilled workmen, under the immediate personal supervision and direction of the vicar, the Rev. F. T. Havergal. A new school has lately been built in the parish at the cost of Mr. Havergal.

Lindow.—The foundation-stone of St. John's Church, Lindow, has been laid. The church, which will be built from the designs of Mr. J. W. Beaumont, of Manchester and of Wilmslow, will consist of a nave, 52 ft. long, 30 ft. wide, and about 37 ft. high to the ridge inside. The entrance to the nave will be by a porch at the south-west corner, and in connexion with this porch there will be a bell-turret with wooden belfry, about 42 ft. high. The chancel will be 18 ft. long by 16 ft. wide, raised two steps above the nave, and on the south side of the chancel there will be an organ-chamber and vestry, under which will be a vault for the heating apparatus. The nave will be divided by a central passage, 4 ft. wide, with benches on either side, containing sittings for 224 adults and 22 children. The building will be of the Early English style. The roof of the nave will be divided into five bays, all the timbers showing, and the space between the spars plastered. The chancel will have a boarded roof. The exterior facing will be of Kerridge parpoints, with Alderley stone dressings, and the interior will be faced with plaster. The total cost of the building will be about 2,000*l.* The contractor is Mr. Benjamin Haywood, of Alderley Edge.

Walsall.—The building committee interested in the erection of St. George's Church have resolved to commence the work forthwith, and have accepted the tender of Mr. Adkins, of this town, for the erection of the nave and aisles, and the putting-in of the complete foundations, for 5,160*l.* For the erection of the entire building, less the tower, there were originally seven tenders, the lowest (Mr. Adkins) being 7,375*l.*, and the highest 9,000*l.* The total of the contributions promised is now nearly 4,000*l.*

Helperthorpe.—St. Peter's, Helperthorpe, on the Yorkshire Wolds, has been opened for divine service. The church is one more addition to the numerous list of churches founded, rebuilt, or restored at the sole cost of Sir Tatton Sykes, Bart., of which two others, Lutton and Kirby-Grindalythe, are in progress, and a new one is to be founded at Duggleby. The church, which is in the Early English style, and elaborately decorated, is from the pencil of Mr. G. W. Street, R.A., and consists of tower (with steeple and stair, bearing the effigy of St. Peter), porch, nave, chancel, and vestry, the whole of the windows being filled with painted glass, by Clayton & Bell. The edifice, which is very prominently situated, is approached by a lytch-gate (at the entrance to a graveyard, not yet consecrated), and surmounted by a Latin cross. Foliated crosses also mark the gables of the nave and chancel. The nave both north and south has two two-light windows, and the chancel on the south has the same, and on the north one two-light window. The bright red tiles make the church a conspicuous object in the landscape. The interior is of ashlar work of Whitby stone, the open roofs of chancel (panelled) and nave, with the panelled floor of the belfry, being decorated in every part. The church is warmed by hot air. The floors are paved with coloured tiles. The builder was Mr. Booth, of London, but the wall surrounding the churchyard was by Messrs. Simpson & Malone, of Hull.

Longford, near Coventry. — The foundation-stone of a new church at Longford, to be called St. Thomas's, has been laid by Mr. H. W. Eaton, M.P. The church is to be built from designs supplied by Mr. John Cotton, of Birmingham, and will be built by Mr. W. Nelson of Dudley. It will comprise nave, with aisle on the north side; chancel, with organ-chamber and vestry, also on the north side. There will be a tower and spire at the north-west angle of the building, the lower portion of which will form the porch. It will be built of red brick, the internal facing being of buff-coloured pressed bricks, obtained from Nuneaton. The stone dressings are being executed partly in Attleborough and partly in Box-ground Bath stone. The roof, which will be open, will be covered with brindled-coloured plain tiles, and the accommodation will be for 300 persons. The cost of the building will be nearly 3,000*l.*

Brackley.—The parish church has been re-opened. The chief feature of the restoration, which, so far has only been partial, is the entire re-seating of the church, with open seats of pitch pine, in place of the old-fashioned pews. In removing the old flooring, it was discovered that dry rot prevailed from the porch to the altar, and that fungi had flourished beneath it to a great extent. Upon the opening of the flooring the odour was offensive, and it must have been very unhealthy before the alteration was made. The tower arch, an example of Early English work, which had been obscured by the double disfigurement of plaster and a west gallery, has been opened up by the removal of both. The advantage of this improvement is enhanced by its revealing the deeply-splayed single-light tower window, which has been filled in with stained glass representing St. Peter, the patron saint of the church. The oak roof of the tower chamber is also shown. The masonry of the arches and pillars has been uncovered and scraped. The walls of the church, which are plastered, have been cleaned. The reredos is the work of Mrs. Thicknesse. It is *appliqué* work in imitation of marble and encaustic title work. The design was furnished by the architect of the restoration, Mr. C. Bather, Shrewsbury. The western window of the south aisle has been filled in with stained glass. The design is Christ blessing little children. The cost of the restoration is between 500*l.* and 600*l.* The work has been carried out, under the superintendence of Mr. Bather, by Mr. William Hawkins, of Brackley.

Moseley. — The new church, at Park-hill, Moseley, which is being built by Mrs. Anderton, will accommodate 400 persons,—254 in the nave, 50 in the north aisle, 66 in the south aisle, and 30 in the chancel. An organ-chamber and vestry are also provided, on the south side of the chancel. The exterior of the building is faced with red Hampstead stone, and the dressings are worked out of gray Ombersley, Box ground, and gray Bromsgrove stone. The dressing of the interior are formed out of Corsham Down, gray Ombersley, and gray Bromsgrove stone, the walls being plastered. All the arches, responds, and piers of arcades are of Corsham Down and gray Ombersley stone. The two principal entrances are in the tower, which is situated on the north-west side of the building, and the west wall of the nave. The parapet of the tower rises to a height of 80 ft., from the floor of the nave, and will be completed without a spire. An octagonal turret, with circular steps, is provided for access to the tower, and it will be finished with a spiral turret, rising to a height of about 100 ft. from the ground level. The roofs will be tiled. The building was commenced last October, and when completed, will cost about 6,000*l.* The architect is Mr. F. Preedy, London; the contractor, Messrs. J. Wilson & Son, Birmingham; and the clerk of the works, Mr. C. Noble, Sparkbrook.

Cheshunt.—The parish church of St. Mary's, Cheshunt, which for the last nine months has been undergoing an extensive process of repair, restoration, and enlargement, has been reopened. The work of restoration has necessarily been of an extensive character. The galleries have been done away with. A modern floor in the lower part of the tower has also been removed. The west window, which had been bricked up for centuries, is now restored, and the centre light is filled in with stained glass presented by Miss Mardell. The subject is John the Baptist. The other parts of the window are filled in with cathedral glass. Two other windows in the north and south sides of the tower are still bricked up. The tower and chancel arches and the arches and columns of the nave, have been restored. The ancient rood-loft has been opened out. The nave and aisles have been re plastered. The nave roof has been taken off and all the decayed parts replaced with sound timber. The roofs, which were formerly concealed by a plaster ceiling, are now exposed to view. The old oak rafters were used again but all the tie-beams, ridges, and intermediates are new. The deficiency caused in the number of sittings by the removal of the galleries has been made up by the addition of a new south chancel aisle, containing open sittings for upwards of 100 persons. The new aisle contains four windows. The chancel roof, which is entirely new, has been raised, and a clearstory has been added, containing six two-light windows. The east window has been restored and enlarged. A north arcade has been opened out in anticipation of an extension corresponding with that on the south side of the chancel. There is a new pulpit, by Hitch, of London, of carved oak, on a base of Caen stone. All the other new carving has been done by Mr. Buddock, of London. The organ has been enlarged and improved by Messrs. Speechly & Ingram, of London, at a cost of about 260*l.* It now stands at the east end of the north aisle of the nave, but the proposed north chancel aisle is designed as its ultimate resting-place. The works have been carried out by the contractor, Mr. Bell, of Saffron Walden. Mr. Thomas Booth was clerk of the works. The total amount expended is about 3,650*l.* There is a debt of between 900*l.* and 1,000*l.* on the present contract, which is attributed to the great rise in materials and wages, and also to the dilapidated condition of the church before the restoration.

Leatherhead.—The parish church, after having been closed for six weeks, has been reopened, having undergone some alterations and repairs. The upper west gallery, where the organ formerly stood, has been done away with, and the organ itself, having been rebuilt and enlarged by Walker & Son, of London, has been placed in a new chamber on the north side of the chancel. The old vestry has been pulled down, and a new one built, and a new north entrance has been made in place of the old porch. The vestry, organ-chamber, &c., are built of black flints, with Doulting stone dressings. Several other parts of the interior have been repaired and renovated, and all the old high-backed pews have given place to oak seats of the modern open pattern. These works have been executed by Messrs. Goddard & Son, of Farnham, at a cost of about 1,300*l.* Heating apparatus has been supplied by Mr. Green, of Epsom. The chancel has been reseated, and paved with Godwin's tiles. There is a new reredos erected, at the cost of the parishioners, to the memory of the Rev. E. Clapson, M.A., thirty-five years vicar of the church. The reredos, which was designed by Mr. A. Blomfield, of Cavendish-square, and erected by Messrs. Earp, is in alabaster and marble, with mosaic background. There is a central figure of our Lord between the two disciples of Emmaus, and on each side are figures of two angels bearing emblems of the Passion.

Coundon.—A new church has been consecrated at Coundon, near Bishop Auckland. The edifice is built of stone, obtained from Westerton Quarry in the immediate neighbourhood. The building is situated on an eminence. The architect was Mr. Ewan Christian, of London, and the contractor, Mr. Ralph Sanderson, of Durham. The style of architecture adopted is that of the Early English, and the edifice consists of a nave and north aisle, and a chancel, which is apsidal with a vestry, and a large porch at the north-west side. Five small lancet windows in the chancel have been filled in with stained glass, by Mr. Wailes, of Newcastle, the subjects being the scenes of the Passion of our Lord. The cost has been defrayed by Mr. Collingwood L. Wood, in addition to his liberal subscription. The church will seat 530 persons; 200 of the sittings appropriated, and 330 free. The cost of the erection of the church, which is dedicated to St. James, has been upwards of 3,000*l.*

Cheltenham.—A vestry meeting has been held to receive a report of a committee appointed to consider the question of the parish church restoration. The committee had called in the

sistance of Mr. Ewan Christian, architect to
e Ecclesiastical Commissioners, who had
ported on the subject of the parish church
storation, strongly discountenancing any exten-
on of the building, but recommending the
pair and restoration of the ancient fabric at a
st of about 4,200*l.*, and the erection of a new
urch on another site if further accommodation
as required. The committee's report was in
ccordance with that of the architect, and recom-
ended the acceptance of Mr. Christian's specifi-
tions for the restoration and the erection of a
rge church on a site to be hereafter decided
. The report of the committee was approved
in its entirety. As the new church is expected
cost from 12,000*l.* to 15,000*l.*, the total amount
quired to carry out the proposal of the com-
ittee will be little less than 20,000*l.*

Bere Regis.—Winterbourne Kingston Church
as been reopened for divine service after a
storation. The entire work has involved the
penditure of 1,500*l.* The church, "or chapel
ease," as Hutchins designates the building, is
nstructed of a nave, chancel, western tower, north
sle, vestry, and porch, the work embracing the
ection of the new aisle and vestry, the restora-
on of the masonry of the old walls, tower, &c.,
e building of new buttresses, the clearing away
the old roofs, pews, and galleries, and the
bstitution of plain deal sittings in the nave,
d oak in the chancel. The removal of the old
ws and replacing them with convenient open
ats has been effected at a gain of eighty-six
dditional sittings. The roof has been raised
d the tower repaired, whereby, together with
e general restoration of the rest of the
ructure and the addition of the north aisle and
estry, St. Nicolas has been rendered more con-
nient. The stone used both for the old and
w works is Ham-hill. The aisle is divided
om the nave by a stone arcade. The reredos,
gether with a painted glass window, the latter
presenting the subject of the Resurrection, is
tribute to the memory of the late Mrs. Michel.
two-light window has also been erected by the
esent family. The east window of the aisle
ill also be filled in with stained glass, to mark
e position of the Muston aisle, which belonged
the Rev. N. Bond, the proprietor of that por-
on of the parish. The chancel stalls are of
nglish oak, and have carved ends. The chancel
ch has moulded caps and bosses. The old
ulpit and the font have been retained, but the
lls in the tower have been rehung, and a new
wer roof and floor fixed, resting on stone
rbels. The doors of the church are of oak, in
nall panels. Two curious Purbeck marble
mbs,—probably of the thirteenth century,—
e under the tower. They were in the founda-
on of the north wall that was raised to the
round. Five others can be traced in the
undation of the south wall, which is still
anding. A number of small crosses, of which
e or two remain in the vestry, were discovered
mongst the rubble in the wall. There also
rned up during the progress of the excavations
curious holed stone, the use of which is
uch disputed by antiquaries. A similar one
s been found at Bindon, and is now in the
ssession of Mr. E. J. Weld, of Lulworth Castle.
r. Gordon Hills expressed an opinion that this
one was used for the purpose of receiving oil
d wick, lighted in honour of some saint on
rtain occasions. The work of restoration has
en carried out, according to plans prepared by
r. G. E. Street, R.A., who designed the London
w Courts; and Messrs. Wellspring & Son,
ilders, Dorchester, were the contractors.
essrs. Clayton & Bell filled in the east window
ith stained glass, and they will fix similar
azing in a window of the nave, besides that in
e aisle. The remainder of the glazing is of
thedral glass with a tinted border. The
rving,—not extensive or elaborate,—has been
ecuted by Mr. B. Grassby, ecclesiastical
ulptor, Dorchester.

Heighington.—At a public meeting, steps have
en taken to restore the parish church of Heigh-
gton. A committee has been appointed, and
ans, by Mr. Ewan Christian, approved of.
he estimated cost was 1,878*l.* but it was stated
at at least 15 per cent. would require to be
dded for rise in the price of labour, although
e chairman very much doubted its sufficiency.
bout 1,400*l.* have been conditionally promised.
he restoration of the tower, at a cost of 166*l.*,
was thought, would have to be postponed.
igh pews and galleries are to be removed,
ccording to the plan, and a new north aisle
rected.

Bugsworth.—The chief stone of St. James's church, Bugsworth, Derbyshire, has been laid. The building occupies a commanding site upon the turnpike road, situated near the Midland Railway Station. The church stands due east and west, and comprises nave, chancel, organ-chamber (on the north side of the chancel), and vestry on the south side. The chancel finishes with a semi-octagonal end. The total length inside walls is 74 ft., of which 21 ft. are in the chancel. The width of both nave and chancel is 24 ft. 9 in. inside, and the height to the ridge of the roof, 35 ft. The roof is open inside to the ridge, the principals and purlins being stained and varnished, while the bays between are plastered under the spars. The whole is covered with slates of varied tints, with enriched ridge tiles. The roof of the chancel is more elaborate than that of the nave. The chancel floor is well elevated above the nave floor, and will be laid with encaustic tiles. All the seats (numbering 190) are to be free. The walls are built of stone from the local quarries, in random walling, and the dressings to the doors and windows are of Darley Dale stone. The windows in the nave are coupled lancets, and the west and east windows of the nave and chancel have tracery, with buttresses to the several walls. A small bell-cot crowns the west gable. The entrance to the church is by an ornamental wooden porch on the south side of the nave. The whole is estimated to cost about 1,400*l.* The contract is taken by Mr. Geo. Napier, Manchester, under the superintendence of the architect, Mr. John Lowe, Manchester.

Barnard Castle.—The foundation stone of a new tower to St. Mary's church has been laid. Such was the dilapidated state of the tower that it was dangerous to ring the bells, consequently, for the past three years they have been only chimed. It was found necessary to pull down the old tower altogether, and to erect another on its site. The designs of Mr. Fowler were accepted, the contract for the work being taken by Mr. Kyle, of Barnard Castle. The new tower will be similar in design to the old one, and will contain a muniment chamber, baptistry, and belfry.

Woodbridge.—It has been resolved to rebench the church, and remove as much of the galleries as the increased accommodation provided on the ground-floor will allow.

Brighton.—St. Paul's Church tower is shortly to be completed by the addition of a lantern story, of octagonal shape, the roof of which will be a spire, covered with oak shingles, and surmounted by an ornamental finial and vane. The present height from the ground is about 80 ft., and the total height of the church, when completed, will be about 150 ft. The architect is Mr. R. Herbert Carpenter, of London, and the contractors are Messrs. G. Cheesman & Co., of Brighton. Four new bells have arrived from the foundry of Messrs. Mears, of London, so that there will be a peal of eight bells, independently of the large one.

Stafford.—The committee for the restoration of St. Chad's Church have accepted the tender of Mr. Fast, builder, Melton Mowbray, for the work of restoring St. Chad's Church, and improving the approaches thereto, in accordance with the plans of Sir Gilbert Scott, architect. The amount of the contract is 967*l.*

Playford. — Through the liberality of the Marquis of Bristol the chancel of this church is about to be rebuilt from plans prepared by Mr. R. Makilwaine Phipson, the diocesan architect. It will be in the Early Decorated style of architecture, with single lights on the south side, and a three-light east window. There will be a moulded south doorway and oak door, and at the angles of the east end buttresses. The roof will be of open timber, and of a similar design to the present, which is much decayed and plastered over. It will be covered with tiles. The east gable will have a stone coping and a cross. The benching will be carved oak. An organ-chamber and vestry will be built on the north side, also at the Marquis's expense. This will communicate with the chancel through a stone arch. The nave and tower are in a bad state of repair, and it is to be hoped that Lord Bristol's generosity will induce the parishioners to put them in good order.

Tottenham Surveyorship.—Mr. John A. Clements, C.E., of Great Queen-street, Westminster, and formerly surveyor of the western district of St. Mary, Islington, has been unanimously elected engineer and surveyor to the Tottenham Local Board of Health.

DISSENTING CHURCH-BUILDING NEWS.

Nottingham.—Memorial stones, four in number, have been laid of a new Wesleyan chapel, to be erected in Tennyson-street, Barn-street. It will be capable of seating 1,000 persons, good provision being made for free sittings; ample Sunday-school and class-room accommodation also secured. The committee have selected Mr. J. Collyer, of Nottingham, as their architect, and a contract for the building has been signed for 4,640*l.*, with Mr. Henry Vickers, of Nottingham. The entire cost will be upwards of 5,000*l.*, and towards this amount 3,000*l.* have been promised. The site of the building is at the junction of Tennyson-street and Larkdale-street. The style of architecture adopted is Italian. The outer walls of the sub-story are to be built of rock-faced Bulwell-stone, and the remainder is to be carried out with pressed bricks and stone dressings. The front is divided into centre and side-wings. The central portion contains three entrances, which are approached by a flight of terrace-steps. The sub-story will contain a schoolroom, 58 ft. 4 in. by 35 ft.; bandroom, 25 ft. by 20 ft.; four vestries, each 14 ft. by 13 ft.; and rooms for cooking purposes, heating apparatus, &c. These rooms are 13 ft. high. The internal dimensions of the chapel are 100 ft. by 59 ft. The ground floor will seat 800 persons. The pews are arranged in the amphitheatre form, the pulpit being the centre of, and being divided by, four aisles, giving good space for ingress and egress. The pews will have reclining backs, book-boards, and hat-rails.

Dedham.—A new Congregational chapel has been opened for divine service in the village of Dedham, in the valley of the Stour. The new building, which stands upon the old site, is in red brick; and consists of a chapel, 60 ft. by 39 ft. 6 in.; and a schoolroom, 37 ft. by 19 ft. 6 in., which opens into the chapel by three pointed arches, supported on Bath stone columns with carved capitals. The school is separated from the chapel ordinarily by curtains, so as to be available for use when the latter is crowded. There is also a gallery across the end, to which access is obtained by a stone staircase in the tower. In the rear are a class-room, minister's vestry, &c., and an organ-chamber recessed from the chapel, with a boarded roof to assist sound. The chapel is lighted by two-light windows in the side and a rose window in the south gable. It is benched throughout with open benches, stained and varnished, and the side seats are radiated, so that the entire congregation faces the minister. The roof is open to the collar and plastered, allowing a ventilating space above. That in the chapel is of hammer-beam construction, and the principal beams, which show, are stained and varnished; the school roof has arched ribs. The building is lighted with gas. The chapel stands in the main street of the village, next the Grammar-school. The walls are of red brick with points of black brick, the tracery of the windows, coping, and other dressings being of Bath stone; the roofs are covered with blue and green slates alternately, with ornamental ridges. The front elevation is gabled, and there is one central entrance, and another in the tower. The architects were Messrs. Sulman & Rhodes, London; and the contractors were Messrs. Saunders & Son, of Dedham. The contract price was 1,588*l.* 16s. 6d., but there were heavy extras, a streamlet having to be diverted, and a culvert and bridge built, so that altogether the cost has been about 2,100*l.* In addition, the organ has been enlarged, at a cost of about 100*l.*, by Mr. Bullen, of Ipswich. The congregation have raised 200*l.* for the repair of the minister's house, and towards the building fund nearly 1,950*l.* have been contributed. The building was opened last summer and service has been conducted in it since, but it has only just reached completion.

Tunstall.—The memorial stones of a new Wesleyan Chapel have been laid at Newchapel. The chapel is to be erected in a central position in the village, the gift of Mr. Robert Heath. The dimensions of the chapel internally are 45 ft. by 36 ft., in addition to which there is to be a vestibule in front, and a vestry with orchestra over at the opposite end behind the rostrum. The accommodation is for 320 sittings, a portion of which will be free; but at any future time the accommodation can be increased by a gallery across the entrance end. The style of the building will be of Italian character; the materials to be used are red bricks, with bricks of other colours introduced for relief. The rostrum

and orchestra front will be of pitch-pine, and the remainder of the woodwork will be of red deal, stained and varnished. The whole of the chapel will have pews with doors, with sloping backs, book-boards, and hat-rails, except those which are to be free, which will not have doors. The roof will be covered with slates, ornamentally arranged. The windows will be glazed with ground glass with coloured margins. The warming will be by hot air. The cost of the building will be about 1,400*l*. Mr. Geo. B. Ford, of Burslem, is the architect; and Messrs. Brindley & Critchlow, of Burslem, are the builders.

Gloucester.—The New Baptist Chapel, in Brunswick-road, has been opened. The old building had long been inadequate to the wants of the congregation, and it was decided to pull down the adjacent school-room and enlarge the chapel. Designs were prepared by Messrs. Serle & Son, architects, of London, and the contract was taken by Messrs. King & Godwin, builders, of Gloucester. The estimated cost of the building is 3,000*l*., and the work was commenced when scarcely 2,000*l*. had been promised. The building is now complete. A portion of the façade of the old building has been utilised, and relief is given to the stonework by some carving executed by Mr. Henry Frith, of Barton-street. The edifice is 67 ft. in length and 61 ft. wide, being an increase on the dimensions of the old chapel of 6 ft. in length by 22 ft. in width. There are galleries on three sides; and the organ is placed in its former position. The chapel will now hold about a thousand persons.

Hillhouse (*Huddersfield*).—The corner-stone of the Hillhouse Free Wesleyan Chapel has been laid. The site of the chapel abuts upon the old Halifax and Huddersfield turnpike-road and the road leading from Edgerton to Fartown, and within a few yards of the small chapel that has been used up to the present time. The plans have been prepared by Messrs. John Kirk & Sons, architects, Huddersfield and Dewsbury, and the works are being carried out under their superintendence. The style of architecture adopted is Italian. The front will consist of two doorways, with arched heads, supported by double stone pilasters on moulded pedestals. Above these doorways will be a large three-light window, the two side-lights having moulded square heads, and the centre one a moulded circular head. On each side of this window there will be an ashlar pilaster, carrying two circular pediments, the upper one being finished in the centre with a carved and moulded urn. On each side of these doorways and three-light windows there will be four wallstone pilasters from the plinth to the main cornice, with a single-light window between each. The basement of the chapel will be formed into a Sunday-school, and will consist of three class-rooms, assembly-room to hold 350 children, kitchen, coal-place, and heating-apparatus room. This school will be approached by an outside entrance and a staircase from the vestibule of the chapel. The chapel will have a large vestibule, with right and left hand entrances into the aisles, and will for the present have no galleries. The chapel is calculated to seat 300 people on the ground-floor, and when the galleries are put in 500. The roof of the chapel will be an open-timbered one. There will be a ventilating-chamber formed on the top of the collar-beams. The chapel and school will be warmed with hot water and lighted with gas. It will be inclosed with boundary walls and palisades, and will have two entrance-gateways. The total cost of the building, including the laying out of the grounds, will be 3,000*l*. The names of the contractors are as follow:—For the masons' work, Messrs. Rothery and Sykes; joiners' work, Thos. Walker; plasterers' work, David Tunnacliffe & Sons; plumbers' and glaziers' work, Lidster & Armitage; painters' work, J. H. Stuttard; slaters' work, William Goodwin & Sons; ironwork, George Schofield & Son; all of Huddersfield.

Hanley.—The corner stone of the new Welsh Presbyterian Chapel, St. John-street, Hanley, intended for the use of the Welsh residents of the district, has been laid by the mayor. The edifice is situated on the west side of St. John-street. The plan is a parallelogram, the inside measurement being 48 ft. by 30 ft., and a school-room 25 ft. by 19 ft. At the back it will provide sittings for 260 persons. The pews are to be made of the best pitch-pine, and constructed upon the most approved modern principle. The chapel will have two external entrances,—one in the turret at the north-east angle, the other at the south-east,—and there will be also communication internally with the schoolroom. The pulpit is to be a combination of rostrum and pulpit, all made of pitch-pine, with perforated panels, and the communion will be made to match. The style adopted is the geometrical Gothic. The side elevations, being hidden to a great extent by other buildings, are devoid of any ornament, each having four windows with pointed heads. The front elevation will be carried out with best red pressed brick, and Hollington stone dressings and tracery. The central part of the front will have a large triple window, and another double-light window on one side, both with ornamental tracery in the head. The south-east corner buttress ends in a pinnacle. The north-east angle will have a tower, in which the principal doorway is situated, having louvre light above, and an octagonal slated roof, with battlemented cornice; height to top of finial, 60 ft. All the windows are to be glazed with cathedral-rolled glass with coloured borders. There are preparations in basement for heating apparatus and for boiling water, &c. All the woodwork inside will be stained and varnished. The whole contract has been let to Mr. R. Hammersley, Hanley, the architect being Mr. Richard Owens, of Liverpool. It is estimated that the total cost will amount to nearly 1,200*l*., and the building is to be completed by November next.

Bramford.—The Wesleyans propose to build a new chapel at Bramford. The new building will be in the Italian style, will accommodate 230 (a schoolroom and vestry at back will hold 125), and will be erected nearly opposite the Angel Inn. The cost will approach 650*l*. The architects are Messrs. Cattermole and Eade, Ipswich. The present chapel has been sold.

Macclesfield.—The erection of a Primitive Methodist Chapel has been begun in Higginbotham-street, adjoining Christ Church School, Newtown, and the memorial stones—four in number—laid with the usual ceremony. The chapel, a gable end of which fronts Blackshaw-street, the principal entrances being from Higginbotham-street, will be built in the modern English style, of brick, with polished stone facings. The entrance will be by two gable doors, the arches over which will be supported by Corinthian pillars, with capitals. The extreme length of the chapel will be 64 ft., width 49 ft., and 83 ft. from floor to ceiling, 54 ft. to the ridge, and 64 ft. to the top of the terminals on the spires. A gallery will run round the interior of the building, which will be fitted up with open stalls of red deal, providing sitting accommodation for about 700 people. The ceiling will be divided into five compartments, having three ornamental ventilators, encircled by cornices in each; the whole, it is expected, will be completed at a cost of 2,300*l*., of which sum about 500*l*. have so far been subscribed. Mr. James Kerridge, of Wisbeach, is the architect, the builders being Messrs. Hammond & Burgess, of Macclesfield.

Stainland.—The new Independent Chapel at Holywell Green, by Messrs. J. Shaw & Sons, is now approaching completion. The spire, which reaches an altitude of over 120 ft., is now ready for the vane and finial, and the high-pitched roof is ready for the placing of the ridge-tiles. Most of the carving on the exterior has been finished, and the workmen are now engaged upon that in the interior. Messrs. Walker, Emly, & Beales, of Newcastle, are the contractors for this portion of the work. The interior is divided into nave with aisles, and an organ recess of about 20 ft. in depth. The nave arcade is of five bays. All the shafts are of polished granite, with carved capitals. All the windows are to be filled with coloured grained glass, the great five-light one being stained. The tower, which is in three stages, has a clock-dial, and over that deeply-recessed belfry-windows, with carved capitals. The roof is of open timber work. The mason has been Mr. Edwards, and the building has been constructed of local stone. The pulpit will be of Caen stone, with polished shafts of serpentine marble, and carved capitals. A large organ is to be placed in the recess provided for it.

Hunslet.—The corner-stone of a new chapel and school for the Primitive Methodists at Hunslet has been laid. The new building, which is commenced in St. Joseph-street, Hunslet, is intended to take the place of the old chapel in Waterloo-road, which will be sold. The entire cost of the new chapel and school, with a house for minister attached, is estimated to be 5,200*l*., towards which the sum of about 2,000*l*. have been promised or obtained. The chapel and school will be erected from designs prepared by Messrs. John Kirk & Sons, architects, Huddersfield and Dewsbury. The basement floor will be the schoolroom, 51 ft. square, and there will be attached an infants'class-room, two small class-rooms, and kitchen. The ground-floor will consist of large and small vestries, also the main body of the chapel, 68 ft. by 51 ft. The gallery will extend round the chapel, supported on ornamental cast-iron columns, with the gallery front moulded and decorated. There will be seating accommodation for 900 persons. The whole of the pewing and other woodwork is to be of red deal, stained and varnished. The chapel will be lighted by means of ornamental sunlights suspended from the ceiling, and will be warmed with hot air. The style of architecture to be adopted is Italian, freely treated, the principal front being towards Jack-lane. The whole of the building will be constructed of brick, with Gipton ashlar dressings.

Luddenden Foot.—A new Baptist Chapel is to be built at Brearley, from plans by Messrs. Horsfall, Wardle, & Patchett. It will be in the Lombardic style of architecture. The site is close to the turnpike-road, and the principal front gives an entrance, flanked on either side by circular-headed windows. Over this is a large four-light window, with circular openings in the head tracery. At each side of the chapel are six windows. In the interior there is an entrance vestibule; and the chapel, which will have an open-timbered roof, will be 50 ft. long by 40 ft. broad. There will be a rostrum, with the baptistery and communion in front. A circular arch opens into the organ recess. Vestries are on each side of the organ. In the rear of the chapel are schools,—that for the boys being 26 ft. by 20 ft., and for the girls 30 ft. by 13 ft.

SCHOOL-BUILDING NEWS.

Lindley (*Huddersfield*).—The foundation-stone of a new Sunday-school, belonging to Zion Methodist New Connexion Chapel, Lindley, has been laid. The site is nearly opposite the chapel, and was purchased and presented by Mr. Wm. Sykes, jun., besides a liberal sum towards the erection of the building, which in design is to be in strict keeping with the chapel. The committee obtained the plans from the architect of the chapel, Mr. Woodhouse, of Bolton. The various works required for the new building have been contracted for, and the foundations have been dug.

STAINED GLASS.

Crickhowell Church.—A double lancet window has been recently placed in the south transept of this church, in memory of the Misses Latham of Crickhowell. The design is taken from the 35th and 36th verses of the 25th chapter of St. Matthew. On the small rosette, at the top centre, are represented Faith, Hope, and Charity by their emblems; beneath, on a grizzled background, are four female figures, "Giving meat to the Hungry," "Drink to the Thirsty," "Clothing to the Naked," and "Visiting the Sick." The artist was Mr. Charles A. Gibbs, of London. The stonework was re-built by Mr. Owen, of Crickhowell.

St. Mary's, Lichfield.—Two other of the lights in the east window of this church have recently been filled with stained glass. The chief subject is illustrative of the "Crucifixion," and the lights just added contain representations of the two thieves on the cross. Above the figures of the crosses are their guardian angels, the face of the one beaming with joy, that of the other clouded from view: and whilst the coloured background employed is the same in both cases, the one is broken up by the introduction of passion-flowers, the other by briars and thistles. The subject in the lower part of the window is the "Last Supper." Three bays of the arcading forming the reredos have also been filled in with oil-paintings on slate. The subject, when complete, will illustrate the "Adoration of the Magi." The window was executed by Clayton & Bell, and the paintings by Burlisom & Grylls. Three other stained glass windows have been recently added to this church. In the north aisle is one to the memory of the late Mr. Webb, the subject being "The Nativity"; another, at the west end, containing the figures of Christ, the Virgin Mary, and St. John the Baptist, and also illus-

ating "The Presentation," "Christ blessing ttle Children," and "Christ's Baptism." In e north aisle is another window, to the memory the late Rev. Hastings Gordon, M.A.; but e subject is treated in so limited a manner, cording to the *Staffordshire Advertiser*, as to ake the window somewhat insignificant.

St. Canice's Cathedral, Kilkenny.—A stained-ass window has been erected in this cathedral, der the superintendence of Mr. Holland, of e firm of Messrs. Holland, Son, & Holt, War-ck. The central light shows two subjects,—The Good Shepherd," and "Feed my Sheep." the two other lancets, six of the miracles are picted. A scroll-work surrounds these de-ns; and the medallions at the top and bottom each lancet, and between each of the principal bjects, represent heads of the Apostles. The ndow is the gift of Colonel the Right Hon. F. Tighe.

St. Giles's, Northampton.—A memorial window s been placed in the west window of the south le of this church, by Mr. Brooks Gates, to the mory of his father and mother. The ground-rk and shading of this window are of a much hter character than those of the others in the urch, and the glass is rather a resemblance of cient than modern work. Underneath canopies the three principal lights are figures represent-g the Annunciation, the Nativity, and the Wise n presenting gifts to the Infant Jesus, each presentation being overshadowed with angels. e smaller lights of the tracery-work are filled with angels carrying scrolls. It is from the rks of Mr. Powell, Whitefriars, London, the ne maker having also supplied the large west ndow, and the four coloured windows of the th aisle.

St. Wilfred's, Kidworth.—A new stained-glass ndow has just been placed in the south aisle this church, making the seventh that has en put in. The window has been designed d executed by Messrs. Heaton, Butler, & Co., London, the same firm who were the artists the large east window. The subject of e present window is the raising of Jairus's ughter, and is to correspond with the other racles of "raising from the dead" in the th aisle. The window is divided into three partments. In the centre light is our viour taking the maiden by the hand, and sing her from the bed. In the right com-tment are the three apostles admitted to ness the miracle; in the left, the parents. two of the quatrefoils in the head of the ndow are angels with scrolls. This window is e gift of Mr. John Marriott, in memory of his cestors and family, long connected with the rish. There is said to be a prospect of one, if two, new windows being presented to the th aisle of the church.

Publications.

hotographs of Building Construction. W. BUS-PRIDGE, Frederick-place, Plumstead.

ese are intended by the author as copies for dents, and consist of details of roofs, doors, ndows, and so on, clearly drawn and litho-phed, and with full tables of references. ey are very well calculated for their purpose.

Miscellanea.

Public Parks.—A park for the use of the abitants of Ashton-under-Lyne, Stalybridge, d neighbourhood, has been opened by the Earl Stamford and Warrington, who, on the under-nding that the people would subscribe 10,000*l.*, de a gift of 35 acres, valued at over 12,000*l.*, he park committee, thus making a place of reation for the people occupying over 50 acres ground. Besides the park there is a mansion a museum and library, and there are also nnasiums, bowling-green, large lakes and terfalls.——Through the energy and enter-se of Mr. C. Gardiner, the densely-populated ghbourhoods of Tudhoe Grange and Spenny-or have been provided with a park, upon a all scale. The new grounds are about eight es in extent, and originally formed a portion Squire Salvin's estate. The park is within minutes' walk of Spennymoor Station. ough still in the rough, the new park has been nally inaugurated.

National Training School of Cookery.—A meeting of promoters of the establishment of a national training school of cookery on a permanent basis, has been held, by permission of the Marquis of Westminster, at Grosvenor House. There was a large and influential attendance, including her Royal Highness the Princess Louise and Lady Franklin. The Marquis of Westminster presided. Mr. Henry Cole, C.B., said the meeting had arisen out of what had taken place at the International Exhibition School of Cookery, of which he gave details. He was authorised by her Majesty's commissioners to say that they were quite disposed to try the experiment on the present premises, which would save them taxes, &c., for the present It was estimated that the expenses would be 100*l.* per week. There must be a lecturer, instructors, and servants, and the provisions had also to be found. He proposed that the meeting agreed generally with the observations of the committee, and desired to see a national school of cookery established on the basis of such proposition. The Hon. F. Leveson-Gower seconded the resolution. Mr. J. McGregor, of *Rob Roy* canoe fame, supported the resolution. He did not think the proposed school would fail. From a school they might rise to a college. They should endeavour to make the school self-supporting; but that should not prevent them from hoping that money would be sent in towards the expenses before the school became self-supporting. The resolution was carried unanimously, and a provisional committee was formed to take the necessary measures for establishing the school by means of shares, donations, and guarantees. Mr. H. Cole read the names of the committee, at the head of which stands the Princess Louise. The principal training schools and school boards are included. The present committee of the School of Cookery at the International Exhibition was also requested to act in a similar capacity.

From New York to England in Sixty Hours.—It seems that the wealthy proprietors of the principal New York journals are never tired of spending money in sensational and unique enterprises, which, if successful, serve as admirable advertisements for their papers. The last undertaking of this kind of which we hear is very startling. The proprietors of the *New York Daily Graphic* have entered into a contract with Professor John Wise, a well-known aëronaut, to build for him a balloon, in which he, his assistant, and six or eight other persons, are to attempt to cross the Atlantic, with the hope of reaching England or Ireland in sixty hours from the time of their departure. The *Graphic* is to pay for the construction of the balloon, and all the expenses of its outfit. The work upon it is now going on, and the voyage is to be undertaken on or about the 20th of next month. The whole cost of the undertaking will be about 2,000*l.* There are to be two balloons. These will give a lifting power of 15,900 lb., a net carrying power of 9,500 lb., and of disposable ballast 7,500 lb. The balloons, it is calculated, will lose by exosmose of gas about 15 lb. per hour, and this would keep them afloat for twenty days; but, as a last resort, the balloons will carry beneath them a life-boat, stored with water and provisions for thirty days.

North Oxfordshire Archæological Society.—This society, which is now twenty years old, had its annual excursion on the 10th inst., the place of rendezvous being Handborough Station. The first place inspected was Handborough church. After breakfast, provided by Dr. and Mrs. Higgs the order was given to march onward to Northleigh, where the vicar, the Rev. R. W. Fiske, met the party and conducted them through his church, which, like that of Handborough, has been restored (by Mr. Street). From Northleigh the party wended their way to the eastern part of the parish, to the valley of the River Evenlode, where they saw the remains of a large Roman villa, with a tesselated pavement, constructed over a hypocaust; the bath still retaining its leaden service-pipe. Mr. Earwaker explained that another Roman villa was discovered near this, about 1713, in the parish of Stonesfield, but that its site is again forgotten. At Stonesfield the rector conducted the party through his church. At Combe the visitors again enjoyed the courtesy of the incumbent, as in each church previously visited. A dinner in the "George and Dragon" Inn, Handborough, was partaken of by eighteen of the party, who thus wound up a pleasant excursion, the weather being all that could be wished.

A Secret of the Coal Trade.—Some remarks upon the condition of the household coal trade, and the somewhat singular circumstance that while all other sorts of coal had a tendency to lower rates, households were persistently advancing in price upon the London Coal Exchange, were recently made by a Newcastle paper. A gentleman largely concerned in trade in the county of Durham, and who has a thorough knowledge of the subject, gives the following explanation:—"Not more coals, I believe, are now sold upon the (London) Coal Exchange than some 50,000 tons monthly, or 600,000 annually. This small proportion of the coals sold on the London Coal Exchange naturally suggests the conclusion that it may be a convenient handle to the coal owners and coal merchants to keep alive prices, as *all the remainder* go by railway at fixed prices at the pit mouth; and, of course, when any merchant is dealing in quantities five or six times those sold upon the market, he can well afford—it is, indeed, an enormous gain to him—to *give a high price upon an open market for one-fifth* of the quantity he wants, so long as it enhances the gain upon the remaining large portion he has under contract." It is now said that the prices cannot much longer be prevented from coming freely down, in spite of knavish coal merchants and coal owners.

The Steam Quarrier.—This is an invention for quarrying and removing blocks of rock, and put into operation by Mr. Sim at his granite quarries, Lochfyneside. Hitherto in connexion with the system of large blasts of 40,000 to 80,000 tons at one explosion, the innumerable large pieces of rock got wedged together to such an extent as to render it a work of great difficulty and danger to get them moved out from the mass of rock on the quarry floor. The quarrier has been supplied by Messrs. Napier Brothers, from a modification of their patent purchase steam windlass for the lifting of ships' anchors. At the outer extremity of the area of the quarry floor the sole-plate, occupying a space about 6 ft. square, is bolted down to the solid rock, and the whole superstructure above this is only, over all, about 9 ft. in length, by 8 ft. in breadth, and 4 ft. in height. Steam is admitted into a pair of 9-inch horizontal cylinders, and by means of a small auxiliary drum the chain cables are carried up to any given point on the quarry face. Arriving there, the chain is attached to the block of stone required, the purchase windlass is then set in motion to heave in the chain, and, according to test, moved off a block of granite forty tons in weight with great ease.

Jersey Harbour Works.—We believe that the sanction of Her Majesty in Council has been received by the States for the erection of La Corbière lighthouse. The Harbour Committee took upon themselves to authorise the construction of the causeway leading from the mainland out to the rock "La Corbiere," which, for more than one quarter of a mile is composed of granite stones on a face filled in with cement concrete. According to the *Jersey Times*, on the rock itself, a semi-circular roofed shed has been erected to serve as workshops, stores, and places for workmen to sleep in. A site has been levelled for the engine, which has arrived, and will be fixed in its place next week. The foundation of the lighthouse tower is cut out of the solid rock, and the building is expected to be commenced at once, so that this long-talked - of and most - urgently - wanted lighthouse may be expected to be finished in three or four months hence, though the lantern and lenses cannot be ready for at least six months, owing to the delicate and intricate nature of their construction, which are, proportionately, the most costly part of the whole. The engineer is inviting tenders for the construction of the light-keeper's dwelling.

A New Ventilator.—Captain Wintour, a resident of Bristol, has invented an apparatus, consisting of a metal frame with glass, at each end of a cylinder of gauze wire. The cylinder slides backwards and forwards in a metal shield, by means of which it can be easily fixed in any window, door, or indeed anywhere. The inventor claims for it that it is specially adapted for the windows of private houses, churches, hospitals, and all large buildings; it can also be fixed in carriages, cabins of ships, tents, conservatories, and greenhouses. Its action is to admit air at the sides of the cylinder only, and remove foul air simultaneously and imperceptibly without the least draught, or admission of dust or insects.

Royal Archæological Institute.—The annual congress of the Royal Archæological Institute of Great Britain and Ireland, which will be held this year at Exeter, commences on Tuesday, 29th inst., and will occupy up to the following Tuesday, August 5. The president of the meeting is the Earl of Devon, and the following are the presidents of sections:—Antiquities, Mr. O. Morgan, M.P., F.S.A. Architecture, Archdeacon Freeman; vice-president, Mr. Beresford-Hope, M.P., F.S.A. History, Sir John St. Aubyn, M.P. Papers will be read daily on subjects of local and general interest in connection with archæology, and the excursions include, of course, Dartmoor, which will be visited under the guidance of Mr. G. W. Ormerod, M.A., F.G.S. Amongst other places to be visited are Totnes, Bury Pomeroy, Compton Castle, Ford Abbey, Powderham Castle, &c. The objects of interest in the city will be visited under the guidance of Mr. Parker, C.B., Mr. Dymond, F.S.A., and Mr. W. Cotton; and Mr. Freeman is the appointed guide to the cathedral.

A Remarkable Discovery.—The people of Clevedon are talking of a remarkable discovery in their town. They have a public weighbridge. This weighbridge was lately tested by an inspector of weights and measures, and found in good order and quite correct. It has since come out, however, that for four years at least this weighing-machine has been registering 16 cwt. instead of 20 cwt. as ton! The mistake, it seems, arose thus. By an arrangement of the machinery, a set of small weights is used in weighing,—1 oz. representing 1 cwt. On the 16 oz. weight is marked "one pound." It seems, however, that this weight has been mistaken since the erection of the weighbridge for 1 ton! Some of the householders have begun to count up their losses. A corrrespondent of the *Bristol Times*, in commenting on the circumstance, says:—"It would be well for the public to know something about their weighbridges: are they worked by a public officer or let to the highest bidder? What security is there for their correctness?"

The Sculptures of the Late John Gibson.—In reply to Mr. Parker in the Commons, Mr. Ayrton stated that no blame attached to the Royal Academy for their not being in a position to exhibit the sculptures and models of the late Mr. Gibson in a gallery specially provided for them, for the Royal Academy several years ago entered into an arrangement with the Office of Works, by which they were to construct a suite of galleries above Burlington House, as soon as the Academy could be put into possession of that building. The Academy, instead of waiting until these bodies shall have transferred themselves to other premises, have at considerable expense carried on the construction of the galleries. He expected the Academy would be in a position to exhibit the sculptures and models when they opened their exhibition in May next.

London and Middlesex Archæological Society.—The annual meeting of this society was held on Monday evening, at University College, Mr. J. Hall, honorary treasurer, in the chair. Mr. Brabrook, hon. secretary, read the report, which stated that during the past year twenty-five new members had joined the society, eleven had retired, and four had died, making the balance of increase ten. Much regret was expressed at the loss of the late Sir William Tite, a vice-president of the society, who had made valuable contributions to the illustrations of the antiquities of London and Middlesex; as well as for the late Mr. J. Walker Baily, whose knowledge of archæology and skill as an artist, together with his valuable collection of antiquities, had ever been available for the use of the society.

Opening of an Art-treasures and Industrial Exhibition at Bradford.—The Mayor of Bradford (Mr. M. W. Thompson) has opened the Art-treasures and Industrial Exhibition at the Mechanics' Institution, Bradford, the object of which is the liquidation of a debt of 5,000*l.* still remaining on the building. The exhibition is on a scale of considerable magnitude, including works of art and industry to the number of upwards of a thousand. The collection of oil paintings and water-colours forms the most prominent feature of the exhibition. The first room devoted to such works contains productions of local artists to the number of about fifty. Along the walls of some seven or eight other rooms are arranged paintings by masters of the modern English and foreign schools.

Proposed Public Park for Sheffield.—At a special meeting of the Sheffield Town Council, a resolution has been passed to the effect that it is desirable for the town council to provide a public park for the use of the inhabitants, and a committee was appointed to report on the advisability of purchasing the residence and grounds of the late Miss Harrison, which are now in the market, for the purpose of a public park. These grounds are about eleven acres in extent, and are situated at the west end of the town. It is joined on one side by land belonging to the Water Company, and the town trustees may purchase this land also, and then a park nearly fifty acres in extent would be provided for the town.

Bank Notes and Stamps by Post.—The following notice, to come into operation on the 1st of August next, has just been issued by command of the Postmaster-General:—"With the view of diminishing the temptation to which servants of the Post-Office are exposed by the practice of sending articles of value in unregistered letters, and in order to give greater security to correspondence of that class, the regulation respecting letters containing coin will be extended to all inland letters and packets not duly tendered for registration which unquestionably contain any of the following articles, viz., bank-notes, postage-stamps, jewelry, and watches. Any such letters or packets will, therefore, be subject to a double registration fee of 8d.

Technical Education.—The Prince of Wales has presided over a conference, held at Marlborough House, comprising the representatives of the principal City companies. It was convened with a view of discussing how the latter might best promote technical education, in concert with the Commissioners of the International Exhibition. In addition to his Royal Highness, the speakers were the Earl of Carnarvon, the Lord Mayor, Alderman Stone, and Mr. Henry Cole. A resolution, cordially sympathising with the objects for which the conference had been called, and promising the support and co-operation of the City companies, was carried.

Proposed Conversion of Two City Basins in Dublin into Baths.—The Corporation of Dublin having advertised for tenders for the materials of two of the city basins, and the sites for building purposes, a memorial, signed by Sir W. Wylde as chairman, has been presented to the Corporation, requesting that the basins be appropriated as baths for the people, who greatly require such an establishment. The memorialists believe that such baths could be made self-supporting. The Corporation have referred the subject to their Waterworks Committee to consider it and report to the Council.

Selby Abbey Church Restoration.—The Abbey Church of Selby is now much dilapidated, and, in order satisfactorily to restore this venerable edifice, Sir G. Gilbert Scott was called in, and has reported to the committee for the restoration of the church on the most important of the works which require immediate attention, together with an estimate of the cost. What is desired to be at present done is estimated to cost about 12,000*l.*, towards which it is hoped liberal subscriptions will be rendered.

Epsom.—A new master's house and extra accommodation for pupils has lately been added to the Royal Medical Training College. The style is in keeping with the other portions of the building, viz., Perpendicular Gothic. Mr. Shepperd, of Bermondsey, is the builder. The gables on pupils' entrance were carved by Messrs. Smith & Finley.

Annual International Exhibitions.—Her Majesty's Commissioners have decided that collections of works of deceased British artists to be formed in connexion with the London International Exhibition of next year shall consist of works by the following artists:—Painters in Oil—J. Constable, R.A., died 1837; Augustus Egg, R.A., 1863; David Roberts, R.A., 1864; David Wilkie, R.A., 1841. Painters in Water Colours—J. Coney, died 1833; J. S. Cotman, 1842; F. Mackenzie, 1854; S. Prout, 1852; A. Pugin, 1832; J. M. W. Turner, R.A. (architectural only), 1851; C. Wild, 1835. Owners of pictures painted by these artists are invited to intimate their willingness to lend them to Her Majesty's Commissioners.

Mineral Oil in Australia.—A product of South Australia, just discovered, promises well. Kerosene oil has been made from a substance which exudes from the earth in large quantities at the head of the Coorong. Experiments have been made to test the stuff, which in appearance resembles asphalte, and has been called "caoutchouc." A ton of it yields seventy gallons of kerosene, thirty of lubricating oil, and seven of varnish. Tests have shown that the kerosene will not burn except through a wick, until heated to 152°.

Lord Houghton has accepted the nomination as President of the Social Science Congress, which will meet at Norwich on the 1st of October next. Lord Houghton was President of the Reformatory Section of the Bradford Congress in 1859, and of the Department of Economy and Trade at the meeting of the Congress in London, in 1862. Mr. Douglas Galton will be President of the Health Department at the Norwich meeting.

Utilisation of Slag.—It is stated that a company is about to be formed to work the patent of Mr. Chas. Wood, at the Tees Works, Middlesbrough. Mr. Wood's process, which has before been explained, is to utilise slag for the making of bricks, concrete, &c. It is also intended to use the slag sand for agricultural purposes. The Tees Scoriæ Brick Company for working Mr. Woodward's patent is at work experimenting at Clay-lane. Some bricks of fine quality and light weight, it is said, have been turned out.

Damage to Chatham Gun Wharf.—The damage caused by a late storm to the sea-wall of the Chatham Gun Wharf proves to have been so extensive that to reinstate it will cost 15,000*l.* or 16,000*l.* From 9 ft. to 100 ft. of masonry and brickwork were forced outward into the river, a culvert from Chatham Barracks having burst while the tide was full, and a great body of water having consequently collected behind the wall.

Sculpture, Painting, and Photography for Persia.—Whilst in Paris the Shah gave sittings to a sculptor for his bust, and for his portrait in oils and photography. He spoke of patronising sculpture in Persia, and made large purchases of photographic materials for his own use. All who have applied for concessions have been referred to the Grand Vizier. The Shah is understood to have spent 50,000*l.* in jewelry and objects of art whilst in Paris.

Bronze Doors.—Messrs. Bunnett & Co. have just now completed, for the Provincial Bank of Buenos Ayres, South America, some bronze doors, of a very exceptional character, measuring 17 ft. 4½ in. high, 7 ft. 1 in. wide, and weighing upwards of three tons each. One of these is erected at their New Cross Works, Deptford, and might interest some of our readers.

TENDERS

For the superstructure of Christ Church, Westminster-road, S.E. (Rev. Newman Hall's). Messrs. Paull & Bickerdike, architects:—

	Portland Stone Dressings and Bath Combe Down Range Work Facings.			*Combe Down Dressings, and Ditto Range Work Facings.*			*A.*
	Church.	Tower.	Schools.	Church.	Tower.	Schools.	Total.
Manley & Rogers	£29,740	£8,320	£6,885	£25,840	£6,494	£6,244	£44,444
Henshaw	29,756	8,199	6,800	25,876	6,290	5,987	44,391
Trollope & Son	29,373	8,300	7,000	25,757	6,320	6,035	44,185
Hill & Sons	29,156	8,200	6,860	25,260	6,450	6,000	43,691
Higgs	28,562	8,255	6,867	25,160	6,321	6,036	43,084
Dove, Brothers	28,475	7,850	6,870	26,295	6,180	6,290	—
Perry & Co.	26,100	7,357	6,500	24,500	6,190	6,060	*37,892
Myers & Sons	25,575	7,300	6,900	23,900	5,893	6,320	38,971
Lucas, Brothers	25,824	6,704	6,278	24,675	5,805	5,988	—

* Accepted.

Column "A." is for all the buildings with Portland stone dressings, and Kentish rag stone facings in horizontal drop courses.

The Builder.

VOL. XXXI.—No. 1591.

"Modern Gothic Architecture."

THAT much of the present prevailing admiration for Gothic architecture, and almost exclusive practice of it, is due to the influence of a mere fashion of the day, which, like other fashions, will run its course and pass away; that Mediæval architecture is not, in its ancient or its present revived form, a sufficient exponent of the feeling or of the practical requirements of modern life; that much of the revived Gothic of this generation is mere copyism, rather to be called archæology than architecture; that many of the attempts at "originality" in the practice of it have resulted in mere eccentricity and uncouthness, and that no "new style" be realised by direct and pretentious striving novelty; these are propositions which will or ought not, to appear in the light of new s to readers of the *Builder*. The publication critical essay,* however, by a professed ad- r and practitioner of the Gothic style of tecture, in which this view of the subject is ated and enforced with considerable literary y, is a sufficiently marked sign of the times ll for some special notice.

e object of the book is stated by its author , "not to examine the claims of superiority its rival styles that have been made for ic architecture; but, starting with the mption that on the whole popular feeling is s favour, and that there is good reason why uld be so, our purpose will be to inquire it is that the Gothic revival has not produced favourable effects on modern art that might been looked for; to point out certain mis- s in our practice which may account for the re; and to suggest certain remedies." It is tted, however, that it is necessary to con- , in the first instance, the principles on h a style should be chosen, in order to justify assumption that we are right in selecting ic as the style on which to base our modern itecture. These principles, as laid down in Jackson's pages, are what most persons who thought on the subject at all are familiar gh with. The characteristics of every dis- and individual style have been the same d ones—"truth, honesty, and simplicity": use materials in the way nature has best l them to be used; to consult in every build- the habits and sentiments of contemporary ety. . . . . these have been the charac- stics of genuine architecture in every age country." We cannot find our style by simply going over existing styles and selecting what seems the best; because all true styles are good in relation to the circumstances and influences under which they arose, and not (or only partially) otherwise. We cannot succeed by merely adopting and imitating even the indigenous style of our own country in its most perfect epoch, because manners and habits of thought affect architecture as well as climate, and these have materially changed with us. To attempt to revive the art thus would be as ineffective as the attempt to revive "classic" literature by the Ciceronian Latinists of the Medici period (an attempt which has been more than once referred to in our own pages as an exact counterpart of the modern Mediæval revival). What we really need to revive is "the practice of architecture in Great Britain according to true and natural principles," and the application of these principles would result in an architecture that would be Gothic, "because modern society is nothing but Mediæval society grown to maturity," but which would differ from Mediæval Gothic as much as we differ from our forefathers of 600 years ago. As we cannot, however, apply the said principles without having something to apply them to, we must take the indigenous native style, and, by working it in regard to our modern wants and habits, we shall unconsciously evolve and bring to maturity a style of our own, expressive of those wants and habits. These may be new ideas to the nonprofessional public, to whom Mr. Jackson's book is partly addressed; they are certainly not new to architects. The *point de départ* theory, as we may term it, has been urged over and over again, though it has not always been so logically and clearly put as here; yet we have seen no fruit from it yet. The reason of this, in our author's judgment, is, that we have fallen into an entirely wrong and unreal method of regarding and carrying on architectural design, and we must get clear of our error in this respect before we can hope to achieve anything of value. It is to affording some new suggestions in regard to this part of the subject that the book is mainly directed.

The errors that lie nearest the surface in the revived practice of Gothic are dealt with in Chapters II. and III., under the heads "Formalism and Purism," and "Affectation of Originality" respectively; titles which explain themselves. What is said in Chapter II. in regard to the efforts that are made to restore details of Mediæval manner, grotesque carvings, stiff archaic drawings, lead-light windows, &c., is well put; in regard to the latter point the distinction is rightly drawn between the use of small leaded panes merely as a Mediævalism, and the legitimate use of leading in ornamental design, so as to give the window a decorative treatment. The author, however, like most writers who attack these abuses of precedent, has a tendency to overdraw his censure, and to magnify to its utmost the particular fault he wishes to expose. The chapter on the "affectation of originality" is more free from this defect, and is very well written and very sensible; and the distinction between the "orginality of vanity," and the "orginality of genius," is a happy one. "A would-be original author or artist works in a violent and extravagant style to cover the commonplace of his matter." Hence, in architecture, arises that which is here justly called an "ignoble manner" of building; "mouldings and chamfers made on purpose to be stopped; projections devised for the sake of corbels and brackets to carry them: the whole plan abounding in queer breaks, starts, and irregularities, without anything unusual in the requirements of the building, or the site, to occasion them." The originality of genius, on the contrary, is distinguished by breadth and simplicity; but it is to be remembered, in looking for this, that a very high degree of originality is the gift of but a very few; that the majority of artists must be content if, without inventing new styles or new treatment, they can improve a little on their predecessors in some special point, or offer a little better or newer combination of old materials. In the struggle after so-called originality, it must be remembered also that outsiders as well as the architects are to blame, a fact which Mr. Jackson appears to recognise in his perfectly true remark (after describing rather eloquently the beauty of some of the simpler buildings of the genuine Mediæval date) that "there are few men who pretend to the possession of good taste who would listen with patience to their architect if he were to put the design of such a building on paper, and propose to reproduce it for them in brick, stone, and timber. The cry would be that the design *had nothing in it*; that it was bald, plain," &c. Architectural competitions, where each draughtsman vies with his neighbour in producing a dashing and brilliant effect, have done much, we fear, to foster this taste in design; but in justice to the public it might be observed that the plain, unadorned class of building referred to does not look half so well on paper as in execution, especially after it has stood some time, and been weather-stained and coloured by the hand of nature. The predominant failing, however, of the modern "original" designer lies in his vain attempt at a design which shall be "all his own," and owe nothing to nature or to his predecessors. The results we are tolerably familiar with; but it may be questioned whether our author does not again overstep the mark in his assertion in regard to these obtrusive productions, that "the most insipid and lifeless Classic work never approached them for baseness. Classic at its worst was always "genteel," but perhaps that very word, in the only sense in which it can here be used, is itself about the worst epithet that can be bestowed on a building, from an architectural point of view.

It is in the three remaining chapters, with the somewhat fanciful titles of "Disloyalty" and "Architecturalism," that most of what may be said to be new in Mr. Jackson's architectural gospel is to be found. "Disloyalty," we may explain, means the use of other styles than Gothic in a dilettante fashion; the notion of Gothic as a church architecture, and of its unsuitability to other and more secular classes of building. This view, of course, has been protested against by Gothicists many times; the novelty in this case lies in the ground on which the protest is made. Eminent practising Gothic architects have exhorted the use of only the genuine Gothic style, on the ground that it was good enough for anything; Mr. Jackson makes the same exhortation on the opposite ground, that it is not good enough for our present needs, and that only by confining ourselves to the style as left to us, and applying it to every class of building, can we really hope to find out its weak points and anomalies in regard to modern life, and to develop it into a modern style suited to the present day. There is certainly some reason in this view of the matter; and it follows quite logically, at any rate, from the premises laid down in the earlier chapters. The best idea in this chapter is the claim put forward for the study of Renaissance ornament and figure design as material capable of being worked into, and affording new suggestions for a further development of Gothic. Renaissance architecture is viewed as having "used Classic forms on Gothic principles,"—a view which is manifestly incorrect in regard to the relation between construction and design in the two styles, but which in regard to design alone may be admitted to have sufficient truth in it to justify in a great measure the suggestion based upon it. "Give the artist liberty to study the great masters of Italian decorative art, and he will no longer paint his

*Modern Gothic Architecture. By T. G. Jackson, utect, Fellow of Wadham College, Oxford. London: y S. King & Co.

windows and walls with the Mediæval grotesques which he now places there; let him know that he may without disloyalty to Gothic art take Donatello or Michelangelo for his master, and we shall see no more of those conventional figures, passionless as dolls, tiresome with their hackneyed draperies and everlastingly repeated poses, which we know so well and meet so regularly on every modern Gothic building."

The argument carried on in the two concluding chapters, under the same heading of "Architecturalism," raises in reality the most important question suggested by the author. The gist of this is (after a short discriminative criticism on architecture and the imitative arts, indicating that the former copies principles and not forms in nature,—a point we hope amateur readers will take note of), that architectural design, pure and simple, without the addition of painting or sculpture (or both) is a dead thing, scarcely an art at all, and not worthy of special pursuit and study for its own sake: the inference, in fact, is that it is a kind of thing anybody can do. This is the old doctrine which Mr. Ruskin has preached before, though in less tolerant and moderate language. The author, indeed, avers that he does not suggest the study of painting and sculpture as a mode of escape from a lifeless architecture, "but that by combining the three arts we shall be most likely to succeed in restoring our dead architecture to life." In our decorative details we are to shrink from the use of "architectural" forms: "let us fly at once to nature, and instead of making window traceries, or whittling and chopping our angles of wood and stone into notchings and scollopings, let us copy what we know to be real and true, and *our own*, not borrowed from other times. . . . . One figure in painting or mosaic really portraying a man or a woman, such as men or women seem to us, is worth whole ranges of arcading or blank traceries." Possibly it is. But this is in reality shifting the ground entirely, and raising the question whether architecture has, or is to have, a separate existence as an art or not. The author is somewhat in a puzzle himself here, and does not know exactly what he wants. He is severe (p. 189) on the architect who spends his time in "laboriously collecting sections of mouldings" from old buildings, and who "notices the slightest peculiarity in the profile of a capital"; and this erring mortal is exhorted "to model his ornament after the original, and not after the copy,"—in other words, to go to nature. But on p. 41 we read that it is inconceivable that any person should become even a tolerable architect at the present day who has not searched into the construction and ornamentation of old Gothic buildings, acquainting himself with every part of their design in detail, "by actual measurement taken with the utmost nicety and to a hair's breadth." On page 75 we have an eloquent description (before referred to) of the effect of a grand simple building on a large scale, with its expanse of wall and "mountain of tiled roof above," and "no person of feeling can fail to admire such a picture." But when we get to p. 187, the author's mind is changed, and he asks, is the architect to "be satisfied with arranging the plan and designing roughly the mass of the building, and to be responsible only for its effect when seen a furlong off?" These are somewhat irreconcilable reflections. Undoubtedly the study of the higher branches of form and expression, as set forth in painting and sculpture, will assist the architect in designing ornament of a high class. Nevertheless, Lincoln tower, Lichfield spires, St. Paul's dome, are all beautiful things for which we may be thankful, and which are a constant source of pleasure, and yet they are neither sculpture nor painting, but, in short, "architecture." The often-repeated example of Michelangelo, painter, sculptor, and architect (not forgotten by our author), is scarcely in point; not only because he was an exceptional genius, but because it is admitted on all hands that the construction of his dome is a failure, and that the dome of the "architect" Wren is far superior in beauty to that of Michelangelo. The unfortunate "architect" is pulled about sufficiently just at present, it must be admitted,—one person wanting him to be a painter and sculptor, another that he should be a surveyor, and so on. This happy uncertainty as to the *locus standi* may perhaps warrant the idea that there is (nominally at least) a profession too many somewhere, and that two might advantageously be amalgamated; but, if so, it is not, we take it, the architect and painter, but rather the architect and engineer, who should be amalgamated,—an idea which has been before suggested. Our author thinks that we should turn from an art which is in so melancholy a condition "towards other arts which are not in so almost hopeless a state,"—sculpture and painting. We can only say that we read every day, in current art-criticisms, lamentations over the uncertain and unsatisfying state of painting, and the utter worthlessness of modern sculpture; so that opinions, at all events, are not unanimous on this point. But granting it to be as Mr. Jackson says, we do not think a neglect of the constructional side of architecture, and an inroad on the fields of other arts, will ensure our having any better buildings than at present. We have had instances of mansions planned and designed by "artists," in the more popular sense of the term, and the result has not been happy. No doubt the drawing of the figure is a higher and more recondite form of art-expression than the planning and grouping of a building, and in its best forms affects us more intensely; but for that very reason it is not a form of art to be lightly taken up by those who have not special genius for it. There are a great many people already drawing figures who had much better not do so, and it would not be desirable to multiply the numbers. On the other hand, there are those who have a special talent for combining convenience and effectiveness of plan with picturesque appearance and appropriate ornament in building, a power which the study of painting and sculpture will not give, and which exists separately. We certainly do not see why, because this is not so purely poetical and ideal an art as the phonetic arts, it should therefore be "daffed aside" as valueless. The combination of convenient planning and good construction with picturesque design, is in itself a most fascinating study, and most architects with any love for and ability in their profession would be very sorry to lose the constructive and practical part of it. In short, we think Mr. Jackson has altogether fallen into a mistake in ignoring architecture proper (the art of expressive building) and wishing to make it into sculpture and painting, which it is not; although these are invaluable accessories to architecture, which in its turn gives support and effect to them.

Upon the view taken of the foregoing considerations depends also the answer to the question further raised by the author, as to the professional theory of architecture. He wishes to insist that architecture is not a "profession" at all, on the same footing as the engineering or the legal profession; but an "art," on the same footing as that of the painter or sculptor. If the view Mr. Jackson takes of the nature and end of an architect's duties were accepted as the correct one, this conclusion as to the professional status would follow as a matter of course. But if, as we know, the architect does valuable service in overlooking the carrying out of a building in its constructive as well as its artistic details, and in providing buildings in which plan and arrangement are so manipulated as to furnish occasion for picturesque effect without sacrificing utility, but rather in furtherance of the expression of that utility, he is certainly doing what no one else at present can do, and what requires special ability and special training and practical experience. Painters and sculptors cannot do this; and engineers, whatever they themselves may suppose, cannot either, as their works do abundantly testify; and a profession which gave congenial employment to the abilities of Wren and Barry, men who never aimed at being artists in Mr. Jackson's sense of the word, may surely claim a right to existence as an independent study, without the aid of the more strictly imitative arts.

The essay may do good, however, in promoting more serious thought and attention to an important subject, and perhaps in opening the eyes of general readers to some of the singular popular misconceptions on the subject of architecture; and in point of style and tone it is a thoroughly well-written book, the production of an educated and cultivated mind. The author underrates, however, on the whole, the value of the Gothic revival, and over-rates the results which are to follow from the adoption of the theory which he puts forth for the future practice of architecture; and his commendable earnestness in his subject has betrayed him into letting his feelings run away with him sometimes on the point he happens to be engaged on, with the result of producing contradictory or irreconcilable opinions in other instances besides those already pointed out.

WESTERN PUMPING STATION:

MAIN DRAINAGE.

On Saturday, the 26th of July, Mr. William Newton, Deputy Chairman of the Works and General Purposes Committee of the Metropolitan Board of Works, laid the foundation stone of the Western Pumping Station in the Grosvenor road, opposite the Thames, and a little east of Chelsea Hospital. The works at this station are to provide pumping power to lift the sewage and a part of the rainfall contributed by the district together estimated at 38,000 gallons per minute a height of 18 ft. into the Low Level Sewer which extends from the Abbey Mills Pumping Station to Pimlico. The requisite power will be obtained from four high-pressure condensing beam engines, of an aggregate of 360 horse power; each engine actuating two single-acting plunger pumps, and the whole being supplied with steam from eight double-flued Cornish boilers, 6 ft. 9 in. in diameter. The engines will be arranged in pairs within an engine-house fronting the Grosvenor-road, the boiler-house being placed at its rear.

Supplementary power to be used in case of accident to the principal engines, or on any similar emergency, will be provided by an additional high-pressure non-condensing engine erected in a separate building to the rear of the main buildings, near the canal. The flues from both sets of boilers will be connected with a chimney-shaft 172 ft. in height, situate between the two buildings.

The intended works further comprise coal vaults, settling-pond, and reservoirs for condensing water, repairing shops, stores, and dwelling-houses for the workmen and the superintendent in charge of the works, all of which will be erected on the plot of land situate between the Grosvenor Canal and the railway from the Victoria Station, and containing about four acres, a part of which was formerly the site of the Chelsea Waterworks, and the remainder was reclaimed from the river in 1858.

The contracts for buildings and engines have been taken by Mr. Webster, the former for 126,955*l.*, and the latter for 56,789*l.*, and the works are to be completed in eighteen months.

Adopting the official account, after an examination of the drawings and specification, the principal engine-house will be set back about 16 ft. from the frontage line of the road. The length of the building will be 116 ft., and its depth 44 ft., the height from the ground up to the springing of the roof 50 ft., and to the ridge 71 ft. The style selected for the building is Italian, of a simple character, the lower story or engine-room floor, being faced with stone and rusticated, having a plain splayed and moulded plinth below, and moulded architrave above. The entrance (which stands out 3 ft. in advance) is the only projection from the general frontage line. The upper story or beam floor is to be faced with brick, the dressings of the windows being of Portland stone. The wall of this story is to be pierced on each of the two principal faces with eight windows, with segmental heads all to the same design, and will be surmounted by a cornice of Portland stone, carrying a cast-iron eaves gutter. Above this will rise a curved Mansard roof, with ornamental covering of zinc pierced with circular openings for ventilation.

The boiler-house will be situate at the rear of the engine-house, at a much lower level, the cornice from which the roof springs being level with the sills of the windows of the engine-room. The elevation of this building will be comparatively plain, the whole being rusticated. The chimney-shaft will be detached, and situate to the north-west of the engine-house, and will also be Italian in character. It will be 172 ft. in height above the ground, and 21 ft. in width at the ground level, tapering to about 15 ft. under the cornice at the top. Each side will be simply relieved by three recessed panels, arched over a short distance below the entablature which surmounts the shaft. The facing will be of Suffolk bricks, with Portland stone dressings. There is to be an internal circular brick shaft, 7 ft. in diameter, within the outer casing, the intermediate space being occupied by a staircase extending to the top of the shaft. The foundations will be carried down to the solid clay, and formed by a mass of Portland cement concrete, 35 ft. square.

The coal-vaults will be situate on the west side of the engine-house, and placed below the finished surfaces of the ground, the floor being level with the stokehole of the boiler-house, into which the coals will be conveyed on a tram-

ree lines of trams will be also laid on the top the vaults, and from these the coals will be ot down into the vaults through openings in arched roof. Beneath the coal-vaults, and rming a foundation for them, will be an arched amber, to be used as a reservoir for condensing ter.

On the western side of the ground, and immeately to the north of the chimney-shaft, will the auxiliary engine and boiler house. The res will be situate opposite the workshops, l next the railway, on the east side of the und, and between them a settling-pond, ptical on plan, and measuring 142 ft. by 68 ft., l 16 ft. 6 in. deep. The sides of this pond are med of concrete faced with brickwork, the or being of concrete only. The pond will be covered at the top, and divided into two comrtments, with the object of allowing one to thrown out of use for the purpose of being aned. Pipes and valves will admit the water m the river, and convey it into the pond, and nce into the reservoir in the engine-house. notion has got abroad that this is to be used the storage of sewage, but this is altogether roneous.

The workmen's cottage will be situate to the th of the stores and settling-pond, but the perintendent's house in the rear, and to the th-east of the boiler-house, overlooking the ole of the works.

The sewage from the western districts will be veyed by a circular sewer 6 ft. 9 in. in meter from the Chelsea Embankment along Grosvenor-road to the front of the engine-se, whence it will be diverted by a double annel, one leading to the well under the prinal, and the other to the well under the iliary, engine-house, each channel being nished with a penstock to direct the sewage ither point. There will be means for dividing well under the principal engine-house into compartments, and the sewage may be ected into one or both of them by the use of stocks placed in a chamber in front of the tre of the building. After passing the penks, the sewage will enter a chamber containan open iron cage, by which any large stances will be intercepted previous to the vage arriving at the pumps. The iron cage is be lifted by machinery in a covered passage ow the surface of the ground, and the conts there to be emptied into trucks, and carried ay on the tram, which runs along this passage, l is in communication with the trams already erred to.

The maximum quantity of sewage to be lifted stimated at 6,000 cubic feet per minute, the ght of lift being 18 ft. This work would be formed by three out of the four engines to erected, the fourth engine being added to w of one being out of use for examination or air. The pumps will deliver the sewage into nch cast-iron culverts, 5 ft. in diameter, and nce into a main, 6 ft. 9 in. diameter, leading the upper or eastern Low Level Sewer already structed, which will convey the sewage to the mping-station at Abbey Mills, to be there in lifted into the High Level or Outfall wer, and conveyed to Barking Creek.

The works are being executed under the ection of Mr. J. W. Bazalgette, C.B., Engineer the Metropolitan Board of Works; and Mr. T. rick, assistant engineer. The drawings, now fore us, are very clear, comprehensive, and mplete. The shoring in the excavation pred for the engine-house, some 60 ft. deep in ground, is an elaborate and massive conuction, putting failure in that direction quite of the question.

Mr. Newton, after laying the foundation-stone, elt upon the smallness of the death-rate of ndon as compared with that of some of the ge towns as proof of the good government of metropolis, and in conclusion gave well-erved praise to the engineer of the Board, . Bazalgette.

Work at the Temple.—The works required separate the Temple Gardens from the Thames bankment are being executed for the Metroitan Board of Works by Messrs. Gibbs & Co., Cheltenham, for about 7,000*l*. They comprise concrete foundation, a Portland stone plinth, ulded, 3 ft. above the line of the paving, and ornamental railing, reaching a total height of ft., mainly of wrought iron. There are two teways leading in from the Embankment h Portland stone piers, each surmounted by ase.

THE VIENNA EXHIBITION.

In observing the objects which surround the visitors to this Exhibition, with the view of studying art as applied to industry, I find no lack of subjects on which to write; but I do find great difficulty in selecting those subjects which it is most important that we consider, for the claims of many manufactures to consideration are alike pressing. Shall I consider carpets? Perhaps it is well that I do so, for I shall thus have an opportunity of calling attention to an unpleasant fact; yet a fact which we must be prepared to face, which is this, that in this manufacture, as well as in others, we English do not hold that position which we ought as the nation producing a much larger quantity of carpeting material than any other country.

We are not only beaten by the beautiful works from the Eastern nations, which are here displayed in unusual numbers, and of special merit, but also by a Viennese firm known as Philip Haas & Co., for to this firm belongs the honour of taking the great step which has enabled them to show a work in advance of all other efforts made by carpet manufacturers. This firm has a carpet, the ground of which is in cloth of gold, and the ornament in a rich silk pile. The gold is kept as flat as possible, and the ground is so thickly covered with ornament as to be in every part protected. The ornament is Arabian in character, and of very excellent design. The draughtsman who prepared the pattern had intimate acquaintance with Eastern art, and it is not too much to say that the ornament is a well-considered and beautiful expression of Arabian art, alike excellent in the drawing of the forms, the colours of the parts, and the spirit of the composition. The ornament is wrought in thick velvet pile, and thus protects the gold ground from contact with the foot when the carpet is in use; and the pile being of silk (which is also the case with many of the best Indian rugs), gives a rich, bright bloominess of effect, with which no other material can vie.

The Indians make silk carpets, and beautiful indeed some of them are. I have heard that attempts have been made in England at their production, but it has been said that the pile will not stand, and that silk will not "work," &c.,—expressions in which those who are devoid of the necessary ability seek to shroud their ignorance; and yet here we have a carpet new, effective, and beautiful, wrought in the most perfect manner, and mocking our boasted knowledge of the possibilities and impossibilities of manufacture.

This is by no means the only instance observable, or even conspicuous, of our taking a second-class place in reference to manufactures in which we are the leaders as regards the quantity produced, and it is not without some feeling of humiliation that the English section of the Exhibition must be viewed, as a whole; for in some departments of art-industry we are shamefully behind a nation for which every excuse could now be made. I allude to France. But in most branches of manufacture where art is concerned France requires no sympathy, for she holds up her head with a nobleness which is beyond all praise, and leaves us shamefully behind.

But to continue our review of carpets, we may notice that while P. Haas & Co. make the one great advance in the manufacture of European carpets, they are not behind in the production of the more ordinary works. On the walls of the central transept they show a number of works, many of which are of considerable merit. A square carpet on a rich citrine ground bears upon its surface one of the finest pieces of Arabian ornament to be found in the entire Exhibition; an ornamental composition which the student of Eastern art will do well to study, for in it I see no defect of drawing, and no error in composition, and this I say after making a critical observation of the work. But while perfect as an expression of pure Arabian drawing, and of high excellence as a study of colour, it fails in one most important particular, and thus it becomes peculiarly unsuited for a floor decoration. The ornament all points in one direction.

The carpets on which the Mahometan prays has a pattern pointing in one direction, and the devotee sets the point towards Mecca; but what is right in the case of the prayer-carpet is wrong in the case of an ordinary floor-covering. To the devotee the pattern of his rug is always right way upwards; to the majority of the occupants of an ordinary room the pattern of such a carpet would be correctly seen by the few only; and it is no more legitimate to place a rug before the spectator with the pattern inverted, than it is to invert a painting and ask your friends thus to see it.

In this particular, this otherwise beautiful carpet is utterly wrong; and how a man who could draw such beautiful ornament should fail to perceive that such a mode of treatment as that adopted is otherwise than wrong, I fail to understand. The only explanation of the error that can be imagined is that it is specially made for some very exceptional purpose.

A model carpet is that which is neutral, yet not "dowdy," in general effect; which is mingled in "colour-bloom," soft in appearance, conveys the thought of flowers, and is based on a geometrical plan. A carpet should be neutral in effect; for at best it becomes but a background to the furniture and objects contained in an apartment. But neutrality may result from the admixture of positive colours if these colours are in very small quantities, or from the association of tertiary colours in larger masses. The former will give a general neutral effect, which, while low in tone, will at the same time be rich and "bloomy," and this effect I prefer,—this "glowing" or "radiant" effect of neutrality. This is the cleverest and the pleasantest effect, and is that which is most difficult to achieve. A carpet should convey the thought of flowers, for it is pleasant to associate flowers with the floor on which we tread; barrenness and fertility strangely contrast, and the verdant or flowery path is that which we like to tread. But a floor is a flat surface, and while the thought of flowers is pleasant, no one with a rightly constituted mind would like to walk through flower-beds nor over the well-arranged parterre. Hence, while the decoration of a carpet should awaken the thought of flowers in the beholder, it should not imitate a plant nor any combination of plants, but should be a consistent floor decoration, so skilfully arranged as to be truly and simply what it pretends to be, and yet such as will call up the greatest number of pleasant memories.

I like all carpet patterns to have a geometrical basis, for the manifestation of order in arrangement of the parts of any works reveals the working of a thoughtful and orderly mind in the construction of the work. The planets revolve in order around the sun, and although the leaves of plants appear to be scattered irregularly over the stems of plants, they are yet, as any botanist will tell you, developed on a mathematical plan of the most orderly description; and it is blights, cold, and insects which, by destroying or disturbing parts, render the law of order more or less difficult to perceive.

Many Indian and Persian carpets very fully manifest these qualities. The design is constructed on a geometrical plan. They have a flowery character, which is highly pleasant, and yet the pattern is ornamental and not naturalistic in its parts. The colours are rich and positive, but are so blended as to produce a glowing, or radiant, neutral effect, and thus the carpet is fitted for its place as a background to furniture. I cannot too strongly recommend my brother architects, as well as our English carpet manufacturers, to carefully consider the beautiful works from Persia, India, and Turkey shown in the Vienna Exhibition; for some are perfect models of what a carpet should be.

The Persian nation, although but imperfectly opened up to us, comes before us with a somewhat commercial aspect, and Turkey loses no opportunity of extending its trade. Persia sends almost innumerable carpets, and this fact is noteworthy, that, while all Eastern nations, so far as I know, have confined themselves to the manufacture of whole carpets only (what are often called square carpets), Persia sends carpeting in long rolls of about a yard in width, and also separate bordering for attachment to the "body" carpet. Up to this time Oriental carpets have never, save in rare and accidental cases, fitted the rooms on the floors of which they have been placed,—they have been surrounded with polished boards, or parquetry-work; but now the opportunity is offered us of fitting Eastern carpets to our rooms and of covering our floors as completely with Oriental manufactures as we do with English goods. Whether it is desirable that we thus cover our floors or not is another matter,—indeed, whether we are right in covering our floors completely with any carpeting is open to question; but the attempt is being made at meeting European requirements, and the manufactures are all that we could desire in taste and durability.

Turning to the British carpets, three firms make creditable display, yet I cannot say of either that it has done all that it might. Messrs. Jackson & Graham exhibit carpets in good taste: one or two of their rugs are very commendable. Messrs. Templeton & Co., of Glasgow, have the newest thing in the way of carpets shown in the British section of the Exhibition, which is a Chinese pattern with a "key" ornament spread over the ground, and a spray of pæony "displayed" upon the surface and running over the key pattern in a manner familiar to us in so many Chinese examples. This carpet is, to us, new in style, effective, well coloured, suitably bordered, and in every way a successful work. Besides this, Messrs. Templeton & Co. show other good, low-toned, carpets; but in all we look in vain for that rich, mingled, fresh colour-bloom which we discover in the Eastern works, or for that powerful expression of a pure style of ornament which we get in one or two of Haas's carpets. But besides these carpets Templeton shows others which are worse than inartistic, for some are painfully deficient of even the least manifestation of an exalted form of art.

The third firm that we have to name curiously makes the largest show on the British side of the Exhibition, while the factory from which the goods are sent is very small, if not one of the smallest in our kingdom. Here we have enterprise at least; and some of the carpets shown are of considerable merit, and can only command favourable notice; but upon investigation it is apparent that many of the works exhibited, if not the majority, are of a manufacture such as is not produced at the works from which they appear to come, but are of Templeton's make.

Mr. Jno. Lewis, of Halifax, however, shows many fine carpets, whether made by himself or any other house; and while his works at home are yet very small, the display made in the Vienna Exhibition is great.

This latter manufacturer, for some reason or other, exhibited a number of foreign rugs, although, as far as I can learn, he does not even deal in such goods. These rugs were exceedingly beautiful, but they have recently been covered by other carpets of British manufacture.

We have now reviewed the exhibits of three British manufacturers, and besides these none make a show which does us credit, although the number of exhibitors competing in this department is considerable; and of these three there is but one which fairly represents the productive power of the firm exhibiting. It would be difficult, if not unjust, to say to any enterprising firm that it should not exhibit anything that it does not produce. If a firm like Messrs. Jackson & Graham is engaged upon the decoration of a house, and the furniture, carpet, and hangings are designed under their guidance, and are expressions of their taste and enterprise, it would be hard if they were not allowed to exhibit these various manufactures, although they do not manufacture the goods themselves, or even make the slightest pretension that the goods are of their own production. But in such cases it is desirable that the objects shown should be exhibited in a special class. If the works are of most excellent manufacture, it appears to me that no award for such excellence should be given to the exhibitor. If given, it should be bestowed upon the producer, if the exhibitor likes to reveal his name, but the award for enterprise should be given to the exhibiting firm; and I am not sure that an award for the excellence of the pattern should be given unless the name of the designer is revealed. But if a work is merely bought from another, and shown by the purchaser as if of his own manufacture, the case is different, and the exhibitor does wrong by showing it; and even in those cases where the manufacturer produces one class of goods only, and for the purposes of success in an Exhibition gets other classes of goods made for him, I think it would be well if the exhibitor were constrained to say which works he actually produced and which were produced for him; for otherwise he can scarcely be said fairly to compete with other manufacturers. To return to our three exhibitors, Mr. J. Lewis certainly makes an excellent show, even if his works are not wholly of his own manufacture, and he appears to have resolved on leaving behind him in Vienna an impression of the nobleness of the English name; for on every hand I hear of his princely hospitality being dispensed with a bountifulness which is calculated to make a lasting impression on the Viennese mind.

FATAL FALL OF ENGINEERING WORKS AT WAPPING.

The works of the East London Extension Railway at Wapping have been the scene of a serious accident. The company have projected an extension of their railway system from the terminus at the old Thames Tunnel at Wapping, to the Blackwall Railway at Shadwell. The work does not exceed half a mile, but is likely to cost upwards of 200,000*l*. After clearing away a portion of a street running parallel with the river, the engineer, Mr. J. Hawkshaw, was met by the London Docks, which stand in the centre of the proposed route, and he has been obliged, therefore, to coffer-dam the dock, as a preliminary to cutting and covering in a tunnel. The portion of street referred to was found to stand upon a bed of gravel, through which the waters of the Thames percolated with persistency. Pending the removal of this water, and the building of the covered way, the banks on either side of the cutting have been kept apart by beams which cross and recross each other in a trellis-work. The fallacy of all the calculations, however, has been painfully proved. The contractors employ a thousand men in the works. A gang of ninety were working in the cutting nearest the junction, when suddenly a rumbling noise like thunder was heard, the banks on either side began to lean towards each other, and in a moment the great beams running across splintered as if they were so many matches, and, heaving upwards, broke in pieces, and the whole cutting was in a state of chaos, with half a hundred men in it, struggling for their lives in the flaring light of the gas-lamps. How the bulk got out is known least of all by the men themselves, but three, if not four, were caught by the closing earth, and remained in their living grave, whence they could not be dug out in less than a week, the banks having to be propped up again before a spade could be put into the *débris* in the cutting. The members and associates of the Society of Engineers had arranged to pay a visit to these works, and, notwithstanding the occurrence of the accident, Mr. Hawkshaw's engagement to conduct them over the line was courteously fulfilled by the resident engineer.

"SCREW-JACK ARCHITECTURE" IN AMERICA.

The feat of removing the Pacific Hotel, at New York, bodily, several feet from its original site, which excited a good deal of attention a few months ago, when vague reports of the proceedings reached us from across the Atlantic; and the offer of an American to put Northumberland House on wheels and remove it to such a position as would allow of the creation of the new street between Charing-cross and the Embankment without demolishing the venerable structure, will doubtless be fresh in the memory of our readers. The idea seems so preposterous, though such works have been actually carried out, that steady-going English people scarcely know what to make of it. The American buildings are not, however, erected in the same substantial manner as buildings in England, and are frequently run up in a hurry, without foundations, so that a house has not always to be raised from a hole before it can be moved. The rapidity with which Chicago has been rebuilt is astonishing in our eyes; but we are accustomed to look at towns and cities composed of houses built of stone or brick, in a solid substantial manner: in America the houses are run up as rapidly as possible. The following description of the mode adopted for the removal of small houses in America, kindly forwarded by an English architect resident in the United States, may prove interesting, and will give some idea of the lightness of many of the buildings which are burnt down one day to be almost re-erected on the morrow:—

"Vague reports have often reached England of the manner in which the Americans remove their houses bodily when they change the place of their abode. Like snails, they carry their houses almost on their backs, living in them during the migration, as though nothing unusual were occurring; but very few people have any idea of the extent to which the practice is carried.

When I first arrived in Chicago I saw a large two-story house standing in the centre of the street. I was inclined to think this was merely an assertion of 'independence' on the part of some Yankee, who had chosen to locate himself in the middle of the public thoroughfare; but, on a close inspection, I found the house was moving so I stopped to see what this marvel might be.

Along the street, for a distance of 200 ft. t 300 ft., were laid rows of planks, to form smooth road on which the house might travel at the end of this temporary road was a windlass worked by a horse, a chain from which wa attached to the house, which was placed o rollers, and thus drawn bodily along.

When a building has to be removed in thi way, the following plan for raising it and placin it on rollers is adopted. The house is firs undermined, and large beams placed under th brickwork as it is exposed. Under these mai supports are placed other beams slightly curve at the end on the underside, to act as sledge when the building is raised high enough to b drawn away. Screw-jacks, about 2 ft. long an 3 in. in diameter, are now brought into requi sition, and placed under the beams beneath th walls of the house, at intervals of 2 ft. or 3 f When properly fixed they are turned simulta neously, and the whole house is gradually raise As soon as the jacks are screwed up to their fu extent, if the house is not already high enough new ones are brought into use, placed on block of wood, and by this means the building is raise to the desired height. Wooden rollers, abou 6 in. in diameter and 5 ft. or 6 ft. long, are the placed under the sledge pieces, and the whol affair is made to slide into the road, on to th line of planks prepared for it. The windlass i pinned down into the road with iron spikes about 200 ft. a-head; and as the house is gra dually drawn up to it, it is carried further a-head, and the process continued till the new site is reached. About half a mile a day is th average rate of progression for a small house. Heavy buildings are of course not moved s quickly.

In this way I have seen two or three brick or wooden houses moving about in one day often with the family living in them, as though they were firmly planted in the earth. Nothing is disturbed, and it is seldom that any accident occurs."

Jack-screws are also used for raising building when they are below the street level, or when it is desired to build an additional story. In England this is done at the bottom of the house. In America they add to the height of their buildings from underneath. Many large structures, five and six stories high, have been raised in this way, and a basement built beneath them.

But jack-screws are also useful in another way, and since the Chicago fire these little articles have been found very serviceable in building many edifices, which, without their use might never have existed.

Chicago, fifty years ago, was a small trading station, known as Fort Dearborn, where only a few traders' stations existed, and whose inhabitants were principally adventurous traders and Indians. The country around was little better than a swamp, the flat land being inundated by the Illinois river. Such a soil as this is not well adapted for building houses of any description without great care and attention being given to the foundations. The Americans generally, and the Chicagoans specially, are too anxious to begin business to wait for elaborate foundations being laid before the superstructure is commenced; so they build the upper part of their warehouse or office on jack-screws first, raise it, and add the lower stories from underneath; so that the building may be occupied as it is being advanced, and the foundations laid afterwards. But even then, in their endeavour to spare expense, the foundations are scamped, enough is not spent to ensure safety, and continual repairs are necessary, which often cause a far greater expenditure in the end than fair attention and liberality at first would have occasioned.

An example of this may be seen in the offices of the American Express Company in Monroe-street. This building was designed by an architect in New York, who only put in such foundations as would have been necessary for the same structure in New York, where, instead of a swampy soil, there is solid rock to build upon. The consequence was, that when the building was five stories high, some ugly cracks began to appear, which soon became so dangerous that the whole of the front had to be taken down, and the rest of the building supported on jack-screws while the foundations were taken out, and relaid sufficiently strong at a greater depth. False economy this! which it is surprising our far-seeing cousins do not recognise as more

xpensive than reasonably liberal expenditure n doing well at first what is to be done at all. This is not a solitary instance of the effects of uch hasty, careless work. It is a striking nstance, but there are many similar cases of ecay as sure, if not as rapid.

Many large buildings are fronted with fine nt stone, or, as the Yankees delight to call it, 'marble." The "marble," however, is seldom nore than 4 in. thick, no thicker in proportion han the enamel on a "lady's" face. The rest f the wall, which is out of sight, is composed of oft bricks, thrown together as rapidly as possible.

Where iron is used, it is reduced to the mini- num quantity. Iron columns are made as thin s possible, and are not calculated to bear more han a certain weight. If the goods in a ware- ouse supported on iron columns are increased o more than a fixed amount, there will soon be a onfused mixture of merchandise and building naterials.

Cracks are frequently appearing in houses nly recently built, which were run up three, our, and even five stories high, *without fronts*; he iron and stone for the fronts were not ready o hand, and, rather than wait for their arrival, he builders erected the other walls, leaving oothings in the party-walls to bond into after- wards. The body of many of these buildings ank before the front was added, and when this vas done, a further settlement took place, which s manifesting itself in the appearance of large racks, and in the breaking away of the front rom the rest of the house.

This is the case with too many of the large tores and warehouses that are being erected in Chicago at the present moment. They are large enough, they are built quickly enough, they are numerous enough to satisfy any Yankee who hinks those three features are enough to con- titute a city of buildings of which any country nay be proud. But their architectural beauties are sought for in vain. This, however, could be dispensed with, if they were well built; but they do not even possess the merit of stability, whether they are constructed from the roof lownwards, or from the earth upwards.

SCHOOL BOARDS.

London.—Mr. C. Reed, M.P., moved, on a former report of the Works Committee:—"That the tender of Mr. G. Stephenson, of Beaufort-street, Chelsea, S.W., amounting to 4,962*l.*, for the erection of a school to provide accommoda- tion for 588 children, on the site in James-street, Camberwell, be accepted." He intimated, how- ever, that a conference between Mr. Tresidder and the architect of the Board would probably result in a further modification of the plans, by which a larger number of children could be accommodated by the conversion of the teachers' room into a class-room, and the average cost per head would be also reduced. The resolution was agreed to. On the recommendation of the Works Committee the following tenders were ac- cepted:—The tender of Mr. J. Kirk, of Warren- lane Wharf, Woolwich, amounting to 6,666*l.*, for the erection of a school to provide accommoda- tion for 806 children, on the site in Canterbury- road, Lambeth; the tender of Messrs. Cooke & Green, of Malborough-street, Blackfriars-road, S.E., amounting to 8,440*l.*, for the erection of a school to provide accommodation for 1,024 chil- dren, on the site in Victory-place, Lambeth; the tender of Messrs. W. H. & J. Mansbridge, of North Villas, Camden-square, N.W., amounting to 3,841*l.*, for the erection of a school to provide accommodation for 716 children on the site in Tottenham-road, Kingsland.

THE CLAPHAM AND BRIXTON BATHS.

On Saturday the Lord Mayor laid the founda- tion-stone of some new and extensive baths about to be erected in Ferndale-road, Brixton. The buildings will, it is stated, comprise a large covered swimming-bath, 150 ft. by 60 ft., giving 9,000 square feet, superficial, of water for the use of men, as well as a separate bath, with a distinct entrance, for women, of the dimensions of 65 ft. by 30 ft.; and additional baths for warm water, medicated baths, and a set of Turkish baths for both sexes, so that, as the committee say, "a complete system of hydro-therapeutic arrange- ments will be available for the enjoyment of the strong and healthy, for the promotion of clean- liness and the art of swimming, as well as appliances for the invalid and delicate." This scheme will be carried out by a public company of shareholders and donors. The site selected is in an open and healthy locality, surrounded by an increasing population, and is most central for the purposes intended, being midway between Clapham and Brixton. The water will be obtained from an Artesian well now being bored, whereby a continuous supply of pure water will be kept constantly flowing. The first issue of 10,000 1*l.* shares has been made, and more than half that number have already been allotted. Mr. Fras. Fowler, the architect, mentioned that the men's swimming-baths would be the largest to the metropolis. Every assistance should be given to such an enterprise.

THE TRADE BANNERS OF ENGLAND.

From time immemorial, "banners" have played an important part in the history of all countries, ancient and modern; but England is more particularly the land of streamers, pennons, ensigns, standards, flags, banners, and bannerets. Her poets, painters, historians, dramatists, and fiction-writers have alike immortalised "the banners which the Lord had blessed."

The amount of devotion, courage, and con- tempt of life exhibited by our soldiers and sailors with reference to their colours is sublime and impressive. It is a kind of adoration of regi- mental colours that has caused our youthful ensigns to wrap standards round their dying forms, that they might not surrender them to the enemy; and our heroes at sea nail the "flag of old England to the mast" lest it might be shot away in battle. To haul down the colour is the signal of defeat and sub- mission, and whenever that rare instance has occurred to an English ship, our old "salts" have wrapped the flags round their bodies, and gone down with them to the deep, to prevent the enemy exulting over the prize. It is a patriotic veneration that our seamen, both naval and mercantile, feel to their flags; and one of the grandest spectacles ever seen on water was the exhibition of the flags of this country, and of "all nations," when the "Shah" went down the Thames lately. In death, the colours are carried on the soldier's coffin, and the "Union Jack" performs the like for the sailor as he is cast into the deep.

It is not surprising, therefore, that this English love of banners has extended into the ranks of the working classes; but few can have a right conception of its vast and costly extent. Its origin may have dated from the tattered flags that have led our armies and navies to victory, and which hang up in our cathedrals and public places, or our workmen may have inherited this love of "crimson silk with golden cross" from their forefathers of the ancient City Trade Guilds, whose banners were followed before the "Union Jack"—the "Flag of England,"—flew on the seas, for its heraldry dates no further back than the 12th of April, 1606, and then only in our ships of war, for the Union Jack was not adopted in the English army till the Parlia- mentary Union of 1707.

Be it as it will, one fact is apparent, that of late years there has been a generous rivalry on the part of trade and benefit societies as to which should possess the most magnificent banner; and no cost has been spared to obtain the best: some idea may be gathered on this head by the fact that in June last, at a demon- stration of the coal-miners on the Durham Race- course, the banners, mostly new, cost over 12,000*l.*! That the trades are desirous of fol- lowing the art of heraldry is apparent, if it be true that the bakers' trade-union recently applied to the Heralds' College for the "Bakers' Arms" for their banners: whether Garter King of Arms has such heraldry at Doctors' Commons, the bakers are anxiously waiting to learn. If not, the union intend offering "a handsome reward" for the best design.*

The colliers of the North do not, however, study heraldry, like the bakers, or seek to adopt its ancient devices, but in the mines fix and chalk out their own designs; and, having once resolved to have a banner, they obtain an article of the most respectable and expressive cha- racter, thinking what is worth doing at all is worth doing well, irrespective of cost.

For instance, at the Newton Cap Colliery, near Bishop Auckland, Durham, the pitmen first chose a committee to procure or fix upon a design. This involved the subject or ideas to be illustrated. The committee had no trouble on these points. An old workman at the colliery sketched a design for both sides of the banner, in which full details were given. This sketch was handed to Geordie Coxon, a young miner of artistic genius, and he produced a design truthful in the whole of the details, and illustrating the original crude ideas of the old pitman in a very forcible manner. The design was highly ap- proved of, and the painting and finishing of the banner were entrusted to a Newcastle firm. Saturday, February 15th, of this year, was fixed for unfurling the banner in public, and the men and youths mustered in strong force at the Newton Cap Hotel, where were assembled a large crowd, the knowing ones passing their distinguished criticism amidst shouts of appro- bation.

This banner, which is 11 ft. by 10 ft., is made of double silk throughout, finished and trimmed with rich gold-coloured fringe and tassels, with an ornamentation of fruit, flowers, and foliage. The heads of the poles are gilded, and the cords entwined with silk. The design is on both sides, and headed, "Newton Cap Colliery Branch of Durham Miners' Association"; and the evils of the want of organisation, and the good results of a properly and intelligently conducted union are illustrated in a somewhat amusing but forcible manner. The first, or leading side, contains three separate and distinct illustra- tions. The two first are side by side,—one representing the triumph of capital, *i. e.*, a long plank resting on a clump of wood (titty-my- torty), which is placed in the middle. On one end is an employer, with a large box of gold beside him, to give weight. On the other end is an emaciated and toil-worn pitman. He is raised high up in the air, the employer and his gold being too heavy a balance for him. The pitman, from his elevated position, is shouting to his weighty opponent, "Let me have fair," and behind and below him are a number of toil-worn miners, looking up, with rueful countenances, representing, as imprinted, "Unorganised and Plentiful Labour." The employer, with his box of sovereigns, replies to the pitman's appeal, "You must yield. You see I am too heavy for you." The companion illustration represents "Labour scarce," and the employer and the pitman are reversed. A number of the pitmen have seized on their end of the plank, and by their extra weight have brought it down. Hats are off and waving about, and shouts ascend to the employer, who, clinging to his box of gold, is poised rather dangerously high in the air. "We have you now," is the pitmen's cry. The employer responds, "A truce. Let us meet, and try to come to terms." The third scene repre- sents organised pitmen and employers meeting. The same plank is in use. The pitmen's agent occupies one end and the chairman of the em- ployers the other, and each is accompanied with a number of his respective backers. Standing on the middle of the plank is "Arbitration," with one foot on each side, to keep it level and equally balanced. Below are the following words,—"We agree to settle our differences in future by this means, and let Justice hold the balance. Hurrah for Justice!"

The other side of the banner has also three separate illustrations, which are introduced by the following words:—"Justice, leading to home- comfort and happiness, is the true object aimed at by all intelligent unionists." On one side is the figure of Justice, blindfolded, and holding her scales. In the centre appears the intended comfortable pitman's home. He is seated at table, with his wife and children, in the parlour, eating their Sunday's dinner. Conspicuous among the furniture is a well-filled book-case, with a glass front, bespeaking a taste for reading, and the whole scene speaks of comfort and intelligence. This is explained by the words, "A happy home: the result of organisation and arbitration." On the other side of the happy home is seen the employer and workman exchanging courtesies, and parting with the understanding conveyed by the following words,—"Henceforth let strife cease between us, and our joint aim be the true happiness of all." The banner, headed by a brass band, was then taken in procession to the managers and owners of the pit, and to other colliery owners, after which the pitmen were regaled by the owners, and speeches of an amicable nature followed, evidencing that em- ployers in the North are taking as much pride in their men's banners as the pitmen themselves.

It is not frequent that the miners are the authors of their own design, but when it occurs it is something out of the common style of heraldic devices that is produced; for at

* Arms would not be granted to any but an *incorporated* society. They would have to obtain a charter.

the demonstration referred to, some 80,000 miners, their wives, and friends were loud in their applause and laughter at a small and neat flag carried by the Coxhoe and Quarrington Hill colliers. Painted on one side of this banner is a poor, worn out, fleshless, ribbed shadow of a horse, meekly but almost vainly endeavouring to draw a large tubfull of coals, and the horse, straining every muscle, is encouraged to persevere in its almost hopeless task by its driver patting and saying to it, "Come up, Bobby, ten hours a day!" On the reverse face of the picture, however, is displayed poor "Bobby's" exact counterpart, a strong, skittish, and almost intractable animal, whose driver is exclaiming, "Woa, Bobby; woa, Bobby, eight hours a day." There is as much quiet humour as signification in this design.

If the miners do not furnish the designs to the banner-painters, they supply the mottoes for the designs, and the words are, in some instances, as pointed as the paintings. For instance, on a banner of no artistic pretentions, the Byer Moor Lodge of colliers supply :—

"Success to every 'Union,'
And every one that's true;
Now we're bound together,
Let's try what we can do.

Our masters they do tell us,
That if we mean to stand,
We shall do ourselves an injury,
And the trade will leave the land.

But in that we have advantage,
And that you know is true;
For if the trade leaves England,
We can leave it too."

One banner has a school scene, and under the illustration the Addison miners show the necessity of schools in their village :—

"The miner-boys would have to go to school,
The Mines Inspection Bill says so,
To learn to read, and write, and spell,—
This, parents, you must know."

The Bewick Main colliers go in for illustrations. Their banners show the most important works of the company they work under, such as a ship going out to sea, a large factory in full operation, an engine in the act of crossing a viaduct, with the aspiration, "Success to the coal and iron trade by land and sea." Portraits of a master and workman embellish the other side, together with the maxim, "He that oppresses the poor reproacheth his Maker."

The Browney miners' banner contains the figures of a miner and a sinker, with the following explanatory lines :—

"We pierce the ancient strata,
Nature's geologic roll,
Till we reach God's hidden treasure,
The world-wide famous coal."

On the obverse, are the figures of two miners, with the words :—

"Through geologic records,
Great Nature's printed scroll,
We work the famed black diamond,
The heat-sustaining coal."

The Burnhope banner has a boy holding a placard, on which are the words, "The Mines Regulation Bill, 1872: Ten Hours from Bank to Bank :"—

"This Bill has passed, and it does say,
The boys to have ten hours a day;
But in this Bill it does say more,
Though I have not time to tell you all."

On the obverse is a picture of a lion and a lamb, and a child leading them, with the underneath pitmen's "poesy" :—

"We have met again, my dear friends,
Hand and heart we have joined,
For our rights we mean to fight;
But as our flag waves in the air,
The capitalist he begins to stare,
And does cry out, 'I do declare,
I'm afraid the Union's off for fair.'"

The Byers Green flag contains figures of several workmen belonging to different handicrafts, under which is the symbol of peace—the lion and the lamb; "It is well for brothers to dwell in unity."

Several banners depict very pathetic scenes of widows and fatherless children, with quotations :—"What mean ye that ye beat my people to pieces, and grind the faces of the poor." "Masters, give unto your servants that which is equal and just, knowing that ye have also a Master in Heaven."

The Derwent banner has the declaration, "The workmen wish to settle all disputes by arbitration." On the obverse, the representation of a night school, containing a master and three pupils. The first figure, a bright and intelligent boy, is listening to the instruction of the schoolmaster, and represents the eight hours system; the second, a sleepy boy, with half-closed eyelids, is intended for the ten hours system; and the third, a miner's boy, who is sound asleep, with his book on the ground, designates the twelve hours system.

The East Hetton pitmen show a tomb, "In memory of a deceased brother miner," and a weeping woman and children kneeling beside it with hands uplifted in prayer. The grave is covered with flowers, and an angel is seen descending, bearing a wreath. The reverse contains a picture of the good Samaritan pouring oil and wine into the wounds of the man who had fallen among thieves, *i.e.*, the mine owners!

The Edmondsley banner contains portraits of the miners' leaders, and the following maxims :—

"Masters and men should both unite,
And this would keep the trade all right;
Compensation then would take its flight,
If all were found in union."

"Awake, arise, or be for ever fallen;" and, "Wealth gotten by vanity shall be dissolved, but he that gathereth by labour shall increase."

The Etherley-lane miners depict what a pitman's home should be, and *in time* may be. On one side the spectator is afforded an interior view of a miner's cottage, well furnished, and the inmates well clothed and fed. The toil of the day being over, the evening chapter from the Book of books is being read by a clean, matronly female, in whose lap reclines a sleeping, happy babe, whilst the contented father sits opposite, listening to his wife. Below this "Arcadian" picture are the words, "Princes and lords are but the breath of kings, but man is the noblest work of God." Lower down is depicted a careworn, tired miner, going to his work at the dark hour of morn, and opposite is seen a healthy, cheerful, well-clad man proceeding to his labour at the hour of seven. The Haswell banner has an elaborate representation of the Good Samaritan, with the injunction of "Go thou, and do likewise:" and on the contrary side is painted a group of miners returning thanks to Mr. Bruce, the Home Secretary, for passing the Mines Regulation Bill, whilst below is :—

"All are equal in God's sight,
The bond, the free, the black, the white;
He made them all, freedom gave,
But Man, he made the slave."

Milkwell Burn and Broad Oak colliers depict a mother shaking a half-dressed sleepy boy, and saying,—"Johnny, wake up; are you not going to the night school?" "No, mother, I am so tired and sleepy. I have been in the pit fourteen hours to-day." The obverse shows the same boy with books and slate under his arm, and, "John, where are you going to?" "I am going to school, mother; I've only been in the pit eight hours to-day."

The Nettleworth men are profuse in designs and inscriptions, and are rather original. On the left-hand side of their splendid banner is the figure of a check-weighman, who is saying to a youthful miner,—"Wait a little longer, and I will free you." Close by are seen a pitman and a capitalist; near to the latter stands a girl, imploring the master "not to take all from our father: give him a fair share of that he labours for." Near the girl stands a boy and a bishop facing, across whose mitre is engraved "16,000*l.* a year." The youth points to the prelate and the couplet :—

"It is you that robs us of our bread,
Beware, our Saviour is on the other side."

The bishop heeds not the threatening of the boy, but points towards the capitalist, and says,—"Leave something more for me." Beneath are the mottoes,—"He that oppresses the poor to increase his riches shall surely come to want"; on the other side is a painting of Christ in the act of turning the usurers out of the Temple, with the following admonition :—"My house shall be called a house of prayer, but ye have made it a den of thieves."

The Roddymoor flag has a miner standing near a colliery, singing :—

"Give me the pick and the man who can use it;
They turn the black coal into bright shining gold.
What would our future have been, lads, without it?
When the lands lay all bare, and north winds blew cold."

The Seaham colliers have a joint committee as the principal emblem, and,—"We want a fair days' wage for a fair day's work." The external workings of a supposed co-operative colliery, and the query,—"Do you think it would pay well?" and, "Oh, yes; 100 per cent.," are seen on the obverse. What Earl Vane thinks of his Seaham pitmen is a matter somewhat interesting.

The Springwell miners have a scene of masters and men taking counsel together, and,—

"See what can be done when we are wise,
What glorious deeds perform, my suffering brother;
When men unite, in love and right,
And cease their scorn of one another."

The South Derwent men depict a miner standing on a stone in a valley, and his master standing on a hill-side, looking down upon him. A number of miners are engaged pulling merrily at the ropes of a pulley, and by co-operation and union are steadily hoisting up the miner to the level on which the master stands. The inscription underneath is :—

"Ye proud and wealthy let this theme
Teach humbler thoughts to you;
Since such a union has its gem,
Can boast its splendour too."

The Usworth pitmen have a small flag, worked by a lady, of a most costly and elaborate description, being gold needlework on thick crimson velvet, edged with heavy gold lace: the cost of materials was 155*l.*

The Westwood banner bears the inscriptions :—

"Two years we've been established, which surely is not long,
Yet now the miners' union is forty thousand strong."

"The union they say is winding its way, and driving all fear;
Yes, the old times are fled, the old bond is dead, and never a tear."

The Woodhouse banner is emblazoned with a horrible representation of an explosion in a pit, with the inscription,—

"The dangers that miners have to undergo,
Are many and fearful by this you may know."

The above are selected from 130 banners, exclusive of bannerets, on the ground; and in point of excellence of subjects, "Arbitration" held the chief place. Capital and Labour afford another favourite point for the artist's brush. Beehives, as representing Industry, and the Bundle of Sticks as Unity, whilst "Good Samaritans" for the charitable element were also plentifully illustrated. It will be seen Politics are nearly left out by the Durham miners; but the Northumberland banners that were unfurled at a great demonstration on the Newcastle Town Moor on April 14, this year, make it apparent that the Northumberland miners are alive to the political use that is to be got out of banners; and Fletcher of Saltoun's oft-quoted "Give me the making of the *ballads*," and you make the laws," may, perhaps, be altered to "Give me the making of the *banners*," and you make the laws."

Thus, the Northumberland Bloombill miners' banner has on it, "Equal Rights Together," with a representation of a ballot-box, and a gentleman and a working man recording their votes together.

The Newsham Colliery has inscribed on it "We Claim Manhood Suffrage."

"Parsons and peers may preach,
And endless falsehood teach,—
Think for yourselves;
And let your watchword be
Justice and liberty!
And toil unweariedly to save ourselves."

The Seaton Burn miners' flag has these lines :—

"Oh, man of dauntless courage, arm for the fight;
Stand out for the wrongs of thousands, do battle for the right;
Who do their duty bravely, despite opposing ills,
And tread life's rugged journey as men of wisdom wills."

The banner of the Dinnington colliers is of a rich dark blue silk, 9 ft. by 3 ft., handsomely trimmed, with scarlet cords and tassels, and a deep white silk fringe along the bottom, the colour of the mountings being arranged to represent the tricolour. On one side is a picture of Liberty, below which is placed the motto "Liberty, Equality, Fraternity."

The Barrington men thus preach on their flag, "The poor man's wisdom is despised, and his words are not heard"; "Wisdom is better than strength"; "Go and do thou likewise."

The Burradon men believe that,—

"The rank is but the guinea's stamp,
The man's the gowd for a' that."

The Byron pitmen have a banner representing a colliery, and a miner standing pick in hand, with the chains of slavery lying shattered at his feet. On another part of the picture is the "Sun of Education" spreading its glorious rays, before which is the tyrant Ignorance retreating into a cloud, and the motto "Union and Liberty."

The banner of the Society of Operative Bricklayers is of mauve silk. In the centre is an elaborate painting representing workmen erecting a house; the picture being supported by two emblematical figures. Above the painting are

inscriptions "By industry we flourish"; "In labour there is profit"; "Unity is strength"; ndustry is the source of prosperity." In the ntre is an allegorical representation of Justice tching over a body of bricklayers at work.*
The Tyne shipwrights' banner is of white silk, h blue border. Two hands are clasped ether. A painting represents a vessel ready launching from the ways, and a streamer ng from the mainmast-head, containing the rds "Manhood Suffrage."
The Tyne bricklayers' banner is of blue silk, h deep pink border with the motto "In God ll our trust." On the reverse side is a painting resenting two officers in the act of relieving injured bricklayer.
The Sunderland saw-mill operatives designed banner especially novel and to the purpose. is made of broad shavings, interlaced and nged with curled shavings, and ornamented h large tassels, also of curled shavings of ried-coloured woods. On the front of this rade" banner are the words "Manhood Hrage," and a device representing a crown, nposed of curled shavings.
The ironmoulders' banner is of green silk. A ture represents the manufacture and uses of n,—showing the blast-furnaces, the engine- rks, a screw-steamer, a plough, and a paddle- amer, and a figure of Justice watching over trade.
The shoemakers' banner is very large, of e silk, with white and floral border, fringed the bottom. In the centre is the crest of cordwainers, flanked by the figures of ispin and Crispino, and the words, "Unity is ength"; "We relieve our sick and bury our d"; "United to protect, not to oppress"; lay prosperity attend the justice of our cause." e whole is relieved with very elaborate and utiful scroll-work in gold. This belongs to ndon.
The stonemasons have several handsome ners and devices, of the square, compasses, e, and trade tools, with the mottoes, "The d is our trust"; "Eight hours the earnest of ew era in the history of labour"; "We are "; "United we stand, divided we fall"; anhood suffrage, our rights as men, and our vileges as citizens"; "People throughout the d, join in one social band, and save yourselves."
The Gateshead pipemakers' banner has a iple of long pipes crossed, the word "Equity," d underneath the eye of Providence. This was ced on a large rolley drawn by a grey horse, which were seated two pipemakers and a boy, o were occupied in making "manhood suffrage es."
The Brushmakers' Society has a banner with ir trade handiwork and the motto, "A sweep- measure the one thing needful."
The Ouseburn engineers and operative smiths ve as their principal banner a model of a steam mmer, a large wagon belonging to the works which are cleverly-constructed models, luding a steamer fitted up with both paddle d screw, a screw steamer, a steam hammer, of which are worked by steam, and workmen ending to the operations. On the white silk nner are the words, "The representation of people, not of a class; brains, not bricks"; he future of the people rests with them- ves"; "By hammer and hand all arts do nd."
The amalgamated engineers' banner is of large nensions, with the motto, "Be united and lustrious."
The joiners' banners are of blue silk, with p white border, and pictures of carpenters rking at the bench surrounded by their prin- al tools, together with the joiners' coat of ns, and the mottoes, "Crede, sede, cave"; Justice and equity"; "How good it is for othren to dwell in unity";—device, a crown ade of shavings.
The painters of Newcastle and districts' banner very large and elaborate. Two figures at top represent Truth and Justice, between hich is the eye of Justice. The coat of ms of the trade and the motto, "Amor et bedientia"; Cupid is standing before an easel inting the words "Manhood suffrage," and e words, "Be true to your colours"; "By th and perseverance we'll gain our rights"; abour and capital go hand in hand"; "Cleave that which is good"; "Give us justice: it is r right."
Boiler-makers and iron ship-builders of Jarrow have several banners with pictures and devices of their trade, and the mottoes on which are—"Success to Iron Shipbuilding"; "Let Jarrow flourish"; "United to support, not banded to injure"; "Honour Bright"; "Nil Desperandum"; "We seek no favour, but demand our right." A banner bearing the Jarrow iron-founders' coat of arms, is elaborately painted, and exhibits in the background a sea view, with a ship under full sail, and the words, "God the first founder."

The London trade banners are perhaps more costly than the provincials, but the designs are not particularly wide of those of Newcastle. At the late Hyde Park demonstration they made a good show, but "Boreas" became so shocked at the tailors' banner, which beside the painting of the "tailor's" coat of arms, and the mottoes, "Concordia parvæ res crescunt," had, on the reverse side, Adam and Eve, as they were attired when they were driven out of the Garden of Eden. It is stated that when the other trade banners were unfurled on the Victoria Embankment, the sun shone brightly, and there was scarcely a breath of wind, but no sooner was the tailors' banner hoisted than "Boreas" became furious, and blew all the banners out of the bearers' hands, and when they reached Hyde Park most of them were in tatters, and "Adam and Eve" were blown out of the picture, as well as turned out of the Garden of Eden. The London trades have a great affection for Phrygian caps, bundles of sticks, and the tricolor.

This wreck will necessitate new trade banners, and as some alteration will take place, it may be left to another paper to describe the London trade banners.

The banners of the ancient City trade guilds, which are now extant, were not made of silk, but many are of tapestry, with the coat of arms worked in. The City library contains a valuable work, with illustrations of banners and banderets of the City trade guilds of the time of Charles II., which seem to show that our present trade banners are superior both in design, cost, and execution.

* This banner belongs to the London Society of bricklayers.

TWICKENHAM.

Most large cities have agreeable outskirts, to the peace and quiet of which the well-to-do inhabitants can retire from the noise and bustle of town life; but few are in this respect so well supplied as London. Of late years "the northern heights" of Hampstead and Highgate have come more than ever into favour, and they are now joined by one continuous line of residences to our huge metropolis; and on the southern side large environs of pretentious and of modest villas of all grades have grown around the various stations of our suburban railways. Formerly, however, it was the Thames that attracted to itself, like a magnet, the noblemen and retired millionaires, or still busy citizens. Palaces and mansions gradually arose along its banks, and its windings became the controlling centre-line of power which led the outskirts in its varying course.

Of all the outskirts of London, the one with the most interesting literary associations is Twickenham, so especially connected as it is with the names of Alexander Pope and Horace Walpole. The houses of both these men were *bizarre*, but interesting, as being exhibitions of their characters. Twickenham is healthy, and its mild and good air has drawn large numbers to its site, so that of late years it has grown greatly; but its true fame will ever cling around the persons and events of the past. Walpole, in a letter to R. Bentley (July 5th, 1755), claims great consideration for the place he loved:—"Nothing is equal to the glory of this village. Mrs. Pritchard has bought Ragman's Castle. We shall be as celebrated as Baiæ or Tivoli; and if we have not as sonorous names as they boast, we have very famous people. Clive and Pritchard, actresses; Scott and Hudson, painters; my Lady Suffolk, famous in her time; Mr. H., the impudent lawyer that Tom Hervey wrote against; Whitehead, the poet; and Cambridge, the everything." These are but a few of the distinguished names of those connected with the place; but Walpole himself made a more ample list, a few years after this. Ragman's Castle was afterwards known by the less singular name of Lawn Cottage, but is now no longer standing. Kitty Clive lived at Little Strawberry Hill, at a house that her friend Walpole loved to call "Cliveden." One who obtained the warmest praise from Dr. Johnson for her character and talents, both off and on the stage, could have been no ordinary woman. Walpole wrote the following inscription after her death:—

> "Ye smiles and jests still hover round;
> This is mirth's consecrated ground.
> Here lived the laughter-loving dame,
> A matchless actress, Clive her name.
> The comic muse with her retired,
> And shed a tear when she expired."

Scott was a celebrated painter of sea-pieces and landscapes in his day, and was called by admirers the "English Canaletti." Hudson was the portrait-painter, who would now be forgotten had he not been the master of Sir Joshua Reynolds. In after-life Reynolds had a villa on the summit of Richmond-hill, and Hudson observed to him one day, "Little did I think we should ever have had country-houses opposite to each other"; to which Sir Joshua replied, "Little did I think, when I was a young man, that I should at any time look down upon Mr. Hudson." Lady Suffolk lived at Marble-hill, a house designed for her by the Earl of Pembroke, and Mr. H., "the impudent lawyer," was Joseph Hickey, who figures more creditably in Goldsmith's "Retaliation":—

> "Here Hickey reclines, a most blunt, pleasant creature;
> And slander itself must allow him good nature.
> He cherish'd his friend, and he relish'd a bumper;
> Yet one fault he had, and that one was a thumper!
> Perhaps you may ask if the man was a miser.
> I answer, No, no; for he always was wiser.
> Too courteous, perhaps, or obligingly flat?
> His very worst foe can't accuse him of that.
> Perhaps he confided in men as they go,
> And so was too foolishly honest? Ah no.
> Then what was his failing? Come tell it, and burn ye!
> He was—could he help it?—a special attorney."

Paul Whitehead, "the champion and bard of Leicester House," whose heart was inurned in his patron Lord Le Despencer's mausoleum at West Wycombe, with Pagan rites, lived at Colne Lodge; and Richard Owen Cambridge, the beau-ideal of a thorough English gentleman, lived at Cambridge House. So much for Walpole's prose. About 1758 he wrote some verses called "The Parish Register of Twickenham," in which most of the famous residents of the parish are introduced:—

> "Where silver Thames round Twit'nam meads
> His winding current sweetly leads;
> Twit'nam, the Muses' fav'rite seat,
> Twit'nam, the Graces' loved retreat;
> There polish'd Essex went to sport,
> The pride and victim of a court!
> There Bacon tuned the grateful lyre
> To soothe Eliza's haughty ire.
> Ah! happy had no meaner stream
> Than friendship's dash'd his mighty vein!
> Twit'nam, where Hyde, majestic sage,
> Retired from folly's frantic stage,
> While his vast soul was hung on tenters,
> To mend the world and rev. Dissenters:
> Twit'nam, where frolic Wharton revel'd,
> Where Montagu, with lock disheveled
> (Conflict of dirt and warmth divine),
> Invoked and scandalized the Nine;
> Where Pope in moral music spoke
> To th' anguish'd soul of Bolingbroke,
> And whisper'd, how true genius errs,
> Preferring joys that power confers;
> Bliss never to great minds arising
> From ruling worlds, but from despising;
> Where Fielding met his bunter muse,
> And as they quaff'd the fiery juice,
> Droll nature stamp'd each lucky hit
> With unimaginable wit;
> Where Suffolk sought the peaceful scene,
> Resigning Richmond to the Queen,
> And all the glory, all the teasing,
> Of pleasing one, not worth the pleasing;
> Where Fanny, ever blooming fair,
> Ejaculates the graceful pray'r,
> And scap'd from sense, with nonsense smit,
> For Whitfield's cant leaves Stanhope's wit,—
> Amid this choir of sounding names
> Of statesmen, bards, and beauteous dames,
> Shall the last trifler of the throng,
> Enroll his own such names among?
> Oh, no! enough if I consign
> To lasting type their notes divine;
> Enough if Strawberry's humble hill
> The title-page of fame shall fill."

This is a goodly list of great names, but several others remain unmentioned, and these we must notice farther on. At present we will just refer to those that Walpole mentions. The Earl of Essex was supposed to have lived at Twickenham Park, but there is no authority for the supposition, although he appears to have visited Francis Bacon here, when the place was in the possession of that distinguished man. Queen Elizabeth visited Twickenham Park in 1592, when Bacon presented her with a sonnet in praise of the Earl of Essex. Edward Hyde, Earl of Clarendon, lived at York House, which was given him by the Crown on the public announcement of the marriage of his daughter with James II., then Duke of York. It was his literary villa, where he passed the summer months, and was visited by most of the celebrities of his day. The notorious Duke of Wharton, called by Pope "the scorn and wonder of our day," lived at the Grove. Lady Mary Wortley Montagu came to live at Saville House about the year 1720, Pope

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having used his best endeavours to induce her to settle at Twickenham. Fielding, the novelist, occupied two rooms in a quaint, old-fashioned wooden house in Back-lane, where he wrote his "Tom Jones." The last name on Walpole's list is the lovely Lady Fanny Shirley, daughter of one of the Earls of Ferrers, who lived at Heath-lane Lodge, and on whom was written the well-known ballad, "Fanny, blooming fair." Walpole omitted many distinguished inhabitants of the "literary suburb" from his "Parish Register," and we will now, therefore, add a list of some of his omissions.

Richard Corbet, the poet, and Bishop of Norwich, whose father cultivated a nursery-ground at this place; William Lenthall, the famous Speaker of the Long Parliament; Robert Boyle, the philosopher; Sir John Suckling, "the most light and sprightly of our poets, except Moore"; and Dr. Edward Stillingfleet, Bishop of Worcester; all lived at Twickenham. The parish church is dedicated to St. Mary the Virgin, and is of no great interest. One only of the vicars has been eminently distinguished, and this was Daniel Waterland, one of the ablest pillars of the Church of England. The list of churchwardens contains one famous name in that of Sir Godfrey Kneller, "who bragged more, spelt worse, and painted better than any artist of his day." He was also a most lenient justice of the peace, and once let off a thief, reprimanding the prosecutor for putting temptation in his way. Pope refers to this remarkable judgment in his lines:—

> "I think Sir Godfrey should decide the suit,
> Who sent the thief (that stole the cash) away,
> And punish'd him that put it in his way."

Sir Godfrey lived at Whitton House, which has been altered and enlarged, and is now called Kneller Hall. In the Register of Marriages of this parish there is an entry of more than local interest, viz., the marriage of the famous sculptor, "Francis Chantrey, of St. George's, Hanover-square, and Mary Ann Wale, November 23rd, 1809."

Several royal personages have been connected with Twickenham. Tradition reports the Manor House to have been the residence of one of Henry VIII.'s queens, and we know from history that Queen Anne was born at York House. In 1694 this same queen (then only Princess Anne) borrowed the house of a Mrs. Davies for a month, in order that her son, the Duke of Gloucester, might have change of air. This young prince brought his regiment of boys with him, and exercised them every day on an ait opposite the house called the Swan Islet, which is now part of the mainland. It is related that Mrs. Davies, a wealthy old lady, who lived chiefly on herbs, without animal food, "refused to receive 100 guineas which were offered her for her house." Louis Philippe, when Duke of Orleans, rented Orleans House, on his arrrival in England from New York, in 1800, and it was here, on May 18th, 1807, that his son, the Duke of Montpensier, died. In this same year Louis Philippe wrote to Dr. Watson, Bishop of Llandaff, a letter, a passage of which is of great interest, when read by the light of his after-life:—"I quitted my native country so early that I have hardly the manners or the habits of a Frenchman, and I can say with truth that I am attached to England not only by gratitude, but by taste and inclination. In the sincerity of my heart, I do pray that I may never leave this hospitable soil. But it is not from individual feeling only that I take so much interest in the success of England, it is also as a man. The safety of Europe, of the world itself, the happiness and independence of the human race, depend upon the safety and independence of England." In 1816 Orleans House was bought by the Duc d'Aumale, who gathered around him here valuable collections of works of art and rare books. York House, once the residence of the great Earl of Clarendon, and long afterwards of the Hon. Mrs. Damer, was purchased a few years ago by the Duc d'Aumale for his nephew, the Comte de Paris. Another member of the Orleans family,—the Prince de Joinville, third son of Louis Philippe,—lived from 1866 to 1871 at Mount Lebanon. "Heroes and kings" are warned to keep their distance on Bishop Warburton's monument to the memory of Pope, but in these instances the warning has been, it appears, unheeded. We cannot longer keep back mention of that poet who was the chief glory of Twickenham. He dearly loved his villa, which he called "my Tusculum," and spent both his time and his money on the adornment of his gardens with the greatest contentment. In 1725 his old nurse died, and he erected a tablet to her memory, with the following inscription:—"To the memory of Mary Beech, who died November 5th, 1725. Aged 78. Alex. Pope, whom she nursed in his infancy, and constantly attended for thirty-eight years, in gratitude to a faithful old servant, erected this stone." Eight years after, the poet's mother, Mrs. Editha Pope, died, and besides erecting a tablet to her in the church, he raised an obelisk in a secluded part of the grounds, with the touching inscription:—

> "Ah, Editha!
> Matrum optima,
> Mulierum amantissima,
> Vale!"

Nothing is now left of the poet; the grotto which cost him 1,000*l.* has been stripped of the spars, shells, and gems which adorned it, by his thieving admirers, thus fulfilling the prophecy in Dodsley's "Cave of Pope":—

> "Then some small gem, or moss, or shining ore,
> Departing, each shall pilfer, in fond hope
> To please their friends in every distant shore,
> Boasting a relic from the cave of Pope;"

and his villa itself was ruthlessly destroyed by the Baroness Howe, widow of the son of the celebrated admiral, and wife of Sir Wathen Waller. The vicissitudes of houses are often very strange; Pope's own villa had wings added to it by Sir William Stanhope, and the end of the villa built by that "Queen of the Goths,"—Lady Howe, after she had razed Pope's to the ground, was that its wings were taken down and the central portion divided into two houses. One of Pope's friends, James Craggs, the Secretary of State who succeeded Addison, and died at the early age of thirty-five, lived at the Grove. The poet wrote his epitaph for the monument in Westminster Abbey, and tells us that Craggs was,—"Praised, wept, and honour'd by the muse he loved."

We now come to the most noted of all the habitations at Twickenham, viz., the gimcrack villa of Horace Walpole, the registrar of the village. The original house was built by the Earl of Bradford's coachman in 1698, and was called by the common people "Chopped-straw Hall." It was inhabited by several men of note before Walpole bought it; one of the earliest of these was Colley Cibber, and the latest Père Courayer. In 1747 Walpole took the remainder of Mrs. Chenevix the toy-woman's lease, and the next year bought the fee-simple. He then gradually rebuilt the house according to his notions of Gothic, and filled it with curiosities, after which it attracted all the fashionable world to it as one of the sights of the kingdom. It thus became a very different place to that which Mrs. Chenevix left. Walpole described Mr. Chenevix's library as "furnished with three maps, one shelf, a bust of Sir Isaac Newton, and a lunar telescope without any glasses." There was a small house on the estate which Walpole bought, in which Richard Franklin, the printer of the *Craftsman*, lived; and it is not a little curious that William Pulteney, Earl of Bath, Sir Robert Walpole's great opponent, and one of the chief writers in the *Craftsman*, should have written some verses in praise of Strawberry-hill: they commence,—

> "Some cry up Gunnersbury,
> For Sion some declare;
> And some say that with Chiswick House
> No villa can compare.
> But ask the beaux of Middlesex,
> Who know the country well,
> If Strawb'ry Hill, if Strawb'ry Hill
> Don't bear away the bell."

Nicholas Amhurst, the editor of the *Craftsman*, died at Twickenham; and although 10,000 or 12,000 copies were sold weekly of this paper, which brought his party into power, he was allowed to die poor, and to be buried at the expense of Franklin. One of the chief distinctions of Strawberry-hill was the printing-press which Walpole set up in 1757, and at which he printed some good books and much rubbish. His last printer, Thomas Kirgate, who served his master for thirty years, was not remembered in Walpole's will, in which 100,000*l.* were bequeathed in various ways. Kirgate wrote some stanzas complaining of his lot:—

> "Adieu! ye groves and Gothic tow'rs,
> Where I have spent my youthful hours,
> Alas! I find in vain:
> Since he who could my age protect
> By some mysterious sad neglect,
> Has left me to complain."

Walpole bequeathed his house and its contents to the Hon. Mrs. Damer, with 2,000*l.* to keep it in repair; and she, after living in it for a time, resigned it in 1811 to the Countess Dowager of Waldegrave. In 1791, six years after Mrs. Clive's death, the two Misses Berry, whom Walpole described as "the best informed and most perfect creatures he ever saw," came to live at Little Strawberry-hill; and their attached friend,—"Albion's old Horace," as he called himself, bequeathed the house to them at his death.

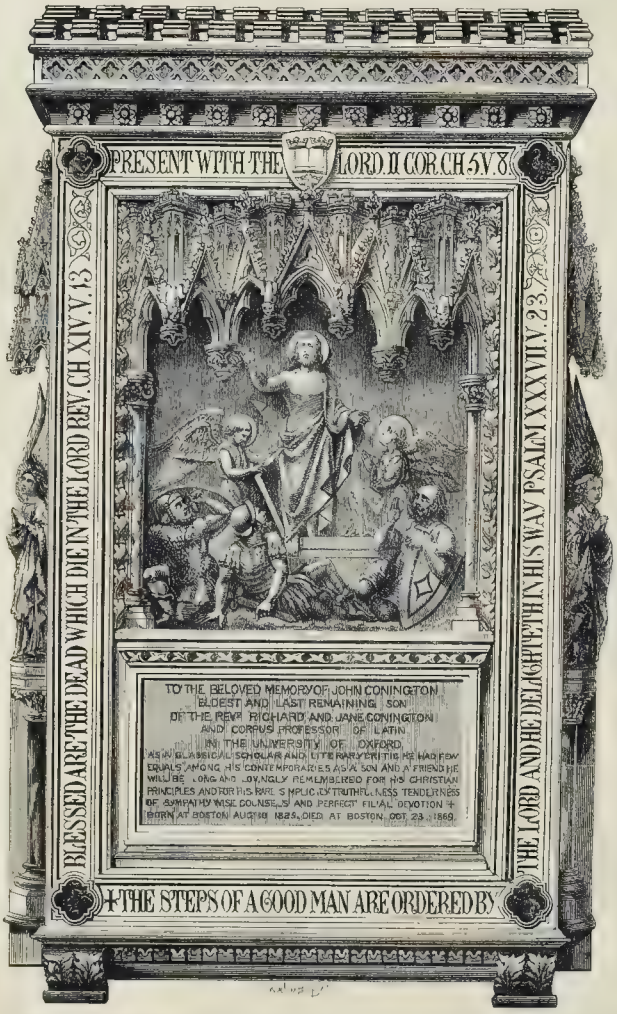
The list of the distinguished inhabitants of Twickenham is still unexhausted, but we must hurry over those that have not yet been mentioned. Twickenham Park has already been referred to as the residence for a time of Bacon; a later occupant was John Lord Berkeley of Stratton, the distinguished Royalist, who was made a peer by Charles II., at Brussels, in 1658. His town-house was in Piccadilly, on the site of Devonshire House, and Berkeley Square and Street, and Stratton-street, take their names from him. His brother, Sir William Berkeley, an able governor of Virginia, died at Twickenham, and was buried in the church. Marble Hill, as mentioned before, was built for Mrs. Howard, afterwards Countess of Suffolk, the mistress of George II. The staircase is made entirely of finely-carved mahogany, and some of the floors are of the same wood. There is a story attached to this mahogany. A certain captain had orders from the king to bring some wood from the Bay of Honduras; and he carried out his instructions in so uncere-monious a manner, felling the trees without permission of the Court of Spain, that a war was nearly the consequence. Marble Hill has had several famous occupants; Mrs. Fitzherbert was one of these, and the Marquis Wellesley another. Soon after the marquis left it it be-came the property of General Peel. Little Marble Hill stands on the site of a cottage once occupied by Mrs. Clive, before she removed to Little Strawberry Hill. The gifted Lady Diana Beauclerk, wife of Dr. Johnson's Topham Beau-clerk, was a later resident, in whose honour Walpole added a postscript to his "Parish Register," commencing—

> "Here genius, in a later hour,
> Selected its sequester'd bower."

Lord Byron's grandfather, Admiral Byron, known amongst the sailors as "foul weather Jack," was buried at Twickenham on April 10, 1786. Dr. Morton, Principal Librarian of the British Museum, and Secretary of the Royal Society, died here in 1799, aged eighty-three. Sir John Hawkins, the historian of music and executor of Dr. Johnson, lived at Twickenham House; and the deluded Joanna Southcott lived and preached in a small cottage on the Staines-road, pulled down a few years ago. Of celebrities of our own days, we must not forget that Turner, the painter, lived for some years at Sandycomb Lodge; or that Charles Dickens took up his summer residence at Ailsa Park villas in 1838. The Poet Laureate lived at Twickenham in 1852, when his son Hallam, called after the hero of "In Memoriam," was born.

Hounslow Heath was once a name of terror to travellers and the neighbouring village of Whitton was a notorious resort of the highway-men that frequented that place. Dr. Dodd was captured here before his trial for forgery. Scarcely more than twenty years ago the little village of Whitton was still quiet and secluded, and at the chief house of the place a night watchman was kept, who went round the house and grounds every hour, and called out the time. Twickenham has always been famous for its trees, and the first weeping willow known in this country is said to have been planted in Twickenham Park in the early part of the eighteenth century. In many of the gardens there are magnificent cedars of Lebanon. Archibald Lord Islay, afterwards Duke of Argyll, planted about fifty of these cedars at Whitton-place, and then erected an elegant tower from which the outspreading branches might be looked down upon. "It is said that the trees of Mount Lebanon itself are so shattered by winds and storms, that they are surpassed by the cedars in the neighbourhood of London." Twickenham has had several historians, but the latest is the Rev. R. S. Cobbett, whose "Memorials of Twickenham, Parochial and Topographical," was issued last year. It is a careful work, full of information and interest, and we have been greatly indebted to its pages for much of the matter contained in this article. We cannot better close these notices of one of the outskirts which has grown up by our beautiful river, than with the words of Thomson:—

> "The silver Thames first rural grows
> Fair winding up to where the Muses haunt
> In Twit'nam's bowers."



THE CONINGTON MONUMENT, ST. BOTOLPH'S CHURCH, BOSTON.

Sir G. G. Scott, R.A., Architect.

CHAMBERS IN LEADENHALL STREET, LONDON.

The subject of our illustration is the street front of a block of offices on the south side of Leadenhall-street. The general plan consists of detached blocks, with a corridor running through, and a large stair in the centre block, giving access to the whole. On the ground-floor there is a branch corridor running through another property into Billiter-street. Each of the blocks averages about 50 ft. by 40 ft., and is four stories high, counting a lofty and well-lighted basement, which really covers the whole area, being lighted throughout by skylights. The whole of the surfaces of the areas throughout are lined with white tiles. The plan seems to be very convenient, and the offices, which are unusually light and well ventilated, are mostly let, and from what we hear, at very high rates. The front is built with Portland stone and cut and gauged Farcham brick. It is an excellent piece of workmanship. The roof is covered with Staffordshire tiles.

The work has been entirely carried out by Messrs. Ashby & Horner, of Aldgate, from the designs and under the superintendence of Mr. R. Norman Shaw, A.R.A. Mr. James was the clerk of works. The carving and modelling were entrusted to Mr. James Forsyth, of Edward-street, Hampstead-road.

It may be interesting to mention specifically that the ground-floor of the back block, simply a room (*under* 50 ft. by 40 ft.), lets for 1,000 guineas a year, on a twenty-one years' lease, and all the rest in proportion. We have reason to believe that the favour with which the building is viewed arises from having good access to all parts, and the care bestowed by the architect on the provision of light and air.

THE CONINGTON MONUMENT.

The monument of which we give an engraving has been erected in St. Botolph's Church, Boston, in memory of the late Rev. John Conington, Corpus Professor of Latin in the University of Oxford.

The work generally is executed in veined alabaster, the subject being sculptured in white Italian alabaster.

The monument was designed by Sir George Gilbert Scott, R.A., and executed by Messrs. Farmer & Brindley, of London.



A BLOCK OF OFFICES IN LEADENHALL STREET.—Mr. R. Norman Shaw, A.R.A., Architect.

NOTES FROM PARIS.

Statues.—The Government of "Moral Order" will decorate Paris, if it does not regenerate the population. Napoleons in marble and bronze are to be liberally distributed. The two principal effigies—that of the Rond-point at Courbevoie, and that of the Column Vendôme,—are at present at the State depôt of marbles in the Rue de l'Université. It is the latter which will surmount the new column; it is for the moment in fifteen or twenty pieces, and looks like a mass of old iron. It is not broken, however, but unscrewed, and, despite a few crevices, can be easily put together, provided that no essential piece is missing. There are only five more statues of Napoleon in France. They are erected at Ajaccio, Auxonne, Cherbourg, Montereau, and Lille. There is also one at Marengo, erected in 1847 by the Sardinian Government. That of Lyons was pulled from its pedestal on the 4th of September. The forgotten statue of the Empress Josephine is to be replaced on its former pedestal in the Avenue Josephine. This statue was preserved from all revolutionary indignities on the 4th of September, and placed in the State depôt, where it remains intact. It is 3 mètres 10 centimètres high, and was executed by the sculptor, Vital Dubray, who devoted two years to the work. It was unveiled in 1867. The Empress is represented holding an exotic flower in her hand, an attitude which symbolises the place of her birth, Martinique. The left hand rests on a coronet placed on an antique tripod. The statue is carved in one block of white marble, and the pedestal is in hard stone from Isère quarries. No inscription, scratch, or fissure has yet disfigured it.

The Ruins of the Tuileries.—The demolition of the two galleries uniting the Medicis pavilion to those of Flore and Marsan, and the materials provening from the destruction of these portions of the Tuileries, were adjudged three days ago, at the Tribunal of Commerce, to the highest bidder, the contest having been, contrary to general expectation, pushed to an extreme point. The auction took place by candle-light. There were two lots, the first of which went for 41,000 francs, the second for 40,000. There was some talk of forming an anonymous company to buy the ruins as an archæological speculation, but this the Government rendered impossible. Among the conditions imposed on the contractor are these,—the demolitions must be completed within the space of three months, and all materials cleared away within five. The Administration of Domains reserves to itself the right to exercise a minute and continuous supervision over all the workmen employed. All objects found in the ruins, whatever may be their value, will be handed over to the Administration, which can demolish parts of the building or organise searches as it thinks fit on its own account. Neither contractor nor workmen will be allowed to enter those parts of the building which are not being destroyed: to break this rule will be to incur a fine of 50 francs. Therefore, if the treasures supposed to be hidden in the ruins of the Tuileries really exist, good care has been taken to keep them in the public pocket.

The Hôtel de Ville.—The Paris municipality is rather more prudent in financial matters than the Versailles Government, yet it is energetic and liberal in one direction—the Hôtel de Ville. A plan for the rebuilding of the principal part of the municipal palace has already been adopted. Now the annexe facing the quays, where the *octroi* department was formerly installed, is being set free from the surrounding ruins. About fifty workmen have been engaged during the last few days in detaching the enormous iron beams that compose the skeleton of the roof, and whereof the greater part is in sufficiently good condition to be used again. The architect directing the works has given it as his opinion that the edifice need not be entirely destroyed. The principal façade, fronting the Place de l'Hôtel de Ville, may be retained, as well as that of the Rue de la Parcheminerie. The reconstruction will cost about one million of francs. It was at first intended to repair the annexe and the Hôtel de Ville together, but it is now announced that the *octroi* building will be completed before the plans of MM. de Perthes and Ballu are put into execution.

New Tramway Carriages.—For some time past the Paris Omnibus Company have been demanding models of a simple and commodious vehicle, suitable to the tramways which are now being laid down in many parts of Paris. One was exhibited at the Trocadero a month ago; but it appears that it was found wanting, since a new model has been tried this week on the rail which runs from the Pont Solferino to the Pont de la Concorde. This last invention will probably be adopted. It is a happy modification of the American form. The form is that of an elegant wagonette,—that most sociable and comfortable of vehicles; it can be drawn by one or two horses, and contains twenty-six places, sixteen inside and ten on two platforms placed at the two extremities of the carriage. On these platforms travellers will stand and be able to smoke; in the interior are parallel seats covered with green velvet, as in the ordinary omnibus. A mineral essence has been adopted for the lighting of the carriages. This new model has therefore no "knife-board,"—a mutilation of which few passengers will complain. The platforms are excellent substitutes. A curious feature is that the driver will stand among the smokers, a revolving handle within his reach which will act on a break, and gratify obese ladies by securing a sudden stoppage. The carriage is uniform at both ends: arrived at a terminus, the shafts are taken out and affixed to the other end; the conductor occupying the place vacated by the driver. Ventilators are affixed to the upper part of the carriage. The company is not yet satisfied, however. A new system, admitting of forty seats, and the orthodox *impériales*, is to be tried in a few weeks.

Preparations for "La Revanche."—Apart from learning German geography, fencing, and riding, the Parisian passion for revenge is leading sober members of the Institute, *savants*, and scientific authorities into the most extraordinary researches and experiments. M. Mille has just announced himself as a partisan of "detached forts," and M. Mille is, it should be stated, the engineer intrusted with the conduct of the experiments being made in the plain of Gennevilliers on the waters and *detritus* of drains as manure. His essays have been thoroughly successful, and the plain where this manure has been tried is a veritable slice of Utopia. Gennevilliers is a peninsula,—waste land hitherto,—jutting into the Seine. These facts have led the engineer to put forward a panacea, in case of siege. He proposes that a large belt of forts should protect the peninsula, which should be manured from the drains. The ground could thus be entirely fertilised, and would produce a sufficient crop of vegetables to supply all the wants of the capital. The Prussians could then no longer force epicurean Parisians to pay 30 francs a bushel for indifferent potatoes.

BARNACK CHURCH.

The east window of the chancel of this well-known church has been filled with stained glass, as a memorial of the late Bishop Davys, of Peterborough. The chancel is of the Late Decorated style of architecture, and sufficient old stained glass was found in the fine stonework of the window to give a clue to the proper treatment of the new glass. The colouring of the tracery pieces is rather heavy. The windows are light-coloured grisaille-work, with subjects under low canopies, running across the window, forming string-courses of colour, as in the side-windows of Merton College Chapel, Oxford.

The scheme of the subjects is, first, from the life of our Lord; next, illustrations from the life of St. John the Baptist, to whom the church is dedicated; then subjects from the life of St. Peter,—these last have reference to the connexion from the earliest times that there has been between Peterborough Cathedral and Barnack Church.

The two side-windows are also filled with stained glass, similar in character to that in the east window, but they have the figures of the four Evangelists, and the four writers of the Epistles, instead of other subjects. The appearance of the new work is remarkably like that of the old stained glass.

The church is best known from its having the oldest and most interesting tower of any church in England. It is Saxon, of primitive form, and in excellent preservation. In Saxon times it stood by itself, the only entrance being by a doorway, now a window about 15 ft. from the ground. From the stone seats placed round the inside, it is surmised that it was used as a council-chamber by the East Anglians. The nave and chancel were added afterwards. The tower is surmounted by a beautiful Early English lantern, and there are some charming bits of Saxon ornament outside. Besides the Saxon tower, there is a very good font, and a most singular sculpture of the Virgin in contemplation. It is much mutilated, but the figures of the three persons of the Trinity, with separate rays proceeding to the Virgin, can be clearly made out. The churchyard, covered with stone coffins, should be noticed. The neighbourhood of the church furnished the celebrated Barnack stone of which Peterborough Cathedral was built. The quarry has been long exhausted.

The three stained windows are the gift of the Rev. Marsham Argles, M.A., canon of Peterborough, and were executed by Heaton, Butler, & Bayne, of London.

ARCHITECTS AND BUILDERS.

THE MANCHESTER SOCIETY OF ARCHITECTS.

The Report of the Council of this Society, read at the last annual meeting already referred to in our pages, says:—"As regards the workmen, the encouragement that has been given to the Building Trades' Institute for technical education by the personal exertions of some of your members, and by the offering of prizes by the Society, has produced and is producing good results. The workmen find that in pointing out to them a course of study the architects are their best advisers, and the results of that study are at present shown in the returns of the Government Science and Art Examinations, in which the Manchester Institute takes a high rank, and will no doubt in coming years be more apparent in the technical knowledge possessed by the future master builders of Manchester.

The value of the Society as an organised body has, however, been shown in other respects.

It will be remembered that some years ago a paper was drawn up with the view of setting forth the principles that ought to characterise building agreements: this alone was a step in advance of anything that had previously existed, showing, as it did clearly, the rules of equity that ought to be embodied in such documents.

Latterly, however, from causes which it is unnecessary though not difficult to point out, the master builders, as a body, have succeeded in inducing or compelling architects in various parts of the kingdom to introduce into their building agreements clauses embodying the quantities with the agreement, and introducing a third party as referee on all points on which,—and they may be many,—the architect and builder may not agree. A request to countenance like clauses has been made to this Society by the Master Builders' Association, and refused. The original paper on building agreements has, however, been revised and some improvements introduced, such as fixing the proportion of payments on account in regard to the value of work done,—the proportion which the amount retained in hand as security for completion should bear to the amount of the contract,—the definition of the meaning of the words "completion of the contract,"—the responsibility as to insurance, &c.; but your Council has declined to agree to the incorporation of the quantities with the agreement as a rule binding in all cases, because it must inevitably lead to laxity in taking them out, and rob the employer of the security he ought to feel as to the amount of money he may have to disburse; and they have likewise declined to admit an arbitration clause, except for such cases as cannot possibly be provided for beforehand in the agreement itself. It cannot be concealed that the real motives for securing the offices of an arbitrator or referee are in regard to prices for extras and omissions, and possibly in throwing such obstacles in the way of an architect rejecting materials or workmanship as may cause him to accept what he might not otherwise feel disposed to do, rather than have the course of his work interrupted and interfered with by the intervention of a third party. Your Council consider that a very slight amount of trouble in framing the agreement, or in determining its basis at the very outset, would render the appeal to a referee unnecessary, while still doing strict justice to both builder and employer.

During the past year the schedule for taking quantities and measuring up works has been revised in conjunction with a Committee of the Master Builders' Association, and reprinted. The Society is to be congratulated on the fact, that so well was the work done in framing this very important document, now the recognised authority on these matters for this district, that no changes whatever have been introduced; the only additions having been some few explanatory paragraphs.

SMOKE NUISANCE IN THE SUBURBS.

There are many people looking out for things to find fault with, some offering a remedy, others not. I beg to class myself with the latter kind of pests. My present grievance is this: The mode adopted in laying out ground for building large houses. I will instance South Kensington and its surroundings. Large high houses are now erected in wide roads, which houses, for example, I will call the shell of a nut. The kernel, or middle of the grounds at back of, and surrounded by such houses, is covered with low stables. These stables are inhabited, and the inhabitants must live, and so sometimes indulge in hot dinners, and use hot water; consequently fires are burning all day, winter and summer, which cause an abominable nuisance to the surrounding private houses, for no sooner are the windows opened than the rooms are filled with large blacks, or I may say lumps of soot. Why should not the stables be fitted up with gas-stoves? Gas may be a little dearer than coal, but if it be considered that the fires are kept alight and burning coals all day, while gas need only be lighted when wanted to be used, gas must be cheaper than coal, would keep the rooms cooler in summer, warmer in winter, prevent the fear of sparks flying out, and save much extra washing, cleaning, and annoyance to the inhabitants of the houses. As the stables generally belong to the houses, arrangement for the payment of gas used could be made with the rent,—if let. Y.

GIVE THEM A RUB.

While sauntering upon the Holborn Viaduct the other day, I noticed what some people would consider mischief, namely, the toes and other lower parts of the bronze statues within reach having been rubbed, no doubt by idlers both big and little; and it struck me how much better the statues would look if such idlers had the opportunity now and then to rub them all over, or, better still, if the custodians of such works of art,—not only on the Viaduct, but throughout London,—would employ some (even pauper) labour once a month to softly rub off, by cloth or brush, the accumulation of dust and soot converted by rain into mud. No harm, I maintain, could happen if properly and regularly performed, but much beauty would be the result and reward. Y.

FALL OF BUILDINGS.

A Bridge at King's Cross.—The down traffic upon the Great Northern Railway has been thrown into disorganisation by the subsidence of one of the outside arches of the iron bridge that crosses the line about 50 yards from the terminus. The arch subsided to the extent of 3 ft. or 4 ft., and completely obstructed the down main line. Two or three trains were delayed; and pending the removal of the *débris* it was found necessary to despatch all the down traffic from the centre platform. The bridge was almost a new structure. Fortunately no one was hurt.

Houses at Brighton.—Workmen had been engaged in erecting some houses and shops, at the corner of Kensington Gardens, and while doing so the other day one of the piers suddenly buckled and brought down the work, precipitating those engaged there into the street below, whence they were picked up and sent to the hospital, but, after receiving attention, and being found not to be much hurt, were permitted to go to their homes. The builders were Messrs. Hoather. Mr. Hill, the architect, was summoned at the police court afterwards by the borough surveyor for contravening the Act in the erection of the above buildings. The evidence went to show that the buildings had fallen down the week before and injured several men. Fined forty shillings and costs.

Roofing in Leeds.—At the oil and soap works of Mr. John Newall, Lady Bridge, Leeds, before the work of the day had commenced, a portion of the roof of the building, which is 40 yards in length, fell in, doing considerable damage to chemicals and things requisite in carrying on the business. It seems that one of the cross beams supporting the roof had given way.

A Building at South Shields.—A large building, which was composed of brick and stone, situated in Nile-street, and intended for extensive ale and porter stores and offices, for Mr. W. H. Dickinson, was being finished, when a loud crack was heard. This alarmed the workmen, who beat a retreat. They had hardly done so when the building fell in with a loud crash, and became a total wreck. Two workmen sustained injuries. The cause of the accident is said to be the giving way of an arch on which one of the main walls rested. The damage will amount to between 500*l.* and 600*l.*

The Front of a Grand Stand.—At the Dunfermline race-meeting a portion of the front boarding of the grand stand gave way, and precipitated to the ground below about a dozen persons, all of whom sustained cuts and bruises.

CHURCH-BUILDING NEWS.

Camberwell.—A new chancel has lately been added to St. Saviour's Church, the accommodation being found inadequate to the rapidly-increasing neighbourhood. It differs somewhat in character from the other portions of the edifice, being of a later date. The chancel has been produced from the designs of Mr. Bartleet, architect, and carried out by Messrs. Woods as the builders. A new stone pulpit has also been erected in the place of one of wood, the carving on the same, and which in the chancel is profuse, being executed by Messrs. Smith & Finley.

Woodbridge.—Mr. R. M. Phipson, the diocesan architect, has been consulted in the carrying out of the alterations already referred to in our pages. His report estimates the cost at about 1,550*l.* A committee was appointed to procure the necessary funds, and carry out the object in view.

Hatford.—The chief stone of a new church has been laid at Hatford. Mr. W. Wigginton is the architect, and Mr. J. Falkner the builder.

Britford.—The church, which has undergone restoration, has been reopened, when a piece of land, the gift of Mr. Jervoise, which has been added to the churchyard, was consecrated by the Bishop of Salisbury. During the progress of the restoration a Saxon arch of stone was discovered in the south side of the church, not far from the west end; and this having been opened, forms the doorway to the edifice, a porch of Early English character having been placed on the outside of the church. The nave is lighted on each side with three windows, some of which are composed of fragments of the original windows, which are of early character, the style being preserved in the new ones which have been inserted. The designs for restoration were furnished by Mr. G. E. Street, architect, and Mrs. Hale was the contractor. The cost of the restoration was over 2,000*l.*

St. Lawrence.—The foundation-stone of St. Catherine's Church at Manston has been laid. The site has been given by the Rev. G. W. Sicklemore. The architect is Mr. W. E. Smith, of London; and the builders are Messrs. Smith & Son, of Ramsgate.

Great Yarmouth.—The amount required for the restoration of Gorleston Church is about 4,680*l.*; and the total sum, within 300*l.* or 400*l.*, has been subscribed.

Reading.—The foundation stone of a new school chapel, now being erected at the west side of the school buildings, has been laid by Mr. John Walter, M.P. The chapel will be a Gothic structure, about 70 ft. long, by 30 ft. wide. Mr. Alfred Waterhouse is the architect, and Messrs. Wright, Brothers, & Goodchild, of Croydon and Reigate, are the builders. The total cost will be about 3,000*l.*, and Mr. C. Easton, of Whiteknights Park, has given the sum of 500*l.* towards the fund.

ARTIZANS' VISIT TO THE VIENNA EXHIBITION.

The thirty artizans sent out by the Society for the Promotion of Scientific Industry to report upon their respective trades, as exhibited at the Exhibition, have returned, and from the careful selection of the men, and the eagerness with which they set about their work, strong hopes are entertained that a very practical and valuable volume of reports will be the result of their visit. Mr. W. G. Larkins, the Secretary of the Society, undertook the entire responsibility of the arrangements, both of travelling and of board and lodgings, and if the cheers the men gave him, when they bid him good-bye at Antwerp on the road home, be any criterion, the men must have been well satisfied with their visit. It should be said that the expenses of eleven Birmingham men were defrayed by the Birmingham Chamber of Commerce, and the party had the benefit of the experience of Mr. W. C. Aitken, who was connected with the artizans' visit to Paris in 1867.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

On Saturday last the Society visited Breton's Farm, on which the greater portion of the sewage of the town of Romford is utilised.

The members assembled at Bishopsgate Station at three o'clock, and proceeded by train to Romford, where they were met by Mr. Hope, the tenant of the farm, who conducted them over the whole of the property, about 121 acres in extent, and courteously explained the various points connected with sewage-farming.

The members were much struck with the variety and richness of the crops, especially when the extreme natural poverty of the soil is considered. In one part was Italian rye-grass undergoing a sixth cutting, while on the next plot was maize or Indian corn; then wheat, well advanced, heavy with grain; and further on strawberries and other fruit, which appeared to thrive wonderfully on the liquid manure,—indeed, the members considered the strawberries to be of a peculiarly fine flavour.

The farm is about three miles from the town, and the sewage, some 240,000 gallons per diem, flows by gravitation into settling-pits, from whence it runs into a chamber, out of which the fluid is pumped by an engine of 8-horse power to sufficient height to flow by means of carriers, some of wrought iron and some of concrete, to all parts of the farm.

While observing the favourable results of sewage-farming, as illustrated by the crops, the members did not fail to note the absence of offensive odours on the farm, and also the purity of the effluent waters, which flowed from the under-drains. The results are such as can only follow intelligent and scientific sewage-cultivation, as practised by Mr. Hope at Romford.

THE WHITEHAVEN WET DOCK.

These works were commenced in May last year, by Mr. Phillips, the contractor, and fair progress has been made. The erection of the dock walls has been forwarded. The outer walls on the north and north-west sides have been completed, and joined at the place locally known as "The Devil's Elbow." About this junction, also, communication with the north shore is afforded by some steps. The arches, three in number, at the "elbow," have disappeared, and a curved wall has been substituted. The west sea-wall, something like 270 ft. long, and running very nearly at right angles from the north pier, has been completed, and the construction of the inner walls of both the west and new north sides has been commenced. This west dock wall, when completed, will be 60 ft. wide at the narrowest part, and will be surmounted by a parapet, 4 ft. 6 in. high. It has occupied the masons, &c., for about six months. The new north wall will be a parapet of about 3 ft. 6 in. in height, and a portion of this has already been put on. A sample of the inner facing of the dock is to be seen opposite the gates of the shipbuilding yard. It is of snecked rubble. The construction of the return wall up to the place where the dock-gates will be situated is in an advanced state, and considerably more than one-half may be said to be completed.

During the progress of the excavating for the east wall the workmen came upon what is supposed to have been the wall of an old timber-dock. The wall faces seawards, and, whatever it may have been, it contains many good blocks of stone which the contractor can utilise with advantage, as they are of excellent quality for dock-work.

The contractor is represented on the works by Mr. Charlton, and Mr. Brunlees by Mr. Williams, resident engineer.

Church Builders.—The *Rock* is informed that so great is the esteem felt for the Rev. F. Whitfield, who has just left Wimbledon, that Baron Hambro, of Rochampton, has offered to build a church at a cost of 5,000*l.*, to secure a continuance of his ministrations. It will, however, probably end in the establishment of another "Free Church of England."

ARCHITECTURAL ASSOCIATION EXCURSION.

THE programme of the "Newark and Lichfield Excursion," being the fourth undertaken under the conduct of Mr. Edmund Sharpe, has been settled upon. On Monday, August 18th, some hours will be spent at the splendid parish church of St. Wolfran, Grantham; and Mr. Sharpe's inaugural address will be given at Newark, where the party will put up for the evening. Tuesday will be occupied in visiting village churches round Newark,—the notable church at Grant Broughton and the church at Stanton Long among the number; the latter church is a fellow of Navenby and Heckington churches in Lincolnshire, as far as regards its fine Decorated carved and sculptured chancel,—Easter Sepulchre, altar tombs, &c. On Wednesday, the Collegiate Church at Southwell will be reached; and on Thursday the party will move by rail a good way westward, stopping on the road at Nottingham (St. Mary's Church), Derby, and the fine Norman remains at Tutbury. "Romantic Ashbourne," near the mouth of Dovedale, will close the travellers on Thursday night. Hence, an early morning riser may reach the Reynard's Cave and other notable features of the Dale; and later a carriage-ride southwards will carry everybody to Mayfield, and to the good collection of old stained glass at Norbury Church. Stafford will be reached by rail, and some hours spent at St. Mary's; and then to Lichfield. In the evening the cathedral will be open for organ recitals; as also will the churches at Newark, Southwell, and Ashbourne, on the several evenings. Lichfield Cathedral, and the collection of architectural drawings by the late Rev. J. L. Petit, which are to be shown to the members in the hall of the Bishop's Palace, will supply occupation on Saturday. The final dinner will take place, and all be completed so that homes in London and at such-like distances may be reached the same evening. With good luck and fair sunshine the fifty should find in this programme rich material to be carried away in memories, sketch-books, and cymagrams,

SALE OF SURPLUS PROPERTY: GREAT EASTERN RAILWAY COMPANY.

DURING the last three weeks a large quantity of surplus property belonging to the Great Eastern Railway Company has been sold by auction, at the Mart, Tokenhouse-yard. The property is situated in the neighbourhood of the company's metropolitan extensions, which, with the exception of the short length between Bishopsgate and the intended terminus in Liverpool-street, together with the great City station there, have now been completed. The aggregate value of the whole of the property is estimated at upwards of 120,000*l.*, producing a present annual rental of 5,000*l.*, which the auctioneer stated is considerably below its annual value, owing to the railway company not being in a position to grant lengthened terms of tenancy.

In opening the sale, Mr. Stapleton (the auctioneer) stated that the property was sold owing to the Great Eastern Company having now completed their metropolitan extension works in the several districts through which they passed, and consequently they had no further occasion to keep possession of it. He added that the reserve put upon the property by the Company was so low that he had every confidence in several lots being sold if the bidding was at all spirited. The first five lots, consisting of houses in Cambridge-road and Paradise-row in Hackney-road, producing a present annual rental of 198*l.*, were sold for an aggregate sum of 1,015*l.* The next six lots offered consisted of houses situated in Tower-street and Richmond-road, Hackney, and producing an annual rental of 350*l.*, were all bought in, with one exception, offers made not amounting to the reserve. The lot sold was a house in Tower-street, having a frontage to Tower-street of 58 ft., and a return frontage to a new road leading to London-fields station, on the north side of the house, of about 100 ft., and available for immediate building purposes. This lot, which in addition to a large house, contains stable, coach-house, and other outbuildings, with a garden and conservatory in the rear, the annual rental being 63*l.*, was sold for 740*l.* The largest and most valuable lot offered during the sale consisted of the Hall End House estate in Walthamstow, Essex, near Epping Forest, occupying an area of seventeen acres and a half. The mansion, which has only been erected within the last few years, was described as "a very superior brick building with stone dressings, fitted throughout regardless of expense, built under the superintendence of one of our most eminent architects, and standing back from the road, and is approached by a carriage drive and handsome flight of steps, and from every window commands magnificent views of the surrounding beautiful and picturesque country." The house, garden, and pleasure-grounds occupy an area of 4¼ acres, and on the west side is the timbered park land, of 13 acres, the timber being all included in the sale. The property was ultimately withdrawn. Its estimated value is 15,000*l.* Three villa residences, in Rectory-road, Hackney, producing an aggregate rental of 156*l.* per annum, were next offered, and two of them sold for 380*l.* and 430*l.* respectively, which closed the day's proceedings.

The sale was continued on Wednesday, the 23rd ult., when a further number of houses in Bethnal-green and Hackney, and also in Stoke Newington, London-fields, Dalston, Stamford-hill, and Edmonton, was offered, and nearly the whole of the lots, sixteen in number, were disposed of at prices ranging from 400*l.* to 900*l.* per house. The aggregate rentals of these houses amounted to between 650*l.* and 700*l.* per annum. An estate at Walthamstow, called Shern Lodge, and containing three acres of land, was also offered, but the biddings not amounting to the reserve, the property was withdrawn. The sale was resumed and concluded on Wednesday last.

Fifteen lots were offered during the day, consisting of houses in Edmonton, Hackney, Bethnal-green, and Walthamstow, in addition to a freehold estate in Edmonton, called Millbrook House, consisting of 10 acres. The sum of 6,000*l.* was offered for this estate, on which it was withdrawn. The property in Edmonton was chiefly bought in, but that in Hackney and Bethnal-green met with purchasers. The aggregate amount of the three sales is said to amount to about 75,000*l.*, and negotiations are also said to be in progress on the part of building companies for the several estates withdrawn.

LEICESTER MUNICIPAL BUILDINGS COMPETITION.

THE author of the design marked "Contranando Incrementum" (Mr. A. Peebles), expurgated by the referee on the ground of non-compliance with Instructions, has sent us a copy of his protest against the decision, as the author of "Simplicity" had previously, with a request that we should publish it. The writer justifies his departure from the Instructions, and points out moreover that some of the designs rewarded equally depart from them. We do not hesitate to say that it is only in extreme cases that we can be led to take part against the decision of a professional referee.

The first premium has been awarded by the Town Council to Mr. Hames; the second to Messrs. Ordish & Traylen; and the third to Messrs. Scott.

IMPORTANT IMPROVEMENT OF THE PORT OF BRISTOL.

EXTENSIVE and important improvements in the dock accommodation, at Bristol, have just been completed, under the superintendence of Mr. T. Howard, C.E., at a cost, including the purchase of property, of rather more than 314,000*l.* Since the introduction of an increased size of vessels, and especially long steamers, the angle at the juncture of the old locks with the river, has been found to be very awkward and dangerous.

"To remedy this," says the local *Times*, "as well as to give increased facilities for admitting a larger class of vessels, was the object of the new works. The angle formed by the line of the old entrance-locks, with the axis of the main channel of the river is 63 degrees, while the improved angle formed by the new entrance-lock is only 28 degrees. . . . In the junction lock there is placed a pair of tide gates, to exclude the high tides from flowing into the harbour. The large lock-gates built for this work are two pairs of timber and three pairs of wrought iron. The sluices for filling the locks and for scouring purposes are a great improvement on the old plan; they have been designed so as to be independent of the lock-gates; and are built in the solid masonry of the lock-walls, so that the mud and silt are carried out behind the gates instead of being drawn up against the sills during scouring or the ordinary operations of filling the locks. The gates, as well as the large sluice valves and machines for opening the bridges, and the capstans at the pier heads for the use of vessels, are all worked by hydraulic pressure; or, in case of need, by hand. The gain in time by this machinery is very great. The Brunel lock-gates took a quarter of an hour to open or shut; those in the new locks can be shut or opened in a minute and a half. As one result of this speedy and effective working, combined with the improved entrance-lock, it may be mentioned that vessels, instead of having to wait a long time in the basin, can go at once into the Floating-harbour, and thus save several hours which were formerly wasted; while vessels can be admitted to the basin from the main channel at any state of the tide that will enable them to get to the lock-gate.

Below the entrance-lock is a fine quay wall, with an inclined plane 212 ft. long, intended to form a landing-place, either for cattle or for passengers, and also a floating iron pontoon landing-stage, for passengers only, 205 ft. long, rising and falling with the tide."

The contractor for the masonry and earthwork was the late Mr. William Judwell, of Birmingham; for the iron lock gates and pontoon landing-stage, Messrs. Maudslay, Brothers, of Cardiff, contracted; for the hydraulic machinery, Sir W. G. Armstrong & Co., of Newcastle-on-Tyne; and for the iron swing-bridge over the junction lock the Avonside Engine Company.

THE ART-SMITH OF ST. PAUL'S.

SIR,—My attention having been drawn to your article on the specimens of the ironwork in St. Paul's Cathedral, which appeared in your number of the 12th July, will you permit me to say that, as an unworthy descendant of the talented artist you mention, I have always understood that our name was properly spelt without the final "e."

WILLIAM TIJOU, Assoc. Inst. C.E.

THE SUGGESTED RAILWAYS IN PERSIA BY BARON REUTER.

SIR,—I feel induced to address a few lines to you on the subject of the vast undertaking suggested by Baron Reuter for the kingdom of Persia, in that of establishing railways throughout the dominion of the State; but before any such undertaking should be commenced, or parties induced to emigrate or embark in the works, every precaution should be taken to insure their health, comfort, and suitable accommodation in the form of residences, drainage, water, &c., in order to guard against the calamities at present existing in the country, from the awful neglect of all sanitary, domestic, and wholesome habitations, and cleanliness in the form of drainage, water, and so forth, which would otherwise prove fatal to many.

W.

STENCH TRAPS.

SIR,—Some time since the question of efficient traps for drains, &c., was ventilated in your publication, and much was said as to P and S earthen or stoneware traps. I have recently given some attention to the subject, and I find during such a day as the 23rd of July very nearly 1 in. of water had evaporated, leaving ½ in. aperture for the escape of foul gases from the sewer, and more every now and then, which could be perceived by the moving of the surface caused by a current of air from the sewer. Also I witnessed in a water-closet with a P-trap a great rat come through and over the bason; the seat and riser having been taken down. It seems evident to me that the rat must have removed quite as much water as the size of its body. I ask, therefore, could either trap be considered efficient? When you hear I am an old plumber, you may say "there's nothing like leather"; but why are the old dip-traps discarded in general, whether it be for in- or out-door? Or can the more modern ones be improved and rendered safe if left for a few hours unattended to?

AN OLD DIP-TRAP.

MARGATE DEAF AND DUMB ASYLUM COMPETITION.

SIR,—Designs were sent in for this competition on the 15th of May last; the unsuccessful designs have been returned; and the fortunate first and second premiates are Messrs. Drew & Bowers, of Margate, and Mr. Watson.

In a later official advertisement of the society in the daily papers of the 15th ult., I notice —and it is a singular fact—that Beriah *Drew*, esq., is chairman and treasurer, and Mr. *Watson*, principal. This may be—and doubtless is—the merest coincidence, and the designs of these gentlemen may have been deservedly selected as the best.

This was a competition in which, it seemed probable that, even if an architectural referee were not appointed, the designs,—being for so well-known an institution,—would be seen and commented on by representatives of the professional press; and this was, in my case, and doubtless in others, the inducement to compete. The whole thing, however, seems to have been settled in the quietest manner; the sealed envelopes were returned unopened, in the interest,—as was said,—"of perfect impartiality"! quite super-Arcadian, indeed!

I trust these few lines will have the attention of other competitors, and of the committee. I scarcely think, and hope it is not possible, that a public competition should be made the medium to stamp with its mark of merit a foregone conclusion: to paraphrase the distich:—

"Drew could not draw,
Nor Bowers bow so low,
Nor Watson help,—
To grind our faces so!"

A COMPETITOR.

PUBLIC WORKS IN SUPPLY:

LAW COURTS,—NATIONAL GALLERY,—THAMES EMBANKMENT.

In Supply, on the Civil Service Estimates, on the vote of 57,800*l.* for the new Law Courts, Mr. Ayrton, in reply to Mr. C. Bentinck, said that the tender for the construction of the building, after Mr. Street's design, had been accepted, but not sealed yet. The specifications were being got out, so that it was expected that the building would be begun within two or three weeks. There would be stone groined ceilings in the central hall, which would require heavy buttresses and increased thickness of the wall. He could not undertake to exhibit the designs publicly, but would be happy to show a copy to any hon. member, or any one specially interested, who wished to see them, and who had a reasonable claim to do so.

In reply to Mr. Bowring, the right hon. gentleman intimated that Government adhered to their determination to cover a certain portion of the new National Gallery with wood flooring.

Further questions were put by Mr. Alderman Lawrence, Mr. S. Booth, Mr. Goldsmid, and Mr. Gregory, respecting the new Law Courts, to which Mr. Ayrton replied that the cost would exceed the amount sanctioned by Parliament by a considerable sum, on account of the increased cost of labour, and that the accommodation would not be sacrificed to bring the cost within the estimate. An additional vote would have to be introduced next year. The work would be proceeded with as soon as possible, and there would be no delay on account of the approaching close of the session. The vote was agreed to.

On a vote of 8,500*l.* for the acquisition of land and the embankment of the Thames to the south-west of the Houses of Parliament, a short discussion took place. The Chancellor of the Exchequer explained that some time ago the Government acquired land in the immediate vicinity of the Victoria Tower, and cleared it of a number of old buildings, to save the House from the danger of fire, and they now proposed to embank the Thames for a certain distance, and to erect a building which would act as a screen between the House and other property on the banks of the Thames, and that the building so erected would be available for Royal Commissioners, in respect to which they now paid a considerable sum for rent. There was to be a clear space of 150 ft. between the proposed new building and the Houses of Parliament. A general complaint was that the vote had not been brought on before, and that there was no necessity for the building in question, because there were many unused rooms in the House itself in which commissions might sit. The vote was agreed to without a division.

OPENING OF A BOARD SCHOOL IN BETHNAL-GREEN.

The opening of the new Board school, Wilmot-street, Bethnal-green, by the Right Hon. W. E. Forster, M.P., has taken place. In the same street are, on each side, rows of the model Waterlow buildings of the Industrial Dwellings Company. The schools are of stock brick, with red brick facing, and moulded brick stringe. There are Bath and Portland stone for heads and sills, while the roofs are covered with Penmoyle green slates. The mullions and transoms are of fir polished. The contract has been executed for 10,389*l.*, and the school is almost all ready for occupation. It is the largest school yet contracted for by the Board. The girls' and boys' entrances are entirely separate. There are cloak-rooms, lavatories, and playgrounds, and the ventilation is good. There were present at the ceremony several members of the London School Board. Mr. C. Reed, M.P., Vice-Chairman of the Board, apologised for the Chairman's absence, and also for the absence of the Lord Mayor. The hon. member, addressing Mr. Forster, stated:—The school is constructed to provide accommodation for 1,500 children. The site, which measures 20,802 square feet, was bought of the Industrial Dwellings Company. The architects are Messrs. Giles & Gough, and the builder, Mr. Adin Sheffield. In addition to the particulars given by Mr. Reed, it may be be stated that the ground floor of the entire block is devoted to infants; the right of the first floor accommodates 220 girls, and the left 240 boys. Between these is the Board-room. The second floor is disposed of in the same way as the first, but the boys' and girls' schools are divided by a room to be used jointly as a drawing class, having for that purpose an upper and northern light. There will be 600 infants on the ground floor, 480 boys on the first and second floors, and 440 girls on the first and second floors. In the school there is a class room for babies, and another for "advanced infants."

LONDON SCHOOL BOARD TENDERS.

The following tenders for schools were received by the School Board for London on the 28th of July:—

SAUNDERS-ROAD, CHELSEA.

Kinninmont	£9,008	0	0
Brass	8,384	0	0
Belham	8,077	0	0
M'Lachlan	7,540	0	0
Cousland	7,248	0	0
Cooke & Green	7,034	0	0
Henshaw	6,975	0	0
Robinson	6,895	0	0
Carter	6,797	0	0
Kirk	6,777	0	0
Wigmore	6,700	0	0

ANGLERS-GARDENS, PINSBURY.

Cooke & Green	£10,247	0	0
Sargeant	9,700	0	0
Ennor	9,310	0	0
Hill & Sons	9,274	0	0
Roberts, Brothers	9,204	0	0
Williams	9,190	0	0
Kirk	9,177	0	0
Pritchard	9,087	0	0
High	8,698	0	0

JOHANNA-STREET, LAMBETH.

Nixon	£7,947	0	0
Gammon & Sons	7,507	0	0
Cooper	7,320	0	0
Shepherd	7,250	0	0
Downs	7,225	0	0
Higgs	7,200	0	0
Newman & Mann	7,050	0	0
Ryder	6,960	0	0
Tarrant	6,941	0	0
Nightingale	6,918	0	0
Cooke & Green	6,623	0	0
Mansbridge	6,740	0	0

CAMDEN-STREET, MARYLEBONE.

M'Lachlan	£9,970	0	0
Merritt & Ashby	9,926	0	0
Sewell	9,895	0	0
Ennor	9,575	0	0
Manley & Rogers	9,810	0	0
Scrivener & White	9,502	0	0
Williams & Son	9,285	0	0
Downs	9,143	0	0
Cooke & Green	9,114	0	0
High	8,996	0	0
Kirk	8,993	0	0
Mann	8,743	0	0
Mansbridge	8,356	0	0

NORTHEY-STREET, LIMEHOUSE.

Cooper	£4,120	0	0
Shepherd	4,068	0	0
Cooke & Green	3,884	0	0
Thompson	3,830	0	0
Sargeant	3,810	0	0
Linn	3,800	0	0
Mansbridge	3,682	0	0
High	3,650	0	0
Scrivener & White	3,594	0	0
Kirk	3,593	0	0
Kilby	3,570	0	0
Sheffield	3,554	0	0
Ennor	3,528	0	0

LAXON-STREET, SOUTHWARK.

Bluitt	£6,750	0	0
Nixon & Son	6,577	0	0
Shepherd	5,990	0	0
Higgs	5,978	0	0
Newman & Mann	5,840	0	0
Tarrant	5,794	0	0
Cooke & Green	5,770	0	0

BOW-COMMON-LANE.

Kilby	£7,980	0	0
Hearle	7,850	0	0
Nightingale	7,833	0	0
Kirk	7,753	0	0
Perry & Co.	7,745	0	0
Sewell	7,630	0	0
High	7,497	0	0
Wood	7,494	0	0
Ennor	7,428	0	0
Sheffield	7,368	0	0

ALDENHAM-STREET, MARYLEBONE.

Merritt & Ashby	£7,995	0	0
Sewell & Son	7,988	0	0
Ennor	7,980	0	0
Scrivener & White	7,867	0	0
Manley & Rogers	7,797	0	0
M'Lachlan	7,490	0	0
Downs & Co.	7,390	0	0
Cooke & Green	7,230	0	0
Williams	7,280	0	0
Kirk	7,250	0	0
High	6,995	0	0
Mann	6,593	0	0
Atchison & Walker	6,775	0	0
Mansbridge	6,637	0	0

MARLBOROUGH-STREET, LAMBETH.

Shepherd	£7,310	0	0
Downs	6,980	0	0
Cooper	6,960	0	0
Higgs	6,978	0	0
Gammon & Sons	6,952	0	0
Tarrant	6,830	0	0
Rider & Son	6,800	0	0
Newman & Mann	6,756	0	0
Nightingale	6,710	0	0
Cooke & Green	6,693	0	0
Mansbridge	6,606	0	0

BROMPTON AND FULHAM ROADS.

In treating this subject last week, omissio was made to notice a palpable default—*th strait at the entrance of Marlborough-road*, whic is the principal traverse street leading t Chelsea Hospital. This, excepting only Sloane street, is the widest and most importan thoroughfare leading southward from our grea south-west arterial road. It is narrowed at th corner opposite the Admiral Keppel, by th obtrusion of two small houses, to the extent 20 ft. upon the house line of thoroughfare, havin only 18 ft. of carriage-way, and 9 ft. of foo way; and considering that the small angle sho was allowed to be repaired and partly rebui a few months back, it throws discredit upon th vestry or others, who ought to have some rega for the rectification of a parish road, half a mi in extent, and of spacious width.

The constriction commences at Walto street, extending 90 ft. to Fulham-road, a consists of four shops and stalls, and the t small houses already noticed, the first sh extending 6 ft., increasing to 20 ft., next to t two corner houses and shops, thus a quad lateral 90 ft. long by 6 ft. at one end, and 20 at the other, is excised from Marlborough-ro which if opened out would form a fine acce sory thoroughfare and business street, impro ing the whole neighbourhood, whilst at prese the narrow end of the road is used as the da and nightly resort of costermongers' barro The sight is deplorable; the blot, "*hiatus va deflendus.*" Q

BRITISH WORKMEN.

Having recently been in contact with a tol able number of workmen, doing repairs a alterations at a house in which I am somew interested,—men from an acknowledged respe able firm,—I was struck with the impro manners, dress, and deportment of the "Brit workman," since I had an opportunity judging, and since the so-called "movement of the class have created such a sensation. T were exceedingly well behaved to me, and peared equally so among themselves, severa them having the addition of "Sir" to answer required from the others. Here, h ever, my admiration ceased; for I soon fo their mental condition had not kept pace w their improved personal bearing,—they w often doing very bungling work, and, for w of forethought or consideration, or someth else, making singularly stupid mistakes. should like to know for what we are pay increased wages, and why we are compl with their demands for extra time to th selves. If it be to give them more leisur be unprofitably disposed of, and more time amusements and reading that do not ten elevate them and make them worth more their employers, it is a lamentable mist All I can say is, I shall try for the future t without them as long as I can. A Lab

THE MIDDLESEX ARCHÆOLOGICAL SOCIETY AT HAMPTON COURT.

The London and Middlesex Archæolog Society made a pleasant trip to Hampton Co on Wednesday in last week, and held t annual general meeting at the palace. party consisted of members and friend archæological as well as of social acquaint among whom there was a good sprinkling of fair sex, and the trip was performed on Thames. The Rev. Mr. Hugo, the vice- sident, and his numerous charge, missed not either of the picturesque, the historical, or archæological element. The principal point regard to the last and special subject of day came out at the annual general meetin the great hall of the palace. Prelimina over, Mr. Hugo gave some particulars a the earlier history of the place, and of manor, described in Doomsday Book, as occ ing the site of the magnificent palace su quently erected by Cardinal Wolsey and H Henry VIII. Mr. Hugo said that the preva notion as to Wolsey having built the great is erroneous, the fabric rolls of the work still remaining to show that the hall, as we see it, is the work of Henry VIII.; that short, we owe the magnificence of the pa more to the king than to the cardinal. W the proceedings in the great hall were over, Hugo showed the company over the va

other parts of the building, and a visit was paid to the chapel. Permission to use the great hall for the meeting had been obtained from her Majesty's First Commissioner of Works, and permission to view the chapel was obtained from the Lord Chamberlain. The company were taken through the quadrangles and the gardens. The duty of describing the splendid collection of old tapestry devolved on Mr. J. G. Waller, while that of expatiating on the rare merits of the wood carving of Grinling Gibbons fell to Mr. W. G. Rogers. Mr. Hugo took occasion to point out the beautiful brickwork of Sir Christopher Wren in the eastern façade of the palace, with other traces of the hand of that architect. The marine-fossils to be seen in the paving stones attracted particular notice, and altogether the company thoroughly enjoyed what Mr. Hugo very properly called the "many marvels of this really wonderful palace."

LAMBETH SCHOOL OF ART.

This school had a visit from Mr. Marks and Mr. Hodgson, Associates of the Royal Academy, on Monday before last, who had come for the purpose of awarding the "Cresy" prize, of the annual value of 5*l.* 5*s.*, founded three years ago by Mrs. Cresy, a resident of South London, who has long taken an interest in this school, to the students of which the competition is confined.

The subject given on this occasion, says the *South London Chronicle*, was "A Victory"; and twelve students sent in illustrations, consisting of models in clay and plaster, paintings in oil and water colours, and chalk drawings.

Mr. Marks said he and Mr. Hodgson had unhesitatingly come to the conclusion that the prize should be awarded to Mr. Frith for his group in clay, on the subject of "The Death of Jephtha's Daughter." Having called Mr. Frith forward and handed him a cheque for the amount of the prize, Mr. Marks addressed to him a few words of congratulation and encouragement. Mr. Frith's work, he said, had a high place in his estimation, and its evident honesty and sincerity proved that Mr. Frith had been trying to do his best. He had had experience of teaching at the Royal Academy, and had found the desire of scamping to be very strong amongst students. He would warn all art-students against this tendency. He had found that the man who had made his way in the world was not the clever, precious student who would dash at his canvas, and paint a wonderfully clever life-study,—he was not the man who succeeded; on the contrary, it was the patient, honest plodder, who was generally set down for a muff, who made his mark. There was no royal road to art; the only method of reaching eminence was that of work, —hard, honest work,—and this was equally the case whatever branch of art the student might elect.

Mr. Frith's group consisted of three figures,— a female supporting the dying daughter of Jephtha, and Jephtha standing by them with his face raised to heaven.

RAILWAY MATTERS.

Subsidence of Ground in Liverpool.—The traffic in Berry-street has been materially interfered with by a subsidence of ground above the tunnel which is being constructed in connexion with the new Liverpool and Manchester line of railway. For two or three days it had been observed that the street was becoming of unequal surface, but the subsidence became so serious as to induce some persons to call the attention of Superintendent Sibbald, of the borough police force, to the condition of the thoroughfare. On an examination being made, it was found that the sinking had taken place over an extent of from 10 to 15 yards in length and 14 ft. in width, the extreme depth of the fall being about 6 in. The place has been inspected by the deputy borough engineer, Mr. C. Davies, and Mr. Knight, the engineer employed by the contractors, and these gentlemen are of opinion that no further subsidence need be apprehended.

Railway Engineering in America.—In travelling from New York to Washington heretofore, the passengers' coaches had to be dragged through Baltimore by horses. To avoid this, the Pennsylvania Railroad managers resolved to build a new line from Baltimore to Washington, called the Baltimore and Potomac Railroad, boring a tunnel under the city of Baltimore to make the transit through that place rapid and easy. The tunnel has been completed. It is 1,512 ft. long, including 550 ft. of open cuttings, and from the northern to the southern end makes an ascent of 125 ft. Branches connect it with all the railways terminating in Baltimore. The work has been done in barely two years, at a cost of 2,300,000 dollars.

Another American Big Thing.—The projected tunnel through the Rocky Mountains, already begun, promises to be the chief of all the engineering wonders of the world. The Box Tunnel astonished people in its day, but in future the Mont Cenis Tunnel itself, the length of which is more than seven miles, is to be looked upon as a mere nothing. The Rocky Mountains Tunnel is to be twelve miles long, and there will be 6,000 ft. of earth and rock, or considerably more than a mile, over its greatest depth. It is hoped that not only will most of the western railway traffic be drawn through this "short cut," but that large mining profits will incidentally accrue. The bore is to be effected by diamond-pointed drills, driven by powerful machinery, and it is reckoned that the tunnel will be finished at the rate of 60 ft. a working day. The Mont Cenis work was fourteen years in construction,—this, it is hoped, will take no more than four.

NEW RAILWAY BILLS.

The Private Bill Committee business of Parliament, which commenced in March last, and which has been very heavy in consequence of the investigation into some of the Bills having been unusually prolonged, was concluded during the latter part of last week, the Bill of the Metropolitan and St. John's-wood Company, for extending their line and also for powers to run goods trains over their line, being the last Bill brought before the committee. The powers sought to run goods trains over the line were strongly opposed by owners of property in the district and several local bodies, but the committee ultimately sanctioned the Bill. The result of the inquiries is that 120 railway Bills have passed through Parliament out of about 198 applications. Of the successful applications, 35 are for the incorporation of new companies. Amongst the unsuccessful applications was, perhaps, the most important Bill of the session, viz., one called the Hull, Humber, and West Yorkshire project. It embraced a proposal to construct a tunnel under the river Humber, of two miles in length, on the pneumatic principle, by the construction of working vessels in the river, portions of which were to be sunk to the bed of the river, and the water having then been pumped out of them and made air-tight, the bed of the river was to be excavated to the intended level of the railway beneath it, and the tunnel was then to be built, the materials being sent down by the working vessels. Mr. Fowler, C.E., was the engineer. The Bill was strongly opposed by the North-Eastern Company, with the view of preventing the projectors securing access to Hull, and several eminent engineers were called on both sides, those on behalf of the opponents of the scheme contending that it would be an engineering impossibility to construct the tunnel under the river as proposed, whilst equally well-known engineers who gave evidence for the promoters stated that it was perfectly feasible. After an investigation of twenty-eight days' duration, the Commons' Committee passed the Bill, but the committee of the Lords rejected it at the close of an inquiry occupying fifteen days. It is the intention of the promoters to renew the application next session.

UTILISATION OF IRON SLAG.

It frequently happens that the iron chemically combined in blast-furnace slags is by no means insignificant in amount, and it therefore becomes interesting to know from time to time what that amount is. It is, however, very difficult, and sometimes impossible, to decompose these slags by means of acids. This is particularly the case with crystalline slags, the vitreous slags being much more decomposable: indeed, too much so sometimes for utilisation of the slag as a building material, we fear. A portion of finely-pulverised vitreous slags, treated with hydrochloric acid, is dissolved, leaving a silicious jelly, but the crystalline portion is scarcely affected. It is recommended that ammonium fluoride be employed to decompose the slags.

The process invented by Mr. Woodward, of Darlington, and carried out by the Tees Scoria Brick Company, has so far succeeded, says the *Darlington Times*, that bricks have been made at eleven o'clock in the morning, and walled at half-past three. Those who have charge of the process are very sanguine of success; indeed, it is asserted that they can now permeate a mass of slag weighing three tons, whereas before they could only succeed with a comparatively small quantity. The company have for some time past been experimenting at Eston, at the furnaces of Messrs. Thomas Vaughan & Co., with the result stated. Laying bricks in a wall four hours and a half after they were made is certainly a novelty in brick-making.

SANITARY.

Fever at Yeovil.—Fever has broken out at Huish, a suburb of Yeovil, and some deaths have occurred.

Overcrowding in Whitehaven.—At a recent meeting, resolutions were unanimously adopted that in the opinion of the meeting the overcrowding in the town was calculated to prove seriously injurious to the health of the people, and that it was highly desirable measures should be taken to provide additional house accommodation; that with a view of carrying out this object, the meeting ventured respectfully to urge upon the Earl of Lonsdale the propriety and advisability of granting building sites upon reasonable terms to parties desirous of erecting houses; and that the trustees for the town and harbour be requested to do all that they can to promote the movement.

REPORT TO COACHMAKERS' COMPANY ON COMPETITION DRAWINGS.

The judges appointed by the court of the worshipful Company of Coachmakers and Coach Harness-makers of London, to examine the drawings of carriages and parts of carriages sent in competition for the medals, money prizes, and certificates, &c., offered by the company, award as follows, viz.:—

1st Prize (the Company's silver medal, 3*l.*, and certificate), to Mr. George Fleming Budd (the winner of the first prize last year), coachbody maker, of No. 3, Cumberland-street, Tything, Worcester, for a set of three drawings, as follows:—1st. An elliptic spring barouche, with working section; 2nd. A "C" and underspring brougham, with working sections; and 3rd. An elliptic spring landau, with working sections.

2nd Prize (the Company's silver medal, 2*l.*, and certificate), to Mr. James Brown, foreman, 18, Kingsmead-street, Bath, for a set of two drawings, as follows:—1st. A mechanical drawing of a landau, to open and shut from the driver's seat, with sections thereof; and 2nd. A design for a T cart.

3rd Prize (the Company's bronze medal and certificate, with 1*l.* added by the right worshipful the master), to Mr. George Edward Holmes, foreman, London road, Derby, for a drawing of an elliptic spring barouche, showing the front side and back elevations, with working sections, and two views of a self-acting folding step.

In addition to the above prizes, the judges award the certificate of the Company to each of the following, viz.:—To Mr. Benjamin Laws, foreman, 413, Liverpool-road, Islington, for four drawings, viz.:—1st. An imperial phaëton, showing front, back, and side views. 2nd. A single brougham, showing the same views. 3rd. A "C" and underspring barouche, with like views, and under-carriage; 4th. Drawings of springs and axles.

To Mr. John P. Lake, foreman, 1, Philip-street, Westminster, for the drawing of a dress coach, with working sections.

THOMAS DOGGET.

The founder of the celebrated "coat and badge" prize is universally known, yet his birthplace is not stated in our encyclopædias, and but few facts of his early career are set forth. He was, however, a native of Dublin, having been born in Castle-street, in that city. As an actor, we find he visited and played in his native city at different times up to the period of 1692, but after that period we find no mention of his name in connexion with the stage of Dublin. The name Dogoit, or Doget, has been found by Mr. Gilbert (see "History of Dublin") in Anglo-Irish annals of the thirteenth century, and one Gilbertus Doget is mentioned in connexion with an unpublished Pipe Roll of the year 1261. Dogget's first appearance was made upon the Dublin stage, but he subsequently became a joint manager of Drury-lane Theatre, in conjunction with Colley Cibber and Robert Wilks. The latter was a fellow-townsman of Dogget's, and also a much-admired actor in his day. Dogget's share in the Drury-lane management was estimated at 1,000*l.*; yet he surrendered this in 1712, owing to a disagreement with one of his partners. He was the author of a comedy, published in 1696, styled "The Country Wake." It is said that some of

Congreve's plays owed much of their success to the wonderful manner in which Dogget performed the parts expressly written for him. No doubt an intimacy sprang up between Dogget and Congreve, while the latter was a student in Trinity College. The performance of certain plays by Dogget was made the subject of much study on the part of Colley Cibber, who, it is said, prided himself when he was able to successfully imitate the former. Dogget appears to have been of rather low stature, from one account which we find of him, which describes him "as a little, lively, spract man." Our hero died in 1721, and, to commemorate the Hanoverian succession, he bequeathed a sum of money, as we are all aware, to purchase a coat and silver badge to be rowed for on the Thames, on the first of August annually by six young watermen whose apprenticeship expired in the previous year. The public are already made cognisant by the daily press that there was a change this year in the conditions of the race. The Fishmongers' Company, who now have and have had for some time the charge of the arrangements, have augmented the prizes, and determined in the event of more than six men entering, they shall row in trial heats from Putney to Hammersmith to decide which six shall row from London to Chelsea.

If we mistake not, the Garrick Club possesses an original portrait of Dogget. Has it been ever engraved? Dogget, in politics, was an uncompromising Whig; and though a good actor in his day, it is his bequest, like Edward Alleyn's, that keeps his memory green.

SALE OF THE METROPOLITAN BOARD'S LAND.

The Works Committee reported at the last meeting that, in accordance with the directions of the Board, the land remaining undisposed of in Southwark-street was put up for sale by auction, on the 22nd of May last, the total amount realised from the property sold being 24,310*l.* The first nine lots consisted of land already leased by the Board, at a rental of 816*l.* 10s., and produced, before deducting expenses of sale, 21,250*l.* on average of 26·025 years' purchase. As the Board only paid 3*l.* 15s. for money borrowed, capital is worth 27·2 years' purchase; and were the Board free from Parliamentary restriction, as to holding surplus lands on improvements, it would do well financially not to sell land at a less price than 27·2 years' purchase; and looked at simply as a financial question, the land which was sold for 21,250*l.* was worth to the Board 22,208*l.*, exclusive of the value of the rack-rents when the leases fall in. Put in another way, the value of the capital produced by the sale is only 796*l.* 17s. 6d. per annum, so that delay in realising ground-rents might be profitable to the Board. The report was finally adopted.

Publications.

Workshop Appliances. By C. P. B. Shelley, C.E. Longmans, Green, & Co. 1873.

This excellent treatise is one of Messrs. Longman's text-books of science, adapted for the use of artizans and students in public and other schools. It contains descriptions of gauging and measuring instruments, hand-cutting tools, lathes, drilling, planing, and other machine tools used by engineers, and is profusely illustrated with engravings; the whole forming a very useful technical compendium of knowledge of workshop appliances.

Reports on the London International Exhibition of 1873. Parts I. and II. London: Published for the Society of Arts by Bell & Daldy.

The Council of the Society of Arts, having been informed that Her Majesty's Commissioners do not intend to publish reports on the different departments of the Exhibition of the present year, have undertaken that duty. The first part includes reports on machinery, surgical instruments, ancient objects, and dried fruits The second part contains reports on carriages food preservation, and swords, military arms and steel.

Long-span Railway Bridges, &c. (Revised Edition). By B. Baker, C.E. London: Spon.

The portion of this work treating on long-span railway bridges was first published about seven years ago. The revised edition comprises, besides investigations of the comparative theoretical and practical advantages of the various adopted or proposed type systems of construction, also numerous formulæ and tables giving the weight of iron or steel required in bridges from 300 ft. to the limiting spans; to which are added similar investigations and tables relating to short-span railway bridges.

VARIORUM.

The *Lancet* says, as to the Westminster Law Courts,—"In Palace Gardens, just opposite St. Margaret's Church, a square tunnel may be seen from the road, which carries air to the Court of Queen's Bench. At the mouth of it a jet throws a fine spray of water over the air which enters, thus cooling the air and saturating it with aqueous vapour. The cold air enters the court through perforated zinc, which is fitted underneath the seats. The upper part of the court communicates with a shaft 4 ft. in diameter, in which a large ring of gas-burners produces a powerful upward draught. It is obvious that the successful working of this system depends on the exclusion of all air that does not enter through the tunnel. Until lately, however, it appears to have been the custom to ignore the ventilating apparatus, and trust to doors and windows, which are utterly insufficient for the purpose."——The *Leisure Hour* gives a word or two in season as to the want of open spaces in Dublin:—"Any rich citizen who wishes to do good, and to obtain a good name, could not better bestow his benefaction than in supplying this public want. The name of Sir Benjamin Guinness has been justly immortalised by his munificent gift of 150,000*l.* for the restoration of St. Patrick's Cathedral. The name of Mr. Roe is, in honourable rivalry, associated with the restoration of Christ Church Cathedral. I heard an anecdote of Mr. Jamieson, another well-known citizen, who has also grown rich by the sale of liquor, his Irish whisky being A 1 in commerce. When asked what he was going to do, after the munificent benefactions of his liquor-selling colleagues, 'I am going to build a lunatic asylum,' he said, 'for men like Guinness and Roe!' I do not believe a word of the story, but if Mr. Jamieson wishes to do a good service to the people by whom he has gained his wealth, he could not do it better than by providing an open space for health and recreation in the region adjacent to the two restored cathedrals. The crowds of pale, haggard men, women, and children crowding the streets of that quarter would have good cause to bless the name of any benefactor who would do this service. There is no city of the size so deficient in open spaces."

Miscellanea.

Street-Watering.—An estimate, founded upon private inquiry, tells us, says the *Morning Post*, that "the cost for labour in watering the streets of London averages about 135,000*l.* per annum, the cost of water being additional. It is contended that the whole of this watering can be accomplished in a far more effectual and advantageous manner by a system of permanently-laid pipes for an expenditure of less than 3,000*l.* per annum in labour; while the interest upon the plant necessary for the purpose would not exceed 20,000*l.*,—making the total yearly cost of watering (exclusive of the water itself), only 23,000*l.*, instead of 135,000*l.* An experiment, which has been conducted upon the drive at the eastern end of Rotten-row, Hyde Park, warrants the conclusion that, with the permanent system referred to, the services of one man would be amply sufficient for laying the dust over the whole of the drives and rides in the park,—a task which at present engages, as a rule, twenty men with twenty horses and carts daily. Taking this area as a seventy-fifth part of the total distance in London to be watered, we arrive at the result that about seventy-five men, without any horses and carts at all, could water the whole of the metropolis, at the cost for labour above named. It is not surprising, then, that the Streets Committee of Commissioners of Sewers for the City of London should be investigating the feasibility of the new system, patented by Messrs. Isaac Brown & Co., of the British Rivers Irrigation Office, India-buildings, Edinburgh."

"The Highlands," Nailsworth.—This mansion has been erected upon the site of the former house, from the designs of Mr. Ewan Christian, architect, London. It may be described as belonging to the half-timbered type of Old English house. On the 18th ult. a dinner was given by Mrs. Frith, the owner, at the George Hotel, to the workmen—the *employés* of Messrs. Estcourt & Co., contractors, Gloucester, who have just erected her new house. The site upon which "The Highlands" is built is a fine one. Timber is, of course, free'y used in the outward construction; the upper part overhangs and is corbelled out boldly from the lower floor. The gables are numerous, and the cut red brick chimneys shoot upward far above the gables. The glazing of the windows was done by Mr. Pepper, of London. Colour is sparingly introduced, in sufficient quantities to give a cheerful tone. In the front façade of the house the windows are glazed with plate glass in large squares, except in the uppermost panels, in which coloured and armorial bearings are brought to bear, and hence the view is not in any way interfered with. The glazing at the side of the house next the Common, however, is so arranged, by the use of several light tints, that while the occupants of the various rooms can see all that takes place outside, it is impossible from the exterior to look within. The floor of the vestibule is paved with encaustic tiles, whilst that of the hall and corridor is of polished old English oak. The ceilings of these portions and of the various suites of rooms are of open panelled timber. The compartments upon the lower floor are spacious, and open out on to the terrace in front. The staircase by which the ascent to the upper rooms is made is of wrought oak. The architect has been represented upon the building since its commencement by his clerk of works, Mr. John Griffiths. The contract has been carried out by Mr. A. Estcourt, of Gloucester. Mr. Godard has been his foreman upon the spot. What carving has been executed upon the building has been done by Mr. Harry Hems, of Exeter.

The Atrocities at Alcoy.—Further accounts have come of the recent atrocities at Alcoy. The *Daily News* correspondent says:—"A strike was organised. The men, numbering upwards of 3,000, proceeded in a body to their masters, and first of all demanded an increase of wages and a diminution of working hours. The masters, I believe, yielded at once. But the leaders only wanted a pretext for a riot. The insurgents, numbering 9,000 men and women, prepared to attack the municipality, which had taken refuge in the Hôtel de Ville. Petroleum was collected in large quantities, and it is said that one individual was immediately seized and immersed in the petroleum, and then set on fire. Having taken the inmates of the Hôtel de Ville prisoners, they dragged the principal men to the window, one by one. They then shouted to the mob, asking, 'Do you want him dead or alive?' If they replied 'Alive,' the victim was thrown out of the window, received on the merciless bayonets below, and carried about alive in that state, amid the shouts and insults of men and women. If the answer was "Dead," the individual was despatched with bayonets or knives, and thrown out. The petroleum was then applied to all the woodwork of the building, and the edifice was set on fire and completely destroyed, with all the persons that yet remained in it. From here they proceeded to the Alcalde's house, which they also set on fire, after having used the most brutal violence to the ladies of the house. Many other houses and many other persons shared the same fate, and when the troops sent from Valencia arrived in sight of the town upwards of a dozen houses and five or six manufactories were in flames."

Demonstration against Improvements.—A great demonstration, we are told, will be made by the journeymen bakers of London on Monday next (the Bank holiday) in Hyde Park, against the Act to abate the smoke nuisance. Would it not be as well to get a few people together at the same time to protest against improved drainage and a constant supply of water? Our readers may remember that some years ago the people employed in a certain large manufactory protested against the improvements that had been made in the ventilation of it, on the ground that the change had increased their appetite. It is wonderful what absurdities, even crimes, people will commit in their ignorance.

Pine Apple Nursery, Maida Vale.—The buildings which the Pine-apple Nursery Company, at Maida-vale, have had erected, may now be considered as complete, and the *Kilburn Times* gives an engraved illustration of them. The conservatory has been designed and constructed by J. Weeks & Co., of Chelsea. One boiler heats 2,000 ft. of pipes. The hot-water apparatus is fixed on "Weeks's one-boiler system." There are twenty-nine large hothouses so heated, the entire length of which houses, if built in one continuous line, would measure over 2,000 ft. The hot water circulates through 11,447 ft. of cast-iron pipe, which is upwards of two miles of piping, and the power of the boiler is so great that every part is made thoroughly hot at the same time, even in the winter. Many of these hothouses are what are termed stoves, and have hot-water pipes fixed beneath the beds for bottom heat. Every house has several valves fixed in the pipes, to regulate the circulation of the hot water, and by opening or closing these valves either side of a house can be heated separately, the top or bottom heat separately, the whole together, or any part, regulated at pleasure. The work is done in such a manner that the conservatory can be kept at a temperature of 60° Fahrenheit, with a thermometer outside below zero. The winter garden is also fitted up in such a way that one side may be kept at a high temperature, whilst the other side may be temperate, or even frigid.

Elsham and Worlaby Estates.—Improvements have been effected during the last four years upon the Elsham and Worlaby estates, in Lincolnshire and Yorkshire, under the personal superintendence of Colonel Astley, the owner. Elsham Hall has been renovated; new schools have been built; the mud and thatched cottages are being replaced by brick and slated cottages in pairs, with a garden attached to each. The homesteads have been enlarged and improved. One is in course of erection at a cost of some 1,000*l*. The parish churches are receiving attention: that at Elsham is being restored, new roofed and reseated by Mr. Wallis, builder, Market Rasen. Worlaby Church is being rebuilt by Mr. Young, of Lincoln. It consists of nave and aisles, chancel, porch, and tower. The old materials are supplemented by Kirton stone outside, and chalk, dug upon the estate, for the interior. The walls are hammer-dressed on both sides. The tower is to be capped by a slated spire. The memorial-stone of this church was laid by Mrs. Astley, on the 12th ult.), forms the inner sill of the tower-window. The works upon the estates are from the designs of Messrs. Gunlop & Bryant, of Westminster, except the churches for which Mr. Wm. Scott Champion, of London, is the architect, and Mr. Houghton the clerk of works. The district is greatly benefited by the money spent upon these improvements.

Presentation by Working Men to the Baroness Burdett-Coutts.—A year since a committee was formed in the east of London to present Lady Burdett-Coutts with a "remembrance," provided by penny subscriptions. The committee, consisting of some sixty men, desired to give the baroness a picture or bust of herself, but this her ladyship declined, preferring to have a picture of the seven principal men who had worked the committee. Mr. Sydney Hodges was the artist selected, and a picture has been presented to Lady Burdett-Coutts at a luncheon given by her to the committee and others (numbering 100), at Holly Lodge, Highgate. Mr. D. Godfrey and the band of the Coldstream Guards entertained her company, and Sir Thomas Dakin, as chairman for the committee, presented the picture. Her ladyship made a suitable reply. The Archbishop of Canterbury visited the baroness during the afternoon. The Highgate Workmen's Club, with their wives, numbering some 400, and the police band joined the festivities. Dancing was sustained until after eight p.m. of a fine evening.

New Church in Islington.—The foundation-stone of a new church, about to be erected by the Clothworkers' Company, in Islington, has been laid. This will form the thirty-first church in the parish of Islington. It is to be in the early English style, and will consist of a nave, with north and south aisles, and an apsidal ending. The west end is lighted by five lancet windows and a large wheel-window over them. There are also clearstory windows. The church is to be surmounted by a plain stone spire. Mr. F. W. Porter is the architect, and Messrs. Dove, Brothers, are the contractors.

Loans for Sanitary Purposes.—In reply to Mr. Delahunty, in the House of Commons, the Chancellor of the Exchequer said the amount of loans granted by the Public Loan Commissioners, with the sanction of the Treasury, to local authorities in England for sanitary purposes between the 19th of August, 1871, and the 31st of December, 1872, was not 869,833*l*., as stated by the hon. gentleman, but 8,389*l*. Amounts had since been granted for like purposes, to the extent of 262,579*l*. During the then present month, the Treasury had obtained power from Parliament to raise a further sum of 1,500,000*l*. to enable the Loan Commissioners to grant additional loans at 3½ per cent. to local authorities in England for like purposes. Since the 19th of August, 1871, the Public Works Loan Board had granted to the local authorities in Ireland for sanitary purposes upwards of 12,000*l*. The maximum period for repayment of such loans in Ireland was fixed by law at twenty-five years for Ireland and fifty years for England. The distinction was one which he was not prepared to justify. The Chief Secretary for Ireland had prepared a Bill to do away with the distinction, and it was only the shortness of the time at his disposal that prevented him from carrying it through. He was not prepared to reduce the rate of interest charged on loans to Ireland, which would be made a precedent applicable to loans for other places than Ireland.

Technical Education and the Goldsmiths.—A statement of annual prizes established by the Goldsmiths' Company, at Goldsmiths' Hall, London, for the purpose of encouraging technical education in the design and execution of works of art in the precious metals, is extensively circulated annually among workmen and artists, and goldsmiths and silversmiths who have marks entered at Goldsmiths' Hall. In the month of November last 250*l*. were awarded in prizes, and the company, Mr. Prideaux states, received several designs of great beauty and originality. To obtain either of the prizes for design, originality is necessary, and no copy can be the subject of a prize. The prizes are awarded in the month of November, and objects of art and workmanship must be sent by the competitors to Goldsmiths' Hall, addressed to the care of the clerk, Mr. Prideaux, in the week ending the 25th of October. The competitors must be British subjects. The company have also resolved that a Travelling Scholarship of 100*l*. per annum may be awarded by the wardens to a student who has shown exceptional talent, and who shall have obtained a prize for design for three successive years, in order to enable him to study art in the precious metals on the Continent of Europe.

The People's Music Hall, Hanley.—The wooden building in Church-street, Hanley, known as the circus, is now closed, the proprietors, Messrs. Rogers & Warrilow, having erected at the rear, and in the new street running out of High-street to King-street, a new hall, which has been opened to the public. The building is arranged after the manner of a theatre, and externally presents a plain appearance. It is calculated to hold 4,000 people. The stage is 36 ft. by 26 ft., and the proscenium is 27 ft. in height. The building is well lighted and ventilated. The cost, including the site, has been upwards of 9,000*l*. There are two entrances, one for the pit and boxes, and the other for the gallery. Mr. T. Rogers, one of the proprietors, has been the architect, and has also superintended the erection of the hall. Previously to the opening of the hall, the mayor went to it with the borough surveyor, and one or two suggestions were made to Messrs. Rogers & Warrilow as to alterations which were desirable for the safety of the public, and they readily promised that these suggestions should have their earnest attention.

Recent Thunderstorms.—The north-west of England and part of Scotland have been visited by severe storms of lightning and rain, and much property has been damaged and many lives lost by the lightning. Sunstroke, also, has been remarkably frequent throughout the country. Besides the usual damages to chimneys, roofs, &c., some more notable injuries to property have been done, as at Coldstream, on the Scottish border, where a statue of the late Mr. Charles Marjoribanks has been shivered to pieces, and nearly the whole monument, a column about 60 ft. high, thrown down. There has been an earthquake at Southport, and watersponts have occurred.

The Attempted Charge on Postage-stamp Enclosures.—The perpetual interference of the Post-office authorities with the public convenience is distressing. They no sooner propose and threaten, however, than they withdraw their annoying "regulations." This, we hear, is already the case with the threatened special charge for transmitting postage-stamps enclosed in letters or envelopes. Under the fostering wing of the postage-stamp system itself, a vast practice of making small purchases and payments by penny-post letters and postage-stamps enclosed has sprung up and nowprevails throughout the whole country; and this, at one swoop, the Post-office has threatened once for all to put a stop to; for what else could have been the result of their "new rule," which, instead of adding to their revenues, must have most materially diminished them, like their restriction of small parcel deliveries? If they would only go upon another tack, now, and afford new and extensive facilities for the safe transmission of parcels or enclosures ordered and paid for through the Post-office, they might do something both new and worth doing.

Cottage Hospitals.—The hospital recently erected in Moreton-in-the-Marsh has been opened by the Bishop of Gloucester and Bristol, in the presence of a large number of patrons and subscribers. The building was commenced in July of last year, by Mr. G. Davis, of Chipping Campden, whose tender the committee had accepted. Messrs. Slatter & Calloway superintended the work. The building is of stone, from the quarries of Mr. Gill, of Bourton-on-the-Hill, the walls inside being lined with brick. The ground-floor contains matron's sitting-room, convalescent-room, accident-ward, two kitchens, and surgery, with larder, fuel-house, and mortuary. The upper floor contains three wards for patients, matron's bedroom, bath-room, &c. The total cost of the building is 820*l*. It is proposed to commence with six beds, although there is accommodation for ten. The total amount raised is nearly 1,000*l*., which will cover the contract and the cost of furnishing.——A scheme is being matured for the establishment of a cottage hospital in Frome, and a meeting will be shortly convened for laying the matter before the public.

Crystal Palace School of Art, Science, and Literature.—The award of prizes to art-students in the ladies' division of this school was made on Saturday. Mr. Louis Haghe and Mr. H. G. Hine officiated as judges of the water-colour paintings produced by lady students in the class conducted by Mr. Edward Goodall. The silver medal was given to Miss Edith Farquhar; the certificate of merit to Miss Mary Fownes Turner, and special commendation to Miss Thwaites. Mr. Joseph Durham, A.R.A., and Mr. T. Thornycroft were judges of the sculpture produced by members of the class for modelling in clay, of which Mr. W. K. Shenton is master. The silver medal was awarded to Miss Helena Teulon for a model of the "Venus of Milo"; the certificate of merit to Miss Macduff. The judges also bestowed commendation on models by both the above-named ladies, as well as on works by Miss Kate Green and Miss Constance Hopcraft. The drawings and models were afterwards exhibited to students and their friends in the private studio of the school.

Improvements in Furnaces.—According to the patent of Mr. R. S. Casson, of Roundoak Works, Brierly-hill, a preparing or heating chamber is combined with the ordinary puddling-chamber, the two chambers being separated by a high bridge. In the preparing-chamber, the pig-iron or steel is heated to incipient fusion by the waste heat or gases passing from the puddling-chamber, the heated pig-iron or steel being charged into the puddling-chamber by lifting it over the bridge. The space at the contracted end or neck of each chamber may be diminished or increased at pleasure, so as to regulate or control the combustion of the gases or flames passing through the chambers, as well as their temperature. Air may be admitted into the chambers through the said regulators or reverberators, and they may be kept cool by water or steam passed through them.

Rot in Iron Water-pipes.—The town surveyor of Bath attributes a bursting of the water-pipes there to the effect of the soil in some parts of the city, which converts the pipes into a kind of plumbago which cannot resist the pressure of the water.

Yarmouth Harbour Works.—Mr. Wm. A. Lyttle, C.E., referring to the haven works at Yarmouth, observes that the timber has everywhere been maintained by the port and haven commissioners in splendid condition; but points out that timber for such purposes is being discarded all over the world, as being too perishable and costly. The harbour of Port Said for the Suez Canal has been constructed in a rockless sand, but not an ounce of timber has been employed, its place being wholly and most profitably taken by enormous concrete blocks. Numerous important works show how concrete, both in air and water, resists the action of time. He recommends the adoption of the chemico-engineering course for Yarmouth harbour.

State of the Frescoes in the Houses of Parliament.—We regret to learn that on a further examination of the principal wall paintings in the new Houses of Parliament it has been ascertained that a similar process of disintegration to that detected a year or two ago in the painting, by Mr. Maclise, R.A., of the "Meeting of Wellington and Blucher at Waterloo," has also become apparent in the opposite picture, by the same artist, representing the "Death of Nelson," and that traces of decay are observable in the work of Mr. Herbert, R.A., depicting "Moses delivering the Tables of the Law to the Israelites."

Bursting of a Canal.—The Leeds and Liverpool Canal at Wigan burst last week into a conduit which passes underneath it at Meadow Bridge. Two or three tons of clay and several sacks of straw were thrown into the opening, but the weight of the water carried all before it. In addition to the wharfs at the Wigan Depôt being drained, it was impossible to work thirty-three large cotton manufactories, which were dependent on the canal for the water supply, and in consequence between 6,000 and 7,000 operatives were thrown idle till next day.

The Fire at the Fire-Engine Makers.—Looking on, as we did, at the fire which destroyed part of the premises of Messrs. Merryweather & Son, at the corner of Bow-street and Long-acre, it was not difficult to imagine it the act of the fire-demons in revenge for the check sometimes given them by the fire-engines. It was strange and disappointing to note what a small effect the water thrown upon the building had until all the combustible portion of it had been turned to charcoal.

Alderman Cotton's Window in the Guildhall.—Mr. M'George, chairman of the City Lands Committee, stated, at the last Court of Common Council of the City of London, that Mr. Alderman Cotton had informed him that if the window which he had recently placed in Guildhall was not considered in keeping with the other windows in the hall he would remove it in twelve months and replace it by another window at his own expense.

Enlargement of the City of London Lunatic Asylum.—The asylum in connexion with the City of London is about to be materially enlarged, and the Coal, Corn, and Finance Committee, having presented a report recommending that the sum of 4,000*l.* for the proposed enlargement be provided out of the City funds, the recommendation was last week agreed to at a meeting of the City Council.

Poplar Wood.—Many despise poplar as a timber, but it has one golden quality,—it will not burn. Some years ago a factory at Nottingham took fire on the second-floor, and burnt out to the top furiously, but not downwards; although the floors lay a yard thick with hot clinkers and melted machinery, yet it did not get downwards, because the floors were of Poplar.—*The Garden.*

Six Millions to be Spent on the Liverpool Docks.—Mr. Langton, the Chairman of the Liverpool Dock Board, announced at the weekly meeting on Thursday, the 24th ult., that the Royal assent had been given to the Bill promoted by the Board for constructing new docks at each end of the Liverpool Dock Estate, at a total cost of about six millions sterling.

Discoveries in Rochester Cathedral.—Interesting discoveries, we learn, have been made at Rochester Cathedral, including portions of the first cathedral, erected in the year 604, encaustic tiles covered with rude figures, and two leaden coffins, one of which is supposed to contain the remains of Ithamar, Bishop of Rochester, who died in 655.

TENDERS

For repairs at the Prince of Wales public house, Riley-street, Bermondsey. Mr. H. J. Newton, architect:—

Hockley	£180 0 0
Taylor	160 0 0
Shurmur	158 0 0
Rolfe	138 0 0
Brindle & Co. (accepted)	109 10 0

For the erection of three warehouses, Tudor-street, Blackfriars, for Messrs. Spicer, Brothers. Mr. William Smith and Mr. William Seymour, joint architects:—

	For corner warehouse.	For two adjoining warehouses.
Wagner	£12,638	£8,414
Webber	12,300	8,703
Nightingale	12,115	8,232
Cooke & Green	11,000	7,800
Foster	10,770	7,490
Tully	10,305	7,250
Manly & Rogers	10,286	7,198
Bullivant	10,045	7,093
Sawyer	10,140	6,880
Elkington	10,149	6,990
Crockett & Dickinson	10,000	6,939
Wicks, Bangs, & Co.	10,169	6,793
Mann	9,875	6,577
Chappell	9,838	6,653
Trevena	9,785	6,523
King & Son	9,730	6,650
Carter	9,467	6,490
Mansebridge	9,331	6,698
Oliver	9,318	6,221

For buildings at the Charter-house, for the Merchant Taylors' Company. Mr. E. T'Anson, architect. Quantities by Messrs. Campbell & Wallen:—

		Extra for wainscot.
Pritchard	£40,871	£983
Ashby & Horner	40,390	942
Holland & Hannen	40,300	664
Macey	39,990	680
Lucas, Brothers	39,824	890
Higgs	39,814	909
Conder	38,965	632
Ryder & Sons	38,808	620
Brass	38,557	850
Trollope	37,465	658
Kilby	36,297	785
Gammon	35,762	760
Browne & Robinson	34,812	734

For Back-row schools, Mildenhall, Suffolk. Messrs. John Young & Son, architects:—

Pearson	£3,249 0 0
Brass	2,908 0 0
Bell & Son	2,775 0 0
Holland	2,718 0 0
Tooley	2,575 0 0
Kendall	2,546 0 0
Robbins	2,495 0 0

For Cross-bank schools, Mildenhall, Suffolk. Messrs. John Young & Son, architects:—

Pearson	£2,707 0 0
Robbins	1,518 0 0
Tooley	1,180 0 0
Kendall	1,150 0 0
Bell & Son	1,090 0 0

For proposed alterations and repairs to St. Andrew's parochial schools, Holborn, for the committee. Mr. Ansell, architect. Quantities not supplied:—

Patten	£316 0 0
Langmead & Way	191 0 0
Bridgman, Nuthall, & West	189 0 0
Bracher	189 0 0
Wagstaff	185 0 0
Mansbridge	165 10 0
Patman & Co.	168 0 0

For proposed alterations to the Spread Eagle, Kennington-lane, for Messrs. Whitbread & Co. Quantities not supplied:—

Hockley	£375 0 0
Bridgman, Nuthall, & West	365 0 0
Axford & Co.	345 0 0

For proposed additions to house at New Steine, Brighton. Mr. A. Lett, architect. Quantities not supplied:—

Wilson	£331 15 0
Bridgman, Nuthall, & West	319 10 0
Griffiths	319 0 0
Titcomb	262 10 0

For rebuilding the Greyhound, Sutton, for Mr. W. W. Thorn:—

Stone	£3,218 10 0
Deavis	2,967 0 0
Richards	2,903 0 0
Cutt	2,835 0 0
Lacy	2,804 0 0
Real	2,410 0 0

For painting, decorating, &c., New Grove House, Brentford. Mr. John W. Smithies, architect:—

Phillipson	£337 9 0
Gooch	336 0 0
Foord	233 16 6
Robinson	223 11 0

For building three houses, with shops, at Herbert-road, near Shooter's-hill, Kent, for Mr. Robert Webb. Messrs. W. Gosling & Sons, architects:—

Blake	£1,910 0 0
Vickery	1,755 0 0
Ward	1,687 0 0
Clark	1,392 15 0

For the erection of a residence at Swattenden, near Cranbrook, Kent, for Mr. R. Appach. Mr. Charles Smith, architect. Quantities supplied:—

Marshall, Son, & Cramp	£6,818 18 0
Dove, Brothers	6,575 0 0
Howell	6,270 0 0
Abnett	6,085 0 0
Adcock & Rees	5,940 0 0
Anscomb	5,790 0 0
Avard (accepted)	5,581 0 0

For taking down and rebuilding coach-house, stable, &c., at Harden-street, Woolwich, for Mr. Henry Shersby. Messrs. Gosling, architects:—

Carter (accepted)	£273 0 0

For new Wesleyan chapel, Shiloh, Montgomeryshire. Mr. W. Ranger, architect:—

Evans (accepted)	£438 0 0

For alterations to Wesleyan chapel, Caeran, Montgomeryshire. Mr. W. Ranger, architect:

Woolley (accepted)	£254 10 0

Alterations to St. Matthias Church, Kensington. Mr. Henry Conybear, architect:—

Wigmore (accepted)	£998 0 0

For new schools, St. Matthias, Kensington. Mr. Henry Conybear, architect:—

Wigmore (accepted)	£1,095 0 0

For painting and redecorating St. John's Church, Hoxton:—

Smith	£493 0 0
Berridge	460 0 0
Philps & Bisiker	459 0 0
Cooke	428 0 0
Richards	421 0 0
Harris	419 0 0
Beensen	416 0 0
Cohen	385 0 0
Charlton & Martin	375 0 0
Ritches	370 0 0
Flaxman	370 0 0
Sawyer	347 0 0
Coulson	340 0 0
Holden & Son	340 0 0
Hayward	340 0 0
Coombs	335 0 0
Church	331 10 6
Gibbs & Moore (accepted)	330 0 0
Allard	266 0 0

For painting and decorating town-hall, Stratford, Essex:—

Carr	£212 10 0
Rivett	197 12 6
Taylor	187 15 0
Charlton & Martin (accepted)	187 10 0

For new parochial schools, Chiselhurst. Mr. J. Clarke, architect. Quantities by Mr. Sidney Young:—

Henshaw	£3,925 0 0
Dove, Brothers	3,905 0 0
Roberts, Brothers	3,855 0 0
Crossley	3,657 0 0
Gammon	3,597 0 0
Carter & Son	3,565 0 0
Wright & Co.	3,495 0 0
Marsland & Son	3,396 0 0
Tongue	3,300 0 0

For additions to Stoke House, Guildford, Mr. Henry Peak, architect. Quantities supplied:—

Loe	£671 0 0
Mason	671 0 0
Strudwick	667 10 0
West	650 0 0
Goddard & Son (accepted)	649 0 0

For additions to No. 72, Edgware-road, for Mr. F. Bullock. Mr. W. S. Witherington, architect:

Mark	£705 0 0
Grover	700 0 0
Bird	619 0 0

For erecting new buildings at 37 and 38, Lombard-street. Mr. Robert Walker, architect:—

	For new build.ng.	Credit for old materials.	Extra for 4th fl. r.
Macey	£13,613	£18	£520
Myers & Son	13,494	50	515
Scrivener & White	13,345	120	440
Brass	11,387	70	537
Sewell & Son	10,633	70	515
Gammon & Sons	10,620	60	430
Holland & Hannen	10,430	50	418
Browne & Robinson	10,371	50	470
Ashby & Son	10,224	40	492
Trollope & Son*	10,040	80	485
Kilby	9,977	60	460

* Accepted.

For the erection of Congregational Church at Leyton, Essex. Mr. T. L. Banks, architect:—

Lindzell & Son	£2,746 0 0
Jefferson	2,450 0 0
Hearne	2,329 0 0
Stains & Son	2,186 0 0
Warr	2,149 0 0
Ennor	2,083 0 0
Pavitt	1,979 0 0
Hosking, Brothers	1,837 0 0
Robins & Co.	1,780 0 0

For general painting and cleansing of the London establishment of Christ's Hospital. Mr. T. Renton, architect. Quantities supplied:—

Patman & Fotheringham	£890 0 0
Morby	866 0 0
Shaw	816 0 0
Pitman & Cuthbertson	749 0 0
Hayward & Son (accepted)	645 0 0

TO CORRESPONDENTS.

J. L. (thanks)—A. M. (information as to concrete will be found in previous volumes of the *Builder*).—J. G.—J. W.—J. C.—B. S.—R. A.—J. W. T. B. J. C. N. S. A. M.—Miss C. H. S.—G. T. C.—J. H.—W. B.—A. P.—B. M. & W.—M. T.—M. P.—C. K.—C. M.—L. A. P.—W. O.—Messrs. W.—H. P.—W. R. B. E. N.—W. W.—E. B. F.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

The Builder.

VOL. XXXI.—No. 1592.

A Few Words on Form.

THE word "form" is used with reference to art in almost as many distinct senses as the word "cause" is made to bear by Aristotle. Thus we speak of the form of matter, when we wish to distinguish between a solid, a liquid, and a gas; and we speak of material form, when we wish to denote the embodiment of an idea, or of a spiritual principle. Form, again, is used, with increasing frequency in the most modern English, to denote style, and this application of the term is far from unhappy. But in æsthetic writing it will be more correct to regard this importation from the Greek, through the medium of the Latin or French, into the English language, as very nearly synonymous with our vernacular word "shape."

We find a beautiful illustration of this identity in original meaning to be afforded by the classical name of the Dream God. The Latin word *forma* is etymologically convertible into the Greek word *morphe*, by one of those transpositions which are common among the Greek and Italic races. Thus, even at the present day, the Neapolitan lazzarone is heard to speak of Garibaldi as Galibardi. Morpheus, then, is no other than the shaper—the power that gives, during the profound repose caused by Somnus, the Sleep God, "to airy nothings a local habitation and a name."

We are, however, in the habit of using the word "shape" as equivalent, or nearly so, to "outline." Form, at all events, includes outline, and the primary idea expressed by the word may be taken to be outline, but it also means something more. It includes modulation of surface. The most accurate use of the word, then, is when it denotes the appearance of a statue. It is true that such appearance, as grasped by the observer, depends as much on the angle and degree of illumination as on the definition of outline and accentuation of surface. But with that we have not now to do. Form, strictly regarded, is subjective. It exists, indeed, objectively, but that which impresses the mind is the picture on the retina, or the impression, however it is produced, on the sensorium. In persons of vivid pictorial imagination, forms may be conjured up almost at will, on the closing of the eyes. We all know how vividly they are at times produced in dreams. However the vision be produced, whether by impinging light, or by some operation of the mind which is as yet obscure, form is the shape that we see before us, and this shape must have surface as well as outline, even if surface and outline alike are shadowy and undefined.

It is worth remark that the different modes under which form has been appreciated by those who gave its present structure to the English language, and by the classic writers, are evinced by the meaning of the adjectives incidentally derived from the word. Thus with Horace and Virgil *formosus* is one of the most distinguishing appellations of the beautiful. It seems to imply a sort of stately regularity, a noble severity of form, proper to the image of a god, or the person of a noble man or beautiful woman. With us, on the other hand, the word "formal" always implies something stiff, unbending, and to some extent unpleasant. The fine old English word "shapely" may be taken as our best equivalent for *formosus*. When we can choose between a word of Teutonic, and another of Latin, origin, our hearts almost always are more stirred by the former.

Regarding form, then, in the restricted sense of shape,—or outline and surface, as visible to our eyes, we still have to distinguish between the mass and the detail, between the genus and the species. In architecture this double application of the word is most apparent. It may be taken as indispensable; nor, when once understood, can it lead to any positive error. Thus we speak with equal correctness of the imposing form of a noble building, such, for instance, as that presented by the Superga, with its shadowy dome and stately turrets looking down on the broad valley of the Po, and of the delicate and massive forms of the mouldings of the cornice, or the volutes of the capitals.

Form may be properly regarded as the visible clothing or expression of an idea. Thus we can at once see how true architectural form, as presented to the eye by the elevation of a building, must spring from the plan, as a plant springs from its seed. For whatever object a building is erected, it must have, in order to have any excuse or apology for existence, a definite purpose. Whether it be for war or for peace, for shelter or for luxury, for the worship of the invisible powers or for the memorial of the departed, there must be some object for which the building is framed. Its adaptation to that purpose is the craft of the architect. When its adaptation is such as to strike any observer with an appropriate sentiment, whether of vast and rugged strength, of convenience and picturesque comfort, of dreamy and undefined awe, or of tender and mournful vigil, the skill of the architect has risen to genius. In this aptness we may almost say that genius takes its highest flight. If we except the pseudo-creation of the mechanic, —the skill that makes moving creatures with iron limbs and joints, that devour coal and expire heated air and steam,—we have no such examples of the bodying forth of an idea, for the fulfilment of a definite purpose, as is presented by a noble building. The vast though simple forms that have looked down for more than forty centuries upon the sandy plain of Gizeh may be cited as instances. Nothing on the surface of our planet more powerfully impresses the imagination than the first view of these ancient and enormous masses of masonry. If the outlines be at once reflected and relieved by the light of a brilliant moon, the angles tipped with silver, and the shadows deepened into that of night herself, the effect is at its highest. In our own country almost as much may be said of the first view of Stonehenge. The imagination is troubled by the presence of these enduring memorials of a mighty but forgotten past. Man, as the maker of these unrivalled monuments, in which the material embodiment of the design of the primeval architect has been attained by such a costly expenditure of toil and of power, speaks to his puny descendants, across the long night of ages, with a voice that is all the more imposing from the fact that its words are scarcely, if at all, intelligible. The grand poetry of the megalithic age mocks the scale of the modern critic.

The architect and the mechanic, however, travel, by different roads, to effect very distinct objects. The former will soon sink beneath his task if he be not fired and informed by the appreciation of the beautiful. With the latter, beauty has no relation. That structural beauty which is, after all, purely mathematical is the only beauty wooed by the great mechanist. To decide upon the mode in which the least quantity of metal or of wood can be disposed so as to give the stability, and to communicate the movement, which he requires is his single task. Utility is the only beauty he knows. Elegance of form means economy of material. Beauty of surface means the best mode of escaping rust, and of avoiding friction, even if it be only against the soft cushion of the atmosphere. Those forms that, as combinations of lines, curves, and surfaces, are positively harsh, meagre, or unrelieved to the eye of the artist, are clothed with the structural beauty that arises from the sense of fitness to the eye of the engineer. The only beauty of mechanism is either statical or dynamical. Thus he approaches, more nearly than other men, to the wisdom displayed in the organisation of nature; but he is a stranger, in so far as he is only a mechanist, to the spirit of beauty that revels in every form of organic life, and that is at times indulged, in its utmost intensity, in structures that are all but invisible to man.

The architect is a more wasteful distributor of the material furnished by nature. He regards time in a different light from the mechanician. With the latter, time and power are functions of one another. Velocity of motion and the overcoming of resistance are convertible terms. The maxim of the mechanic is, that a gain in time is a loss in power, and the converse. Unnecessary weight, therefore, as meaning unnecessary power, is the great thing that the good engineer seeks to avoid.

Weight, on the other hand, is the friend of the architect. Not that, even with him, it may not at times prove a subtle and unsleeping enemy. The architect maintains a continuous struggle against weight when he uses the arch. But in other instances he relies on the inertness of matter, or rather on the constant activity of gravitation. Time is his foe, as bringing atmospheric degradation and chemical change, and destroying his works by a ceaseless though imperceptible tooth. In the countries to which we look for the noblest works of architecture, moreover, Time has a terrible ally,—an ally whose power, often perfectly irresistible, breaks up the structure that would long have defied the inroads of Time alone, and yields him a ready prey in the fragments. This terrible foe is the earthquake. In Egypt, Italy, Greece, let a building outlast generation after generation, it will hardly escape ultimate overthrow by earthquake.

Dealing, then, with massive materials, relying on weight as an element of stability, and yet preparing a defence against dynamic agencies that may suddenly test his skill, the architect has an imaginative side to his labours which is wanting to the mechanic. The very ideas of repose, stability, defence, shelter, if rightly translated into structural form, have in them a certain poetic grandeur. When the aim and destiny of the most important buildings are borne in mind, the imaginative association is heightened. The simple, but sharply accentuated form of the spire has an effect on our imagination, when it suddenly appears in a landscape, that is not due to the optical form alone. We know that it indicates a church; we instinctively associate the idea of peace, of light, and of promise, with its heaven-pointing apex. The faint echo of an organ steals upon the ear, the voices of white-robed choristers, and the words that speak of promise of a life to come. It is thus that, in dealing with the form of his building, regarded in the mass, the architect has such scope for the display of genius of an heroic order.

Form with the painter, has, necessarily rather a different meaning. Here again we have to

remember the generic and the specific import of the word. In the first sense it is difficult to rise above what may be called technical. The form of a picture in the broadest sense of the word, is almost synonymous with its obedience to the laws of composition. It involves the even appreciation of two elements which we have before discussed (pp. 659 and 757, vol. xxx.), namely, character and motive. It is the law which determines the grouping of the elements of the picture. No picture can be held to be good in its general form if the structural lines, when reduced to the form of a diagram, are ill-combined. The faculty of seeing an object in its true, and yet its best light, is the first requisite for excellence in a painter. If he does this, if he has the real active appreciation of the unity, the harmony, and the scale of an object which he seeks to represent, he will be sure to impress on his work an appropriate form.

When we descend with the painter from the motive to the detail of his work, we shall find the beauty of the minor forms to depend on three elements. The first is experience. The painter must see a beautiful form before he can paint it; not, it may well be, the actual form, but the type. Creative power, in this respect, is not given to human genius. Thus a painter who was familiar with the most beautiful forms and faces of England, but with these alone, would be utterly unable to draw a Greek Hero, Amazon, or god. Phidias could never have impressed upon the marble yet happily preserved in the British Museum, a grandeur and a glory that mock all modern art, had he not lived among a people formed by blood and by climate into the worthy models for his chisel.

Besides this happy experience, the artist requires the eye to see,—to grasp the very fleeting *pose* or expression that is to be reproduced, and the hand to execute. The latter it is his craft to educate, but the former must be chiefly instinctive,—capable, indeed, like all instincts, of development by exercise, but originally minute. When we have this power and culture of the eye, with no corresponding cunning of the hand, we have, not indeed art, but the criticism and school of art.

In sculpture, the distinction between form, viewed in mass, and form considered in detail, which is so wide in architecture, and so conventional in painting, almost vanishes. The sculptor is dependent on the architect in a manner unknown to the painter. The latter, indeed, demands for the shelter and the exhibition of his works a chamber sheltered from the elements, and allowing a proper light to enter for their display. But there is no very special interdependence in the matter. A properly-built and properly-lighted gallery may serve for the display of almost any picture. The case is very rare in which, if the painter were allowed his choice, he would not hang his work in a suitable light in a public gallery, supposing such gallery to deserve the name. But the sculptor depends more closely on special illumination. The change of a few degrees in the incidence of light makes a difference in the effect of sculpture which is entirely unknown to the painter. Thus, in general form, in the first place, the sculptor has to consider the architectural setting of his subject.

That assured, the limits of sculpture are narrow. A group of three figures may be considered as almost the most complicated arrangement appropriate to sculpture in the round. In relief, the range is more extensive, but at the same time the architectural limitation is more precise. A single figure is generally the favourite subject of the noblest sculpture; and since the form knows no distinction into general and special, we now have to deal with a fresh order of considerations. Ethnological type comes into play. Expression, both of form and face, demands a definite rendering which taxes the utmost power of the human hand. The sculptor has to steer between opposed dangers, so subtle, so disastrous, and so nearly approaching on either side, that out of the 5,000 or 6,000 years during which this godlike art has been practised, from the date of the wooden effigies of the monarchs of the fifth Egyptian dynasty, to that in which we are now expecting the impossible achievement of a successful colossal seated figure, to be viewed from all sides—it can only be said to have been perfectly attained for less than a century.

There is a primary distinction between the character of the forms which engage the study of the architect, and those which are reproduced by the painter and by the sculptor. In no other respect is so broad a line drawn between the three sister arts. The sculptor, in the purest exercise of his art, is restricted to the reproduction of animal form, and, in his noblest works, to the form of man. The painter adds to a representation of animal that of vegetable forms, and further commands the wide range of the landscape. But the architect can obtain but little pattern from nature. He may find, indeed, among some of the animal tribes development of a very high degree of structural ability; but the most signal instances serve rather as illustrations of, than as examples for, the work of the human builder. Thus, in the beaver he may recognise a four-footed engineer. The dams constructed by that sagacious rodent, by means of trees felled by its teeth, and the double entrance, by land and by water, which is constructed for the island dwelling of the family, are analogous to those lake dwellings of the early European races to which attention has only lately been directed. In an entirely different subkingdom of the animal world, that of insect life, we find long galleries excavated by ants, lofty pyramids reared by termites, chambers built by the mason-bee, and hung with splendid tapestry, furnished by the petals of the poppy by the upholsterer bee. Yet neither in these nor in the textile beds woven by so many species of birds, can we find any actual exemplar for the architect.

More, then, than either the sculptor or the painter, is the architect the creator, — the ποιητης.

THE ARCHÆOLOGICAL INSTITUTE AT EXETER.

The Exeter Congress of the Archæological Institute has passed off very agreeably. There have been many interesting excursions, accompanied by competent men as expositors, and a great amount of social enjoyment.

The President, the Earl of Devon, made an address, in the course of which he said:—"Few of us can observe such indications of the habits and physical condition of the earliest inhabitants of this island as are afforded by the remains of their rude dwellings, and by the rude implements occasionally found, without a sense of thankfulness that our lot has been mercifully cast in times of improved knowledge, of advanced civilisation, and more refined habits; or, as I trust that I may add, without readily recognising the truth that greater advantages entail greater social, moral, and religious responsibilities. Again, in examining the remains of our early castles, and our later domestic buildings, we cannot fail to be struck with the contrast between the numerous and carefully studied provisions for attack and defence, indicating a state of society where every man's hand was against his neighbour, and might held sway over right, and the indication of a more peaceful, free, and well-ordered society, afforded in universal measure, as years pass on, by the gradual changes in our architecture. And, once more, the study of our ecclesiastical remains, proving, as it does, that our ancestors deemed it fitting to give, for the glory of God and the due celebration of His worship, whatever they had most to be prized in the natural material or in the conditions of art, may well stimulate the devotion of their descendants, and elevate and guide their judgment. Nor, lastly, ought we to doubt that the study of the past, if properly and thoughtfully conducted, has a sound mental and moral influence. Living, as we do, in the full enjoyment of all the appliances of modern civilisation, we shall yet be led, by archæological observations, to feel grateful to those who have gone before us for the treasures in art and in architecture which have been handed down to us; we shall consider what would, in many respects, have been our condition had our ancestors done nothing for us, and, unlike the man who said he would do nothing for posterity because posterity had done nothing for him, we shall be the more inclined to endeavour, in our measure, to leave something behind for the benefit of those who are to follow us."

Mr. G. J. Clark, who was one of the mainstays of the meeting, read an interesting paper on "The Worthies of Devonshire," and delivered some excellent addresses on several occasions.

Mr. E. A. Freeman read a paper on "The Place of Exeter in the History of England." Exeter, said the reader, was among cities what Glastonbury was among churches. It was one of the few ties that directly bound the Englishman to the Roman and the Briton. It was the great trophy of that step of English conquest when our forefathers, weaned from the fierce creed of Woden and Thunder, deemed it enough to conquer, and no longer sought to destroy. The first glimpse of the city showed the traveller that it was one of a class common on the Continent, but rare in England, and which among west Saxon cities was absolutely unique. From Winchester onward the seats of the west Saxon bishoprics, as a rule, lay low, *e. g.*, Mr. Freeman mentioned Winchester, Wells, Glastonbury, and Bath. Exeter, at the first glance, told another tale. The city, indeed, looked up at height loftier than itself, but the city itself sat on a height far above railway or river. Exeter was in short a city of the same class as Bourges or Chartres, and others on the Continent; through all ages it had proclaimed itself by the name of the city on the Exe. In that respect its continuity had been greater than that of the city of Northern Gaul. It had never exchanged its own name for that of the Damnonian people. On the whole, Lincoln was its nearest parallel in the cities of England. Exeter, then, as a hill fort city, had, more than almost any other city of England, a close analogy with the ancient cities of Gaul. But the greatest cities had almost always been the seat of some bishopric from the days of the first establishment of Christianity. The hill-fort had grown up into a city, and the city had lived through all later conquests; but the bishopric was something which, in the long history of such a city, might almost seem a creation of yesterday. Bishops of Exeter had played an important part in local and general history; but the city of Exeter had begun to play an important part in the history of Britain ages before Bishops of Exeter were heard of. As to when the city first became a West Saxon possession—when Britain, Caer Wisc, the Roman Isca, passed into the English Exanceaster—he could not say. He could find no reliable data on which he could answer that question. The first distinct mention of Exeter as a city was in the days of Alfred, when it figured as an English fortress. In Athelstan's day the city was partly English, partly Welsh. John Shillingford told them that Exeter was a walled city before the incarnation of Christ; and although it was not likely to have been a walled city in the sense that would satisfy modern or Roman engineers, it was likely enough to have been a fortified post before Cæsar landed in Britain. In later ages Hooker told them how Vespasian besieged the city, and was driven away by the valour of the citizens. These questions, he added, were beyond him; but still he knew of no evidence to fix the point when Isca became Exanceaster any more than to fix the point when Isca came into being. With regard to the ancient wall Mr. Freeman said a few small fragments of large stones were still extant, and might be remains of the great wall of Athelstan; but the best proof of its original existence was the record of its destruction. After some further remarks, Mr. Freeman went on to say that thus it was that Exeter stands alone as the one great English city which had lived an unbroken life from pre-English and even from pre-Roman days. Whatever was the exact date at which the city first became an English possession, it was with the driving out of the Welsh inhabitants under Athelstan that it first became a purely English city.

Mr. Scharf did, as he always does, good service. There was a collection of portraits of people famous in the western counties, and amongst them Mr. Scharf pleasantly discoursed. He thought the majority of them fine specimens of the school of portraiture that obtained in England from its commencement to the present time. With the exception of the City of London, he had never met with so complete a series of portraits of mayors as in this collection. In these were not fine works of art, they were matter-of-fact representations. He remarked on the different "periods" which had prevailed,—the skull period of painting, the comb period, the curtain period, and the poker period. There was a period when it was customary to have a hat under the arm. In one case a gentleman wished to have his portrait taken with his hat on, and he was so painted, but with a second hat under his arm.

We take a few sentences from Mr. Ormerod's paper "On the Hut Circles of the south side of Dartmoor." The interior of the huts was from 9 ft. to 36 ft. in diameter, and 4 ft. high in the walls. In the district between Cawsand Ba and Rippon Tor he had discovered four villages

nd he believed they had been inhabited by eople who had been engaged in tin-washing. Ie described the hut village of Teigncomb, tanding between the North and South Teign, nd now containing thirty-one huts; and also a ound pound, consisting of two inclosures, the uter an irregular triangle, and the inner a circle f about 34 ft. diameter, the outer being about 5 ft. The wall (where it is perfect) is about ft. in diameter, and the space between the ircular and the outer wall is divided into six ourts, in one of which is a hut circle of about 0 ft. diameter. About 100 yards to the south f this pound were the remains of what he alled the square pound. There were no huts ithin 100 yards of either of these pounds. robably the round pound was the dwelling of he chief person of the village, and the square ound a cattlefold or storehouse. He mentioned umerous other huts in the neighbourhood. At oveycombe Head there were remains very milar to those at the round pound. These r. Omerod described. On Hamildon were everal barrows, one of wich was opened by r. Spence Bate, last year, an account of which as given in the "Transactions" of the Devon ssociation for 1872. Four groups or villages xisted along the line he had taken, separated, ot by parochial or manorial boundaries, ut by breaks in the country. At the first he chief house was a hut with a chamber; the second, the round pound; at the third, he remains of Boveycombe Head; and at he fourth, the double semicircle at Tor Hill, ere the chief houses, those at the round pound nd Boveycombe Head being the chief stations. uts also occurred in many places on and ad- oining Dartmoor, which would not come within he limits he had taken. He connected the xistence of these huts (as already stated) with he workings for tin. Where the traces of archers for tin were extensive the huts were umerous, where they were but slight the huts ere few. He believed these rude huts were wellings of the workers and washers of tin. s to the date of their erection, it was useless o speculate on it. If Mr. Ferguson was correct n the idea that the circles and avenues showed here a battle had taken place in defence of a illage in the rear, the huts at Teigncombe ould have been in existence during the first en centuries of the Christian area; and as the streaming" for tin in the district near Chag- ord appeared to have ceased by the time of ueen Elizabeth, the time between those periods ight probably be taken as that when the huts ere abandoned.

Archdeacon Freeman "did" the cathedral, nd Mr. J. H. Parker led off through the town, nd gave his audience the advantage of his nowledge of the subject.

The excursion to Dartmoor, under the guidance f Mr. Ormerod, was very satisfactory to the arty, but was found fatiguing by many. owderham Castle was visited, and it was here hat after luncheon Lord Talbot de Malahide ook the opportunity of expressing on behalf of imself and the members of the Institute the anifold obligations which they were all under owards Lord Devon, not only for his hospitality, nd for the lucidity and clearness with which he ad pointed out the interesting features con- ected with Powderham Castle and its history, ut for his kindness in undertaking the office of resident of that meeting, the various duties of hich office he had discharged with consummate bility. He proposed "The health of Lord evon in his own wine, and prosperity to the ouse of Courtenay."

To which we willingly add, Hip, hip, hip,— urrah!

THE NEW RAILWAY FROM MANCHESTER TO LIVERPOOL.

COMPLETION OF THE LIVERPOOL GREAT CENTRAL STATION.

The large new central station at Liverpool, which has for some time been in course of erection by the Midland, Great Northern, and Manchester and Sheffield Companies, in connexion with their new line between Manchester and Liverpool, which was partially opened for traffic on Friday, 1st inst., is now rapidly approaching completion, and is intended to be fully opened in the course of next month, together with a tunnel of about two miles in length under the south-east portion of the town, and which will complete the entire length of the new railway between the two great Lancashire towns. A notice of the external features of the large new structure has already appeared in the *Builder*, and it is only necessary here to remark in this respect that the station is one of the largest in the country, covering an area of nearly 10 acres. The roof enclosing the station consists of eleven elliptical spans, and is nearly 800 ft. in length. The magnitude of its proportions and the light and airy character of its construction are exceedingly striking, and the London and North-Western Company's station, in Lime-street, as well as the Lancashire and Yorkshire Company's Exchange Station, are altogether dwarfed by the new structure.

The arrangements of the spacious platforms at the new station have been carried out with every possible regard to the convenience of passengers. Easy and convenient access is obtained to the two spacious arrival-platforms, which are in direct connexion with each other. Workmen are now busy in all the multifarious trades required in the completion of the interior of the station, which is being highly decorated. The whole of the girders and ironwork is being ornamentally painted in light blue, the prevailing colour of the woodwork being a light fawn-colour. The columns will be copper-bronze, with a dark base, and the capitals are picked out with gold. The platforms have all been laid, whilst the several booking-offices, waiting-rooms, and other apartments in the station are nearly all ready for occupation. The refreshment-rooms, which are very large, are being elegantly fitted up, and it may here be stated that their management has been entrusted to Messrs. Spiers & Pond. The works in the tunnel, from the station to its junction with the new line, and which, as we have already stated, is the connecting-link completing the new line between the two towns, is making rapid progress. Already a great portion of the lines have been laid, and on Friday last an engine, for the first time traversed its entire length. Extensive works in connexion with the new line are also in progress at the Manchester terminus, and a large new station, called the Manchester Central, is about to be erected in Great Bridgwater-street, between which and Cornbrook-street a new branch is in course of construction, in connexion with the undertaking.

LARGE NEW CONVALESCENT HOSPITAL NEAR LIVERPOOL.

A convalescent hospital, upon a large and extensive scale, has just been built and completed at Woolton, near Liverpool. The outlay required has been about 30,000*l.*, and the required funds for the purchase of the land and the erection of the hospital have been supplied from the surplus of the Liverpool contribution towards the cotton famine fund in 1862. The total amount of the Liverpool subscription was 102,678*l.*, and the sum remitted to Manchester was 62,000*l.*, leaving a residue with interest of 40,500*l.* It was recommended, with the concurrence of the donors, that this sum should be appropriated to the erection of a convalescent hospital in the neighbourhood of Liverpool. The consent of the Master of the Rolls was necessary, and that functionary gave authority to expend 10,000*l.* in the purchase of a site, and 17,000*l.* on the building, the remaining portion of the balance to form a fund for the future necessities of the hospital. The site purchased was the Woolton Wood estate, about six miles from Liverpool, containing twenty acres, standing upon the banks of the Mersey, and one of the most picturesque spots about Liverpool.

The structure, which is of Gothic design, is square in form, the several elevations being each 200 ft. in length, and it thus covers an area of 40,000 square feet. It contains a spacious central building and wings; and, besides basement, consists of ground floor and story above. Externally, the building is erected of grey brick, with Woolton red sandstone dressings, and bands and figured work of blue brick. The walls are all cavity built, so as to ensure perfect dryness. One of the most interesting features in the building is what is called the "Gladstone Hall," which has been erected over the dining-hall, and is precisely of the same dimensions as that apartment, but more lofty. The "Gladstone Hall" has been built out of the penny subscriptions of a number of working men in South-west Lancashire, who determined to raise a testimonial to Mr. Gladstone when he was defeated for South-west Lancashire. The sum collected amounted to 1,200*l.*; and Mr. Gladstone having desired that it should be applied towards the erection of a convalescent hospital, the money has been expended on the building now just completed. A tablet has been placed in the hall, containing an inscription setting forth the circumstances under which it was built. It is intended to be used for religious services, together with lectures, and other purposes in connexion with the establishment. The hospital is situated on an elevated portion of the grounds, from which there is a magnificent view of the surrounding country and the Welsh coast and mountains. The grounds have been artistically laid out, and the sloping ground on one side of the hospital has been divided into three terraces, the lower one having been laid out as a croquet-ground for the recreation and amusement of the inmates.

Mr. Thomas Worthington, of Manchester, is the architect; and Messrs. Haigh & Co., of Liverpool, are the builders.

THE FLOORING OF THE NATIONAL GALLERY.

In return to an order of the House of Commons, the correspondence respecting the construction of the flooring of the New National Gallery buildings has been published. It was opened by the following letter from the architect:—

"January 21, 1873.

The flooring of the present National Gallery in Trafalgar-square is formed of wood, the walls are lined with the same material, and a partially similar mode of construction is provided by the contract for the new picture galleries, which are now in progress under my direction.

It appears to me, however, to be well worth consideration, whether the floors, in the case of the new galleries, should not be made wholly incombustible, and whether parian cement or other similar material, should not be substituted for the wooden lining of the walls.

The main construction of the new floors is already designed to be formed of iron beams and concrete arches, and there will be no difficulty in making it completely incombustible, if the First Commissioner approves of the suggestion.

With reference to the walls, a wooden lining is doubtless convenient for hanging pictures, but in the event of fire it would be a source of great danger. If the walls be finished with cement, instead of wood, as above proposed, the pictures could be hung from a strong iron picture rod, fixed to the walls, as is now done in the principal galleries at Dresden, and also in parts of the Louvre in Paris, and in other places.

The walls of the new picture galleries will be of brick, the roofs of iron, slate, and glass, the doors of iron, and the skirtings and door architraves of marble. If, therefore, the First Commissioner should approve of the proposal to make the floors and wall linings also of incombustible materials, the only woodwork would be the small quantity necessary to form the cove of the ceiling, and the building would be practically fireproof.

I have not yet made an estimate of the cost of the proposed changes, but any additional expense caused by them would certainly be within the amount of the Parliamentary estimate. EDWARD M. BARRY."

In reply, the First Commissioner informed the architect "that the Board desire that the arrangements on the points to which you refer, provided in the contract, should be adhered to."

In the course of the correspondence, the following report was made by Mr. R. Redgrave, R.A., on Tile Floors in Picture Galleries:—

"I am requested to report my opinion as to the use of tiles or mosaics, and of wood, as the flooring for picture galleries.

I consider tiles or mosaics as far preferable to wood for such purposes.

1st. The danger of fire is very greatly decreased by the use of tiles, &c.

2ndly. Far less dust arises from tile floors than from wood.

3rdly. They are far more quickly, easily, and thoroughly cleansed than wood floors, and the moisture necessary for such cleansing less frequently needful than for wood floors. It is also far more easily and at once removed from the surface of the floor, while the water used to scour wood floors is retained for some time in the pores, and given out, gradually injuring pictures, especially water-colours.

4thly. The colour of such floors (chosen judiciously by the architect and director of galleries) enriches the room, enshrining works of art, gives a sense of comfort and pleasure, taking away any slight difference that may arise from the slightly greater conductive powers of tiles over wood.

I have never had a complaint from the students in our galleries of cold or unpleasantness arising from our tiled floors."

The following remarks were forwarded by Major Festing, R.E.:—

"The advantages which tiles offer in comparison with wood for floors in respect of incom-

bustibility is too evident to need explanation or comment.

The next advantage of well-manufactured tiles for a public gallery is, the facility with which they can be kept clean and in good order. They are more easily swept or washed with soap and water than boarded floors, and are not stained by oil, paint, &c.

The question of appearance may be an open one, although I should have little hesitation in expressing my own opinion on the relative appearance of the tile floors here, and wooden floors in any much-frequented public gallery which I have ever visited.

I have often heard it objected to tile floors, that they are slippery to people who wear nailed boots. But I do not think that this inconvenience is much felt; at least I have never had brought to my notice any accident from this cause.

It is very commonly said that tiled are colder to the feet than boarded floors. This idea doubtless arises from the fact that tiles feel colder to the touch than boards, and if people went barefoot they would find wood pleasanter to stand on.

I have made a few experiments, from which I draw the inference that a person wearing moderately stout boots would not find tiles colder to the feet than wood, and this is borne out by the information given me by one of the attendants in the National Gallery rooms here, in which there always are a considerable number of artists at work on students' days. He tells me that he hears few complaints of coldness of floor, and that although mats are kept in case the students wish them, they are very seldom asked for.

Even supposing the tiles to be colder to the feet, I do not think that consideration should weigh much against the adoption of tile floors. It would be very easy to supply each student with a mat or foot-board, or even with a foot-warmer filled with hot water. The trouble of doing so would be less than the additional labour required for keeping a wooden floor in good order.

We have not yet had sufficient experience of marble mosaic floors in the Museum to judge of their value. They are, however, easily kept clean, and a small piece of floor of this description which was laid near the entrance of the iron building, and which was there for some years, stood the wear much better than Minton's tiles laid in close proximity to it."

All that the Trustees of the National Gallery say is this:—"With respect to the mode of flooring, although the Trustees and Director would prefer the use of oak, they leave the question of material to the decision of the First Commissioner of Works."

In conclusion, "the First Commissioner deems it expedient to adhere to the contract, so far as regards the floors."

THE SAND-BLAST PROCESS.

The main object of the inventor of this remarkable process, of which we spoke when it was first employed, was to engrave ornamental and other devices sharply upon plain and coloured glass, upon stone, and upon metallic surfaces, in an expeditious and economical manner. The invention, which applies chiefly to intaglio and flat relief engraving, is based on the curious fact that when glass, stone, or metal is subjected to the impact of a blast of sand, or equivalent hard granular substance, the detrition of the surface exposed to its action will be rapidly effected.

Although the sand-blast acts with energy upon hard or brittle surfaces, strange to say it has little or no effect upon elastic and soft substances, such as india-rubber, wax, paper, and lace; and it is upon such substances, therefore, that the patentee relies for protecting those parts of the glass, stone, wood, or metal which are intended to be untouched by the sand-blast. Thus, a piece of lace spread over and cemented to a sheet of glass will so effectually protect the glass when exposed to the sand-blast, that the threads of the network will, after a few seconds' exposure, be imitated on the glass by bright interlacing lines, while the rest of the glass surface will be reduced to a ground or frosted state.

The efficacy of the blast depends upon its velocity. The sand may be propelled either by steam, water, or air, but steam is in general preferred where high velocities are required.

When a large quantity of material is to be removed, as in the ornamenting of stone, a steam jet of from 60 lb. to 80 lb. pressure is used. In this case the stencil is made of iron or rubber; but when a small quantity of material is to be worn away, or the surface merely depolished, as in ornamenting glass, a jet of air of from one-tenth to 1 lb. pressure is preferred. With a low pressure, soft and delicate substances, such as paper designs, lace, leaves, &c., cemented on glass, may be used. With a steam jet using two horse-power of steam at 70 lb. pressure, and one pint of sand, 2 cubic inches of granite, 4 cubic inches of marble, or 10 cubic inches of sandstone, may be cut away per minute. Flat or curved surfaces may be alike acted on by this process, the blast being in all cases directed at a right angle to the exposed surface.

The blast process, besides executing ornaments in relief or intaglio, may be applied for cutting grooves in quarries and tunnels, for dressing stone, for cutting stone in lathes, for cleaning scale from metals, for graining lithographic zinc, and for producing—by the aid of stencils or photographic gelatine,—pictures, any variety of design, and even the most delicate line engravings.

The following remarks are from the monthly scientific summary in *Chambers's Journal*:—

"Readers will remember our mention of the surprising process of glass-engraving and stone-cutting by means of a sand blast, which was invented within the past year or two by Mr. Tilghman, of Philadelphia. This process may now be seen in the International Exhibition,—one of the most interesting sights among the machinery in motion. The rapidity with which the design is produced on the surface of the glass never fails to astonish all who witness the operation; it seems instantaneous. A few seconds, even, suffice for the production of an elaborate design on a sheet of glass 3 ft. wide. Simple or complicated, it makes no difference to the machine: the blast is turned on, and, *presto!* the picture appears. With a combination of steam and sand, intricate designs can be cut in a slab of marble in the course of a few minutes; and a large variety of ornamental work hitherto done by the carver and the sculptor can now be accomplished by a purely mechanical method. Any one who watches the process will find no difficulty in believing the suggestion that the ancient Egyptians may have carved the hieroglyphs on their stone monuments,—stone of exceeding hardness,—by a jet of sand. One immediate effect of the invention will be a large increase in the supply of ornamental window-panes and other kinds of glass at a very moderate cost."

UNVEILING THE CHADWICK STATUE AT BOLTON.

The town of Bolton has again been *en fête* since the opening of its new Town-hall, on the occasion of the unveiling of the statue of Dr. Chadwick, well-known in Bolton and the surrounding districts for his munificent gifts to the inhabitants of the borough. The statue is placed on the Town-hall square, with its face looking towards the Grapes Hotel. The figure was designed by Mr. C. B. Birch, of London, and was cast in bronze by Messrs. H. Prince & Company, Phœnix Foundry, Southwark. It has cost, it is said, over 1,000*l.* It is 10 ft. high, and weighs a little under 2 tons. The doctor is represented standing on a pedestal, 22 ft. high, the base being of Cornish granite. On the front of the pedestal is a bas-relief in bronze, representing Mrs. Chadwick, having under her care some orphan children. She is apparently directing their attention to the Chadwick Orphanage provided for them by her husband. The sum devoted by Dr. Chadwick towards carrying out his benevolent designs in Bolton amounted to 22,000*l.*

The *Bolton Guardian* gives the following particulars of the course adopted to obtain the design:—"After it had been determined that the statue should be in bronze and a standing figure, a sub-committee was appointed to procure designs and estimates, and Mr. J. Hall was asked to write to the editor of the *Builder*, requesting him to give the names of four artists who would be likely to compete, along with Mr. Calder Marshall and Mr. Noble, for the intended statue. On the 22nd of March, Mr. Hinnell was requested to write to the artists recommended by the *Builder*, and at a further meeting of the committee on the 20th of April, it was resolved that Mr. W. Calder Marshall, Mr. C. B. Birch, and Mr. Geflowski, should be supplied with a tracing of Nelson-square, photographs of Dr. Chadwick, and other information, it being intimated that the cost of the statue would be about 1,000*l.* At the sub-committee meeting on the 24th of May, a letter was read from Mr. W. C. Marshall, with proposals to erect a statue for 1,400*l.*, and it was resolved that all the model designs should be sent in by the 1st of August. A second meeting of the statue sub-committee was held on the 11th of August, when letters were read from Mr. W. C. Marshall, Mr. Durham, Mr. Papworth, Mr. Birch, and Mr. Geflowski, the competing sculptors, who had all sent in models designs for the statue, Mr. Phillips asking a little more time to finish his designs, which it was resolved to grant, the 25th being assigned as the limit, and his instructions having been sent two months later than those to the other artists. The sub-committee then proceeded to inspect the models at the Mechanics' Institute, and the models were then locked up till the 25th. On the latter date, the sub-committee again met at the lecture-hall of the Mechanics' Institute when Mr. Papworth was allowed to repaint his model, and on the 30th a general meeting was held of the whole committee, there being a good attendance. Mr. W. C. Marshall's estimate and design was 1,400*l.*; that of Mr. G. E. Geflowski 1,050*l.*, with three alto-relievos, and without 840*l.*; Mr. C. B. Birch, 850*l.*; Mr. E. G. Papworth, 1,200*l.*, with figures in panels; Mr. Joe Durham, 1,050*l.*; Mr. J. Birnie Phillips, No. 1, 2,200*l.*; No. 2, 1,600*l.*; No. 2 with base devoid of figures, 1,200*l.*: if stone be substituted for granite, No. 1, 2,000*l.*; No. 2, 1,450*l.*; No. 2 with base devoid of figures, 1,050*l.* Mr. Mr Noble, Mr. J. Bell, and Mr. Woolner declined to compete. This meeting came to no decision, it being thought advisable to defer the selection of the design until the Friday evening following; meantime the models to be open to the inspection of the public, the proceeds to go towards the memorial fund. On Friday, September 30th, the design of Mr. C. B. Birch was selected, subject to such conditions and alterations as might be agreed upon between the committee and the artist."

Mr. Birch had just previously distinguished himself by a group selected in competition by the Council of the Art-Union of London, "A Wood Nymph," and we have reason to believe that on the present occasion he has fully justified our nomination of him to the Bolton Committee.

MURAL DECORATIONS IN WINDERMERE PARISH CHURCH.

Since the restoration of the old parish church of Windermere there has been considerable decoration done in it by way of mural painting in encaustic, tempera, and oil. The architecture of this church is of a very rude and simple character, the walls and pillars being merely rubble-work covered with plaster, and before the decorations were effected the interior presented a very cold appearance. The east window having been restored by Messrs. Ward & Hughes, it was determined to intrust the decorations to the same firm, and Mr. Hughes decided that the work should be carried out in freehand. The designs are principally bands and scroll work in grisaille, heightened with gold. The chancel has naturally received more elaborate treatment than the nave, and here are two paintings on the north and south walls respectively so arranged as to form with the east window a triptych. The design on the north wall represents the adoration of the Magi, and that on the south the entombment of our Lord. The idea of the artist was to bring into one view our Lord's history from His earliest years through His cross and passion to His rest in His honoured grave. The subject of the resurrection appearing in a window in the church, it was not thought desirable to repeat it, but on the west wall a mural painting has been placed above the arch, representing our Lord in glory surrounded by angels, the legend underneath being "He shall come with all His Holy angels." In the nave the great feature has been the studious preservation and resetting of the ancient inscriptions upon the subject of the sacraments. These writings have been carefully restored. The roof-timbers have been covered with texts of Scripture, and in this way their rudeness is somewhat concealed, and additional height apparently given to the building. There are also texts from the Sermon on the Mount, arranged on scrolls round the walls of the aisles. The whole cost of this decoration has been borne by Mr. H. W. Schneider, of Belsfield.

Box-making by Machinery.—We have received several letters from Mr. James Brewer, denying the correctness of a communication from Mr. Wormersley in reply to his first letter. We must, however, decline going further into the matter. As we have already said, the dispute is capable of easy solution.

THE COMPANY OF TURNERS OF LONDON.

At a recent court of the Turners' Company, held in Guildhall, the freedom and livery of the company were successively given to the following gentlemen:—Mr. Alderman Cotton, Sir Bartle Frere, Mr. Benjamin Scott (Chamberlain), and Mr. Horace Jones (City Architect).

Professor Tennant, the master of the company, occupied the chair.

We have more than once of late drawn the attention of our readers to the movement of this Company in favour of technical education, but we take this opportunity of again stating that they propose to give this year their silver medal and the Freedom of the Company and of the City of London to any one workman or apprentice in England who may send in the best specimens of hand-turning for the year. There will be two competitions this year, one for turning in stone, spar, &c.; the other for turning in ivory.

Under the word "stone" is included any natural substance of a mineral character, excluding, however, all those which, like china or pottery, require baking or burning. Porphyry, granite, jasper, agate, serpentine, marble, spar, stalagtite, alabaster, jet, coal, freestone, &c., are examples of what may be used.

Carving is admissible; and, if skilfully done, any additional effect produced by it will be considered, but it must be subsidiary to the turning.

In vases, tazzas, and similar examples, special regard should be given to beauty of form by causing the lines to run freely into each other, so that where they meet there shall be no abruptness; and in each material sufficient strength should be given to the various parts to bear ordinary handling.

In the competition for turning in hardened and tempered steel last year, the successful candidate for the silver medal was Lewis Donne, and for the bronze medal, Henry John Mann. The recipients of Certificates of Merit were Thomas Arthur Nelson, and Mrs. Mann.

The Lord Mayor of London will present the prizes for 1873 on the 13th of October.

WANT OF WATER-SUPPLY.

Liverpool.—According to a report presented to the Liverpool water committee, the water in Rock at Rivington Lakes has decreased 127 million gallons during a fortnight. There were then in store 1,795 million gallons; last year at the same period there were 3,180 millions, so that the falling off to the enormous extent of 1,385 millions was shown as compared with the same period of last year. Householders are now on a four hours' supply daily.

Hull.—At a meeting of the waterworks committee, a report from the engineer, Mr. Dale, was read, to the effect that the water in the reservoirs at Stoneferry was gradually lowering, although the engines at Springhead were kept working at full speed. The present storage at Stoneferry was about one million and a half gallons of water. The chairman said the only way of getting up the supplies in the reservoirs was to shut off those to the town. It was stated that there had been an average daily supply to the town of five million gallons, and this, he observed, was more than the engines at Springhead could raise. It was highly important that there should be sufficient storage, in case of fire. This storage was gradually becoming less, and it was absolutely necessary that something should be done. He therefore moved that the supply to the town be stopped for two hours a day in each district. After a discussion, this was agreed to.

THE GROWTH OF BERLIN.

According to the Berlin *Fremdenblatt*, the population of that city (reckoning strangers) amounted on June 30, 1873, to about 930,000 souls, as against 826,341 on December 1, 1871, the date of the last census. Of all the cities on the globe, no other shows such a rapid increase, not even London and New York. Berlin occupies the fourth place amongst the capitals of Europe, and is only surpassed by London, with a population of 3,350,000 souls; Paris, with 1,795,000; and Constantinople, with 1,500,000 inhabitants. Forty years ago, in the year 1833, the nine largest cities of Europe had the following numbers of inhabitants:—London, 1,624,000, now 3,350,000; Constantinople, 1,000,000, now 1,500,000; Paris, 880,000, now 1,795,000; St. Petersburg, 480,000, now 691,000; Naples, 358,000, now 480,000; Vienna, 310,000, now 901,000; Dublin, 300,000, now 360,000; Moscow, 280,000, now 611,000; Berlin, 250,000, now 907,000. It should be added here that these numbers include, in the case of Vienna, the population of the suburbs, while for Berlin the latter are omitted. If the suburbs of Berlin were reckoned, the total number of inhabitants would be nearly a million. In the year mentioned above (1833) there existed twenty-six cities larger than Berlin. Of these, Berlin has surpassed twenty, and has only been outdistanced in the race by one (New York). Berlin, therefore, as in Europe it is the fourth, is on the globe the eighth city, as to number of inhabitants, viz.:—London, 3,350,000; Peking, 200,000; New York, with Brooklyn, &c., 1,800,000; Paris, 1,795,000; Constantinople, 1,500,000; Canton, 1,260,000; Calcutta, 1,000,000; Berlin, 907,000. After these follow next Vienna, with 901,000, and Philadelphia, with 800,000.

IRON AND OTHER MATERIALS.

Our of 2,100 puddling-furnaces in the North of England iron district, about 700 are said to be out of blast, and likely to remain so until coal and iron are lower in price. *Per contra*, however, it appears that a revival of activity in some branches is anticipated after the reduction of the German tariff in October.

It is a remarkable fact, remarks the *Engineer*, that the most abundant material in nature,—iron,—is practically the strongest of all known substances. The following figures have been given with reference to this and other substances:—Made into best steel, a rod ½ in. in diameter will sustain 9,000 lb. before breaking; soft steel, 7,000 lb.; iron wire, 6,000 lb.; bar iron, 4,000 lb.; inferior bar iron, 2,000 lb.; cast iron 1,000 lb. to 3,000 lb.; copper wire, 3,000 lb.; silver, 2,000 lb.; gold, 2,500 lb.; tin, 300 lb.; cast zinc, 100 lb.; sheet zinc, 1,000l.; cast lead, 55 lb.; milled lead, 200 lb. Of wood, box and locust the same size will hold 1,200 lb.; toughest ash, 1,000 lb.; elm, 800 lb.; beech, cedar, white oak, and pitch-pine, 600 lb.; chestnut and maple, 650 lb.; poplar, 400 lb. Wood which will bear a heavy weight for a minute or two will break with two-thirds the force acting a long time. A rod of iron is about ten times as strong as hemp cord. A rope 1 in. in diameter will bear 2½ tons, but in practice it is not safe to subject it to a strain of more than about 1 ton; ½ in. in diameter the strength will be one-quarter as much; ¼ in., one-sixteenth as much; and so on.

ST. GILES'S AT THE PRESENT TIME.

At the twenty-ninth annual meeting of the Society for Improving the Condition of the Labouring Classes, a report of which has been recently published, Dr. Ross, medical officer of health for the St. Giles's district, said I have peculiar pleasure in speaking because the Society has been concentrating its operations in the parish and district of St. Giles's, of which I may be assumed to be a representative, being the medical officer of health for that district; and because I have had ample opportunities of observing what have been the Society's efforts to promote the well-being, physical and moral, of that locality. There is a remark in the report to the effect that continental nations are learning from this Society what they should do in reference to the sanitary condition of the working classes. I can vouch for the correctness of that statement from this circumstance, that during the past year foreign scientific gentlemen have waited upon me, in order that they might go through St. Giles's and see the state of its population, and the sanitary regulations in force, so that they might go back to their own country and teach the lesson they had learnt here. Gentlemen have come to me from Switzerland, from Berlin, and from America, the object of the physicians from America being to obtain information which might be useful in rebuilding Chicago on good sanitary principles. We have shown these gentlemen that we have in St. Giles's, within a given area, a larger amount of disease and squalor than could be found within the same area in any other part of Europe. There they have found 2,000 persons who were chiefly mendicants, or some of them, perhaps, worse, living in common lodging-houses; and although these houses are under police regulations, and the police do their duty well, they are so unfit for the habitation of human beings that nothing can be done to prevent the disease and death that arise in them. Then we have another class, somewhat above them in the social scale, but even worse off in regard to sanitary arrangements, living as they do in houses over which there cannot be any efficient control. These houses are inhabited by flower-sellers, orange-sellers, match-sellers, and others, who make St. Giles's their head-quarters, and who are living in the most deplorable circumstances. They are constantly liable to disease, the seeds of which they carry about with them; and the very violet which a flower-girl sells to a gentleman may be infected with scarlet-fever, which may thus be conveyed from her home where it exists. We little know or think of the variety of modes in which diseases are spread from these humble abodes into the houses of the wealthy. All that can, to a certain extent, be remedied by adopting proper measures. In St. Giles's the annual rate of mortality is no less than 600 in excess of the average; that is, there are 600 preventible deaths, or deaths which would not occur if proper sanitary regulations were carried out. What lies at the root of this evil is simply the bad state of the dwellings of the poor. Without pulling down the old dwellings and erecting new ones in that district it is, in my opinion, impossible to do anything effectual for the improvement of the health or the moral condition of the classes of persons to whom I have alluded. This Society has done a vast deal in the way of improvement; but the evil is so extensive that nothing less than some general legislative measure, some measure giving powers for taking land compulsorily, and throwing the expense on the ratepayers, and the duty of administration on the local authorities, will meet the necessities of the case. There must be, and I hope it will not be long before there will be, some general measure of that sort carried out. With regard to the operations of this Society in St. Giles's, I may remark that I have myself taken great interest in them; I have also taken part in bringing those operations under the notice of the public authorities; and I have told them that they may see in St. Giles's, in the force of example, all that is required to enable them to proceed in the path of improvement. You have endeavoured as a Society to improve existing dwellings; you have tried to secure the improved housing of the poor in that way; and you have thus done a great deal of good, and no doubt much good may still be effected by that mode of proceeding. It has been said that the poor require to be better educated, in order to appreciate such efforts on their behalf. That is true, I know, of some parts of St. Giles's. We have there a great many Irish of the lowest class, and you will find in some of the residences of the Society inhabitants, half of whom are Irish and half English, and I would defy you to guess from appearances which rooms are occupied by the one and which by the other. The Irish occupants have undergone a good process of training, and the result is that they are as careful with regard to sanitary arrangements as the most orderly class of English. Streatham-street-buildings, Bloomsbury, are built on principles well worthy of being generally imitated. Indeed, I think nothing better could be done in the way of improvement than to follow the example presented in that excellent block of buildings. I am sorry to see that some persons are trying schemes which are not as good as the scheme upon which that range of buildings was constructed. The Lord Mayor has declared that if he wished to build a house, he would also have outside staircases, to protect people from fire and from the spread of disease. Last year the small-pox was imported into that block of buildings from a place near the Strand. A family of five persons was attacked; three were sent away, and two remained in the house. There was complete isolation,—that is, there was no communication with any other part of the building, and the result was, that the persons who were attacked were recovered, and no fresh case of small-pox arose in the building. This shows the perfection of the plan adopted. If, with such facts before them, architects erect and construct dwellings for the poor with inside staircases, by means of which disease may be carried from one set of rooms to another, they will incur deep responsibility, besides showing a great want of judgment. The population of this metropolis is increasing at the rate of 45,000 a year, and of these 25,000 are working men and their families. I do not

see how any one society or company can deal with this accumulating mass. The faster the population is increased the greater is the risk of the centre of London being fearfully overcharged with a poor element. Many houses have been pulled down recently, to provide sites for the new courts of law and for railway purposes, and the poor who have been turned out are congregating around and increasing the value of the remaining property. The houses in Russell-place and Coram-place have been lately destroyed. Considering what sort of places those were, one can hardly regret that; but, unfortunately, the ground cannot be used in providing better dwellings for the poor, and hence similar places may soon spring up elsewhere. What is wanted is, I repeat, compulsory powers to purchase land. Until powers are given, by means of which sufficient land can be obtained for the erection of dwellings for the poor, the evil will not merely grow, but increase; for, the more houses are pulled down, the more must the poor be crowded together, and the greater will be the number of deaths. Something must be done to secure improvement. The burden of doing it must be borne in some way. It is a question for the public whether they will bear it on one shoulder or on the other,—whether they will be subject to heavier poor-rates, an increased cost for gaols, at the same time encouraging a system of idleness and improvidence amongst the labouring classes, or whether they will assist in the erection of improved dwellings, by means of which such evils may be destroyed at their root. Until this be done, until better dwellings are raised for the poor, the public will have to pay the penalty of neglect in the form of rates and taxation. I believe that nothing short of what I have advocated will meet the evil to be dealt with; and I trust that earnest and energetic efforts will be made to induce the Government to pass a Bill vesting powers in some body or other to raise the necessary dwellings, and to do on an extensive scale that which has been, to a certain extent, already done through the medium of this society.

KENT ARCHÆOLOGICAL SOCIETY.

One of the most enjoyable meetings that have been held in connexion with this society took place in the district of Cranbrook, under the presidency, -first, of Earl Amherst, and subsequently of his son, Viscount Holmesdale,—on Thursday and Friday before last. The weather was brilliant.

The preliminary meeting for the despatch of business was held at the South-Eastern Railway Hotel, Staplehurst, the president of the society (Earl Amherst) in the chair.

The hon. sec. read the annual report, and a number of new members were proposed and accepted.

Carriages were then in readiness, and, shortly after leaving the hotel, Loddenden, the ancient manor-house of the Usborne family, was passed, and a halt was made at Staplehurst, where, under the guidance of the hon. secretary, the church was visited, and where, also, Mr. Robertson read a paper on Staplehurst Church.

Once more in the carriages, the party proceeded to Frittenden, and when about half-way the wheel of one of the breaks came off, and caused a slight delay, but no injury was done to the vehicle itself. The next halt was made at Frittenden Church. The architectural features were described by the rector, the Rev. T. W. O. Hallward. The Roman remains formed the subject of an interesting paper by the hon. secretary.

Sissinghurst Castle was the next point, and here the Rev. Francis Haslewood, curate of Benenden, read a paper on the Castle. Mr. George Neve, the occupier of Sissinghurst Castle, provided refreshments in a shady part of the lawn in front of the manor-house.

After a somewhat hot and dusty drive Cranbrook was reached. The sources of attraction were the temporary museum and the parish church, where the Rev. T. A. Carr, the vicar, read a paper on it. The temporary museum contained some interesting specimens of antiquity, displayed in the rooms connected with the vestry-hall.

The dinner took place in the vestry-hall, under the presidency of Lord Holmesdale, M.P.

The company then adjourned to the George Hotel, where Colonel Colomb read a paper on the Royalist Rising in Kent in 1648, and Mr. Tarbutt on the Cloth Trade of Cranbrook.

NEW CUSTOM-HOUSE AT GRIMSBY.

Sir Thomas Fremantle, chairman of her Majesty's Board of Customs, has laid the foundation-stone of a new custom-house, which is being built in connexion with the Grimsby Docks, by the proprietors, the Manchester, Sheffield, and Lincolnshire Railway Company. The erection of the new building has been made necessary by the rapid development of the trade of the port. A few years ago Grimsby was a mere fishing village. In 1851, the population was a little more than 4,000; it is now upwards of 27,000. The customs revenue, which in 1866 was only 24,000*l*., is now 94,000*l*. The development of the place is chiefly owing to its connexion with the Manchester, Sheffield, and Lincolnshire Railway, of which it is the eastern terminus and the port. The docks, in which about 1,500,000*l*. have been sunk, and which are being rapidly extended, are the property of the company. There are great imports of timber from the Baltic, and one of the peculiarities of the trade is the importation of ice from Norway, to the extent of 20,000 tons per annum. The total value of British goods exported, which, thirty years ago, was 1,000,000*l*., and in 1871, 10,000,000*l*., had increased in 1872 to 18,000,000*l*., and is now nearly 20,000,000*l*.

The new custom-house is being built on a site opposite to the Royal Dock Chambers. The frontage is 74 ft. and the block of building extends towards the old town. The building will be two stories in height, and contain ample accommodation for a largely augmented staff. The architect is Mr. F. Hadfield, of Sheffield, and Messrs. Longton & Hemingway are the contractors. The ceremonial was marked in Grimsby by the proclamation of a general holiday, and profuse decoration of the streets.

DUGDALE'S ST. PAUL'S, AND HOLLAR'S ETCHINGS.

It is an observable fact in art-history that not only do the art and architecture of a country perpetually, as time goes on, change and grow, but the mode and language of description of the special art of any certain age also change. It is a subject not a little noteworthy and instructive, and is especially interesting at the present moment from the contrast which may be noticed by the curious in such matters between the new and modern accounts and descriptions of St. Paul's Cathedral and the old ones, such as Dugdale's. Mr. Longman's new book on St. Paul's is one thing; William Dugdale's book on St. Paul's is quite another thing. We do not here contend that it is the better of the two, but it is different, and affords another view of St. Paul's, and of all things appertaining to it. The very atmosphere around the St. Paul's of Dugdale is different from that round the St. Paul's of the present day. We do not here speak of the simple facts of the building, of dimensions, and so on, but of the mental impression conveyed through the two books. Nothing can be well more unlike. Mr. Longman's is modern, and of the day and hour, and shows how all now-a-days look at St. Paul's, and think about it, who care to look at it at all. But Dugdale's book quite carries you into another world of things, and of feelings, venerative and otherwise,—a remarkable contrast, typifying the times!

It would, indeed, be impossible to find a greater contrast between one thing and another than there is between those two books,—Dugdale's and Longman's. Dugdale's book was printed, as the title-page informs us, by Thomas Warren, in the year of Our Lord God, 1658, and was dedicated to the Right Hon. Christopher Lord Hatton, Comptroller to the Household to King Charles. It is not only, in paper, printing, and typography (no slight things), the very opposite to the new book just published, but the very language of it seems, as you read it, to quite alter the character of the building talked about. We may, perhaps, be calling attention to a but little thought of matter if we give an extract or two from this quaint book of Dugdale's. Dugdale is not satisfied with mere speculations on the date of old St. Paul's, or even of the heathen temples of Diana before it, but he goes fairly back to the genesis of things, and says, "That solemn duties of publick service, to be done unto God, have had certain places set and prepared, in such sort as beseemeth actions of that moment. We want not instances of the greatest antiquitie, as the Reverend Hooker well observeth." "For it is evident, saith he, in the sacred text, that Adam even, during that small continuance of his in Paradise, had where to present himself before the Lord, and that his sons also had, and the patriarchs." Thus he goes on through the whole of sacred history in his quaint and plain way to instance every text bearing on the subject of sacred temples and places devoted to public worship. To read is to be convinced. No antiquarian doubts of any kind disturb him; he goes straight on with his history till he comes to "the year CLXXXV, after our Saviour's incarnation, in which year Pope Eleutherius sent hither into Britain, at the instance of King Lucius, two eminent doctors, Taganus and Damianus, to consecrate such churches as had been dedicated to divers false gods." What these eminent doctors did, which is curious, but too long to quote, "continued so till the time of Augustine, in the year of grace DCIIII., who translated the Primacy to Canterbury, and constituted Mellitus first Bishop of London."

"It was there this first Bishop of London," says Dugdale, "who in the days of Ethelbert, King of Kent, erected here a church, as by the testimony of divers historians appeareth, dedicating it to St. Paul, the Apostle and Doctor of the Gentiles, in the place of a temple of Diana the Goddess." A little doubt certainly here disturbs our good historian, for he cannot quite bring himself to admit that an idolatrous temple ought to be made use of as a Christian temple; but, as he argues, *persons* may be converted, so may *places*." A plain, sensible man was Dugdale.

It will be needless to go through the history of St. Paul's as given by Dugdale, but it should be read by all those who would really understand the history of St. Paul's. He gives things as he finds them, and as doubtless they really were, and his whole account of St. Paul's is so quaint and full of curious and almost forgotten matter that it illustrates Mr. Longman's book most usefully, and by contrast shows how differently times and men wide apart look on things, and on the very same things. We could go on with our quotations to almost any length, and all is instructive, but must forbear; but one or two more ought not to be passed by, so thoroughly do they take one into the times in which this quaint history of St. Paul's was written. Dugdale is careful to name all the "benefactors" of St. Paul's, and is evidently quite grieved when he comes to blank centuries in which nothing can be found; for, as he says in one place,—"After this good Bishop and canonised Saint, Erkinwald, the fourth bishop from Mellitus, for the space of two hundred and forty years I have not discovered any other benefactor that it had than Kenred, King of the Mercians, who onely granted this immunitie thereto: that it should be in all things as free as he himself desired to be in the day of judgement." Stout-hearted men these,—all they said they meant. Nothing stood between them and the building, which they determined to build up. They combined theory with practice in a singularly happy way. They might dream,—as they no doubt did,—but they were not content till they had *realised*, as far as they could, their dreams. They were real practical benefactors, and it is to them, and such as they were, that we now owe all the great cathedrals and churches, which make our otherwise mechanical island artistic,—and poetic.

It is not to be forgotten that Dugdale is careful to go through his cathedral thoroughly, and to describe everything, from the floor to the cross on the spire,—its size, and even what the ball at the foot of it would hold; the ball at the head of the spire being so large as "would contain within it ten bushels of corne." "The length of the cross above the said ball or pomell xv. foot, and the traverse of the said cross vi. foot." All this he tells us was written up in large characters and hung on the north part of the quire, so that all might read and understand. There was a *picture* of St. Paul, to whom the church was dedicated, "richly painted, and placed in a beautiful tabernacle of wood on the right hand of the high altar in Anno MCCCXCVIII., the price of its workmanship amounting to 12 pounds 16 shillings." Mr. Longman regrets in his book that there exists no record of the cost of the old cathedral, but there are scattered through Dugdale's pages some very curious items of expenditure which might guide to a rough estimate of the cost of the old cathedral. Of the "*furniture*" of the church he has much to say, and notices the "splendor that it had, by the inward furniture in those days belonging thereto: which consisting in a multitude of glorious jewels, massie plate, rare and costly manuscripts, sumptuous shrines, rich

estments, magnificent suits of hangings, and her ornaments, as are to admiration," the gifts pious ancestors, as he explains, who "stuck ot at that charge for the adorning of this ouse." Of the great cross, one Raphe de Clatord gave two acres of land towards the mainnance of a taper burning before it.

It would be indeed unfair to talk of Dugdale nd his book on St. Paul's without mention, and small honourable mention, of his honest and ble draughtsman, Hollar. If we owe someing, and not a little, to Dugdale, we owe as uch to Hollar, for without his clever etchings en Dugdale's account of things in his own day ould be not a little puzzling and tantalising. is to Hollar that we owe pretty nearly all we n see of the London of his day, and too much nour can hardly be given to the man who has faithfully drawn for us the buildings he saw ound and about him. For ourselves we have ways thought those drawings of Old St. Paul's Dugdale's book, by Hollar, to be likenesses of e building in a peculiarly vivid and truthful nse. We do not mean for strict accuracy of tail, but for general idea and honest truthfulss. There is no imagination in them, but ere are the *buildings* themselves, just as they ppeared to the eye of the draughtsman. We ould specially note the interior perspective ew of the Church of St. Faith, of which so uch has been said, and not without reason, r a glorious bit of Gothic it was—the real ork. Hollar shows it with a lifelike reality. e seem to see the colour of the place as well the form of it. The dull paper on which it printed helps this, of course, but there is a mething in the etched lines which shows us e actual and life-like look of the place as it en was. It is a masterly drawing. It would e difficult to exaggerate the value of this book Dugdale's. It is a landmark in the history St. Paul's Cathedral which cannot be too often ferred to by those who wish to understand the osition of things architectural, and who value e great cathedral itself as it at present exists, who care to compare it and its capabilities ith the old Gothic structure which it replaced. is not the dull book which many, perhaps, at first glance might take it to be. It is full of unt and wise thoughts and sayings, characristic of the author of it, and of the time in hich he lived. Books such as this take you t once into the times in which they were written nd printed, and that in a way which no modern ook, however able, can do. Even more than is, they speak to us with the voice and manner f the writers of them. There is truly no history, hether of architecture or anything else, like *contemporary* history, and more is to be learned of any ertain time from such present and living acounts as are found in it than from any amount of fter explanation or amplification. All honour, hen, to "immortal" Dugdale, as he is called on he title-page of his book. We owe not a little to im and to his able helpmate and illustrator, Iollar, of glorious memory. Through them we eally see old Gothic St. Paul's, and can listen o what men in their day thought of it; and we ave its history, and can get insight into the eelings and thoughts and aspirations of those—nthusiasts, may be—who built it; and it is something to do this.

A SCOTTISH TRADES' BANNER.

The trades of Edinburgh possess but one anner or standard to represent their entire ody. The populace of Edinburgh has been oted through many ages for its readiness to ouse itself in tumultuous fashion, no matter hat the prompting cause might be,—religion, olitics, or motives of lesser importance. As far ack as the fourteenth century, these same itizens became an impromptu army, each itizen possessing weapons which he was able, eady, and willing to use. These fiery denizens f Dun-Edin are understood to have risen in 482 to redeem their king, James III., from estraint in the castle which overlooks the town, nd for the services they rendered, besides ertain privileges, "he," according to Maitland, he earliest historian of Edinburgh, "granted hem a banner or standard, with a power to display the same in defence of their king, country, and their own rights." This banner as borne by the loyal burghers of Edinburgh to he battle of Flodden-hill, and was brought back attered and torn. It was something more than banner, it was a talisman in the keeping of the convener of the trades. To this day it is known as the Blue Blanket, "at whose appearance therewith not only the artificers of Edinburgh are obliged to repair to it; but all the artizans or craftsmen within Scotland are bound to follow it, and fight under the convener of Edinburgh as aforesaid." In Aytoun's spirited ballad the banner is thus alluded to. It is brought home from Flodden by Randolph Murray, the provost's son, who presents it to his father,—

> "Saying—'That is all I bring ye,
> From the bravest of the land.'
> * * *
> Ay! ye well may look upon it—
> There is more than honour there,
> Else, be sure, I had not brought it
> From the field of dark despair.
>
> Never yet was royal banner
> Steep'd in such a costly dye,
> It hath lain upon a bosom
> Where no other shroud shall lie.
>
> Sirs! I charge you keep it holy;
> Keep it as a sacred thing,
> For the stain ye see upon it
> Was the life-blood of your king.'"

This banner, along with that of the Earl Marischal, who went down to that same disastrous battle, is still conspicuous in the library of the Faculty of Advocates.

Apropos of banners, there was one denominated the Banner of Revenge, which was first borne about the streets of Edinburgh in June, 1567, to inflame the popular mind against Queen Mary. In 1601, when Laird Bargeny was slain by the Earl of Cassilis, the same banner was uplifted in the streets of Ayr on the occasion of the laird's funeral, "whereon was painted his portraiture, with all his wounds, with his son sitting at his knees, and this ditty written betwixt his hands, 'Judge and revenge my cause, O Lord.'"

Not a shred of the Banner of Revenge remains, but the Bluidy Banner, underneath whose folds the Covenanters marched to the fights of Drumclog and Bothwell Bridge, is still to the fore. It is of blue silk, here and there a little faded, and is inscribed in Hebrew characters (gilded), "Jehovah Nissi" (The Lord is my Banner). The next line is painted in white,—"For Christ and his Truths"; and then come the words from which it has received the name Bluidy Banner, "No quarters to ye active enemies of ye Covenant." This banner is treasured as an heirloom by a family in the neighbourhood of Dunbar.

In the Museum of the Society of Antiquaries of Scotland is preserved a banner which did duty at Bothwell Bridge, and some sixty-six years afterwards was carried by a corps of stanch Burgher Seceders, associated as a regiment of volunteers, who were posted at the gates of Edinburgh College when the Highland army entered the city in 1745. The college these Seceders guarded was not battered down till some forty years later on, in order that the present college,—the joint design of Adam and Playfair,—might arise. A banner which belonged to Mr. W. B. Johnstone, R.S.A., was in the thick of the combat at the battle, and also figured at Bothwell Brig.

At the great reform procession in August, 1832, the Edinburgh trades were anxious that the banner which had been borne before their predecessors for 400 years should be unfurled, but its custodians

> "Kept it holy,
> Kept it as a sacred thing."

Strange it is that the Blue Blanket, the gift of a king, should become a terror in after years to a successor and descendant of that same king.

When the Protestant faith came to stir up men's minds, the working classes of Edinburgh became a very formidable body. James VI., who had more than once experienced their violence, and consequently knew them well, says, very naïvely, in his "Basilicon Doron," which he intended as a *vade mecum* for his son,—"They [the workmen of Edinburgh] think we should be content with their work, how bad and dear soever it be; and if they be in anything controlled, up goeth the *Blue Blanket!*"

Than this Blue Blanket few trade banners can boast of a more eventful history.

THE FORTRESSES OF ALSACE-LORRAINE.

With the provinces of Alsace and German Lorraine, the fortresses of Thionville or Diedenhofen, Metz, Bitsch, Pfalzburg, Strassburg, Schlettstadt, and Neubreisach, have passed to the German empire. It remained for the consideration of the German War-office which of the acquired fortresses were to be retained on account of their strategical situation, as well as with regard to the conditions necessary for fortresses in modern warfare. Considering the heavy outlay entailed by the construction of new fortifications, it was thought advisable to raze only the smallest, weakest, and apparently most useless fortresses, and to partly enlarge and partly rebuild according to modern requirements the larger and most important ones. It was decided to demolish the fortifications of Pfalzburg and Schlettstadt, the former of which was razed in 1872, the latter this year. A vast quantity of building material was gained by these operations, which is now being used up for the reconstruction of the remaining fortresses. At the erection of the six earthworks (forts), commenced in 1872, of Strassburg the materials from Pfalzburg, and for the three water-forts, taken in hand this year, those from Schlettstadt are being used. The fortifications of Diedenhofen, Metz, and Bitsch, which defend the approaches to Rhenish Prussia and the Bavarian Palatinate, as well as Strassburg and Neubreisach, which protect the grand-duchy of Baden, will have to undergo almost complete rebuilding, as they had been left by the French in their former condition, without applying the experience lately gained in different campaigns to these fortresses.

The only exception is Metz, the construction of outworks (forts), lying a considerable distance from the *enceinte* proper, having been begun before the war of 1870. At the outbreak of that war, those forts were not quite ready, but they were capable of being defended, as the sequence proved. There are no such outworks to the other fortresses, Strassburg especially wanting them; they ought to have been present in her case years before the last disastrous war, considering its importance as a town and a fortress. The detached works (lunettes) lying before the *enceinte* proper could not be considered as forts, since they were situate so close to the fortress that they could not protect the city itself from a bombardment.

The forts now constructing, planned by the German Government for the fortresses of Metz and Strassburg, have been placed in such positions as to preclude all possibility of a bombardment of the towns in the first place. All the forts are situated about six to eight kilomètres from the city; they will all be armed with long-range guns, and if the enemy should also employ the best long-range guns, he will have to place his first batteries at least four kilomètres from the forts; and at the present state of the heavy ordnance question, a bombardment at such a range is more than doubtful, nay, almost impossible. To place batteries for a bombardment, therefore, it will be necessary first to reduce a number of the forts.

To protect the garrison of such forts, which resemble small military colonies of 600 to 800 men, effectually from a bombardment, which the besieging army would first direct against the forts, perfectly bomb-proof casemates have been provided for the whole garrison, as well as embrasures in the parapet for the sentries. Such a defending force may satisfy all the ordinary requirements of life without once leaving the bomb-proof rooms; it need not even cross the *terre-plein* of the forts to reach the ramparts, bomb-proof stairs beneath the ramparts connecting the *terre-plein* with the latter. Besides, it should be mentioned that these forts, even with extensive length of front, are as narrow as possible, so that the artillery of the besiegers will find it a very difficult task to hit them, for any ball which may fly over the front parapet only by a little either falls into the gorge of the parapet or flies over it into the ground beyond the gorge without causing any damage.

For those fortresses which will not be defended by such outlying forts, and of which only the *enceinte* will be rebuilt according to modern science, a bombardment may be avoided at the outset, as the enemy's light field artillery cannot cope with the heavy ordnance of the defending force; but if he has brought up his siege train of heavy calibres, the defender will take up the combat with the attacking force, and make use of the ordinary means of defence. But even then he will be able to confine within the narrowest limits, by means of a well-directed and energetic defence from ramparts constructed after the most perfect modern principle, the successes of the siege batteries, and so prevent catastrophes of which the last campaign furnished so many examples.

OLD BATH-HOUSES AND NEW ONES.

Amid the multitudinous plans and suggestions for the improvement of this mighty metropolis, and the consequent "improvement" of those who at all times and seasons of the year live in it, there is certainly not one that can claim to be more worthy of note and attention than that of public baths,—public baths, that is, on a scale worthy of the size of London and the number of its indwellers. It is really wonderful to think of the *paucity* of London baths; how far they are apart, and how impossible it would be for *all* to bathe and be clean if the practice of bathing were as universal as it ought to be. Then, again, look at the poor places that *have* been provided for those who will and do persistently bathe. Draughts, cold and warm, want of proper accommodation, and the discomforts of pretty nearly every kind that can well be, are to be met with and endured as they best may. It is the well-known "Hobson's choice,"—that or none. Few cities, or even towns, in the world seem to be so ill provided with that which is one of the first necessities of a healthy life,—the ready means of bathing,—as London is. Let us hope, now that some little attention is roused to the subject, that it will be fruitful of some sort of result, if not for the present year, at least for the next.

A few words and hints on the subject of baths, ancient and modern, may perhaps serve a good purpose, and help to practical results.

Some of the ancient accounts to us poor modern Londoners seem almost fabulous. The immense size, mode of construction, materials employed, and the all-pervading magnificence of the Roman Thermæ put to shame all modern doings in bath-building anywhere. It is only in a kind of poetic dream that we can picture to ourselves such baths as those of Caracalla, or such vast "Thermæ" as those must have been of which the present magnificent Roman Pantheon was the central hall or the vestibule. Such notions of baths and bathing belong truly to the classic past, and do not seem to be even comprehensible, much less capable of practical imitation, by the present time, with all its wealth and mechanical resources. We look down, in some respects, on the old Greeks and Romans, but perhaps have but small reason to do so, for they had their "mechanics" as well as ourselves; but they always, somehow or other, contrived to make art and architecture grow out of their necessary mechanics,—an art truly not a little glorious in itself, and a problem not a little difficult to solve sometimes, when the work done is new and untried, and "precedent" is not to be found.

But turning for a moment from these past efforts to provide baths for the people, we would,—for it is instructive,—say a word or two on what has hitherto been done by ourselves. We would in the first place assume it as a practical necessity that any structure devoted to the purposes of a swimming-bath, for that is one, if not the chief thing needful, should be a solid and well-built structure, lightly roofed in, with good substantial roof; properly floored or paved, and with doors and windows well fitted, and mechanically perfect, as far as may be, and all made of proper and suitable materials. A warehouse is one thing, a bath is another; what is good and useful, and fit, in the one, is not necessarily so in the other. But if anyone will look carefully into the mode of construction and materials, and into the fittings of some of our metropolitan baths, it will be found that nothing can well be more inappropriate or unsuitable, and even dangerous, than are not a few items of the modern London bath-house. In one of them, to cite an instance,—a remarkable one too, that in Westminster used by the scholars of Westminster School,—a new floor has just been laid down, composed of,—what can the reader suppose?—nothing less than large sheets of rough *cast iron!* It would surely be impossible to imagine a worse material for the barefooted tread; the rapid absorption of heat by the ever cold iron surface must be surely enough to do serious hurt to not a few; to say nothing of the discomfort of it both to sight and feeling. We specially mention this because it is one of the very last "improvements" effected in swimming-bath arrangements. Nothing can possibly be worse, as it would seem.

Another evil not a little noteworthy is the slight roofing common to buildings of this class,—of corrugated iron thin as cardboard. Heat cannot be retained by such thin roofing, and all sense of comfort disappears. A wide modern problem truly is there in bath-house *building*.

It is difficult to speak on the subject of baths, old or new, without dwelling for a moment on the open-air bath. It is hardly too much to say that one open-air bath is worth three of those enclosed and shut up in a room. Nothing but experience can evidence the effect, good at all times, of the fresh and invigorating and ever-changing *outer* air. The proposition to construct baths in the Thames like those on the Seine is a right good one as far as it goes, and it is to be hoped that in them the roof will be left more or less open to the outer air and sunshine, when we luckily have it. But is it not truly wonderful to think of how much there is sometimes proposed to be done in the scientific and expensive way, when the work is already done to hand by friendly nature herself, without cost to any one? There are not a few places up and down the river Thames,—as opposite the dead wall of the Penitentiary,—where an open-air bath might be had for absolutely nothing but the keeping the traffic, small as it is, to the north or Penitentiary side of the road. It is now, even as things are, used by the poor neighbourhood as bathing-ground, but under constant terror. Yet does it do a great deal of good in the way of cleanliness where no other means for it are to be come at. But be things how they may, whether out of public funds or out of private beneficence, we would earnestly urge the utility and healthiness of the *open-air bath*. There is nothing like it.

But it is also,—and the subject is a little new,—in their capability of being made so appropriately receptacles of fine art and statuary, that we would venture on a few thoughts. It is curious to reflect on the immense importance which the old Greek and Roman evidently attached to their great public baths. It has been in them, and amid their ruins, that so very many of the great statues of the "antique," to use the favourite Academy term, have been found. Every museum in Europe has been enriched from these almost inexhaustible sources. It seems to have been thought by those in old Rome who had charge of such matters, that there could be no more fitting place for a fine statue than a public bath. Indeed, when we consider that the Roman Thermæ were not baths, but gymnasiums, after the model of the Greeks, we need not wonder at the importance attached to them. One might almost say that they were art-schools for the study of fine forms and graceful action; they had all appurtenances for athletic games, and even for *lectures* and poetic recitations! They had also *libraries* attached to them. We are expressly told that they were decorated with the finest objects of art, both in painting and in sculpture, and had ever-playing fountains, and the grounds round and about them were planted with trees like the groves of the Academy. Surely in all this there is something worthy of imitation, for why should not a "bath" be a fit object to "adorn"? It is thought that these great doings of old Rome began and ended with the Empire; but the truth probably is that they were normal things of necessity, and only reached their highest form of expensiveness and art in the absolute days of the Roman Cæsars. M. Agrippa, the builder of the Pantheon; Nero and Titus, Trajan, Caracalla, and Diocletian, were bath builders, so that it can hardly be said that the Roman emperors did not sometimes do good things. It may help to give some notion of an old Roman's idea of a bath establishment, as contrasted with the modern idea of one, that the external or bounding range of buildings in the Caracalla baths, or thermæ, measured just *one mile* in circuit! So much in these days is talked of education, both in Parliament and out of it, that no one can do otherwise than attend to it, and feel interested in it; but we are sometimes inclined to ask, *What is education?* Were the old Romans in the days of Cicero educated or not, and what sort of education was it? Here we see that the education was of the body and the mind at one and the same time, almost art-education included, in spite of yourself; for the grand "antique" was to be seen in action,—living action. What more could the draughtsman and the sculptor want or have? No studio, or formal school, could afford such opportunities for study. One can, indeed, almost reach the very highest idea of artistic education possible, for Myron himself might be supposed to not only go to the "Thermæ" for his unconscious *model*, but ever after to see how true he had been to nature. If this be not to educate, artistically at least, what is? The antique, and that from which the antique originally sprang, were always present to the eye and mind of the Greek and Roman of old. Have we anything as good, or any approximation to it?

SHABDEN.

Shabden, a country-house just completed from the designs of Mr. E. M. Barry, R.A., is situated in a pleasant part of Surrey, not far from Reigate, on the site of a smaller house which has been pulled down to make way for it. Some of the old servants' offices still remain, and these have been worked into the new plan, with modifications.

The external walls of the new house are double, with a space of about 2 in. between the outer and inner thicknesses. The outer walls are faced with Kentish rag-stone, in level courses. The window dressings, cornice, and other architectural details are of Bath stone, and the window cills and copings are of Portland stone.

The staircase is of oak, in short flights, with massive oak newels and balustrades. It is entered from the hall, and commences with a central flight of steps, flanked by columns, and arched recesses, the whole being constructed of oak. The upper part of the staircase has a cove and a domical ceiling. One side of the staircase is open to the upper landing. Another side is occupied by the windows. These are filled with grisaille glass by Clayton & Bell, with coloured medallions representing the country pursuits suitable to the twelve months of the year. The other two sides of the staircase are formed by open arches partly filled with oak screens, and elaborate wrought-iron scroll work. The latter has been well carried out from the architect's drawings by Mr. Leaver, of Maidenhead.

The garden-room, which is placed between the drawing-room and the library, is screened by a verandah from the southern sun. It has an oak dado, 4 ft. 6 in. high, and the upper part of the walls is lined with tiles of artistic design by Messrs. Simpson. There is an open tracery screen of oak between the garden-room and the hall. The hall is wainscoted with oak to the ceiling, and floored with wood so as to be available as a reception or sitting room. The ceiling is of plaster, with massive beams marking the construction. One of the corners of the hall is occupied by the fireplace, the other three corners display family portraits worked into the oak panelling so as to form a part of the permanent arrangements of the hall.

The dining-room has a dado of oak, with a carved and panelled recess for the sideboard.

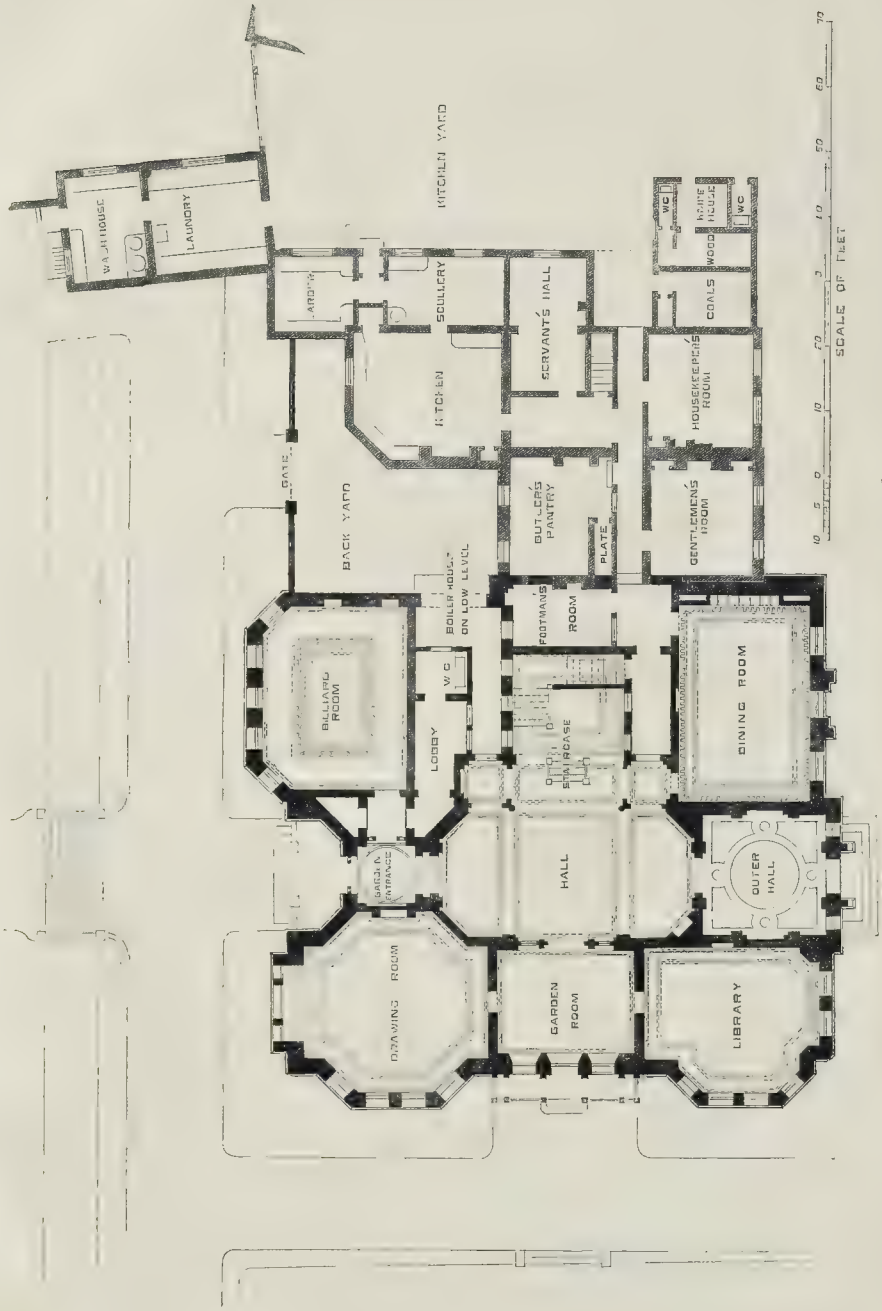
The drawing-room and other apartments are finished in a simple, modern style.

There is a warming apparatus underneath the staircase. It consists of a room about 12 ft. by 8 ft., full of hot-water pipes. The temperature of this room is raised to 100° or 120°, and from it warm-air flues of wrought iron, encased in wood, radiate to the various rooms and other parts of the house when warmth is required. These flues start from the top of the heating chamber, at the bottom of which fresh external air is admitted by air-flues from two sides of the house. All the flues can be partially or wholly closed by means of valves. The fresh air passes through the coils of hot-water pipes, and thence is distributed throughout the house by means of the warm-air flues. The fresh air so admitted ventilates the house both in summer and winter, and being only warmed by hot-water pipes, is considered much more wholesome than air heated by contact with iron at a higher temperature. The ordinary water-pipes are placed in a vertical shaft easy of access from the back stairs, and the boiler flue forms a portion of the shaft, thus avoiding risk from frost to the pipes.

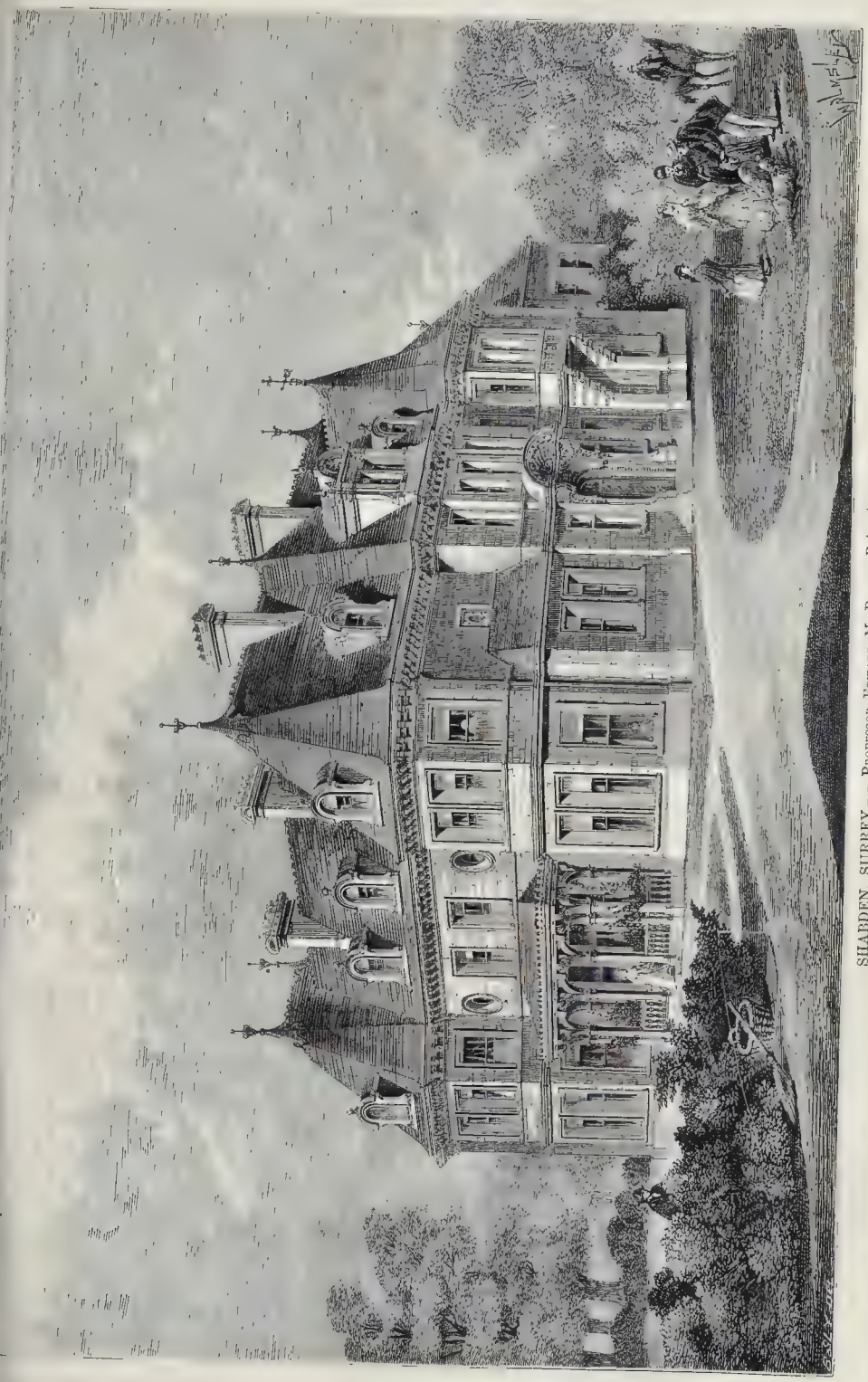
The walls are built on concrete, and a layer of this material is spread over the whole surface of the foundation, as a precaution against damp. The roof is covered with tiles of a dark red colour. All the main beams are of wrought iron, and the wooden floors are pugged and double framed. The windows are fitted with wainscot sashes of the usual type, and are glazed with plate glass in large sheets.

The first floor contains the family bedrooms, the best of which are planned in suites, with dressing-room and w.c. attached. The upper story contains the servants' bedrooms, and one or two extra family rooms.

The builders are Messrs. Holland & Hannen, Bloomsbury. The warming apparatus was carried out by Messrs. Haden from the design of the architect. The carving was executed by Messrs. Mabey; and the internal decorations are by Messrs. Crace.



SHABDEN, SURREY.—*Plan of the Ground Floor.*



SHABDEN, SURREY.—Professor Edward M. Barry, R.A., Architect.

SAXON REMAINS ATTACHED TO NORWICH CATHEDRAL.*

In the reign of Edward the Confessor, Norwich was a flourishing town. According to the Doomsday Survey, it possessed 1,320 burgesses n the time of King Edward, and not less than wenty-five churches, among which was the hurch of St. Michael, held by Stigand, and he church of the Holy Trinity, held by twelve urgesses in King Edward's time, and by the Bishop William Belsagus, at the survey of the ift of King William. The record of so many ncient churches led Mr. Richard Taylor to emark ("Index Monasticus," page 6) that "in town which contained such a multitude of hurches and chapels as early as the Conqueror's ime, it is somewhat singular that so few traces f ancient architecture are discoverable in the arly parochial churches." The discovery, herefore, of Saxon remains, which forms the ubject of this paper, in the west wall of the loisters of the Norwich Cathedral, is in accordnce with probability; and our late respected ecretary, Mr. Harrod, states in his excellent ork, "The Gleanings among Castles and Conents of Norfolk" (page 235), that evidence exists hich seems to him to go very nearly to prove at the church of Herbert was built on the te of a yet more ancient one dedicated also to e Holy Trinity. In proof of this he cites from emble's "Codex Diplomaticus ævi Saxonici," ol. iv. p. 282, the following very conclusive exact. Sifled made his will "when he went over e sea" some forty years before Herbert's time, nd devised, among other things, "and ic an to Nordwick to Cristes Kirk iiij recheren and into Sancte Marian." And what and where as this Christ's church in Norwich? It ppears that this title was continued from the iginal monastic church, called in Doomsday urvey the church of the Holy Trinity, to the thedral, built by Herbert, and so dedicated him and continued from his time to at least e reign of Queen Elizabeth. Indeed, these les seem to have been convertible, the e being used by the upper and the other by e lower classes. Harrod observes that, alough in the wills of the upper classes the thedral is referred to as the church of the oly Trinity, in those of the lower it is conntly called Christ's Church. Of this he cites merous instances from wills, from the Corration accounts, and the Session and Assembly oks also. He inserts also a very droll account on the anecdotes by L'Estrange, published by e Camden Society, which unmistakably conicts and identifies Christ's Church with the thedral. He refers also to some parallel ses which are very confirmatory; the Church, the Holy Trinity in York is stated in the omsday Survey to be held by Richard, son of fast, and in the enumeration of his lands in e Survey, all the lands held by him in right this church are named as held of Christ's urch. The priories of Christ's Church, ndon, and Christ's Church, Hampshire, were h dedicated to the Holy Trinity. I have reposely refrained from adducing as evidence statement made by Ingulphus, the chronicler Croyland, that when he was installed there 1076 (twenty years before the foundation of rwich Cathedral) he found there 100 "comfessi" or monks, from other monasteries, of om fourteen were from Christ's Church, Norh, because doubts have been raised as to the uineness and the date of his chronicle, so led. It appears to me that, however little ne may be attached to this account of the gration of the monks from Norwich, and atever may be the date of the chronicle, it ves to prove that Christ's Church was a little en, at some time or other, to a monastic ablishment in Norwich. I pass by also mefield's observation, that this title could not e belonged to the present cathedral, because as not then founded by Herbert de Losinga, that it belonged to the church of St. John ddermarket, which he identified with that of Holy Trinity mentioned in Doomsday Survey, withstanding there is no record relating to John's Maddermarket Church, prior to the rteenth century. It is important to men- that the Conqueror is said in Doomsday k to have given to Arfast (1086), fourteen suræ, or tenements, for the building of principal see; and this plainly indicates t he contemplated the erection of a see at Norwich previously to the time of Herbert's installation. The absence of any allusion by Herbert in his foundation charter to any persistent monastic church impresses me with the conviction that the removal of the monks, if at all, had taken place previously, and that the old monastic buildings had been pulled down to make room for the new cathedral. There was also the church of St. Michael, as we have noticed, mentioned in the Survey. It is admitted on all hands that Herbert was installed in it, and that it stood near Tombland, but it has since been demolished. It is evident, therefore, that portions of these Saxon buildings, which were sufficiently strong and available for convenience of site, might have been retained and utilised in the present cathedral or priory; and it is my object in the above remarks to show, not merely the possibility, but the probability that such was the case, and endeavour to invest with a degree of interest such ancient relics which connect the past with the present. However interesting such archæological details may be, the reality of the Saxon remains in the west wall of the cloister does not depend in the slightest degree upon them, but it must undergo the severe scrutiny of architectural knowledge and experience, and to these tests I beg to submit the following description of the wall in question. It extends on the west side, covered and masked by the recently-restored locutory, at right angles with the south aisle of the nave, 180 ft. to the south-west angle of the cloisters. This entire length of wall is quite undisturbed, except where it has been pierced for more recent doorways, or for the junction of walls of buildings, as of the Strangers' Hall, at right angles to it. On the northern extremity of the Strangers' Hall it has been cut away for the reception of a quoining of ashlar, and for an internal Decorated string, which is let into the old wall about 12 in., with a return on the north side. On searching with the spade, Mr. Spaull hit upon the foundation of the north wall, corresponding exactly with the quoining of ashlar and the strings, and marking the true boundary of the Strangers' Hall on the north side. The string dies out about 17 ft. 9 in. against the west wall, and I would suggest that this was at the termination of the dais, or raised and most ornamented part of the hall. I propose to finish the notice of this more recent addition before I proceed to continue the description of the wall. Besides the discovery of the north wall, Mr. Spaull observed a staircase, or rather remnant of one, at the south-west angle of the Strangers' Hall, which had been previously overlooked: to discover the use of this will require further examination. Now I will return to the old wall. On the external side, at intervals of 14 ft., there are circular apertures about 20 ft. high from the pavement and floor of the cloisters. These are continuous throughout the extent of the wall, except where one has been removed for the insertion of a larger window above the string-course of the Strangers' Hall, and another, probably, is concealed by recent flint-work adjoining the late Canon Wodehouse's residence. These circular windows are about the usual size of Saxon work, 2 ft. ontside, with a double splay contracted to 1 ft. in the centre, in a wall 3 ft. thick. There is one, and most important point, upon which all professional persons who have inspected the work are agreed, namely, that these windows have not been made in the wall after it was built, but have formed part of the original masonry. They are formed of flint uncut or worked, and scarcely a piece of freestone can be detected. They were plastered originally, as also the west side of the wall, except where it has been refaced or repaired, and here also very rarely any freestone can be found throughout it, except in recently-repaired parts, in the coinings and jambs. I will next direct your attention to the east side of the wall. On ascending the staircase leading from the locutory, now used as a school, the supposed dormitory is reached, part of which, abutting on the late Canon Wodehouse's house, is concealed by plaster, but the northern extremity discloses one double splayed circular window, 19 ft. 9 in. above the floor, and on the southern side of the recent window already mentioned there is a continuous line of five double splayed circular windows. The ancient wall may here be studied to advantage, as there is scarcely any plaster upon it. About 7 in. above these windows, stretching the whole extent of the wall, is a line of interlacing Norman arches of the same pattern as in the three westernmost bays of the south aisle of the cathedral. These interlacing arches rest upon corbels set upon the old wall without jambs, as in the rest of the cathedral, indicating that the wall beneath had been built before the interlacing arches were designed, and there is an evident line of demarcation between the Norman and the wall beneath, giving an unmistakably more modern appearance to the upper portion. Another and important point is that beneath the Norman interlacing work there is no appearance of ashlar work, except at the termination of either end of the old wall, where, on the northern extremity, next the cathedral, it has been made good with freestone, and united with ashlar work to the wall of the cathedral, and also on the southern, the like finishing of the wall with ashlar may be seen. Beneath these double-splayed windows there is a continuous line of attachment of a floor or lean-to roof. Apertures in the wall at regular intervals may be traced to receive corbels or joists. The interlacing arches were external, as also the Norman arcades on the south side of the cloisters abutting on the refectory. Long observation of similar double-splayed windows convinces me that they are Saxon, and that we have here the remnant of building of the Saxon period. It might have served as an outer wall of boundary or defence. The double splay of the window was well calculated for archery, as it commanded an extensive view without exposing the combatant to attack, and the aperture was too small to admit of the ingress of an enemy. It has been observed by Rickman that the early ecclesiastical buildings were framed for defence against invaders. But it is not within my province to account for the position in this place, or for the uses the building might have been applied to, or, indeed, to point out its possible connexion with any other adjacent buildings. Were history altogether silent on the subject, or were there no clue whatever to the pre-existence of any edifice on the foundation of the present cathedral, still the architectural evidence is so strong that, independently of any other, it would convince me of the certainty of the Saxon origin of this piece of masonry. Of the various characteristics of Saxon work, none is more decisive than the double-splayed window without the use of freestone. Herring-bone masonry is common to every period, and is had recourse to in building with rough materials at the present day as well as in Saxon times. The straight-sided window is not uncommon in later work. The use of flint and stones gathered from the land may be found in the meanest modern buildings. Short and long, and pilastered work, occurs in towers of Saxon character, and balustered shafts are all of wrought freestone, and may have been (as I remarked in an article on Beeston St. Lawrence Church, read at the meeting of the Institute, at Norwich, and printed in the report) continued in Norman times by Saxon masons, as probably is the case at Great Dunham Church. But the difference between circular Norman and Saxon windows is very obvious. The Norman is formed of freestone, well cut and wrought, the other of rude flints and stones. The Norman has a single splay, or none at all; the Saxon has almost invariably the double splay; and so persistent is this character that in the ruined church of Shottisham St. Martin (so called on the Ordnance Map) there is a double splay in a small window in the north wall, which is only 1 ft. 2 in. thick. It is singular that this characteristic, perhaps then not generally known from its rarity, is omitted in the "Glossary of Architecture." In Norwich, from the changes and enlargements churches have undergone, no Saxon characteristics have been retained; the small churches in country villages may be said to abound in them. Framlingham Earl had, at least before its restoration, most interesting relics of this description, pointed out at a meeting of our Society by our respected secretary, Mr. Manning. In a circular double-splayed window there, he observed the remnant of a rim of oak, and also an oak shutter, curiously closed by leather thongs probably, passed through oblique holes in the rudest manner,—before glass was in general use. At Coltishall Church, coupled with coinings of Roman tiles, and also at Witton Church, near the sea, are to be seen good examples of these windows over the north doors precisely corresponding with those under our immediate consideration.

* By the Rev. J. Gunn: read at a recent meeting of the Norfolk and Norwich Archæological Society.

The late Mr. Perkins.—We record with regret the death, on the 30th ult., of Mr. William Perkins, aged 65, for thirty years the principal assistant to the late Sir James Pennethorne, and well known in the architectural profession.

THE LEICESTERSHIRE AND NORTHAMPTONSHIRE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

The Architectural Society of the Archdeaconry of Northampton, and the Architectural and Archæological Society of the county of Leicester, selected Coventry as the place of their general meeting for 1873. To that ancient city accordingly the members of the societies, with their friends, numbering some fifty or sixty persons altogether, betook themselves, and here they were joined by several members of the Warwickshire Naturalists' and Archæologists' Field Club. The proceedings commenced with a public meeting at St. Mary's Hall, the Mayor of Coventry in the chair. Mr. Fretton read an interesting paper "On the Antiquities of Coventry." The objects of interest in St. Mary's Hall were then pointed out, and a temporary museum inspected. Next, under the guidance of Mr. Odell and Mr. Fretton, the churches of St. Michael and Holy Trinity were visited, and their chief architectural features pointed out. Then the remains of the ancient cathedral were shown. "Peeping Tom" was inspected, and Mr. Bloxam considered this remarkable figure to be of Henry VII.'s time, and to have been originally in one of the Coventry churches, probably a figure of St. George or some other saint.

After the visitors had partaken of luncheon at the King's Head Hotel, they went to St. John's Church, where the Rev. G. Ayliffe Poole pointed out the chief architectural features of the building, and strongly condemned the "cattle-pens," as he termed the old-fashioned high pews. Bablake Hospital, founded by Thomas Bond, in 1506, was next visited, and the Boys' Hospital, founded by Wheatley, in 1560. The Free Grammar School was then seen. Mr. Matthew Bloxam gave a short account of the building. Next, the Carmelites, or White Friars, on the site of which a workhouse now stands, was visited, and Mr. Bird, the master, showed the party the monastic remains. The Carthusians, or Charterhouse, now a private dwelling-house, was then seen, and Mr. Wiley, the owner, conducted the party over the small remaining portion of the old building. The cemetery, the Franciscans or Grey Friars' monastery, and lastly, Ford's Hospital, a specimen of timber-work, founded in 1529, concluded the somewhat lengthy programme of the day.

There was a public meeting at St. Mary's Hall, when Mr. Burgess read a locally interesting paper, entitled "The Hunting Match at Dunchurch, 1605." "Bells and Belfries" was the title of a paper read by the Rev. G. Ayliffe Poole. Mr. James Thompson was announced to read a paper on "Kenilworth," but in his absence the Rev. N. F. Lightfoot read the paper.

On Wednesday an excursion took place. The party first went to Kenilworth Castle, where a minute inspection of the whole remains was made, under the able guidance of Mr. Burgess. Next Guy's Cliff was visited; and afterwards Warwick Castle; at both places the houses and picture-galleries were thrown open to the excursionists. At Warwick, after luncheon, the Dudley Hospital was seen; likewise St. Mary's Church, and the Beauchamp Chapel. After this, the party visited Stoneleigh Abbey, where Lord Leigh and his brother conducted them through the remaining buildings of the ancient abbey, and through the modern rooms of the mansion. The excursionists then returned to Coventry, having enjoyed their Warwickshire trip very much.

THE COTTESWOLD NATURALISTS' FIELD CLUB.

The third field meeting of this club for the present season took place at Weston-super-Mare for Swallow Cliff, to examine the geology of the coast line between the two places. The programme was attractive, and a goodly muster was the result. The point first reached in the day's excursion was the Camp on Worle Hill, which immediately overhangs the town. This large and important work is thought to be very Early British, and may mark the site of a town inhabited in times of extreme antiquity by persons connected with the large traffic known to have been carried on in minerals raised from the mines of the Mendip hills; and it is not impossible that from this height primitive Britons may have looked down on Carthaginian or even Phœnician ships, drawn up on the shore of Sand Bay, and taking in their cargoes of mineral wealth with which the region then abounded. The ramparts are very numerous and very distinct, and are strongest at the east end of the enclosure, which was the most accessible, the steep sides of the hill forming without much trouble ample protection in other directions. The interior of the fortified space contains a considerable number of hut circles, and these were some few years ago carefully examined by a Committee of the Somerset Archæological and Natural History Society. They are very like those of Dartmoor, and appear to have been made by forming a circular excavation a few feet in depth, the sides of which were built up with loose stones, and surmounted by a framework of wood, filled with wattle or wickerwork, and probably thatched with turf.

BUILDERS' BENEVOLENT INSTITUTION.

The twenty-sixth annual meeting of the subscribers and friends of this charity was held on Thursday afternoon, the 31st ult., and, as usual, was chiefly attended by the honorary officers of the Institution. Mr. Edwin Lawrence, the president, occupied the chair. After the usual preliminary business had been despatched, the secretary, Mr. A. J. Harris, read the annual report. This document commenced with an appeal to those persons who belonged to the building trades, and who had not yet identified themselves with the work of the Institution, to become subscribers at once. A large number of candidates were anxiously waiting to become the recipients of their bounty at the November election. Last year eight new pensioners were elected,—four in November and four in May. Of the inmates already in the Institution, five had died. The worshipful Company of Taylors had generously placed at the disposal of this Institution one of their almshouses at Ball's-pond, with an annuity of 10*l.* per annum, and a supply of coals. Since the last general meeting the Institution had had to deplore the loss by death of Mr. George Spencer Smith, who was one of the earliest friends of the Institution. Mr. Henry Manning had also died and left the Institution a legacy of 500*l.*, which, when the duty was paid, amounted to 450*l.* The financial statement showed a total income of 2,979*l.* 4s. 7d., which included a balance carried forward from last year.

Mr. Richardson moved, and Mr. James Simpson seconded the adoption of the report and accounts, which was agreed to.

Mr. Waldram moved, and Mr. Richardson seconded, a vote of thanks to the patrons, and the addition to the list of the names of Mr. Edwin Lawrence and Mr. T. H. Poynder. This was agreed to.

Mr. Plucknett, in moving a very hearty vote of thanks to Mr. Lawrence, for his presidency during the past year, commented on the necessity of such an institution to the important trades with which it was more immediately identified. He was sure that the trade had largely benefited by Mr. Lawrence's presidentship; and if all the subscribers were present, they would heartily endorse that opinion. Mr. Plucknett concluded, amidst cheers, by proposing the resolution.

The words of Mr. Plucknett were confirmed by Mr. Richardson, in seconding the motion, which was then carried unanimously.

The Chairman briefly acknowledged the compliment which had been paid him, saying that his best services were always at the disposal of so excellent a charity as that whose anniversary they were then celebrating. It was so excellently managed by its treasurer, secretary, and other officers that his office had been almost a sinecure. He only wished he had been able to render more service to the Institution.

Mr. James Simpson moved the thanks of the meeting to the vice-presidents of the Institution, and the following gentlemen were elected to that office for the ensuing year:—Mr. George Baker, Mr. Alfred Lawrence, Mr. Sapwell, Mr. W. Griffith, Mr. Mark Manley, and Mr. Philip Ainstie. This was carried, as was also a resolution appointing a trustee in the room of Mr. G. S. Smith, deceased.

A vote of thanks to Mr. Plucknett, who it seems also fills the office of treasurer, was moved by Mr. Waldram, seconded by Mr. Richardson, and carried unanimously.

Thanks were also voted to the directors. The list for the ensuing year is as follows:—Messrs. George Dines, Matthew Hall, George and Richard Head, Mark Manley, S. L. Mann, W. Nicholson, W. R. Rogers, and Thos. Stirling.

Votes of thanks were also passed to Mr. Joseph Burn, hon. sec. of the managing committee, the auditors (Messrs. S. H. Head and J. H. Hunter), and the solicitors (Messrs. Jacques, Edwards, & Co.), and the meeting closed with a hearty vote of thanks to the chairman.

INJURED FRESCO.

It would be well if the term *fresco* were not, as it commonly is, indiscriminately applied to every kind of wall-painting, as by thus having all the imperfections of other processes heaped upon it, one of the most ancient and best methods of mural decoration is undeservedly brought into disrepute. Mr. Herbert's picture of the "Tables of the Law," recently referred to in the House of Commons, is, I believe, painted in water-glass, not fresco. The term *fresco* is improperly applied to any method of painting but that on *fresh* mortar. As a rule, our painters have not had sufficient practice and experience in fresco-painting to master the method, and to understand its manipulation under different conditions of the weather. A great deal has been said about the effects of an English climate on fresco, but it should be recollected that the base of fresco-painting is good mortar, and that good mortar has never been discarded by the builders, from the Roman occupation to the present day. And, if permitted to indulge in a very small joke, we might say, that in England good mortar has always exhibited the endurance of a "regular brick."

W. Cave Thomas,
Author of the "Methods of Mural Painting."

VENTILATION OF SEWERS.

Having read all published in your paper on the ventilation of sewers, I fear that the whole question merges in the following incident. Last year two men were working in a rosin-still at Crew's Hole, Bristol, and not appearing at breakfast, search was made for them, when they were found in a sitting position, apparently asleep, but dead; a candle burning, and no noxious vapour perceptible in the still. At the inquest it seemed that the following were the temperatures:—On the top of the still, 103° Fahrenheit; on the ground, only 78°; and inside the still, 84°; the consequence was there was no circulation of the atmosphere. The air in the still, having more specific gravity than that above, would not rise; and that near the ground, still heavier, could not ascend through the bottom. The air within becoming gradually charged with carbonic acid gas exhaled from the lungs of the unfortunate men, they were suffocated. A verdict by jury accordingly.

It is perfectly clear that exposed rain-water pipes will not ventilate a sewer in the summer as the temperature of a sewer is colder; no can it in the winter. Being a small tube, surrounded with a cold atmosphere, condensation would check it before it rose half-way, as thoroughly as Arnott's ventilators stop when the fire is out and the shaft becomes cold. To pass up hot air or gas when it is surrounded with cold air, and not guarded, is a nut which all may try to crack, but will assuredly fail in. The only method, therefore, is either natural,—namely, wind-pressure, by displacement and pressure; or artificial,—namely, subtraction. By heated shafts causing vacuum by wind-pressure we should gain equilibrium of temperature, the gases would be more dispersed, consequently less dangerous, being diluted by pure air; and greater circulation would help impure gases to pass off without becoming poisonous.

M. Tossell.

LONDON CEMETERIES.

It is stated that sites for two new cemeteries have been selected for the purpose of forming additional burial accommodation for the western and southern districts of London; and that a limited company is in course of formation with the view of carrying the same into effect. The sites chosen are situated at Acton-green, in the parish of Acton, close to the Turnham-green Railway Station, for the western districts; and at Norbury-hill, Streatham, for the southern district of London. The grounds of these cemeteries are to be laid out by an eminent landscape gardener and will be of an ornamental character. When the crowded state of the existing public cemeteries is realised, the present movement cannot be viewed as premature. The subject is now under the consideration of Mr. P. H. Holland, the Government Medical Inspector, who will report as soon as practicable.

THE DRAINAGE AND HEALTH OF MARGATE.

Good resolutions by the dozen, made by e town council since the date of the last ticle upon this subject (*Builder*, September d, 1871), have paved the way to some finite action in the very important questions abolishing the old-fashioned used-up cess-ols and dealing with the sewer system as a ole; and lately the perception of the cor-ration has been quickened by a visit on the vocation of the resident medical men, from . Gwynne Harries, one of the medical spectors of the Government Local Board.

Previously, however, to the visit of Dr. Harries e sanitary committee of the council drew up a port on the condition of the town, which has en printed and circulated in the neighbour-od, and from which we make the following eresting extracts:—

"The physical contour of the town is that of two eys and two hills. The subsoil is chalk, mostly the ble Thanet chalk, but in some places it is of a hard almost rocky character, standing with ease to a ght of 20 or more feet perpendicularly under the rations of the excavator. This cretaceous deposit has n perforated to a depth of nearly 500 ft. in the neigh-rhood, and is believed to extend to a depth of 1,000 ft. n the surface. The dip of the stratification is sea-ds, and the angle of dip is small."

The great offence charged against the whole-heness of the borough,—for of its general h tone of health there cannot be a doubt,—is prevalence of the cesspool system and the al absence (save on the Royal-crescent and tfield Bay Estates) of efficient tubular inage. To this very serious charge the itary authorities plead guilty, but with ex-uating circumstances. Here is their plea:—

"As a matter of fact, independent cesspools attached lmost every house, sunk from 12 ft. to 40 ft. deep in chalk, receive the sulliage, and owing to the porosity he chalk, the liquid matter for the most part quickly ne away by absorption and filtration into the inter-es thereof, and is thus lost to sight; while, at least for ngthened period, only the solid portions remain nd. These cesspools (owing to the great dryness of superficial chalk into which they pass) require only e opened at intervals of years, often at long intervals an to twenty or thirty years, and are then found to ain more or less of fluid and semi-solid matter, often a few feet of tenacious and frequently not very nsive matter, and it is remarkable that the operations he cesspool system, fraught as they are with large lity in other soils of a clayey and retentive nature, not been found so deleterious in this district, and the n has been most signally exempted from disease and h in every epidemic visitation which has occurred in district within the knowledge of the members of this ncil."

Notwithstanding the fact commented upon in concluding paragraph of the above extract, feeling was becoming more and more general the district that the cesspool system was rdone, and that some better system should be oduced; and those who, for the most part, e disposed to act on the "let-well-alone ciple, and do nothing, were and are dually coming to feel that the knowledge of great sanitary deficiency is extensive and rious, and that many of the wealthier and er-informed visitors and their friends were rred from making their customary sojourn ne town in consequence, and thus it became rvable that three classes of opinion were esented in the council, viz.:—

Those who were convinced that drainage *needed*.

Those who were not convinced, but thought nage *expedient*.

Those who were convinced of the *necessity expediency* of letting things remain as of

f these, the two former appear to have been ys disposed to work in some sort of unison; the "do-nothings,"—that is, the third of the e classes,—have hitherto had the numerical onderance, and have thus effectually stopped way.

ut we observe from the various newspaper rts of the doings of the council, as they odically appear in the Margate *Guardian* *Keble's Gazette*, that under the stimulus of Gwynne Harris's presence among them, the s of the second class (the *expediency* men) being augmented from those of the third, the introduction of a general and compre-ive scheme of drainage for the whole ugh seems now to be imminent, or, at least, the matter of a few months' delay.

he Margate season is conspicuously flat this ; the number and status of the visitors being e beneath the customary average. Possibly, is in some degree owing to the well-ntioned efforts of the resident medical prac-ners in publishing a memorial setting forth "that the sanitary condition of the town is exceedingly bad," and adding that "low types of disease, caused or aggravated by defective drainage, are constantly prevalent"; and in commenting upon which, the sanitary committee, while combating its accuracy, take occasion to remark:—

"The publication of this very memorial of the medical men will contribute largely, and has no doubt contributed largely, to deter visitors from coming to our town, and its effect most probably has been to cause hesitation in the minds of some non-resident members of the medical faculty who have hitherto customarily sent their patients to our waters."

We observe that this report of the Margate Sanitary Committee of the borough is dated February, 1873, and concludes in these words:—

"The Council are looking with anxiety to the time for action in the introduction of a complete system of sewerage, and anxious to proceed as soon as they can at all see with any degree of certainty in what manner the sewage products can be dealt with or utilized. A committee of seven members of the Council, who had been sent to inspect several (in all seventeen) towns which had the reputation of being well and efficiently drained, by their report of the 29th August, 1871, did not agree in advising that either deportation or works of utilization should be adopted, and the Council, after many debates thereon, resolved to take no immediate action in the matter, or to venture upon so very large an expenditure with only a prospect of problematical success."

The whole question has, however, been stirred up again by this official visit of Dr. Harris, and probably, at no very distant date, we shall have occasion to comment upon what has been done in reference thereto. At any rate, we hope so.

SKETCHING IN FOREIGN CHURCHES.

Sir,—As we are now, most of us, contemplating holiday tours, in which probably some amount of sketching will be accomplished, it may interest some of your readers to hear the experiences at St. Ouen's, Rouen, of a canon attached to one of our most beautiful cathedrals (where, I may state, no unreasonable restrictions are placed in the way of sketchers). This gentleman, indignant at the brusque manner in which one of the members of his family was treated by the "Suisse," was energetic enough to write to the editor of a local journal,* who promptly took notice of the complaint in a lead ng article. I beg to inclose a cutting of the paragraph relating to it.

E. B. F.

ACCIDENTS.

Fall of a Chimney at Felling Chemical Works. A large chimney at the Felling Chemical Company's Works has fallen. Fortunately no lives were lost, nor any person injured, but the damage is said to amount to several thousands of pounds. A contractor from Manchester and a number of men, who had previously been engaged in repairing and altering some of the other chimneys in the factory, were working at this chimney until a short time before it fell. It was the largest chimney in the works, being about 210 ft. high, and has been out of plumb for some years. The operations going on were with the object of restoring it to its proper position. A good many bricks had been cut out of the chimney at about 20 ft. or 30 ft. from the ground, and shortly after 4 o'clock the workmen noticed that lime was occasionally falling, and from that and other appearances, it was decided to cease work. The falling of the lime was followed by slight, and then by heavier oscillations, and at half-past four the huge chimney toppled over and fell to the ground. The buildings in the neighbourhood were greatly damaged; but the most serious loss is in the destruction of two acid chambers, and the partial destruction of a third.

Fall of a Ceiling at Brighouse.—The whole of the ceiling in a bedroom of Mr. William Armitage's house, Walker's buildings, has fallen in. The bed was almost entirely broken up by the weight of the *débris* falling upon it, and other furniture injured. With the usual stupidity a cross beam end was inserted right into the chimney. On this beam other beams for holding the laths were nailed. The beam in the chimney had become ignited, and had been burning many days, and, having burnt to the front of the chimney-stack, had set fire to the woodwork, when the whole gave way and fell. The damage is estimated at about 10*l.*, but several lives were at stake.

Fatal Accident in a Sewer at Eccles. — An inquest has been held on the body of an excavator who was working for Messrs. G. Gilbert & Son, contractors, Oldfield-road, Salford, in a sewer in Albert-street, Eccles. Preparations were being made for propping the sides of the excavation; timber for side pieces had been lowered into the hole, and the "stretchers," or cross pieces, were about to be adjusted, when a large quantity of earth on one side of the cutting fell, carrying with it several side pieces of timber which had been fixed. Deceased and two other men who were at the bottom of the sewer, which was about 6 feet deep, were partly buried in the fallen earth. One of the planks fell against deceased's chest, and, although he was only partly embedded five or six minutes, he was quite dead when extricated. A week before the accident deceased told his wife that he did not like working in the sewer, as its sides did not appear to be safe. He did not, however, mention this to his foreman.—The jury returned a verdict of "Accidental death."

THE TRADES MOVEMENT.

Stalybridge.—The stonemasons have struck work. They have hitherto been working 55½ hours per week, but demand that that number be reduced to 48½. A conference has taken place between the men and their employers, at which the former agreed to modify their demand by one hour, but the masters wished to pay by the hour. The men refused, and demanded to be paid by the day, and the conference broke up without a satisfactory settlement being come to.

Blackburn.—Depatations of the journeymen joiners and carpenters have waited upon their employers to see if some arrangement could not be arrived at in reference to the question of wages. The majority expressed their willingness to pay 7½d. per hour, being an increase of ½d. per hour. This was reported to a meeting of the men, and it was resolved to accept the offer.

Bristol.—For many weeks a number of the carpenters and joiners of Bristol had been on strike, in consequence of having failed to obtain from their employers what they considered a proper rate of wages. They were getting before the strike 6½d. per hour, and demanded 7d., which the masters declined to give, not seeing their way clear to do so. The employers have now made a concession, for at a largely-attended meeting at the Athenæum, Mr. W. Brock in the chair, it has been resolved that the wages of the carpenters and joiners be 6¾d. per hour. The secretary (Mr. Alsop) was requested to forward a copy of this decision to the executive committee acting on behalf of the men, and it is hoped that this concession will be accepted, and thus put an end to the strike.

Sheffield.—The engineers' strike still continues.

English Assistance to Foreign Workmen on Strike.—The locked-out building operatives at Hamburg have received the gift of 1,000*l.* from the working men in the English coal districts, and have, on the strength of that support, refused to resume work.

SCHOOL BOARDS.

London.—The London School Board have resolved:—

"That the tender of Messrs. W. Wigmore, of Fulham, amounting to 6,700*l.*, for the erection of a school to provide accommodation for 795 children, in Saunders'-road, Notting-hill, be accepted; that the tender of Mr. J. High, of Lower Clapton, amounting to 8,698*l.*, for the erection of a school to provide accommodation for 1,107 children, in Anglers'-gardens, Islington, be accepted, that the tender of Messrs. W. H. & J. Mansbridge, amounting to 6,740*l.*, for the erection of a school to provide accommodation for 799 children, in Johannah-street, Lambeth, be accepted; that the tender of Messrs. W. H. & J. Mansbridge, amounting to 8,356*l.*, for the erection of a school to provide accommodation for 1,110 children, in Camden-street, Marylebone, be accepted; that the tender of Messrs. W. H. & J. Mansbridge, amounting to 6,637*l.*, for the erection of a school to provide accommodation for 1,023 children, in Aldenham-street, Marylebone, be accepted; that the tender of Messrs. W. H. & J. Mansbridge, amounting to 6,806*l.*, for the erection of a school to provide accommodation for 1,021 children in Marlborough-street, Blackfriars-road, be accepted; that the tender of Messrs. Cooke & Green, amounting to 5,770*l.*, for the erection of a school to provide accommodation for 784 children, in Lazon-street, Southwark, be accepted; that the tender of Mr. A. Sheffield, amounting to 7,368*l.*, for the erection of a school to provide accommodation for 920 children, in Bow-common-lane, Tower Hamlets, be accepted; and that the tender of Mr. T. Ennor, amounting to 3,210*l.*, for the erection of a graded school, to accommodate 366 children, in Northey-street, Limehouse, be accepted.

Manchester.—From the minutes of the Sites and Building Committee, it appeared that the

* See *Journal de Rouen*, du Samedi, 26 Juillet, 1873.

committee had considered the competitive designs for new schools in Vine-street, Hulme, and Every-street, Ancoats, and had recommended that the Board should adopt Messrs. J. M. & H. Taylor's plans for the Vine-street School, and that the first premium be given to Mr. H. Lord, and the second to Mr. W. Dawes. The committee also recommended the Board to adopt Mr. W. Dawes's plans for the Every-street School, the first premium to be given to Mr. H. Lord, and the second to Messrs. J. M. & H. Taylor. The recommendation in reference to Vine-street School was adopted without much comment, but on the second recommendation of the committee being put to the meeting, Mr. Maclure moved an amendment, to the effect that the design of Mr. Lord be adopted. The amendment was seconded by the chairman, who said he should vote in favour of Mr. Lord's designs, because they were simple, and in accordance with the instructions issued to competing architects. Mr. Alderman Lamb complained that the architects had not been fairly treated by the Board. Finally, the amendment was put to the vote and lost. The recommendation of the committee was accordingly carried. The Clerk read a letter from the Rev. E. Hewlett, Rector of St. Paul's, Brunswick-street, in reference to the proposed erection of a Board school in Rusholme-road. The rev. gentleman, in effect, stated that the new school was unnecessary. The letter was referred to the Sites and Building Committee.

Leeds.—The report of the Sites and Buildings Committee recommended

"The acceptance of the following tenders for the Cross Stamford-street School, subject to approval by the Education Department: Carpenters and joiners' work, Jno. Benton, 1,115*l.*; plumbers and glaziers' work, H. Braithwaite & Co., 257*l.* 3*s.*; slaters' work, W. Pycock & Son, 263*l.* 5*s.*; plasterers' work, Wm. Helmsley, 160*l.*; ironfounders and smiths' work, Heaps & Robinson, 314*l.*; painters' work, Jos. Walker, 70*l.* 1*s.* 10*d.*; total, 2,179*l.* 9*s.* 10*d.*"

The committee further recommended the appointment of an additional clerk of works, and asked for power to advertise for and provisionally appoint such officer, at a salary of 2*l.* 2*s.* per week. The Bewerley-street School being now completed, the committee thought it desirable, being the first school of the Board, that it should be formally opened by the Board. They had accordingly made provisional arrangements for such opening on the 8th inst., in connexion with the laying of memorial and foundation-stones of the new schools. They recommended that the Board sanction such formal opening.

Mr. Kendall moved, and Mr. Armitage seconded,—

"That it be an instruction to the Board architect, in preparing further plans for schools, to provide, wherever practicable, means of internal communication between the various departments."

As an amendment, Mr. Woolley moved, and Mr. Long seconded,—

"That in the two-story buildings an internal communication be made between the schools, and in schools on the ground-floor such communication be made between the girls' and the infants' schools."

The amendment was lost. Dr. Heaton then moved, and Mr. Wilson seconded, that the question be referred back to the Sites and Buildings Committee. This was also lost. The division on the original motion resulted in a tie, whereupon the chairman gave his casting vote in favour of it, and it was adopted.

PARLIAMENTARY.

South Kensington Museum.—In reply to Lord Elcho, Mr. W. E. Forster said that Government were now in communication with the trustees of the British Museum as to the transference to them of the control of Kensington Museum, but that no arrangement had yet been arrived at.

The Frescoes in the Houses of Parliament.—In reply to Mr. Bowring, Mr. Ayrton said it was undoubtedly true that for some time past the surfaces of these pictures had presented an appearance which detracted from their effect, but what was the exact nature or cause of this appearance had not been ascertained. There was very great difficulty in deciding whether it arose from actual decay of the picture, or whether it arose from a mere efflorescence on the surface. Mr. Richmond, R.A., had come to the conclusion that it was only an efflorescence on the surface of the picture, which could be removed, and which would leave the picture nearly as good as it originally was when painted. The question required chemical investigation, and Dr. Percy was now applying himself in the examination of the substance taken off the picture. He (Mr. Ayrton) had arranged to get the assistance of an eminent picture-cleaner, who was recommended by Mr. Richmond as best qualified for the purpose. He had spoken of Mr. Maclise's picture, but with regard to Mr. Herbert's picture he did not wish to make any observation until he had communicated with that gentleman.

The New Offices in Parliament-street. — In reply to Lord Redesdale, in the Lords, the Duke of St. Albans said, that the buildings in Parliament-street, in front of the new public offices, would be taken down before the meeting of Parliament next year, and that there was no intention to apply to Parliament for power to purchase property in any of the places mentioned by the noble lord. The Earl of Carnarvon testified to the importance of seeing after the sites referred to, which he believed could be had on easy terms, and remarked that we were constantly in the habit of paying exorbitant prices for land.

THE NEW OLD STYLE.

Mr. Editor,—I have from the commencement of the *Builder* been a subscriber and an occasional contributor to its pages; for I have ever regarded it as the drama is represented by our immortal bard, as holding up the mirror to nature; so the *Builder* reflects the passing events and productions of the day in architecture. But I must own that as, I suppose, it would be the endeavour of the dramatist to avoid whatever is offensive in nature, so the *Builder* would not record the deformities, which crop up day by day, but rather give specimens of the genius of the profession for our admiration and instruction. Now, I must own that I have been taken aback by the illustration in your number last Saturday, August 2, of the block of Offices in Leadenhall-street, and I cannot conceive what motive could have induced its author, a man of acknowledged talent, to rake up a type of the very lowest state of corrupt erection in the City of London, of a period that marks the senility of decaying taste. In the history of art, it is important to rescue any specimen that marks a phase of any special time. But to reproduce such a contortion of every feature of architecture amazes me, for doubtless the talented author, in his search for novelty, must surely be aware that such buildings mark the absence of high art (and there may be high art even in the humblest dwelling), the absence of the architect, and the ignorant handling of the mere mechanic, the carpenter, the bricklayer, or plasterer; and I say this despite the opinion of a late writer in the *Quarterly*, who attributes the genius of that class in building to all its fine productions. This elevation seems like the last somersault or gambol of the agile gymnast, who seeks at the end of his performance to extort a laugh from the spectators at whatever cost of contortion and personal effort. But such a work of the Gold Medallist of the Royal Academy and Silver Medallist of the Institute is a sad spectacle of the abuse of high powers in the artist and draughtsman, who is capable of nobler things.

Thos. Leverton Donaldson.

PROPOSED MONUMENT TO THE LATE BISHOP OF WINCHESTER.

Meetings are being held to carry out a very general desire to erect a memorial of the late Bishop of Winchester, and various schemes have been suggested with the view of realising some favourite idea of the suggester, sometimes with very little reference, or appropriateness, to the purpose ostensibly in view. One of them even contemplates the cutting up of the bishop's diocese into pieces,—an idea against which his relatives naturally protest. Sir G. G. Scott suggests the restoration or improvement of St. Saviour's Church, in Southwark,—an excellent idea in itself and by itself, but not a proper channel into which to divert the feeling and the fund expressive solely of regret for the loss of a good and celebrated man.* A third suggests a college for overworked clergy, and one for mission clergy,—both valuable ideas, and well worthy of consideration for their own sakes. A fourth suggests a scheme in connexion with the African slave trade and missionary scholarships, and so on. All such stray or errant suggestions ought to merge into the one simple idea of a monument useless in all respects but the one purpose of properly commemorating the deceased.

At the funeral, at Lavington, there came to do honour to him a vast assemblage of clergymen and the general public. The Dean of Windsor represented the Queen, and the Hon. C. Wood the Prince of Wales. Several of the nobility and members of the House of Commons were present. After the ceremony a meeting was held in front of Lavington House, the Bishop of Chichester presiding; and it was agreed that at the place where the bishop met with his accident a monument should be erected to his memory. A committee was appointed for carrying out this object.

A sepulchral monument in Winchester Cathedral has also been suggested.

The memorial, whatever it be, ought to be of a distinctively personal character, and so inseparably associated with his name. A memorial to mark the spot where the Bishop fell has been designed by Mr. Street.

* We have received a letter from Mr. F. T. Dollman announcing his intention to publish illustrations of this church; but as the letter has already appeared in the *Times*, it is quite unnecessary for us to print it.

OPENING OF ST. CHAD'S COLLEGE, DENSTONE.

This ceremonial has taken place in the presence of a large number of members of the Church of England in Staffordshire and the neighbouring counties.

The new schools—of the design of which we have already given some account—occupy an elevated site, which was presented by Sir Perceval Heywood, bart. Much remains to be done to fit the buildings for the reception of pupils in October. When completed, the school will afford accommodation for 400 students; but it is intended to endeavour so far to complete the building at an early date as to receive 100 students to commence with. The building is in the Early Decorated style of architecture, with high roofs and dormers. The ground plan resembles in form the letter H, there being two quadrangles, of which one side is left open, the connecting central building being the school-room block. The wings of the western quadrangle consist of dormitories and class-rooms, while those of the eastern quadrangle will consist of the chapel and the dining-hall. In fact, the college will closely resemble that already existing at Hurstpierpoint, where the same class of boys are educated as it is intended to receive into the new college. The dormitories—eight in number—will accommodate fifty boys each, the rooms being lofty, well lighted and ventilated, and commodious lavatories &c. being attached. Libraries and a gymnasium for the masters and boys will be placed in the south wing, while residences for the head master and second master occupy the ends of the north wing, rooms being set apart for the assistant masters, the chaplain, the provosts' visitors, &c. The dimensions of the great schoolroom are 100 ft. by 32 ft., with lofty open roof, and it will communicate with the dining-hall below by means of a wide flight of stone stairs. At the angles of intersection of the central and wing buildings are two lofty towers, in which are placed large water-tanks for the supply of the building. The whole building is of white Alton stone, with red bands, and the roof is of tiles. A bathing place will be provided on the river Churnet, which flows at the foot of the high ground on which the college stands.

DAMAGING MASTERS' PROPERTY.

At the Mansion House last week, John Bastin, a plumber, was charged with an act of wilful damage. The prisoner was in the service of Messrs. Hill & Sons, builders, and was engaged, with other workmen, in repairing the roof of the church of St. Nicholas Cole Abbey. On Thursday week he was detected in the act of spoiling and secreting a large sheet of lead, weighing 60 lb., about to be used in the repairs. When asked what he was going to do with it, he replied that he was about to get beer with it, as he was suffering greatly from heat. The value of the lead was about 12*s.*, and the prisoner had spoilt it very much for the purpose for which it was intended to be used, by cutting deeply into it with a saw. He was earning about 2*l.* a week at the time. The Lord Mayor, after consulting with Mr. Oke, the chief clerk, said he feared there was among some workmen a very loose kind of morality in dealing with their masters' property. This case was one in point, and he

urged the prisoner, and all whom it might concern, to let it be a warning to him for the future. Taking all the circumstances into consideration he fined him 50s. for the wilful damage, and 5s., the value of the lead he had spoiled, with the alternative of seven days' imprisonment. Before the court rose the prisoner paid the fines and was liberated.

NAME! NAME!!

Sir,—Having named every one concerned with the enlargement and restoration of Cheshunt Church but the architect, perhaps the *Builder* will name as such your obedient servant,

Joseph Clarke.

*** We print this note, but take the opportunity to say that we do not consider ourselves bound to publish the name of the architect of every work alluded to in our pages, or on all occasions the names of those who have been concerned in the execution of it. We have been no considerate in this respect. The fact is we have given a popularity to some of our *brother*-architects that they do not in any respect merit, of which good-natured proceeding some few of them, moreover, have shown when opportunities occurred but scant appreciation.

WISBEACH.

The town-hall here was recently reopened, after having been pulled down (except the front wall), and rebuilt on an enlarged and improved scale and plan.

The building now comprises spacious and lofty council chambers, magistrates' and committee rooms, police-offices and cells, lavatories, &c.,—the whole lighted by gas with sunlight burners. The works have been carried out by Mr. James Peet, of Melton Mowbray, from the designs and under the superintendence of the architects, Messrs. Mumford & Townsend.

FREEMASONRY, NATAL, SOUTH AFRICA.

Sir,—A building is now being erected in the capital city of the colony of Natal for the uses of the Masonic Lodge, Prince Alfred, No. 956. The building is intended to be used at once as a large-room, but when the circumstances of the lodge will warrant the building of a suitable Masonic Temple, the former will be converted to the purposes of a Masonic school. The designs are by Bro. G. Loveday, under whose supervision the building is now being erected. A notice of this in the columns of the *Builder* will greatly oblige the Masons in this part of South Africa.

John D. Burnett.

ASPHALTE AND WOOD PAVEMENT.

At the last meeting of the City Commissioners of Sewers, a report from the streets committee was brought up, recommending that Gresham-street, St. Ann's-lane, a part of the Old Bailey, Lawrence-lane, Bow-lane, and Wood-street, be paved with asphalte by the Val de Travers Company; that Old Jewry, Clement's-lane, Birch-lane, and Castle-street, Holborn, be paved with asphalte by the Limmer Company; and that, having considered the memorial of the inhabitants, they recommend that Houndsditch be repaved with either asphalte or wood. They also recommended an extension of the wood pavement in Great Tower-street and at the entrance of Seething-lane; and that a report be prepared by the engineer upon the condition of the asphalte pavements be printed for the use of the commissioners. A memorial (which was referred to the streets committee) was presented by Mr. Church, manager of the London Omnibus Company, and Messrs. Pickford, carriers, against the use of asphalte on any of the public thoroughfares of the City, on account of the danger and injuries caused to horses by its slipperiness. Some discussion took place, in the course of which it was moved that wood be laid down instead of asphalte, but eventually the recommendations of the committee were adopted. Mr. Church stated while before the commissioners that the number of horses that fell on wood paving was so few as not to be worth noticing. This is remarkable considering the complaints made while wood paving was tried on a former occasion, unless indeed we keep in view that few horses have just now any opportunity of either running or falling on wood pavement.

An experiment is reported in the *Manchester City News* as having been tried with Val de Travers asphalte as a fireproof material for roofing. The experiment was tried at the works of the Val de Travers Paving Company at Ancoats, Manchester, and is said to have been severe, and entirely satisfactory. Heat softened the asphalte, but it would not burn, and cold water immediately rehardened it, so that the flames did not even soften the asphalte where the water was thrown upon it. Representatives of various insurance companies were present.

ARCHITECT-CONTRACTORS.

At the Northumberland assizes, before Mr. Justice Brett, and a special jury, the case of Hepple *v.* Greener, turned upon the important question as to the right of *contracting* architects to commission upon the works contracted for.

The plaintiff, Mr. Hepple, claimed 250*l.* as architect's commission, at 2½ per cent., on works executed to the value of 10,000*l.*; and Mr. Crompton, who appeared for the plaintiff, contended that the mere fact of his client being the builder of the works, did not compel him to act as architect without being remunerated for his services. Had not Mr. Hepple acted as architect, the defendant would have had to retain the services of another gentleman, and paid him the 2½ per cent. on the 10,000*l.*

Mr. C. Russell, Q.C., said the defence was, that the works themselves were tendered for, and executed by the plaintiff, and he was paid for them, and there was no foundation for a further claim for architect's commission.

The Jury gave a verdict for the defendant.

CHURCHES OVER RAILWAYS.

Sir,—Your correspondent, "K." is in error when he states that St. Paul's Church, St. Leonard's-on-Sea, is built over the Hastings tunnel. This is not the case; the church is on the north side of the tunnel, and quite clear of it, as can be seen at any time.

By a map of the borough of Hastings, the figures marked thereon, showing the relative levels of places, show that there is a considerably greater distance than 100 ft. between the level of the rails and the floor line of the church.

A builder, who I believe knows, informs me that the soil on which the church is built is anything but "shifty and bad." Z.

Another correspondent writes:—

The church of St. Paul is not built upon the Hastings tunnel, the south wall of south aisle being nearly 20 ft from the north side of the tunnel. There is much vibration at times, but no settlements have occurred.

H. A. B.

MARGATE DEAF AND DUMB ASYLUM COMPETITION.

Sir,—Referring to the complaint by "A Competitor" in your last impression:—

The particulars of this competition now before me are dated 31st of March last, and early in April I, intending to compete, waited on the polite secretary, Mr. Warwick, at the offices in Cannon-street, and "bothered" him by a lot of questions such as these:—Will you make the following or any similar conditions, viz.,

1. Uniformity in the scale of drawings.
2. Exclusion of colour.
3. Exclusion of gold frames and plate-glass.
4. None or only two or three perspectives.
5. Professional assistance in judging of the plans.

But I found that no promises on any of these points would be made. The secretary accidentally mentioned *one* name of an architect, and as I *knew* he was very intimate with a leading member of the committee and his family, and Mr. Warwick expressed a hope that the number of designs sent in would be very small, I set myself to work to find out all I could about the chances of the named architect, and from all I learned I *drew* the conclusion that I should not *draw* the prize. Mr. Drewe has friends, as well as talent, and this is not his first competitive success; for do not the columns of the *Builder* of that date announce by an advertisement that on the 21st of Feb., 1871, two years ago, he won a competition for a school at Margate (since built), in which, by a coincidence, his own cousin, or his cousin's wife, was the judge. I am glad that in the "Asylum" matter I have not the right to subscribe myself,

Another Competitor.

Sir,—My attention having been called to a letter in your issue of the 2nd instant from "A Competitor," I beg to state that Mr. Drew "e," of the firm of Drewe & Bower, of Margate, is in no way related to the treasurer of this asylum, Mr. Beriah Drew (the names are spelt differently); and that the same remark applies to Mr. Watson, the second successful competitor, who is a perfect stranger to our principal, the Rev. Jas. H. Watson. A sub-committee devoted nearly a fortnight to examining the various plans, and agreed to their report without any difference of opinion; but in the interest of "perfect impartiality" it was decided not to present the same to the general committee until the opinion of some eminent member of the profession had been taken. To this end Mr. Thomas Henry Wyatt was invited to examine all the plans. Mr. Wyatt presented a report which enabled the sub-committee (without giving any further consideration to the subject) to recommend how the premiums should be awarded. I will only add that it was not till the general committee had most carefully considered the two reports that the sealed envelopes containing the mottoes of the successful competitors were opened, *and their names ascertained.* With this explanation I hope your readers will feel that the competition was conducted in the most honourable manner, and that (to use your correspondent's own words) the designs of the gentlemen referred to "were deservedly selected as the best."

W. H. Warwick, Secretary.

*** The publication of three other letters on this subject is rendered unnecessary by this very satisfactory statement from the Secretary.

MOVING BUILDINGS.

Sir,—In your remarks in reference to moving buildings in America, you mention my proposition to raise and move Northumberland House as by an American. I beg to say that I am an Englishman, born in Lambeth, London; but resided in America for some years, where I had the advantage of learning how to raise and move buildings on to new foundations.

Henry P. Pitcher.

FIREPROOF WOODEN HOUSES.

"Indurate or infect wood with fixed salt, sulphate of soda, common alum, green vitriol. Coat *all* the woodwork with a thin mortar laid on with a brush. Make this coat as thick as possible. Poplar will not burn."—*Times.*

Sir,—May I venture to draw attention to the above extract, and to ask some of your correspondents to tell me if the facts therein stated are true; or where I could obtain further information on the subject? Decent houses of wood, if tolerably fireproof, would, in the dearness of brick, be a great boon to working men. I have bought a bit of land close to Leeds, and purpose erecting at once a small house of wood for myself. As probably the prejudice against them will be great at first, I am therefore very anxious to obtain information on the point. E.

N.B. Is it true that poplar will not burn?

THE PALESTINE EXPLORATION FUND.

The Quarterly statement of this Fund, dated July, 1873, has been published at the Society's Office, 9, Pall-mall East, and by Bentley, of Burlington-street. The statement is an interesting one. Besides the reports of Lieutenant Conder and Mr. C. F. Tyrrwhitt Drake, it contains an account of the proceedings of the New American Society, and Notes on an Interrupted French Survey, on our Lord's Tomb, on the Hamath Inscriptions, on the "Second City" and the "Middle City," and on the newly-found Samaritan Stone; besides the Report of the Annual Meeting, and Lists of Subscriptions, Lectures, &c.

At the time Lieutenant Conder wrote his report,—

"The talk of Jerusalem, and of the travellers then crowding in and around it, was the great Shapira collection. Since last I wrote on this subject (he says) many important events have occurred. The collection has struggled through the first stage of disrepute and incredulity, and the German *savans* have distinguished this valuable and unique series from the clumsy forgeries so common in Palestine, ranking it with the Moabite Stone and with the Hamath Inscriptions. The expedition of Pastor Weser resulted in a great meeting of the Oriental Society, who elected him a member. The famous names of Hitzig and Rediger are now arrayed with that of Schlottman in defence of the genuineness of the pottery. Mr. Shapira has received the official position of an agent for the Prussian Government, and his first series of 911 pieces has just been bought by the Emperor himself, at a price, I believe, of over 1,000*l.*"

Mr. Shapira has since been able to lay the foundation of a second collection, containing already over 250 pieces, of a character, if possible, more curious than those formerly found, and daily almost growing in numbers.

The note on the newly-discovered Samaritan stone is by Mr. Pritchett, who says:—

"In Gaza there have been three Englishmen resident for eight years in charge of the telegraph station. One of them, my friend Mr. Nimmo, received me as usual into his house, and very hospitably entertained Mr. Hamilton also. Another, Mr. Pickard, produced the stone which you mention, and Mr. Hamilton forwarded a squeeze of it to England. The stone had been accidentally found by men who were digging old foundations out of the sand for building materials, and Mr. Pickard brought it from thence. There can be little doubt of obtaining more if proper measures are taken,—through Mr. Hamilton, for instance, who now knows the place and the people. The stone is carefully preserved by Mr. Pickard."

This is at present the only information given, except the squeeze itself, of the stone, forwarded to the Society by Mr. Dunbar Heath, to whom Mr. Hamilton sent it. The inscription is a passage from Deut. iv. 29–31. It has been suggested that the stone belonged to a Samaritan synagogue at Gaza.

THE ÆSTHETIC WANT OF WATER IN EDINBURGH.

Sir,—It is passing strange to note the far from sober sanitary efforts that are now made in Edinburgh for removing instead of improving the conveniences so much required near every crowded thoroughfare. The public are compelled by stern necessity to resort to the houses or shops of the much-abused spirit-dealers and publicans, where licensed sanitary arrangements are too often defective. *Gardy loo!* from the French *gardez l'eau!*—"Save yourselves from the water!"—was of old an Edinburgh cry, when all the sanitary arrangements of Auld Reekie were above board. Surely, now, with modern refined sanitary appliances, it is requisite for common decency that the Sanitary Amendment

Act of July 31st, 1868, should at once be extended to Scotland. Water enough might thus gladden our eyes, by giving a fresh charm to "gardens, fountains, palaces." Meantime the enormous waste of water by leaky pipes, defective apparatus, and otherwise, renders the costly abortive position of the Ross fountains upon the buried North Loch an absurdity. Just fancy the nude naïads sitting on their unsavory stagnant basins, and think of the old warning, nasty water-cry of this city,—"*Gardy loo!*" recalling to mind the words of the poet Prior:—

> "I know we must both fortunes try,
> And bear our evils, wet or dry."

However, citizens and visitors alike demand in these days that some effort should be made during this holiday season to cover with a generous spray of water the graceful naïads, whose nude forms might then be gazed on with pleasure, when seen through the water rescued from utter waste to sparkle in the sun. It has been proposed to remove this unappreciated Edinburgh fountain to the meadows, the site of the South or Borough Loch, where any such artificial water display would be as much out of place over the buried South Loch as at present it is over the North Loch, amidst grass and foliage. It is in the dry and dusty streets, and the excessively over-architectural dreary squares, circuses, and crescents of Edinburgh, that the lively, living, leaping spray of clear fountain-water is wanted. How much would such rejuvenate some of the open breathing-spaces in the older parts of the venerable dirty town now undergoing transformation. Why not a Scott Fountain in Chambers-street?* And by way of wakening up the Knox Memorial Committee, I would humbly suggest that the great image-breaker should have an ever-flowing fountain reared to his memory near St Giles's Kirk.

J. K.

WORKMEN'S TRAINS.

SIR,—Much loss and inconvenience is felt by workmen engaged in the City, through the discontinuance of the *early trains* on the District Railway. The *times* they run now may suit tradesmen and costermongers going to market, but to workmen (more especially those in the building trade), they are of no service. Perhaps it may be necessary to inform the directors that we are still old-fashioned enough to commence work at six o'clock in the morning. To do so many of us have to walk an hour, some an hour and a half, to reach our employment, a task sufficient to take the "steam" out of any man before commencing his day's work; indeed, many, rather than do it, submit to the loss of half an hour every morning, and travel by the train that arrives at the Mansion House about 6·30, thereby running the risk of being discharged. This is not as it should be, because the construction of this railway has displaced many of our homes, making it more difficult than ever to obtain dwellings near our employment, and surely the company ought to carry us over the "gap" they have thus created.

GEO. WYETH.

PROFESSIONAL INQUIRIES.

SIR,—Your correspondent "A." (page 590) asks "if there is anything unreasonable, or out of the usual course of the profession, in an architect providing bills of quantities for certain works, and notifying the surveyor's fee at the end of the said bill."

Now, the contract system having rendered it necessary for quantities to be furnished to builders, a considerable number of architects, more especially in the provinces, have adopted the practice now in question, and, where there has existed the necessary amount of skill, no great risk of evil has resulted from it. There are however, obviously, openings for irregularities in the hands of dishonest and incompetent persons; and therefore the schedule of rules for professional practice and charges of architects published by the Institute, and confirmed by the last general conference of architects, contains this clause:—

"When an architect supplies builders with quantities on which to form tenders for executing his designs, he should do so with the concurrence of his employer; and it is desirable, when practicable, that the architect should be paid by him rather than by the builder, the cost of such labour not being included in the commission of 5 per cent."

In my humble judgment, this clause fails to hit what it is aimed at; for the question of prime importance is not whether the builder should hand over to the architect or to some other person a definite amount which he must hand over in full to one or another; nor yet whether the builder, with the concurrence of the employer, or the employer himself, should pay the architect; but whether the architect should furnish quantities under conditions which leave a possibility of disputes between himself and the builder, or between the builder and the employer. However, that may be, the number of respectable architects who have followed the system, though not large enough to give it sanction in the face of such an expression of opinion as that of the Institute, has been too large for one to say that it is "unreasonable or out of the usual course,"—the usual course, that is, of those architects who are able to take out quantities.

He asks also, "*Provided* the builder *requires* a second set of drawings and specification, is the architect justified in making an extra charge for the same?" He is clearly entitled to make a fair charge if he supplies them, and it is so much better that he should do so than that the builder should have to make his own set that this ought to be left in the discretion of the architect.

B.

ASPHALTE ROADWAYS.

SIR,—On Tuesday morning about noon, say 12h. 15m. p.m., I saw four horses prostrate in Fenchurch-street; all belonged to separate vehicles of the wagon class, and they lay within the space covered by about twenty houses. The first fall caused a block, but there had been no collision.

As usual, a slight drizzling rain came, and the roadway was immediately covered with a thick, unctuous, glutinous mud, far worse than ice for iron-shod horses.

A. H.

SIR JOSEPH WHITWORTH'S PRIZES FOR THRIFT ESSAYS.

OUR readers know that Sir Joseph Whitworth has offered prizes of the value of 100*l.*, to be awarded by the Society of Arts, for the best essays on the "Advantages that would be likely to arise if railway companies and limited companies generally were each to establish a savings-bank for the working classes in their employ." With this offer Sir Joseph Whitworth makes the following remark:—"I think it will be admitted as desirable that one-third of the period of man's existence should, if possible, be spent free from the necessity of labour and toil. The middle period of life is, therefore, the time when man's energies should be put forth, and the greatest amount of work should be done that strict obedience to the laws of health will permit. The experience of industrious men goes to prove that the most pleasurable existence is insured by following this course. It is, therefore, wrong, in every sense, for the Amalgamated Engineers and other trade-unions to combine and endeavour to compel young and middle-aged men, in the prime of life, to limit and reduce their hours of labour to the extent now being attempted, and thus prevent them from saving so much, and laying it by for that period of life when man's energies begin to fail, when work becomes irksome, and when rest is necessary in order to pass a comfortable existence. May not the case between the industrious working man who saves part of his earnings, and the man who is reckless and will not save part of his earnings, be fairly stated thus?—That the man who does not save when he is in health and strength, robs the man who does save, because the law compels him to support those who have not saved, and to bury them when dead." There will be two prizes, 70*l.* for the best, and 30*l.* for the second best essays. The essays must be sent to the House of the Society of Arts, Adelphi, London, addressed to the Secretary, on or before December 1st, 1873.

Kent County Asylum, Chartham, near Canterbury.—Tenders have been received for the above building from a number of contractors invited by the architects, and that of Mr. Furniss, of Victoria-chambers, Westminster, for the first portion of the work, is accepted, the amount being 98,500*l.* The architects are Messrs. John Giles & Gough, of Craven-street, Strand.

CHURCH-BUILDING NEWS.

Woodmancote.—The parish church of this pretty little village, situate between Henfield and Poynings Crossways, has been recently re-opened after restoration. The original edifice consisted of three styles of architecture, but the restored church has been adapted to one style, namely, Early English. The present rector having determined upon restoring and improving the church, set to work in 1869, and called to his aid the services of Mr. H. Woodyer, architect, of Graffham, Guildford, whose plans, after receiving the approval of the Bishop of Chichester, the Archdeacon, and the Diocesan Association, were accepted by the parishioners. The work has been carried on with vigour. The additions which have been made from time to time to the old structure have been removed; the chancel has been enlarged; the floor relaid (with mathematical tiles) and re-boarded; a new oaken screen put up; an old gallery removed; and the old high-backed pews have been replaced by modern benches, the seats in which are free and unappropriated. Several mural tablets decorate the interior, but the light, especially in the chancel, is bad, owing to several large trees at the north-east end stretching out their long branches till they rest against the windows. The branches might be lopped or thinned.

Abingdon.—St. Helen's Church has been re-opened, after having undergone a restoration. The alterations and improvements which have been carried out at the church are considerable, and the edifice, previously to the work being commenced, was in a dilapidated and dangerous condition. The chancel has been rebuilt, at the expense of Archdeacon Pott and his family. An east window has been inserted, and will ultimately be fitted with stained glass. The old reredos has been removed to another portion of the church, where it has been placed to the memory of two brothers, namely, G. A. Gibbs and S. V. Gibbs. Costly hangings have taken the place of the reredos, and the altar is vested. The chancel, which is paved with encaustic tiles, is divided from the nave of the church by an oak rood-screen, in the centre of which is a large carved cross of the same material, all new; and the side aisles are also separated from the chancel by decorated screens, composed of oak and stone. Temporary seats now occupy the place in the choir which it is intended to fit up with benches. The roofs in the chancel and centre aisle are new, and are lofty; the former has received embellishments, in the shape of carving, shields, &c. The piscina and sedilia are in keeping with the rest of the work, the whole of which has been carried out with a regard to the style of the architecture of the church. The roofs of the side aisles, which are flat, are either new or have been improved. There being no clearstory windows in the chancel, the woodwork of the roof has been extended on each side of the walls, so as to form arches. Eventually the rood-screen, which separates the east end from the body of the church, will have a gallery erected over it, with pierced parapet of open tracery work, with five niches, in which will be placed figures. The west wall of the church has been rebuilt, and a new window placed to the memory of the Hyde family, the expense being defrayed by the late Mr. John Hyde, of Caldecot House. The supporting columns throughout the edifice have had fresh bases put to them, besides being otherwise improved. The font is of white marble, mounted upon Forest of Dean stone steps in the form of a cross; it was executed by Peyman, and was on view at the first Exhibition. The old oak pulpit has been utilised and placed upon a stone basis just outside the chancel. The seats are all new, of yellow deal stained and varnished, and of modern shape. The church will be lighted by the old chandeliers, which have been suspended from the roof by illuminated rods, and are now adapted for gas. In the chancel will be placed two standards, one on each side of the altar, to burn gas. The other improvements are too numerous for detail. The restoration has occupied about two years. The total cost of the work is estimated at 7,000*l.*, towards which between 5,000*l.* and 6,000*l.* have been collected. The architect employed was Mr. W. Woodyer, of Graffham, near Guildford, whose designs have been carried out by Mr. Williams, of Abingdon, builder. Mr. G. Redfern acted as clerk of the works. The carving was executed by Messrs. Nicholls & Lovegrove.

Cleethorpes.—A reredos has been placed in St. Peter's Church, under the superintendence

* The birthplace of Scott was in College-wynd, now Chambers-street.

Mr. Fowler, architect, Louth, executed by r. Buddock, of London. It is in carved Caen one with four panels, filled in with glass osaic, and erected to the memory of the late mes Dickson by his widow.

Burstall (near Ipswich).—The church of St. ary has been reopened. Three years ago storation to the roof of the nave and improve- nts in the chancel took place, and now the storation of the nave of the north aisle has en completed. The roof of the nave, which as restored in 1870, has four of the hammer- ams finished by carved angels, two of which e work of Mr. T. Stopher, Ipswich) have just en fixed. It is to the roof of the aisle that the rk just completed has been done. This roof as in a very dilapidated condition; for its sup- rt there were unsightly iron rods, but they re not equal to the task, and it is questionable ether a heavy fall of snow would not have ought the whole roof in. All the principals re decayed, and these have been renewed, d, in fact, a new roof put on, with a stone ping outside, the cost being about 100*l.* Mr. Barnes, Ipswich, was the architect, under om all the alterations in the building have en carried out; and Mr. Welham, Hintlesham, e builder.

Welton.—A chapel-of-ease at Welton, in the rish of Sebergham, near Carlisle, has been nsecrated. The church is a simple little ilding in the Early style of Gothic architec- re, and may be classed as an economical speci- n of those village or mountain chapels of ich we have lately written. Provision is made r ninety-six sittings, and the church stands on south side of the village, and is built of red dstone. That for the walling, which was en by the rector, is from the Sebergham arry, and the dressed stonework, which is of larker red, is from the well-known quarries Shalk-foot. It is roofed with Westmorland en slate from Mr. Postlethwaite's quarries, l shows externally as one continuous roof, h a small belfry at the north side of the west l, and a gabled vestry on the south side. On north side it is intended to build a porch, for ich funds are now being collected. The dow joints and arches are all of dressed ne, and the roof is open-timbered. The nave seated with a simple form of open seats of nished pine; but the fittings of the chancel of wainscot, the sedilia being, as the brass- te on it indicates, the gift of Mrs. Richardson, Dalston. The floor is tiled. An arched recess been provided for the organ, for which the ney has already been raised. The church been carried out from the design of Messrs. y & Ferguson, of Carlisle, architects, at a t of about 800*l.*; the mason work being done Mr. Wilson, of Gaitsgill; and the carpentry joinery by Mr. Pearson, of Wigton.

Freemantle.—At a recent meeting of a com- tee, formed for the erection of a new spire Freemantle Church, Hants, Mr. Bunney ted that he had been unable to get the bills quantities ready, adding that it was his nion it was too late in the year to begin the k, it being so near the time when the ather was likely to be unsettled. A discus- n ensued; and in reply to a question, Mr. ney said it would take three months to com- te the work, even if they had favourable ather. Mr. Ingram inquired if it could not done in two months, to which Mr. Bunney lied that it was impossible, in his opinion, as nust have time to set. It would cost more ney to begin it now, and, so far as he was cerned, he should require 50*l.* more to com- nce now than if it was begun in the spring. ch disappointment was expressed at this ult, Mr. Bassett saying that they might have ertised for tenders in next Saturday's papers he bills of quantities had been ready, and gested that they should obtain the opinion Mr. Scott, the architect, as to the advisability ommencing the erection now, and be guided his reply. This was agreed to.

Tomby.—The church of St. Mary, at this ce, has for a long time needed considerable toration. The east window is damaged, and figured by being cut through with the ceil- of the chancel. At the request of Mr. V. y-Elwes, the lord of the manor, the vicar ed the principal inhabitants to meet and ide what should be done. Plans, prepared Mr. Fowler, of Louth, were examined, and it s agreed that, with some few alterations, y should be adopted. The lord of the manor, vicar, and the churchwarden, were appointed ommittee to receive subscriptions, and carry out the restoration. The estimated cost is 1,300*l.*, and 1,075*l.* were promised at the meeting, of which the lord of the manor gives 500*l.*, the vicar, 200*l.*, and Mrs. Cary-Elwes, 100*l.* Considerable alterations and improvements have been lately made in this village, and several pairs of new cottages which give better accommodation to labouring men, have been erected.

Cromwell.—The parish church, after having been closed for some months for restoration, has been reopened. Both nave and chancel have been restored internally. The chancel appears almost as if it had been rebuilt. In removing a door a portion of the south wall gave way, and exposed to view two arches belonging to an ancient chancel aisle, which the rector decided on rebuilding, and this has been carried out. The chancel roof and east window are new,—the new roof being an open one of pitch pine, and the east window a large one of a Flamboyant character, there being one of that sort already in the chancel; and as no old tracery of the former east window existed, it was decided by the architect to fill the old head with tracery of that description. The floor of the chancel has been considerably raised, and laid with encaustic tiles from the manufactory of Mr. Godwin, of Hereford. The architect for the whole was Mr. H. Parr, of Muskham; and the builder, Mr. H. Clipsham, of Norwell.

Welland.—The roundation-stone of a new church has been laid at Welland. The walls of the new building are up to a height of 10 ft. at the east end, and 2 ft. at the west end. The work is expected to be completed in the course of next summer; the total cost will probably be between 3,500*l.* and 4,000*l.* The building will seat nearly 400. It is being erected as near the centre of the parish as possible, namely, at the junction of the roads leading from Worcester to Gloucester, and from Ledbury to Upton. The site, the extent of which is about half an acre, was presented by Mr. Watkins, of Woodside Farm. The architect is Mr. John West Hugall, of Oxford; and the builders are Messrs. Wall & Hook, of Brinscombe, near Stroud; the foreman, Mr. Day.

DISSENTING CHURCH-BUILDING NEWS.

Middlesbrough.—The foundation-stone of a new Welsh Congregational Church has been laid upon the site in Marton-road, Middlesbrough, by Mr. Joseph Dodds, M.P. for Stockton, in the presence of a large number of spectators. The chapel, exclusive of land, is to cost 2,125*l.*, about half of which sum has been raised. The chapel will be of the Corinthian order, and will seat 500 persons. There will be a school-room underneath for 300 children.

Henley.—The foundation-stone of the new Wesleyan Chapel, in Duke-street, in this town, has been laid. Messrs. Cattermole & Eade, of Ipswich, are the architects. The building, which is commenced, is in the Gothic style of architecture, and will be capable of seating about 160 persons, and also give accommodation for a vestry-room, provision being made for its future enlargement if required, and space reserved for the erection of suitable schools.

Norton.—The corner-stones (four) have been laid of a new Free Methodist Chapel and School at Norton, the former of which is intended to seat 300 persons, and the latter to accommodate 300 children. The new building is expected to cost 800*l.* to 850*l.* The contract has been taken by Mr. Ward, of Middlesbrough, Mr. Frazer undertaking the masonry, and Mr. Ventress the joiner work.

Guilden Sutton (Cheshire). — A Primitive Methodist Chapel has been opened at Guilden Sutton. The chapel occupies an elevated position, directly in front of the road leading to Chester, the land having been given by Mr. R. Smith. The building is of brick, with blue and white bands and stone dressings. The entrance is by means of a porch at the side, and the front to the road is that of a gable, with two two-light windows in the lower portion, divided by buttresses, and a circular one above. On the one side there are three two-light windows, and on the other side two; the window having been glazed with rolled glass, except the circular window and quatrefoils, which are tinted. The bareness of the plastered walls is relieved by a white label, running over the pointed window-heads and round the building, and there is an ornamental wood cornice at the eaves course. For the woodwork throughout, pitch pine, burnished, has been used; the seats being open with sloping backs, and in front, at the carved desk for the minister, is open arcading. The chapel will accommodate about 120, and, with the addition of the vestry, which can be utilised by opening the folding-doors which separate it from the chapel proper, the accommodation can be increased to 150. The total cost will be probably 450*l.* Mr. Rawlinson was the architect; Mr. Vernon, the builder; Mr. J. Duckers, the stonemason; and Mr. R. Jones, the joiner.

SCHOOL-BUILDING NEWS.

Darlington.—The Skinnergate schools, Darlington, have been reopened. These schools, which were established about fifty years ago, and have been carried on in connexion with the British and Foreign School Society, have lately been transferred to the local school board, who have improved them. An additional entrance has been made from Powlett-street, and two large playgrounds have been added, covering together 1,300 square yards. These grounds have been fitted up with sheds and other conveniences for the children. The work has been carried out under the superintendence of Mr. Robinson, architect, at a cost of 306*l.* Of this sum, however, only 187*l.* have been incurred by the School Board, the recreation-sheds in the playgrounds being the gift of Mr. H. Pease and Mr. Grieveson, the boundary wall being erected by Mr. Arthur Pease. The schools are for boys and infants.

Heaton.—The new Baptist schools, Heaton, have been opened. The building is a plain structure of one story. It has been erected on a plot of ground in close proximity to the Baptist chapel and cemetery, Paradise-street, and is placed some distance back from the road, being approached by two flights of stone steps. The main schoolroom measures 52 ft. by 35 ft., and is divided by a low partition into boys' and girls' divisions. This room has also a platform at one end, and is made suitable for holding lectures, meetings, &c., being capable of accommodating 400 or 500. In the front of the large room are two class-rooms for select classes, each 15 ft. by 11 ft., and an infants' room, 22 ft. by 15 ft. There are also superintendent's rooms and lavatory in the rear. The walls of the class-rooms are wainscoted to a height of 4 ft. Underneath the school-room is a cottage for the school-keeper. The whole of the rooms are warmed by a hot-air apparatus. The total cost of the school, including the ground, will be about 1,383*l.* 10*s.*

STAINED GLASS.

All Saints', Pocklington.—A stained-glass window, executed by Mr. J. W. Knowles, of York, has been inserted in the south side of this church, as a memorial of the late Rev. F. J. Gruggen, M.A., head master of the Grammar School in this town. The window consists of two lights, in each of which is a single figure standing under a canopy of the Decorated style of architecture. In the dexter light is a representation of Moses, with the tables of the law in his hand, in the attitude of teaching; and in the sinister light is "Aaron, robed in the garments of the high priest, and holding a thurible in his hands, as in the act of intercession." The cost, including the stone work, is about 40*l.*, the greater portion of which has been promised.

PATENTS CONNECTED WITH BUILDING.

SMOKE IN FIRE-GRATES.—*T. Blocksage.* Dated 18th November, 1872.—This invention relates to ordinary or domestic fire-grates or stoves, and consists in applying thereto hollow air-conductors, preferably formed of fire-clay, which rest upon the grate and conduct air into the midst of the burning fuel.

MANUFACTURE OF PARQUETRY.—*S. W. Worssam.* Dated 18th November, 1872.—For the purpose of edging and grooving the separate parts, the inventor combines on one machine two rotary cutters, one for grooving, the other for edging, whereby the operations of grooving and edging are effected at one traverse of the wood. Or, if desired, a single cutter-block, with suitable cutters may be employed for effecting the combined operations of grooving and edging, or of tonguing and edging, in which case he employs a double set of tables and guides, so that two operatives may work at the same time at one machine. For surfacing, he takes a square of parquetry and fixes it to a revolving disc fixed to an axi

carried by a poppet-head. In front of this disc he fixes a cutter for acting upon the face of the wood.

Roofs, &c.—*J. Riley.* Dated 19th November, 1872.—In constructing roofs and other parts of buildings of corrugated metal the inventor fixes upon the framework of the roof or other part to be covered series of rows of hooks, and upon the underside of the corrugated metal and spanning the corrugations a band or bands of metal, which when the metal is laid acts as "eyes" to the aforesaid hooks, thereby securing the metal to the framework. Where the upper edge of each successive layer of metal overlaps the next upper serial row of hooks rectangular portions are cut from the said layer exposing the hooks and allowing the bands, spanning the under part of the next layer to engage with the hooks so exposed. When the roof is covered the metal is made fast at the outer edges by screws as described in the specification.

Books Received.

The Trustees' Guide. London: Edward Stanford.

The second edition of "Cracroft's Trustees' Guide," just now published, contains a large amount of condensed and carefully digested facts, and will be found of great assistance by trustees and others desiring investments. It includes particulars of more than a thousand securities.

A Handy-Book on the Ecclesiastical Dilapidations Act, 1871. By Edward G. Bruton, Diocesan Surveyor. 2nd edit. Rivingtons, London. 1873.

In the first edition of Mr. Bruton's book the Act was set forth in spirit, but not literally. In the second, just now published, the author has wisely given the Act *verbatim*, together with a copious analytical index and the Amendment Act of August, 1872. Forms for working the Act are also printed, and make the little volume additionally useful to all interested in the matter dealt with.

VARIORUM.

Some particulars of the newlaboratories of the Natural History Museum, Paris, are published, with an illustration, in *Nature* (for July 17th). ——Under the title "Bargarran's Daughter," Mr. William Gilbert has given, in the *People's Magazine*, a very interesting and instructive account of Christian Shaw, who did so much to facilitate the manufacture of thread in Paisley, and so to lead to the setting up of looms in that town and other parts of Scotland. The total number of spindles at present working in Paisley alone exceeds 120,000.——*British Battles on Land and Sea*, by Jas. Grant; *The Races of Mankind*, by Robert Brown, M.A.; *The Bible Educator*, edited by the Rev. E. H. Plumtre; and *The Popular Recreator*, are amongst the serials which continue to reach us from Messrs. Cassell & Co., and are all useful publications. ——*Cassell's Magazine* for August has a pleasant simple story, called "Gretchen," delightfully told by MM. Erckmann-Chatrian.——Cassell's *Household Guide* shows how to remove stains caused by scorching:—"For whitening scorched linen, it is often sufficient to wet it with soap-suds and lay it in the hot sun. Another method is, where milk is plentiful, to put 1 lb. of white soap into a gallon of milk, and boil the scorched article in it. Another plan is, to squeeze out the juice of two middle-sized onions, which is boiled in half a pint of vinegar, with 1 oz. of white soap and 2 oz. of fuller's earth: the mixture is applied cool to the scorched part, and, when dry, washed off with clean water." ——The *Art Journal* for August includes an illustrated paper on Ancient Stone Crosses. The writer says:—"There were probably not fewer than 5,000 crosses in England, of the kinds already indicated, at the time of the Reformation; and though they may admit of some such classification as that now attempted, they must have been erected for many other objects and on many other occasions than have been enumerated. There were some crosses, for example, that were supposed to have peculiar claims on certain classes; like one at King's Weston, in Gloucestershire, most beautifully situated on the Severn, at which sailors paid their devotions after a voyage. This cross was celebrated far and wide, and a judicious hole was cut in the stone to receive contributions of those who had profited by it, or hoped to do so. Indeed, I am indebted to Canon Lysons, of Gloucester, for furnishing me with the following extracts, which show how universal, even at an early period, the use of the cross was:—'Tertullian (*de corona militis*), writing A.D. 199, or 120 years before the conversion of Constantine, to which period most writers have been in the habit of tracing the use of the cross, writes,—"At every commencement of business, whenever we go in or come out of any place, when we dress for a journey, when we go into a bath, when we go to meat, when lights are brought in, when we lie down or sit down, and whatever business we have, we make on our foreheads the sign of the cross." And Chrysostom, in 350, says,—"In the private house, in the public market-place, in the desert, on the highway, on mountains, in forests, on hills, on the sea, in ships, on islands,"' &c. This last quotation is extremely suggestive of the great variety of places where we find them."——The *Garden* takes up an old theme of ours, trees in the London streets, and says:—"What a noble effect might be created between the Marble Arch and Notting Hill-gate by an avenue of trees. They should not be allowed to form a monotonous row, all of the same kind, elms, or horse chestnuts, or Oriental planes, as has been hitherto the too common custom, but should consist of various kinds of suitable free-growing trees, among which many of the nobler tree-forms of the American forests (many of them with magnificent pinnate foliage) might be selected, as several of them flourish freely in the London atmosphere. Of course, the horse-chestnut, the elm, the spreading poplars, the Oriental plane, and even the lime (though its foliage fades so early in London), should none of them be neglected; but there are grand American trees, too little known in our English plantations, as well as trees of other climates, which would in all probability succeed admirably; and if, after due trial, they failed, they might easily be replaced by other novelties; the kinds to select from being, instead of restricted in number, as some might suppose, so extremely numerous as to form a positive *embarras de richesse*. The charm of merely single trees, in some of the blackest and narrowest of the City thoroughfares, is felt at once in early summer to be a soft and beautiful relief to the eye, the impression of the softening beauty being instinctively felt, even by such as are unconscious of the source of the pleasant influence which is cheering them on their way."

Miscellanea.

Casting Metals.—Messrs. W. Wilkinson & G. E. Taylor, of Birmingham, have patented some improvements in machinery or apparatus for casting metals. The invention consists of machinery or apparatus to be used for casting long or continuous ingots, bars, or strips of metal, to be afterwards rolled into plates or drawn into rods or wires. The said machinery or apparatus consists essentially of a nearly vertical travelling or endless mould, composed of two series of endless bands of jointed plates supported by and working over drums or pulleys. The plates of one series are of a trough form, open at both ends, and the plates of the other series are flat. The said two series of endless bands of jointed plates are so arranged with respect to each other that, in their descending motion, they are brought together and constitute an endless mould, and in their ascending motion they are separated from one another. The flat plates are pressed into close contact with the trough-shaped plates by springs. The two series of plates are geared together and worked by racks and pinions. In using the machinery a temporary bottom is fixed in one of the trough-shaped plates, and motion being given to the endless bands of jointed plates, molten metal is poured into the apparatus through a funnel fixed at the highest point of the machine. The ingot or bar formed by the solidification of the metal passes out at the bottom of the machine, the temporary bottom of the mould passing out in front of the ingot or bar.

Holyhead Harbour and Works.—The Prince of Wales has fixed Tuesday, the 19th of August, as the day upon which his Royal Highness will formally declare the public works at Holyhead Harbour completed.

Postage of Newspapers.—Some useful in formation and valuable hints respecting th postage of newspapers for transmission abroa is given in the Postmaster-General's report ju issued. It seems that last year nearly 600,00 newspapers, posted for abroad, had to be stoppe in their progress owing to insufficient paymer of postage. Many persons appear to think th a penny, or even a halfpenny stamp, will carr a newspaper of any weight to any place wha ever, whereas, as the Postmaster-General point out, no newspaper can be sent abroad for halfpenny; and it is only to certain countrie and by certain routes, and when the weigh does not exceed a quarter of a pound, that eve a penny will suffice; while, as a rule, unless th full postage is prepaid, the newspaper cannot b forwarded at all. As the post-office has gen rally no means of ascertaining who are th senders of newspapers insufficiently paid, copi are necessarily destroyed, and thus not only th newspaper but also the sum paid upon it sacrificed. It cannot, says the report, be to strongly impressed upon persons sending new papers to their friends in the colonies, and oth places abroad, that the halfpenny rate is appl cable to inland newspapers only; that on new papers going abroad the lowest rate is o penny, and that when the weight of any sue newspaper exceeds four ounces, the lowest ra is twopence. The neglect of another rule,—vi that fixing eight days from the date of publica tion as the limit within which a newspaper ma be posted for foreign transmission,—also leads the loss of a large number of newspapers, sus number last year having been more tha 100,000.

Bucks Archæological Society.—This S ciety, which is in a very flourishing conditio and has for its patrons nearly all the leadi men in the county, has taken its annual arch diaconal trip. The Prolocutor of the Low House (Archdeacon Bickersteth) acted as ci rone. The *cortége* was not very numerous, more than half a dozen carriages, at the outsid being brought into requisition. Nor was thi more than a fair sprinkling of ladies. Still, t expedition was a success, the day being fine, a some of the churches being models of antiqui The first halt was called at Dunton Church, t whole party alighting, and inspecting all t objects of interest. The party then proceed to Stewkley. The vicar seemed to think enlargement was absolutely necessary. T archdeacon, loth to see so fine a church deface suggested a chapel of ease, but the vicar thoug the parishioners would hardly take kindly their proposed domicile. From Stewkley t company proceeded to Soulbury, and from So bury to Liscombe, where the party partook refreshments. From Liscombe House and hospitable entertainer, the party went to L combe Church, and then proceeded to Linsl school-room, where the meeting proper may said to have taken place. There was, howev very little speaking. Dr. Lawford exhibited number of interesting local relics of the Rom occupation. After re-electing the vice-pre dents, among whom are Mr. Disraeli, the Du of Buckingham, Sir Harry Verney, Mr. Du Pre, &c., and appointing a treasurer a secretary, the party returned to Aylesbury way of Wing, having spent an enjoyable day.

The Improved Industrial Dwelling Company.—The twentieth half-yearly meeti of the members of this company has been held the Mansion House, Lord Mayor Waterlow, w is also the chairman of the directorate, presidi There was only a small attendance. The repo for the last half-year was read. In it t directors recommended the payment of the usu dividend of 5 per cent. per annum, free income-tax, which would absorb 3,347l. 17s., a leave a balance of 2,939l. 12s. 3d. Contract had been entered into for the erection of seven five dwellings on the sites in Commercial-roa Whitechapel, and where works were then in pr gress. The additional site in Pimlico-roa offered by the Marquis of Westminster, had be secured, and plans of 121 dwellings and fo shops approved, and steps were being taken obtain estimates for carrying out the san Thirty additional dwellings were also being bu on the Bethnal-green estate. The buildings be erected this year would therefore accomm date 230 families, or about 1,100 persons. was intended to introduce into these buildin some further improvements in the domestic rangements and conveniences. The report w adopted, and the proposed dividend declared.

The Builder.

VOL. XXXI.—No. 1593.

*The Welsh Cathedrals.**

LWAYS has the British, or Celtic, Church prided itself upon its priority to the Romish Church. St. Peter carried the Christian religion to Rome in the second year of the reign of Claudius, while Britain, it is always asserted, was in possession of the new faith while the Emperor Tiberius was living, some five years before the apostle visited the city of the Cæsars. Gildas is the great authority quoted in support of this tradition. He says,—"We know that in the latter end of Tiberius Cæsar's reign, when this island frozen by its distance from the visible h, Christ, the sun of righteousness, the true n, not from a temporal, but from an eternal rnament, was first pleased to communicate his rs, that is, his precepts, to our inhabitants, d fast, by some with more or less fervency, the hot days of Diocletian." Upon this ssage the most far-fetched speculations have en raised. Who communicated these rays, or ccepts, in this early time? asked the monkish olar of old, as he transcribed the chronicle, well as the antiquary of more modern times, he sought out the statement of the ancient torian. Was it Joseph of Arimathea? He st have left Jerusalem to avoid questioning the Jews, or we should have heard more of n, they urge. Or, was it St. James, the son Zebedee, who, it was averred, came to Britain h his mother Salome, about six years after Resurrection? Or, Simon Zelotes, who came ut four years after they did, and perished at hands of the Druids? Or, was it Aristo-us, the brother of St. Barnabas, who was t to Britannia as bishop about the year 51? was it St. Paul himself? When St. Paul in Rome, he was entertained by a noble ish lady, Claudia Rusina, and what is more ly than that he was influenced by her to ceed to her relations and countrymen in ain and preach the word of life to them? uncertainty as to the means of communica- by no means detracts from the honour of fact; and in virtue of it the British clergy ained precedence over the Romish clergy at ods they attended in very remote times. To e minds, the present Welsh cathedrals are ested with a certain interest from the force his tradition. It is supposed there were, at , seven suffragan churches in Wales, under archbishop at Caerleon. But after the mities endured at the Saxon invasion, eccle-tical affairs were gradually rearranged, and cathedrals now represent the reduced er. These four buildings,—Llandaff, St. id's, St. Asaph, and Bangor,—are minutely described in a fifth volume of Mr. Murray's "Handbooks of Cathedrals," which we now introduce to our readers. It comes at a very fitting moment, as some of the cathedrals have just now been reopened, after considerable work upon them, as mentioned in another page.

Are there any structural remains of the small churches that were first raised by the founders of the sees preserved in the present buildings? None whatever, we must reply, should this question be asked. All four of the Welsh cathedrals were rebuilt in Norman times, and subsequently extended. One of them was completely rebuilt at the end of the thirteenth century; and another, after being rebuilt in Plantagenet times, was laid waste in the rebellion of the fifteenth century, and raised up again in the Late Perpendicular period. The Norman bishops of Llandaff and St. David's effaced the small fabrics raised by their canonised predecessors as effectually as the Norman prior of Lindisfarne effaced the Saxon church that succeeded the temporary structure erected on the Holy Island by the first missionaries from Iona; but, as he did, they included the hallowed sites within the boundaries of their new buildings. In the case of St. Asaph's Cathedral, the present edifice is so small, that it is not unlikely that the Norman successor of the first British building covered the same extent of ground. It is but 182 ft. in length and 68 ft. in breadth, including that of the aisles with the nave, and is the smallest cathedral in Great Britain. It differs from the other three Welsh cathedrals in occupying the summit of a ridge that rises between the two valleys of two rivers, the Clwyd and Elwy. Llandaff, St. David's, and Bangor all lie in low, sheltered places. A Norman bishop was appointed to Bangor, as to the other Welsh sees, but he appears to have been received but coldly, if not in a hostile manner, by his flock; and, until the recent restorations, the only structural evidence there was that he, or his immediate successors, attempted to improve the structure, was a Norman fragment in the south wall of the chancel. Bishop Anian, who was the favoured prelate chosen to baptise the infant Prince of Wales, born in Carnarvon Castle, appears to have built this cathedral from the ground, with the exception of the Norman fragment mentioned, and patches of Norman masonry left here and there as a core to Decorated work. But, although there are no structural remains earlier than the Norman era, there are, in each case, traditions of much greater antiquity, which have been duly noted by the author of the handbook, Mr. King.

The see of Llandaff, for instance, is fortunate in the preservation of a MS. entitled "Liber Landavensis," which contains mention of grants, charters, and records connected with it from its foundation to the year 1131. It is believed to be the work of Geoffrey, the brother of the first Norman bishop, Urban. From this we learn that the first bishop of Llandaff was Dyfryg, or Dubricius, the prelate said to have crowned King Arthur. Like most of the Welsh saints, he was a scholar, and presided over about 2,000 clergy, whom he instructed. One of his scholars, Teilo, succeeded him. This saint, accompanied by David and Padarn, went to Jerusalem, and was there consecrated, according to the legend, in the place of St. Peter. He returned to Llandaff, and held supremacy over all the churches of South Britain till the time of his death, when his body was multiplied into three bodies precisely alike, to satisfy three churches desirous of the honour of receiving his remains. His successor was Oudoceus, who, with Dyfryg, made the third saint associated as the three patrons of Llandaff. Their little church, famous as it was, does not appear to have been more than 40 ft. long, if we follow the dimensions given in the life of the first-named patron in the "Liber Landavensis." The same account mentions an eastern apse. But Urban cleared it all away. His Norman church does not appear, however, to have been of any great extent, for it was speedily enlarged. In the Early English period, we may see (the "Liber" ceased its record before then) it was extended westwards as far as the west front; then a chapter-house was built; then, later, in the Early Geometric period a lady chapel was added. In the Second Decorated period the presbytery was rebuilt, and soon afterwards the walls of choir and nave were repaired. A north-west tower was added by Jasper Tudor, uncle of Henry VII. This mixed structure is described in all its parts by Mr. King, who then gives a history of the see, and a list of the bishops. This plan of progression is methodically followed, indeed, throughout the work; and a ground-plan of each building is given, as well as views of details.

St. David's is the largest of the Welsh cathedrals. Like the other three, it has been recently restored. This was founded by St. David, and was held in such high reverence that two pilgrimages to his shrine, which was placed within it, were considered equal to one to Rome. It is a cruciform building with a central tower. The general aspect of the interior is that of a Transitional building. The nave has six bays. Over the rich Transitional arcades rises a feature not found in any other church. This is a combination of clearstory and triforium, forming but one stage, but consisting of two parts equally well marked. It is shown in an illustration. Over the nave is a fine Perpendicular roof. The walls of the aisles of the nave are later. They were raised in the Decorated period; but only one ancient window remains; the others are either debased substitutes inserted in the seventeenth century or modern restorations. The first central tower fell shortly after its erection, and when it was rebuilt one of the Norman arches was retained. Hence, three of the arches are high and pointed, and the fourth low and round. The string course is, consequently, carried to two levels. The space beneath the tower was occupied by twenty-eight stalls, which were removed during the repair of the tower, but carefully replaced on its completion. The presbytery has three bays. Beyond it is a closed chapel, occupying another bay. And beyond this is a vestibule, leading to the lady chapel, which occupies another bay. The south transept is fitted up as a parish church. The base of the shrine of St. David still occupies the third bay from the east on the north side of the presbytery. It is illustrated. On this base was laid the portable shrine, or feretrum, containing the relics. It consists of a stone slab, or table, supported on three arches about 3 ft. from the ground, and extending from pier to pier. The arches are scarcely more than 1 ft. high, and in their spandrels are quatrefoils. Upon the slab upon which the shrine reposed rises a background of a triplet of Early English arches, with a solid wall behind. The back of the shrine projects slightly into the aisle. It is but little more than a stone wall, having three round-headed arches, corresponding with the position of the three pointed arches on the presbytery side, with quatrefoils and squared niches above them, which, though now closed, may have had their special purposes. Browne Willis states that the Early English triplet contained wall-paintings in the days of Elizabeth. On the south side of the north transept is another monument of a similar character. This is the shrine or tomb of St. Caradoc. And in the centre of the presbytery is the altar-tomb of Edmund Tudor, Earl of Richmond, the father of Henry VII. There are many other monuments, all duly mentioned in the handbook; but these are the most important. This cathedral, like that of Llandaff, is treated at great length by the compiler. In these accounts he has had the advantage of more than one pioneer. But

* Handbook to the Cathedrals of Wales. London: J. Murray. 1873.

with the exception of a paper contributed to the "Archæologia Cambrensis" on each building, he has had no antiquarian guide more recent than Browne Willis to assist him in the examination of St. Asaph's and Bangor. These two buildings are dismissed, therefore, much more summarily

St. Asaph had its book, the "Lyfr Coch Asaph"; but, with less good fortune than Llandaff, it has lost it. Not, however, before some notes were taken from it, which were used by Wharton, in 1695, in the compilation of his "Lives of the Bishops of St. Asaph. The building was visited, too, by Giraldus, who speaks of it as "the poor little church of Llanelwy." Its exposed situation led to a proposal to build a new cathedral within the walls of Rhuddlan, where it would be protected from the dangers that often prevented the attendance of the congregation even on the most solemn festivals. But before this proposition of Edward's could be carried into effect, the Welsh Prince David resumed hostilities, and St. Asaph's was burned to the ground by the English. Within two years, however, we find King Edward gave 100*l.* sterling to the chapter towards repairing the damages incurred in the war, and granted the advowson of the church of Rhuddlan to the Bishops of St. Asaph. We hear no more of the proposal to make Rhuddlan the site of the see. On the contrary, Bishop Anian set to work to rebuild the edifice on the old site; and the clerks of St. Asaph exhibited a precious book of the gospels through the dioceses of Coventry, Lichfield, Hereford, and Wales, as a means of raising funds for it. Then gradually uprose a cruciform building, with a central tower 93 ft. high, of which the nave, transepts, and tower, remain to this day. The roofs and all the woodwork were burnt in the wars with Owen Glendower; but successive bishops refitted it for worship, and it flourished till the time of Oliver Cromwell. Browne Willis tells us,—"In Oliver's days the post-road was not through Denbigh, but St. Asaph, and one Miles kept the office in the bishop's palace. . . . . He kept his horses and oxen in the body of the church, and fed calves in the bishop's throne and in the choir. He removed the font to his own yard, and used it for a trough to water horses." But the succeeding bishops remedied all this mischief; and in the year 1780 the choir was "completely remodelled," which means that a plaster ceiling was put up, the east window filled with modern tracery, and the side windows blocked up altogether. Finally, the roof of the nave was lowered, to conceal the clearstory from within, early in the present century. "Such," says the Handbook, "is the architectural history of St. Asaph's Cathedral. The existing building, which consists of nave and aisles, central tower, and transepts and choir, is accordingly of three periods—the whole of the western portion, including the tower and transepts, Decorated, the work of Bishop Anian and his successors; the choir Early English and Decorated, with a modern restoration." Over and above all this are the recent restorations. In this cathedral there are no traces observed of St. Asaph's shrine, although there is early mention of the fear that its exposed situation might lead to the loss of the saint's relics. The brothers of Mrs. Felicia Hemans, in our own time, have placed a small tablet to her memory in the south aisle of the nave. The list of bishops given in the Handbook furnish a few other associations connecting this outlying diocese with the wide world. The celebrated Geoffrey, of Monmouth, for instance, was one of the early bishops. We have already mentioned Anian, the confessor of Edward I., and William Lloyd was one of the seven bishops sent to the Tower by James II.

Bangor Cathedral is also cruciform, with a central tower, now erecting, but it has, in addition, one western tower. It had the reputation of being the meanest in the United Kingdom. Like St. Asaph's, it suffered in the wars with Edward I., and with Owen Glendower, and was repaired after each devastation, but it does not appear to have shared the same care in its later history. When first placed in the hands of Sir Gilbert Scott, he wrote of it in his first report, "while the neighbourhood has been constantly increasing in wealth, while it has become the resort of tourists from every part of the kingdom, and has become possessed (to facilitate the vast amount of traffic which passes through it) of some of the greatest wonders of modern engineering art, its cathedral has gradually sunk into such low estate as to become almost a by-word,—no cathedral in the United Kingdom being equal to it in meanness." The see was founded by Deincol, who died A.D. 584. His church probably endured till 1071, when the Welsh chroniclers record that the cathedral of Bangor was destroyed by a Norman army. A Norman building must have replaced it, for we next hear of King John's army encamping on the Conway river, and burning Bangor, and carrying off Bishop Robert of Shrewsbury from before the high altar, who was not released for less than a ransom of two hundred hawks. We next hear of the building when Baldwin, Archbishop of Canterbury, was preaching the crusade in Wales. The archbishop celebrated mass in the cathedral, and the bishop assumed the cross at his urgent desire. Then came the disasters under Edward I., and the subsequent rebuilding. The new edifice was scarcely a century old before it was burnt by Owen Glendower's troops. It appears to have suffered to a greater extent than St. Asaph's at this time, and to have required more extensive renewal. First, the choir was rebuilt by Bishop Deane at the close of the fifteenth century; then the nave and transepts, by Bishop Skevington, at the commencement of the sixteenth, who added the western tower, and inscribed upon it,—"Thomas Skevynton episcopus Bangorie hoc campanele et ecclesiam fieri fecit, Aº Partus Virginei, 1532." During the civil war, the woodwork of the interior was again destroyed; but after the Restoration, there was a thorough refitting, which left the church "very lightsome," down to Browne Willis's time. Then came various restorations, which left the fabric poorer and poorer still. "The roof of the nave," enumerates the Handbook, "was altered during the episcopate of Bishop Cleaver (1800—1806), and all its carved work was destroyed. A repair of the fabric was undertaken between the years 1824 and 1827. The stalls were then swept away; and, in the words of Sir Gilbert Scott, "the most execrable gimcrack substituted that ever disgraced a church." The carved roofs, described by Browne Willis, were replaced by plain deal; and a heavy closed screen carrying the organ-loft was constructed, entirely separating the nave from the choir. The latter was used exclusively for English services. The Welsh congregation, driven from the worthiest portion of their own cathedral, were treated like Willis's "ordinary folks" (*i.e.*, buried in the nave), and an occasional service in their native tongue was provided for them in the nave. This was the state of things in 1866, when the Dean and Chapter resolved to place the building in the hands of an architect for restoration. As soon as the new works were commenced, it was discovered that the walls were full of the old materials of the English church destroyed by Owen Glendower's troops, and that there were sufficient wrought stones among the *débris* to indicate the design of Bishop Anian's transepts and part of his choir. As far as it was possible to do so, every ancient stone has been worked into the new building, and made to occupy its original position. "This exhuming and restoring to their places," wrote the architect in 1869, "the fragments of the beautiful work of the thirteenth century, reduced to ruin by Owen Glendower, used as mere rough material by Henry VII., and re-discovered by us four and a half centuries after their reduction to ruin, is one of the most interesting facts I have met with in the course of my experience." The foundations of a Norman apse were also found, which showed that the Norman church was shorter than the present structure. A Norman string course in the south transept turned inwards, 12 ft. short of the extent of the present transept; and beneath the foundations of the fourteenth-century piers of the crossing, those of the Norman piers were found. Thus the extent of the eastern portion of the Norman church was ascertained.

It is not a little curious that in neither cathedral has any vestige of the church built by the founder been observed by the recent restorers. Not a foundation, apparently, has come to light in either restoration. Not a fragment has been found reused as rubble. Can it be that the overlookers were overlookers in every sense of the word, and suffered these relics to pass undetected because they were of no recognised or familiar form; or must we assume that they were all four without tooling of any distinctive character; or, were they all built of timber, as the earliest Saxon churches probably were? However, the restorations are not the subject under present consideration. We are dealing only with the handbook in which they are described, and this, it is no mean praise to assert, is worthy of the rest of the series. The four cathedrals themselves may not be so grand, so vast, or so rich, as some of their English compeers; but the manner and method with which they are treated are precisely the same. First, in each case we have an architectural description of the fabric, with a sufficiently full account of its successive alterations and present appearance; then a general history of the see; and, finally, a biographical list of the bishops, which, we presume, is as much information on the subject as any one consulting a handbook is likely to require or obtain. After perusing its pages the reader will have acquired a clear presentment of four small churches founded by four energetic scholars and teachers in times as remote as the idyllic days of King Arthur, and in places as out of the way as could be selected far distant from one another, but all behind the ranges of hills that kept Romans and Saxons alike out of sight, and all near the western coast. In each case these four sites remain sacred, and the small churches are replaced after the Norman conquest, with Norman churches. These in their turn disappear, with the exception of the nave of St. David's, the choir arch and north doorway of Llandaff, which are exceedingly rich, and a few immaterial fragments; and still more superb structures rise upon the same honoured sites, now associated inseparably with the memory of the canonised founders of the first humble buildings. Llandaff becomes as severely beautiful as Ripon; St. David's, as it lies in the valley of the Alan, or upon the most western point of Great Britain save that of Land's End, becomes as rich in Decorated work with Perpendicular additions can make it, and royal pilgrims flock to it, and its bishops own a palace, close by, that is unsurpassed by any English structure of its kind. St. Asaph's develops in the same direction only on a smaller scale; and Bangor shares the fate in good and ill fortune. Their earliest prelates attend conferences or synods on the Continent, and claim and obtain precedence or place over other bishops, in virtue of the greater antiquity of the Celtic Church. This privilege, however, gradually lapses, and the Archbishops of Canterbury travels through Wales, officiating in the cathedrals and preaching the Crusade. Armies come over the hills, and spread into the valleys, and destroy all before them, cathedrals included. Once it is King John's army, another time that of Edward I., and then, again, Owen Glendower's; but the result is always the same. Then masons are brought together after their departure, and scaffolds are raised, and the buildings eventually emerge from them more beautiful than before. There are many monuments in them all, much carving, and superb enrichments generally. Then comes a season of spoliation, followed by meagre repairs and modern substitutions, and all are in need of the thorough and costly restoration each has recently enjoyed. The Handbook gives its readers, too, scores of details upon which we cannot dwell, but which are of considerable interest. A member of the family of Shakspeare's old acquaintance, Lucy of Charlcote, in Warwickshire, was one of the bishops of St. David's, for instance, in the seventeenth century, and one of his descendants is proud to give the mosaic-work with which the window-spaces above the altar have been filled; and, in a similar manner, the outer world is seen connected with the history of these outlying buildings in numerous instances. Altogether, we must pronounce it a very agreeable and convenient companion for a Welsh tour.

We are enabled to reproduce three of the engravings with which the volume is fully illustrated.*

REPAIR, OR PICTURESQUE RUIN.

Ought we to repair, as matter of principle, the ravages of time and decay in the fabrics of our cathedrals, minsters, and great historic churches? or ought we, on æsthetic grounds, leave them to moulder and to crumble?

It may seem, to many of our readers, idle to put such a question. They will declare that it is, in the sense of the public speech, a "question" at all. But when we find writers in various quarters advocating the latter of the two courses that we have named, it is clear that, in some minds at least, the question does arise. And as the purport and aim of the observations to which we now refer are to condemn and to discountenance, as far as pos-

* See p. 644.

sible, a series of operations to which some of us have contributed money, some skill, and nearly all (speaking of the habitual readers of the *Builder*) hearty good will, it is opportune to reflect for a few moments, and to inquire whether we should or should not repair. This question involves, for its solution, the definition of what true repair substantially ought to be.

We do not propose, in these remarks, to enter into controversy as to special instances which have been cited in support of the argument in favour of leaving decaying structures untouched. There is room, to say the least of it, for wide difference of opinion as to the justice of the remark,—"If we said that that great church (Exeter Cathedral) had been destroyed, it would be true, from the point of view of the antiquary or the historian." We may doubt whether "that craving for activity from which even the superior clergy are not entirely exempt," "the good old English housewively passion for neatness and tidiness;" "the desirability of getting the churches, in which one may spend one's life, put in thorough repair by means of funds, a large proportion of which is gathered out of other people's pockets;" and "an amateurish liking for dabbling in ecclesiology and architecture, are the mainsprings of that mania which has seized deans and chapters throughout the land,—a mania which has destroyed everything venerable in every place which it has touched." We think that more worthy motives might be credited to those who, if unable altogether to emulate the piety of our forefathers, have been desirous to repair the houses of God in our land. The utterly barbarous neglect in which some of our finest ecclesiastical monuments were until recently left (if it be even now altogether a thing of the past), had not even the poor excuse of being picturesque. At St. Alban's Abbey, for example, a public footway led between the church itself and the chapel attached to the building; and filth, squalor, and neglect long marked a spot sacred to some of the earliest Christian associations of England. At the very extremity of Wales, the grand archiepiscopal Cathedral of St. David's was, a few years back, ruined and desecrated in much the same manner; the sparsity of the population of that part of the principality, as contributing fewer scraps and offal than those which so rapidly accumulate in the waste places of more populous towns, being the sole cause why an element of the picturesque lingered in Pembrokeshire, which had altogether evaporated in Hertfordshire. We speak of the picturesque, but, in cases like these, the word should be distinguished from the pictorial; from which it differs nearly as much as grandiose differs from grand. The true artist, or the critic of adequately cultivated taste, will feel the due importance of preserving the pictorial beauty of our great ecclesiastical monuments. It is only the dabbler who sighs for the picturesque, so far as it is expressed by the dilapidations of buildings of such character and dignity. In a sketch by Morland, in a good water-colour drawing, or a good etching, the picturesque is illustrated by the mouldering thatch of a cottage, or the broken outline of a gigatye. But trivialities of this kind, precious as they are for the transient gratification of the taste, and for the service of the lighter branches of the arts of design, are out of place when we come to speak of a cathedral.

What then, we are led to inquire, is the history of those noble edifices, by the possession of which England has so high a claim to rank in the foreground of the civilisation of the past? What is the true point of view, not only of the "antiquary or the historian," but of the fully-cultivated man, who reads history as the contribution of the past to the education of the future, and who finds, in the study of monumental records, valuable notes and illustrations of that great undying lesson? What was the origin of these fabrics? What was their design? What relation do they hold to the civilisation, and the needs of the day?

Unquestionably the great claim which such buildings as Exeter, York, Westminster, have on the living veneration of Englishmen, arises from the fact that they are noble mementos of the piety of our ancestors. They carry us back to a time when religion was not either a matter of divergent and unimportant opinion, or a profession limited to a certain order of men, but when it held both state and citizen with a firm and living grasp. We may say what we will about a cheap mode of purchasing posthumous credit, by willing away, on the death-bed, for the building of churches, the money which is almost that of other people—the money which, so that the dying man remains silent, is that of his heirs and next of kin. But it is no mere question of money that is concerned here. Princely donations were made in church-building times by way of gift no less then by way of bequest. Noble instances of the same nature occur in our own day, as our columns bear witness. But there went to the erection of the great churches of the twelfth and thirteenth centuries, much that no money could purchase. The architecture of those days may almost be called a religion. It is the outward symbolisation of the religious spirit, the religious study, and the faithful devotion to his work, of the ancient architect. So thoroughly did the details and ornamentation of the great churches correspond to the requirements of the ritual, and harmonise with the effect of the religious teaching of the day, that the visible fabric might almost be said to bear the same relation to that mystic entity, the church, that the human body does to its indwelling and informing spirit. Thus, in every way, as paid for by munificent charity, as designed and carried out by religious and thoughtful men of art, and as adding pomp and beauty to ritual, our great cathedrals are enduring monuments of the piety of our forefathers.

The historic interest of many of our cathedrals may be easily over estimated, or, more accurately speaking, it is often mis-stated, rather than overstated. There exist, indeed, historic relations of the highest order, as matter of association,—as in the case of the coronation of our Sovereign at Westminster; but these may be termed with propriety rather sentimental than monumental. Of the truly monumental order are such buildings as the Eleanor crosses, which were erected, not only for a definite religious purpose, but to commemorate a distinct event. But the histories of our churches and minsters are rather chronicles of the rule and character of bishop, or abbot, or local magnate and benefactor, than distinct chapters of the political history of the country. Their actual value, in this respect, rather regards the philosophy, than the detail, of history. It is as permanent records of the taste, the thought, and the general habit of England, in her various dioceses, at the periods of their foundation, extension, and repair, that our noble old churches chiefly illustrate the history of the country.

It is otherwise as regards the history of art. Here we have not illustrations, but elementary facts; not mementos, but records. The live art of those architects whom we term Gothic stamped its likeness upon its work. Here history speaks with no uncertain voice. The name of prior or abbot may be forgotten. The brass may have been torn from his tomb by an iconoclastic fervour, that had its reward, then and there in the pocket of the dilapidator. The memory of knightly and noble benefactor may have proved as unenduring as that of great churchman.

> "Their bones are dust,
> Their good swords rust,
> Their souls are with the saints, we trust;"—

may be all the epitaph left to explain the mouldering scutcheon, where, bend, or fess, or besant, once a famous and well-known blazon, is now looked at, with unintelligent eye, as an ornament of forgotten fashion. But in the delicacy or sharpness of a moulding, in the lancet grace, or in the four-centred magnificence, of light or of arch; or even, to some extent, in the relative proportions of plan and of elevation, we have records that cannot be obliterated, so long as the stone retains its form. In the preservation of these structural records, no less than in the delineation, description, and embalming in adequate architectural works of literature, consists the true core of the history of that art in England.

Such we take to be the main claims of our cathedrals and minsters on the veneration of educated men. But we have to regard these edifices in another light. They are not mere monuments. They are great civil structures, erected for a definite purpose. Although varied in its exact bent, that purpose still holds. The utility of York Minster or of Canterbury Cathedral, though of a somewhat different motive, is not less at the present day than in the times of Wolsey or of Becket. Ritual has altered,—not by the slow, constant change that attends many political revolutions, but by one great period of struggle. With the adoption of Protestantism under the Tudor monarchs, the structural motives of the great churches became less obvious and less applicable. In the aisles and transepts, the lady chapels, apses, side chapels, ambulatories, and rood-lofts of our pre-Tudor churches, we had the structural administration of a ritual which reared numerous altars, invoked numerous protectors and mediators, and placed much reliance on processions, as direct means of obtaining divine aid. "A worthy priest," writes John, Sire de Joinville, a noble who lived in that crusading time when Gothic art produced one of its most exquisite gems, the Sainte Chapelle, at Paris,—"A worthy priest, who was called the Dean of Maurupt, said to us that he had never suffered in his parish from drought, or from too much rain, or from any other scourge; as soon as he had made three processions, on three Saturdays, God and his mother delivered him." This is an unimpeachable contemporary testimony to a certain element of religious creed which, as we before said, found its echo in the general plan, no less than in the details, of the church architecture of the great church-building centuries.

With the reforms introduced by Henry VIII., one great feature of our cathedrals was almost obliterated. We refer to the rood-loft. At Westminster the large size of the elevated apartment at the east of the new reredos is known to but few visitors to the Abbey. The turret staircase remains, but the gallery front, over which the relics were exhibited by the priest, has been obliterated. At the parish church of Avebury, in Wiltshire, one of those ancient pieces of church decorative architecture yet exists in very fair preservation. It is enough to show what an important feature of our great churches the rood-loft must have been;—far more conspicuous than pulpit, or communion-table, or any element known to our contemporary builders.

Processions, exhibitions of host or relics, multiplied masses having ended, a great change in the use of the English churches succeeded, a change which, for the most part, has left marks of its occurrence. So, also, has the pomp of the clergy in those solemnities which were rather ecclesiastical than religious, been shorn to a great extent of its lustre. Nor, there seems little reason to doubt, were the changes thus made in the services and in the arrangement of the churches unattended by a diminution of their use. Such is, at all events, the testimony of Swift, a writer unlikely to err on the side of partiality to Romanism. But, whether more or less thronged, the cathedrals of England have never ceased to be, in a special sense, the church of the poor. To the poor man, the floor of the great minster has always been free, at least on the Sunday. That adaptation of the opera-box in which elbow-room, separation from the lowlier worshippers, and, generally, advantage for ready display of fine clothing, were so comfortably secured that the occupant found it worth while to pay a yearly rent for what he called his pew, has never yet thoroughly absorbed and vanquished the nave of our cathedrals, though parish churches tell a different story. And of late years, there is no manner of doubt, a different tone from that of even the beginning of the present century, is becoming prevalent in society as to our minsters. Care has been given to arrange great services, and St. Paul's, Westminster Abbey, and other buildings of this type are now all too small for the thousands who crowd what are called the special services, as distinct from the daily morning and even song in the choir.

We thus come to this point,—which, indeed, we have borne in mind all along,—that whatever may be the importance of preserving our minsters as monuments (and we are not among those who think that this importance can be easily over-estimated), there is yet a prior claim which these buildings have upon Englishmen of the present day. They must be kept in going order as Christian churches. Eminently the churches of the poor,—in the widest and most catholic sense the churches of the people,—the decent and reverent solemnisation of the services of the Church is the object for which they must first be maintained.

If, then, for this prime reason, it becomes expedient, in the opinion of those who are responsible to their countrymen, no less than to their own conscience, for the due maintenance of our great churches, to "obliterate with merciless hands and blind hearts all memorials of service, all signs of wear, scraping out every mark, stain, slur, or blot"; if the question arises between the religious utility of the building, on the one hand, and the purely picturesque effect on the other, there can be but little hesitation as to what the decision ought to be. It will be on the side of the painstaking, and not of the negligent, custodians of the fabrics.

For ourselves, while we have staked this issue on the plainest grounds, we do not believe that the question need thus to be decided. We have, we think, shown that it is impossible, in the present state of society, to leave our great edifices to unarrested decay on picturesque grounds. The question, then, narrows itself to that of the best mode of preservation, and of needful repair. And here two suggestions present themselves. The first is, that all buildings are more durable, and actually do endure better and longer, when they are inhabited and put to their proper use, than when they are locked up. Even if the parish church be only filled once a week, that degree of inhabitation renders the building far more able to resist decay than if it were never opened. When services are numerous, and when due care is given to cleansing and to warming, the preservative effect is more marked. If, then, it were possible to leave all the stains and slurs and blots, which some writers so much admire, altogether undisturbed, it would be but a short-lived piece of selfishness on the part of the lover of the picturesque. Unresisted decay would become more rapid from year to year, and the structures which we had forbidden to be repaired because we wished to indulge the taste by reading the handwriting of antiquity, unruffled by modern punctuation, on its walls, would, for our children's children, be not monuments, but ruins.

First, then, we must repair our great churches because they are required for the religious worship of great congregations. Secondly, we ought to repair them, if we regard them merely as monuments, because they will be more durable if properly repaired, and if properly filled, than if they are left in picturesque slovenliness. All that remains, then, is the question how best to repair them. How shall we so arrest the ravages of decay as to preserve in its most authentic beauty the ancient and genuine character of our minsters and abbeys,—and not only to please our own eyes, but to hand down to our children, as perfect as may be, these noble heirlooms, which tell of our pious forefathers, now with God?

VIENNA INTERNATIONAL EXHIBITION.*

The magnitude of the Exhibition is so great that the careful consideration of any one class of objects entails upon the student an amount of labour that is greater than could be supposed. I have been perpetually tired, and generally very tired, since my arrival in Vienna. I am anxious to report fairly, and to mete out praise where praise is due; and in order to do this I have to traverse miles and miles through the numerous transepts of the building, and then, after all my care, I am often humiliated by finding that there are yet other objects belonging to the group that I have been studying that I have passed unnoticed. I long for the simpler arrangement of the last Paris Exhibition.

It behoves the reviewer here at Vienna to be careful how he metes out praise or apportions blame; for after he has spoken of works as the finest in the Exhibition of their class, he may find others as fine, if not finer; and after condemning objects as disgraceful to the Exhibition and the country which has produced them, he may find others much more deserving of censure than those already condemned. The vastness of the display renders it impossible that justice can be done by any one writer: so I claim no absolute justice for my reports, all that I attempt to do is —the best that I can.

From my observations at the Exhibition, I have learned something of tea-kettles, and I now know that tea-kettles may be more beautiful than they generally are, and more useful than they usually are; and that a tea-kettle may differ essentially from the form that I am acquainted with, and yet serve its purpose as well or better than the forms in use with us in England. There are here in the Exhibition kettles of many kinds—perhaps not of all kinds, yet certainly of more kinds than I have ever before seen. There are common kettles formed of iron, tin, and copper. There are kettles with large bottoms and with small; there are kettles with long spouts and with short; there are kettles in which the spout is attached to the body by a band of metal; there are kettles which are tall, kettles which are short; there are square kettles and round kettles, and polyhedric kettles. There is a kettle in the form of a bird, a kettle in the form of a mountain, and there is a kettle with a tea-pot in it, on the principle of a carpenter's glue-pot. There are elegant table-kettles, swing kettles with lamps underneath, formed of silver and of tea-urn bronze. There are dainty enamel kettles; dainty Japanese bronze kettles; dainty kettles, formed of china, of red earth, of black earth. There is a kettle formed of tender blue and white china, with silver mounts and handle. There is a large earthen kettle, with a splendid raised, perforated, bronze lid, and bronze and gold handle. There are kettles with two handles placed side by side, and running parallel with each other; there are two-handled kettles, with handles apart, yet parallel. There is a kettle with a handle like a tea-pot, and also a handle like a kettle, the latter crossing at right angles with the direction of the spout. There are kettles from China, kettles from Japan, kettles from France, kettles from Denmark, kettles from England, and I know not from where else: truly, kettles need not be kettles, as Paddy would say; they may be whatever your honour pleases.

A kettle, considered as a utilitarian object, should be a vessel into which water can be readily introduced, and from which it can be poured with facility,—it should be an object so formed that it can easily be lifted, and, above all, of such construction that the water in it will boil with the least possible supply of heat.

In a few English houses, a kettle of curious appearance is met with which is elliptical in shape, and with a large flat bottom,—the sides rising up from the bottom (which is of greater diameter, both in length and breadth, than any other part of the kettle) in an arched form, like as if an elliptical basin were inverted upon the flat base. I think that the credit of this invention belongs to the Americans, but of this I am not certain. Here we have a kettle of considerable merit, for the largeness of the base gives an increase of heating surface, and with the increase of the surface to which the heat is applied we have rapidity in the warming of the water; but this kettle is not beautiful,—it is useful, but it is almost ugly.

Although an artist, I am no advocate of works intended for utilitarian purposes being beautiful rather than useful. I say, let all utilitarian objects be useful,—perfectly useful,—and then, if possible, let them be beautiful also. I want a kettle, but I am not content to have even a beautiful kettle if the water is twice the time boiling in it that it would be in a plain or even in an ugly object. A calabash-shell is beautiful, and in this some savage tribes boil water, although the vessel will not bear fire. The water being placed in a gourd, a fire is kindled and stones are made hot, and these stones are dropped into the water, and thus the water is boiled. Beautiful as the calabash-shell is, especially if adorned with rich savage-tribe carving, yet give me the common kettle and the simple mode of heating water; but if a kettle can be equally useful with that which is not comely, and yet beautiful, I say by all means let us have the beautiful object. There are few articles of domestic use which could not be equally useful while yet beautiful, and in no case does this remark more fully apply than in reference to kettles; but in order that the fulness of this remark be understood, it is necessary to see a series of kettles which the Japanese have contributed to the present Exhibition. The kettles to which I now make reference are not toy-kettles, nor little fancy table-kettles, but serviceable kitchen-kettles, varying in size from a pint to several quarts in capacity. Here we have kettles which are beautiful,—very beautiful, and yet useful,—eminently useful. The form, in some cases, is excellent. The handle is well formed and well finished, and the lid is smooth and ornamentally treated. First, as to utilitarian qualities. The body of one kettle shown is covered with rounded excrescences, or, to use botanical phraseology, with tubercular eminences, about the size of peas, whereby the heating-surface is much increased, to say nothing of the beautiful effect achieved. Another has a sort of petticoat extending from the sides of the kettle downwards, in spreading or divergent manner, and leaving a space between the body of the kettle and it. This petticoat-like arrangement conducts heat, just as the flanges of the radiating stoves do, the one conducting from the exterior and conveying the heat inwards, the other collecting within and conveying the heat outwards, but both collecting from the source of supply and achieving to a degree the equalisation of temperature. But this cloak, or petticoat, does not only act as a conductor, but it confines a quantity of heated air between the body of the kettle and this shade, and thus prevents the c tact of cold air with that part of the kettle which the water is contained. But besides th all-important qualities just noticed, wher special facility is given for the heating of water, there are other, though perhaps mi points that should not be lost sight of. bodies of these kettles are rough in their fin while the handles and lids are most carefu treated. In England we hear a great deal nonsense about bright kettles, and some car old dames are afraid that their kettles should on a fire less they get black, and most cottag like to see one bright patch on the side of kettle, whether it be of copper or of tin. N as a kettle is an object constructed especi for being placed on a fire, and as a fire inevitably blacken a kettle if placed upon it it not only reasonable and right that the body a common kettle should be so formed as no suffer injury from the fire and look well wh black? But in these Japanese kettles handle,—which is to be grasped,—is invaria smooth and convenient to hold, and the lid also well finished; but neither of these pa comes in contact with fire. The kettle be eminently a work of utility, it is also beauti This is the perfection of art,—the construct of an object which is perfectly useful and at same time perfectly beautiful. The Japan kettles now under review come very near t ideal perfection, for the rough body, wh useful, is so shaped that the form is also be tiful; the shape of the petticoat, or the distri tion of the dots, highly pleasant; and the hand while agreeable to hold, is always of beauti form, and in some cases is highly ornamen In certain instances the lids and handles these rough, yet artistic, kettles are of bron inlaid with exquisite silver devices. I comme to the consideration of my fellow-countryn the common tea-kettle.

* See previous articles.

THE PRIX DE ROME.

The annual exhibition of works by candidates for the Prix de Rome is n open at the École des Beaux Arts, Pa For the last four months the Latin Quar has been taking sides and allotting prizes w the same fever that seizes upon the "horse gentlemen on the eve of an important ra For Art in every form is interested in t competition: painters, sculptors, architec engravers, and musicians, all look Ron wards; even those who have not dared to en their names as candidates. These mod aspirers are not numerous. Nearly eve student at a good *atelier* has laid formal cla to the Rome Scholarship after three or fo years' apprenticeship. The Administration h made the way easy to the tempest of juven ambitions. The would-be candidate becomes month before the 1st of April assiduous a attentive at the evening classes of the École; takes notes of the lectures, produces a certa number of "*Académies*." This is the first ste it softens the professors' hearts. Then com the *épreuve préliminaire:* drawings are sent to the committee of examination, and the auth of such as are pronounced correct are forma admitted as candidates for the Prix de Ron No expense is entailed, not a document voucher required; the examination is absolut free. The admitted candidates have simply rise at five o'clock on a cool spring morning, a carrying their easels and their breakfast, generally consisting of a "saveloy" and penny roll,—present themselves at the École the *entrée en loges*. The *loges* or cells are si ated on either side of a long stone corridor. T candidate who has obtained the greatest numb of marks at the *épreuve préliminaire* has the rig to select his prison first, his companions follo ing in order of merit. Directly all have be placed in separate *loges*, the professor appe at the end of the corridor, and reads in a lo voice the subject given for the Prix de Ro It is generally more or less mythological,—pe haps a piece out of Plutarch, or, if the co mittee happen to be in an excessively mode humour, a passage from Froissart or Comin After the announcement of the subject the doo of the cells are locked, the young painte sculptors, and engravers are isolated for thr months. An official walks up and down the co ridors, to see that no attempt at communicati is made. His watch is over, for this year, least. The result of the three months' solita labour is before the public, and the Rome schola

hips have been awarded. The successful can-
idates are now "des Prix de Rome," a title
hich Courbet's school has derided, but which,
ke all official consecrations, is yet dear to the
art of the majority of Frenchmen. The
oman scholarships are supposed to attract the
ly representatives of high classic art to be
und in France, and they certainly secure a
rfect technical education. But there are two
rong arguments against the system. It nearly
ways stifles all personal feeling and originality.
has done nothing for the greatest modern
tists of France. Corot, Diaz, Gerome, Dela-
oix, Robert Fleury, Breton, Decamps, Vernet,
d many other names equally familiar, are not
be found on the register of the Villa Medicis.
mong architects, Baryc, Prèault, Henriquet
pont, Viollet le Duc,—that is to say, the
knowledged masters of their profession in
rance,—could never obtain a Prix de Rome.
These facts, however, do not diminish the
izeholders' sense of their own importance.
ey receive a pompous welcome on arriving at
e Villa Medicis, that palace of the old Floren-
es, beautifully situated on the Monte Pincio,
d overlooking the city and suburbs. A solemn
st takes place in the great saloon, hung with
portraits of all the former Prix de Rome;
en the installation takes place. Each student
ceives from the State 3,600 francs a year.
om this sum enough is deducted to form a
ovision of 1,200 or 1,500 francs, which is
nded to the student on the eve of his depar-
re. Thus, 267 francs 50 centimes are received
each Prix every month. The meals are taken
common, and cost per month 100 francs a
ad. With the rest of his allowance the artist
ys for canvass, colours, models, washing,
vice, &c. Thus the Prix de Rome means any-
ng but golden ease. Many students without
vate means are reduced to wearing their studio
use from year's end to year's end. The
ector, who is always an artist of merit, a pro-
sor of culture, exercises a paternal surveil-
ce over his "young friends." M. Hibert
sted on their cultivating *genre* paint-
. The present Director, Leuepven, leans
ards academics. During each of the first
e years the painter must execute a life-sized
re. The fourth year he must sketch a pic-
e and execute a copy, both of which produc-
s become the property of the State. In the
year he paints his picture. The architect
ows an analogous rule. His first years are
en to the study of details; then he achieves
storation; then, finally, a detailed plan and
ject. The sculptor executes a copy in marble,
dies in plaster, and finishes with a statue,
which the Government furnishes the marble.
engravers are occupied in a more desul-
fashion; and, it is rumoured, the musicians
nothing at all. An authorisation to travel is
ly obtained from the Director, above all
ng the dangerous season of summer. In
case the artist receives his 267 francs
centimes in their entirety, and roams about
y as he pleases, without guidance, without
ervision. It is only on returning to France
the artists discover but too often that
ialism has marked them, that their talent
been trimmed and stunted by the traditions
he school; that they have become, in a word,
"pions du Beau"—the pedagogues of the
utiful.

OUR POSITION IN VIENNA.

International Exhibitions are rightly re-
ded as reliable records of human progress in
peaceful arts, the interest of such a display
he world's industries as that at present
g held in the Austrian capital is not of a
re to be exhausted by the criticism of one
nor a hundred. Each reviewer, as he is
rested or learned in special departments, may
rt favourably or otherwise; but it is only
he aggregate opinions that anything like a
and complete estimate of the whole will be
ined. Indeed, it would be simply madness
ny one individual, however well informed,
ttempt even a superficial review of the
e Exhibition; and I shall therefore make no
gy for offering the few remarks I am about
en, carefully confining myself, to a section in
h I believe I am, by years of observation
practical experience, competent to speak.
r, however, my contribution to the general
of criticism will not pass unchallenged, for
heme is "art industries," and my judgment
t favourable to our own position or progres-
ess therein.

No one in the least degree familiar with American manufactures will be misled by the display she makes. With her, well-known names in every department of art, science, and manufactures are "conspicuous by their absence"; and if she makes no mark, it is because she has, of conscious strength, neglected her opportunity, or is purposely nursing her energies and husbanding her resources for her own great Centennial of 1876. In the mean time she can well afford to join good-naturedly in the laugh raised at her expense.

But England must be adjudged by her works, as exhibited by her best-known men, and, *thus judged, condemned;* for there is not only no evidence of progress since her record of 1851, but a strong presumptive evidence of decadence in some most important branches of art industries. Many of the principal works in the precious metals, brass, and iron, to be found here, have been on public exhibition any time during the last quarter of a century, and have long since become familiar to those who have never seen the originals, through the medium of photography, lithography, and woodcuts. All that could be said for or against them has been said a hundred times, and their presence at Vienna is an anachronism and a shameless evidence of self-complacency or want of enterprise in our leading manufactures which cannot be too seriously deprecated. Setting the best of these well-known works aside, there will be found very little in the English department at all calculated to advance her interests or enhance her fame. Objects in the precious metals are as thickly studded with jewels as children's pasteboard boxes with seashells, or so bedaubed with coloured enamels that their gold and silver substructures can be valued only by their weight. In the latest developments of "cups" and "shields" the human form has become distorted and crushed out of all semblance to humanity. Our china, decorated out of all fitness for table use, has become picture-books of natural history, and all the semi-monstrous forms of animate and inanimate nature are reproduced (reckless of the disgust they must cause) upon our dinner-plates and drinking-vessels. Glass has lost all semblance to itself in the admixture of crude and opaque enamels, and will presently rival in ugliness the most treasured specimens of its monstrous birth; whilst wooden furniture, in its highest phases, has been made into the vehicle for the display of preposterous inlays, and rendered utterly useless for any domestic purpose by fragile and delicately-carved mountings of ivory.

Nor does it appear in all this costly elaboration that harmony of colour, beauty of form, or consistent combination of materials has in the least influenced or guided the designer or artificer. Wherever originality is attempted, it would seem that design has become simply the elaboration of ornament which subserves no purpose of beauty or utility; or, rather, it might be said that both beauty and utility have been ruthlessly sacrificed to lavish cost and ostentatious display.

If we pass from the British to the French departments, I confess we still find but little evidence of higher aims; and the contents of the Italian courts, while they might fitly shine resplendent in the classic neighbourhood of Wardour-street, are utterly unworthy of the position they at present occupy. But here adverse criticism ends. We must pass through the German courts with increasing interest, until we arrive in the Austrian section, and there we find on all sides only models for study and admiration. Vienna has unquestionably eclipsed all competitors, not only in the variety, magnificence, and magnitude of her exhibits, but in the highest excellence of design and finish. In every class of goods the same simplicity and fitness prevail. Her fans and book-covers are works of art, and yet examples of art labour so well applied that the utility of the object decorated is in no degree disguised or lessened. The gilt pier-glasses, cornices, and tables are in the highest style of decorative art, and are not less remarkable for their simplicity of construction than for the exquisite finish of every detail. The drawing-room, library, or dining-room furniture are all alike characterised by boldness of design. Here are no far-fetched and antiquated emblems, suggestive of after-dinner nightmares or lascivious dreams; no preposterous combinations of materials or violent contrasts of coloured woods and marbles, suggestive of the patchwork of our long-deceased grandmothers. Here is nothing forced for effect, and nothing sacrificed for display The same consistency of design, the same subordination of ornament to utility obtains throughout. Strength and massiveness where stability is required, elegance and lightness where easy movement is a desideratum. Every article is homogeneous, and the best characteristics of each material are brought out with the unerring certainty of a master mind. But it is not my purpose to write a detail criticism upon Austrian, any more than upon British manufactures. All I desire is to call attention to the fact that there are objects of industrial art within the Austrian section of the Vienna Exhibition worthy of our most careful study, and that whilst we are complacently repeating our well-worn and effete themes of the past, the world has gone rapidly forward, and left us far behind in the race: that if England wishes to hold her place amongst the nations, she must awaken to a lively sense of her own shortcomings, and brace herself up to more serious efforts than ever heretofore.

Nor is it to Austria alone that we should look for instruction. Russia can read us lessons we should do well to learn. There are samples of iron castings from St. Petersburg which our utmost skill and knowledge would fail to produce, and which rival or excel even the bronze wonders of Japanese art; and from Moscow there are specimens of silver and gold work, combining in such a remarkable degree the highest excellence of artistic design and manipulative skill that it is reasonable to hope some samples will be secured for our national museum at South Kensington.

C. Henry Whitaker.

NEW LECTURE HALL AT LEWISHAM.

A new block of buildings is about to be erected in Brockley-road, Lewisham. They will include a large lecture-hall, and other rooms and apartments for public purposes; and the building, which will be situated at the corner of the Brockley and Lewisham high roads, will have a tower. The proposed frontage is objected to by the Greenwich Board, in whose district it is, on the ground that it is desired to build beyond the line of the frontage, the other property in the same street being built 14 ft. from the public way. The proposal has been before the Metropolitan Board of Works, on the objection raised by the Greenwich Board, and the Central Board have declined to allow the proposed building to be extended beyond the present street frontage. The plans generally were approved of, but the promoters were desired to submit a modified plan, with the main elevation of the building carried further back.

ARCHÆOLOGICAL SOCIETIES.

The Cambrian Society have been holding their annual campaign, the scene of their operations on this occasion being the neighbouring town of Knighton. The proceedings were opened by the holding of a general meeting at the Norton Arms Hotel. Among those present were the Hon. Arthur Walsh, M.P., the president elect, and Professor Babington, of Oxford, as chairman of the out-going committee, in the absence of Sir Joseph Russell Bailey, bart. The Rev. E. L. Barneswell, the general secretary, read the report for the past year. Professor Babington said the Association was in a favourable position, and that there was every prospect of a successful continuation of its labours. It had done good service by collecting together a great number of interesting observations through the medium of its members, and publishing them in its journal. He referred, too, to the usefulness of the Society in preserving ancient monuments, and followed up his remarks by reiterating his protest against what were designated church restorations. Mr. Bloxam read a short paper on the little mountain church of St. Patricio, about four or five miles from Crickhowell, the period of whose erection he attributed to the time of Henry VII. It consisted, he said, of a nave and chancel only. Yet, though rude and of the most unpretending character as to its external features, internally the building was most interesting. There was a singular adjunct to the church at the west end, apparently more ancient than the church which it adjoined. That structure, he imagined, was a *reclusorium*, or *domus inclusi*, the residence of a recluse or anchorite. At the close of the paper, Mr. Bloxam gave a short description of an effigy of a pilgrim in St. Mary's, Haverfordwest. The

Rev. D. R. Thomas gave a brief account of an inscription on an Ogham stone in North Wales, composed of the following letters:—

AIMININI
TOYISACI

An animated discussion followed, in the course of which the diverse opinions expressed by archæologists on the general question of Ogham stones were noticed; and as to this inscription in particular, it was mentioned that the Bishop of Limerick, one of the high authorities to whom it was submitted, had given a translation differing from the Gaelic inscription upon the stone. The Rev. James Davies read a paper on Wapley Camp, and its connexion with the resistance of Caractacus to the Romans. The first excursion was made next day, when the archæologists visited Castle-cwm-Arran and the British camps on the hill above Llandewy. Several objects of interest were visited on the route. At the evening meeting there was a limited attendance only. The chair, in the unavoidable absence of the Hon. Arthur Walsh, M.P., was taken by Professor Babington. The chairman gave a brief description of the places visited during the day, and Mr. Bloxam made a few remarks relative to the abbey at Cwmhir, suggesting that excavations would probably reveal the leading features of the structure. Mr. Williams, of Rhayader, read a paper on Radnorshire churches; and Mr. Bloxam delivered a brief account of some monuments in St. David's Cathedral. The Rev. D. R. Thomas read a paper on Grants made to the Monasteries of Merionethshire, from which it appeared that one condition was that the prince should be lodged and fed one night in the year at one of the abbeys. Mr. Bloxam showed that the same practice prevailed in England. A paper on the Cross of Llowes, near Hay, was read by Mr. Ernest Hartland, and, after some formal business, the proceedings terminated.

The Suffolk and Essex Societies made a joint excursion this year in the Valley of the Stour. Manningtree Station was the place of assembly, and a good number of the Essex members were present, but the attendance of the Suffolk members was smaller than usual, the place of meeting being rather difficult of access to some who are among the most constant attendants at these excursions. Lord John Hervey, the president of the Suffolk Institute, Mr. E. M. Dewing, Bury, the secretary, and other Suffolk gentlemen were present. The Essex division were under the leadership of Mr. H. W. King, the hon. secretary to the Essex Society. The programme included visits to Lawford, East Bergholt, Dedham, Great Wenham, Little Wenham, and Raydon, but it was found necessary to omit the last-named place. The party having spent a very pleasant and interesting day, returned to Manningtree Station, and there finally separated.

RAMSGATE.

The town surveyor, Mr. Ellice-Clark, C.E., has just presented a report to the Local Board on the ventilation of the sewers. It appears that there are only seven ventilators on several miles of sewers, consequently many of the higher sewers are charged with gases. The report says:—"The immunity hitherto enjoyed in Ramsgate from anything like contagion spread by sewer gases is due to the fact that your town is not yet one quarter sewered; that the sewers as they exist are of sufficient capacity to take away nearly all deposit; that, in fact, with slight exceptions, they have been self-cleansing, but that they will continue to be so without ventilation I doubt very much." Mr. Ellice-Clark then quotes Mr. Latham's experience at Croydon, remarking,—"Every word Mr. Latham says of Croydon applies in a singular degree to our own town and sewers. For some years past, in fact, so far as I can learn, ever since you have laid sewers down, there has been a wide-spread feeling against having houses connected with them; in some instances, I believe, houses that have been connected with the mains have been cut off. Constant complaints are being made to me as to the abominable smells arising from the sewers, either in the houses or in the streets, through the gully gratings, and I wish the inhabitants to bear in mind that although the smell from a grating in the street may appear injurious, and be stopped by trapping, the gas thus cut off from an outlet in the gully will assuredly find its way out through the weaker or defective traps in their houses, though being diffused over many habitations it does not appear so foul; 'but sewer gas escaping into the streets, combining with immense quantities of fresh air, is not nearly so injurious, if it is at all, as when allowed to escape into the limited atmosphere of our dwellings; all the organic poisons can be diluted so as to completely palliate destructive effects, but they may retain all their poisonous properties when again concentrated.' There can be no reasonable doubt that large quantities of gases find their way into the houses connected with the Ramsgate sewers unless they are well and thoroughly trapped: hence has arisen the disinclination to have the houses connected with the sewers; for I cannot believe that this disinclination has been on the score of cost. While speaking of this disinclination on the part of householders to connect with the sewers, probably the idea that sewers were a useless expense in Ramsgate arises in many instances from the fact of the town being on a chalk formation, which has a large capacity of absorption, and that fæcal matters were thus dispersed; but this is a great mistake: nature has been too kind, and yet not kind enough to us: doubtless a large quantity of sewage entering a cesspool would be absorbed, but sooner or later the chalk would become completely saturated, and in a densely populated town like Ramsgate the whole of the formation underlying would, in time, have become saturated in the same manner. Had we rested on a bed of clay, through which the sewage could not have percolated an inch, the abomination of the cesspool system must have forced itself upon the inhabitants years ago. That prejudice against drainage should be deep seated in Ramsgate never surprised me, after hearing a medical man, long resident in the town, declaring that after using a cesspool for nearly a quarter of a century, when opened it was found empty. This certainly looked as if the absorbing qualities of chalk were equal to anything, and for some time puzzled me; but being called to a house within 50 ft. of the medical gentleman's, where an intolerable stench filled the house, and where a child had recently died of fever, I found a cesspool inside the house without any covering, and full to within 4 ft. of the flooring. Here was a case, directly opposed to that of the medical man's, and the opposite cases still further astonished me till within a few days ago, when driving a heading at the rear of both premises, I found the ground near the medical gentleman's to be 'made' to a depth of more than 20 ft., and there were evidences showing that the contents of his cesspool had found their way into this 'made' ground, while that of the other house did not. This might also have occurred by the fact of the cesspool being driven in the line of a fault or fissure in the chalk (of which there are many in the neighbourhood), and thus carrying off everything entering the cesspool. Cases of this description coming to the notice of persons who either did not care to inquire further, or were too much engaged in other subjects, would naturally make them believe that nature had done everything for the drainage of the town, and that art was trying to undo it. I have daily experience, however, that chalk has by no means such a capacity for absorbing as is generally imagined; for there are numbers of cesspools full and being emptied every month. The peculiar nature of the outfall, tide-locked as it is for several hours each day, renders ventilation a paramount necessity with us, more especially in the lower portions of the town, where the gases, displaced by the intake of the sea water, must find their way into the houses or out at the street gullies; though, the former having much lighter traps, the probability is that all accumulations of gas pass by some means into the houses either by defective or small traps, for the mere placing of a syphon trap will not insure freedom for a house from gases entering from the main sewer; the rush of water, when flushing is taking place, frequently causes a vacuum which would unseal two or even three ordinary syphon traps on one connexion. . . . . The ventilators placed in some few places in this town are completely useless during wet weather, as the charcoal is not protected from the rain, and in hot, dry weather, nearly so, by reason of being choked up with dust. The ventilator* I have had fixed for your inspection answers in every respect the two requirements of keeping the charcoal free from dust and water, so that 'no impediment is offered to ventilation, as there exists a free communication between the sewer and the external atmosphere.' I therefore suggest that these ventilators should be placed at distances varying from 100 to 200 yards apart throughout the whole of the town and district. I had in my mind an idea of connecting the sewers with various chimney-shafts, such as the 'Granville Hotel,' but my mind is not fully made up as to the efficacy of such connexions, for the draught thus caused in the sewers might unseal the traps, and thus disarrange all attempts to disconnect the sewers from the house connections. I shall, at a future opportunity, lay the subject before you, after I have tried a few experiments as to the value of ventilation through large chimney-shafts, but at present I deem it unadvisable to do so."

* Latham's patent.

LONDON INTERNATIONAL EXHIBITION OF 1874.

The Exhibition next year will include,—Civil Engineering, Architectural and Building Contrivances; Sanitary Apparatus, and Constructions; Cement and Plaster Work; and Heating by all Methods and Kinds of Fuel; and committees are being formed for the purpose of obtaining good representations in these classes. The commissioners are also desirous of promoting the exhibition of a collection of paintings, drawings, or diagrams of a scenic effect, and on a large scale of important architectural and engineering works, both ancient and modern. They have invited the Institute of Architects to assist in carrying out this design, by inducing their members to contribute representations of some of the more important works which have been executed under their direction.

NOTES OF RESEARCH ON MEN AND MATTERS.

From time to time there have appeared in the *Builder* papers by several writers,—the present among the number,—on men and matters, concerning which very scant materials were obtainable. To supplement these papers by additional particulars is the object of the following notes:—

SIR EDWARD LOVET PIERCE, ARCHITECT.

Some months ago, a notice was published in these pages of the above overlooked architect, and with some reason an identity was pointed out with the missing Edward Pierce, the author of a work on Friezes, concerning whom, also, little or no information seemed obtainable. In hunting through a variety of channels, we came upon a few more scant particulars of the architect. During the viceroyalty of the Duke of Dorset in Ireland, who was a good patron to the stage, a new theatre was determined upon in Dublin, the site of which was Longford-street, adjoining Anguier-street. In the ceremonial attending the laying of the foundation there was an incident worthy of notice, inasmuch as the ceremony was not confined to the laying of one stone, but comprised the laying of four. According to Hitchcock, the author of "An Historical Review of the Irish Stage," published in 1788, "The first stone of the new theatre was laid with great pomp and ceremony, on Tuesday May 8th, 1733, by the Right Hon. Richard Tighe, the second by the Hon. General Napier, the third by William Tighe, esq., and the fourth by the Hon. Sir Edward Lovert Pearce, knt., Surveyor-General of his Majesty's Works in Ireland, and Architect of the Parliament House." It is stated that a prodigious concourse of people attended, and each stone was laid with a flourish of trumpets, drums, a band of music, and loud acclamations. Plenty of the choicest wine was provided for the gentry by the managers, and several barrels of ale were given to the populace. Under each stone were placed several medals struck for the occasion by Mr. Griffit, Mr. Elrington, and Mr. Layfield, managers of the old theatre, and all popular actors at the time. Each of the gentlemen who laid the foundation-stones made presents to the workmen, and a sumptuous dinner was provided by the managers for the nobility who attended.

A NATIONAL THEATRE.

The subject of a national theatre and its establishment has been written upon and warmly advocated in the *Builder*, and it is somewhat curious to find that the same idea was entertained by others, and measures taken to carry the idea into execution, nearly a century and a half ago. The [illegible] mapped out in

ese pages is nearly similar to what we are tout to quote from Hitchcock's work already uded to. Speaking of the Anguier-street heatre he says,—"There certainly never was a re noble or disinterested design than that st formed of building and conducting this eatre. Its principles were the most liberal d extensive that can be conceived. The plan st laid down by the subscribers, if properly rried into execution, would, in a short time, ve produced the grandest theatrical constitun in the world, even superior to the boasted henian drama. The proprietors were noblen and gentlemen of the first rank and consence in the nation, who, actuated by the blest motives, agreed to superintend the conns of the stage, endeavoured to advance its erests, and fix it on the most permanent and urishing basis, without the least idea of emolunt or return. A committee was chosen from nongst them, a chairman appointed, and every turday they met to appoint plays, distribute e parts, and settle the great variety of busiss which unavoidably arises from so great an dertaking. All the profits and emoluments cruing from the performances, instead of ing into the purses of private persons, were ely dedicated to the public service. As e scheme extended, the best performers who uld be procured were to be engaged, pieces of doubted merit were to be revived and brought rward, the wardrobes and scenery to be enrged, and every decoration which the hand of ste could point out to be adopted to adorn the eatre. Such were the outlines of a design uich promised as splendid dramatic entertainnts as Greece or Rome ever exhibited. How rthy of imitation!"

Alas! the grand design was never realised in ublin or elsewhere, nor is there any indication London, Paris, or Berlin that the nobility or ntry in any of these places are willing to subcribe to carry out such a design for the elevan of the drama, and with it morality and art. is presumable that Sir Edward Lovet Pierce as the architect of Anguier-street Theatre, hough we are not authoritatively informed at the design was his. If he was the archit, he was not so happy in his work as in that the Parliament House. The architect failed two essentials—hearing and seeing. We are d it required uncommon power of voice to fill ery part of the house, and that on crowded ghts the greater part of the people in both lleries could neither hear nor see. Such pedition was used in the building of this eatre that it was begun and finished within n months.

Sir Edward Lovet Pierce died in 1733, the me year as the theatre was built, and, we lieve, some time before it was completed.

LADY ANNE PIERCE.

This lady lived for several years after her sband, at the family residence at Stillorgan, unty of Dublin. The demesne is now known Obelisk Park, so called from a lofty obelisk, wards of 100 ft. high, erected by Lady Pierce, 1741, to afford employment to the poor during e scarcity of that period. The obelisk is oced on a rustic base, and on either side there a double staircase, leading to a platform, hich encompasses the obelisk. A beautiful ew of the Bay of Dublin and the Irish Channel to be had from the top.

STREET DIRT, OR SCAVENGE.

London at the present time furnishes very tle valuable scavenge; but fifty years ago and wards the scavenge of London and other ies was much sought after by farmers and rket-gardeners. The various health and wns improvement Acts during the last thirty ars have led to vast changes, and our leading oroughfares, at least, are better looked after. nce the advent of the asphalte pavement horse d cattle "droppings" in the City are specially ended to. We can, however, picture to ourlves what the streets of London were 100 ars since. One of the authorities of that day, iller, in his "Gardener's Dictionary," writes,—There is not any sort of manure equal to the eansing of London streets for all stubborn, ayey soils, which will be better separated, and much less time, with this manure than any mpost whatever, and it is extremely well orth procuring for corn, grass, or garden land." he ashes of pit coal and the soot of the same al were also recommended for their special ualities, which they are still credited with and ssess, to a certain degree, according to the rcumstances of their use.

The sweepings of our London streets at present, minus the "droppings," are not of much value to the husbandman. With other heterogeneous rubbish of the ashpit, they are carted to suburban "shoots," to raise foundations for future streets and houses, where land may be had cheap, and dwellings are built to *sell* and to kill.

A NEW SYSTEM OF IRRIGATION.

The Duke of Somerset, Lord Chesham, Sir Henry Montgomery, Sir Erskine Perry, the Hon. Leslie Ruthven, and other agriculturists assembled recently at Stoke Park, Bucks, the residence of Mr. E. J. Coleman, for the purpose of witnessing a new system of irrigating pasture-land carried out by Mr. Brown, a Scotch gentleman. It embraces, first, an increased production of grass; and, secondly, an improved and more economical method of consumption.

A force-pump worked by a 12-horse power steam-engine draws water from the ornamental lake, and waters the whole area with jets of "artificial rain" squirted from small perforations in lead pipes, which are laid down in parallel lines 16 yards apart. With a pressure of 60 lb. to 70 lb. per square inch, or a head of 120 or more feet, the engine maintains a shower upon a plot of about an acre and a half in extent, applying 10 tons of water in 15 minutes. And plot after plot is taken in rotation until the whole is thus irrigated, the work proceeding for the most part in the night, so as to avoid any ill effect upon the herbage from watering under a hot sun. Six acres, parted off for the present experiment, are watered every night. Mr. Coleman, requiring hay, has hitherto used the system chiefly for promoting the growth of hay crops, and thus the natural herbage has been injured for grazing purposes. Nevertheless, the appearance of the full green aftermath, from which an enormous bulk of hay 3 ft. high was taken in June, was surprising when compared with the adjacent ground, lying withered and bare on its dry loamy soil. The six-acre portion was dressed with 5 cwt. per acre of artificial manure, and then watered.

Here is also being conducted another novel experiment, designed to secure in sheep-grazing the economy found in the well-known Jersey system of tethering cows. Two hundred fatting sheep (tegs of the Leicester and Cheviot cross) are inclosed in a fold which reaches across the whole breadth of the field, namely, 300 yards, but with only seven yards space between two rows of hurdles, so that the area occupied by the sheep at one time is less than half an acre. Instead of confining the sheep to this plot until it is quite exhausted, and then shifting to another plot of high grass, as in ordinary folding, the new plan is to remove both rows of hurdles one yard forward at least four times per day. Thus the animals have always access to a strip of strong, fresh, succulent herbage; they never foul their food; they walk and lie only upon what they have already cropped short; they leave not a blade of grass, or a stem shooting up into seed as a "bent," and yet they have ample room for their natural ranging up and down in search of new mouthfals or special grasses. To ease the labour that would otherwise attach to this rational process, Mr. Brown has constructed a hurdle in the form of a *chevaux de frise*, consisting of a horizontal central bar, with spelis or bars at right angles, in cross section like the multiplication sign ×, each side of the square being 3 ft. across, and the hurdle 9 ft. long. Made of Norway fir, these military-looking fences are light and yet very durable, particularly if creosoted wood were used; and the process of shifting by rolling each hurdle one-fourth of a rotation, or on to its next face, is so easy and expeditious, that the shepherd turned by himself 106 hurdles, being a length of 300 yards, in seven minutes.

The sheep graze by putting their heads between the upright bars or slats of the hurdles and after ten days of the folding were evidently doing exceedingly well. Indeed, Lord Chesham, who is pre-eminent as a breeder and feeder of Shropshires, expressed his high approval of these hurdles as the very things most suitable for grazing sheep. The fold had advanced in ten days, about forty yards, leaving the grass uncropped and untrodden in the portion behind to grow up rapidly under the stimulus of the daily showers, in readiness for a repeated visit of the flock. The earliest eaten grass is already (in the ten days) a fair sheep bite: and it will be ready for refolding long before the expiration of the fourteen more days which are required to complete the first course. It is affirmed that, with "growing weather," always at command by means of the steam pump, a growth of half an inch to 1 in. per day can be obtained, and that, with a proper attention to the watering, the 6 acres in Stoke Park are able to feed double the present number of sheep, or sixty-six per acre. At this rate the six acres would carry about 400 sheep for six months, from April to October; and the summer stocking for the whole 40 acres under the system would be no less than a flock of 2,600 tegs, shearlings, or other fatting sheep. Without the watering, manuring, and hurdling it would probably be overdone with 260.

Thus upon a tenth part of the area of grass land hitherto required, the supply of mutton may become wonderfully increased, leaving nine times as much grass land to be added to the area used for breeding flocks.

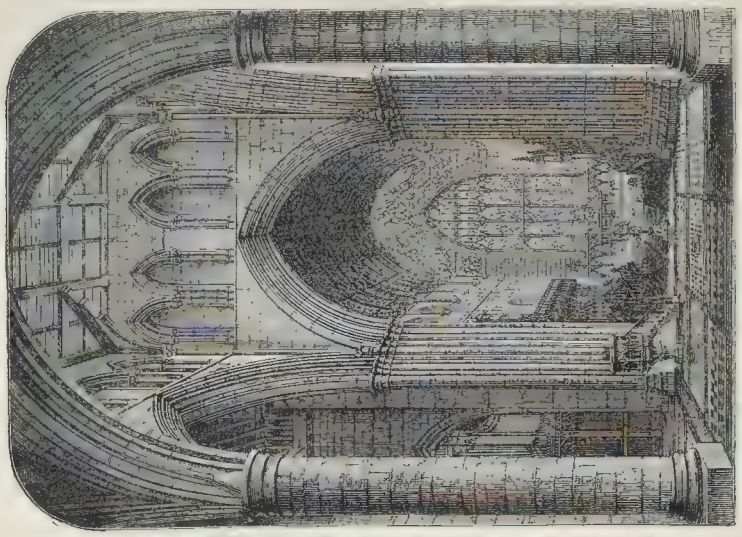
The estimate reckons the rent at 30s. per acre; manual labour, 5s. per acre; coals, 10s. per acre; artificial manure, 120s. per acre; interest and maintenance upon permanent plant, machinery, and engine-power, 40s. per acre; interest and maintenance upon hurdles, 20s. per acre; total, 11*l.* 5s. per acre, for the season. The return is, the keep of 66 sheep for twenty-eight weeks, which, at 6d. per head per week, would amount to 14s. per sheep, or 46*l.* 4s. per acre. Looked at another way, the sheep may reasonably be expected to make one pound weight of mutton per head every week for twenty-eight weeks; and this, at say 8d. per pound, will be 18s. 8d. per head for the season, giving, at Mr. Coleman's rate of stocking, 30*l.*, or at the rate calculated upon in future, 60*l.* per acre.

OUR SILK MANUFACTURES.

The last of the reports on the different departments of the International Exhibition yet written for the Society of Arts is one on the "Silk and Velvet Manufactures," by Mr. Francis Bennoch. In summing up his observations, the writer inquires why it is that, as a rule, the foreign manufacturers excel us in all the higher branches of silk manufacture? In his opinion the answer is at hand. "We dye as well, we weave as well, but, as a rule, the scientific manufacturers of France, Germany, and Switzerland have their silks specially reeled in a manner suitable for the goods required, whereas in England the manufacturers are, to a large extent, at the mercy of importers, brokers, and dealers, who care little for the success of our manufactures, so long as they can, without much thought, secure a profit in their own department of the trade. This is a fact so patent to the initiated, and so disastrous in its results, that persons interested will protest against it, and deny the statement; but it comes within the experience of too many to be successfully disputed, and the largest manufacturers in the kingdom deplore the humiliating fact."

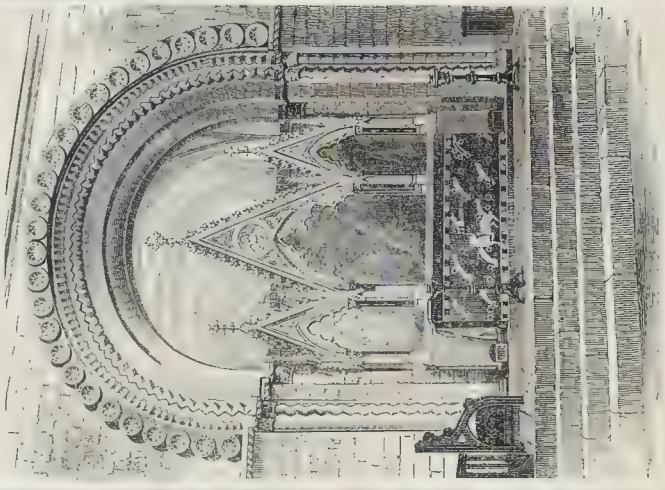
Mr. Bennoch refers with great satisfaction to the works produced by Mr. Thomas Stevens, of Coventry, and adds,—"Mr. Stevens evidently possesses a restless spirit, not easily subdued, and if the tide threatens to leave him for a time, he digs out a new channel for himself, and thus he has created a trade peculiarly his own. I have taken unusual interest in his productions, not only in the goods, but in the looms producing them, and I find that to make a 'Forester's scarf,' as exhibited, 2½ yards long and 6¼ in. wide, requires the use of 16,000 perforated cards to make the figure, which is 1 ft. 3 in. long, and for the plain part 14,000 cards, making a total of 30,000 cards. The number of threads in the warp of each scarf is 1,800, and there are fifteen different colours in the shutes; these figures are multiplied by the number of pieces being made at once; so that if ten pieces were making, 18,000 threads of warp would be in the loom. Hence the involved, and, to the untrained eye, the inextricable confusion of threads, as shown in the harness of the loom."

It requires about six months to fit up such a oom, and when it and the cards are ready t occupies a month to obtain one complete attern. Eight pieces are made at once in the oom now at work, and with ten hours' labour a good hand will make the length of one scarf ach day. The cost of the loom, the draft or lesign, the cards, and the value of silk in the oom, would make a total value of 500*l.*

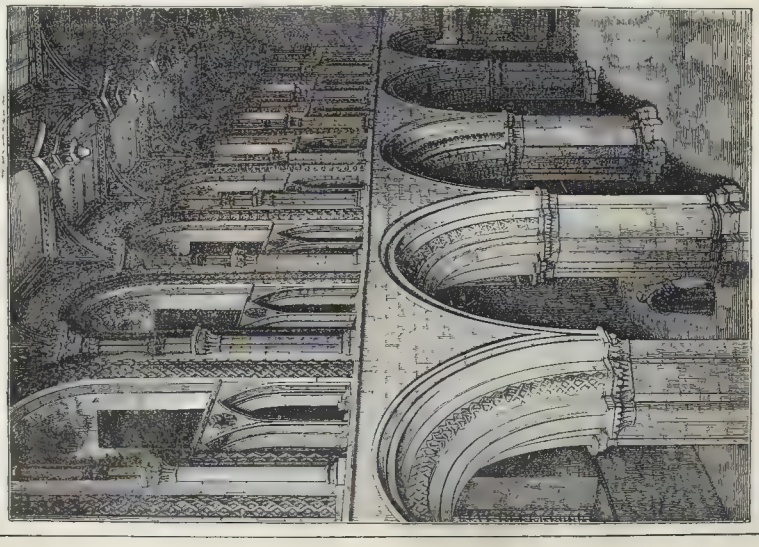


BANGOR CATHEDRAL.
Interior from the West.

See p. 637, ante.



LLANDAFF CATHEDRAL.
Norman Arch of Choir.



ST. DAVID'S CATHEDRAL.
The Nave.

THE GRIP OF GENIUS OR INTELLECTUAL GRASP.

Grasp is the distinctive characteristic of the aster-mind; the antithesis of feeble, rancorous esidedness; of narrowness, littleness, eccencity. He who possesses this grand and masful quality is not unmindful of, wantonly blind mere individual facts; his vision is neither veted on, nor bounded by, them. Having the p of genius, he binds isolated truths together rmoniously, orderly; extracts from them an sential form, a general principle. This ality of intellect, or the great mind, is tless till it clutches and holds fast the ruling d immutable principle of the work it is proucting; soon discovers what is trivial, accinital, temporary; and is never fascinated and ssed by either fashion or prejudice. Intelctual grasp characterises greatness in philoophy, politics, science, art, poetry, and literare; therefore what the mind so gifted carries is for all time.

Greatness is rare because *grasp* is rare; it is ly a few men in any age upon whom this ine gift of *grasp* is bestowed; or if it is more quently bestowed than we seem willing to mit, it is because we are unacquainted with all t grasp accomplishes. The greater proportion the men of any epoch are too narrowly gaged in the crowded arena of life ever to eam that there is a wider and higher outlook n their own,—a topmost point, viewed from ich they and their labours sink into insigcance, into such atomic minuteness as to be ost invisible. Mention any really great rk which has been, and continues to be admiration of mankind, and unmistakable dence of this masterful quality of *grasp* shall apparent,—the "Iliad," antique sculpture, cartoons of Raffaelle, the decorations of the tine Chapel, Newton's "Principia," Shakare's dramas, "Paradise Lost," &c. Beside rks like these, the scattered items of modern rt appear fragmentary and purposeless, and the admiration only of sects as narrow and tial in view, or perhaps narrower and more tial in view, than the workers they admire, and are taken to be their representative men and nen, for they have their at-homes and grand eptions, receive and return the homage of r own kith and kin in opinion, and dream n eternal resting-place in the Temple of e, but wherein they will have neither freeniche, nor abiding-place. Minds of this r have not worked upon principle, have aken an aspect for the grand whole and metrical truth. They never clutch the conforms, but merely emphasize the accidental vidualities of things,—they lack *grasp*. And ime, fashions, opinions, and individualities ge their philosophical meanderings, their elling poetry and art, their florid science narrow politics, will sink into oblivion.

it during all this fêting, interviewing, and sing of serene intellectual littlenesses, it sometimes happen that one or two men d with mental grasp are silently working r difficulties,—men who are seldom seen, or en, are passed without those marks of gnition which should be their due in the ral pageantry and panoply of the time. r work, nevertheless, ripens into a plentiful est, and their fame grows and expands hat of their more popular contemporaries dles, shrinks, shrivels, and decays. These men lay the solid foundations upon which ore discriminating future safely builds,—the means of power to or save their country; yet, as we have said, they, of all men having attributes of intellect, shall be the most unrved of all observers of their own day. Nay, for centuries, and when the material value eir work is fully understood, never receive e of the homage which is paid in succession ose servants of the State who are appointed e comparatively easy task of watching and lating the results of the greater men's ghts. Who now ever thinks or dwells upon vast importance of the inventions of Watt Stephenson to this country? Do we yet ociate the greatness of the few men who vered the means by which it was alone ble for England to maintain her position, her own,—the men who, immeasurably nd all others in this century, have conted to the advancement of civilisation? We it a callous indifference, a conceited, irrevebearing, in respect to the memories of our lectual giants. It was but yesterday re-d in the *Builder* that Newton's observatory had been removed no one knows whither, and that his house, though well known, has long been consigned to neglect and decay. It is true that the greatness of men of grasp, like Newton, builds its own monument; that marble and bronze are of no moment to such men,—are not required to perpetuate the memory of the truly great. But though public monuments can neither add to nor contribute to the perpetuation of true fame, they are important as outward and visible signs of a nation's sensibility; and the comparative dearth of public monuments to our greatest men, whilst they abound to lesser benefactors, manifests a defective appreciation and a low state of civilisation. It is said that if you scratch a Russian, you shall discover the Tartar: it is not said, but it is equally true, that you have only to scratch an Englishman to reveal the barbarian,—to find that he is easily diverted by noise, loud colour, and glitter,—that quantity and oddity are in his eyes superior to quality,—that he is always ready to run and see the great this or the monster that, the dwarf and the deformity. He it is who is now readier to listen to and be led by palaver than to ponder or think for himself. He it is who is led or driven he knows not whither; it is he who, more than any other European, is insensible to the value of intellectual grasp.

Mental grasp is an indispensable quality to a statesman; in fact, no one deficient in this quality ever can become a statesman in the true sense. For a man, no matter what his station is, or what his education may have been, without the foresight which is the accompaniment of intellectual grasp, may either imperil or ruin his country in deference to the narrow views of a party, or the vested interests of wealth. Mental grasp enables a statesman to divine whither progress is inevitably tending, and, without putting the helm hard down, to steer wisely, and thus to avoid mutinous revolution and wreck. It is mental grasp which makes the great general, which gives the power to discern at once the disposition and intent of an enemy, his strong and weak points, and to perceive at once the proper mode of attack, which is prompt to organize, and confident of victory. It is grasp of intellect in literature, painting, and sculpture, which seizes the *general* form of a subject, and combines all subsidiary elements into one organic and compacted whole. It is *grasp*, in fact, which makes any work a work of art. In brief, there is no vocation in which intellectual grasp will not confer mastery. Grasp is power intellectually as well as physically, and without lesser spirits precisely knowing what subtle and compelling influence is working upon them, they are chafed and worried by its manifestation, and are sometimes imprudently and rashly impelled to attack men who possess it, who, if they be vindictive, as they very seldom are, take their opponents, give them one rude shake, and it is all over; but more frequently gentle and merciful, they smile at antagonistic lilliputians, and hand them over to the tender mercies of posterity.

Even in respect to the more material pursuit of wealth, it is grasp of true financial and trade principles which alone leads to any great success. Without intellectual *grasp* the pursuit of gold sinks to mere miserly grovelling greed. It is mental *grasp* in every department of inquiry which will eventually demonstrate to nations that their best interests are identified with those of mankind. If, therefore, the men having the Grip of Genius be unheeded, and a nation is persistent in narrow views and policy, it will never occupy an important place in the history of the world, in art, science, or literature, and its power will be transitory. The decadence of a nation commences when wealth, position, and power believe they can do and endure without the aid of intellectual grasp, of men of genius.

W. C. T.

NEW GOTHIC CHURCH FOR THE HIGH PAVEMENT UNITARIAN CONGREGATION, NOTTINGHAM.

Eighty-one sets of designs, from all parts, were sent in competition for this church. The committee, assisted by Mr. T. H. Wyatt, chose the one by Mr. Stuart Colman, of Bristol, for adoption, and awarded the premiums of 75*l.*, 50*l.*, and 25*l.* to Messrs. E. T. Robins & G. F. Roper, of London; Mr. G. Ogden, of Bradford; and "I Aspire," of London, in the order named. The whole of the designs will remain on view during next week, in the large hall of the School of Art, Nottingham.

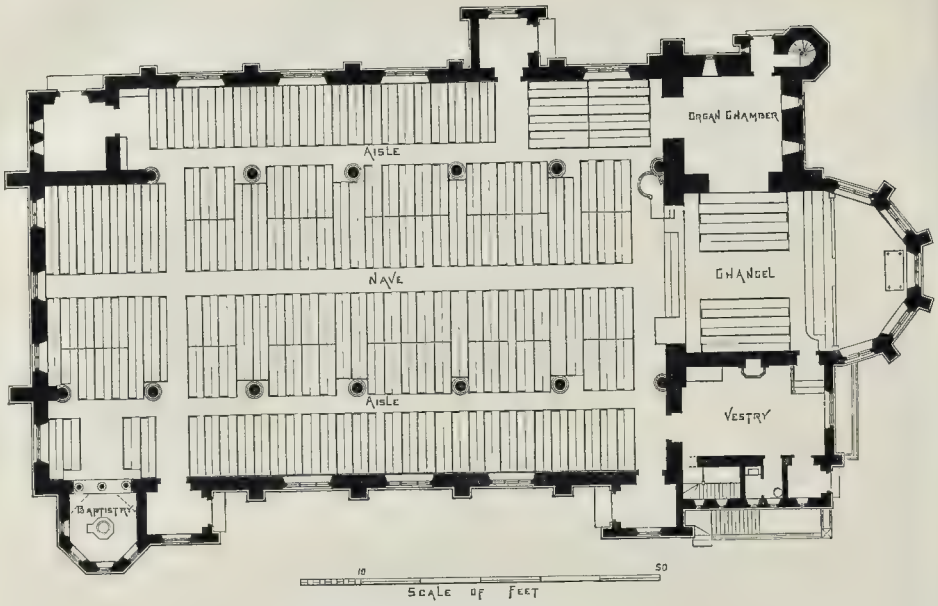
PROPOSED RAILWAY EXTENSION AND NEW STREETS IN THE CITY.

An important railway project in the City, involving the construction of a new street from the corner of Eastcheap to Fenchurch-street, and also the widening of a portion of Fenchurch-street, has just been brought before the public, and it is intended to apply to Parliament next session for powers to carry out the object. The proposed railway would complete what is known as the Inner Circle, by connecting the Metropolitan and Metropolitan District lines in the City, and it further includes an extension to Bow.

The proposed line commences by a junction with the existing Metropolitan District line at the Mansion House station, following the line of Cannon-street to Eastcheap, and thence from the corner of Eastcheap to another point in Fenchurch-street, along which it passes to the junction of Aldgate High-street with Leadenhall-street, where, by a curved line, it joins the authorised line of the Metropolitan Company leading from Aldgate to Bishopsgate-street. From this point it is continued underneath the Whitechapel and Mile End road, to the North London Railway at Bow.

The proposed construction of new streets and the widening of others form an important element in the undertaking. This portion of the scheme involves, as we have already stated, a new thoroughfare from the corner of Eastcheap and Fish-street-hill to Fenchurch-street, and the widening of Fenchurch-street at different points in continuation of the widening already effected by the City Commissioners of Sewers and the Metropolitan Board of Works. The estimated expense of this portion of the undertaking is 1,010,000*l.* It should here be stated, by way of explanation, that there are two distinct parties or promoters of the undertaking, whose objects are almost identical with each other. One set of promoters is represented by Messrs. Newman, Dale, & Stretton, and Mr. C. Baylis. The proposal of these parties embraces the extension to Bow. The other promoters are represented by Sir Edward Watkin, chairman of the Metropolitan Company, who are desirous of accomplishing precisely the same object as the first-named parties, with the exception of the extension to Bow; Sir Edward Watkin, however, being of opinion that when once the circle is completed by the junction at Aldgate, the extension to Bow must naturally follow. One body of promoters proposes that the railway company should make the street improvements, and the Metropolitan Board of Works and the City authorities should contribute part of the cost; whereas the party represented by Sir Edward Watkin suggests that the local authorities should carry out the improvement, and should give the railway company the right of making the railway underneath, the company only paying for any land which it may require for stations. But at a recent interview with the Parliamentary Committee of the Board of Works on the subject, Sir Edward Watkin intimated that if the Board should think that the company ought to pay something for the right to make the railway under the street, the directors would probably be ready to entertain any proposition to that effect. Sir Edward Watkin further suggests that the Board should make a new street from Bishopsgate-street to Aldgate on the surface over the railway.

The subject was before the Metropolitan Board of Works last week, when the undertaking appeared to be favourably received, the Board being strongly in favour of the completion of the railway circle as a great convenience to the inhabitants of the East-end. The matter was referred to the Works and General Purposes Committee, with instruction that the engineer and architect of the Board be instructed to examine the plans and estimates of the proposed undertaking; but it was suggested that as one of the two rival schemes only could be sanctioned, unity of action on the part of the respective promoters was desirable. The scheme also appears to be under the consideration of the City Corporation authorities. We understand that the necessary plans and documents are being prepared by both bodies of promoters, preparatory to their being deposited in anticipation of the application to Parliament next session, but that a fusion of the two schemes is probable, and that the sanction of Parliament will be asked for the carrying out the scheme in its integrity which has been fully decided upon.



ST. LUKE'S CHURCH, SOUTH KENSINGTON.—*Plan.*

ST. LUKE'S, SOUTH KENSINGTON.

St. Luke's Church, in Redcliffe-square, which was consecrated last week by the Bishop of London, accompanied by a large body of the clergy of his diocese, has been built to supply the spiritual wants of the Redcliffe Estate, a neighbourhood recently created by Messrs. Corbett & McClymont. The land upon which this church and surrounding buildings have been set up was occupied scarcely ten years ago as market-gardens. During that time 980 houses of all classes, of rentals varying from 400*l.* to 50*l.* per annum, have been erected. This has been done by Messrs. Corbett & McClymont and some few under-tenants. The freeholders of the greater portion of the estate are Col. Gunter, and his brother, Major Gunter.

The site had unfortunately been excavated for brick-earth some years back, and it was found necessary to take out the loose soil in some places to the depth of 24 ft.; 10 ft. of concrete were thrown in, and piers built connected by brick arches. The whole of the church, with the exception of the tower and spire, in fact, stands upon brick piers. To bring the foundations up to the ground level more than 1,700*l.* were expended. Luckily the architects knew perfectly the nature of the ground before commencing the works. The second contract was commenced in July last year. The church is in the Early Decorated style, treated rather freely. The exterior is built of Kentish rag stone and Box-ground stone.

The total length of the nave, which is in six bays, is 102 ft. 8 in.; the span is 33 ft. It is 55 ft. high to the underside of the ridge, and 31 ft. to the top of the wall-plate. The width of the nave, from centre to centre of columns, is 35 ft. 4 in., and the width of each aisle is 14 ft. 3 in.; making a total of 63 ft. 10 in. The chancel is 40 ft. in length, and 26 ft. wide, 40 ft. 6 in. high to the underside of the ridge, and 20 ft. 6 in. to wall-plate. The chancel arch springs at 16 ft. 9 in. from floor of nave, rises 16 ft., and is 22 ft. in span. The organ is placed in the lower portion of the tower; it is 16 ft. by 16 ft., and 20 ft. 6 in. high. The tower is 67 ft. 9 in. to the starting of the spire, which is 77 ft. 7 in.; the stone finial is 4 ft. 8 in. high, the iron termination is 8 ft., giving a total height of 158 ft. The vestry is 23 ft. by 15 ft., and a choir-vestry is provided below.

The columns of the nave-arcade are of Hullington stone, the shafts being 1 ft. 10 in. in diameter, and 6 ft. 2 in. in height, the total height of each column, with capital and base complete, being 9 ft. 6 in. On each of these columns there is about 45 tons' weight, and inasmuch as when the stone came upon the ground it looked less hard than was expected, experiments were made to test its strength, and an entire shaft, consisting of three pieces, was subjected to pressure. 100 tons were applied to this shaft without causing it to yield in the slightest degree, and as this was more than double the weight which it would have to bear, no further weight was put upon it, the test being considered sufficient. In this experiment thin slips of deal were placed between the joints of the shaft in lieu of the lead which is used *in situ*. Sitting accommodation is provided at present for about 1,000 persons, but by a rearrangement of the seats hereafter many more may be accommodated. The total cost of the foundations was 1,732*l.*, and the contract for the rest of the work, including the tower and spire, brought the total cost of the building up to about 15,800*l.* The spire, it may be mentioned, is solid for some 6 ft. or 8 ft. down, and at 30 ft. from the top there is a York landing across. The thickness of the walls at the bottom of the tower is 3 ft. 9 in. The main walls of the church are about 2 ft. 3 in. in thickness. The heating of the church is effected by hot water. Ventilation is secured by hoppers in the windows, and by means of small lights above the large west window and the chancel-arch, made to open. The interior is of brick, in parts varied as to colour, with free-stone arches and dressings.

The church was designed by and carried out under the immediate personal superintendence of Messrs. George & Henry Godwin. Mr. Lewis was clerk of the works. The builders, Messrs. Hill & Son, of Charlton Works, Islington, have done their work well. Mr. James Steward was their foreman. Such carving as is completed, including reading-desk and lectern, of alabaster, was executed by Mr. Boulton. The gasfittings were done by Mr. Cannon. Messrs. Hart, Peard, & Co. may be mentioned in connexion with the ironwork; and Messrs. Minton, Hollins & Co. with the tile-pavement. The organ is the work of Mr. H. Jones, of the Fulham-road.

The money has been chiefly provided by the vicar designate, the Rev. W. Fraser Handcock, and his friends. We are glad to be able to add that the acoustic qualities of the church have been pronounced very satisfactory.

THE BUILDING TRADE OF WURTEMBERG.

A short report which has just been published upon this subject is not without interest to the readers of this journal. We learn that of late the building trade of Wurtemberg, generally speaking, has been developed with great rapidity, and has assumed an importance which it did not previously possess. The demand for labour, too, in this direction, has been so great as to lead to the importation of southern navvies, whose services have been found useful in the construction of earth-banks, &c. With regard to the relations of capital and labour, though it is stated that the labourers seem to have had things pretty much their own way, and all wages have risen proportionately, still these results have, for the most part, been arrived at in an amicable manner, and without recourse to the costly expedient of a strike. It appears, indeed, that the building trade of Wurtemberg has been as yet entirely free from these unpleasant occurrences, although other branches of native industry have not been so fortunate. The right of striking and combining in such associations as trade-unions being an altogether novel idea in Wurtemberg, its consequences have yet to be experienced; but we find that the legal status and position of these unions are already a matter of consideration with the authorities, with a view to timely legislation; and the Gewerbverein of Stuttgart has also given its attention to the question of tribunals of arbitration. In general, the social question of the day, so far as it concerns the relations of employer and employed, is treated with much earnestness in Wurtemberg, although the country, as we have mentioned, has not suffered in any serious degree from differences between labour and capital.



ST. LUKE'S CHURCH, SOUTH KENSINGTON.—Messrs. George & Henry Godwin, Architects.

MEDICAL OFFICERS OF HEALTH.

At the recent Medical Congress at King's lege, Dr. Syson, in the section of "Public dicine" (Mr. G. W. Hastings in the chair), d a paper on the subject of "Public Officers Health."

He maintained that an officer of health has no ver, *ex proprio motu*, except under the Arti- s and Labourers' Dwellings Act and the Act the Seizure of Unwholesome Food, but sani- y authorities might empower an officer of lth, by restitution, to institute and carry on proceedings which they themselves could titute and carry on. The only two cases he aware of in which this resolution had been ed were Leeds and Salford. In all proba- ty, as authorities gained confidence in their cers of health, they also would delegate hority to them. One of the difficulties which cers of health would experience would be in ablishing proper relations between themselves l inspectors of nuisances. Inspectors of sances should be thoroughly subordinate to cers of health, and should not be allowed to nge the authorities into great expenditure for inage and other works until the sewage iculty was nearer to a solution. Their work uld be to make the sanitary survey men- ned in the regulations issued by the Local vernment Board, and to keep the officer of lth well posted up as to all cases of infectious ease and matters requiring his attention. The cers of health would be called upon to advise authorities in regard to the framing of bye- s and regulations for the removal of nuisances l the disposal of sewage. Dr. Syson recom- nded that as far as possible in country dis- cts, for the present, officers of health should leavour to cause individuals to prevent any sances arising on their own premises, and so id accumulations of sewage and filth. The sing of Sir Charles Adderley's Bill next sion, it was to be hoped, would remove diffi- ties. He found that relieving officers in rsely-peopled districts made valuable in- otors of nuisances, although he was well are that objections might readily be urged inst their employment universally.

Some conversation followed, in which there peared to be a general, although not a unani- us, concurrence in Dr. Syson's views.

A conference of medical officers of health ing under unions of sanitary authorities, was d in another room, where matters of special erest to them were discussed.

RIOUS OUTBREAK OF TYPHOID FEVER IN MARYLEBONE.

At the last sitting of the Representative stry of St. Marylebone previous to the recess, Whitmore, the medical officer of health, orted that at the present moment a very ious outbreak of enteric or typhoid fever was valent in the parish, more particularly in the vendish-square district. Every day, and ost every hour, for the previous three or four s, fresh cases of this disease had been ught to his knowledge, and it was most portant to trace, without a moment's delay, disease to its sources. Suspicion already ated to a particular cause, but in order to vert suspicion into proof, the investigation l inquiry required would necessarily be of a y extended character. For the satisfaction the Board, and to allay apprehension in the blic mind, he stated that the suspected cause s in no way attributable to the water supply, sanitary condition of the houses in which outbreak occurred, or the condition of the vers. All these had been carefully examined l found to be in good condition. In his nion, the source might probably be found be many miles from London. At the sent moment he could not be more ex- cit, but he was about to bring the matter mediately under the notice of Mr. Simon, the dical officer of the Government, who, no abt, would afford him that assistance in prose- ing the inquiry which the importance of the ject urgently demanded. The statement duced a deep sensation in the vestry, and it s unanimously resolved that their medical cer of health be authorised to prosecute his uiries without delay, and that the necessary penses incurred be paid by the Board. The *itish Medical Journal*, referring to the out- ak, says its cause is still in doubt. Our con- porary publishes a letter from Dr. Whitmore on the subject, and says its information throws considerable doubts on the statement in it that the epidemic is conterminous with a particular milk-walk. The implicated company, it adds, believes itself to be in possession of information indicating quite another source of the epidemic. It must at least be remembered that typhoid fever was not long since distinctly traced from a provincial town to a country farm-house which supplied the infected town houses with milk.

MACHINERY FOR MAKING PARQUETRY.

Messrs. Samuel Worssam & Co. exhibit at Vienna some machines patented by them for making parquetry flooring. At present the series comprises three machines. The first is a single grooving and edging machine, for preparing the skips or angular pieces which are to form the squares. The wood to be acted upon is fixed to the table, which can be traversed past the cutters, whereby the operations of grooving and edging are effected. The grooving is performed by a cutter on a vertical block; and edging, in this case, is effected by a revolving cutter with lancet-shaped teeth, somewhat resembling a circular saw.

The second machine is for performing the same operations, but is on a larger scale, and so arranged that two operatives may work at the same time. It can also be used for edging the squares after they are glued up. In this machine a single vertical cutter-block is employed in conjunction with a double set of tables, on to which the stuff to be operated upon is cramped.

The third and most important machine, and one which attracts notice at the Vienna Exhibition, is the surfacing-machine. After the parquetry square has been edged, grooved, tongued, and put together, it is secured to a revolving disc or plate, carried by a mandril in a poppet-head, similar to a lathe head-stock. In front of the face-plate, cutters, somewhat similar to a plane iron, are held at suitable angles for acting upon the face of the square. These cutters are fixed in slides, which are traversed across the face of the revolving disc by means of a square thread-screw and bevel gearing.

A NUT FOR CHICHESTER.

If we accept Dr. Darwin's theory, we once were unacquainted with cooking and ablutions, to say nothing of habiliments and habitations; when, however, we became better off, we, in course of time, covered our epidermis with the skins of "our poor relations," and garments of vegetable substances, made habitations of minerals, and cooked our food and consumed it under the roofs thereof. We erected cities and towns, and in them reared churches, theatres, baths, gymnasiums, markets, halls, reservoirs, hospitals, schools, and factories. We did not wash our dirty linen at home, and we sent our offal and filth miles away from our domiciles—at least, some of us. We were very young at first, and knew no better; but now that we have grown up, we are conscious of being big girls, and blush at our former indecencies—at least, most of us. It is very deplorable that some of us are, even now, not much better than we were "in the beginning," and still retain our filth at our elbow, until we are almost buried in it. To the eye of the stranger passing through Chichester, it appears a clean city; but his nose knows it is not. He blows it, and he "turns it up," and never dreams of going there to live; new villas are springing up everywhere away from this city of cesspools, and in it "there is nothing new under the sun," although, besides the cathedral and the cross, there is nothing very old. It stands upon a gravel flat, and the houses are built of the largest boulders from this gravel. East-street is a noble one, but the architecture is that of the country carpenter; in front of the Corn-exchange stands a very pretentious Doric portico, under which all East-street and his wife can find shelter from the rain, which can be the only purpose it was built for. The Swan is the greatest ornament to this Oriental thoroughfare; but, like the theatre, it has been metamorphosed, and "mine host" now administers to the external requirements of his patrons and matrons. The council chamber in North-street is an insignificant building in the Queen Anne style, surmounted by a lively lion large enough to swallow the chamber, town-councillors, and all. There is no free library nor free baths, and the consequence is, that few of the working-classes, which are the largest class, have been washed since they were weaned. The nearest place of natation is a creek, some distance from the city, to which there is a pretty walk, much frequented by sighing swains and confiding maidens, across some fields full of lowing kine. This would be a pleasant walk, and calculated to provoke the tender passion, but for the meandering brook, which is crossed and recrossed by the billers and coocrs who wander along its sedgy banks. This stream is one of the most polluted, disgusting, and abominable rivulets in England. It is, in fact, a sample of the contents of the Chichester cesspools.*

As may be imagined of such a lagging place, the wages of the great unwashed are scandalously low, and their propensities on a par with their pay; property is valueless, and there is a lethargic air about the inhabitants which indicates that to them to-day is just like yesterday, and to-morrow will be like to-day. They will take their shutters down and put them up again, as their benighted ancestors did before them, until the lion loses his good temper, and swallows up their connexions in his indignation.

Gargoyle.

* The Priory inclosure is a redeeming feature; but being supported by subscribers instead of rates, it is tabooed to the horny-handed as much as if they were still in Darwin's original state.

CURING ECHOES.

We mentioned not long ago that echoes in rooms had been destroyed by the introduction of a few wires. There is a very troublesome echo in St. John's Church, Limehouse, and an experiment as to the effect of wires has been tried there. The *St. John's Chronicle* says,—It was difficult to know how and where to begin; for the learned, if indeed any one can be said to be learned in this matter, are not at all agreed as to the cause of the echo. One authority attributes it to the wall, another to the roof, whilst a third has no manner of doubt that the echo proceeds from the floor. Under these circumstances we have been obliged to string up the wires at a venture, and we began by stretching half a dozen, about 6 in. apart, lengthways from the chancel to the west wall, forming a sort of invisible fence, from pillar to pillar, just about the middle between the nave and the aisle. It seems to be admitted by those who sit in the aisle that this arrangement, so far as they are concerned, has had a beneficial effect. Indeed, some who were not aware that the wires had been put up, said that they perceived a marked improvement as soon as the reader began to say the prayers. But these wires made no difference to those who sat in the nave. Accordingly other wires have been stretched from north to south across the nave, but with no perceptible result. Further experiments, however, will be tried; and the results will be recorded for the benefit of clergymen or churchwardens who may be troubled with echoes in their own churches.

THE MURAL PAINTINGS IN KEMPLEY CHURCH.

Last autumn an interesting discovery of mural paintings was made in the Church of Kempley, a small village in the diocese of Gloucester and Bristol. The church itself, says the *Gloucester Chronicle*, in giving an account of these paintings, is an extremely interesting specimen of Norman architecture. It had undergone, like most of our ancient churches, periods of "beautifying," in the style common enough in the last 200 or 300 years,—whitewashing. On removing the several layers of this useful, but scarcely ornamental, material, colour was found. This encouraged careful and persevering efforts on the part of the Rev. Mr. Drummond, which have resulted in the uncovering of wall-paintings, almost, if not quite, unique in this country. The chancel is wagon-roofed. The ceiling of this, as well as the walls, were covered with paintings both of figures and ornamental designs. The general subject is the worship of Heaven. On the ceiling is a large figure of our Saviour, surrounded by the various subjects as described in Revelations iv. 4,—Seraphim, the four living creatures, emblems of the Evangelist, seven candlesticks as the Spirit of God, the sun, the moon, and stars, a figure of St. Peter, and opposite one of the Blessed Virgin. Beneath, on the walls, are the twelve Apostles, six on either side, seated on thrones, gazing upwards to the Saviour, with hands outstretched in attitudes of

ecstacy and adoration. On the east wall is a figure of a bishop, in eucharistic vestments, in the act of blessing. There are also other figures of equal size and interest, which are not easy to explain. The nave has been equally adorned; but more attention had been given to the whitewashing, which adhered so closely that the process of scraping was more difficult, and attended with less satisfactory results. In the splay of one window, however, which had been blocked up, a capital subject was revealed,—on one side, the Archangel, weighing a soul for judgment; on the other, the figure of St. Antony. The date of these paintings has been fixed by competent authorities as not later than towards the end of the twelfth century. They have been photographed by Mr. Abraham Thomas, of College-green, Gloucester.

THE EAST LONDON RAILWAY EXTENSIONS, AND THE VALUE OF LAND REQUIRED FOR THE WORKS.

It transpired at the half-yearly meeting of the East London Railway Company that the price demanded for the land required by the Company for the execution of their new works now in progress at the East End between Wapping, Shadwell, and Whitechapel, is enormously high, and in many cases unreasonable, as the arbitration awards have proved. During the last six months the directors have been giving great attention to the purchase of land. In one instance, six persons asked 12,000*l.*, and the Company thinking the price asked exorbitant, lodged 5,800*l.* in court, and on the case going to arbitration a still smaller sum was awarded. In another case twenty persons claimed 28,000*l.*, and ultimately the whole was settled for 14,000*l.* But the most remarkable case was one where the owner in the first instance claimed 4,000*l.* for his land, which he afterwards reduced to 2,000*l.*, but the Company still thinking it was far above its value, the case was sent before a jury, when a verdict for 25*l.* was given as the value of the land.

SUPPLYING BUILDERS WITH TRACINGS.

"PROFESSIONAL INQUIRIES."

"B.'s" answer (p. 634) to "A.'s" question (p. 590) might be accepted as it stands, and still supply no very practical guidance. "A." had asked, "*Provided* the builder requires a *second* set of drawings and specification, is the architect justified in making an extra charge for the same, and notifying the same on the bills of quantities?" "B." says, if the builder *requires* these the architect had better supply them, and of course ought to charge for them. But the question as it stands appears rather to be: (1) Is an architect, supplying the bills of quantities himself, entitled to conclude that the builder will want a second set, and provide payment for himself in the quantities? I think that the general voice of the best part of the profession would answer that he is not to do this;—certainly not without special authority from his client. In the case (2) where a builder having obtained a contract by competition tendering on quantities, applies to the architect for copies (say for use in his shops and office), circumstances must guide as to the answer. It is clearly a service rendered to the builder, for which he will have to pay directly and finally,—not receiving payment again from the employer. It is one of his expenses in carrying out the work, —on the same footing as his time-sheets and other stationery, his own travelling expenses, and so on. If the architect has reason to believe that the builder looks on the work as a sop,—a little piece of work made to do the architect a service,—he will be entitled to feel some resentment, and (if he does without heroics) he can decline work that his pressing business does not allow him to undertake. If the application is made in all honesty, I think he should arrange the charge, then tell his client, and get his approval. The character of the drawings will be often the best guide. The architect's judgment will tell him how far it is difficult for a builder in active business to get the services of a competent tracer of right-lined plans and sections; —anything with much art-character about it will be on a different footing. Most London building firms have in their own office the means of producing all ordinary tracings; or can get them done quickly and cheaply and well. But of course there may be times when they will be glad to have this help from the architect. And this will apply still more strongly in the case of some country builders.

The client should be told everything. To be completely candid, I may add that it will generally be well for the architect to charge little if any more than the cost of his clerks' time. He should consider that he gets his main profit on the transaction in the more complete following of his instructions in the executed work. C.

MACADAMIZED ROADS AND THE STEAM-ROLLER.

The making and repair of these roads is a subject of increased importance, through the great increase of traffic about the suburbs, &c. The use of the steam-roller does not appear to tend to their durability, although most desirable to produce a good surface with despatch. The mistake seems to me to be this,—the hoggin is merely thrown on the top of the broken granite, instead of being thoroughly mixed up with it like concrete, before the roller goes over; the bits of stone are jammed together for a time, but the interstices are not filled up, and the traffic in a few weeks loosens the body of it, causing parts to sink down in hollows. The slushing with water at the time to wash in the hoggin tends, no doubt, to soften the foundation.

An Official Looker-on.

THE SURPLUS LANDS OF THE CHATHAM AND DOVER AND METROPOLITAN COMPANIES.

At the half-yearly meeting of the London, Chatham, and Dover Company, held last week, the chairman stated that sales to the extent of 450,000*l.* had been effected since the award of Lords Cairns and Salisbury, and that the debt upon what remained, of the value of 140,000*l.*, was only 80,000*l.* In other words, they had 140,000*l.* to meet 80,000*l.*; but, owing to the increased cost of building materials and labour, it was not so easy to find purchasers as formerly, and the Board of Trade had extended the time of sale for twelve months longer.

At the meeting of the Metropolitan Company, it was stated that the letting of unoccupied, and the sale of surplus, property had proceeded satisfactorily during the half-year, and that the company had let property on lease and under agreement, including a portion of the surplus land, to the Great Northern Company, and also a portion of the surplus land near Whitecross-street, to the Midland Company, for a total ultimate rental and payment of toll of 16,674*l.* per annum.

ST. PAUL'S AND THE LIGHTNING.

Although much had been done to protect St. Paul's Cathedral, recent examination showed that it was in a very dangerous condition. Upon the report of Mr. John Faulkner, Associate of Telegraph Engineers, of Manchester, the authorities commissioned him to prepare a plan for the fitting of the cathedral with an efficient system of conductors. The plan submitted was approved, and the fitting is now completed. In metallic connexion, with cross and ball, and scrolls, are eight copper conductors, each being a half-inch strand of copper wires. The octagonal strand has been adopted as giving most metal in the least space. These eight conductors then pass to the metallic railing of the Golden Gallery, with which they are in metallic connexion. Thence they are carried down to the dome, to the metallic surface of which they are again connected at several portions of their length. Then down the rainfalls, over the leaden roofs of the aisles, in the angles formed by the aisles themselves; again down the rainfalls to the sewers. Further, the choir and nave roofs are connected together by a saddle or conductor stretching over them both, and joined to the conductors proceeding from the summit of the West Towers. Even this, it is said, did not satisfy Mr. Faulkner, who tested, sheet by sheet, the electrical condition of the leads, connecting the worse insulated sheets by copper bands to the better conducting surfaces. Thus the dome, aisle-roofs, and ball and cross, and the two west towers, form one immense metallic conductor, and the danger arising from interior gas-piping is removed; for it is proved that electricity accumulates upon the surf only of bodies. In the sewers, which alw afford a moist earth connexion, the copper stra are riveted to copper plates, and these again pegged into the earth. By this means as g an earth connexion is obtained at the top of cross, at the very summit of the cathedral, a found in the sewers at its base. The misfort is that if another electrician were sent morrow to report on the condition of the cat dral, he would, doubtless, show that it was of weak points. However, we must trust Mr. Faulkner, who seems to have gone into subject very carefully.

A LARGE NEW COAL AND GOODS STATION AT WANDSWORTH.

The Midland Railway have this week oper a very extensive coal-station at Wandswor which they have constructed on a plot of l four acres in extent, running along the east s of the London, Chatham, and Dover Railw near the Wandsworth-road station. The la on which the coal-depôt has been formed is c siderably below the Chatham and Dover R way level, and it has been connected with latter by means of a single line on a descendi gradient, which leaves the Chatham and Do line between the York-road and Wandswor road stations. This line reaches the low level the coal-depôt about 200 yards from its leavi the main line, and from this point a netwo of rails, each about 700 ft. in length, radi right and left from the connecting-line, and carried in the direction of Wandsworth-ro There are altogether six of these lines for coal-wagons and traffic, in addition to a seven line between them, carried the whole length the depôt, and intended solely for the worki of a travelling-crane to facilitate the dischar of the coal.

The intended new works of the Company h will be carried considerably beyond the co station which has just been completed. Company have purchased altogether ten acres land in the locality, and six acres of this spa which lie immediately to the eastward of coal-depôt, are intended as the site of a lar merchandise-station which is immediately to erected. On a considerable portion of this large warehouses and offices, together wi extensive sheds, are to be erected, the remaini area being covered with lines of rails for working of goods-trains.

REOPENING OF BANGOR CATHEDRAL

After undergoing a partial rebuilding a restoration, a work which has occupied nea seven years in completion, Bangor Cathedral been formally reopened for Divine service.

The work of restoration has been carried from the designs of Sir G. Gilbert Scott, R.A who presented a report, which was adopted, a public meeting convened in 1866 by the Dea and Chapter, for concerting measures for restoration and improvement of the cathedr Sir Gilbert estimated the whole cost of the wo at 25,000*l.*, towards which upwards of 22,00 have been contributed.

The original structure was, with the excepti of Llandaff Cathedral, the oldest in Wales, hav been erected about the year 550. In 1071 it wa destroyed by the insurgent Saxons, and t edifice was rebuilt in 1212. In 1402 it was agai reduced to ruins by Owen Glyndwr, and nothi was done towards its restoration for nearly century, when Bishop Dean undertook the r building of the choir. In 1532 Bishop Skeffington revived the work and rebuilt the tower an nave. Subsequent alterations were made i later years, but they were so completely out harmony with the rest of the building that it character as an old church structure was almos effaced. By the process of investigation and th application of each discovered detail, wherever possible, to its original position, Sir Gilbert Scot was enabled to discover nearly the entire desig of the transept as erected in the days Edward I. Many green encaustic tiles wer found in the chancel, and these showed the ol levels of the sanctuary at three points, an proved it to have risen by successive step towards the east.

The first step determined upon by the restora tion committee was the reconstruction of th dilapidated transepts, with so much of the towe as reaches to the ridge of the roof (the remain

portion, with the spire, having to be post-
d in consequence of the want of funds), and
restoration of the choir, and the chapter
lings. This they have been able to accom-
, with the exception of the chapter buildings.
total cost of these portions of the work is
ards of 20,000*l.* In addition to a donation
,000*l.* to the general fund, Lord Penrhyn
ayed the cost of the decoration of the roof
walls of the choir, together with two stained-
windows and the erection of the stall-work
gh as the elbows, with one canopy on each
at a total expense of 2,865*l.* The floors
been paved with encaustic tiles, after the
rn of those found during the excavation;
a new organ has been built which will cost
l. Very much of the work of restoration
emains to be done. The chapter buildings,
nave, chapel, tower, and spire, have to be
r restored or reconstructed, and upwards of
l. are required for these objects.

THE MEN IN THE SEWERS.

E inquest on the two poor fellows who were
ned in a sewer in Beaufort-street, Chelsea,
g the sudden storm on Tuesday, August 5,
ed observations censuring the foreman
e contractors. This relates to sewers in
e of construction. Something should be
ght of the miles of sewers under the care of
h surveyors, who took no steps whatever to
the hundreds of sewer-men groping about
, and far from "man-holes," and who
not foresee the dangerous storm approach-
It is a "God's providence" that men were
drowned in every parish; scores had not
to pick up their tools; and at Dulwich one
rman had to swim for his life.
uld not some step be taken to warn men in
dangerous position of approaching storms
e the floods rush down upon them in the
s" it did on Tuesday? Surveyors may not
all jurymen so easy as the Chelsea ones.

L.

RAILWAYS IN GERMANY.

TENTION is called by the British consul
antzig to the large increase of late in
ay communications throughout Germany,
h has materially contributed to the de-
ment of trade. The construction of rail-
in the country has been very active
g late years, and still continues to be so,
n immense amount of capital is employed
e work. As an interesting fact, showing
dvance which has been made in Germany
gard to her railway system, it may be
ioned that in the year 1855 Germany had
7,826 kilomètres of railway; in 1865, she had
0 kilomètres; and at the end of 1871 the
nt was 20,980 kilomètres, thus showing a
important increase. It is also pointed out
Brunn (the largest manufacturing town in
ia), Prague, and Lensberg have more
course with the Hanse Towns than with
te, and when the railway which is being
ructed between Oderberg in Silesia and
hau in Central Hungary is finished, Breslau
ertainly be nearer to the wealthiest pro-
s of Hungary than Trieste, and though
au is not a seaport, its facility of com-
cation with England is very considerable.

WORK AT HOME AND ABROAD.

,—In a recent number you have an account
w work is hastily constructed in American
. A workman a few days since by chance
d to me how a friend, who was considered
gland a fair plumber, having saved 100*l.* or
nt to America in the hope of bettering his
on. He found the methods of executing
in his trade so different (and probably the
itself also) to what he was accustomed to,
after spending nearly all his savings in
bring in search of work and maintaining
lf in idleness, he returned in despair.
l you permit me to suggest that a com-
n of the methods of executing details of
ng of various countries from some of your
pondents would be just now of the highest
st, and possibly of much value?
plumbing, I know the spirit blow-pipe is
n the Continent largely, where the English
men *must* lose time in preparing the
rous large fire for heating tools required,
ps, for making one pipe joint.

G. B. G.

VEGETATION ON STONE FLAGS.

YOUR note (p. xi. of the last number) as to the water employed for boiling potatoes called to mind another use to which that liquid has been put. Pour some of it on stone flags every day for about a fortnight, and they will assume their original colour, though the vegetation may have seemed very strong. This information I had from a very worthy lady who had directed the application many times with success; but I think it would be as well if any of your readers, who are tempted to direct this remedy to be tried, would let us also know their experience. One is inclined also to suggest that the "Stone Broth" of excellent fables may perhaps here be paralleled. Does the virtue proceed from the earth-apples, or would simple boiling water have the same effect? X.

LOCAL BOARD SURVEYORSHIPS.

SIR,—A so-called election has just taken place for the Aston (near Birmingham) surveyorship. There were sixty-six candidates in answer to the advertisement of the Board, and after giving these the trouble (to say nothing of the expense) of getting up testimonials, which would probably number say six each, making 396, half of which would, perhaps, be written specially, the Board have elected the former surveyor. Is not this sort of thing a farce? After a certain time both Board and surveyor *must be re-elected*. The clerk to the Board advertises for a surveyor, and consequently numbers of persons apply thinking it a *bonâ fide* appointment, when the fact is there is not a shadow of a chance for them. I think if this were generally known there would not be so many persons sending in applications for these situations, as it is only waste of time and can serve no purpose. A CANDIDATE.

MASTERS AND MEN.

SIR,—Our joiners having been on strike a week, and some of the daily papers conveying a wrong impression, the following explanation may be acceptable:—

The men are striking for what no other employers in London give, viz., 9½d. per hour. We are willing to pay 9d., the trade rate, and as we obtain the bulk of our work by competition, not only with London but provincial contractors, you will at once see the great injustice of the claim; but we are pleased to say that our shops are filling, and we shall suffer but little inconvenience.

FARMER & BRINDLEY.

NEW METHODS FOR THE SEARCH OF SPRINGS OF WATER.

SIR,—A few months ago you were kind enough to insert in your valuable journal a letter of mine in which I gave some details about certain modern methods now most successfully resorted to on the Continent, to ascertain in arid lands the exact situation of subterranean springs and water-bearing strata.

Since then, I have received from all parts of England a number of letters requesting me to give further particulars, thereby illustrating to me the interest which the public take in the matter. Now, sir, the question being one in which I myself take great interest, and to which I have paid for years considerable attention, you will find it natural that I should be particularly anxious,—independently of any pecuniary object,—to make it as popular as possible, especially through its practical results. Having now some spare time at my disposal, I beg to offer this to the public. Should any owner of land or property insufficiently supplied with water choose to avail himself of my experience for surveying his land in search of sources of water supply, I offer my services *gratuitously*, requesting only that the results should be made as widely known as could be.

May I add that the methods to which I refer are now thoroughly tested. In France and Algeria,—as can be proved by official documents, thousands of fountains and wells have been successfully dug where previously most inconvenient scarcity of water prevailed.

L. JOUAN'NUL.

THE LATE MR. THOS. PIPER.

WE cannot allow the announcement of the death of Mr. Thos. Piper to pass without an expression of friendly remembrance and great regret. He had been a manager of the London Institution for many years, and in 1867, after he had left business, as a builder, became its hon. secretary, on the retirement of Sir W. Tite. He held the position of surveyor to the North British and Foreign Mercantile Insurance Company. He was also hon. secretary to the Builders' Society, and took an active interest in many other institutions. Mr. Piper was one of the earliest and most active members of the Builders' Benevolent Institution: he was a good speaker and a clever man, and it might not be uninstructive, if it were practicable, to examine into the reasons why he did not, like some of his contemporaries, make a large fortune as a contractor. We highly esteemed Mr. Thos. Piper.

SCIENCE AND ART DEPARTMENT.

THE examination of students' works from night-classes for drawing, and from schools of art, submitted in competition for payments and prizes, has just been concluded.

From 402 night-classes 76,943 works have been received. From 124 schools of art 93,672 works have been received, making a grand total of 170,615 drawings, models, or paintings which have been executed in the classes during the year ending in April last. This is an increase over 1872 of 41,366 works.

"These works were first submitted to a preliminary examination, those of each school being taken separately by a Committee of Examiners, who awarded the third grade prizes, and at the same time selected from the mass 1,430 of the best and most advanced works for reference to the national competition, which is open to the students of all the Schools of Art throughout the kingdom.

On the result of this competition, ten gold, thirty-two silver, and sixty-eight bronze medals have been awarded, together with a number of prizes of books.

The prize-works of this competition, together with as many of the other competing works as space could be found for, are now exhibited in the Temporary Schools on the ground floor of the South Kensington Museum, where they will remain open to the inspection of persons interested in Art education, and the public, until September."

Re KENSINGTON GARDENS.

SIR,—May I be permitted, through the medium of your influential columns, to call the attention of the "powers that be" to the dilapidated state of the engine-house at the head of the Serpentine. This building illustrated in your pages at the time of its erection, is, or rather was, covered with ornamental tiles, which, when perfect, had a very pretty and suitable appearance; but they are now broken and off in all directions, and the roof is patched with tiles of various shapes and colours, giving the building a most poverty-stricken appearance. If the Government cannot afford to have a supply of these tiles manufactured (I believe they are not now in the market, though there are plenty of people who could make them), I would suggest that, for decency's sake, the roof should be stripped, repaired, and covered with tiles of a suitable, but less uncommon, pattern before the timbers get too rotten, to prevent the whole falling into untimely decay. T. C. S.

THE TRADES MOVEMENT.

London.—On the day upon which, in accordance with the resolutions adopted at the meeting of master builders on the 18th of July last, the advanced rate of wages,—from 8½d. to 9d. per hour,—was to be paid to the building operatives, considerable excitement prevailed amongst the men, it having been very generally rumoured during the week that several of the large firms intended refusing the payment of the ½d. per hour advance, upon the ground that no agreement had been signed to that effect, but that the matter had only taken the form of a recommendatory resolution, carried by a simple majority. The masons' committee sat at the Paviors' Arms, Westminster, for the purpose of receiving reports from the men as to the action of the employers, but up to a late hour on the same evening it was found that, with a few exceptions, the employers had acted up to the spirit of the resolution, and paid the 9d. per hour. The carpenters and joiners held a delegate meeting at the Brown Bear, Bloomsbury. Upon giving in their reports, it was found that the advance had been very generally given by the employers, but that some firms, including the large establishments of Messrs. Farmer & Brindley, Westminster-road, and Mr. Robinson's, Rockingham Works, New Kent-road, had refused to pay any advance, and that in these two firms the carpenters, to the number of about 100, had struck work. From many shops no report was given in. In a discussion which ensued, it appeared that the men in the employ of Farmer & Brindley were chiefly employed on church and ecclesiastical work, requiring great care and skill, and that in consequence their wages had always been in advance of those generally paid in the trade, some of the men receiving 8¾d. per hour, others 9d. and 9½d. per hour. The firm declined to give the ½d. advance upon these prices, but stated their willingness to pay the 9d. per hour all round in accordance with the terms of the masters' resolution. This offer the men refused, claiming the ½d. per hour advance on their existing rate of wages, contending that if their work was worth more than the standard rate of wages before the advance, they had a right to participate in the full advance which

had taken place. This being refused, the men to the number of about fifty, struck work. In the case of Mr. Robinson, of Rockingham Works, it was found to be a simple refusal to pay the advance, and the action of the men in leaving their employ was approved, and notices were ordered to be issued to the trade cautioning men from applying for work at the firm.——A largely-attended meeting of builders' labourers has been held in Trafalgar-square, Mr. Halloran occupying the chair. The chairman said the object of the meeting was to obtain for the labourers employed in the building trade a small advance upon their present low rate of wages, which were now 5d. and 5½d. per hour. The skilled men in the trade, by union, had obtained an advance of ½d. per hour, and he thought the labourers were quite justified in desiring to participate in that advantage. The pleas put forth by the skilled men for an advance of wages were the dearness of provisions, fuel, and clothing. The labourers put forth the same plea. Mr. John Kenny, the Secretary of the Labourers' Union, read the correspondence which had passed between the committee of the union and the committee of the master builders, in which the latter declined to entertain the memorial of the men for an advance from 5½d. to 6d. per hour before March next. He proceeded to complain in strong terms of the manner in which they had been treated by the employers, and said that if the men wanted justice done to them, they must, like the masons and the men in other branches, act together in union. Several labourers then addressed the meeting, and a resolution was unanimously adopted, and ordered to be sent to the employers, to the effect that unless 6d. per hour was conceded to the men on Saturday, the 16th inst., steps would be taken to enforce the same in all the firms where it was refused.

The Trade Outrage at Gorton.—James Scholes, 33, Thomas Coady, 28, and Joseph Edwards, 22, were indicted at the South Lancashire Assizes for having, at Gorton, on the 10th of May last, wilfully destroyed 40,000 unbaked bricks, the property of George Forster. The damage amounted to 20*l*. We need not enter into the particulars, but shall merely state that the jury, after the lapse of half an hour, gave verdicts of guilty against Coady and Edwards, and acquitted Scholes, who was discharged. Sentence was deferred.

FROM IRELAND.

Opening of St. Patrick's (R.C.) Cathedral, Armagh.—The New Roman Catholic cathedral of St. Patrick, at Armagh, which has been some thirty years in course of erection, and has already cost about 70,000*l*., is now so far completed that its solemn dedication and opening have been fixed for Sunday, the 24th of the present month.

Consecration of Ballynafeigh Church, Belfast.—The new church at Ballynafeigh has been consecrated. It is one of ten churches erected, according to the *Belfast Newsletter*, within half a dozen years, by the liberality of churchmen in Belfast and neighbourhood. The parish of St. Jude, Ballynafeigh, is a new one, taken out of the mother parish of Knockbreda. A free site was given by a parishioner, Mr. Fitzpatrick, and the late Ecclesiastical Commissioners gave a grant of 600*l*.; several friends also liberally contributed, the result being the erection of a church at a cost of nearly 3,000*l*., and capable of holding 400 persons. The architect is Mr. Thomas Drew.

DISSENTING CHURCH-BUILDING NEWS.

Hillmorton.—The Wesleyan Methodists in this village, having secured a site in a conveniently-situated field, obtained plans from Mr. Enoch Underwood and Mr. Tom Walton, for the erection of a plain, but commodious chapel, with school-room attached, and Mr. Rathbone, the builder, made such progress with the foundations and walls that the laying of several memorial stones has taken place. The estimated cost of the chapel and school-room is 330*l*.

Brampton.—A Congregational church has just now been erected and opened in the populous district of Brampton, near Chesterfield, at a cost of about 1,500*l*. The chapel is intended to accommodate 300 persons. Mr. Kent is the architect; Mr. Heath, the builder; and Mr. Marsden, clerk of the works.

Books Received.

Over the Dovrefjelds. By S. Shepard. With illustrations. H. S. King & Co., Cornhill and Paternoster-row. 1873.

How to take a month's run through Norway with a 20*l*. note in the pocket, the purpose of this volume is to show; and it does so pleasantly, smoothing the way for a trip much more easily taken than many suppose.

While at Drontheim, or Trondhjem, the state of the cathedral attracted the author's attention. "At present," he remarks, "better days seem to be dawning for it, the direction of the work having recently been placed under a young and rising architect,—Herr Christie, of Christiania, a descendant of a Scotch family, who, if we may judge from what has already been accomplished under his supervision, is the right man in the right place." They have now commenced to restore the high choir, and scaffolding has been for this purpose erected all round the interior in a series of stages. The most complete wreck of all are the nave and west front, the walls of which alone remain, kept up by many huge brick buttresses.

A Handbook of Sewage Utilisation. By Ulick Ralph Burke, M.A., Barrister-at-Law. Second edition, revised and enlarged. London: Spon, Charing-cross.

A considerable amount of new matter has been added to the first edition of this compilation, the utility of which seems to be appreciated. A great portion of the information contained in it has been collected from the Reports presented to Parliament by various Commissions since 1858. To a certain extent, this is an epitome of much that has already been written on the subject of which it treats. The author thus sums up, in conclusion, as to the system or combination of systems which he thinks ought to be preferred:—"As a general rule we would recommend the adoption of a system of precipitation on General Scott's process, in combination with a system of irrigation in places where the natural circumstances,—a proper fall, suitable land, &c.,—are favourable, or in other cases with charcoal filtration. The more the subject is impartially studied [he adds], the more apparent will it be that the true secret of success is to be found in *Combination*."

Treatise on the Setting Out of Railway Curves, with full Tables &c. By David Livingston, C.E. London and New York: Spon.

The most part of this volume is filled with tables of the angles, distances, and offsets required, specially arranged for measurements in feet and imperial links, but also adapted for use in any other unit of measurement. They were prepared for the author's own practical use in setting out a section of railway over a rugged tract of country, and he believes them to be of more practical utility than any known to him as having previously been published. Prefixed is an account of those methods of ranging railway curves for use in which the tables were more particularly compiled.

VARIORUM.

The *Gardener's Magazine* has a few observations on "Propagating Evergreens," which may be useful to some of our readers:—"Now is the time to make stock of evergreens, and the best way is to make up frames and boxes in shady out-of-the way places, where the cuttings may be allowed to remain twelve months at least, and the slowest of them, such as hollies, two years. Old frames that are past all ordinary uses will do; but there are no contrivances for this purpose so well adapted for small gardens as Rendle's propagators. A few inches of sandy soil, the box fitted over it, and the glass and bar being ready, the rest is simple work enough. The cuttings should consist of wood of the season 3 in. to 6 in. long; the lower leaves must be removed, and they must be dibbed in close together, rather deep, and made quite firm. Give them a good watering, and shut them up close, and for the rest of the season look at them once a week to give water if needful, and shut them up close as soon as that is done. The two best paying things here for this practice are variegated hollies, variegated euonymus, and the better kinds of ligustrum and osmanthus. Coarser things may be multiplied in the same way. We trust to seeds and layering when we want aucubas; of common berberis self-sown seedlings appear in plenty."

Miscellanea.

Accidents. — The bodies of the six buried alive by the accidental falling in of at the works of the East London Railway pany, Wapping, had not been recovered withstanding the utmost efforts of the eng and others, in the removal of the hundr tons of earth, timber, and ironwork ov bodies. The cause of the disaster is sup to have been the shifting of the sand formed the substratum where the earth way. If the accident had occurred tw four hours later, sixty or seventy lives inevitably have been lost, as arrangement been made for that number of bricklayers to work at six the next morning at the where the accident took place. ——Dr. Di has held an inquest at Chelsea, on the bod two "navvies," who were killed in a sew Duke-street. The men were at work in sewer during a heavy storm of rain, and in sequence of the great flow of water they drowned before they had time or warnin effect their escape. The outlet into the it appeared from the plan, was smaller tha sewer itself. The foreman of the jury tho there should be more "man-holes" in sewer. The jury returned a verdict of "dental death."

Proposed Covering in of the Edinbu Vegetable Market.—The Lord Provost's mittee have resolved to recommend to the council the carrying out of a scheme covering in the Vegetable Market, in accord with the expressed desire of the gardeners u the market that they should be provided some shelter from the weather. Accordin the plan, prepared by Mr. R. Morham, jun., city superintendent, it is proposed to cove the area with a flat platform, which would the form of a promenade on the level of Prin street. The surface of this platform is posed to be formed of asphalte paving, car upon concrete arches, which again would upon a system of iron beams and main gir crossing the space in two spans, and suppo in the centre by a range of iron columns. series of wells, six in number, with glazed s and glass roof in the bottom of each, w afford light to the interior, and these apert in the platform could at the same time be tu to account for ornamental purposes. In o to raise the estimated cost (23,000*l*.) it will necessary to obtain Parliamentary sanction.

The Adulteration of Food, &c., Act.— Westminster Board have received a report f their Street-cleansing and Sanitary Commi that proceedings had been taken against th persons for selling adulterated milk, and th heavy penalty was imposed in each case. T have satisfaction in stating that samples of br and beer have been analysed during the p month, and found unadulterated. They t that the steps already taken will tend to sec the sale of pure articles of food only. Altho it was contemplated by the Adulteration of F Act the penalties should be paid to the seve district boards, yet, under the Police Court A the magistrate decided that the penalties m go to the receiver of the metropolitan pol The question has been mooted in the Hous Commons by Mr. W. H. Smith, M.P.; and y committee submit a letter received from h offering to take the necessary steps to endeav to effect an alteration of the existing law in next session. The committee recommend that the solicitor (Mr. Warrington Roge place himself in communication with Mr. Smi and move in the matter accordingly.

Newcastle Society of Antiquaries.— the monthly meeting of the Newcastle Soci of Antiquaries, held in the Old Castle, Mr. Jo Clayton presiding, a present was received fr Sir Walter C. Trevelyan of the series of volum published by the Archæological Institute Rome. These volumes contain papers elucidati some of the inscriptions belonging to the No of England. Two papers were read by R Ralph Carr-Ellison, elucidatory of the names the deities Nociticus and Antenociticus, fou upon altars at Benwell, and of the name Bel tucader, which occurs on altars found in We moreland and elsewhere. Dr. Bruce mention that the Duke of Northumberland had giv directions to have the map of ancient Northu berland, which was prepared under the auspic of the fourth duke, engraved, with the view forming a frontispiece to the Lapidarium.

ther Great Engineering Proposal. proposed to cut one of the most famous of land in the world, the Isthmus of h. Its severance by a canal has been ted from very ancient times, and was ly attempted by the Emperor Nero. A am from Constantinople reports that anos Xenos has obtained "a concession for analisation of the Isthmus of Corinth." reek Government has granted to Messrs. i and Xenos, the concessionnaires, land for n and docks as well as for the canal, and se of mines and forests, together with privileges. The Isthmus at its narrowest is a little more than four miles broad. d this spot be selected for the proposed travellers from the west to Athens, na, Constantinople, and the Black Sea will through classic ground as they traverse pace between the gulfs of Corinth and

ctro-Telegraphic Progress.—Not long was thought to be impossible to send two ges along a telegraph wire, in opposite ions, at the same time. But proof was that it could be done; and now, by inge- arrangement of coils and batteries and connexions, circuits can be formed through cross-messages are sent as ordinary busi- and "duplex telegraphy" has passed into on use. But as yet it is applicable to short ts only. Mr. Heaviside, of Newcastle-on- says, in the *Philosophical Magazine*, that ly it is theoretically possible to send any er of messages at once along a single wire, n opposite directions, and without inter- ce. "From experiments I have made," he nes, "I find it is not at all a difficult r to carry on *four* correspondences at the time, namely, two in each direction; and ms not improbable that *multi-telegraphy* ecome an established fact."

e Countess of Huntingdon's Chapel, ton.—A stone reredos has recently been d in this chapel. The structure, which is n stone, rests upon a base of four courses lar, with carved pateras, and above this ve panels of polished black marble, on are to be engraved the Creed, the Lord's r, and the Ten Commandments. The s are surmounted by canopies, embellished carving, terminating in carved finials, and erted by six columns of Aberdeen granite, tone capitals of which are carved with s and flowers, emblematical of Faith, Hope, Charity; Love, Joy, and Peace. The whole pported by side buttresses, ornamented with d panels. The reredos was designed by Vimble, of Walbrook, the architect of the it chapel; and the work has been executed r. Pinker, of Cliftonville, the carving being r. H. R. Pinker.

e Ross and Monmouth Railway.—new railway has been opened. The line is iles in length, from Ross Station to Wye, Monmouth. There are two tunnels, the ipal one being at Coppet, which is 628 in length. The second runs under nds' Yat, and is cut through a quarter of a of solid rock. At the Coppet cutting the tions were commenced at each end, and oring parties met in the centre within an —a creditable feat of engineering skill. At end of the tunnels there is some heavy cutting, but beyond this the groundwork been of an ordinary character. Three es, however, will span the Wye in con- n with the line. There are four stations, ling the Wye Bridge, viz., Symonds' Yat, evern and Wye Junction, or Lydbrook, and e Bridge. The permanent stations are of old red sandstone, from Tudorville.

nblane Cathedral.—While the workmen s cathedral were engaged in the chapter- in preparing a bed for an ancient re- ent monument, they came upon a large about 2 ft. below the surface of the floor. nd of it extended for some distance below undation of the cathedral. It was found a sculptured stone, about 6 ft. long and broad. A finely-carved cross occupies t the whole of the one side of it, and the is marked with a variety of sculptures,—a on horseback, a dog or pig, two crosses and sques of different patterns. This stone have been placed where it was found e the building of the cathedral, more than nturies and a half ago. It is unfortunately n across 2 ft. from the top.

Opening of Cleethorpes Pier.—This event, which has long been looked forward to with pleasurable interest by the inhabitants of the rising little watering-place, Cleethorpes, named the Margate of the Lincolnshire coast, has taken place, amidst much ceremony and rejoicing. The new pier, which is a light structure supported by iron pillars, was commenced by a limited liability company in December last, from designs by Messrs. J. E. & A. Dowson, of London, engineers, the contractors being Messrs. Head, Wrightson, & Co., of Stockton-on-Tees. It is 400 yards in length by 20 ft. in width, and at the end is a platform, 120 ft. long by 85 ft. broad, with steps descending to the water for the accommodation of passengers.

Mr. J. W. Anson, of the "Adelphi."—Mr. J. W. Anson has always shown himself willing, and not merely willing, but able, to help on any project or matter in which the theatrical profession are concerned, and we are therefore not at all surprised to hear that a number of the members of the Junior Garrick Club have recently entertained him at a banquet, and presented him with his portrait, painted by Mr. F. Sydney Muschamp, in acknowledgment of his services in forming the club. When his successful labours in assisting to found the Dramatic, Equestrian, and Musical Sick Fund, the Dramatic Burial Necropolis Cemetery, and the Royal Dramatic College are also remembered, the profession may, one of these days, even do something more than has yet been done.

Overcrowding in Westminster.—Mr. Barnard Holt, F.R.C.S., in his report to the Westminster District Board, says,—"During the month (June, 1873), I have examined the house of the Rev. Mr. Harford, Dean's-yard, Westminster, and I find it so closely abuts on the houses at the back, in Great Smith-street, as to prevent any free admission of air, and consequently I consider it especially unhealthy. Cases of illness are frequently occurring in the house. I see no other way of rendering Mr. Harford's house habitable than by removing the houses in Smith-street, and so secure him that amount of ventilation which is absolutely necessary for the due maintenance of health." The report was referred to the Street-cleansing and Sanitary Committee. Rather a brave recommendation.

Antiquarian Discovery at Lyminge, in Kent.—The recent discovery of the wall of a Roman basilica in the very ancient village of Lyminge is announced by a contemporary. The discovery is the result of excavations undertaken by Canon Jenkins, a well-known local antiquary. The wall is of great solidity, and, if possible, the concrete (which is compounded of lime and chalk) is harder and more massive than the stone in which it is embedded,—a circumstance due, no doubt, as much to its antiquity as to the excellence of the concrete. The site of the remains is a short distance from the church in which the Northumbrian princess, St. Ethelburga, took the veil in the seventh century. The church itself is built on a Roman foundation.

Walsall: the Surveyor.—At the last quarterly meeting of the Town Council a recommendation of the Finance Committee that the Salary of the Borough Surveyor (Mr. Boys) be increased from 200*l.* to 300*l.* a year, and that an additional assistant, or office clerk, in his office, be appointed, at 80*l.* a year, was considered. Complaint was made by a professional townsman, that Mr. Boys had undertaken private practice contrary to his agreement, "without first obtaining sanction;" and that he had recently prepared drawings "unsolicited" by the committee, for the intended new wing to the Cottage Hospital. The surveyor, however, gave a very satisfactory reply, and the recommendation was agreed to.

Appointments.—Mr. William Baiten has been re-elected surveyor to the Manor of Aston Local Board, at a salary of 250*l.* per annum. Sixty-six applicants solicited the appointment. ——Mr. Banister Fletcher has been elected surveyor to the Planet Building Society, in the room of Mr. W. W. Pocock, who lately resigned. There were seventy-eight candidates.

The Joiners' Company and Building Construction.—The Joiners' Company, who are also carvers and ceilers, have intimated their intention of giving prizes for drawings upon building construction, wood-carving, and designs for ceilings, to be competed for by students at the several schools of art and colleges.

Laying the Foundation-stone of a Family Chapel at Tyntesfield, near Bristol.—The foundation-stone of a chapel at Tyntesfield has been laid by Mr. W. Gibbs. Though intended merely for family worship, the chapel at Tyntesfield will be a massive and costly structure. The general style of the building will be the Decorated. It is to be fitted throughout with windows of stained glass, and a spire will rise from the roof, though not to a great height. Underneath the chapel there will be a vault, intended to be the place of sepulture for members of the Gibbs family. The architect is Mr. Blomfield, of London; Mr. G. W. Booth, also of the metropolis, being the builder.

The Whitworth Scholarships.—The following are the names of the successful candidates in the competition for the Whitworth Scholarships for 1873, in the Science and Art Department, South Kensington:—Samuel Dixon, draughtsman, Manchester; Roger Atkinson, analytical chemist, Crewe; Joseph Amscow, chemist, Crewe; W. R. Bousfield, student, Cambridge; W. H. Warren, engineer, Wolverton; William Barber, draughtsman, Nottingham; William H. Fowler, engineer, Oldham; Thomas Sugden, mechanic, Oldham; Cyrus Bullock, millwright, Worsley, near Manchester; John Lockie, engineer, Glasgow.

Wood Paving.—The portion of roadway in Piccadilly between Berkeley-street and Albemarle-street, the paving of which is to be renewed, is to be covered with wood paving, to be laid by the Improved Wood Paving Company, at an estimated expense of 1,120*l.* The wood paving has been on trial for twelve months in the city of London, having been laid down from London Bridge to King William's statue, and it is said there are no signs of decay, and the police state that they knew of no cases of horses falling upon it since it had been laid down.

Expenses of Fortifications.—The outlay at Portsmouth has been 2,504,584*l.* 0s. 5d.; at Plymouth, 1,489,431*l.* 16s. 11d.; at Pembroke, 305,098*l.* 9s. 4d.; at Portland, 362,337*l.* 19s. 2d.; at Gravesend, 276,156*l.* 1s. 4d.; at Chatham, 275,398*l.* 13s. 5d.; at Sheerness, 338,297*l.* 5s. 7d.; at Dover, 293,525*l.* 14s. 10d.; and at Cork, 150,022*l.* 9s. The cost of providing and fixing iron shields has been 324,874*l.* 2s. 5d.; incidental expenses (works), 145,729*l.* 7s. 2d.; experiments, 14,393*l.* 4s. 6d.; surveys, 23,521*l.* 4s. 9d.; and legal and other incidental expenses, 26,024*l.* 10s. 11d.

Art-Union of London Exhibition.—As we have already given a list of the principal pictures purchased by the prizeholders in the Art-Union of London, we need now do nothing more than mention that the collection is open to the members and their friends in the gallery of the Institute of Painters in Water-Colours, Pall-mall; and in the course of a week from this time will be free to the public without limitation. It includes a number of very good pictures.

Cole Testimonial.—We are glad to hear that H.R.H. the Prince of Wales will subscribe to the testimonial. The Duke of Edinburgh puts his name down for 25*l.* The very day Lord Ripon resigned, he wrote, subscribing 25*l.* The Duke of Buccleuch also sent 25*l.* Active steps will cease till people return to town, when an important consideration will have to be settled—the shape the testimonial is to take.

The Burgoyne Memorial.—The fund for raising a memorial, by the corps of Royal Engineers, of the late Field-Marshal Sir John Burgoyne, has now nearly reached 1,800*l.*, and the Burgoyne committee have determined that the memorial shall consist of a bronze statue of the Field Marshal, to be erected at the School of Military Engineering, Chatham, probably in front of the new Halls of Study.

James A. Lee's Paper Mills Machinery Company.—A company has been formed for the purpose of acquiring the business of Mr. James A. Lee, until recently carried on at the Severn Engineering Works, Lydney, Gloucestershire, and now at the new works under the same name at Derby. Mr. Lee has patents for improvements in machinery for reducing wood-fibre into pulp for paper-making, and for improvements in the manufacture of paper.

Another Millionaire Philanthropist.—Mr. James Baird, of Auchmedden, the Scotch ironmaster, has paid over to a body of trustees, to be called the Baird Trust, the sum of 500,000*l.*, to be applied for purposes in connexion with the church of Scotland.

The Crystal Palace School of Practical Engineering.—The school examinations of the engineering branch of the Crystal Palace School of Art, Science, and Literature, for the Easter Term, commenced on the 2nd, and closed on the 8th. The Autumn Term will commence on Monday, September 8th.

The New Workhouse for Rhayader, Radnorshire.—At a meeting of the Board of Guardians of the Rhayader Union, held at their board-room on the 30th ult., and which was largely attended, Mr. Stephen W. Williams, county surveyor of Radnorshire, was unanimously elected architect for the new workhouse.

New Canal in the Baltic.—The Russian Government proposes to construct a navigable canal connecting St. Petersburg with Cronstadt. The canal will measure 20 ft. in depth, and therefore be navigable to large sea-going vessels. The cost of construction is estimated at 7,000,000 roubles.

TENDERS

For detached residence in Harestone Valley, Caterham, Surrey. Quantities supplied by Mr. Frederick Sparrow:—

Bridgman, Nuthall, & West	£1,838	0	0
Ward	1,695	0	0
Jarratt	1,650	0	0

For Methodist Free Church and school, Canning-town. Mr. F. Boreham, architect:—

Horlock	£2,053	0	0
Ennor	2,038	0	0
Palmer	1,990	0	0
Catley	1,686	0	0
Pavitt (accepted)	1,650	0	0

For Methodist Free Church and school, Grays, Essex. Mr. F. Boreham, architect:—

Thompson (accepted)	£625	0	0

For the restoration of the tower, west front, and porch of St. Sepulchre's Church, Snow-hill. Mr. W. P. Griffith, architect. Quantities supplied:

Hill & Son	£7,180	0	0
Dove, Brothers	6,975	0	0
W. & J. Lister	6,027	0	0
Sewell & Son	5,486	0	0
Perry & Co.	5,220	0	0
Brass	4,964	0	0
Lidstone (accepted)	3,727	0	0

For alterations and additions to malt-houses at Market Rasen, for Messrs. Thorpe & Sons. Mr. Charles Baily, architect.

Clark	£1,054	0	0
Close	750	0	0
Harrison (accepted)	680	0	0

For the erection of two cottages, near new malt-houses, at Louth, for Messrs. Thorpe & Sons. Mr. Chas. Baily, architect:—

Hobson & Taylor	£1,027	0	0
Clark	935	0	0
Harrison	890	0	0
Paddison (accepted)	785	0	0

For alterations and additions to residence and premises in Market-place and Church-street, Newark-upon-Trent, for Mr. Henry Weaver. Mr. Charles Baily, architect:—

Whate, Brothers	£1,457	0	0
J. & W. Hill (accepted)	805	0	0

For the erection of the Victoria Wesleyan schools, Newport, Isle of Wight. Mr. James Newman, architect. Quantities supplied:—

Head	£880	0	0
Barton	796	0	0
Denham	749	0	0
Salter	733	10	0
Harris (accepted)	686	0	0

For alteration and additions to Infants' and National schools, Chepstow. Mr. E. A. Lansdowne, architect:—

Jones	£920	0	0
Linton	869	0	0
Thorn	611	8	1

For alterations and additions to villa at Llantarnam, Monmouthshire, for Mr. Cromwell. Mr. E. A. Lansdowne, architect:—

Linton	£585	0	0
G. Jones	582	0	0
Thomas	552	0	0
Hawkins	550	0	0
W. Jones	540	0	0

For terrace for Mr. W. R. Mace, Sydenham. Mr. Jos. Fogerty, architect:—

Foster	£15,091	0	0
Candler	14,655	0	0
Bayse & Ramage	13,971	0	0
Perry & Co.	13,389	0	0
Ennor	13,201	0	0

For additions to Raleigh Hall, Brixton, for Mr. Alex. McArthur. Mr. J. Fogerty, architect:—

Candler	£854	0	0
Ennor	807	0	0
Dunsmore & Knight	766	0	0
Bowyer & Sons	751	0	0
Andrew	743	10	0

For finishing mansion, at Orpington, Kent. Mr. B. Fletcher, architect:—

Bayes & Ramage	£3,038	0	0
Bridgman, Nuthall, & West	2,989	0	0
Blandford & Jones	2,281	8	2

For alterations to the Old Hall, Rhyd Ithon, Radnorshire, for Mr. W. W. Thomas Moore. Messrs. Haddon, architects:—

(First Contract.)

Coleman, Brothers	£1,800	0	0
Potter	1,680	0	0
Hurst	1,632	0	0
Welsh & Son	1,600	0	0
Berry	1,573	0	0

For new Board schools for Marden, Herefordshire. Messrs. Haddon, Brothers, architects:—

Jones & Allen	£2,224	0	0
Bowers	2,142	0	0
Welsh & Son	2,110	6	0
Hudson	1,706	0	0
Lewis	1,772	0	0
Day	1,772	0	0
Evans	1,478	0	0

For a pair of model cottages at Cobrey Park, near Ross, for Miss Stokes. Messrs. Haddon, architects:—

Stone, Brothers	£398	0	0
Bennett	370	0	0
Parry	365	0	0
Giles	340	0	0
Griffiths	325	0	0

For houses on Kettering Building Company's estate. Mr. R. W. Johnson, architect:—

Dover & Son	£6,105	10	0
Hobson & Taylor	6,067	0	0
Neale & Son	5,797	0	0
Chapell	5,400	0	0
Shurman	5,325	0	0
J. & G. Henson	5,297	0	0
Barlow	4,750	0	0

For cottages, Toft, near Bourne, Lincolnshire. Mr. R. W. Johnson, architect:—

Norman	£916	0	0
Hobson & Taylor	890	0	0

For leather factory, Kettering. Mr. R. W. Johnson, architect:—

For General Works.

Wilson	£2,052	0	0
Shurman	1,990	0	0
Barlow	1,955	0	0
Briggs	1,949	0	0
J. & G. Henson	1,942	0	0

Ironwork.

Salmon	£160	0	0
Illston	135	4	0
Clark & Co.	135	0	0
Richards	123	0	0

For farm premises, Whissendine, Rutland. Mr. R. W. Johnson, architect:—

Halliday & Cane	£1,735	0	0
Hobson & Taylor	1,629	0	0
Barnes	1,589	0	0
Stafford	1,568	0	0
Hayes	1,464	0	0

For additional story to two warehouses, City. Mr. Herbert Ford, architect:—

Blow	£530	0	0
Crabb	508	0	0
Bostle (accepted)	428	0	0

For rebuilding two warehouses, Aldermanbury, City. Mr. Herbert Ford, architect:—

		Sundries.
Anley	£4,547	£201
Boyce	1,115	373
Perry & Co.	1,026	360
Perry, Brothers	3,994	333
Browne & Robinson	3,930	307
Ashby	3,920	320
Downs	3,874	289
Crabb (accepted)	3,760	233

For sundry alterations, No. 2, Lower Seymour-street, Portman-square, for Mr. T. Tomlinson. Messrs. D. Haylock & Son, architects:—

Hawke & Son	£593	0	0
Knapp & Co.	488	0	0
Sage & Co. (accepted)	448	15	0

For building warehouse, No. 5, Milk-street, City. Messrs. Tress & Innes, architects:—

Perry, Brothers	£5,250	0	0
Browne & Robinson	5,208	0	0
Condet	5,094	0	0
Ashley & Son	4,995	0	0
Fish	4,800	0	0

For four houses at Capel, Surrey, for Mr. Roffey. Mr. F. J. Dibble, architect:—

Weeden	£1,433	10	0
Ansell	860	17	8
Hamblin, Brothers	780	0	0
Taylor	773	12	10
English	769	12	0
Clear, jun.	747	0	0

For dwelling-house, London-road, Dorking, Surrey, for Mr. Appleby. Mr. F. J. Dibble, architect:—

Goddard & Son	£620	0	0
Hesselgrave	579	0	0
Hamblin, Brothers	520	0	0
Clear, jun.	499	0	0

For the erection of a house and shop, New Swindon, for Mr. S. Smith. Messrs. Lansdown & Shopland, architects:—

Bishop	£1,375	0	0
Wiltshire	1,178	0	0
Phillips	1,176	0	0
Forshaw (accepted)	950	4	0

For Wesleyan Chapel, Pewsey. Messrs. Lansdown & Shopland, architects:—

Barrett (accepted)	£624	0	0

For new farm buildings and alterations to New Farm, Lacock, Wilts, for Trustees of Huggins Cha Messrs. Lansdown & Shopland, architects:—

Bromley (accepted)	£475	0	0

For the erection of new premises, Bridge-street, B friars, for Messrs. Braham & Wells. Mr. R. Rob architect. Quantities supplied:—

Crabb	£10,440	0	0
King & Son	10,090	0	0
Brass	10,087	0	0
Mark	10,018	0	0
Browne & Robinson	9,931	0	0
Perry & Co.	9,790	0	0
Newman & Mann	9,696	0	0
Morter	9,620	0	0
Colls & Sons	9,570	0	0
Hart	9,533	0	0

For the erection of a new hop warehouse and of Weston-street, Southwark, for Messrs. Samuel Barn Brother. Mr. G. Elkington, architect. Quantities plied:—

Browne & Robinson	£9,449	0	0
Higgs	9,300	0	0
Axford & Whillier	9,292	0	0
King & Son	8,850	0	0
Downs	8,790	0	0
Little	8,679	0	0
Gammon & Son	8,678	0	0
Rider & Sons	8,553	0	0

For the erection of new showrooms, Nos. 102 Long-acre, for Mr. Henry Heffer. Messrs. Mar Sanders, architects. Quantities supplied:—

Belham	£1,087	0	0
King & Son	897	0	0

For roadwork for Vestry of St. Giles, Camber Bushey Hill-road:—

Harris	£319	0	0
Reed	290	0	0
Batch (accepted)	260	0	0

Clifton-crescent:—

Hare	£12	11	8
Reed	38	0	0
Harris	20	0	0
Batch (accepted)	27	10	0

Chadwick-road:—

Parsons	£98	0	0
Harris	85	0	0
Hare	91	10	0
Reed	70	0	0
Batch (accepted)	64	0	0

Earl-street:—

Harris	£88	0	0
Reed	66	0	0
Batch (accepted)	47	0	0

King Arthur-street:—

Harris	£117	0	0
Reed	117	0	0
Hare	95	0	0
Batch (accepted)	82	19	0

Nunhead-passage:—

Parsons	£60	0	0
Hare	59	0	0
Harris	55	0	0
Reed	52	0	0
Batch (accepted)	35	10	0

North Cross-road:—

Hare	£130	0	0
Harris	108	0	0
Parsons	108	0	0
Reed	99	0	0
Batch (accepted)	98	10	0

Nutt-street:—

Harris	£73	0	0
Reed	50	0	0
Batch (accepted)	41	19	0

Philip-road:—

Hare	£120	0	0
Harris	99	0	0
Parsons	95	0	0
Reed	90	0	0
Batch (accepted)	88	19	0

For two sewage tanks, Southborough:—

Bloomfield	£780	0	0
Potter (accepted)	610	0	0
Goldsmith	605	4	0

For rebuilding No. 38, Poultry. Mr. B. Tabber architect. Quantities by Messrs. Franklin & Andrews:—

Larke	£3,844	0	0
Jarrett	3,850	0	0
Cooke & Green	3,707	0	0
Pritchard	3,674	0	0
Brass	3,639	0	0
Ashby	3,625	0	0
Browne & Robinson	3,590	0	0
A. E. Robinson	3,540	0	0
Downs & Co.	3,460	0	0
Perry, Brothers	3,415	0	0
Merritt & Ashby	3,394	0	0
Mark	3,368	0	0

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At the HALF-YEARLY GENERAL MEETING of the Proprietors, held on Thursday, the 7th August, 1873, at the City Terminus Hotel, Cannon-street Station, the following Report for the half-year ending the 30th June, 1873, was read by the Secretary.

FREDERICK FRANCIS, Esq. in the Chair.

The Directors, in presenting to the Proprietors the balance-sheet of the Bank for the half-year ending the 30th June last, have the satisfaction to report that, after paying interest to customers and all charges, allowing for rebate and making provision for bad and doubtful debts, the net profits amount to 109,461*l.* 9*s.* 5*d.* This sum added to 14,936*l.* 8*s.* 0*d.*, brought forward from the last account, and 64*l.* 13*s.* 4*d.*, received to meet interest accrued on new shares, produces a total of 124,939*l.* 10*s.* 9*d.* They have declared the usual Dividend of 8 per cent. with a bonus of 4 per cent. for the half-year, free of income tax, being at the rate of 20 per cent. per annum, which will absorb 100,000*l.* and leave 4,750*l.* to meet the interest accrued on the new shares from the respective dates of payment to the 30th June last, and 20,189*l.* 10*s.* 9*d.* to be carried forward to profit and loss new account.

The shareholders having, at the meeting in August last, decided to issue the remainder of the shares created in 1870, the Directors, in view of the continued increase in the business of the Bank, and of the desirability of preserving a proper relation between its capital and the amount of its banking, will ask the shareholders to pass the resolution of which notice has been given, authorising the creation of 10,000 additional shares, such shares to be issued at such times and on such terms as may be determined at some future annual or half yearly meeting.

The Directors will further propose the second resolution contained in the notice, that the Bank be registered under "The Companies Act, 1862," as an unlimited company; this registration, while it will not affect the principle of unlimited liability of shareholders, or involve any alteration in the Deed of Settlement of the Bank, will have the effect, under the terms of the Act referred to, of limiting the duration of liability of shareholders coming to be such to one year, instead of to future years as at present, and will also give to the Bank the advantages of a corporate body with a common seal.

If these resolutions be adopted, they will require to be confirmed by an Extraordinary Meeting, which will be called for the purpose on Thursday, 21st instant, of which due notice will be given. This Extraordinary Meeting will be only of a formal character, and no other business can be transacted at it.

The Dividend and Bonus, together 12*l.* per share, free of income tax, will be payable at the Head Office, or at any of the Branches, on or after Monday, the 18th inst.

The Directors have to remind the Proprietors that the Scrip Certificates should be left for payment of the interest and for Registration five clear days before the 19th instant.

BALANCE SHEET

Of the London and County Banking Company, June 30, 1873.

Dr.			
To capital	£1,200,000	0	0
To Instalments unpaid	3,120	0	0
			£1,196,880 0 0
To reserve fund	600,000	0	0
To Instalments unpaid	1,560	0	0
			598,440 0 0
To amount due by Bank for customers' balances, &c	£17,821,279	0	0
To Liabilities on acceptances, covered by securities	3,114,964	17	6
			20,936,243 16 3
To profit and loss balance brought from last account	14,936	8	0
To reserve to meet interest accrued on new shares	64	13	4
To gross profit for the half-year, after making provision for bad and doubtful debts, viz.	391,736	3	10
			407,234 5 2
			£23,138,788 3 5

Cr.			
By cash on hand at Head Office and Branches, and with Bank of England	£2,316,542	14	2
By cash placed at call and at notice, covered by securities ..	2,878,601	5	1
			£5,195,143 19 3
Investments, viz. :—			
By Government and Guaranteed Stocks	£1,647,848	11	9
By other stocks and securities ..	109,949	1	2
			1,757,947 12 11
By discounted bills and advances to customers on bond and security	2,2,971,690	14	11
By liabilities of customers for drafts accepted by the Bank (as per contra)	3,114,964	17	6
			15,086,655 12 5
By freehold premises in Lombard-street and Nicholas-lane; freehold and leasehold property at the branches, with fixtures and fittings			277,937 9 5
By interest paid to customers			141,125 11 10
By sundry other assets			
By balance due from other banks, not due, and on account of new shares			60,000 0 0
By balance carried forward			20,189 10 9
			£407,234 5 2

Dr. PROFIT AND LOSS ACCOUNT.	
To interest paid to customers, as above	£101,125 11 10
To expenses	121,787 17 7
To rebate on bills not due, carried to new account	59,381 5 0
To dividend of 8 per cent. for half-year	60,000 0 0
To bonus of 4 per cent.	40,000 0 0
To reserve to meet interest accrued on new shares	64 13 4
To balance carried forward	20,189 10 9
	£407,234 5 2

Cr.	
By balance brought forward from last account	£14,936 8 0
By reserved to meet interest accrued on new shares to 31st December last	64 13 4
By gross profit for the half-year, after making provision for bad and doubtful debts	391,736 3 10
	£407,234 5 2

We the undersigned have examined the foregoing balance-sheet, and have found the same to be correct (Signed) WM. JARDINE, WILLIAM NORMAN, RICHARD H. SWAINE, } Auditors.

London and County Bank, July 31, 1873.

The foregoing Report having been read, by the Secretary, the following Resolutions were proposed and unanimously adopted :—

1. That the Report be received and adopted, and printed for the use of the Shareholders.

2. That the capital of this Company be increased by the creation of 10,000 Shares of 50*l.* each, and that such Shares be issued at such times and on such terms as may be determined by any future Annual General or Half-yearly Meeting of the Proprietors of Shares in the capital of the Company.

3. That this Company be registered as an unlimited Company under the provisions of "The Companies Act, 1862," and that the Directors be, and they are hereby authorised and required to do all acts necessary for effecting such registration

4. That the thanks of this Meeting be given to the Board

Directors for the able manner in which they have conducted the affairs of the Company.

(Signed) FREDERICK FRANCIS, Chairman.

The Chairman having quitted the Chair, it was proposed and unanimously resolved—

5 That the cordial thanks of this Meeting be presented to Frederick Francis, esq. for his able and courteous conduct in the Chair

(Signed) WILLIAM CHAMPION JONES, Deputy Chairman.

Extracted from the Minutes

(Signed) GEORGE GOUGH, Secretary.

LONDON and COUNTY BANKING COMPANY.—Notice is hereby given, that a DIVIDEND on the Capital of the Company at the rate of Six per Cent. for the Half-year ending 30th June, 1873, with a Bonus of Four per Cent. will be PAID to the Proprietors, either at the Head Office, 21, Lombard-street, or at any of the Company's Branch Banks, on and after MONDAY, the 18th instant.—By order of the Board,

W. McKEWAN, } Joint General
WHITBREAD TOMSON, } Managers.

No. 21, Lombard-street, 8th August, 1873.

THE CHEQUE BANK, LIMITED, has COMMENCED BUSINESS

At its Offices, Pall-mall East, and 124, Cannon-street, E.C.

The Guarantee Fund of 100,000*l.* Consols has been invested in the names of the following

TRUSTEES :

Robert Dalglish, esq. M.P. | Samuel Morley, esq. M.P.
Cuthbert E. Ellison, esq. J.P. | W. H. Smith, esq. M.P.

The cheques of the Cheque Bank supply a new, safe, and universally applicable method of paying and transmitting small amounts of 10*l.* and under

Each cheque will bear stamped on its face the maximum amount for which it can be filled up, but the maximum amount must be previously deposited, and thus no account can be overdrawn. All cheques are crossed, and payable only to order

The cheques are supplied in books of ten each, costing 1s. being 10*d.* Government duty, and 2*d.* Bank commission.

Applications for Cheques to be made at the Offices as above or at any of the following Bankers, where the funds of the Cheque Bank will be deposited :—

The Bank of England	Alexanders, Cunliffes, & Co.
The Western Branch of the Bank of England, Burlington-gardens, Bond-street.	National Bank of Scotland.
	Alliance Bank, Limited.
	Jay Cooke, McCulloch, & Co.
Glyn, Mills, & Co.	Herries, Farquhar, & Co.
Williams, Deacon, & Co.	R. Twining & Co.
National Provincial Bank of England	City Bank.
	Union Bank of Scotland.
Dimsdale, Fowler, Barnard, & Co.	Manchester and Salford Bank.
Consolidated Bank, Limited.	Manchester and County Bank.

By order,—

S. J. NICOLL, Secretary and Accountant.

Pall mall East, S W 11th August, 1873

IMPERIAL FIRE INSURANCE COMPANY. Established 1803.
No. 1, Old Broad-street, E.C. and 16 and 17, Pall-mall, S.W.
Capital, 1,600,000*l.* Paid up and invested, 730,000*l.*
JAMES HOLLAND, Superintendent.

LOSS of LIFE or LIMB, with the consequent Loss of Time and Money, caused by Accidents of all kinds, provided for by a Policy of the RAILWAY PASSENGERS' ASSURANCE COMPANY.—An Annual Payment of 3*l.* to 6*l.* 6*s.* insures 1,000*l.* at death, and allows at the rate of 1*l.* per week for injury. 72,000*l.* have been paid as Compensation, one out of every Twelve Annual Policyholders becoming a claimant each year.
No. 64, CORNHILL, and 10, REGENT-STREET, LONDON.
WILLIAM J. VIAN, Secretary.

ESTABLISHED 1863
SAVE YOUR MONEY by Depositing it in the FRIENDS of LABOUR BUILDING SOCIETY and DEPOSIT BANK. Interest, 5 per cent. per annum. Cheque-books supplied to Members and Depositors.
Weekly Subscription to the Building Society, 1s. per share, payable monthly. Completed shares, 50*l.* paid in one sum. Half-shares, 25*l.* paid in one sum.
Three appropriations will be made on THURSDAY Evening, AUGUST 21st, at EIGHT o'clock. The repayments can be spread over fifteen years.
Prospectuses and every information can be obtained daily at the Society's Offices.
No. 6, WARWICK-COURT, HIGH HOLBORN.
JABEZ PODZUS, Secretary.

UTILISATION of SEWAGE and PURIFICATION of STREAMS.—The GENERAL SEWAGE and MANURE COMPANY, LIMITED, is prepared to NEGOTIATE with the Authorities of Towns for the TREATMENT and DISPOSAL of the SEWAGE of their DISTRICTS. By order,
C. R. GIBB, Secretary.
No 1, Crown-buildings, Queen Victoria-street, London, E.C.

THE NEW GAS COMPANY (Limited).
The Directors of the above Company are ready to receive APPLICATIONS from Owners of existing Gas works, as well as from others erecting, or about to erect, new works, and to grant Licences for the use of the PATENTS.—Apply to the Secretary, No. 22, Walbrook, E.C.

THE PATENT LIGNO-MINERAL PAVING COMPANY, LIMITED, is now prepared to enter into CONTRACTS for PAVING generally. This system is particularly suitable for stables, courtyards, &c. For further particulars, prices, &c. apply at the Offices of the Company, 8, Great Winchester-street Buildings, London, E.C.

PERSPECTIVES
Rapidly and Artistically PREPARED,
COLOURED, or ETCHED,
for Competitions or Exhibition.
DESIGNS and WORKING DRAWINGS.
Terms Moderate.—Address, T. H. 14, Argyle-street, King's-cross, W.C.

TO ARCHITECTS, BUILDERS, &c.
PLANS, WORKING DRAWINGS, SPECIFICATIONS, &c. accurately and expeditiously prepared. Surveying, measuring up work, &c. Terms moderate.—Address ARCHITECT, care of Mr. Farge, Stationer, 40, Euston-road, N.W.

TO ARCHITECTS AND SURVEYORS
DESIGNS PREPARED from ROUGH SKETCHES or otherwise, in an ARTISTIC and EFFICIENT manner. OUTLINES COLOURED in first-class style. PERSPECTIVES rapidly and effectively drawn, and etched, if required. TERMS MODERATE.—Apply to Mr. MYERS TAYLOR, 19, Thavies Inn, Holborn.

TO BUILDERS, ARCHITECTS, AND OTHERS.
DRAWINGS made from Rough Sketches, Specifications and Estimates Prepared, Quantities Priced: also Tracing, Copying, and assistance generally, in the best style, by the Advertisers, on moderate terms.—Address, 524, Office of "The Builder."

WILLIAM READ, 437, Brixton-road, GRAINER, MARBLER, and DECORATIVE ARTIST.
Prize Medals awarded 1851, 1862, 1870
Graining, Marbling, and Decorative Painting undertaken and promptly executed in Town or country, on most moderate terms. Specimens at the Crystal Palace, near the High-level Station.

CHARLTON & MARTIN,
MARYLAND POINT, STRATFORD, LONDON, E.
CONTRACTORS for PAINTING, STAINING, DECORATING, RENOVATING, &c Churches, Chapels, Halls, Offices, Chambers, and all kinds of Public, and other Buildings in Town and Country.

TO ARCHITECTS and SURVEYORS.—WANTED, a small BUSINESS, or PARTNERSHIP, in Town or country.—Lowest price for fixtures, goodwill, &c. to J. P. 36, Bloomfield-terrace, Lower Broughton, Manchester.

PARTNERSHIP.—An ARCHITECT, for-merly pupil of a leading mover in the Gothic Revival, wishes to meet with a Gentleman, established in practice, with a view to PARTNERSHIP; or would be willing to assist in managing a business, to which he would ultimately succeed. London or country. Address, 37, Office of "The Builder."

PARTNERSHIP. — A Monumental and general MASON, in one of the Midland Counties, requires a PARTNER, with a few hundred pounds, who is well versed in orna-mental sculptured work in all its details. To a young man with energy and ability this is a most favourable opportunity.—Address, LAPIS, No. 6, Cook's-court, Lincoln's-inn, W.C.

KING'S COLLEGE, London.—The Office of SUPERINTENDENT of the WORKSHOP being now VACANT, the Council are ready to receive APPLICATIONS from candidates who are above the ages of 25 and 40. All candidates must be acquainted with the various branches of builders and engineers work, and must be capable of giving practical instruction to students in these subjects, and must be competent to superintend the repairs of a large building, external and internal, which may from time to time be required at the College. A superior knowledge of carpentry is of the first importance. For further particulars, apply personally, or by post-paid, forward to prevent delay, to J. W. CUNNINGHAM, Esq., Secretary.

SIDMOUTH LOCAL BOARD.—DISTRICT of SIDMOUTH SURVEYOR, INSPECTOR of NUISANCES, and COLLECTOR.—The Sidmouth Local Board are desirous of receiving APPLICATIONS from Persons wishing to undertake the combined duties of SURVEYOR, INSPECTOR of NUISANCES, and COLLECTOR for the above district, comprising an area of about 1,600 acres, and a population of 3,360. The salary will be 80*l.* per annum, payable quarterly. The person appointed will be required to live in the district (to decide the whole of his time to his office), and to discharge the duties of an inspector of Nuisances as prescribed by the Sanitary Acts and the orders and regulations of the Local Government Board. Applications in the handwriting of the Candidates, stating age, past and present occupation, and qualifications, together with testimonials of a recent date as to character and ability, to be sent to me on or before the 1st day of SEPTEMBER next.

J. GEORGE G. RADFORD, Clerk to Sidmouth Local Board.

Sidmouth, August 13th, 1873.

WANTED, BUILDER'S CLERK, to assist generally in an Office of the Office. Apply, by letter only, with particulars and references, to R. B. care of Mr. Bradley, No. 713, Lombard-st., E.C.

WANTED, by a Builder and Contractor in the Country, a thoroughly competent CLERK. State age, references, and salary.—Address, W. MARTIN, Commercial-chambers, No. 98, High-street, Stockton-on-Tees.

WANTED, in a London Builder's Office, a first-class CLERK, who can take the measurement where two others are kept. Must be well up in taking off quantities, and produce good references.—Address, 517, Office of "The Builder."

WANTED, in a DECORATOR'S OFFICE, at the West end, a young Man, not more than 27 years of age as CLERK. One with some knowledge of house agency would be preferred.—Address, with all particulars, to 519, Office of "The Builder."

WANTED, in an Engineer's Office in the North of England, a Person to act as ACCOUNTANT and CORRESPONDING CLERK. He must be able to write shorthand. One having some acquaintance with the duties of an engineer or surveyor's office preferred.—Apply, stating age, previous occupation, &c., necessary required, to ENGINEER, Pickering's-office, Bridlington Quay, near Hull.

TO SURVEYOR'S ASSISTANTS.

WANTED, immediately, a good DRAUGHTSMAN, well accustomed to the work of survey-ing, levelling, setting out roads, and street work, paving, and street improvements. Salary, 2*l* guineas per week.—Applications on or before the 25th instant, by letter, stating age, with testimonials, endorsed "Application for Draughtsman," to the Clerk to Messrs. RADCLIFFE & CAYTON, Clerks to the Local Board of West Derby, Towns of Liverpool: Public Office, Stoneycroft, Green Lane, West Derby.

WANTED, in a Contractor's Office, a DRAUGHTSMAN, correct in taking out quantities for con-version of timber, to prepare working drawings, to assist with the books, must be generally useful in the Office. Those who have had considerable experience, and to whom a vacancy of earning not to be less than 3*l* per week could be offered, are requested to apply without delay. Address, by letter, stating age, experience, qualifications, and salary required, to F. W. S., Victoria-chambers, Victoria-street, S.W.

WANTED, a first-class OUT-DOOR FOREMAN. Reference will be required.—Apply, 192, Albany-street, Regent's Park, N.W.

WANTED, a practical WORKING SHOP-FOREMAN of JOINERS. Knowledge of machinery and a recommendation.—Apply, stating terms, to J. FOSTER, Builder, Normanton, Yorkshire.

WANTED, by a Builder and Contractor in the country, a GENERAL FOREMAN. Must thoroughly understand estimating, setting out, measuring, and brickwork. Used to employ a few hands. None but first-class need apply. Permanency to the right party.—Address W. MARTIN, Commercial-chambers, 98, High-street, Stockton-on-Tees.

WANTED, a good FOREMAN of CABINETMAKERS. He must be a thoroughly practical and experienced man, conversant with the manufacture of Cabinet and Office Goods. Apply, by letter only, addressed to W. B. care of Messrs. Bainbridge, 27, 28, St. John's-street.

WANTED, immediately, a first-class SHOP FOREMAN of JOINERS, by a large London Builder. Must be energetic, a good steerer, and keep good control of a large number of men, and used to good large jobbing. Address who full particulars and wages required, 488, Office of "The Builder."

TO GENERAL FOREMEN.

WANTED, an energetic MAN for the ERECTION of a MANSION, near London.—Address, stating age, name of last employer, and salary required, to 515, Office of "The Builder."

TO BUILDERS' FOREMEN.

WANTED, a middle-aged experienced MAN, to take the Management of a Joiner's Shop and Timber Yard in a country town. He must be fully competent to set out and superintend the work in hand. One prepared to do this need apply only if he can do it well. Apply by letter stating age, wages expected, if married or single, and giving references as to character and ability, to A. Z. Post-office, Oswestry.

WANTED, a young Man, Joiner by trade, used to the bench. From the country preferred. A constancy for a suitable man.—Address, J. and H. S., York-street, Globe-road, Mile-end-road, E.

TO PLUMBERS, &c.

WANTED, a THREE-BRANCH or JOBBING HAND, at once. He must be a good Plumber, experienced, steady, and attentive to work. Permanency to a suitable hand. Apply, Mr. BATES, Builder, Stevenage.

WANTED, a steady and energetic young MAN, in a Builder's Office. Must be able to trace plans, figure as to age, salary required, and references, to WALTER & HENSMAN, Builders and Contractors, Hornsea.

WANTED, now and permanently, an accomplished ARCHITECTURAL ASSISTANT.—Address, A. B. Messrs. Dale & Son, John Dalton-street, Manchester.

WANTED, in the Office of a Builder and Contractor, a thoroughly efficient BOOK-KEEPER.—Apply, by letter only, stating full particulars, to W. WIGMORE, Bradfield House, Walham-green, S.W.

TO HYDRAULIC WORKMEN.

WANTED, a Person thoroughly conversant with the LAYING of WATER-SERVICE MAINS, VALVES, and FITTINGS, to take CHARGE of NEW WORKS.—Apply to Mr. BLOOMER, Heeley, near Sheffield.

TO JOINERS.

WANTED, first-class WORKMEN. Constant Employment for steady men. Those accustomed to church work in oak preferred. Applications by letter from the country will be attended to. Wages, 9*l* per hour.—FARMER & BRINDLEY, 67, Westminster Bridge-road, London, S.E.

TO BUILDERS' BOOKKEEPERS.

WANTED, near London, an experienced MAN who has had good experience in a BUILDER'S Office. State age, lowest salary required, term of last or present engagement, and name of employer. To a suitable person the appointment would be likely to be permanent.—Address, in strict confidence, to 472, Office of "The Builder."

WANTED, in a Builder and Contractor's Establishment, a young Man to take charge of the IRON-MONGERY STORES. One that can write a good hand has been used to the business preferable.—Apply, with references, and stating salary required, to J. P., care of Mr. Morris, Bookseller and Stationer, Camberwell-green, S.E.

WANTED, an experienced, steady Man, as PLUMBER and GASFITTER, to fill up his time at Painting and Glazing, when required. Constancy to a suitable man.—Address, Mr. EVANS, Plumber, Gasfitter, &c., Eltham, Kent.

TIMBER TRADE.—WANTED, a competent BOOKKEEPER, at one of the outports. Highest references required.—Address, A. B. care of A. H. Bailey & Co., 3, Royal Exchange-buildings.

TO CLERKS.—WANTED, a JUNIOR, in a Manufacturing Ironmonger's and Hot water Engineer's. Good writing and correct at figures, with a knowledge of mechanical drawing to a certain extent to be indispensable.—Address, HAYWARD, BROTHERS, 187, Union-street, Borough, S.E.

CLERK of WORKS WANTED. Salary 2*l* 2*s* per week. Same hours as the workmen.—Address, with full particulars, to HOUSEKEEPER, 2, Southampton-buildings, W.C.

CLERK WANTED.—One used to the Manufacturing Ironmongery, Range, and Hot-water trade. Write, stating age, salary, and references, to J. B. 38, Museum-street, Bloomsbury, W.C.

CLERK WANTED, in a Builder's Office. One with a practical knowledge of the trade preferred.—Address, stating age, salary required, and references, to 488, Office of "The Builder."

BUILDER'S CLERK WANTED. Must be well up in prime cost, and the general routine of a Builder's office. State age and salary required. Address, 507, Office of "The Builder."

ALEXANDER GIBBS, STAINED-GLASS WORKS, 28, Bedford-square, W.C. WANTED, a first-class FIGURE PAINTER for STAINED GLASS. Apply as above.

TO ART STUDENTS.

A VACANCY exists in an Artistic Decorator's Establishment, for an ARTICLED PUPIL, as DESIGNER and COLOURIST. Only those gifted in drawing treated with. Apply, stating particulars, No. 489, Office of "The Builder."

TO ARCHITECTS, BUILDERS, AND OTHERS.

WANTED, EMPLOYMENT, by a person as Man, or CLERK of WORKS or Managing FOREMAN. Thoroughly up with all trade details, both in town and country trade, and a good draughtsman and measurer. Well up in quantities and estimating.—Address, A. E. 61, Denmark-road, Camberwell.

TO ARCHITECTS.

WANTED, an ENGAGEMENT, by a DRAUGHTSMAN, accustomed to contract drawings and perspectives.—Address, H. A. 17, Bedingfield-street, Strand, W.C.

WANTED, an ENGAGEMENT, by a thoroughly competent GENERAL ASSISTANT, of a comprehensive character, first-class experience in all trade details and all classes and styles of architectural assistance to design and otherwise. Address C. L. A. Post-office, Tavistock-road, Devonport.

TO ARCHITECTS AND SURVEYORS.

WANTED, a RE-ENGAGEMENT, in an ARCHITECT'S OFFICE, in London. Temporary or permanent. Terms moderate. Has a few years' references.—Address, M. W. B., 11, Gloucester-terrace, Regent's Park-road, N.W.

WANTED, a RE-ENGAGEMENT as GENERAL FOREMAN to a BUILDER. Can give first class testimonials. Town or country.—Address, Mr. F. 3, Park place, Gt. Yeldon-road, Bow.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN, having had thorough practical experience in the building business.—Address, J. E. No. 8, Penn street, Bridport-place, Hoxton.

TO BUILDERS AND CONTRACTORS.

WANTED, a RE-ENGAGEMENT as GENERAL OUTDOOR FOREMAN. Carpenter and joiner by trade. Good references from last employer.—Address, No. 483, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN, or to take Charge of a Job. In town preferred. Joiner by trade. Thoroughly up in all branches of the building trade.—Address, 516, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as FOREMAN of PAINTERS. Twenty-five years' experience of first class work. Now finish has a large job in Town. No objection to proceed in the Address, A. E. D. No. 7, Bark place, Bayswater.

TO ARCHITECTS AND SURVEYORS.

WANTED, a RE-ENGAGEMENT, by the Advertiser. Is a neat and expeditious draughtsman, understands fig. and is also surveying. Can prepare drawings from rough sketches, &c.—Address, S. B., Fairbank-street, East road, City-road.

TO BUILDERS.

WANTED, a RE-ENGAGEMENT as BUILDER'S CLERK. Well up in all the duties of the office, can take out quantities, and measure up work in all branches. Salary moderate.—Address, S. M. 11, Bath-grove, Hackney-road.

WANTED, a RE-ENGAGEMENT as CLERK of WORKS or MANAGING FOREMAN. Well up in drawing, estimating, and setting out brickwork, and other branches. Aged 35. Highest references. Carpenter.—Address, W. T. C. 7, Dartmoor-street, Kensington.

WANTED, by a JUNIOR or GENER... CLERK, a SITUATION in an Architect and Surv... Office. Country preferred.—Address, 220, Office of "The Build...

TO ARCHITECTS AND SURVEYORS.

WANTED, by an experienced CLE... of WORKS, a SITUATION. One who is thoroughly competent to superintend any class of buildings measure up and se... accounts, keep day accounts, &c. No objection to the country. ... testimonials and references.—Address, J. D. 42, Gillingham-st..., Pimlico, S.W.

TO ARCHITECTS AND SURVEYORS.

WANTED, by a careful DRAUGHT... MAN, of seven years' experience, an ENGAGEMENT ... near London. Well versed in design, details, perspective, and ... struction; also capable of taking out quantities, &c. For test... mials and terms, address, No. 421, Office of "The Builder."

WANTED, by a first-class ARCHITE... TURAL DRAUGHTSMAN, an ENGAGEMENT, ... Three Days weekly, in a London Office, at a moderate sala... Address G. 13, High-street, Putney.

WANTED, by a first-class ASSISTAN... an ENGAGEMENT, temporary or otherwise. Is a ... designer and draughtsman, and can make and colour perspect... write specifications, &c. Several years in the profession.—Addr... No. 571, Office of "The Builder."

WANTED, by a good GENER... ASSISTANT, a SITUATION in an Architect's or Surve... Office. Is well up in detail, construction, sanitaries, &c. Refere... given.—Address, 760, No. 2, Pembroke-villas, Pembroke-villa...

WANTED, a SITUATION, by a you... Man, a JOINER. Wages not so much an object as a ... work.—Address, T. B. 204, Paddington, W.C.

WANTED, a SITUATION, by a respe... able young Man, of many years' experience. Can ta... neatly and colour, copy specifications and quantities, and make h... self generally useful in a builder's or architect's office.—Addr... W. G. 22, Lucas-road, Lower Kennington-lane, S.

TO LIME, CEMENT, AND STONE MERCHANTS.

WANTED, a SITUATION, as WHAR... CLERK, by a Man aged 30. Twelve years' experience ... years in last situation.—Address, J. L. 25, North-street, Cambridge-heath, N.E.

WANTED, a SITUATION, as Improve... in an Architect's Office. Good draughtsman, expedit... and fairly up in design and detail. Salary moderate.—Address, W. ... No. 200, Post-office, Tisbury, Salisbury, Wilts.

TO PLUMBERS AND BUILDERS.

WANTED, a SITUATION, by a thorough... practical PLUMBER. Has had hot-water work. Can ta... hand if required. Good reference.—Address, W. G. 17, Lanca... street, Seymour-street, Euston-square, N.W.

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WANTED, by a young Man, aged 34, a ... SITUATION in the English Timber Trade. Has a thorough knowledge of buying, selling, and converting. Good reference, and no objection to the country.—Address, X. Y. 9a, Cambridge-circus, Hackney-road, E.

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WANTED, by a respectable young Man, a SITUATION, as IMPROVER, in a good firm. Five years in the trade.—Address, T. B. 28, Brocwell-road, Clapham, S.W.

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WANTED, a PERMANENCY, by a good PAPERHANGER, and to fill up his time in painting, &c.—Address, G. M. 106, Commercial-road, Peckham.

The Builder.

VOL. XXXI.—No. 1594.

A National School of Art.

"The pay of a common builder was five or six minæ; an architect would require more than ten thousand drachms."—*Plato.*

BEFORE now we have urged, in controverting the conclusions of certain recent critics, that no fair judgment could be formed of the present status of English architecture, without keeping in view the actual facts of its history within the very limited period of its modern development.

When it is remembered that any native architecture worthy of the name had died out; on the part of the public at large no ledge of or taste for art, as we now stand it, existed; that there was nothing literature of art accessible, much less tative examples; and that travel, as now ised by our architects, was a thing t unknown; it is not surprising that in evitable stages which had to be passed gh, they might be expected to prove r fruitful in mistakes than otherwise. It impossible, under the circumstances, to ach questions of style and systems of art- re *à priori*, when the whole domain of art as it were, to be reconquered. Experience became the necessary teacher, and we now e present time, with the experience thus d, and with all the materials then wanting dantly supplied, seem to be placed in the possible position for forming a just estimate sults thus far obtained, and for discerning eeds and conditions of a future and nobler rogress.

y review of the development of our modern itecture will lead to the conclusion that whatever success we have resorted to past complete styles,—ready to our hands, as a from which we could draw all manner of tic wealth,—we have not obtained that ery over them which can for a moment e our works upon a par with the achieve- ts of the past. Taking into account that present always stands at a disadvantage in rd to the past owing to that glamour which, ome mysterious tendency of our nature, we w over the past, and feel disposed to depre- the present, yet it must be confessed that all our facile combination and imitative ess, our works very rarely answer the only test of real fine art, viz., that it should be thing of beauty and a joy for ever," to be rned to again and again with a sufficing e of unwearied delight. Their secrets of portion, beauty, and variety,—which in same- were never plagiarism,—seem to have eluded It may be that styles of art, the growth of indwelling thought of a past age, once dead, beyond restoration to *life*; and, if so, that we on a useless quest to see how far we can he our modern and altered requirements with the forms of the past; though as imitative revivals in certain stages of art-culture they may be highly valuable and desirable as a means to an end. But while much beautiful work has undoubtedly been accomplished within these limits, often with a stamp of genius and originality about it, which appeared to promise a fresh point of departure in architectural art, we still find ourselves on the confines of the past, with no certain hints even of anything like a new, robust, native style,—if such a thing is possible. And it needs not be pointed out that the greater part of the vast mass of building which has sprung up under the impetus of a demand for something more æsthetic can lay no claim to be considered architecture at all.

How, then, admitting, as we emphatically do, the real progress made in the direction of a better architecture since the depressing times of the Georges, can we account for results which present, not a little, rather the appearance of chaos than of cosmos, in which there seems a casting about for something novel and fresh, almost by way of experiment, as it were, in each new architectural work, but no fixed principle, no consistent, definite progress, such as alone we should expect to comport with the dignity of so great an art as architecture. It cannot be a state of things to congratulate ourselves upon, that our architecture has become "all things by turns, and nothing long," and that our architects, true or so called, "do what seemeth right in their own eyes," "according to their own sweet will"!

We think that none, on reflection, will hesitate to ascribe this state of things to the wholly wrong system we have pursued in what we may term our art-culture, looking at it specially in regard to architecture. Without knowing, perhaps, much of those conditions and modes which gave art its extraordinary excellence in some past epochs, we can readily see that it cannot have arisen from such a system as that pursued amongst ourselves, and that we have really taken, or allowed to be followed, the course precisely conducive to such results as we now see.

Before, however, comparing the system which has grown up amongst us, and given us our architects and architecture, with what may be considered a true system of art-culture, it is very important, if we would discern the cause of past failures, that we should keep well in view *the central facts* which underlie and govern *all* true art-production, considered as fine art. These are now being most questioned by the destructive criticism to which all art-matters are subjected; which, if not resisted, threatens to launch us on a sea of conflicting opinions, which would be "confusion worse confounded," and lead to results which might almost prove the grave of English art.

Upon what, then, we ask, does all art-production, considered as fine art in the highest sense, depend? It is not necessary to enter upon what is termed the "philosophy of art"; but account for it as we may, in certain stages of human civilisation and culture, the lamp of art has only been lighted by what we understand as men of genius. It might seem trite to make such a remark, but when a leading journal favours us with the extraordinary dictum in commenting on the motto of the Royal Academy Exhibition, "*labor et ingenium*," that the "labor" was all very well, but was much better without the "ingenium," and that these so-called men of genius had an influence upon art more for evil than good, inasmuch as they created schools of base imitators, who repeated their masters and themselves *ad nauseam*, it becomes necessary to challenge these shallow and contradictory criticisms, as outraging all art history, as precisely at issue with all the lessons to be learned from the last half-century's experience amongst ourselves, and as barring progress in the very direction which so many thoughtful men now see to be so urgently demanded, if art amongst us, and especially architectural art, is to rise and not to sink, and to find scope for a satisfying and nobler development. It may be said, in passing, that real genius ever preserves its individual originality, and does not lapse into imitation, though quickened and influenced by correspondent genius, and that in what it borrows and in what it gives lie the life and progress of art. Mediocrity alone is the creature of base imitation, and the problem of all art-culture is to call out genius, or original creative capacity, and to repress mediocrity to its subsidiary place and level, often a helpful one. It is just this we seek to establish.

We contend, then, that all we understand by fine art, as distinguished from science and technical art governed by sheer utility, is the product of genius. It has ever been a law of human progress, in all departments, that certain master-minds, from time to time, appear endowed with that innate extraordinary capacity we call genius. Confining ourselves to formative art, whether painting, sculpture, or architecture, it is evident that while the range of their expression lies within those adjusted relationships between the senses and mind, and the external order of things which bring to us impressions of beauty, sublimity, and the like, that genius comes in as that peculiar susceptibility to these influences, accompanied by an indwelling creative power of expressing itself in new combinations of form, proportion, light and shade, colour, &c., which by human art reach the sources of thought, emotion, and pleasure, which nature and life themselves yield after their own mode. Architecture,—in one sense the most utilitarian of all the arts,—is yet also a mean between the real and ideal, and demands, if anything, a far larger measure of essential genius to make it a fine art in the sense we have pointed out, *i.e.*, as capable beyond its utilitarian objects of yielding impressions of beauty, character, grandeur, or whatever expression of indwelling thought can by such means reach the mind through the eye. The main elements here must ever be form, proportion, and light and shade, mingled in ways to create impressions of admiration in the minds of others according to the character of the building intended. But fixed laws in optics, &c., govern all these sources of impression, and it is genius that, consciously or unconsciously, seizes upon these and works out with them its own creative results. It cannot be pretended that, while much in all art as simple science can be acquired by the many, these subtler harmonies, these grander powers of expression, can be discerned and employed by any but the few.

Here, then, we have the key-note by which to test any true system of art culture: (1), the means we employ to discover genius, and to cultivate to the utmost extent its powers; and (2), the ranging of all other excellence in its proper scale, and the keeping mediocrity, however ambitious, or under whatever factitious influences or pretences, from being allowed to usurp the place of real genius. Without these, imitation and plagiarism, and a false pretence at originality, can be the only result. This is abundantly illustrated in all Fine Art, whether poetry, painting, sculpture, oratory, or the drama.

In turning then to the system which has prevailed amongst us, what do we find? First, that the artistic professions have been open, in a sense, to all comers; that there has been nothing occurrent which, as in other professions, compels the passing through an extended course of education specially designed for a given end; no crucible, as it were to test the ore, turning out the true metal, and rejecting the dross; nothing charitably to check those who had mistaken their vocation, to assess mediocrity at its real value, or to assign to genius alone the commanding place. Architec-

ture, of all the arts, has been the greatest sufferer from this state of things. It cannot, in all charity, be supposed that the source from which the ranks of the profession are mainly recruited, namely, those who have passed so many years as pupils and assistants in architects' offices, fulfils the above objects. It is impossible to say of those who thus enter upon the profession,—under the prestige of a great name, possibly, as their master,—that there is any real guarantee of the pecular genius which makes the architect; that they have received the necessary cultivation which should accompany it, or that their future status will be determined by merit alone. The reverse of all this is as likely to be the case as not.

We conclude, then, that the system hitherto pursued of allowing things to take their own course has exposed architecture to some of the worst possible conditions for evoking its highest products; and when we come to look at the arena of public patronage and appreciation in which it seeks its *status* and reward, we find that these are dictated by the most chance, and even unworthy influences; that, as a rule, the criticism which often guides both has been too unsound, contradictory, and unfair, to leave any other conviction than that of its incompetency to deal with what makes for the pure glory of art. Hence, as is well known, fashions in art prevail; favoured names have their day, not always indicative of genius or beneficial to art progress. This has been true in a marked sense of other arts besides architecture; painting as well has had its rise and fall of fashions and names, and the noble school of English sculpture has been allowed to languish under neglect and the parrot cry that it was behind-hand, and was a sorry affair at best; while nothing could be further from the truth, as we have had but recently, and still have amongst our sculptors men who, under due encouragement, are equal to works all but the highest, and rarely lacking in some sweet expression of thought and beauty.

Is there, then, any remedy which can be applied to a state of things which we cannot suddenly revolutionise, but to which a corrective *must* be applied if other and better results are to ensue? What can free art from the trammels to which it has become subjected through false criticism, ignorant patronage, and a depraved public taste? Experience answers, and the assent of all thoughtful minds unites in the conclusion, that if it is to a false system we have to trace the heterogeneous and confused results with which we are now presented, it is to a reversal of the process we have first to look; and that it is comparatively useless to be arguing questions of style and other details while the one main question of a proper system of a noble and national art-culture remains in abeyance. We have followed a system which has been one chiefly of isolation and rivalry, and art has become the creature of circumstances.

An attentive consideration of all that has recently been advanced convinces us that it is more and more felt that the one thing now is *for art to organise itself*; to take the lead where it has hitherto followed; to have in its own hands such a perfected system of cultivation as shall avail to discover genius and ability in all its varied forms, and to give it the stamp of currency, and to have the power to confer its own honours and rewards upon its own estimate of merit freed from outside influences.

There seems but one agency by which these ends can be reached, and that is the establishment of a really National School of Art, which would occupy the same position to all national art that the university does to the learning of a country. It may be said that we already have our schools, academies, institutes, &c., but these, however good a work they have done, are local and partial in their results, and have by no means effected the objects which we now see are so imperatively demanded to give that dignity, *status*, and progress which we have found to be so uncertainly apparent under the divided system which now obtains. The analogy for such a national school of art is furnished by other learned professions. These all have a *curriculum* of severe study, of examinations, degrees, &c., step by step, as the means adopted to bring out and equip ability, to guarantee fitness, and to confer honour and *status* in varying measure. It would be deemed well nigh idiocy in professions which have charge of important public interests to pursue a policy of letting things take their course. Why it should be thought allowable in the fine arts it is difficult to say. Certainly architecture, of all the arts, is concerned with important public interests in every way, and not least as the outward and visible sign of our national taste and culture. Yet we dare not say,—looking at our architecture during its modern period,—that it has faithfully reflected all that we were capable of achieving; in other words, that it affords no assurance that the best genius has been engaged in its production, or even been recognised,—much less received its due meed of reward. The candid suffrages of the profession itself would point to very opposite conclusions.

But in such a national school of art as we contemplate—having thought specially to architecture—all this might be changed. Inviting, attracting, as it would, all the art ability of the country for the advantages it had to confer, opening its doors wide, with every facility to students, they would become speedily closed again against all who could not pass the ordeal which would be imposed by an exhaustive course of study and examinations. Thus the first needed condition would be gained in sifting the aspirants for artistic honours, and only those could pass along to a career in art whose genius, or positive talent of some kind, proclaimed them worthy. Then would follow the second needed condition—combined study and the mingling of genius in art, than which nothing, it is obvious, is more requisite in architecture, where varied gifts and the combination of them under common effort to a common end are a *sine qud non*, and without which a national style of architecture cannot spring up or be pursued to its noblest developments. The third condition would also follow, in art being thus enabled to stamp its own *imprimatur* upon genius and merit with no uncertainty, as now, and the honours and rewards of such a school would become synonymous with the highest distinctions art could confer, and the *status* now so often denied to real genius would become its natural possession as a matter of course.

It is impossible to do more than hint at such a scheme as the one thing needful for English architecture, as in analogy with past systems of art culture, as taught us by our own modern experience, and as being the felt need of all who have the real interests of art in view. Details could be worked out only in actual organisation.

The one question remains of ways and means. Endowment, to begin with, would be the first step; but with such wealthy and lavish patrons as we now have for our present art, and such accumulated wealth on the part of many of our professional men in all branches of the arts, no difficulty need be feared here, if a patriotic love of art for its own sake can be reckoned upon.

If the review we have taken of the system which has given us our modern architecture, and the principles we have adverted to in this article be correct, we do not think there can be two opinions as to the course it has now become imperative to adopt. The choice simply lies between letting things take their course, with such results as we have seen, fruitful of complaints from the most competent judges, and such an organisation of art for free and independent, but no uncertain, development to all those ends which so much concern its success and dignity and consistent future progress.

THE SHEFFIELD CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

The week has been well commenced, and promises to be full of interest. The Corporation received the Members in the Cutlers' Hall, and the town clerk read this address:—

"To the Most Noble Henry Duke of Norfolk, the president, and other the members, of the British Archæological Association.

We, the mayor, aldermen, and burgesses of the borough of Sheffield, tender to the British Archæological Association our most hearty welcome on its assembling in our borough for the first time to hold its annual congress, and beg to express our satisfaction that Sheffield and its adjacent districts have been selected for the purpose of antiquarian research.

We assure you that we are fully alive to the advantages to be derived from archæological investigations, believing that the researches made by your Association into the history and usages of our forefathers, the rise and progress of arts, sciences, and manufactures, and the advance of civilisation are of deep interest and great practical utility, and cannot fail to prove beneficial to the present and future generations.

We have no doubt that the inspection of the antiquities in the ancient liberty of Hallamshire and the surrounding districts, with the information obtained during the holding of the Congress here, will be productive of both interest and pleasure to the members of the Association.

We desire to take this opportunity of assuring you Grace of our feeling of personal respect and regard, an we congratulate the Association on having as their pres dent a descendant of the illustrious family of Howar which has for centuries been intimately connected wit the town and neighbourhood of Sheffield, not only b rights of property, but as lords of the ancient Saxo manor of Hallam, of which this town is the centre."

The Mayor strengthened the address with few words, and the Duke gracefully thanked th Corporation in the name of the Association. A adjournment then took place to the parish churc where the Rev. Dr. Sale descanted on the alta tomb and monument to the founder of th chapel, the fourth Earl of Shrewsbury, with th marble effigies of that earl and his two cour tesses on the top,—the earl with his coronet an in the robes of the Order of the Garter, his fee resting on a talbot, and his hands joined i prayer. Against the wall is the monument o the sixth earl, erected by himself some tim before his decease. The effigy of the earl, i plate armour, is somewhat defaced; above is long Latin inscription, surrounded by all sort of heraldic devices. The inscription gives no only a list of the earl's illustrious titles an deeds, but refers to his custody of Mary Quee of Scots, with allusions to certain scandalou reports. The members did not fail to perceiv the difference in taste between that monumen and the fourth earl's tomb. A third monument as to which doubt existed, Mr. Planché had n hesitation in saying commemorated the earl' first wife and her son.

Carriages took the party to the "Manor," the buildings on which were erected by th fourth Earl of Shrewsbury, and became th places of confinement both of Wolsey and o Mary Stuart, and afterwards fell into neglec and decay. A residential building, with mul lioned windows and a staircase-turret leading o to the roof, built, as some think, for the queen' occupation, is in course of restoration, by direc tion of the Duke of Norfolk. A room with a panelled and ornamented plaster ceiling and a chimneypiece, is pointed to as her particula apartment, but the heraldic bearings seem a little more recent. The building itself is o stone, but the turret above the roof is of brick The party then proceeded to Broom Hall, th residence of Mr. R. N. Philipps, F.S.A., who read a paper on the history of the hall. The building includes a half-timber gable, with handsome carved barge-board.

At the dinner which was given by the duke in the evening, in the Cutlers' Hall, nearly 300 persons sat down.

Lord Houghton, in the course of his speech, proposing the health of the president, said it would be difficult for the Association to light on any spot in Yorkshire which would not in some degree accomplish their expectations. For this county, of which I am proud to be a citizen, holds within itself almost the whole of British history; and from the very earliest times when it was inhabited by conflicting races and various emigrations, it has been the scene of all those great conflicts of body and of mind which have resulted in the present condition of the English nation. It is difficult to say what portion of it has not contributed to British history. On a previous occasion I had the pleasure of accompanying this Association over the historical bridge of Wakefield, which has added one tower to the Tower of London. I took them to my own neighbourhood, and there we found in the bridge of Fairbridge the place of those continual conflicts from the Aire river, which ended in the battle of Towton. When we come into this country we find ourselves, perhaps, not so immediately connected with particular conflicts; but, nevertheless, this town and this neighbourhood are full of those great associations of the different times of English history which still remain vivacious in the mind of the English people. You will recognise that on all those great occasions Yorkshire men and Yorkshire noblemen have been pre-eminent. They have contributed much to archæology,—very often their own lives. We know the great interest that has always hung about a slain or decapitated nobleman,—and how we always feel for them,—whether it be the thorough-going Earl of Stafford or any other nobleman of a still earlier time, who has fallen in a great political conflict,—whose name is associated with districts and with periods which render the locality in which he lived a matter of general and universal interest. We have to-day been seeing the old Manor House, where the Earl of Shrewsbury was the guardian,—it may be historically, perhaps, said almost, the jailer,—of the romantic Queen of Scots; and we find that property transferred to the care of a noble-

man whose family happened to take very much the other side in those historical periods, and who would probably, if they had had their own way, have been anything but the jailers of that princess. But so has turned this wonderful English history of ours!

The Duke of Norfolk made a spirited reply. Sheffield, said his Grace, is a very great and increasing centre of a particular branch of trade, and a singular fact in connexion with it is that no town in England has grown so rapidly. For that reason it entertains, perhaps, more than any other manufacturing town a feeling of affection for the old things which have not yet been obliterated by the advance of various branches of industry within it. At the same time, as so much is given up to the purposes of trade, there is a great danger of old things becoming more and more ignored, and that very much so from the character of the trade carried on in the town and neighbourhood. We ought, therefore, not only to welcome the Association for coming here, but to sincerely thank it for coming. According to modern ideas, towns given up to such industries as those in Sheffield are not the places likely to attract the archæologist. Not only is everything here given up to activity and business, but the manufactories carried on here tend to promote change. Things are overturned, to be replaced by others. Buildings which do very well for one kind of trade are allowed to exist as long as that trade is flourishing. It may be that a staple trade is carried on with them; that trade fails, and then the buildings are pulled down for others more suitable to trades which are active. I remember about twelve years ago Sheffield was largely engaged in the rolling out of wire for crinolines. Now the great thing to look at here is the rolling of armour-plates for our iron-clads, —two very different things. You will therefore see that things here change rapidly, and that in this constant change the long gone-by past is apt to be forgotten. At the same time, there are objects in this town and neighbourhood which, I trust, will repay the members of the Association for having come here. We have already seen the monuments in the parish church, and the remains of the Manor Lodge,—reminiscences of events connected with two great names, Cardinal Wolsey and Mary Queen of Scots,—names historically famous throughout the world. That is especially so as regards Mary Queen of Scots, about whose life and times so much mystery and romance lingers; and everything which can throw light upon her history is always regarded with great interest and curiosity, and looked into with care. I hope what we have to see during the week will not prove unproductive of interesting results.

In reply to "Prosperity to the British Archæological Society," proposed in hearty terms by the Mayor of Sheffield, Mr. Godwin, as a vice-president, said it was many years since he assisted at the foundation of the Association, but during the whole of that time he had never been present at a finer assemblage in a finer room than the present. He hoped, however, when they next came to the Cutlers' Hall, to see in the panels of that magnificent banqueting-room paintings by some of their local artists, or those connected with the town, of places and events connected with the history of the county. He was sure they would not think he was travelling out of his course in suggesting this. A town which had produced Geoffrey Sykes as a decorator, Montgomery, and others, must surely be capable of finding men who would render that all an instructive book for all who entered it. With regard to the Association, he must consider it was a happy determination on the part of the Council to select for some of their visits those towns which did not, in the first instance, seem to offer the most material for investigation. They had been to nearly all the cathedral towns, to all those buildings which, remaining much as they were hundreds of years ago, at once promised to be suitable places for the researches of the archæologist. But it was a happy thought to come to Sheffield and other large towns which they had recently visited, occupied wholly, as it would seem, in the business of the day. In such towns they desired to suggest to the inhabitants that they should preserve all the mementoes which connected them with the past. We had been told on indisputable authority that man shall not live by bread alone, and the sentence contained more, perhaps, than at first met the eye. The mind and the heart required food and support, and those who poohpoohed sentiment were only half taught. The inhabitants of a town like this should preserve every record which tied them to the early portions of our history as if it were the apple of their eye,—their heart of heart. He trusted the visit of the Association would lead some who had not heretofore looked at matters in that light to preserve everything that related to the former history of the town. Though that and similar Associations had been working some years, they were as much needed as ever—perhaps more so. Destruction went on in the most barbarous manner. Earthworks were turned up, old buildings were knocked down, walls were destroyed, and landmarks in our history were obliterated. It was very difficult oftentimes to persuade the owners of these remains of their great value archæologically. In coming to Sheffield they could hardly hope to make such a discovery as he had been informed of that day by a private letter from Germany. In searching upon the plains of Troy, Dr. Schliemann had made one of the most remarkable discoveries of modern times. If he had not turned up the shield of Achilles described by Homer, at any rate he had found one something like it. Besides he had discovered hundreds of copper, silver, and gold implements and chains of a most remarkable character. Although they could not expect to turn up anything quite so remarkable, he was sure they would see very much to interest them, and might perhaps leave a thought behind to benefit others.

Mr. Gordon Hills made an interesting and suggestive speech in proposing the health of "the mayor and corporation;" and Mr. R. N. Philipps, the Master Cutler, Mr. G. Wright, F.S.A., and Mr. Robert Merriman, also spoke.

On Tuesday the members of the Congress went off to Beauchieff Abbey, erroneously termed a priory by Dugdale, and Mr. Gordon Hills gave a history and description of the building. At the conclusion of his account, Mr. Hills pointed out that the supply of water to the abbey was obtained nearly a mile away, up the hill, and was conveyed to the vicinity of the building by a series of reservoirs flowing into each other. In conclusion, he described the ruins as affording a most valuable illustration of the few churches of the kind in the kingdom. Returning to Sheffield, the party was largely increased in number, and then went off by special train to Worksop Priory; and in the picturesque gate-house there the Rev. J. Stacye read a full account of its history. The nave of the ancient church, a charming specimen of the Transition period, which is cut off at the transept and was restored a few years ago, is used as the parish church. One of the priory buildings displayed a number of masons' marks, which elicited a discussion. The sensation of the day was the examination of Steetley Chapel, a beautiful little Norman structure once a parish church, but now unroofed, and scarcely known. Mr. Stacye said the name did not appear in the Domesday Survey; but from the register of Welbeck it appeared that shortly after that survey was made, the place was held by one Gley de Briton or Brett. Gley had four sons. Only one of them had issue, namely three sons and a daughter, the latter of whom became heiress of the family. She was married to Robert le Vavasour, who through her became Lord of Strelley and Denaby. From a *post-mortem* inquiry taken at Chesterfield, after the death of Ouker Freshvill (1391), it was gathered that he was seized of property at Strelley, together with the avowson of the Church, and that he held them of John le Vavasour by fealty for all services. The property continued long in the family of Freshvill, some of whom resided at the hall near the chapel, and now used as a farm-house. From that family it passed into the hands of Sir Thomas Wentworth, in the reign of Elizabeth, and from his representatives to the Earls of Shrewsbury and their descendants, the noble house of Howard. There it remained till, to go with the Worksop estate, it was sold to the Duke of Newcastle in 1840. The date of the building is the twelfth century. Mr. Blashill produced drawings of five churches, which were very similar both in date and style. They were at Kilpeck, Herefordshire; Moccas, in the same county; Dalmeny, Linlithgowshire; East Ham, near London; and St. Julien, near Rouen. On the motion of Mr. Godwin, a resolution was passed unanimously expressing the desire of the Congress that the chapel should be roofed in and otherwise protected from the weather.

A very interesting visit was paid to Thorpe-Salvin, where there is a fine Norman font.

At the first evening meeting the Duke of Norfolk presided, and there was a large attendance. A *resumé* of the day's proceedings was given, and then

Mr. J. R. Planché, Somerset Herald, read a paper on "The Early Lords of Holderness," in which he treated a somewhat dry genealogical subject in so pleasant a way as to interest all his listeners. After disposing of various mistakes made by previous writers, he said, justly enough, that it was remarkable, considering the position and connexions of Adeliza, sister of the Conqueror and Countess of Ponthieu, that the discovery of her triple marriage should have been left to reward the diligence of an English antiquary of the nineteenth century, every previous account of her and her issue being, through ignorance of that simple, but important fact, full of errors and contradictions. It was perhaps still more remarkable, this fact having been clearly set forth by the authors of *Reserches sur le Domesday* in 1842, as well as by Mr. Stapleton himself, in his notes on the "Norman Rolls of the Exchequer," that so critical an antiquary as Mr. Edward Freeman should have overlooked the information, and in his second volume of the "History of the Norman Conquest," published in 1870, should have married Odo to his step-daughter Adeliza on the misrepresentation of Mr. Stapleton, in the 24th volume of *Archæologia*, though Mr. Stapleton had subsequently discovered and acknowledged his error thirty-three years ago. I conclude, said Mr. Planché, with an anecdote. Somewhere about thirty-three years ago, I was present in Covent Garden Theatre at the representation of "Romeo and Juliet," produced for the first appearance of a young lady in the character of the ill-fated daughter of Capulet. I sat in the boxes (there were no stalls in those days) immediately behind and unnoticed by an old friend of mine, a devoted admirer of the national drama, who had an unfortunate habit of talking aloud to himself. In act 4, Lady Capulet is informed that "they call for dates and quinces in the pastry." "Umph," ejaculated my friend, to the surprise of the people near him, "dates are indigestible things: what can they want with them?" I am afraid I have dosed you with dates beyond the power of your digestion. Still, it is only by a strict examination and comparison of them that we can distinguish fact from fiction, and their verification is one of the most important duties of the modern archæologist.

The Rev. Dr. Gatty afterwards read an excellent paper on the Town and Parish Church of Sheffield, a portion of which, namely that relating to the history of the town, we print separately. At the close of it,—

Mr. Edward Roberts said he wished Dr. Gatty had gone a little further, and had asked that the work which was done in the parish church about the year 1800 might be undone as far as possible. He was expressing the general feeling of the Association when he said that if the galleries were removed it would very much add to the beauty of the building. The high pews also might easily be replaced by others, which would occupy less space, and quite as many worshippers could be accommodated as now. The observations were generally assented to, but the Rev. Dr. Sale said there were more difficulties in the way than might be supposed.

Mr. Tucker, Rouge Croix, said all the gravestones were now flat on the ground, and urged that the inscriptions upon them, which were fast disappearing, should be recorded.

On Wednesday the Saxon Church of Laughton-en-le-Morthen and the ancient earthworks at Laughton were visited and examined, and then the Congress went to Roche Abbey, where luncheon was provided by the Mayor and the Master Cutler of Sheffield, and the Abbey was well described by Mr. Gordon Hills. Rotherham was then descended on, and the Church and the Chapel on the Bridge were commented on by Mr. John Guest.

In the evening, after returning to Sheffield, there was a *conversazione* at the Cutlers' Hall, given by the local committee, which went off gaily, and some papers were read, to which we will return.

The inhabitants of Sheffield have opened their houses most hospitably to the visitors, and in so doing have made known some of the treasures in the town. There are many capital pictures spread about, and Mr. W. Bragge, F.S.A., of Shirle-hill, has a remarkable and beautiful collection of Mediæval MSS. The same gentleman's collection of pipes, now at the International Exhibition, is probably unique. The

Sheffieldians describe themselves as a house-proud people: the first ambition when fortune comes is a good house well fitted up. The residence of Sir John Brown, where all that wealth could do has been done, may be pointed to as the culminating exposition of this feeling.

THE TOWN OF SHEFFIELD.*

The town of Sheffield is peculiarly interesting from the double fact that its history includes times and personages teeming with romantic incident; whilst there is the second era of long and laborious effort in the workshop, terminating at last in a brilliant success. There can be no doubt of a Roman occupation of the neighbourhood; their earthworks, solid as the natural hills, still attest the former presence of that vigorous people; but I scarcely think that the term Campo-lane gives countenance to the tradition that there was a Roman camp on the site of the old churchyard. If the derivation be Latin, the name would rather refer to the field in which De Lovetot placed his church, and where trees may have been felled to give room for the structure. However, in several parts of the town pots of Roman coins have been dug up, which testify that they were secreted for some purpose, and possibly by the Roman soldier, who intended to exhume them again. It is also said that urns with burnt ashes have been discovered here, and if so we have indubitable traces of the Roman. One interesting point about which some obscurity continues to hang is the date when Sheffield became the capital of Hallamshire by having the residence of the lord paramount within its precincts. On this point the entry in Domesday Survey is so brief and general, that it leaves only conjecture as to its meaning, inasmuch as no other historical authorities of the same date allude to the presence of Earl Waltheof in Hallamshire. He was Earl of Northampton and Huntingdon at the time of the Conquest; also Earl of Northumberland in the right of his mother, Elfreda, whose ancestors had held the earldom; and he was also Lord of Hallamshire, or at least he was one of three Saxon lords who owned the four manors which now formed the parish of Sheffield. In Hallam, says the Survey, was the *aula* or mansion of Waltheof. Whether this was in Sheffield as being demesne land, inland of Hallam as it is described, or whether the hall of the earl stood somewhere in Rivelin cannot be decidedly said, but it may be questioned whether he ever personally resided here at all. Why not at Northampton, which I have seen spoken of as his residence? It seems scarcely credible that the chief mansion in the district should have been placed on a spot so remote as Rivelin Valley, which is difficult of access even now; and when, too, Sheffield, protected by hills, and where the rivers are confluent, claimed at once to be the site of the great lord's home whenever he became resident. The life of Waltheof is only imperfectly known. Who can even tell whether he fought against the Conqueror at Hastings? We know that he submitted at the Conquest, and was taken to Normandy as a hostage by the King in December, 1067. Did he settle down in Hallamshire after his return? Who can tell? We only know that he rebelled and joined Atheling and the fugitives from Scotland when they came back in the summer of 1069 with Danish allies, to expel the Normans from the north country; that in the second attack upon York, which they took, Waltheof was the great hero in the fight. Then followed the dreadful vengeance of the King, who made a waste of all Yorkshire and Durham by fire and sword, and the land in Hallamshire lost five-sixths of its previous value. But Waltheof appeared in person before the Conqueror, and was again pardoned; and was raised to higher honours than he had ever before enjoyed. Probably it was in 1070 that he was married to Judith, the King's niece. All Hallamshire was then given to him, and in 1072 the government of Northumberland, a most important trust, was placed in his charge when Yorkshire was deprived. That the Conqueror watched him and kept him about his person as opportunity offered, there can, I think, be little doubt, and so it would happen that he became intimate with those who formed the King's court, and had his confidence. Hence his implication in the treachery of Earls Ralf and Roger, and his hurrying over to Normandy to confess once more his fault to his wife. Though seemingly pardoned again, his wife, the Countess Judith, urged her royal uncle against him, and he was beheaded at Winchester on May 31st, 1076. I have tried to identify this remarkable man with a residence in Hallamshire, but my present impression is that his personal abode here is doubtful. He had other property before the Conquest better adapted for the habitation of a great nobleman. After his submission, he was taken to Normandy by the King, and soon after his return he was in rebellion. The harrying and waste which followed this outbreak must have made these parts uninhabitable; and when Waltheof rose, after being pardoned, under the patronage of the Conqueror, to be almost next to him in influence and rank, he would not be likely to make his home, with the Countess Judith as his wife, in the depths of Hallam. Is it not probable that the *aula* of Domesday may have been little more than the *aula baronis* of later times; the price at which the representative of the owner settled all matters connected with the property, that the great dignity of the last English nobleman and his unique death (for William does not appear to have punished any other conspirator by judicial death) may have caused its mention in the Survey; and that our great local historian, Mr. Hunter, with involuntary partiality for his own birthplace, may have given to the term *aula* rather more definite meaning than it was intended to express? From the time of the Lovetots, Sheffield has been the acknowledged capital; and what they did at once for the town and district shows what a desolate place it was where they came to reside. Their castle was built in the angle which is formed by the junction of the River Don with the Sheaf; and their piety and beneficence were now displayed with a zeal becoming the residential proprietors. They founded the parish church of Sheffield, and charged its services on their own priory of Worksop; they built a bridge over the Don, the Lady's-bridge; they erected a hospital on Spital-hill, and a mill for the tenantry outside the castle walls; and I am persuaded that what is still called "The Town Mill," at Millsands, which used to be turned by the waters of a goit, cut from the river, stands on the very site of the original mill of De Lovetot. In nine generations this amiable family ended in an heiress who married a Crusader, Gerard Furnival. A different character appertains to this succeeding race. The Furnivals were not quiet and domestic, building church and hospital, mill and bridge, for the use of their dependents, as their predecessors had done; but they were engaged in war, both at home and abroad, and one of them at least was slain in battle. Thomas de Furnival rebuilt the castle after it was destroyed in the wars of the barons against the King, and his successor of the same name was a great benefactor to the town. He granted lands to his free tenants, released them from vassalage, and made them owners of the property, and both the church burgess and the town trust are the offspring of his bounty at the present day. This family also ended in an heiress, who married the illustrious John Talbot, the founder of the Shrewsbury peerage. Then came a line of nobility, who, for wealth, station, and honour, were second to none in the kingdom, and the highest trusts were confided to them by the successive sovereigns in whose reigns they lived.

As is well known in connexion with Sheffield Manor, which was built by George, fourth Earl of Shrewsbury, in the reign of Henry VIII., this fine mansion was made for eighteen days the resting-place of Cardinal Wolsey when he was summoned by his Royal master to London to answer for his pride and contumacy. There the Earl entertained the broken prelate until the Governor of the Tower arrived with a guard to conduct him on his way. There, too, about forty years afterwards, was the unfortunate Queen Mary of Scotland occasionally taken by George, sixth earl, when her apartments in the castle required cleaning, or the state of her health needed change during the fourteen years of her captivity at Sheffield. Nor can I, in naming this sad episode in the history of Sheffield, withhold the expression of my thanks to the noble duke before us for rescuing, as I believe, the very portion of the old Manor House from utter decay, in which the captive Queen was detained in her occasional visits. The original doorway has been opened from behind a thick coating of plaster. We have the narrow entrance exposed, through which the prisoner had no sooner gone than the bottom step of the spiral staircase met her foot, and up this she had to climb to her apartment, which was some 18 ft. by 13 ft. in size. In the walls of this small chamber are the very nails yet fixed on which the tapestry of her own working was probably suspended; and the ceiling above richly embossed with heraldic ornaments, is being carefully preserved in the state when Mary knew it. The preservation of a relic so interesting to every intelligent person is a good work, for which the town will feel deeply grateful to the Duke of Norfolk. Lord Arundel was the most accomplished nobleman of his time, and whilst he was in possession of the estate, the civil war broke out, and Sheffield Castle was held by the Royalists, and underwent a siege. The incident of great interest in this event was that the Governor's wife, Lady Savile, who for six months had been a widow, but remained in the castle, owing to the disturbed state of the country, courageously exhorted the garrison to hold out, although she was herself on the point of becoming a mother. In consideration of her condition, the defenders at length yielded, but honourable terms were granted by the conquerors. The castle was then razed to the ground, the Manor House was soon afterwards dismantled, and henceforth the Lord of Hallamshire resided elsewhere. It is now of the Sheffield cutler that I would briefly speak, for he becomes the chief actor on the stage as an historic nobility pass away. Through all times the smith has been an important member of society. Never was King Saul in a greater strait than when it was said of his people,—"Now there was no smith found in all the land of Israel." The Israelites had been subdued by the Philistines, who had taken from them the men who could forge swords and spears; and this rendered them powerless to release themselves from their enemy. Sheffield throughout the Middle Ages, and afterwards, was a settlement of smiths. They made, no doubt, the common arms of the soldiery; for arrow-heads they were famous; but their crowning achievement was the whittle,—the common knife,—which served for every purpose, except making pens, which few besides the clergy could use in those days. Chaucer could not have written 500 years ago of the Sheffield whittle as the Cambridge miller's hose, if it had not been the instrument everywhere carried; nor would Lord Shrewsbury, in Queen Elizabeth's reign, have presented a set of Sheffield knives to Lord Burghley, and boasted that there was "fame thereof throughout the realm," unless the Sheffield cutler had been a first-rate craftsman. Still, the extraordinary fact remains indisputable, that up to about the middle of the last century the town of Sheffield continued to be a mere settlement of forgers and grinders of steel. The man with 100*l.* a year was in the first grade of society, and the honest cutler retired from business, perhaps to cultivate a bit of land, when he had amassed a fortune of 500*l.* The lord of the manor worked what coal was got, and at an earlier period he held the forges in his own hands by deputy. The restrictions imposed by the regulations of the cutlers' guild kept all down to one mean level. But in those simpler days to ride in one's own carriage was not in the rubicon which had to be passed before gentility was attained; nor was a man measured by what he had, but by what he was. If respectable, he was made churchwarden or collector of the town burgory rents, or elected to the highest dignity of Master Cutler for the year; and I have a strong persuasion that under the three-cornered hat and wig, broad-tailed coat, breeches, and buckled shoes, which formed the dress of the old cutler on Sunday, when he led his leather-breeched apprentices to the parish church, there was often as much honour, intelligence, and old-fashioned courtesy of manner as will be found at the present time of the more remunerative trade. Prior to the Reformation, these horny-handed burgesses had maintained their own three priests, to assist the vicar, and the very fund which, from the time of Queen Mary, has supported these chaplains at the parish church, is in a great measure the result of the pious gifts and legacies of the needy knife-grinders. Nor were they without education. There was a school at Sheffield before good Thomas Smith founded the Grammar-school in 1609; and accounts show that prior to this date a poor scholar was helped to the University of Cambridge out of the purse of the Church Burgess Trust. Moreover, the stringent rules of the Cutlers' Company, which stifled competition, and inhibited the stranger from importing a little capital into the trade, were so careful to exclude that prime article in the pedlar's pack, "a razor made to sell and not

* From a paper by the Rev. Dr. Gatty, already referred to.

to cut." The cutlers themselves were so scrupulously particular about the quality of their steel and the fineness of the edge, that I almost wonder we do not find some of their genuine blades in use even at the present day. The life of the old cutler was hard and thrifty; for, though an employer, he earned less money than we sometimes pay for labour now; but I am convinced, after a close study of the social history of Sheffield, that the existing generation may safely look back with pride on the integrity and respectability of their rude forefathers.

What opportunity will do for a locality like this, which abounds in coal and iron, with plenty of water, may be estimated from the fact, that instead of the cutler, with his journeyman and two apprentices, we have a limited company, employing 7,000 men and boys, and paying 8,000*l.* a week in wages. This is the great commercial change which has been wrought in Sheffield by industry, perseverance, and sagacious venture, operating on local capabilities, and it has all been accomplished within a quarter of a century.

TYPHOID FEVER AND SANITARY PREVENTION.

The recent outbreak of typhoid fever in Mayfair, Marylebone, and the neighbouring districts has been an occurrence of unusual importance as regards the question of sanitary protection and reform. We are far from attributing to any of our fellow-countrymen a cynical and callous disregard for the lives or for the welfare of their poorer neighbours. The noble manner in which the incidence of almost the heaviest taxation in the world,—by far the heaviest, in as far as the relief and support of the poor are concerned,—is supplemented by private charity, is enough to forbid any such insinuation. But even with the most open-handed the adage must be remembered that charity begins at home; and it would be only the very pedantry of philanthropy that should affect to say that the health of his own family is not, and ought not to be, a more direct object of interest to the head of each household than that of the families of his neighbours. Thus, while it is true that many a man may take more or less solace from the consideration that, in any access of pestilence, it is the neglected, ill-drained, unventilated houses that will bear the brunt, and not his own well-regulated and duly disinfected abode, we do not admit that he is on that account chargeable with selfishness. On the contrary, such a man is, so far, a sanitary reformer. He does what in him lies,—if not altogether, yet to a very creditable extent,—to preserve the health of that part of city or country for which he is responsible. While chiefly caring for the protection of his own fireside, he is a public benefactor in two distinct ways. First, he prevents his own domain from becoming a seed-bed of contagious disease. Secondly, he sets a good example to his neighbours, and throws his moral influence into the scale of duty.

To this large class of conscientious and thoughtful men, the actual outbreak of fever addresses a special lesson. It tells them that, though they may have done much, they have not done enough. It teaches them that when great public dangers arise, the citizen cannot meet them in his private capacity alone. He can do so efficiently only by joint action. For the ordinary attacks of disease, the care of the prudent father and the service of the family medical adviser may suffice. Against epidemic or endemic evils such precautions are of comparatively little avail. The master can only protect his own home by keeping the enemy at a certain definite distance. And he can only do that by combining with his fellow citizens to insist on a competent and regular administration of the entire sanitary arrangements of the district in which he dwells.

Nor is this all, or nearly all. We took occasion, not many weeks ago, to point to the great danger that exists that one neglected locality may prove the seed-bed of disease that may decimate the best-regulated districts. Such appears to be now the case. We desire to speak with all reserve, and not to state as absolutely proven that which nevertheless has the weight of probability in its favour. We should be sorry to say a single word that might injure any tradesman, or take the bread out of the mouths of any hard-working men, but we have the less hesitation in referring to the subject from the fact that we are entirely unacquainted with the names of any of the purveyors of milk who may be interested in the matter, and thus could not, if we would, treat the subject on any but the broadest medical grounds.

Our contemporary the *Medical Record* was the first to call attention to the fact, that the peculiar circumstances of the recent outbreak had led a physician, of great eminence and extensive consulting practice, to suspect that infection had been communicated by the milk-supply. One hundred and sixty-five cases of fever were known to have occurred in forty-seven families, and, without citing statements which may be only partially founded on fact, it was evident that ordinary drain-poisoning could hardly be suspected as the source of the evil. Not a few of the families attacked were those of medical men. In many, if not in all, special care had been directed to the hygeian state of the houses, and sanitary engineering had, in more than one instance, been specially appealed to, to exert its best skill.

It became clear, on investigation, that the disease had not localised itself along any particular line of sewers. It is stated that the sewers in the neighbourhood of Cavendish-square, Wimpole-street, and Queen Anne-street,—the very *Pays Latin* of the medical profession,—are in a very dangerous state, and the use of disinfectants is strongly recommended to the inhabitants. Still the distribution of the fever cases is too wide to be in any way directly connected with the state of the sewers of this district; St. John's Wood, for example, being situated in a totally different part of the system. The outbreak of the fever in his own nursery is said to have directed the attention of Dr. Murchison to the question of milk. But, on the other hand, the delicate organisation of children is such as frequently to expose them to danger from sources of infection which more mature constitutions are able to resist. Moreover, on the question being mooted, the milk-purveyors stood on their defence, and threatened any persons who attempted to depreciate the excellence of their wares with actions at law.

A committee was, however, formed, in which the medical officer for Marylebone intervened, and Dr. Corfield was engaged to look after the interest of the vendors of the milk. The committee proceeded to take the only proper course of visiting and investigating the several farms from which the milk consumed by the families in question had been supplied. On the 13th Dr. Corfield wrote to the daily papers, to say that, in company with Mr. T. Chalmers Morton, he had inspected all the farms which supplied the districts visited by fever; that no suspicion whatever could attach to seven out of eight, but that in the case of the eighth, such probability of accidental contamination was found to exist; that the supply of milk from that farm had been stopped.

At the same time Mr. Sedgwick called public attention to the circumstances of an outbreak of typhoid fever in Islington, in 1870, mentioned by us at the time, when the milk supply was indicated as the source of infection; and when it was found on investigation that the dairy was supplied with water from an underground tank, lined with wood, which had been eaten by rats, and that a communication with sewage had been thus effected. The question yet remains undecided whether, in every such case, the evil results from the shameful but generally condoned iniquity of adding a definite quantity of water to the milk from the cow, before it is sent out to the customer; from the more venial carelessness of washing the milk-cans in the water in question, a suggestion that assumes the presence of an extraordinarily active venom; or from the supplying the cows with unfit water to drink. If the latter should prove to be a possible cause of communicating infection, it is evident that we have before us a physiological investigation of extreme difficulty, no less than of the highest importance.

The direct medical and chemical details, however, are rather subjects for the pages of our contemporaries, the *Lancet* and the *Medical Record*, than for our own. The point on which we are most anxious to insist is, the close and intimate connexion which is thus shown to exist between the sanitary state of districts lying very wide apart. Dr. Corfield does not mention the locality of the farm put under quarantine. Thanks to the convenience afforded by railways, twenty or thirty miles do not make much difference nowadays in the locality of a milk farm. From whatever part of the country milk can be sent, it follows, if the present view be ultimately proved correct, that infection may be imparted. We may go a step further. If milk may prove a source of infection, so may butter; so, perhaps, cheese. This consideration makes it highly important to ascertain whether the evil comes direct from the admixture of water, or, indirectly, through the animal economy. If the latter should prove to be the case (which we are not prepared as yet to believe), there could be little doubt that the butter would be as liable to carry infection as the milk. In fact, such is the extraordinary delicacy, or receptivity, of butter, that we think it highly probable that this substance may be the cause of mischief in unsuspected instances. We can cite a case in our own personal experience, to which no doubt many dairy masters or mistresses would quote parallels, where an entire make of pure fresh Welsh butter was rendered uneatable from the simple fact that the outside of the doors of the dairy had received a coating of fresh tar. The butter absorbed so much of the vaporised carbolic acid (or whatever be that principle in tar which makes itself sensible to the nose) as to be, though probably not unwholesome, yet entirely inedible. If such a case could occur without any contact, in an open dairy, from the mere admission of the air through the window, what subtle poison may not be absorbed by this receptive substance without any warning being given to the consumer?

We are not, indeed, helpless in this matter. But it is incumbent on us to help ourselves. Now that *Pallida mors æquo pede pulsat*, the carefully tended mansion and the neglected hovel, is it not time for us to insist on stamping out the slovenly sources of preventible disease. Disease, too, that seems scarcely to stride with the "equal foot" of the Roman satirist. The highest in nature, the noblest in intellect, the most delicate in nurture and in constitution,—in a word, those whose cerebral system is most highly developed,—appear to be the chosen victims of the typhoid fever. We spoke, some little time back, of the several special dangers of small-pox, cholera, and scarlet fever. Typhoid, it is but too evident, can only be kept down by precautions that are not special, but universal. No *cordon* can keep it out, from drawing-room or from nursery, so long as its pestiferous seedbeds are supposed to exist at whatever distance. It is on this account that the principle, if such it may be called, of throwing on each district what the Local Government Board sardonically calls responsibility, is so puerile—so much worse than puerile. We have insisted on this important truth from the first moment when it became apparent that Ministers were about to neglect the great opportunity which the illness of the Prince of Wales placed in their hands. We have now, if possible, a more striking lesson than any we have yet received of the madness of allowing the local "sanitary authorities" to take their own course—to do anything, if they like; or to do nothing, if they like it better, as Mr. Simon's report indicates, is generally the case.

There are not a few signs in the political horizon that an unpleasant reckoning is at hand for this negligence. We confine our remarks to sanitary legislation and administration, or rather non-administration. A wise statesman, it is true, regards not so much what it is absolutely best to do, as what is the best thing that can be done under actual circumstances. He presents to his own mind the theory of the case. He decides what would be the proper course if everything had to be constructed from the foundation, and he then decides how nearly, regarding either the disturbance of other interests, or the power at his command to overcome opposition, he can approach this ideal. At times it may be only within a humble distance; at times he may seize a lofty opportunity; but to the true statesman these two distinct elements of conduct are always clear—the end at which he desires to arrive, and the means which are, under varying circumstances, within his power in order to attain that end.

Now, the substitute for the statesmanship which has dictated the proceedings of the last two years (we confine our remarks to sanitary administration) has been guided by a different principle. It does not appear, judging from results, that the measures proposed have been regulated either by the desire for what was best or by the knowledge for what was attainable. The ruling principle has been deference for what was likely to be popular. On no other ground can the absolute miscarriage of legislation be explained. It is almost too late in the day to suppose that it is necessary to insist, to any man of sufficient education and knowledge

of the world to have crossed the threshold of Downing-street, on the propriety of compulsory sanitary measures. It is perfectly certain that Parliament and the country at large, in the alarm that was spread by the Prince's illness, would have hailed the proposal of such compulsory measures; would have strengthened the hand of the Minister who brought them forward; and would have enabled him to draw a line of defence against an enemy more to be dreaded than any who marches in military order, for which we, and those who may come after us, would have been grateful. The object of the statesman was plain—prevention of preventible disease. The means of attaining that object was clear — compulsory legislation. The practical difficulty of obtaining the power so to legislate was removed. The country was in alarm, and would have endorsed any measure that was at once enlightened and vigorous. Why was the occasion wasted? Because a certain amount of popularity was, or was thought to be, attainable, by the easy negligence of referring the initiation to the ratepayer. That the object thus sought was most illusory, we think there is accumulating evidence. But that is not the point. If popularity is to be the *ultima ratio* of the legislator, we have entered on that headlong and rapid course which has brought nations older and more cultured than ourselves to destruction. The moment that the idea of pleasing the people,—that is, of pandering to the caprice of the hour, —is substituted for that of the steady pursuit of wise ends, the power of legislation is invoked only for mischief. To do nothing when action is necessary, is only one degree less reprehensible than to do what is known to be mischievous. Each is only a case of that conduct which is described as doing evil that good may come.

We think, then, that two very practical and important lessons have been enforced on us, at a cost which, though less than might have been inflicted, has still in many cases proved heavy to endure. Are we to continue to sanction an admitted adulteration of one of the main supports of infant life? Ten per cent. of water, it seems to be taken for granted, is regularly added to what we buy as milk. That is to say, that if, for what is sold as ten quarts of milk, we pay 4s. 2d., we receive nine quarts of milk and one quart of water, for that price. And, unless the dairy from which the supply is derived be in a thoroughly well inspected district, in that quart of water,—regularly added by the "respectable" vendor,—may exist the elements of contagion. Why should this be allowed? If nine quarts of milk are worth the selling price of 4s. 2d., why not say so honestly? Why not fix the fair price, sell the genuine article, and subject to heavy penalty, and the vigorous action of criminal law, the adulterator of milk? To do otherwise would have been called by our plain-spoken and right-thinking ancestors compromising felony. It is in very truth sanctioning a swindle. It is putting temptation in the way of the tradesman. If of one quart of water in nine, we hear,—"of course, every one knows that,"—a quart and a half is only a question of degree, and so on in the descending scale. This we have known long enough, and yet have allowed such a slur on our commercial morality to remain without reprobation. Now that we are told, on the highest authority, that we not only pay 5d. out of every 4s. 2d. for water, but pay it for impure, infected water, is it not time to insist that milk should be milk? It is, at least, as much the interest of society to do this as it is to insist that a pair of scales shall be a just balance, and that a pound shall weigh sixteen ounces.

This brings us to another matter. We must help ourselves. We must not trust to the patriotism of one minister or to the intelligence of another. We must not depend on departments, or resign ourselves to the paternal care of some Government Board or Privy Council. Here is a question that comes home to every man. We speak of fathers of families, because it is among children that the victims are for the most part found, and because many now will be nervously alive to the danger of their children, who may neglect their own. But it is "death in the pot." Not one of us is safe; and if there be one man whose life is more valuable than that of another,—one whom the anxiety of life, the care of a numerous family, the scientific or literary toil that fatigues the brain more than ordinarily, tends to depress,—he is the one marked for the first victim of this subtle danger.

We give, then, earnest council to all those who regard the lives of their children, their wives, and themselves, as precious, to lay this lesson to heart, and to extend the limits of their care. Let them not cease to look to their water and their drains, to disinfect, to purify, and to keep on their guard at home; but let them do something more. When they meet in public or in private let them make the sanitary question a theme of conversation. Above all, in those votes which before very long they must be called on to give, let them learn from the candidates who ask their support how they will deal with the sanitary question. What were once great party questions are now no more on the *tapis*. Great practical differences of opinion in home or foreign policy are now hardly anywhere discernible. Politics are becoming more and more personal. Sanitary policy is a question that takes rank above all other points now under debate. It has been shelved for more abstract matters,—for changes of law as to which it remains to be seen whether they are for good or for evil. Let the true sanitary reformer be the candidate for whom every thoughtful citizen votes. Let politics be to him, for once, not a matter of speculation or of habit, but of the earnest, discharge of a duty. Let him regard the "do-nothing" candidate as he would regard one who should prepare to dismantle a fortress or to disband a garrison when the standards of the enemy were to be discerned on the horizon, or when the line of the invaders' march might be traced from his watch-tower by columns of smouldering smoke.

IMPORTANT DISCOVERIES AT TROY.

Dr. H. Schliemann, who has now spent some time and a considerable sum of his private means in excavations on the site of ancient Troy, has at last been rewarded for his perseverance and liberality by discoveries the importance of which cannot be too highly estimated. In a letter to the *Allgemeine Zeitung*, not free from bold conjectures, and which we translate, he writes as follows from Troy, under the date of July 17th:—It seems as if Providence had intended to recompense me for my superhuman efforts during three years' excavations at Ilios in a bountiful manner, for at the beginning of this month, at a depth of nearly 28 ft. on the great Trojan enclosure-wall extending from the Scæan Gate in a north-westerly direction, and close to the house of Priamus, I came upon a large object of copper and of remarkable form, which attracted my attention all the more as I believed I noticed gold behind it. Upon it a layer of red ash and calcined *débris*, from 4 ft. to 6 ft. thick and as hard as stone, rested, and upon this an enclosure-wall, about 6 ft. thick, and nearly 20 ft. high, consisting of large stones and earth, and probably dating from the period following the destruction of Troy. To withdraw the treasure from the avidity of my workmen, and preserve it for science, the greatest expedition was imperative; and although time for breakfast had not yet arrived, I let "païdos" (a word of uncertain derivation passed over into Turkish, which is used here instead of *ἀνάπαυσις*, or "resting-time") be called out, and while my workmen took their meals and rested, I cut out the treasure with a large knife, an operation requiring the greatest exertion, and performed under the most terrible danger, for the large wall, under which I was working, threatened every moment to come down upon me. But the sight of so many objects, of which each one had an incalculable value for archæological science, made me reckless, and I did not think of danger. But the removal of the treasure would have been an impossibility without the assistance of my devoted wife, who stood ever ready to pack the objects cut out by me into her large shawl, and carry them away.

The object first seen was a large, flat utensil of copper (*δίσκος ὀμφαλοειδὴς* or *ἀσπὶς ὀμφαλόεσσα*) in the form of a large waiter, in the middle of which was a boss surrounded by a groove (*αὐλαξ*). It is about 20 in. in diameter, quite flat, and surrounded by a rim 1¼ in. high. The boss (*ὀμφαλὸς*) is 2¼ in. high, and 4⅜ in. in diameter; the groove surrounding it being 7 in. in diameter, and ⅜ in. deep. Most likely it is a shield, reminding us of Homer's *ἀσπίδες ὀμφαλόεσσαι*.

The second object which I took out was a round copper basin, with two horizontal handles, which reminds us of Homer's *λέβης*. It is 16 in. in diameter, and 5½ in. high; its bottom flat and 8 in. in diameter.

The third object was a copper plate, ⅜ in. thick, 4 in. broad, and 17 in. long, having a rim a little over $\frac{1}{10}$ in. high; on one of its ends are two fixed wheels, with axle. This plate is strongly bent in two places, but I believe these bends to have been the effect of the heat to which it was exposed during the conflagration. A silver vase of the height of 4⅜ in., and of the same breadth, is joined on to the plate; this I suppose to have been likewise caused accidentally by fire.

The fourth object found is a copper vase of the height of 5¼ in., and 4⅜ in. in diameter.

Then came a globular bottle of purest gold, 6 in. high, 5¼ in. in diameter, and weighing 403 grammes, with a zigzag ornament commenced, but not completed; a goblet, also of purest gold, 3½ in. high, 3 in. broad, and weighing 226 grammes; as well as a goblet of purest gold in the shape of a ship, with two large handles, weighing exactly 600 grammes, 3½ in. high, 7½ in. long, and 7½ in. broad; on one side is a mouth 2⅜ in. in width, on the other one 1½ in. in width. It is suggested by my friend, Professor Stephanos Kumanudes, of Athens, that the person offering the filled cups drank first out of the small mouth, and to do honour to the guest by letting him drink out of the large one.

The treasure contains further, a goblet of gold alloyed with 25 per cent. of silver, weighing 70 grammes, 3½ in. high and 2⅜ in. broad, the foot of which is only ⅝ in. high and 1 in. broad, and is besides not straight, as if the goblet was intended to rest on its mouth only. I found there further six pieces of a mixture of gold and silver (*κρᾶμα*), wrought with the hammer in the form of large blades, of which one end was rounded off, the other being cut out in the shape of a crescent. The two largest ones are 8½ in. long and 2 in. broad, and weigh each 184 grammes. The next two pieces are 7⅜ in. long and 1⅞ in. broad, and weigh 173 grammes each. The remaining two are 6⅞ in. long and 1½ in. broad, and weigh each 171 grammes. Most probably they are the Homeric talants (*τάλαντα*), which could only be small, as Achilles for instance (Iliad, xxiii., 269), proposes as first prize for the victor a woman, as the second a horse, as the third a basin, and as the fourth prize two golden talents.

Partly on the top, partly by the side of these gold and silver articles, I found thirteen lance-heads of copper of a length of 7 in., 8½ in., 8½ in., 9 in., and 12½ in. long, and from 1½ in. to 2⅜ in. broad at their widest part. There is a hole at the lower end, in some of which the nail or pin still remains, with which the lance-head was fastened into the wooden shaft. The Trojan spears were, therefore, quite different from those of the Greeks and Romans, for the two latter nations put the shaft into the spear-head, while the Trojans put the lance-head into the shaft.

As I found all the objects enumerated above packed together, or into one another, on the top of the enclosure wall, the construction of which is attributed by Homer to Neptune and Apollo, it seems certain that they were put into a wooden box (*φωριαμὸς*) like those mentioned in the Iliad (xxiv., 228), as being in the palace of Priam. This seems all the more certain, as I found, close to the articles described above, a copper key, 4½ in. long, the bit of which, 2 in. long, and of the same breadth,—has the greatest resemblance to the large safe-keys used in modern banks. Curiously enough, this key must have had a wooden bow, the end of the shank being bent at a right angle, as in dagger-knives, leaving no doubt on this point. Probably some member of the family of Priam packed the valuables in a great hurry into the box, carried the latter away, without having time to take out the key, was overtaken on the wall by the enemy or by fire, and had to leave the box behind, which was buried at once to the depth of 5 ft. or 6 ft., with the red ashes and the stones of the royal house close by. Perhaps the helmet found by me a short time ago, along with a vase and a goblet of silver, in one of the rooms of the royal palace, belonged to the same unfortunate who tried to save the treasure. The successors of the Trojans built 5 ft. or 6 ft. over the treasure the enclosure wall, 20 ft. high and 6 ft. thick, of large hewn and unhewn stones and earth, reaching more than 3 ft. under the surface of the hill. A proof of the treasure having been packed up under terrible danger to life, and with a trembling hand, is the contents of the largest silver vase discovered, in which I found at the bottom two splendid gold head-bands (*κρήδεμνα*), a frontlet, and four very artistically-worked ear-hangings of gold; on the top of these lay fifty-six gold ear-rings of most curious shape, and

thousands of very small rings, cubes, buttons, &c., of gold, which evidently formed part of other jewelry; then followed six gold bracelets; and on the top lay the two smaller gold goblets.

One of the head-bands is 20 in. long, and consists of a gold chain, on each side of which eight small chains, 15½ in. long, and covered all over with small gold leaves, and intended for covering the temples, are hanging down; on each end of these sixteen chains a gold idol (1⅝ in. long), with the owl-head of the Ilian tutelar goddess, is suspended. The fifty-six gold ear-rings are of different sizes, and three of them seem to have been used also as finger-rings by the princesses of the royal house. The forms of these ear-rings have no similarity with those of Hellenic, Roman, Egyptian, or Assyrian ear-rings.

He who tried to save this treasure fortunately had the presence of mind to place the large silver vase with the valuables described upright into the box, so that not a pearl has been lost, not a single thing been destroyed. My esteemed friend, M. Landerer, of Athens, well known for his discoveries and writings on chemistry, who has examined very carefully all the copper objects belonging to the find, and analysed fragments of them, says that all of them consisted of pure copper, without any admixture of tin or zinc, which, to make it more desirable, has been wrought (*σφυρήλατον*).

Hoping to find further treasures, and wishing to bring to light the Trojan wall of the gods as far as the Scæan Gate, I have had the upper wall resting partly on it for a distance of about 55 ft. entirely taken down. Visitors to the Troad, however, recognise it still, opposite the Scæan gate, by the north-western earth wall. I have also had the gigantic mass of earth separating my western and north-western cuttings from the large tower completely removed, and had for this purpose to take down one of my houses, and also, for easier transport of the *débris*, to carry a bridge across the Scæan Gate. The result of this new excavation has been of great benefit for science, for I have been able to lay open several walls, and also a room, 20 ft. by 20 ft., of the royal house, on which no buildings of a later period rest. Amongst the objects found there, I mention only the following:—A square piece of red slate, with two holes, not penetrating, at the top, and a groove running round it, with an inscription excellently engraved, of which neither my learned friend M. Emile Burnouf nor myself is able to say to what language it belongs; further, a few interesting terra cottas, among which a vessel of the exact form of a modern barrel, and with a pipe in the centre for pouring in and running out the liquid. There were also found on the Trojan enclosure wall, 20 in. underneath the place where the treasure was discovered, three silver bowls (*φιάλαι*), two of which were broken in excavating, but which may be put together again, as I have all the pieces. These bowls seem also to have belonged to the treasure, and if the latter has been so wonderfully preserved from our picks, it is thanks to the large copper utensils mentioned, which projected, so that I was able to cut everything out of the hard *débris* with my knife."

So far the indefatigable explorer must be heartily congratulated on his success. How far he is right in his surmises further investigations will no doubt fully establish, but that his discoveries are of the greatest importance to the archæologist as well as to the historian admits of no doubt. He intends publishing full details of the treasure in a work on his excavations at Troy, now in the press. The atlas which is to form part of this publication will be increased by 216 photographic plates, in consequence of the additional illustrations of the many remarkable objects of this treasure-trove. The work will be executed in the well-known establishment of F. A. Brockhaus, at Leipzig.

Wooden Pavements in New York.—New York has given the patent wooden pavements a thorough test, says the local *Tribune*, and found them expensive and inadequate to our uses. The official report of Commissioner Van Nort confirmed the conclusions already very generally reached, that the city must return to a good stone pavement, and waste no more money in testing a material which answers in Chicago or Brooklyn, or other cities where travelling is comparatively light, but which cannot sustain the heavy traffic of the metropolis.

THE UNITARIAN CHURCH COMPETITION, NOTTINGHAM.

The Unitarians of Nottingham desire to build a new church in that town, on the High Pavement, to cost about 10,000*l.* and seat 1,000 persons; and so, to prove to the world the small value architects set upon their own skill and time, eighty-one of them went to work, and have filled the large room at the School of Art with hundreds of drawings utterly useless for any other purpose. It is quite true that the large majority of the designs are obviously the works of persons egregiously incompetent, and the competition may be looked upon as a sort of exercise set them in the course of their studies. After deducting these, however, a sufficient number of creditable designs still remain to make one grieve for the time and energy wasted. The committee have selected for the first premium, and it may be supposed for execution, a design sent by Mr. Stuart Colman, Bristol, under the motto "Nulla Vestigia Retrorsum."

The second premium is awarded to Mr. E. T. Robins, of London; and the third to Mr. George Ogden, of Bradford, for a somewhat feeble and inferior design. Mr. Robins has a boarded roof panelled, and tie beams; and gives a *flèche* to mark the commencement of the chancel, as well as a steeple.

The selected design is Early English in style, cruciform on plan, and has a handsome tower and spire. The aisles are covered with span roof, an expensive mode, adopted possibly in order to obtain lofty clearstory windows, light being one of the difficulties of the situation. The designs marked "*Sans Dieu Rien*," "Faith," and "1,001," are ably set forth. The drawings, we may add, are all in pen and ink, or pencil.

PROPOSED NEW CEMETERY AT HAMPSTEAD.

The Hampstead Burial Board are desirous of constructing a new parochial cemetery for the district, and propose to purchase for the purpose a piece of land near the Fleet-road, Gospel Oak-fields. An opposition to the project was offered by a number of the inhabitants, at an inquiry as to the suitableness of the proposed site held last week by Mr. Holland, the medical inspector appointed by Government. The inquiry stands adjourned.

THE IMPORTANCE OF APPRENTICESHIP: AND A PLAN.

To the importance of extending apprenticeship, Mr. T. H. Hartley, of "Marble Hall," Westminster, has drawn attention more than once. It is a subject that will pay for discussion. When we look around and through our towns and see so many idle young people growing up without learning any trade or skilled occupation, it is indeed a wonder how they live. If such, then, instead of being left to themselves, should be taught some business or occupation, they would cease to be mere human machines, and having acquired a knowledge of a trade or some skill in handicraft, they would become at once elevated into a higher scale of social position, and by their industry and skill would increase to a great extent the national fund of wealth. This is his argument. He thus sets forth his proposal:—"It is to provide boarding-houses or homes for lodging apprentices, and my experience of such an establishment enables me confidently to speak of its success, for the system has been in operation at 26, Page-street, Westminster, for the last sixteen years, and has therefore been well tested.

The following is the plan of this establishment, set on foot by me, and would serve as a model for the working of the proposed homes. The boys are taken as apprentices, and placed in a small house, in which a person resides connected with the works, who acts as a master. His wife is the superintending matron, and the control of these lads is placed in their hands. They are called in the morning to go to their work; they return at stated times to their meals, which are always ready for them: there is thus no time lost. After the work is done, there are books and newspapers for them to read, or occupation is found in writing or drawing. They are allowed full liberty of ingress and egress, being fined, however, if not in by a stated time, which varies according to the season, and they are allowed a small sum a week for pocket-money. They are thus placed in a position which must have a very material effect in qualifying them to fulfil their duties properly when arrived at manhood. The boys are taken at about thirteen or fourteen years old, and retained until twenty-one, at which age they ought to be able to take care of themselves, and make room for others; and during this period they have all the advantages of a home, and, at the same time, a surveillance is exercised over them which others in the same station of life have not at their paternal homes."

In order, therefore, to bring this matter more prominently before the public, and, if possible, to restore this ancient custom to its former position, he proposes the following regulations for consideration:—

1. That some competent person or persons should be appointed in the different towns and provinces, whose business it should be to perform duties similar to those of the Chamberlain of the City of London.

2. That homes should be provided for all apprentices, with a master and mistress over each to superintend the necessary domestic arrangements.

3. The masters or employers of those apprentices to train them up to some craft and provide work for them, and pay for their support in their homes.

In this way, by adding to our skilled labour, we should be adding to our national wealth, and this most important result would follow as a necessary consequence, that we should greatly diminish the amount of our pauper population, and by thus striking at the root of the inducements to crime we should lessen the number of our criminals.

RAILWAY SALES OF SURPLUS LANDS.

In last week's *Builder* we gave particulars of the sales of surplus lands which had been effected by the London, Chatham, and Dover, and Metropolitan Companies, as disclosed by the proceedings at the late half-yearly meetings of the companies. We now find that the Metropolitan District Company have sold a large quantity of their surplus lands within the half year just ended. At the meeting of the Company the Chairman (Mr. J. S. Forbes) stated that within that period they had sold surplus lands, for which they had realised 67,000*l.*, and since the half-year ended they had sold 40,000*l.* more, leaving them a balance of 187,000*l.* to deal with. He also stated that they had disposed of lands in the form of leases to the extent of more than 100,000*l.* in value, leaving about 80,000*l.* now to be disposed of. He added that in about a year he hoped they would have sufficient to yield them between 6,000*l.* and 7,000*l.* for interest on the purchase of land.

It also appears that the Great Eastern Company are making considerable progress in the sales of the large surplus property connected with their metropolitan extensions. It transpired at the half-yearly meeting of the Company held last week that of 350,000*l.* worth of this property they have already disposed of a large portion, which has realised the sum of 200,000*l.*

THE NEW CHURCH IN NEWINGTON CHURCHYARD.

Within the last two or three weeks the preliminary steps have been taken towards the erection of a new church which is about to be erected on a portion of Newington churchyard. As is generally known, the old parish church of Newington, which immediately adjoins Newington Butts, is about to be taken down for the widening of that thoroughfare, and a large new parish church is to be erected on a site secured in Kennington Park Road; but in addition to the new parish church it has been decided to erect a new mission church on that portion of the churchyard furthest removed from the main road. In order to effect this it is necessary that some of the bodies and remains in the churchyard should be exhumed, and this is now being done, the remains being re-interred in a number of vaults which remained almost empty when the churchyard was closed for interments. As, however, the new church is to be built on piers and arches raised some feet above the ground, the exhumation only extends to the spaces necessary for the foundations of the piers.

The church, which will be of tolerably large dimensions, will be Gothic in character, and

built of red brick, with stone dressings, and the roof will be surmounted at the chancel arch by a gable, containing two bells. Internally the walls of the church will be faced with red brick, decorated with moulded strings. Four arches on blue stone columns will support the roof of the nave, and divide the main body of the church from the aisles. The chancel will be raised between three and four feet above the main body of the church, and an approach from the latter to the altar will be made by means of seven steps. The roof will be an open one, and besides the windows in the aisles, there will also be eight clearstory windows on each side. The pulpit will be of wood on a stone base. The reredos, which will be chiefly of stone, will be elaborated, carved, and adorned, and supported on each side by ornamental columns, returning several feet into the chancel. The extreme length of the church, without including the vestries, will be 119 ft. The nave is 76 ft. long and 25 ft. wide, and the width of the aisles 11 ft. each. The chancel will be 31 ft. long, and the height of the nave 32 ft. to the spring of the arch, and 56 feet to the apex. The edifice, which will be dedicated to St. Gabriel, will have accommodation for 800 persons.

Mr. Edward Cutts, of Waterloo Place, Hammersmith, is the architect; and Messrs. Lathey Brothers, of Battersea, are the builders. The estimated cost is 5,000*l.*

THE ARCHITECTURAL ASSOCIATION ON TOUR.

The Newark and Lichfield excursion is being this week carried on with good success: a fair number of students taking part in the expedition. We give elsewhere part of Mr. Sharpe's inaugural address. We shall hereafter have something to say of the churches and other buildings looked at and talked over by the party.

MANCHESTER CATHEDRAL.

A MEMORIAL WINDOW.

One of the five-light clearstory windows on the north side has been filled with stained glass. In the tracery are shown angels bearing appropriate emblems of majesty, also bearing scrolls for suitable text. The five openings are filled with a subject taken from the life of King Solomon, in the temple. No. 1, left-hand light,—The priests bringing in the ark, also worshippers. No. 2,—The high priest, with priests and Levite with censer. No. 3, centre opening,—King Solomon offering the burnt offering. No. 4,—Priests, with worshippers, and Levite with a ram for the burnt offering. No. 5,—Priests blowing trumpets, with worshippers. In the foreground are various offerings for the use of the Temple; in the background of the subject is shown the outer court of the Temple. The figures are drawn large, to suit the height of the window Under the window is a brass plate, placed upon one of the piers, with the following inscription: "The above window was erected by Susannah Woodcock, in loving memory of her husband, William Henry Woodcock, who died November 2nd, 1870, in the 73rd year of his age."

The work has been executed by Mr. Charles A. Gibbs, of Marylebone-road, London.

THE ORGAN IN THE CHOIR OF ST. PAUL'S CATHEDRAL.

The accompanying engraving represents one side of the organ,—we might say, the new organ,—in the choir of St. Paul's as it now stands; but before entering upon a description of the instrument, it will be interesting to give a short history of it from the commencement.

Originally the organ stood at the west end of the choir, the stalls returning at that end, and the entrance to which was by two pairs of very beautiful iron gates. Above these stood the organ, supported on eight Breccia marble columns, of the Corinthian order, the whole forming, as it did, a fine feature in the centre of the choir, immediately beneath the wagon-vaulting. The side facing the choir and that also towards the dome area presented the same appearance, except in minor details, such as the figures, some of which have books, others trumpets, in their hands; but otherwise the two faces or fronts were identical. As viewed from the end of the nave, or even beneath the dome, it was a fine object of its sort.

This organ was the work of one Father Smith, a man of great ability in his day. A quotation from Ellis's "Dugdale" (p. 183) will further explain:—"Sir John Hawkins says the organ of St. Paul's, erected soon after the year 1700, had established the character of Smith as an artist; whether Harris had been his competitor for building an instrument for that church, as he had been before at the Temple, does not now appear; but in the *Spectator*, No. 552, for December 3rd, 1712, is a recommendation of a proposal of Mr. Renatus Harris, organ-builder, in these words,—'The ambition of this artificer is to erect an organ in St. Paul's Cathedral over the west door, at the entrance of the body of the church, which in art and magnificence shall transcend any work of that kind ever before invented.'

The proposal, in perspicuous language, sets forth the honour and advantage such a performance would be to the British name, as well that it would apply the power of sounds in a manner more amazingly forcible than perhaps has yet been known, and I am sure to an end much more worthy. Had the vast sums which have been laid out on operas without skill or conduct, and to no other purpose but to suspend or vitiate our understandings, been disposed this way, we should now perhaps have an engine so formed as to strike the minds of half a people at once in a place of worship with a forgetfulness of present care and calamity, and a hope of endless rapture, joy, and hallelujah hereafter."—*Hist. of Music*, vol. iv., p. 356.

By this description we find that it was once contemplated putting the organ at the west end of the cathedral.

The Smith organ, then, as it is commonly termed by the initiated, remained in the position described until the year 1860, when, by the order of the Committee for Decoration, and with the sanction of Dean Milman, the organ was removed to a position under one of the side arches of the choir, under the direction of the architect to the fabric, and also to the committee, Mr. F. C. Penrose. At the same time the stall-work underwent rearrangement, so that an uninterrupted vista was obtained from end to end of the church, thus throwing open to the view the whole of the apsidal end, with its windows This idea of placing the organ under one of the arches was not a novel one; the notion was entertained by Wren himself, or his advisers, as there is a drawing in his own or pupil's hand still extant, designed for this very situation. However, the instrument was found but ill-adapted to such a situation, and it became, in the view of many competent judges, a necessity to remove it from so unsuitable a position to one more worthy of it, both in a musical as well as an architectural point of view.

The idea of dividing the organ longitudinally seems to have originated in the mind of one, if not two, of the dignitaries of the cathedral, and if of the two, about or nearly simultaneously; but it is certain that one of them did actually work the thing out in a sufficiently practical form as to enable the architect to adapt the organ to, and reconstruct it in, its present position.

Mr. H. Willis was the organ-builder, who from the origin of the plan worked out the project of uniting the two sections, so as make one harmonious whole.

Mr. Penrose has designed four stalls for the principal clergy to each half, and has likewise designed some beautiful new carved work in parts to agree with the old work of Grinling Gibbons. He had no easy task to perform, also, in supporting these separate sections with other pendent or hang-over organs. Some stout iron columns, with cantilevers of iron encased in carved woodwork, take the real bearing.

Mr. Willis's work is as follows, and comprises the organ as it now stands, and which is much enlarged and increased in musical powers.

The organ being thus divided, means had to be adapted to enable the organist, who could only be on one side, to command the part opposite to him, and the means that the organ-builder preferred was the pneumatic lever; but this had to be very considerably modified, and it is in this case constructed with an intermediary note of great length to each note or key of both swell and choir organs, which are placed on the south side, the organist being on the north side. A valvular apparatus exists near the keys, and these tubes receive the compression of the air, and inflate a flexible diaphragm to an extent sufficient to transmit the mechanical action of the valves of the swell and choir organs; and so marvellously rapid is this in its operation, that reiteration is perfect; nor is there any loss of time between the touching of the key and the sound being heard. We have reason to believe that this plan, so successful here, was first developed at the Royal Albert Hall, and it has this singular advantage over other plans, that it is permanent. The same principle is also carried out with respect to the drawing of the stops and the pedal-organ, which is placed in the body of the stall-screen under the first arch on the north side, and so perfectly does this contrivance operate that the organ, though scattered as it is, appears to the auditors one harmonious whole.

The following is a synopsis of the instrument:—

There are four clarions, from CC to A, 58 notes; and pedal of two octaves and a half, from CCC to F, 30 notes

THE GREAT ORGAN STOPS.

	Ft.		Ft.
1 Double diapason	16	8 Twelfth	
2 Open diapason	8	9 Fifteenth	
3 Open diapason	8	10 Sesquialtera.	
4 Claribel	8	11 Mixture.	
5 Mint	6	12 Contra posaune.	
6 Flûte harmonique	4	13 Tromba.	
7 Principal	4	14 Clarion.	

THE STOPS OF THE PEDALE.

	Ft.		Ft.
1 Double diapason (wood)	32	5 Violoncello	
2 Open diapason	16	6 Furniture.	
3 Violone (metal)	16	7 Contra posaune	1
4 Octave	8	8 Grand bombard	1
		9 Clarion	

THE STOPS OF THE CHOIR ORGAN.

	Ft.		Ft.
1 Bourdon	16	6 Geveshorn	
2 Dulciana	8	7 Flûte harmonique	
3 Violoncello	8	8 Piccolo	
4 Claribel	8	9 Orchestral oboe.	
5 Lieblich gedacht	8	10 Como di bassetto.	

THE STOPS OF THE SWELL.

	Ft.		Ft.
1 Contra Gamba	16	7 Fifteenth	
2 Soliconal	8	8 Mixture.	
3 Open diapason	8	9 Contra posaune	1
4 Lieblich gedacht	8	10 Cornopean	
5 Vox Angelica	8	11 Hautboy	
6 Principal	4	12 Clarion	

There are four combination pistons to each manual clavier, four composing pedals to the pedale, one vent to pedale, and some other useful contrivances for managing the instrument.

STOPS OF THE SOLO ORGAN.

	Ft.		Ft.
1 Flûte harmonique	8	4 Orchestral oboe	
2 Concert flute	4	5 Luta major	
3 Como di bassello	8	6 Clarion.	

The couplers are,—	
1 Solo to great.	Choir to great.
2 Swell to great unison.	Solo to pedals.
3 Octave.	Great to pedals.
4 Sub-octave.	Swell to pedals.
	Choir to pedals.

It remains only to say that the ironwork seen in front of the stalls is the work also of the architect to the fabric, and is intended to form additional desk accommodation for the choir boys whilst making handsome appendages to the choir as a whole. The whole of the reconstruction of this work, together with the new carved oak work and the iron desks named, has been carried out by Messrs. Cubitt & Co., the well-known contractors, of Gray's-Inn-road.

The opposite page of engravings shows some of the details of the organ to larger size, viz.:—

Nos. 1 and 2 are the upper story and window vent, and one of the four crowning figures of angels which formerly all had instruments of music in their hands—either pipes or trumpets. The figure in our cut has lost his trumpet.

No. 3 represents one of the external angle pilasters, the carvings of which are, with the exception of the cap, of lime-tree wood, and stand out in light relief against the dark oak.

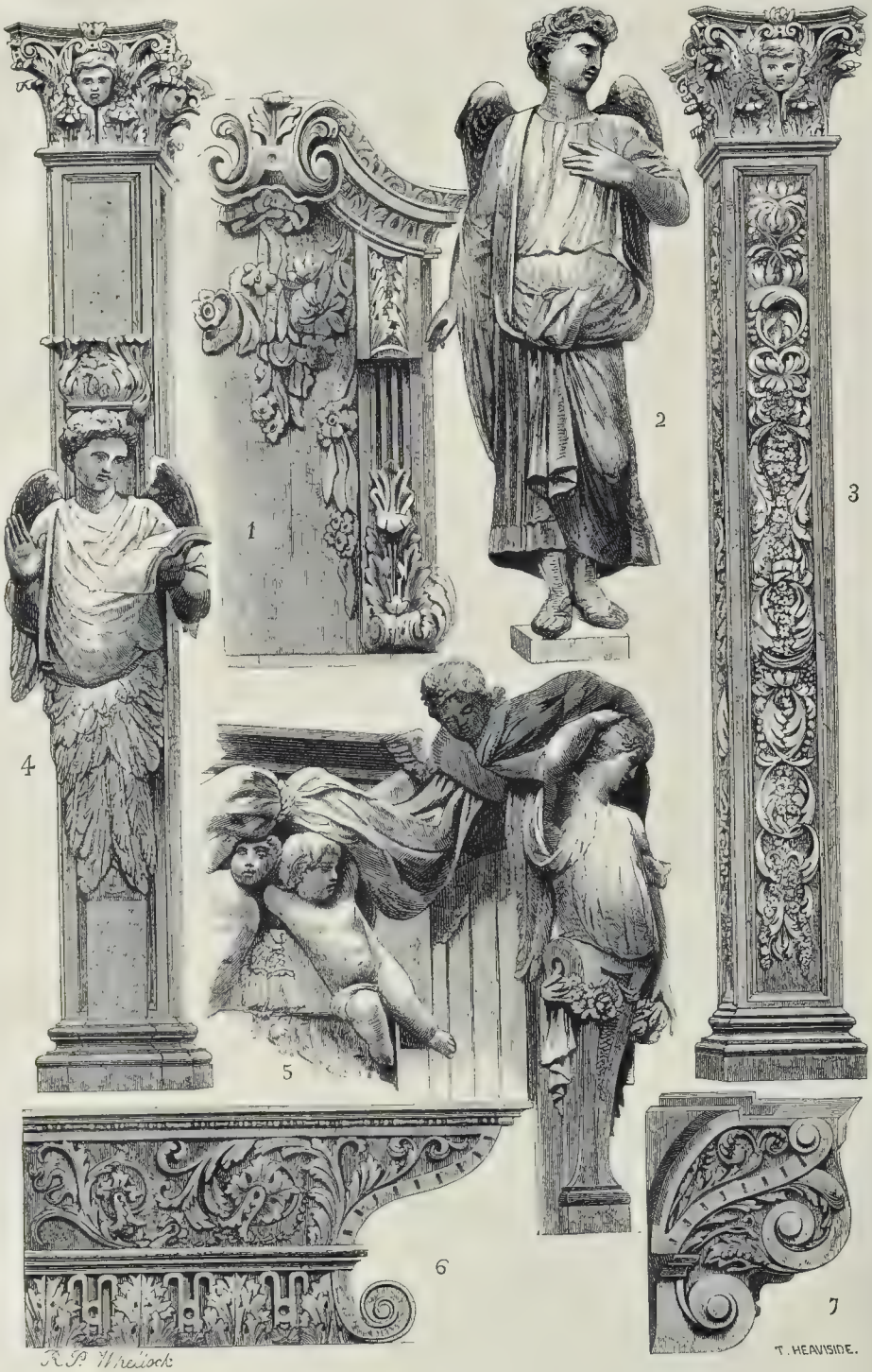
No. 4 is one of the inner angle pilasters, with an angel figure with four wings, and which supports a pediment over the centre range of pipes.

No. 5 represents one of the supporters of the "hang-over" organ in centre, with the little cherubs upholding the drapery.

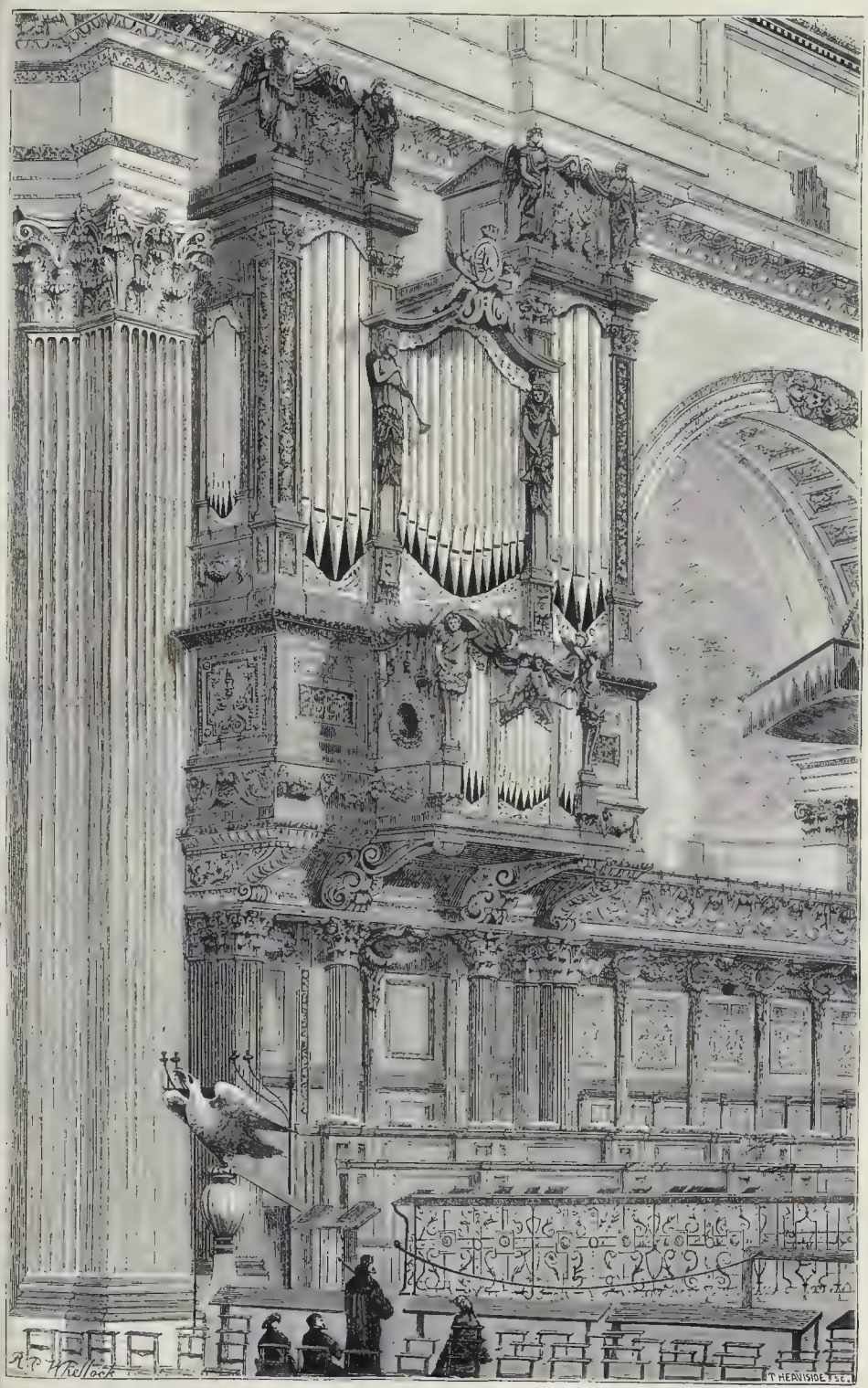
Nos. 6 and 7 show the flank, or corbelled work of the organ as arranged by Mr. Penrose, who specially designed these carvings for the situation.

Salary of the Borough Surveyor of Walsall.—At the last quarterly meeting of the town Council of Walsall, a communication of the Finance Committee, that the salary of the Borough Surveyor be increased from 200*l.* to 300*l.* a year, and that an assistant, or office clerk in his office be appointed at 80*l.* a year was considered. After some discussion, it was resolved, by a majority of 15 to 5, that the recommendation of the Finance Committee be carried out.

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ST. PAUL'S CATHEDRAL: DETAILS OF ORGAN.



THE ORGAN IN THE CHOIR OF ST. PAUL'S CATHEDRAL, LONDON,—AS NOW ARRANGED.

ON HEALTH AND COMFORT IN HOUSE BUILDING.*

As implied in the title, my subject is not house-building itself, as such, but only certain arrangements for health and comfort therein.

House-building has at least two aspects—architectural and sanitary. The former belongs exclusively to your own profession, but the latter comes within the sphere of the medical profession also. It is the architect's province to provide dwellings for the people, and to see that they are made protective and safe; and it is part of the medical man's province to help to make them healthy and comfortable. In this respect the medical profession has lately been very forcibly reminded of its duty by one of your own Fellows (Mr. George Aitchison), who, in the *Builder* of December 2, 1872, made the following observations:—"No greater benefit could be conferred on mankind than the teaching them the necessity of ventilation, but that lesson is more likely to be learnt if it come from the doctor than from the architect. . . . Until the faculty can convince the people that their life is shortened and serious diseases are brought on by want of ventilation, architects have no chance."

House-building being the point in which the duties of the architect and the physician meet, it becomes necessary that architects and medical men should occasionally discuss together the requirements involved in this art. Much public and much mutual benefit would, I am sure, result from such a practice. Under this impression I willingly accepted your invitation, and I am pleased that I have been able to be present myself, because I look forward to much interesting and profitable discussion this evening. The object I have in view is to invite your consideration of a few conditions of house-building that I deem of particular importance in a sanitary and medical point of view.

In building a dwelling-house, the conditions I deem of essential importance are the following:

First.—That the house shall be so placed as to be as much as possible exposed to the fresh air and sunlight; *because* fresh air and sunlight are essential to the health and growth and life of the occupants. The *site*, therefore, should be rather elevated, if not absolutely, at all events in comparison with the surrounding objects.

Second.—That it shall be absolutely free from damp; *because* a damp house is a most potent and active and ever-present cause of disease, especially of rheumatism, neuralgia, colds, coughs, consumption, and such like. The site, therefore, if not naturally dry, must be rendered so by means of asphalte or cement, throughout. The foundation, and the roof and gutters and drainage must be perfect. All the house-drains should terminate outside the house on an open grid or trap; that is, they should be cut off from the street drain, and they should be ventilated by having a pipe run up from every soil-pipe and every bend in the house.

Third.—That it shall be so placed that the direct rays of the sun shall have free admission into the living apartments; *because* the sun's rays impart a healthy and invigorating quality to the air, and stimulate the vitality of human beings as they do those of plants, and without sunlight human beings, as well as plants, would sicken and die. The *aspect*, therefore, should be south-east.

Fourth.—That the look-out from the living apartments shall be cheerful, lively, and interesting; *because* much of the time of the family must be spent in-doors, and a cheerful look-out is as necessary to render indoors attractive and even endurable in the daytime as society is in the evening. The *prospect*, therefore, should be as extensive and varied as possible.

Fifth.—The apartments should admit into themselves a great quantity of light; *because* light is essential to the health and vigour of the inmates. The *window openings* should, therefore, be large; but as the greater the surface of glass, the colder the rooms in winter, and the hotter in summer.

Sixth.—The window openings should be well glazed, as well outside as inside, so as to do with as little glass as possible.

Seventh.—The *windows* should be so arranged as to admit the direct rays of the sun at the times when the apartments are in use; *because* it is when the apartments are occupied that they acquire the cheering and invigorating influence of the sun's rays. For instance, the breakfast-room window should admit the early morning rays; the dining-room windows, one should admit the morning rays for breakfast time, and the other the noon rays for dinner time; and the drawing-room windows, one should admit the morning rays for callers, and another the evening rays for company; and the bed-room windows should, if possible, admit the early morning rays.

Eighth.—The *interior* of the apartments should provide wall space for the arrangement of furniture; *because* without wall space no manner of furnishing a room can make it either handsome, elegant, or comfortable. The *windows*, therefore, should be few, and they and the door and fireplace should be so arranged as to provide as much wall space as possible.

Ninth.—In the bed-rooms the window, door, and fireplace, should be so arranged that the bed can be fixed entirely out of the draught, and not have to be placed between the window and door, the window and fireplace, or the door and fireplace; *because* a cold draught playing on persons whilst sleeping is often dangerous to life, and always destructive of comfort.

Tenth.—The *doors* of the apartments, besides not admitting cold air when shut, ought not to admit cold air when open; *because* the draught thus produced not only destroys the comfort of the apartment, but produces lumbago, rheumatism, neuralgia, &c., in the occupants. The *doors* should, therefore, open out of a warmed lobby or corridor.

Eleventh.—The *apartments* should provide a large cubic space for air; *because* plenty of air is essential to the health and comfort of the inmates. The apartments should therefore be as large and lofty as possible.

Twelfth.—The apartments, besides providing a large cubic space for air, should also provide for the escape of the foul and admission of fresh air; *because*, however large an apartment is, the air is sure to become deteriorated and contaminated when the apartment is occupied by living beings. There should, therefore, be *two special openings* to each apartment, one for the escape of the foul air, and another for the admission of fresh air. There must be *two openings*, an outlet and an inlet. It is useless to make one without the other; it is useless to make an outlet unless there is also an inlet, for no air can go out if none comes in. This is a self-evident fact; still it is very frequently disregarded in attempting to ventilate apartments. There will, for instance, be a perforated or louvered pane in the window, a perforated brick or grating in the wall, an Arnott's ventilator in the chimney breast, an opening above the gas, with a tube leading to a grating in the wall or into the chimney smoke-flue, or some other contrivance for the escape of the foul air, whilst there is no opening at all for the admission of fresh air; and the doors and windows are made to fit as tightly as possible, and even list put round them to prevent any possibility of air getting in by them, as though that could go out which never got in! In these cases, if the outlet act at all as an outlet, it must obtain its supply down the chimney—hence a smoking chimney; but generally, instead of acting as an outlet, it becomes an inlet to supply the current up the chimney, and always so when the fire is burning—hence the cold draught so generally complained of from the ordinary ventilators, and hence the reason that ordinary ventilators are so generally closed up in disappointment and disgust, and ventilation decried as a nuisance, failure, and farce.

Thirteenth.—These *openings* providing for the escape of foul air and the admission of fresh air should, both of them, be *special and permanent*, and altogether independent of every other arrangement of the house, such as opening the windows, doors, chimneys, &c.; *because* the escape of foul air and the admission of fresh air are most needed when, in consequence of the coldness of the external air, we close the doors and shut the windows. Special *ventilation* is most needed in winter, in cold frosty weather, with an east wind blowing, and when we are very careful to shut the doors and windows, and adopt every other means we can to exclude the out-of-doors air, particularly if sitting at table for meals, or round the fire for evening entertainment.

Fourteenth.—The *outlet* should take the foul air from the upper part of the room; *because* the foul air being more heated is specifically lighter than the fresh air, and so rises to the upper part of the room. The outlet should, therefore, be in or near the ceiling.

Fifteenth.—The outlet should be effectually protected against any possibility of back draught—indeed, it should have a considerable amount of suction; *because* any liability to back draught is quite incompatible with an efficient outlet. The *outlet*, therefore, should not communicate directly with the out-of-doors air, but, by means of a tube or flue, should pass through some permanently heated contrivance. If the outlet go directly to the out-of-doors air,—as, for instance, a tube from over the gas to a grating in the outer wall,—there will certainly be back draught; and so also will there be if the tube lead to an opening into the chimney flue; at any rate, when the fire is not burning, and particularly if the room door be also open, and most certainly if there be also a strong draught up the chimney of another room opening out of the same lobby, as, for instance, a dining-room or a kitchen. To prevent any possibility of back draught the outlet should be provided with some means of constant suction, and the more thoroughly to remove the foul air the more suction the better, provided there is also an ample inlet for fresh air: if not ample, the suction would produce a smoking chimney and draughts from around the windows and doors, and perhaps draw in air from foundation and drains. The necessity for this suction is generally acknowledged, and it is sometimes attempted to be gained by carrying the tube before mentioned up a little way in the smoke-flue, and even by bending it down and round the fireplace. But a fatal objection to this plan is, that it is quite inoperative for the greater part of the year, and is of no use whatever unless the fire is burning; when the fire is not burning it may, indeed, become an inlet, and then an additional objection is, that a back draught down the smoke-flue carries the soot into the room to the spoiling of the ceiling, paper, and furniture. And to be really effectual the suction referred to must be *constant* and *permanent*, and operative both winter and summer, and day and night; and whether the apartment is occupied or not, and whether the fire is burning or not. The *outlet* must, therefore, pass through some contrivance for keeping it constantly and permanently heated.

Sixteenth.—The *inlet* should admit only warmed air; *because* the admission of cold air would produce dangerous draughts, and these specially directed towards the part of the room occupied by the inmates in cold weather, viz., the neighbourhood of the fireplace. The *inlet* should, therefore, open out of a warm lobby or corridor.

Seventeenth.—The *outlet* should be sufficiently large to carry off all the foul air at the time when the apartment is being put to its maximum of use; *because* it is just at that time the outlet is most needed, its capacity for other times could be regulated by a valve. The outlet for a dining-room, for instance, should be calculated for a dinner or supper party, and that of a drawing-room for a ball, *conversazione*, or *soirée*, and should be sufficiently capacious to carry off, at the very least, 15 cubic feet per minute for each occupant. The outlet should, however, be considerably less than the inlet, or it will produce draughts.

Eighteenth.—The *inlet*, on the contrary, should be as capacious as possible; *because* it has to provide not only for the outlet in the ceiling but also for the chimney, and that when the fire is burning and requiring for its supply alone from 600 to 1,000 cubic feet per minute. Indeed, the *inlet* should be able to admit more air than can possibly find its way out by both these outlets, otherwise it will produce draughts. When the air can get out of an apartment more rapidly than it can come in there are sure to be currents; but when more air can come in than can get out,—when the air has to go out under pressure, so to speak,—there will be little or no current. And the *inlet* should be through the wall of the opposite side of the room to the fireplace; *because* the fire will then draw the air into and across the room, and thus cause it to circulate throughout the whole of the apartment. If the fireplace be on the same side as the inlet, it will not only not assist to circulate the air throughout the apartment, but it will prevent it from so circulating by drawing it directly up the smoke-flue; and it should, moreover, be split up into as many divisions as possible so as to distribute the supply along the whole side of the room, and thus assist to prevent any perceptible current; and this will be further helped by having the openings through the cornice instead of through the skirting, because then the fresh air will be the warmest that is in the corridor, and it will

* From a paper by Dr John W. Hayward, Liverpool read at the Royal Institute of British Architects.

also have to descend through the warmer air of the room before it can come in contact with the persons therein. When through the skirting it is the coldest air of the corridor; it comes through the coldest air of the room, and it comes first to the part of the body where it can least be borne, viz., the feet.

In this country it is necessary to provide specially for ventilation. In consequence of the nature of our climate, the doors or windows can very seldom be left open, even in the day, and never in the night, without risk. Indeed, no direct admission of the external air into the apartments of the house can be endured during at least eight or nine months of the year,—in fact, the great prevalence of cold, searching, and shrivelling east wind renders such an admission absolutely dangerous; so that no kind of arrangement of openings directly to the out-of-doors air, such as drawing down the window-sash, perforated bricks or gratings in the wall, perforated or louvred square in the window, the wire-gauze at the top of the window-sash, patent ventilators, or any other contrivance that communicates directly with the out-of-doors air, can possibly answer for ventilation in a country like ours. In this country, where eight or nine out of the twelve months in the year are cold, windy, and winterly, houses should be built with reference to winter, and not with reference to summer; and they should be planned and built with the object of keeping out the cold air and not with the object of letting it in; ventilation should be provided for specially; and in making this provision it should be borne in mind that we are living at the bottom of an ocean of air, and that the same manipulation is required as though we were living at the bottom of an ocean of water, and were endeavouring to make it come in at the bottom of the house and go out at the top in a continuous stream.

From the foregoing remarks it will be seen that I maintain that *ventilation* is the great and main necessity of house-building; and that whatever else may be left undone this should be attended to; and whatever else may be left imperfect this should be made perfect and complete; and that it should include the whole house; and should be self-acting and inexpensive. It should, I repeat, be perfect and complete, include the whole house, and be self-acting and inexpensive.

Ventilation is *the* point for discussion between the architectural and medical professions, for it is here in particular that their duties meet and combine; the education, knowledge, and experience of both professions are wanted here. However much the medical man may be impressed with the absolute necessity of rooms and houses being ventilated, he cannot himself provide it,—this must be done by the architect; and, on the other hand, the architect cannot be expected to provide flues and tubes, which involve extra expense, except under the certainty that they are absolutely necessary, and required arrangements involved in the plan of every house. But there is a third party interested in this subject, namely, the public. The public are, after all, the "yea" and "nay" in this matter; it is, indeed, for them that these arrangements are to be made, and they are the paymasters. Whatever extra cost is involved, it is the public that will have to pay it; and it is of little use for a doctor to prove the necessity, or for an architect to design the arrangements, unless the public be persuaded to adopt them, and pay the cost involved. That the public can be thus persuaded I have no doubt, but that this will take some time I am equally ready to admit. It will take some time thoroughly to educate the public into the absolute necessity for special provisions for ventilation, because they have hitherto been left under the impression that special arrangements for ventilation are unnecessary and superfluous, or that they are impracticable, or at least incompatible with warmth and comfort; and I am sorry to have to add that they have been encouraged in this impression by many architects and engineers, and that medical men have not protested with sufficient force and intelligence. Medical men have gone on from generation to generation silently mourning the resulting evils of the want of efficient and practicable means of ventilation, and architects have continued to design houses with very little regard to these absolutely necessary provisions; whilst the public have submitted, and if they have not thought it was all right, have at least thought that the evil was quite beyond their remedying, because every amateur (if not every professional) attempt hitherto made had only ended in failure, disappointment, and loss of money.

"LA VANARELLA."

In even a cursory review of the Vienna Exhibition, something should surely be said under the head of "Sculpture." So important a branch of art must no doubt be largely represented. The Italian, which is classic and tame; the German, which is heroic and massive, or domestic and tender; the French, which is poetic and sensual; the English, which is academic and academical; each nation has no doubt availed itself of so favourable an opportunity of bringing its special characteristics prominently before the world.

If it be so, I confess that I failed to observe it. To me, the display in this department is remarkable neither for its quantity, nor, with one exception, for its quality; and what there is of it lies scattered up and down, here, and there, and everywhere, apparently uncertain of its claim to a position at all. I admit that as an art, *per se*, it has very little hold upon my affections or respect, and that, severed from its natural connexion with architecture or decoration, I more frequently turn aside to avoid than to view it. It may be that circumstances and surroundings have imbued me with a morbid distaste for our modern rendering of the Phidian art, and that a judicious retirement from the purlieus of Trafalgar-square for a season or two would restore my mind to a more healthy tone in matters sculptural; for certain it is that the intensity of my feelings is in inverse ratio with my proximity to that vortex of monumental phenomena. Indeed, I am not sure but that I have been occasionally surprised into admiration of a few foreign specimens of this difficult art, and I am certain that I have a well-founded and genuine admiration for very many of those naturalistic renderings of the human figure in red terra cottas for which the Belgians have this year made themselves remarkable in our own "International" at South Kensington.

The confession of such views as these will not, I am aware, tend to make my pretensions as a critic on such subjects unassailable, but it will perhaps bespeak for me in advance the consideration which is due to candour and modesty (qualities not inseparable from the order), the more so when it be known that my comments are to be confined to a single work.

In my very brief and imperfect review of some of the art industries,* I treated Italy to a sweeping denunciation which, I hope, will not be without its effects upon any future efforts of that nation. I was aware at the time that I should have to recur to her exhibits in a gentler mood, but I did not wish to weaken the force of my criticism by any distracting exception, nor to indicate in a parenthesis that I had a *bonne bouche* in store for all true lovers of perfect art which I deemed worthy (as our novelists put it) of a chapter of its own.

Yet, I confess, I approach my subject with extreme diffidence, well knowing that my best efforts at word-painting must, in this instance, miserably fail to convey an adequate picture of the object described. If, however, I can so far interest my readers on behalf of my *pet*, that they will give it a moiety only of the homage to which it is entitled, I shall have done a service for which in due course they will no doubt be grateful. Let me, then, beg attention to a single piece of sculpture, situated in the Rotunda,—La Vanarella, by F. Barzachi, of Milan. There may be, and no doubt are, other statues worthy of your study and your praise; but this one is, in the estimation of the writer, incomparable. It is the figure of a young maiden, of "high degree," full of joyous and irrepressible life, who has slipped impatiently but playfully (her toilet yet unfinished) from the tedious hold of her tire-woman. There is no doubt about this; for although one hand already with mimic gesture flirts with a fan, her delicately dimpled feet, *as yet shoeless*, peep out from beneath her robe. Her pretty head is thrown with exquisite coquetry over her shoulder, as she turns gracefully back and admires, unaffected by pride in her own loveliness, the graceful sweep of her silken trail. There is no need here to refer to your catalogue: the marble itself is eloquent with the poetry of motion, and playfully prattles to you as you gaze. You already know as plainly as words can tell that she is the darling of all hearts, and that, arrayed for her first ball, she is innocently enjoying by anticipation the inevitable triumphs of the night. It is a fascination you will not easily shake off, nor would if you could, for it is full of pleasant fancies, rich with the sanguine hopes of young life, and fragrant with the perfume of roses.

I have spoken only of the work as regards its design and poetic rendering. I might also expatiate upon the technical skill displayed in the surface treatment of the several parts. But that is not my purpose. The hair, and the flesh and the flowers, and the dress, are, each in its turn, a masterpiece,—not less so because no one obtrudes itself at the cost of another, and the marvellous skill of the artist is evidenced in this, that we are at once so charmed with the result, that it never occurs to the observer to inquire into the means of production.

I know when I assert that this little statue moves and breathes, and that you are made sensible by dexterous handling of the sculptor's chisel, not only of the colour of my darling's hair and eyes, and the material of her dress, but that you inhale the perfume of flowers, it will be retorted that this work has travelled outside of the true sphere of sculpture, and is meretricious; that colour is for the painter, and that stone "demands" repose. I know that these are the conventional and traditional requirements of art, and I have in my mind many statues worked out with scrupulous adherence to the scholastic canons; and, considering them, I am tempted to ask for what purpose they were executed, and to what particular section of humanity or particular faculty of the human mind they are addressed? It would almost appear that in some minds a belief prevails that an armed neutrality exists between the several arts of painting and of sculpture, that we must our materials on sufferance only, and within well-defined limitations. I recall the fact that opaque pigments were once repudiated by the legitimists in water colours, and effects produced by the aid of solid colouring were stigmatised as the debasement of the art, and trespasses upon the border land of oils; and I am not sure but there are still those who hold that transparent colouring is inconsistent with the dignity of this latter art, and worthy only of the aqueous brotherhood. We all know that amongst sculptors the question of sightless eyes and incided pupils is still unsettled, and thinking of these things, I am impelled to believe that the true artist is he who, refusing to be trammelled by any dogmas of the schools, seeks to compass the broadest aims of art—the humanising of our hearts—by every means at his command. If this be so, then "La Vanarella" is worthy of our highest admiration and Sig. Barzachi is entitled to our most sincere thanks.

C. Henry Whitaker.

* Page 641, "Our Position in Vienna."

SCHOOL-BOARDS.

London. — The Works Committee invited tenders for the erection, in Northey-street, Limehouse, of a graded school (for boys and girls), and received the following:—

Cooper	£4,120	0	0
Shepherd	4,066	0	0
Cooke & Green	3,884	0	0
Thompson	3,830	0	0
Bargeant	3,810	0	0
Limn	3,800	0	0
W. H. & J. Mausbridge	3,682	0	0
High	3,650	0	0
Scrivener & White	3,594	0	0
Kirk	3,593	0	0
Kilby	3,570	0	0
Sheffield	3,554	0	0
Ennor	3,528	0	0

Certain modifications were made reducing the estimated cost of the building by 318*l.*, and the committee recommended the acceptance of the amended tender of Mr. T. Ennor, amounting to 3,210*l.* Cost of interests so far as purchased 3,036*l.* 14s. 6d. Cost of building per head 8*l.* 15s. 5d.

St. Thomas (Devonshire).—The girls' school erected on the Cowick estate, has been opened by Dr. Temple, Bishop of Exeter. The style is Gothic. The plinth of the building is of Westleigh limestone, the upper part being of red and black brick, relieved by Ham Hill stone dressings. A bell-turret, of moderate height rises from one of the gables. As yet only the girls' school has been finished, but when the whole block is completed it will consist of a girls' and infants' school, with residences for two mistresses attached. The latter will not probably be complete

before Michaelmas. The main school-room is 70 ft. in length by 20 ft. wide, with a wing abutting on the south side 23 ft. 6 in. by 20 ft. There are two class-rooms attached, one 18 ft. by 27 ft., and the other 18 ft. by 24 ft. The architect was Mr. R. M. Fulford, of the Close, Exeter; and the builder Mr. Tozer, of St. Thomas.

Gwyddelwern. — The Board school of this hamlet has been opened. Some difficulty was experienced in finding a suitable plot of land, but the chairman of the Board offered a convenient site at a low price. The school is capable of accommodating 150 children, and the whole cost will not exceed 150*l.*, including the money paid for land. The architect was Mr. R. Owen, Liverpool, and the builders were Messrs. Jones & Ellis, Towyn.

Leeds.—The first school of the Leeds School Board has now been opened in Bewerley-street. The foundation stone of the school was laid on the 31st of July, 1872. The boys' and girls' departments are identical in size, each making provision for 281 children, the dimensions of the principal school-rooms being 46 ft. by 30 ft., with three class-rooms attached to each department. The infants' room is 56 ft. long, and 26 ft. wide, and provides for 292 children, thus making a total provision for 854 children. The site of the school was purchased from Lord Houghton, at a cost of 1,377*l.*, and the builders' contracts amounted to 8,651*l.*, making a total cost of 10,028*l.* The provisional schools, which will be transferred to the new building, are attended by 698 children. The foundation or memorial stones of six other proposed new schools were laid on the day of the opening of the Bewerley-street school.——On the 15th May, 1871, the Leeds Board reported a deficiency of school provision of 12,149, which was not met nor intended to be met by any other schools, and they proposed to erect twenty-four new schools to meet this deficiency. The Education Department signified their general approval of the report of the Board, and arrangements have already been made for the erection of nine schools (including the Beeston School) making provision for 6,235 children. Plans for two schools, each for 700 children, in the Leylands and in Sheepscar, are also in preparation. Meantime the number of provisional schools has been increased to 35 departments, with 9,253 children on roll, and 5,668 in average attendance. In addition, 11 schools, embracing 17 departments, have been transferred to the Board, and have now 2,896 children on roll, and 2,975 in average attendance. The total number of children accordingly at present on the roll of Board Schools is 12,149, and the average attendance, 7,643.

Northampton.—The following tenders for the erection of Vernon-terrace Schools were opened: W. Redshaw, schools, 3,459*l.*; boundary-walls and asphalting yard, 249*l.*; total, 3,708*l.* John Watkin, schools, 3,361*l.*; boundary walls, 56*l.*; asphalte, 233*l.*; total, 3,650*l.* Frederick Goodman, Kidderminster, schools, 4,567*l.* 5s.; boundary-walls, 75*l.*; asphalte, 195*l.* 15s.; total, 4,838*l.* David Ireson, schools, 3,615*l.*; boundary-walls and asphalte, 275*l.*; total, 3,890*l.* Charles Claridge, Banbury, schools, 3,575*l.*; boundary-walls, 58*l.*; asphalte, 262*l.*; total, 3,895*l.* Dover & Co., Cemetery-road, Peckham, schools, 3,703*l.*; boundary-walls, 63*l.*; asphalte, 233*l.*; total, 3,999*l.* Thos. Cosford, schools, 3,560*l.*; boundary-walls and asphalte, 290*l.*; total, 3,560*l.* Mr. Bland, the architect, stated that he had allowed 2s. 3d. per yard for the asphalting. Mr. Rush considered that quotation too high, and mentioned that he had had thoroughly good work of this kind done at 1s. 3d. a yard. Mr. Bland remarked that there were different kinds of asphalting. His experience taught him the advisability of having the best, although it might be dearer in the first instance than common sorts. He mentioned that no town he knew of had better asphalte pavements than Nottingham. The man who gave him the estimate resided in that town, and had done a quantity of work for him in Kidderminster very much to his satisfaction. Of course the matter was open for consideration. Mr. Lees thought the work might be thoroughly well done by a townsman for 1s. 6d. a yard. Mr. Gurney believed Mr. Scudamore would do it thoroughly well at that price. Mr. Bland, alluding to the tenders generally, said they included the whole fittings of the schools. Mr. Gurney proposed that Mr. Watkin's tender (leaving out the amount for asphalte for future consideration) be accepted. Mr. Wright seconded, and it was carried.

The School Boards in England and Wales.—A return published in the first part of the Appendix to the Report of the Committee of Council on Education for 1872-3 supplies a list of the districts in which School-boards have been formed up to the 30th of June last. We give the total number in each county:—Bedford, 10; Berks, 3; Bucks, 7; Cambridge, 7; Cheshire, 6; Cornwall, 22; Cumberland, 7; Derby, 10; Devon, 34; Dorset, 5; Durham, 12; Essex, 18; Gloucester, 5; Hants, 10; Hereford, 3; Herts, 2; Hunts, 2; Kent, 20; Lancashire, 13; Leicester, 9; Lincoln, 10; Middlesex, 2; Monmouth, 10; Norfolk, 23; Northampton, 15; Northumberland, 5; Nottingham, 13; Oxford, 5; Shropshire, 1; Somerset, 9; Staffordshire, 16; Suffolk, 10; Surrey, 7; Sussex, 9; Warwick, 4; Westmoreland, 2; Wilts, 4; Worcester, 3; Yorkshire, 50. Of the total of 404, 92 of the Boards are in boroughs, and the remainder in parishes. The general number of members in the parochial Boards is 5; in the boroughs, the number varies from 7 to 15, except in the case of London, which rises to 49. From another table in the appendix, we find that 132 School-boards have been formed in Wales up to the same date, of which only 12 are in boroughs, some of the remainder being in very small parishes. A return is also furnished of the School-boards recommended for loans from the Public Works Loan Commissioners, with the amounts granted to them up to the 31st of May last. The number of Boards thus assisted in England and Wales is 186, or nearly one-third of the total number formed, and the gross amount of the loans is 1,314,170*l.* 8s. 6½d. London heads the list with a loan of 250,000*l.*, and the only other Board borrowing more than 100,000*l.* is Bradford, which takes 116,000*l.*

THE TYPHOID FEVER IN MARYLEBONE.

Dr. Whitmore, the medical officer of health for the parish, has caused the whole of the street drains to be thoroughly cleansed and deodorised by disinfectants once, and in most instances twice, daily. He has also issued, posted, and distributed throughout the parish the following sanitary code:—

"1. To examine the state of the house-drains and closets, and see that they are perfect in construction, and properly trapped. 2. To pour down every morning a small quantity of carbolic acid. 3. To examine the cisterns and other water receptacles, and if not found perfectly clean, to have them cleansed at once. 4. To ascertain whether any of the overflow-pipes from the water receptacles pass into the drains, and, if so, to have them cut off immediately. (This is most important.) 5. Strictly to forbid any vegetable or animal refuse being thrown into the dust-bin. The former can be burned, and the latter can be removed in the street-sweeper's cart. Dust-bins are not objectionable when they contain only dust and ashes, but decomposing vegetable and animal matter very frequently causes diarrhœa, and often leads to fever. 6. To limewash or whitewash all areas and basement passages, and sprinkle the carbolic acid powder daily over the contents of the dust-bins, and in other parts of the house or premises where offensive smells exist."

Whatever the final decision as to the milk question in this case may be, great differences in the risks run exist according to the accommodation in nominal "dairies," many of which are on a very small scale; so much so, that dwelling and dairy both together often constitute one small dwelling, in which both the sick and their milk are enveloped in one common and often ill-ventilated atmosphere. Ought there not to be a licensing system for the regulation of such dairies if it is now again clearly found that in any one of several dairies where the milk in this case has been kept, fever cases have been in close association with that dairy, as has been said with respect to one of the six or seven sources whence the Dairy Company, a highly respectable one, we understand, have hitherto drawn large quantities of milk. Inspectors might thus restrict any one of these several sources, while not injuring the general interests of a useful company; but once have the material admitted even to the best-conducted establishment, and the whole may become contaminated; whereas the dairy proprietors, if they only were made acquainted with the risks run,—the whole affair being still obscure and uncertain even to professional men and sanitarians in general, far less to dairymen,—would willingly themselves aid due inspection, if, under such circumstances, their reward would be a legal licence to sell milk obtained from superintended and approved sources. Analysis, we fear, of the milk, is of no use; the infectious miasm is far too subtle to be thus hunted out; the suppression of many poor and miserable "dairies" may alone suffice to guard the public health.

We have seen no reference as yet to the rather ominous fact that cholera is not only related to diarrhœa, but to fever, in its stages of preliminary fever, subsequent collapse, and final reactive fever where the cold stage of the collapse is got over; and although typhoid fever is no stage of cholera at all, it is enteric or bowel fever, just as cholera is, and typhoid fever itself is associated with diarrhœa. In the present season we have not had such valuable thunderstorms as in previous years in London, although the season cannot be called a very close or at all an unhealthy one as yet.

Typhus fever is said to exist in St. Olave's.

HOLYHEAD BREAKWATER AND HARBOUR OF REFUGE.

The new breakwater and harbour of refuge at Holyhead have been formally declared by the Prince of Wales to be open. In honour of his royal highness's visit, with his brother, the Duke of Edinburgh, the streets were prettily decorated with Venetian masts, bearing trophies of flags and loyal inscriptions, evergreens, and wreaths of bunting hanging from most of the houses, whilst near either end of the town a triumphal arch of evergreens was erected. Most of the ships in harbour showed a profusion of banners, and the day was observed in Holyhead as a general holiday.

The new harbour and breakwater have occupied about twenty-five years in construction, and form one of the most important public works upon our coasts. The original plan comprised a north breakwater of 5,360 ft. in length from the coast line, and an east breakwater 2,000 ft. in length, the two enclosing between them an area of 267 acres of available water space, with a packet pier 1,500 ft. long. As the works proceeded it was found that the harbour would be too small even for purposes of refuge, and it was therefore determined to extend the northern breakwater to 7,860 ft., and thus shelter an additional roadstead of 400 acres of deep water. The breakwater is terminated by a head on which is erected a lighthouse.

The foundation of the work is a great rubble mound of stone, 400 ft. wide at the base, and nowhere less than 250 ft. in width at low-water level. It contains altogether about 7,000,000 tons of stone. The rubble mound having been consolidated by the action of the sea, a superstructure of a solid central wall of massive masonry, built of stone from the Holyhead mountain quarries, was erected. Many of the stones are of great size, some weighing upwards of fifteen tons, and the work is set in lias lime mortar. The wall was built as near as possible to the inner edge of the stone deposit, the foundations being laid at the level of low water. It is carried to a height of 38 ft. 9 in., and upon it is a promenade, surmounted on the sea-side by a parapet. At a lower level, 27 ft. above low-water, there is on the harbour side of the central wall a terrace or quay, 40 ft. wide, formed by an inner wall. The head at the end of the breakwater is of ashlar masonry, 150 ft. long and 50 ft. wide; and the foundations rest upon the rubble mound, at a level varying from 20 ft. to 28 ft. below low-water.

The head of the Breakwater was selected for the formal ceremony of the opening, and on the pier was erected a crimson-draped daïs, covered with an awning of flags.

Mr. Hawkshaw, the engineer, represented the Board of Trade.

THE TRADES MOVEMENT IN LONDON.

A general meeting of the masons' committee has been held in the Falstaff Hall, for the purpose of receiving reports as to the way in which the building firms had carried out the resolution to pay wages at the advanced rate of 9d. per hour. After some preliminary business had been transacted, the secretary stated that, from the reports sent in, it was found that the payment of the extra ½d. per hour to the masons had been so general throughout the trade that it had not been necessary to strike even one firm. There were, however, about fifty men employed in different firms to whom the 9d. per hour had been refused. These men had consequently left the employ, and were receiving the usual allowance from the society until they obtained re-employment at the advanced rate.

In some cases where the men had been allowed to work under the new terms without any notice having been given to them that they would not be paid the advance, summonses would be taken out to enforce the advanced rates. General satisfaction was expressed at the almost unanimous manner in which the employers had given the advance to the masons.——At an adjourned meeting of the delegates of the carpenters and joiners, held at the Brown Bear, Bloomsbury, to receive reports from the men in any firm who might have refused to pay the 9d. per hour, and to decide upon the case of the men who had struck at Messrs. Farmer & Brindley's, Westminster-road; the delegates having given in their reports, it was found that, with the exception of the firms of Messrs. Robinson, New Kent-road; Foxley & Co., King-street, Regent-street; and a few small firms, the advance had been generally given. A resolution was then adopted that the men who had turned out from the firms refusing the advance receive the strike allowance until they obtained employment at 9d. per hour. The case of Messrs. Farmer & Brindley then came under consideration, and some difference of opinion prevailed as to the action taken by their men. It was ultimately resolved that, looking at the peculiar features of the case, a deputation of the delegates, accompanied by a deputation from the men, should obtain an interview with Messrs. Farmer & Brindley, for the purpose of effecting an amicable settlement; but that pending such settlement, the men who had turned out from the firm should receive the strike allowance. It was expected that the threatened strike of the labourers would be averted. The carpenters and joiners in the employ of Mr. Sweet, of Richmond, have resolved to strike for an advance.

A crowded delegate meeting of house decorators and painters representing the various societies and firms, has been held, Mr. George Shipton in the chair, for the purpose of taking measures to ensure an advance of one halfpenny per hour on the present rate of wages. The chairman said that when paid the additional halfpenny per hour painters would be receiving but 8½d. per hour, being a halfpenny per hour under all the other branches. After some discussion, it was resolved that a memorial be at once sent to the employers of house decorators and painters, requesting that on Saturday next they would pay the additional halfpenny per hour, thus making the minimum wages for decorators and painters 8½d. per hour. A resolution was also adopted requesting the men in firms or on jobs not to take any further action in the matter except through the committee.

AGAINST "RESTORATION."

In the course of an inaugural address delivered in Newark Town Hall, on Monday last, August 18th, those taking part in the fourth annual excursion of the Architectural Association, Mr. Sharpe gave expression to his views on the subject of "Restoration,"—of course mainly with reference to churches, but applying to national monuments generally. This portion of his address we give at large:—He wished to make a few general observations on the subject of restoration—an operation which had become so important a one during the last twenty years, which had been carried out in so different a manner in different cases—and which had excited of late so much attention and discussion. The meaning of the term itself had, in fact, been stretched so as to comprehend much more than its primitive signification would imply, for not only had it been used in cases where work had been repaired, and even replaced and renewed, but also where work had actually been altogether removed and destroyed, and where fresh work had been introduced and constructed, for which no authority or precedent previously existing in the building itself could be alleged. Indeed, some of these so-called restorations had consisted simply of the rearrangement of the sittings of a church, and the introduction of a completely new set of fittings and fixtures, and of decorative features which never existed before all of which might or might not be very good things in their way, but which certainly could not be called, in the proper sense of the word, restorations. What, therefore, it was very desirable that those who were interested in this matter should do was to arrive at an understanding,—first, what this word "restoration" really means, and secondly, what kind of restoration is a legitimate one, and what is not so. In the first place, he asked the question, why do we restore at all? Why, when a building, or a portion of it, had become by age, or from other causes, unsuited for its purpose, did they not pull it down, and build another? They would certainly do so, in five cases out of six, in the case of a house. Why did they not do so in the case of a church? Well, the answer was, he thought, very simple and obvious. It was impossible to do so. The attachment which the people of this country fortunately had for their national monuments was so strong that no one would ever venture to propose such a thing. This universal regard for these ancient buildings was, moreover, not confined to members of the Church of England alone, but was shared by all classes of the community alike; and he was happy in the thought that the recent use to which the naves of our cathedrals had been applied in the adoption of simple services that the working classes could understand and take part in, was likely greatly to increase and intensify this general feeling of attachment in a class, which occupied as it mainly is with a bare struggle for existence, would be little suspected of possessing a national feeling of any kind. It was for this reason then that, whatever the nature of the works proposed to be carried out in one of our national monuments, "restoration" was the term that was always employed to cover them when public assistance was required. No other plea would be accepted. Preservation, and not removal, or even renewal, was the professed object of all such appeals. No other would be successful. Let them take care then that neither the proper meaning of the term, nor the national feeling in this matter, be abused. What were the sources of interest, apart from that derived from these buildings as places of worship, upon which this general attachment was based? He thought they might be chiefly stated to be of three kinds; (1) one class liked them because they were old; (2) another because they were picturesque; and (3) because they contained the history of a great art. He need not tell them to which of these three classes they belonged. They did not search out, measure, and sketch these buildings, either because they were old or because they were picturesque, but because they were excellent, and because they taught them lessons in the particular walk of art which they cultivated, that they could not learn elsewhere. And he could not help thinking, when the matter of the preservation, or removal of one of their early works of art was in question, the reasons they had to urge for its preservation would prevail, where those of the antiquary and artist might fail. For its loss was, in this sense, a national loss; it was the annihilation of a link in the evidence upon which their knowledge of the history of our national architecture is based, and the circumstances must be very strong indeed which would justify its destruction. But it might be said that there were cases in which, whether for the sake of preserving from destruction the rest of the fabric or for other reasons, such as the convenient practical use of the building for purposes of modern worship, the removal or destruction of this or that fragment of early work became a necessity. Undoubtedly this necessity might arise, and however much they might deplore it they must, in such a case, accept the plea. But what they had a right to insist upon and to demand was, that the imperative nature of this necessity should be first clearly established. Finally, should removal and reconstruction have thus become absolutely necessary, some mode should be found of preserving, even amidst the new work, some such record of the old as might give authenticity to the new. One mode of doing this he strongly urged upon those who might be intrusted with such a restoration. It seldom happened, where a building had to be replaced, either in consequence of a sudden calamity, or from long decay, that the whole of its ornamental work was so completely deteriorated, as that parts of it could not be used again: this was particularly the case in regard to moulded work, which as he had often observed, possessed more historical value, as to progress in art, than any other portion in a building. In the last chapter of his supplemental edition to Professor Willis's monograph on Chichester Cathedral, which was published a few months after the fall of the spire, and the demolition of portions of the four arms of the cross, he not merely suggested, but strongly urged, that portions of the moulded work, of which a considerable quantity, in an undamaged condition, existed amongst the ruins, should be used again along with the new in the restoration of the church. This advice was followed, he believed, in every part of the restoration, and the new work thus inoculated with the old had derived from this circumstance a value and an authenticity that it would not otherwise have possessed. But it sometimes happened, where a building, or a portion of it was not in such a condition as to endanger its safety, that work was unnecessarily removed on the ground of its defective appearance, arising from decay. Now he would confess that in a such cases he was in favour of the utmost possible conservation. In the case of moulded or carved work he preferred infinitely to see even a portion only of the original capital, for example, rather than a new member, and for this simple reason. He drew an instructive lesson from this fragment of early work; it was a genuine example of the Period to which it belonged, whilst the new one, however well copied and carefully restored, taught him nothing; it possessed no authenticity; he could not tell whether it was a correct copy of the former one or not. The designer or carver was not at his elbow to vouch for this, and he did not know if he should believe him if he did. He should not forget soon the lesson on this head which he learned in one of the churches that Viollet-le-duc was engaged in restoring. It was at Poissy, near Paris. A carver was working at one of the circular chapels of the apse; he had got the fresh block of stone which was to serve for one of the capitals of a vaulting shaft in its place, and he was hammering away at it, carving out his new Romanesque foliage, without once casting a glance at the discarded fragment of the old capital, which lay on the ground near him, and evidently without a thought that it was either necessary or desirable to do so. What, therefore, he had to urge was, that surface-decay, even when considerably advanced, should not be considered a sufficient plea for the removal of ancient work; and that if its condition were such as to cause a positive eyesore, it should be patched, rather than removed. The most fatal process, however, to which the church could be submitted, was that of which they saw some deplorable examples in their visits to the churches of Norfolk and Cambridgeshire the year before last, and by which, in order to remove the paint or whitewash of a former day, the whole of the work had been tooled over in such a manner as not only to give an entirely new and modern appearance to the surface of the stone-work, and to damage the true profile of the original mouldings, but also to destroy and remove some of the most characteristic features of the carved work of the capitals. He was sorry to say that these cases were not rare; and though frequently done with greater care than in those to which he had referred, this process of dressing over old masonry was rather the rule than the exception. What, therefore, they had to protest against, in the second place, was the use of a tool of any description on the surface of early work, and to demand that the equally efficacious, though somewhat more tedious process of the carding-brush and a chemical wash should alone be used for the removal of paint and whitewash. After all, perhaps the best and simplest counsel to offer to those engaged in restoration was, as regarded the masonry of the building, to do as little as possible.

CONCRETE AND STONE FACING.

Sir,—I am about to build a few houses, with dressed sandstone exterior, and brick inner walls and lining. As bricks are now so dear could I not substitute concrete for the inner walls and linings? or are there any insuperable obstacles to this mode of proceeding?

Yorkshire.

ORGANIZED DWELLINGS.

In your issue for July 19th, I was interested in a report of the Special Dwellings Committee of the Charity Organization Society. The remarks made there by Dr. Greenhill and Mr. Gathff show that these gentlemen are really interested in the matter, but have evidently never heard of the success of the Social Palace at Guise, France, built by M. Godin, a large manufacturer at that place. As a demonstration of the possibility of providing for the poor a dwelling in which, by organization, the comforts and luxuries of life can be afforded to the poor, without any odour of charity, and without any sacrifice

f capital, this building is worthy of devoted udy. It is really the first specimen of social rchitecture constructed in the world, and I am ire the above-named gentlemen will be pleased) have their attention called to it.

EDWARD HOWLAND.

P.S. M. Godin, in his "Solutions Sociales," as given an account, with illustrations of the ocial Palace.

Hammonton, New Jersey, U.S.A.

*** A full account of this Institution was ven by the conductor of this journal at the heffield Congress of the Social Science Associa- on. Illustrations will also be found in the *uilder*.

THE CLOCK TOWER AT THE HOUSES OF PARLIAMENT.

SIR,—For some time I have been surprised at the "powers that be" allow those glass ge-like excrescences to disfigure this beautiful ructure, and mar its outline at a vital point. re they lighthouses? or for what good purpose they remain? I feel sure that if ever the ost of Barry sees them it will start in terror the sight, and weep for pity at such want of ste.

W. H. L.

LICENSE TO VALUE.

SIR,—The answer to "Nicholi Filius" is not fficiently precise. It is not required that a rson making a valuation should hold an ap- iser's licence, if the valuation is not "obli- ory as between parties, either by agreement by operation of law."

This matter is very usefully cleared up in the *ilder*, p. 251, vol. xxix., year 1871.

A. H.

THE EDMUND CLAY MEMORIAL SCHOOLS, BRIGHTON.

A MEETING of the subscribers to the above ools took place last week. Considerable gress has been made since last meeting. e site is now in possession of the trustees. e design of Mr. G. Tuppen has been selected, d it was decided that the tender of Mr. John nton for the building should be accepted, and work commenced at once. Upwards of 00*l.* have been subscribed; and, as the devo- n of the late Rev. Edmund Clay to the welfare the fishermen is widely recognised, no doubt remaining 400*l.* or 500*l.* will be raised before building is completed.

he tenders for the erection of the schools re as follow:—

Anscombe	£1,850 0 0
Newsham	1,790 0 0
Cheesman & Co.	1,760 0 0
J. & C. Colwell	1,725 0 0
G. & F. Marshall	1,645 0 0
Patching & Webber	1,625 0 0
Nash & Co.	1,578 0 0
Eldridge & Reynolds	1,560 0 0
Hall	1,575 0 0
Barnes	1,474 0 0
Howard	1,468 0 0
Botting	1,450 0 0
Bruton (accepted)	1,390 0 0

wo others were sent in after the time limited dvertisement.

HOW SHALL I BUILD?

IR,—I am about to build a house for my own idence. It will contain about twenty rooms, e of them large. Before beginning, I am rous of having each room *thoroughly venti- d*, and I want so to construct the chimney o economise heat and prevent smoke. From pages I can get no thorough plan for ting my purpose. Will some one be good igh to inform me where ventilators should laced; at the top or bottom of the rooms, or ? How far should the chimney project the room? What width and how soon con- ted to the size of the chimney? And what the chimney should be? Should a flue be tructed below the grates to communicate the external air? By giving the directions our columns you will much oblige

AN AMATEUR.

rand Stand for Oxford Races.—Arrange- ts have been made with Mr. James Hall, ller, to erect a large and commodious grand d, complete in every particular, together a smaller stand for the use of the stewards heir friends.

Miscellanea.

Iron and Phosphorus.—A new light has been thrown upon the manufacture of finished iron by Professor Scheerer, of the Mining Academy of Freiburg. The Professor recommends for the removal of phosphorus from pig-iron during the puddling process, that chlorides of calcium and sodium in equal parts be fused together and introduced into the puddling furnace in the proportion of about three times as much as the phosphorus contained in the iron. The phosphorus and the chlorides combine and are removed in the slag. In these days of dear coal, the discovery of Professor Scheerer assumes considerable importance, inasmuch as one of the principal objections urged against the use of peat and preparations of peat for smelting purposes has been the presence of phosphorus—in large or small quantities, in that description of fuel. If the elimination of phosphorus is reduced to the simple process described, its presence in such pig-iron as is intended to be subsequently "finished," will become of minor importance, and the long-predicted rivalry of peat with coal will at last assume a formidable appearance.—*Iron*.

Accidents.—A labourer has met with a serious accident while at work on a scaffold in New Cavendish-street, Marylebone. He was in the employ of Messrs. Key & Heads, builders and contractors, Marylebone, who are doing some repairs to a house, and just as the men were going to leave off work, the coping fell on to the scaffold and broke it, the labourer being thrown heavily to the ground and rendered insensible. He was picked up and taken to the Middlesex Hospital, where he lies in a dangerous state.——A Chicago paper records the strange death of three men by burning in a well. They were at work boring for oil. Three men were in the well at the time, when suddenly oil was struck, bursting high into the air. Scarcely had it spouted above the service when the oil took fire, sending up a blaze to a height of over 100 ft. The men were burned to death, and when their bodies were recovered they were a horrible, shrivelled mass. The derricks and machinery were consumed, involving a loss of several thousand dollars.

Improved Industrial Dwellings.—A large number of improved model dwellings for mechanics has been recently erected at Halstead and Bocking, in Essex, from the designs of Mr. J. Birch. The dwellings have been built of red brick, with white brick dressings to doors, windows, &c., the external walls being constructed hollow to prevent damp. Each dwelling contains a living-room, parlour, and three bedrooms (those at Halstead having four bedrooms to each dwelling), with wash-house and coal and wood house. Each living-room contains a cubical space of 1,400 ft., each parlour 1,200 ft., and each bedroom an average of nearly 1,400 ft. The Goux earth-closet system, used by the authorities at Halifax, has been introduced to the dwellings at Halstead. Similar buildings, but of a more agricultural character, are in course of erection at Bilton Grange, Warwickshire; at Thorpe and Effingham Hill, Surrey; at Compton, near Petersfield, Hampshire; on the Heathfield Park estates and Mr. Freeland's property, Sussex; on the Barr Hill estate, Madeley; and at Tain, Rosshire, N.B.

Pollution of Rivers.—The fourth report of the Commissioners appointed in 1868 to inquire into the best means of preventing the pollution of rivers has been issued. It has reference to Scotland, and consists of the oral evidence taken in 1870, when Major-General Sir William Denison (who is since dead), Dr. Edward Franklin, and W. C. Chalmers Morton held courts of inquiry in Edinburgh, Glasgow, and all the principal towns of the country. It also contains returns, giving the answers sent to certain queries issued by the Commissioners to local authorities and manufacturers.

The Narrowest Gauge, or Single Central Rail, Railway.—We understand a project will be brought before the British Association for the Advancement of Science for engines and carriages to be constructed with a single row of *central* wheels, ranged *à la* bicycle, to travel on a single line of rails. The advantages claimed for it are economy in construction, easier motion, greater safety, and the facility which it offers for rapidly extending railway communication at home and abroad.

Gigantic Fungus on Pitch Pine Joists.—Mr. Alfred Smee has sent to the *Gardener's Chronicle* a huge fungus, found growing parasitically upon the pitch pine joists of the Bank of England, in Threadneedle-street. The entire growth was so large that when packed in a box for transit, it was as much as two strong men could carry. The largest piece was no less than 6 ft. 3 in. in circumference, 7 in. thick, and weighed 32 lb., growing upon a piece of joist weighing 6½ lb. The fungus turned out to be *Polyporus annosus*, Fr., a plant peculiar to the coniferæ, and perhaps not uncommon in similar situations beneath floors, &c. The mycelium had completely destroyed the wood of the pitch pine joists, and in the decayed parts was found an abundant crop of young cockroaches, spiders, and mites. The fungus will be shown at the forthcoming fungus exhibition of the Royal Horticultural Society on October 1st.

Antique Vases.—A communication was made to the Academy of Inscriptions and Belles Lettres, at its sitting of the 1st. inst., by M. de Whitte, on two amphoræ recently dug up at Corneto, in Tuscany. They pertain to the sort which used to be given as prizes to the victors at the Panathenaic games. One of these Panathenaic amphoræ bears a painting representing Pallas standing and turned towards the left in a fighting attitude, with the lance in her right hand and the shield on her left arm. The vase is marked "Pythodelos archon." It is known that this magistrate governed in the 111th Olympiad, and more exactly in the year 336 before our era,—that is, the very one when Philip II., King of Macedonia, died. These two vases are valuable, as they show Grecian art just before its decline: other specimens three years later, under the archontate of Nikokrates, are much inferior to them.

Wolverhampton Free Library.—The Wolverhampton Free Library, which previously had its home in the old Athenæum building in Queen-street, has been reopened to the public in the more extensive premises to which it has been removed, in Garrick-street. The building is not a new one, having originally been erected, and for many years used, as the borough police station, public offices, &c., superseded by the new Town-hall in North-street. The building, however, has been altered and adapted for the purposes of a Free Library and Reading-rooms, the Athenæum building in Queen-street being much too small for the increasing requirements of the town. The contract was let in the spring of the present year to Mr. Grove, of Wolverhampton, builder, the plans and specifications being prepared by Mr. Johnson, also of Wolverhampton.

Sussex Iron.—In allusion to the improvements in progress in the precincts of St. Paul's and the old railings to be substituted by new ones, "Rambler," in the *South London Chronicle*, says:—

"It may not be generally known, perhaps, that these very railings have a certain historic interest. They are made of Sussex iron, dug up in the vicinity of Brighton, and smelted with the wood of the forests which hundreds of years ago covered that country. Since those forests have gone Sussex iron has not been in the market, for the cost of transporting coal to smelt it would be too great to render the operation of getting it up remunerative. But it is very possible that shortly,—sooner than many think, perhaps,—Sussex may again become a 'black country,' and, with the aid of the veins of coal which undoubtedly lie beneath its surface, produce all that is required for the establishment of vast foundries and factories which shall rival those of Sheffield and Wolverhampton. At any rate, recent borings seem to indicate this."

Railway Accidents.—Mr. Robert Fairlie the well-known railway engineer, writes to the *Times* on a subject of interest to all who are concerned in railway-construction or value their lives. Taking for his text the recent accident at Wigan he makes the following recommendations:—

"1. That the space or opening between facing-points and rails should be increased, because doing so loses nothing and gains much. 2. That this space of clearance should be definitely fixed and maintained. 3. That the flanges of all wheels should be uniform in thickness. 4. That the play or clearance allowed between wheel-flanges and rails should be the same on all railways. 5. That these dimensions should be definitively settled by a committee of engineers selected for this purpose acting in concert with the Board of Trade, and afterwards made one of its Standing Orders."

Memorial Window to Bishop Wilberforce.—A stained-glass window to the memory of the late Bishop of Winchester is about to be placed in St. John's Church, Angel-park, Brixton. The estimated cost is about 150*l.*, the larger portion of which has already been subscribed.

Fire at the Leeds Town-hall.—After the night policemen had deposited their lamps in the room set apart for the purpose in the basement of the Leeds Town-hall, on Thursday morning before last, a fire broke out in that portion of the building. With much difficulty, hose reels were laid into the lamp and store rooms, and the flames were then quickly extinguished, but not before considerable mischief had been done. The roof, forming the floor of the council-chamber, was considerably burnt, a huge beam of wood, 22 in. thick, being burnt nearly through at one point, and the laths and plaster more or less consumed. The lamp-rack and the police library were also destroyed.

Monumental.—An obelisk of polished Aberdeen granite has just been erected over the tomb of the late Mr. James Carson, in the parish churchyard of Marlow. It is about 11 ft. in height, and surrounded by a massive granite kerb. On the east side of the obelisk is a figure of an angel kneeling, sculptured in Sicilian marble. This piece of work was executed by Mr. Lauder, of Kensal-green.——The Monument of Victory, at Berlin, numbers among the commemorative frescoes with which it is embellished, one representing the German princes offering the Imperial Crown to the Emperor William, at Versailles. It is now stated that, at the Emperor's special command, the design has been altered.

The Wilberforce Memorial.—The secretary to the memorial committee states that two great diocesan works are in contemplation as memorials of the late bishop, the one by a large and influential committee sitting at Winchester, for the erection of a monument or effigy of the late bishop in the cathedral; and the other by a large central committee in London, who propose to raise a fund for the maintenance of missionary clergymen to work amongst the dense masses of the poor, amounting to about 700,000, in the South-London portion of the diocese of Winchester. Both committees will act in harmony.

A Lump of Timber.—Chicago papers recorded recently the arrival of a raft containing 650,000 ft. of rough logs, from Ludington, on the eastern shores of Lake Michigan, a distance of 160 miles. The raft was towed by a steamtug, making the whole distance in sixty-three hours. The raft was 1,100 ft. long and 75 ft. wide. The number of sections was forty-nine; the number of logs in each section varied from fifteen to twenty. The value of the timber was about 25,000 dols. the cost of transportation from Ludington by this raft was 500 dols.; the cost of the transportation in the old-fashioned way would be about 2,000 dols.

The Iron and Steel Institute.—The meeting of the Iron and Steel Institute of Great Britain was opened on the 18th instant at Liége, Belgium, to be concluded on Friday, the 22nd inst. It is the first meeting held on the Continent by this Institute. The committee of reception prepared grand *fêtes*, including concerts, illuminations, and other entertainments, and a banquet, for 600 persons. The congress was formally opened by Mr. Lowthian Bell, the president of the Institute. The following days were occupied in lectures, discussions, &c., as well as visits to the principal mines and iron foundries in the neighbourhood.

The Vienna Exhibition.—The number of prize medals which were to be distributed this week at Vienna, by the Archduke Rainer, in the Emperor's name, amounts to 2,000, besides 600 diplomas of honourable mention for deserving exhibitors. The prizes rank in six classes, the diplomas constituting the seventh. Class 1 is the diploma of honour; class 2, the medal for progress; class 3, the medal for merit; class 4, the medal for fine arts; class 5, the medal for good taste; and class 6, the medal for co-operators. We are glad but not surprised to hear that Mr. George Jennings has gained the medal of progress for sanitary appliances and disinfecting apparatus.

The Designs for Laying-out Roundhay Park, Leeds.—About twenty plans for laying-out Roundhay Park have been received in Leeds by the town council, in competition, for the premiums offered for the best designs. The *Yorkshire Post* believes that it is the intention of the Corporate Property Committee, after examining them, to throw them open to the inspection of the ratepayers. They will be arranged in one of the apartments of the Town-hall, at the conclusion of the Assizes.

The West Front of Wells Cathedral.—Mr. B. Ferrey, F.S.A., the architect who has the direction of the restoration of Wells Cathedral, in a letter to the *Athenæum*, contradicts a statement in that journal that the statues in the west front have been restored. Not a figure, he says, "has been touched, nor has any ancient sculpture been meddled with whatever. The work there has been confined to the reparation and renewal of the constructive features, which are essential to the stability of the front."

The Duplex System of Telegraphy.—The new system of "duplex" working, by means of a new condenser, which splits the current of electricity and enables the operator to send messages through the cables in contrary directions at the same moment, has now, we learn, been successfully applied by the Eastern Telegraph Company.

Wycliffe and Tyndale.—It is intended to erect, on a suitable place in the centre of London, statues to the memory of Wycliffe and Tyndale, in connexion with their efforts to secure "a free and open Bible" for the people.

TENDERS

For erection of house at Hayes Common, for Lord Sackville Cecil. Mr. Vinall, architect. Quantities supplied:—

Dove, Bros.	£3,225 0 0
Sharpington & Cole	2,923 0 0
Coppin	2,893 0 0
Downs & Co.	2,890 0 0
Pain & Baldwin	2,835 0 0
Tyerman	2,831 0 0
Roberts	2,781 0 0

For rebuilding No. 38, Poultry, and Nos. 1 and 2, Dove-court. Mr. B. Tuberer, architect. Quantities supplied:—

Larke	£3,944 0 0
Jarrett	3,850 0 0
Pritchard	3,674 0 0
Brass	3,639 0 0
Kirby	3,625 0 0
Browne & Robinson	3,590 0 0
Robinson	3,540 0 0
Downs & Co.	3,460 0 0
Perry, Bros.	3,415 0 0
Merritt & Ashby	3,394 0 0
Mark	3,368 0 0

For erection of warehouses and offices, Weston-street, Southwark. Mr. Elkington, architect. Quantities supplied:—

Browne & Robinson	£9,449 0 0
Higgs	9,300 0 0
Clarke & Bracy	9,293 0 0
King & Son	8,850 0 0
Downs & Co.	8,790 0 0
Little	8,679 0 0
Rider & Son	8,558 0 0

For pulling down and rebuilding No. 114, High-street, Southampton. Mr. H. Mitchell, architect:—

Bailey & Son	£955 0 0
Martin & Son	850 0 0
Dyer	850 0 0
Bunney	845 0 0
Crook (accepted)	797 0 0

For pulling down and rebuilding No. 40, High-street, Winchester. Mr. T. Stopher, architect:—

Newman & Son	£1,047 0 0
Fielder & Son	1,000 0 0
Macklin	990 0 0
Marsh	888 0 0
Crook (accepted)	870 0 0

For building house and stables at Otterbourne, Hants, for Captain Hall. Mr. T. Stopher, architect:—

Newman & Son	£4,490 0 0
Macklin	4,195 0 0
Fielder	4,165 0 0
Marsh	4,121 0 0
Crook (accepted)	3,790 0 0

For Hannah Memorial Chapel, Lincoln. Messrs. Bellamy & Hardy, architects:—

Brooks	£6,750 0 0
Hobson & Taylor	6,700 0 0
Kent & Otter	6,676 0 0
Martin & Sims	6,649 0 0
Lovelee	6,559 0 0
Huddleston & Son	6,322 0 0
Otter & Elsey	6,307 0 0
Close	6,154 0 0
Barnes & Wright	5,160 0 0

For alterations and repairs to the British Oak Tavern, Westbourne Park, for Messrs. James & Hicks. Messrs. Bird & Walters, architects:—

Ennor	£1,218 0 0
Newman & Mann	1,210 0 0
McLachlan	1,195 0 0
Williams	1,175 0 0
Brown	1,162 0 0
Harris & Sons	1,135 0 0
Mark	1,067 0 0

For various works to be done at the parish church of St. Lawrence Jewry, King-street, Cheapside. Messrs. Young & Son, architects:—

Shaw	£650 0 0
Colls & Son	578 0 0
Clark & Mannoch	558 10 0
Pickering	534 0 0
Galli	497 0 0
Penn	415 0 0
Pitman & Cuthbertson (accepted)	359 0 0

For building chapel-keeper's lodge in Belmont-road, Clapham. Messrs. Goulty & Gibbins, architects:—

Elsden	£420 0 0
Lacy	359 0 0
Cobden	315 0 0

For additions to Nos. 17 and 10, Camberwell-road, &c. Messrs. Wheeler & Box. Messrs. Jarvis & Son, architects:—

Marsland & Son	£639 0 0
Lacy	457 0 0
Caivers	285 0 0

For a new wing to Crown East Court, Worcester, &c. Mr. H. Bramwell. First contract, shell only. Messrs. Haddon, Brothers, architects:—

Forter	£1,540 0 0
Wood & Sons	1,447 0 0
Everal	1,445 0 0
Smart	1,294 0 0
Kendrick	1,286 19 0

For new organ-chamber, Church of St. Matthias, Malvern Link. Messrs. Haddon, architects:—

Smart	£280 0 0
West	255 0 0
Garbutt	245 0 0
Everal	225 0 0
Porter	217 0 0

For stabling, &c., to the new workhouse, Madeley, Salop, for the Board of Guardians. Messrs. Haddon, architects:—

Nevett (accepted)	£247 0 0

For alterations and additions to Bucklebury School, Berks. Mr. J. H. Money, architect:—

Winter	£1,260 0 0
Fulker	1,227 7 0
Whiter	1,090 0 0
R. & W. Harrison (too late)	1,088 0 0
May (accepted)	925 0 0

For erecting a new warehouse, 204, Upper Thames-street. Mr. J. M. K. Hahn, architect. Quantities supplied by Mr. M. Evans:—

Hill & Sons	£1,438 0 0
Morter	1,375 0 0
Brass	1,360 0 0
Little (too late)	1,356 0 0
Woodward	1,350 0 0
Jackson & Shaw	1,300 0 0
Scrivener & White	1,244 0 0

For alterations and additions to No. 317, Mare-street, Hackney. Quantities not supplied:—

Over	£806 0 0
Skinner	783 10 0
Boyce	750 0 0

For detached house, coach-house, and stabling, Cumberland Estate, Kew, for Mr. F. Coleman. Quantities by Mr. G. Ward:—

Dove, Bros.	£6,495 0 0
Curtis	5,983 0 0
Hill & Son	5,900 0 0
Stimpson & Co.	5,870 0 0
Adamson & Son	5,693 0 0
Sharpington & Cole	5,477 0 0

For timber-shed, Storecliff-street, Edgware-road, &c. Messrs. Peters. Quantities by Mr. A. Williams:—

Howard	£547 0 0
Langmead & Way	520 0 0
Stimpson & Co.	491 0 0
Scrivener & White	477 0 0

For additions to No. 30, Albemarle-street, Piccadilly. Quantities by Mr. C. Sewell:—

Faulkner	£3,001 0 0
Rowe & Berran	2,609 0 0
Fish	2,589 0 0
Scott	2,577 0 0
Stimpson & Co.	2,534 0 0
McLachlan	2,526 0 0
Jurrell	2,269 0 0

For the erection of stores, &c. in Belfast, for Mr. W. Gregg. Mr. W. Batt, jun., architect. Quantities supplied by Mr. H. McConnell:—

Smith	£1,740 0 0
Collen	1,650 0 0
Corry	1,544 0 0
McCracken	1,490 0 0
J. & R. Thompson	1,476 5 9
McMaster	1,475 0 0
McCammond	1,470 0 0
Mansell	1,456 0 0
Thompson	1,429 0 0
Courtney & Carlisle	1,383 0 0
Colville	1,375 0 0
Carson	1,355 0 0
McKeown	1,350 0 0
Moore	1,350 0 0
Gutler	1,348 0 0
Dixon & Co.	1,250 0 0
Hunter (accepted)	1,125 0 0
For stables, &c.:—	
Hunter	£340 0 0
Mansell (accepted)	312 0 0

For erection of manse in McClure-street, Belfast (double house). Mr. W. Batt, jun. architect. Quantities supplied by Messrs. Featherston & Banks:—

Moore	£1,432 0 0
Hunter	1,189 0 0
Corry	1,185 0 0
J. & R. Thompson	1,150 0 0
McCracken	1,135 0 0
Mansell	1,050 0 0
For the erection of single house:—	
J. & R. Thompson	£1,115 0 0
Moore	986 0 0
Hunter	960 0 0
Mansell (accepted)	905 0 0

For new residence, The Chase, Clapham, for Mr. R. Morton. Quantities by Mr. W. H. Barber:—

Nightingale (accepted)	£1,739 0 0

For additions to premises, No. 8, Maida-vale, N.W., for the Hon. Lewis Wingfield. Mr. W. Todd, architect:—

Simpson & Co.	£2,284	0	0
Nightingale	2,270	6	0
Longmire & Burge	2,050	0	0

For Grocers' Wing, London Hospital (contract No. 1). Mr. Charles Barry, architect. Quantities by Mr. J. H. Trudwick:—

Brass	£7,931	0	0
Myers	7,303	0	0
Higgs	6,672	0	0
Enoch	6,610	0	0
Lucas, Bros.	6,479	0	0
Sheffield	6,471	0	0
Holland & Hannen	6,399	0	0
Browne & Robinson	6,007	0	0
Downs & Co.	5,960	0	0
Perry (accepted)	5,949	0	0

For alterations to Nos. 51, 53, 55, and 59, Buckingham Palace-road, for Mr. F. Gorringe, Mr. J. Walford, architect:—

Nightingale	£2,084	0	0
Newman & Mann	1,936	0	0
Taylor	1,844	0	0
Roberts	1,832	0	0
Axford	1,795	0	0
Wagner (accepted)	1,760	0	0

For two houses at Croydon, for Mr. W. Thompson, F. W. Paice, architect. Quantities by Messrs. Paice, others:—

Cole	£1,920	0	0
Simpson	1,880	0	0
Brown	1,800	0	0
Randall	1,730	0	0

For Main Drainage works, at Haywards Heath, Sussex. P. Colbrow, C.E. Quantities supplied:—

Bulmer	£4,050	0	0
Dover & Co.	2,743	0	0
Bloomfield	2,450	0	0
Cheesman & Co.	2,298	0	0
Box	2,009	0	0
Marshall	2,000	0	0
Hostel	1,990	0	0
Rigby	1,916	0	0
Goodair	1,802	10	0
Symonds	1,760	0	0
King (accepted)	1,650	0	0
Gardner	1,217	0	0

TO CORRESPONDENTS.

e Vienna Exhibition (unavoidably postponed).—L.—F. M.—C A. G. C J. M.—E. W. S. E. S. J. H. S.—W. B. S. E.—L.—G. C.—J. N.—C. S.—J. W. H.—MoD. Brothers.—H.—F.—J. T.—Dr. W.—H. H. S.—O.—C. J.—E. T.—E. J.—J. S.—H.—Pro. J. W. G.

are compelled to decline pointing out books and giving nses.

statements of facts, lists of tenders, &c., must be accompanied the name and address of the sender, not necessarily for cation.

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Repression of Crime.—F. F. O'Malley, esq. Q.C.
Education.—Professor Hodgson, LL.D.
Health.—Captain Douglas Galton, C.B. F.R.S.
Economy and Trade. Thomas Brassey, esq. M.P.
An Exhibition of Sanitary and Educational Appliances will be held in connexion with the Congress
Prospectuses and particulars may be obtained at the Office of the Association, 1, Adam street, Adelphi, W.C.
C. W. RYALLS, General Secretary.

SANITARY and EDUCATIONAL EXHIBITION, in connexion with the Social Science Congress, to be HELD at NORWICH, from the 1st to the 8th of OCTOBER next.
Prospectuses and forms of application for space for the Exhibition of Appliances for Improving the Public Health and Promoting Education, may be had of JAMES ROBINSON, Secretary to the Managing Committee, 1, Adam street, Adelphi, London.

CRYSTAL PALACE SCHOOL of PRACTICAL ENGINEERING.—Principal, Mr. T. W. WILSON, Assoc Inst C E Thorough practical instruction in preparation for articles or for employment. Another Term commences SEPTEMBER 8th next Particulars on application at Office of Crystal Palace Company's School of Art, Science, and Literature, next the Reading Room, Crystal Palace, where only can students be inscribed.—By order of the Committee of Directors,
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Loughborough, 20th August, 1873.

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The Builder.

VOL. XXXI.—No. 1595.

Sheffield and the British Archæological Association.

THE greatest discovery made by the bulk of the inhabitants of Sheffield, in consequence of the visit of the British Archæological Association, appears to be that they have architectural remains in their neighbourhood deserving of admiration and preserva-
, and men amongst themselves able discriminate their merits, and worthy being listened to when they speak on subject. This knowledge will have its d effect hereafter. So much was seen and e during the week, that in continuing our ice of the proceedings,* we shall have to fine ourselves to the more salient points and ers, giving a little of the actual information arted, rather than a list of all that was seen done. One of the most interesting buildings ted on the third day was the

Saxon Church of Laughton,

ace which, as the Rev. Mr. Stacye said, from loftiness of its site, caught the first beams the rising sun, and had long gone by the ular and cheery description of "Lighton in Morning." Its true name was Laughton-e-Morthen, which was, as Mr. Hunter inter-ed it, "Law-town," implying that in early es it might have been the seat of a local sdiction, though perhaps it might be derived n the Anglo-Saxon "hlaw," a hill; "en-le-then" denoting its situation in the moorland rict, as they might well suppose that lofty osed situation to have long continued after more sheltered and richer lands around been brought into cultivation. It was oubtedly a place of great antiquity, for e seemed reason to suppose that they in the remarkable earthworks which remained, the site of one of a series of antian strongholds, which a late local anti-ry who had much studied the subject (Mr. Mitchell) well pointed out, formed as it were outwork of the southern portion of that erful people, remains of other of these for-ses being found at Tickhill, Roche Abbey, s, Todwick, Beighton, Mosborough, Holmes-ll, Carlswark, Hathersage, and Hope, the ual formation of the Brigantian territories owing the line of the valley of the River Don. this as it might, there could be no question Laughton was a place of considerable im-tance in the Saxon times. The first mention y had of it was probably to be found in the ament or will of Wolfric Spott, who was ed to have been the Minister of King elred the Unready, and who possessed much perty in this and the other neighbourhoods. m the Domesday Book they learnt that it was the property of the great Saxon, Edwin, Earl of Mercier, as was the neighbouring manor of his brother-in-law, Earl Harold, afterwards King of England. In that important document they were also informed that Edwin had a hall here, which was doubtless seated on the remarkable earthwork already alluded to. He referred to the remarkable doorway on the north side, near the west end, which was of such rude and peculiar character, that it might well be considered among the very earliest of our ecclesiastical remains, and as dating to a period before the Conquest. Mr. E. Roberts remarked that the porch of the north doorway was unquestionably Saxon. It bore a strong resemblance to the stonework of the seventh and eighth centuries.

Roche Abbey

was fully described by Mr. Gordon Hills, who said that the foundation charter of the abbey bore no date; but it could be shown from the signatures to it that the abbey was founded in 1147, by Richard de Busli, a great nobleman in those parts; and in the charter it was stated that he "gave his land for the abbey." It appeared, however, that the abbey had two founders, Richard de Busli and Richard Fitz Turgis, who were the owners of the soil on either side of the stream. They joined their lands in order that the monks might be able to choose a site on whichever side of the stream should be most convenient. They decided on this side of the stream; and, as at Beauchieff Abbey, they thereupon turned the domestic offices of the abbey towards the stream, that they might get a due supply of water, and have their sewage carried off in the then proper way. The domestic buildings were on the south side of the abbey, and therefore most open to the sun. Roche Abbey was the thirty-seventh abbey of the Cistercian order founded in this kingdom. Their first abbey was founded in 1128, and the last erected in this country by them was in 1250. He said the buildings were not erected immediately after the actual foundation of the body, as he found that a very considerable part must have been erected in 1184. The date of the buildings was not therefore to be precisely fixed; but it might be very nearly ascertained. He directed special attention to the great solidity and majesty of the work, and to its simplicity. There was no fancy or showy architecture in any way: the builders trusted entirely to its actual solidity and goodness. The walls were about 5 ft. thick. The church was amongst the first of the buildings erected by Abbot Osmund, and towards the conclusion of his time was erected the gatehouse at the entrance to the grounds. It was a very admirable specimen of architecture of nearly the middle of the thirteenth century.

The fine church at

Rotherham

was elucidated by Mr. Alderman Guest, who has made the history of the neighbourhood a long study. He said, in conclusion,—"In giving ample honour to the beneficence and Christian institutions and religious services of the olden times, I have the high satisfaction in relation to this self-same subject—the parish church of Rotherham—of being able to do equal honour to the present time, which is now doing honour to itself in nobly resolving that this grand monument of past munificence shall be so repaired and so restored, inside and outside, as to make its "bold and lofty proportions," its wide and lofty arches, its elegantly designed and finely-chiselled capitals, once more develop in restored beauty the splendid and harmonious effect of "the best style of the best age of perpendicular work"—the close of the fifteenth century—before it merged into the more elaborate but less beautiful Tudor. It is now in Sir Gilbert Scott's hands, and he reports—"The interior is very fine, and well deserves a careful restoration." The work will no doubt be proceeded with with the least possible delay. A structure like Rotherham Church is an honour to Yorkshire, and deserves not only county, but general support.

From the papers read at a *conversazione* given in the evening, we take a portion of one by Mr. R. N. Philipps,

On the Manufacture of Hardware by the Celts and Romans.

The reader proceeded to review the process of the manufacture of implements in the earlier ages, exhibiting from time to time specimens of ancient stone and bronze weapons, in illustration of his descriptions. The next material that was used after stone and flint was copper, and afterwards bronze was brought into requisition, and applied to the process of cutting tools, &c. The reader believed that the material for bronze was found first in Britain, that without our tin-mines it could not have been made, and that the ironstone of Britain supplied the iron worked so successfully by the Romans for the then civilised world. These Romans were the men to whom in after ages had succeeded our own ironmasters, who, as Englishmen, had developed this great manufacture in its various branches for the world. Passing from the consideration of the bronze to that of the iron age, he thought it was somewhat extraordinary that ironstone, which abounded so much in this country, should have been so long unused. In many parts it even cropped up on the surface, and its very weight, if not indeed its actual appearance, ought to have suggested a mineral. What, then, was the reason for its non-employment? The difficulty arose from the want of those mechanical contrivances which were now employed for the purpose of smelting the ore. The "black diamond," productive of more wealth than the clear sparkling form of carbon, was not unearthed, and the wood of the forest was the only material at hand. They could therefore readily comprehend the disadvantages arising from the want of properly constructed furnaces, of a proper blast, and of the proper material for smelting purposes. But when the Romans took possession of Britain, they at once began to improve its condition, and to utilise its products. They were indeed a wonderful people. They did not conquer a country and there leave it. They had sought for its hidden wealth, they had brought it to the light of day, and whilst they had benefited themselves, they had at the same time introduced their civilisation amongst the inhabitants. The Roman stamp had been found on pigs of lead in Derbyshire and elsewhere. The Roman ironworks existed principally in the Forest of Dean, in Gloucestershire, and in the extensive districts of the Weald of Sussex and of Kent. Mr. Philipps introduced specimens of metal made nearly 2,000 years ago, and argued that because of its great lasting powers, this iron must have possessed toughness and malleability in a remarkable degree. They might fairly conjecture that when the power of the air-blast itself was inconsiderable, a better plan would be substituted by exchanging the wood fuel for the more extensive use of charcoal in their furnaces. Archæological investigations had disclosed the mode adopted, which was this:—Placed within a square formed of stones, were a quantity of pieces of oak-wood crossing each other, and over these was a covering of earth or clay. This pile of material, so constructed, a simple mode was adopted of producing charcoal similar to that now pursued for producing coke from coal.

At *Kirkburton Church*, visited on the fourth day, there is on the north side a hagioscope, so that any infected person could sit outside the church and yet be able to see the elevation of the host at the altar. This is a remarkable

* See p. 659, *ante*.

feature. The party entered the church under the guidance of Mr. W. S. Barber, under whom the church had been recently restored. The church, he said, was thoroughly Early English; there were traces of Early English work throughout, and the chancel was unequalled in this neighbourhood. In carrying out the restorations he had replaced every stone in its original position, and so far as he was aware none of them had been retooled. The register books were shown in the vestry, as was also an old religious work, which had chains attached to it, and which had evidently been chained to a desk or pulpit. Before leaving the church Mr. W. de Grey Birch took occasion to remonstrate with the vicar with regard to the ruinous condition of the early register-book, which was as old as the reign of King Henry VIII. Without care it would hardly last to be of interest to many more archæological visitors. At Woodsome Hall, the members were most cordially welcomed by the late president of the Association, the Earl of Dartmouth. At the evening meeting, after a memoir by Mr. S. Tucker (Rouge Croix) on the "Descent of the Manor," Mr. J. D. Leader (of the local *Independent*) read a paper on

The Remains of Sheffield Manor.

Mr. Leader gave an interesting account of the buildings and their history, not forgetting proper comment on the wretched, squalid, and dangerous buildings now on the spot; and then, after referring at some length to the confinement of Cardinal Wolsey and Mary Queen of Scots at the Manor-house, Mr. Leader continued,—We have seen enough, however, to convince us that the Queen of Scots did pass some portion of her time at Sheffield Manor, and a curious question has lately arisen whether we do not still possess the identical building in which she was there confined. The idea was first thrown out by the Rev. J. Stacye, and further reflection and examination tend to encourage the belief that in the little three-storied building now undergoing restoration, we see a prison-house especially erected by the sixth Earl of Shrewsbury for the Queen of Scots. Mr. Hunter, in his "History of Hallamshire," speaks of that building as a porter's lodge; but, judging from its decorations, it must have been a much more important erection. The narrow turret staircase, and the strong crooks on which the doors formerly hung, suggest the idea of security; while the richly-ornamented ceiling of the two chambers, and particularly of the upper one, point to the conclusion that the building was intended for the use of no inconsiderable person. If the members of this Association had visited Sheffield Manor a few months ago, and had inquired for the Queen of Scots's room, they would have been shown by the farmer's wife the two chambers on the upper floor, the outer one occupied by a few old boxes, and quite dark, the inner one lighted by one window on the east side, but adorned with a rich heraldic ceiling, and over the walled-up fireplace an almost illegible plaster cast of the Talbot arms. The old plaster floor was still entire, if a little uneven. In some places wet was finding its way through the roof, and the place had a melancholy appearance of decay, strangely contrasting with the ceiling and with the remains of hooks on which tapestry had hung. A few years more and this portion of Sheffield Manor would have been as ruinous as the rest. Fortunately, however, as we have already mentioned, the Duke has taken it in hand, and it is now being restored.

There seems to be no actual evidence in support of the existing belief that the Queen of Scots was really confined in the building referred to. It is to be hoped that further examination of the Talbot papers and in other directions may establish its truth. An extract from one of the Shrewsbury letters, which referred to "all the kitchen-stuff in the Queen's kitchen and my lord's," read by Mr. Tucker, would seem to show at any rate the existence of two establishments.

During the excursion next day, the ruins of Conisborough Castle and Church were inspected, under the guidance of Mr. Edward Roberts, who gave a description of the architectural and other features of the buildings. Seated as it was on nearly the highest ground of the neighbourhood, Conisborough Castle occupies a site remarkably well chosen, and one which does much credit to the skill and military genius of the period in which it was erected. The castle was built by Isabel, sole daughter and heiress of William de Warren, the third lord of that name. The church is of the Norman period, and was probably built between the years 1187 and 1190.

The papers for the evening included two of particular interest, by Mr. J. W. Grover and Mr. Llewellyn Jewitt, F.S.A. Mr. Grover took for subject,—

Some Modern Lessons from Ancient Masters.

His object being to show that the ancients are really our masters in ideas and inventions, and to recommend a more careful study of the ancients with a view to modern improvements, he vindicated the Romans from the assumption that they constructed expensive aqueducts and masonry through ignorance of the law of hydrostatics that water in a tube will find its own level. He appealed to the extensive system of leaden piping found in the baths of Rome and in Roman villas in England, to Nero's works near Lyons, where the valley, being too deep for an aqueduct, was crossed by immense leaden pipes, and to 6-in. bore leaden pipes found in the valley below Ludgate-hill. He also cited Vitruvius's mention of a bent pipe, in which the fluid reached the same level at both extremities, and Pliny's statement that in leaden pipes water rises to the level of its source. He attributed the general adoption of aqueducts to sanitary reasons, water in an open conduit preserving its sparkling purity for any distance, and the friction also being much less than in a closed conduit. The American engineer, General Meigs, has constructed the great Washington aqueduct on this principle; and Sir W. Armstrong has recommended this plan for Newcastle. Mentioning the proposal of Mr. Bateman and others to supply London by an aqueduct from the north-west, Mr. Grover remarked that though the scheme is deemed Utopian and colossal, the twenty great aqueducts at Rome were of greater extent. Having got a good Roman aqueduct, Roman fountains should follow, such as Acqua Felice and the Trevi, not absurdities like Trafalgar-square, or such miserable apologies as drinking-fountains. Public baths, too, would be provided. Ancient Rome had 800, some of amazing magnificence, such as the *thermæ* of Agrippa, near the Pantheon, or those of Caracalla, Antoninus, or Diocletian. Caracalla's was 1,000 ft. square, surmounted by sumptuous porticos, with 1,600 seats of marble or porphyry, some extant, fifty vaulted bathing-chambers, each consisting of vestibule and bath, 3 ft. by 15 ft. It had also a swimming bath and a rotunda, 111 ft. in length; Spartian remarking that architects and mathematicians considered the *Cella Solaris* inimitable. 18,000 bathers could be accommodated at one time, 1,000,000 cubic feet of warm water being supplied. Mr. Grover then noticed the recent revival of encaustic tiles, and stated that our oilcloth patterns have been copied from Roman pavements. He recommended, however, tessellated floors, combining durability and cleanliness, dispensing with dusty carpets, and being also fireproof. The ancient floors were supported on beds of concrete, resting on tiles, which stood on a small forest of short pillars. The fire was outside, the heat passing under the floor, and the hot air escaping through the walls by small flue-pipes. The Roman roads, with their posting houses at regular distances, inns, and *mansiones*, —whence our word mansion,—places where *diplomata* or passports were examined,—were next noticed, and then the public playgrounds, where games were carried on. The great basilica at Netherby was sometimes used as a riding school, and there were evidences of the existence of public gardens. While the ancients reverenced the human form, we cultivate the mind, but have no thought for the body save as to food and clothing, though we improve the breed of dogs, horses, and poultry. At least two hours a day should be devoted to training the muscles.

Mr. Jewitt's paper was on the popular ancient ballad

The Dragon of Wantley,—

the scene of which is laid at Wharncliffe (visited by the Congress), and the name Wantley is merely a provincialism for Wharncliffe. It appears clear that the dragon typified Sir Thomas Wortley, who is supposed to have allowed nothing to stand in the way between him and his fondness for the chase. How well this tradition of the destruction of these towns is carried out in the ballad!—

> "Houses and churches
> Were to him geese and turkeys,
> Ate all, and left none behind;
> But some stones, dear Jack,
> Which he could not crack,
> Which on the hills you will find."

The "stones" on the hills being, without doubt, the remains of the houses of Stan, or Stonefield.

Then, again, the violent disfranchisement ancient freeholders is aptly allegorised in t lines:—

> "Devour did he
> Poor children three
> That could not with him grapple,
> And at one sup
> He ate them up,
> As we should do an apple."

And then the breaking up of the pastures arou the homesteads, and the felling of the trees f purposes of the chase, are clearly meant in the words:—

> "All sorts of cattle this dragon did eat;
> Some say he did eat up trees,
> And that the forest sure he would
> Devour up by degrees."

The popular expectation being that in his gree he would not stop at destroying the villages a seizing lands, but would ultimately take violent to himself Loxley Chase and Sherwood Forest

Sir Thomas Wortley (son of Nicholas Wortle by Isabel his wife, daughter and heir of Willia Tunstall, of Thurland), was Knight of the Bo to four successive kings—Edward IV., Richa III., Henry VII., and Henry VIII. He died 1514.

Moar or More Hall, still standing, is situate in the Yewden Valley, and may be distinct seen from Wharncliffe Lodge—the apocryph den in which the dragon, Sir Thomas Wortle resided, and naturally within but a short distan of the site of the destroyed towns. The Drag has, in all ages, been the symbol of the Devil, tyranny, of oppression, of cruelty, and of wron Hence it is that this monster has been chosen the embodiment of wrong in the "Dragon Wantley," in "St. George and the Dragon," the "Horn of Lambton," in "Conyers of Stoc burn," and a score or two other popular legend

We can give but a few lines more. At t concluding meeting on the sixth day (Saturda 23rd),

Mr. W. de Grey Birch delivered a short a dress on "Cæleography," in which he examin and explained the MSS. of Mr. Bragge, me tioned in our last, and which were exhibited f inspection. He showed that shorthand was n a modern invention, but was used by the ancien With regard to the beautiful MSS. before hi he said he had no hesitation in stating that nin tenths of them had been prepared by monk and some were as fresh, after a lapse of 500 600 years, as if they had just emanated from t printing-press.

Mr. Gordon Hills then offered a general vo of thanks to all who had aided and assisted the congress, specially naming the Mayor an Master Cutler and the Local Committee, and telling speech addressed by Mr. Roebuck to t members of the association and the people Sheffield, agreeably ended the agreeable week.

THE VIENNA EXHIBITION.

It is not without feeling of shame that write of goldsmiths' and silversmiths' wares displayed here in the Vienna Exhibition, for must at the very outset admit that in th branch of industry we are completely, if n shamefully, beaten by foreign rivals.

After the terrible disasters which France h of late suffered she could be pardoned were h display both poor and feeble in every departme of industry; but instead of misfortune leavi her a weak competitor, we find her not only creditable form, but in some departments of ar manufacture taking a leading and exalted plac But in no art-manufacture does she reveal h strength so powerfully as in that now under co sideration, for as represented by MM. Christofl & Co. and M. Barbédienne, of Paris, who are th leading exhibitors in this department of manu facture, she is far in advance of all the othe competing nations.

Few of the works shown by M. Barbédienne ca strictly be regarded as coming from the smith who works in silver or in gold, for the majority of his works are in enamel; but as enamel wares are made almost exclusively by silver smiths and goldsmiths, I shall include these in my present considerations. By classifying enamels with wares in silver and gold, it must not be thought that I do our own metal-workers a wrong, for Messrs. Elkington, who make much the best display of any British firm in silver smiths' wares, exhibit enamels somewhat largely, and most of the Russian goldsmiths also show enamels, hence the displays of the French bear direct comparison with those from our own and other countries. MM. Christofle & Co.

and M. Barbédienne each have their specialties, and each produce works alike rare and beautiful in their way;—

"Not like in like, but like in difference";—

but as the exhibit of the former firm is most varied, I shall notice its works first.

There is scarcely a branch of metal-work in which MM. Christofle & Co. do not show rare examples both of art-knowledge and manufacturing skill. Although our Elkingtons show a large and truly admirable work in *repoussé* which is deservedly worthy of careful study, and is one of the few works shown in the Exhibition which do us credit as workers in the precious metals, I yet feel that there are examples of hammered work on Christofle's tables which, if not as elaborate, are as clever as this fine work of Elkington's, and some of the smaller works in *repoussé* by Christofle & Co. have the merit of being both useful and beautiful, while the one important work by Elkingtons which is now is merely ornamental.

I confess that I like useful objects better than those which are merely ornamental. Give me a drinking-cup as beautiful as you please, but let it be a vessel which will contain my wine,—a vessel which is useful as well as beautiful. I have seen champagne-cups of silver, and in Paris we find coffee, and English tea, served in vessels of gold and of silver. To neither of these do I take exception: only let them serve well the purpose for which they are intended, and then let them be as beautiful as you please. A beautiful tea-cup in a tenderly-wrought saucer I prefer to an object which is merely an ornament. For this reason I give preference to some of Christofle & Co.'s wine-cups and tea-services, and regard them, in a sense, as greater than Messrs. Elkington's magnificent figure-subject, which is intended merely as a table-ornament.

No exhibit in the entire Exhibition here at Vienna shows more fully than that of Messrs. Christofle & Co.'s the favourable influence which Eastern art has exerted upon that of Western nations. Everywhere in the Exhibition we see the influence of Eastern art manifested, but in no instance is it more apparent than in Christofle & Co.'s exhibit, and in no case has Eastern art been allowed to influence European manufacturers more desirably than in the exhibit now under consideration.

What is called "Damascene" work occurs alike frequently in Arabian, Persian, and Indian metal-work; and nothing is more pleasant in metal-work than the judicious inlaying of one metal in another. In India we generally find silver inlaid in iron; but gold as an inlay in dark metals is also common. In Persia we most frequently have gold inlay in a dark metal, and not unfrequently in steel. In Arabia both gold and silver are inserted into iron and other dark metals; and in Japan, also, this practice of inlaying metals of one colour in another is common.

Messrs. Christofle & Co. have carefully considered these works from the East, and have bestowed upon them that consideration which their beauty and just treatment deserve, and the result of this study is apparent in their exhibit. We have now Damascene work in its best forms, and much of it, but there are no servile copies of Eastern works to be found, but beautiful works, the first thought of which has sprung from a consideration of Oriental examples, but—works which are as fresh and new in appearance as if they were altogether of novel manufacture.

While the Eastern works consist, almost exclusively, of silver or gold, inlaid in a dark metal, Christofle & Co. show many examples of mixed metals, inlaid in copper, bronze, and dark metals; and golds of two colours, pale and deep, are employed in several of their works in Damascene.

Eastern examples are known which afford precedent for almost all forms of inlaying, which this firm has adopted, but credit is none the less due to this enterprising firm for adopting desirable suggestions from any source of knowledge open to them, and for utilizing these valuable hints. Oriental examples are alike open to us and the French, but the latter make much more use of them than we do: indeed, I doubt whether any nation in the world is slower to avail itself of the suggestions made by foreign countries, however valuable those suggestions may be, than we English are.

But, mark, there is a strange difference between copying works and deriving suggestions from them. To become a copyist is to become servile, and to acknowledge inferiority to the creator of the work copied; but to derive an idea, and then give new expression to the work,—a work the mere thought of which has been suggested by previous examples,—is right and desirable; and especially so if the new form or character, which the original thought now assumes, is exalted and refined.

The trays in copper-bronze, which Christofle & Co. show, are almost, without exception, of great merit, and are, for the most part, founded on Japanese examples. A tender spray of some ornamental plant is spread over a salver, the spray as silver, the salver as copper-bronze. But the spray is not engraved with lines which attempt to give fictitious relief, but is a flat and consistent decoration of the flat surface which it ornaments, and is yet sufficiently suggestive to call up the thought of flowers.

The firm have studied Japanese ornaments carefully; the ornaments found on metal work, on lacquer wares, on china, especially that from the Satsuma district, and have had them introduced into Europe,—a new and beautiful manufacture, derived from the consideration of Oriental examples, but a manufacture having all that freshness and beauty which results from the passage of the original thought through a refined and educated mind, from which it emanates in new form.

Some of the vases shown by this firm are of great beauty, and present a variety of inlay such as I have never before seen, for instead of gold and silver being simply set in a dark metal, we have gold and silver inserted in bronze of various colours, and the gold is in some cases of lemon colour, and in others of orange hue.

Of Damascene work, Barbédienne shows little that is new, and the little that he does show is of the same character as that of Christofle, and is, I think, but a copy of his work; and Elkington also shows nothing that is novel in this way,—the small portions of Damascene work upon the beautiful Milton shield are not new in character, and the shield has been shown at previous exhibitions.

I have spoken of European Damascene work; but, as yet, have made no mention of that from Persia, Turkey, Japan, and other Oriental nations, although the countries named, and notably Persia, show excellent examples worthy of the most careful study; but I do not intend in this paper to deal critically with the merits of Oriental examples. Besides, it is scarcely fair to compare European works with the grand Oriental examples, from which the very arts practised by us have been derived. All I will now say on this subject is this: let us carefully consider the beautiful works of the East whenever opportunity occurs, but not with the view of copying them. Let us seek to gather from them inspiration like that which brought about the examples before us, and having thus become imbued with a true art-spirit, the manifestations must be new through bearing upon them the impress of a fresh and well-informed mind: thus both personal and national individuality of style will be stamped on the works produced.

We will pass now to a consideration of enamel wares, and here, again, we have a beautiful art derived from Oriental works. It is curious to notice how many of our beautiful arts have been suggested by the consideration of examples from countries which we are in the habit of despising, or regarding as of imperfect civilisation. *Cloisonné* enamels from China, have been long known to us, and have been much admired by European of refined taste. Chinese *cloisonné* ware had its highest development about 150 years since, under the patronage of an emperor to whose excellent taste we are indebted for many fine works both in this manufacture and in ceramic wares also. But it is only during the last few years that we have become acquainted with a similar manufacture in Japan.

A vessel of *cloisonné* enamel consists of a "core" of brass, with enamel work upon it; that is, a brass vessel is formed of the required shape, upon the exterior of which a pattern is scratched with a point. A narrow brass riband, or flat wire, about the one-sixteenth of an inch in width, is soldered to the "core," or brass shape, edgewise, so that it projects from the surface of the brass "core" to the extent of one-sixteenth of an inch (its own width). Into the spaces now formed by this brass riband a plastic matter is worked, and where any space, both of ground and ornament, is filled with this plastic matter, it is exposed to heat, which, owing to the nature of the paste, causes it to vitrify, and become an opaque glass; the glass being of various colours the pattern is formed, but all is yet rough. The surface is now ground down till it is smooth and level, and thus we have a vessel variously coloured, and with the colours separated by a fine metal line, the line being the edge of the wire riband.

With Chinese enamels we generally have a light blue or turquoise ground; yet examples with yellow, morone, grey-white, and dark blue ground, are by no means uncommon: in almost all Chinese examples known to us, there is a delicious, clear, coolness of colouring which is very pleasant. Japanese enamels are at once distinguishable from Chinese, not only by the character of the ornament, which is very distinctive,—so distinctive, indeed, that when one specimen has been seen, all future works of a similar character can at once be recognised by this one feature,—but also by the fact that all Japanese *cloisonné* enamels are darker and warmer in colour than the Chinese, more geometrical in construction,—though the geometrically-arranged parts are distributed irregularly over the surface of the vessel,—and especially by the extreme fineness of the metal lines (the edges of the metal ribands) separating the colours, which in these examples are scarcely thicker than the edge of ordinary note-paper; while in the Chinese enamels they are about three times this thickness. So earnest were Messrs. Christofle & Co. in their endeavour to learn the secrets of this beautiful manufacture, that they sent a man to China to investigate the process, and the inquiry into the mode of manufacture having been successful, *cloisonné* wares were produced in France by Christofle, and they have also been produced in England by the Elkingtons.

Speaking first of the works of Christofle & Co., we cannot help admiring the rare beauty of some of their samples of this interesting and artistic manufacture displayed here in Vienna; but what is most be commended is this,—that the works although of *cloisonné* enamel, are not like Chinese works, and are not like works from Japan, but are works new in style, while rich in art-feeling,—they are beautiful, they are new, they are European, and yet they have about them a quaint dash of Oriental feeling which gives to them a character which is novel; yet they are in no way copies of Oriental examples.

I wish, for the honour of our country, that I could speak as favourably of Elkington's similar enamels. I speak as an artist, and as an artist only, and as an artist I am bound to say that art feeling is scarcely to any degree present in these works; that, as art productions they are childish and poor, and do little or nothing towards upholding the national name as producers of works in enamel. It would be very wrong of me to write in praise of works which are indifferent because they are by a fellow-countryman (and I fear that this has been done by some of the members of the English press out here in Vienna), for such a course of procedure can only result in national humiliation. To be behind our Continental friends, and to delude ourselves into the belief that we are equal with them, or in advance, is worse than folly, for then we cease to make those efforts which are necessary to success. I would that I could say that we were equal with the French in the beautiful manufacture of enamels; but it is not so. We are far, very far, inferior to them.

The exhibit of Barbédienne is, like Christofle's, of great merit, and is a display such as any country might well be proud of. But here we have no *cloisonné* enamels, strictly so called, of French manufacture. M. Barbédienne achieves his results by casting a brazen core, upon the surface of which are interstices which are subsequently filled with enamel. There is in this process no soldering of a metal riband to the body, as the body, or core, is produced in the first instance with a pattern wrought upon it by projecting lines. The process of Barbédienne has this advantage over true *cloisonné* work, that it can leave brass ornaments upon the surface mingled with the enamel work, and not fine lines only; and by the brass forms having detail added by engraving, and colour given by a deposit of gold, great beauty is achieved. M. Barbédienne shows works of great loveliness, and the style of ornament employed upon his enamels has, from the very first, been both vigorous, novel, and elegant, and it is now becoming characteristic of his beautiful works.

Russia sends some little works in enamel,—a

few excellent spoons, wine-cups, and salvers, but nothing worthy of any special note, and Vienna is not without examples of this beautiful art.

China sends a wonderful collection of its splendid *cloisonné* enamels, and Japan furnishes many excellent examples of its treatment of *cloisonné* wares, and other Oriental nations give us a few examples of similar work. Let us study these works carefully, and learn from them, but on no account let us be mere new imitators of even beautiful examples.

One thing I regret in all European exhibits of silversmiths' work is the absence of beautiful works of ordinary cost. Many tea-services are shown which are of great art-merit, but they are invariably of great cost. Why cannot a tea-service which is worth but a few pounds be also beautiful? The few only can have the expensive services, while the many have those of lesser cost: why cannot the many have that which is beautiful as well as the few? Beautiful objects of medium cost are almost unknown in the exhibition of silversmiths' ware here in Vienna, but our endeavours to meet this want again fall short of our Continental neighbours.

It is with much regret that I write as I do of our displays of the works in goldsmiths' and silversmiths' ware, but I must be truthful. Of some of our exhibits I am ashamed, of none am I proud; while of the exhibits of the two great French firms which I have so often named in this paper I can scarcely say too much, for their works are of rare merit. I feel that in looking at them I learn; while I fail to perceive in any English exhibit in this class, excepting one or two solitary objects, anything upon which I delight to dwell; but in the knowledge that English energy is sufficient to meet any difficulty and to make any advance I have comfort, and I look with hopefulness to an effort which shall place us, as workers in the precious metals and enamels, in a foremost place amidst our Continental competitors.

FODDER AND FEVER.

A VITAL QUESTION.

When the rising of Parliament relieves the public press from that deluge of talk for which its columns have been tasked to make room, it often happens that some subject which, a few weeks before, would have been squeezed into an obscure paragraph, swells, like the frog in the fable, till it demands the entire marsh for itself. Sometimes a literary dispute thus seizes the attention of the public; sometimes a luckily-timed scandal. The present dead season has been hitherto chiefly enlivened by a subject for once of great interest, and one which, beyond a doubt, comes home more or less directly to everybody.

This question concerns the mode in which health may be affected by the application of sewage as manure. It is one that it is essential to settle, and that not in an off-hand manner, either one way or the other; but exhaustively, conclusively, and judicially. We have long since pointed out that it was difficult to understand the principles on which any administrative interference with the subject of drainage and river pollution, that left this question undetermined, could be guided or justified.

A gentleman whose name is known as that of a man of science and of practical experience, was the first to open the conflict, and to drag across the columns of the daily papers the coat upon which advocate after advocate has rushed eagerly to set his foot. We shall be glad if we are finally able to place on record, once and for all, an admitted and proved conclusion in a matter so closely affecting the national health, wealth, and purity.

It is worthy of attentive remark, as teaching caution in accepting *ex parte* testimony, from however respectable a source, that a conflict has been waged, at the same time, in the journals, as to a subject far more easy of settlement than any quasi-chemical inquiry. The state of the dust-bins in Marylebone is a simple question of fact; as to which one would think that half an hour's attention on the part of a qualified person would be enough to ascertain the rights. And yet we have letter after letter bearing responsible signatures, which flatly contradict each other as to that question of fact. If an issue can be raised whether a certain number of dustbins are or are not duly cleansed, and if we find, as we do find, that the people who are responsible for cleaning them, say that they *are* properly cleaned, while the people who are in the habit of using them assert that they are neglected, and *not* properly cleaned, it is only too certain that we shall have to look with a very searching glance at the statements as to sewage manure, whether *pro* or *con*.

The first letter which has again brought this subject to the front was to the effect, that a small herd of cows at Wallington were fed, during the spring of this year, with a small proportion of sewage grass; that their butter thus became so offensive as to be uneateable; that the use of sewage grass was then discontinued; that the cream, milk, and butter then resumed their former excellence; that on this the experiment was repeated, and that similar results followed. It is added that the milk has a slightly varied odour when twenty-four hours old, that the butter becomes bad on the second or third day, and that no care in the preparation can avert the rancidity. The writer adds that he has long known that the use of putrid manures affects the quality of vegetables, but that he was not previously aware "that the putrid matter could be taken by animals, and communicated, in the dangerous putrefactive state by their milk."

Now, we have little doubt that many a valuable piece of information is long kept within the knowledge of the discoverer from the fear that if, being very likely unaccustomed altogether to writing for the press, he should simply state all that he knew, some annoymous critic would pounce upon him like a hawk, question his facts, make fun of his language, and leave him in a state of puzzle almost as to his own identity.

But when the person who communicates startling information to the public claims, as in the present instance, to belong to the literary guild, the cross-examination should be applied by himself to his letter before it is committed to the post. The prudent delay of twenty-four hours, and a second reading of the communication at the expiration of that time, would often save much dispute. In the present case it might have seemed admirable, before opening so very sensational as well as important a controversy, to have taken care to give a few particulars as to the state and quantity of the food supplied, whether it was hay or grass,—if the latter, whether eaten on the ground or how supplied,—whether fresh or otherwise; and also some definition of what was meant by "putrid manure" was desirable. As it is, the writer has already had to admit that "fresh sewage under certain conditions may be safely applied over a large surface of land without injury." Had he recalled the system pursued in China, or even the history of the well-known meadows at Edinburgh, he would not have raised a doubt on that point in his first letter. These details, however, have been since supplied.

In elucidation of the question whether milk may be rendered unfit for human food by peculiarities in the pasture of the animal which produces it, Mr. Sedgwick cites eight local outbreaks of typhoid fever which have occurred within the last three years, all of which have been more or less traced to infected milk; and he further states that the dangerous quality has not been communicated by mixture with impure water, but has been inherent in the milk itself. We may add that the experience of every careful mother is enough to induce her to take extreme care of her own diet while nursing, as she is aware that an unusual proportion of vegetables, fruit, or acid food, even if not of sufficient amount to be sensible in her own person, is at once perceptible in that of the child, readily causing diarrhœa in the infant. This bit of universal old woman's lore ought to be taken as one of the first points to bear in mind, when considering the possibility of the partial poisoning of a liquid so exceptionally delicate as milk. The French men of science, who are generally in the van as regards physiological investigation, have collected much curious information on this subject. It appears, that most of the cases which have been investigated, where milk has been affected by the browsing on plants that are more or less poisonous to man, have been those of goats. This animal is naturally the rock-haunting type of ruminant, and is by preference a browser, rather than a grazer; it thus, in a state of nature, consumes a much wider variety of vegetation than does the cow. Thus the liability of the milk to be affected is much greater in the case of the former than in that of the latter animal. At the same time, it is highly probable that milk may be in every way suitable to the constitution of the kid which is not wholesome for a human child. If, in the case of a freely pasturing animal, we find that the natural instinct has not prevented the goat from browsing on the sea spurge or the fool's parsley, with the result of secreting a milk that produced choleraic symptoms in the first case, and typhoid in the second, our care ought to be redoubled as to the character of the food with which we supply our domestic animals, on the terms of Hobson's choice.

We could cite examples, from our own personal experience, of the effect on human infants of the milk of cows fed on mulberry leaves, a diet often given in Italy. These points are rather medical, or indeed practical, than chemical. No chemist, in the present state of his science, can find any indication of a degree of infective impurity, the results of which may be detected in half a dozen hours by an experienced and watchful nurse. As far, then, as this part of the case goes, we apprehend that there can be no room for intelligent doubt that milk is very readily and positively affected by the food consumed by the milch animal, and that it may even become highly deleterious, or absolutely poisonous, to the human infant, while the external appearance of the animal in question denotes good health and condition.

The advocates of the sewage-farm system have not been slow to accept the challenge held out to them as above described. From Hayward's Heath comes the information of a distribution of 35,000 gallons of sewage per diem on eight acres of land. Two portions of this are regularly under rye-grass, and one third under root crops. The rye-grass grows luxuriantly, often reaching 4 ft. high, and is cut four or five times in the year. Thirty cows and horses thrive on this grass, and the condition of the dairy is said to be excellent.

It is not stated in what manner the sewage is applied in this farm. This is one of the most important points in the matter. We will assume nothing beforehand; but it is undeniable that it is at all events quite possible that the result of applying any manure to the earth on which crops are afterwards grown, and to the growing crops themselves, may be extremely different. The good health of the animals themselves has not been called in question in cases of proved milk-poisoning, and is therefore foreign to the inquiry.

The manager of another sewage farm calls attention to the danger of confounding the *post hoc* with the *propter hoc*, and asks pertinent questions as to the grass consumed in the case of which the first complaint was made. He asks how long the grass had been cut before it was given to the cows; how it had been conveyed from the sewage farm; how stored; and in what way the sewage had been applied to the land. To the last question we shall have, no doubt, repeatedly to recur. But the very inquiry seems to admit the possibility of a species of infection of the grass grown by sewage, that will be imperceptible, or nearly so, when the grass is fresh, but that will develope on the keeping and stacking of the grass. It is clear that, if any evil be communicable, it would be almost certain to take this course. The questions are most proper to put; but the fact of their being put by a warm advocate of sewage farming has a very marked significance.

A third writer comes to the important question of the method of applying sewage as manure. He states the fact, which we may take to be fully in evidence, that "when sewage passes through earth it becomes considerably changed as regards its chemical and physical qualities." This happy law of nature is one of the primary elements of sanitary science. Its importance it is not easy to over-estimate. Its *modus operandi* has not, as far as we are aware, received the attention it deserves. But whatever else be in doubt, and whatever else may be taken for granted, we take it as a postulate in sanitary engineering that sewage must go through the earth, and that in no other manner can water once polluted with sewage mixture be rendered non-deleterious to health.

In the case, on the contrary, of the flooding of growing grass with sewage, this writer, who is an officer of health for the combined districts of Leicestershire, is of opinion that if a cow eats the grass so treated, the butter may be injuriously affected. The writer gives opinions, instead of facts, but they are opinions in themselves probable, and point in the direction which we have before indicated.

Another witness comes forward to speak to the diminution of typhoid fever in the Croydon district since the sewers have been properly

ventilated, and to the health of the animals fed on sewage grass in that neighbourhood. He also bears testimony to the excellence of the dairy produce. A sixth writer, also a C.E., puts the question fairly and pointedly,—"Is the application of raw sewage to grass-land productive under any circumstances of evil results; and is not some chemical treatment of the sewage necessary previously to its utilisation on land?" As to this, it may perhaps at once be replied,—that not chemical, but mechanical filtration, is generally necessary to prevent the clogging up of the natural filter of the earth.

Next in order comes evidence from the physician of the Devon County Asylum, and from the South Metropolitan School, with a population of 1,660 souls, as to the excellent condition and good yield of cows fed on sewage-grown grass, and as to the purity of that test-product, the butter. We pass over the personal incivilities that come to the surface at this stage of the discussion. They can have no effect but to discredit the persons who adopt such a method of controversy. Next we find the manager of a large sewage-farm offering to place its contents and stock at the disposal of scientific experimenters; and then a well-known medical writer comes forward to testify in favour of the milk from cows fed on sewage-farms.

It is proper to bear in mind that evidence in favour of the excellence of milk, butter, &c., in order to be entitled to much weight, must come from the consumer, and not from the producer. There is an old proverb about the sale of fish. And, with the best intentions, there is such a facility possessed by the greater number of persons for shutting their eyes to any view but that which is most favourable to themselves, that we can hardly take the evidence of any farmer as to the quality of his own produce. It is clear, on the evidence, that the milk of cows is greatly increased in quantity by the feeding of the animals on full crops of succulent grass. With this increase of quantity is combined, it also seems clear, an increased richness and excellence. Other things being alike, the milk of a cow well fed on luxuriant grass is the best. But the question is not as to that; it is simply whether, in attaining this desirable result, any danger is incurred. Most of the correspondence in the papers bears on the first point, as to which there is no real dispute. Very little touches on the second.

We have still, however, to refer to the communications of two gentlemen, whose names are well known, as well as highly respected, in connexion with the sanitary aspect of the case. Mr. Denton, while protesting against groundless alarm, admits that it is quite within the limits of possibility that if sewage irrigation is so conducted that the blades of the growing grass are bathed by the fluid, they may become the agents of infection. Mr. Rawlinson cites conclusive evidence as to the fact that the long-continued application of sewage to land does not poison the land. The two views are in perfect keeping with one another, and, in our opinion, point to the true issue.

It is, as we before stated, a fundamental principle in sanitary engineering, that water, once polluted in any way by sewage mixtures, must pass through the earth before it can be regarded as safe from infection. It is not true that impure water at all times causes infection. We should be in a fearful position if such were the case. But it is certain that occasionally, in some states of the atmosphere, or in some states of the public health, water contaminated by sewage does spread infection. Further, it would seem that if the special scourge, typhoid fever, was always connected with sewer or drainage poison, fluid or gaseous. Again, we have ample evidence that filtered sewage may be turned for very long time through the same bed of gravel, and that the gravel does not thus become foul, but lose its power of disinfecting the fluid,—or, to the point of fact, of so aiding the mixture of the whole body of water with oxygen as to *burn* the organic matter by an insensible combustion. And this way alone can the action of the gravel ever be explained. If the fluid be unstrained, it will, in course of time, close up the interstices of the gravel, and arrest the good effect.

Every argument, then, that is raised in favour of disinfecting foul water by passing it through the earth, is an argument of equal weight as to the danger of allowing such water to touch the leaves of growing vegetables. If sewage may be sprinkled over growing crops with impunity, the necessity of earth purification is negatived. The advocates of such a process may urge that the plant itself has a purifying influence, and that it must be as destructive to organic matter to pass it through the cells of the vegetable tissue as through the earth. But that is to give the go-by to the real question. We have no assurance that the matter does go through the plant; we have no reason to suppose that the grasses imbibe nutriment except through their roots. The leaves of most vegetables are considered rather to be expiratory organs than alimentary organs. But even that question need not be raised. Knowing as little as we do of the intimate nature of the impurities found in polluted water, it is as probable that the virus may continue, if a plant or other object be bathed with the fluid and then dried by ordinary evaporation in the air, as that it may be destroyed by the simple process of drying. It may be difficult to collect facts either way. It is very little to the point to say, "Here are so many instances of sewage grass being used, and of no typhoid fever, cholera, or other evil following." Of course this is the case. We should not otherwise be now in any doubt on the subject. Further, as to one source of evil which was anticipated, namely, the propagation of entozoic parasites, it seems well supported that there is no good cause for alarm. Thus the offers that are made to submit animals fed on sewage grass to microscopic examination are idle. They only serve to turn the attention from that which the microscope cannot detect, but the physician will. But whichever way we look at it, we come back to the same creed,—Sewage through the earth is disinfected; sewage not passed through the earth is always liable to suspicion. Sewage, however dilute, thrown upon the leaves of grass or growing herbs, is not disinfected in the only way on which we can rely. It is only dried in. We are without direct evidence, so far as we are aware, that sewage dried into grass, hay, or any other matter, does communicate infection. We are without any evidence that it does not. Precaution, then, suggests that it is mischievous recklessness to assume that it cannot. Further evidence, no doubt, will be forthcoming; and the matter will probably be fully discussed. At present we can only come to the conclusion that sewage sent through the earth is purified. That the earth, which serves as filter, is capable of sustaining growing crops without danger to health. But that sewage, flooded over grass meadows, or applied to the leaves of growing vegetables, may well be regarded with suspicion, as a possible agent of infection.

NEWARK AND LICHFIELD TOUR OF THE ARCHITECTURAL ASSOCIATION.

The following notes made on the spot by one of the tourists will give a general idea of the course of the fourth annual excursion under the conduct of Mr. Edmund Sharpe:—

Monday, August 18th. — The *Réveillée*, Grantham,—old faces appear from Ireland, Newcastle, Yorkshire, Stafford, and a good batch from London. The Angel Hotel (fifteenth century domestic), symmetrical, archway in centre, bay windows, buttresses, gargoyles, animal grotesques, and a picturesque look. The church,—in honour of St. Wolfran of Sens (Abbeville also associated with him). In centre, three bays of Transitional (1170) church,—piers and remains of clearstory windows, &c.,—maintained in thirteenth century, and surrounded with new work east, west, north, and south. Now, altogether, one of the most spacious best lighted churches in the kingdom (the extensions carried on eastward till completion, 1400). Window, west end of north aisle, noblest of intersecting tracery in any English parish church (cusped,—that at Raunds not). Tower majestic: spire graceful. Profuse ball (or bell) flower at west end—full 1800 in all. These rare before 1310: this earlier,—in fact, one of the very earliest examples. Was an entasis designed to spire? At Glinton, Caythorpe, &c.,—the cucumber-top the result of accident,—started the spire too steep, and pulled it in suddenly (Mr. F. C. Penrose suggests). A crypt (late); font, late fourteenth century; incised stones. Two libraries,—in that over the south porch wooden book covers, iron chains: active worms apparently the only constant relishers. The school house north side of the church:—the value of a bold base course and well-sunk windows: Newton. Rail to Newark,—called, "*temp.* Ed. Confessor, New work, to distinguish it from some town of older date,"—as Thoroton with agility suggests. The assembly-room:—Hung with plans and mouldings. Mr. Sharpe on the plan of the week,—the six very important churches to be visited may be ranged as (1) Lichfield Cathedral, (2) Southwell Minster, (3) Grantham (Collegiate Church) and parish churches, (4) Newark, (5) Stafford, (6) Ashbourne. Then the work taken in chronological order,—from the year 1100 onwards, nearly a complete series. Illustrations given from cymagraphed mouldings,—the English art: the surest tests of date (history), and (2, art) adapted in nature of curve and intricacy or simplicity of form to the other features, —main outlines, window traceries, foliage, &c. "Restoration."*

Tuesday, August 19th.—Newark: a great, handsome, well-windowed parish church, on the plan of the fifteenth century. Designed for large parish,—large spans, piers flattened north to south (longer east to west); height,—plenty of every dimension. Transitional piers (1170) of original centre tower remain. Were there conservatives then, who wished to leave records? or was the tower kept up while built against from time to time on every side? or was there frugality? West tower,—in the lower stages a problem:—how came these side arches (north and south) in a tower designed to stand clear of the aisles? They are (unweathered) piers, caps, and arches of 1230,—the west front earlier. Wanted, an account of a fire; alterations short of total rebuilding would then look feasible. But how to account for the insertion of Rectilinear windows in aisle within fifty years of the building of it;—little, if at all, larger than the Curvilinear windows. A second conjectural fire? Six-light Curvilinear window west of south aisle very beautiful (like Heckington, Navenby, Sleaford). Nave piers, arches, clearstory, &c.; and a little later those in the chancel,—all Rectilinear. Black old oak screens of much size and character. The famous "Flemish" brass,—the bottom a good 7 ft. up the south transept wall,—a hint that walking over it should be avoided. A crypt (1170) under the altar,—a bit of vigorous design:—full of coffins and—evil smell. The clouds suggest wet sketch-books;—but the move made eastwards for (1) Beckingham;—past Beacon Hill, the highest land of East Notts (building-stone and gypsum quarries), down to the Witham, and across into Lincolnshire. The church a rare example,—nave arcades 1175,—just clear of Lancet: all well moulded. A pair of piers have monolithic shafts in nooks,—all the look of banded shafts—the universal fashion a short generation after. (2) Broughton, on the tiny Brant, a feeder of the Witham:—crocketed tower and spire,—thought the finest hereabouts; now wants a length at top. Backed by trees,—the church to the east,—porches vaulted and roofed in stone,—a picture. The north side,—parapets, pinnacles, similar porch and mossy stone,—another. Mostly Rectilinear. Our "long-range" marksmen, with the proper tools, would at three miles hit,—Falbeck, such another "home of ancient place,"—the second church visited in the first (1870) expedition. (3) *Claypole*: fine early Rectilinear east window: mouldings Curvilinear, five-light, well pointed,—12 ft. 5 in. clear, jamb to jamb. A rough flat roof cuts it at top. Late Decorated caps in nave, — crumpled leaves crawling round. Sedilia in chancel of very perfect Curvilinear work,—rare beauty. Altar-slab with sunk crosses (3 ft. 1½ in. by 7 ft. 2 in. by 4½ in.) in little chapel, now a vestry north of chancel. Bellringing, and people in holiday mood; rich baby display. (4) Balderton. Two Norman doorways, 1120,—about as at Southwell. Late oak benches, with rabbits standing down the upper slopes of ends. Bit of a figure of purest art over north porch; how here? (5) Hawton. Lancet nave,—nail-head in hood mould (rare). But the chancel! North side,—sacristy-door, memorial arch, Easter sepulchre. South side,—double piscina, three sedilia. In all crumpled leaves of 1320;—figures with grace and dignity, and straight drapery,—angels, bishops and grotesques, diapers; Roman soldiers, — humour shown in shaping their dozing forms. Who was the (one would hope) native genius who made all this? and had wit enough to leave plain wall in plenty about for the eyes' rest withal? Was he at Navenby and Heckington also? and did he die all too young? Back to Newark:—to dinner, and a lighted church, and the fine organ. The town nearly awake.

Wednesday, August 20th.—Newark Castle in the grey morning. Tall walls next the loop

* Mr. Sharpe's remarks on this we gave at length last week.

from the Trent. Hall, and large-vaulted crypt, Norman towers, and ivied ruins. Out by the westward road, and the carriages draw up before (1) Kelham Hall (Manners Sutton, Esq.); Sir G. G. Scott, architect. Red brick and stone, many shafts and carved caps. The great entrance,—the Spanish *patio*,—glass roofed, and with greenery, and carriage-drives in and out. Vaulted rooms and corridors, real woods and large plate-glass; gilding and colour; the music-room near grandeur. The gardens, old trees, and older Trent, frame well the new lordly hall. (2) Upton church, monumental arch in the transept, outside and in, with thin partition (similar arrangement at Hawton, south aisle). These are generally the founders; frequently in chancel-walls; not always both sides. The Rectilinear tower has a 2 ft. 10 in. square stone centre pinnacle, on pyramidal stone roof, carried on pointed ribbed barrel vault: unique? Rare Early chest, bound with good beaten iron. Three earthen pots found months outwards, and faceable with the inside of the north wall of chancel —why? Qy. Acoustic device pushed by an enterprising manufacturer here and elsewhere? We had them at Denford, in the Nen Valley last year, in similar position. (3) Southwell: works in hand in choir and its aisles; floors to be at proper levels, and damaged stonework pieced. The architect, Mr. Christian, on the building and things in general. Restoration is showing and keeping up any design produced in an art-period. The 1110 Norman nave very bold work; to have a heavy timber roof of good pitch, if funds can be got. Choir, choir-aisles, and east end generally Lancet, strong and pure and suave; the nave has a touch of the morose. The caps, bosses, &c., stiffened foliage with thick edges, very conventional; unlike the chapter-house (about 1280), with its natural leafage,—one of the earliest attempts after that misuse of stone. Nature may suggest the lines of growth and the leaf shapes, but man must take the ideas and create a new form in stone. The copies here suggest little imagination and power, albeit plenty of skill of hand and of taste and fancy. Should good old Rectilinear windows in nave and aisles be taken out, and Norman windows put back? One or two replaced thus years back. Mr. Christian says "No." 1. The building as altered in old time gives its own history; 2, is more picturesque; 3, the light is wanted inside. The value of vaulting in case of fire talked over; why not more daring? A church near Caen mentioned, 30 ft. span; stone ribs, 9 in. by 8 in., moulded after setting; filling in of hollow brick, 2½ in. thick. Also, St. Michael's, Munich, 60 ft. span, 5½ in. thick.

Thursday, August 21st.—The early morning finds the party on ladders, on roofs, in triforia, and the ruins of the palace of the Archbishop of York hard by. The hall, the chimneys, and chimney-pieces, and a tower of garderobes may be looked at. Constant connexion between Southwell and York, the influence of dignitaries: were the workmen passed on?

The whistle works as the pipe at Hamelin. *Disjecta membra* are soon in their specially appointed carriage, and hurried along the valley of "the Crystal *Trent*, for fords and fish renowned," — not much altered from Drayton's day hereabouts. Red marl hills keep near on west, till towering wall-like marked with gypsum at Carlton and green Colwick. (1.) St. Mary's Nottingham, a big late church,—spacious, not grand. Can grandeur subsist without much massiveness? Parts of nave piers of an earlier church (Lancet), under the floor; the present piers thereon with much space to spare. Ample restoration—begun thirty years ago. Mr. Cottingham copied the large north transept window for the west of nave (the work pulled down was a joke; "in 1726 the west end was rebuilt, the Doric order being substituted for the Gothic"). This is approved as the path of safety. Stalls copies of old woodwork,—removed hence to Sneinton Church, and never got back. (2.) Tutbury, by Derby and Burton,—and, from the station across the Dove, into Stafford county. Dove (o as in *love*) uniformly in the country it drains. A little more undercutting of mouldings and use of the principle of subordination than at Southwell. Nave clearstory gone. The west front,—very grand,—doorway, &c. An alabaster order of beakhead still clean and sharp: work of 1120. Ten set to work, and in a little under two hours measure doorway down to jointing, cymagraph mouldings, and sketch carving. The modern east end (circular apse), thin walls, weak mullioned windows,—an obvious addition. Had the architect seen the old church? or did he on system design wholly out of scale? Is full justice really done to the Mediæval architects for their attention to general effect? However obstinately working in their own style, were they not much influenced by older work, and led by it to strength and boldness, or lightness and elegance? The castle just by, "on the credit of an excellent witness, hath a brave and large prospect to it, in it, and from it," (Prebendary Fuller's "Worthies,"),—and ruins, some vaults, and details. By rail up the Dove valley to Ashbourne. At Rocester, an active four are detached for Croxden (*Crux dene*= *Valle Crucis*) Abbey,—Cistercian, reported as red sandstone, with great lancets, and a road where stood its crossing and choir. Grand south end of south transept; part of cloister and Chapter-house; patched awfully with cement just now. Remains of domestic buildings,—a ruin of a ruin. One mile from Croxden the quarries at Hollington,—the white and the reddish brown. No tram. The hills add 3d. per cubic foot for four miles. (Shrewsbury) Alton to the west, among dark green woods. "Romantic Ashbourne." Jacobean Grammar School—broad wall surfaces; six gables and a straight front. Old almshouses. Butcher's-row, a rising street, with a gable or two,—characteristic—not merely respectable and dull. "The Green Man and Black's Head Royal Hotel;" forester less glorious than shining-face Sambo,—brilliant as patent boots, right well satisfied with the loaded tables within.

Friday, August 22nd, 5 a.m.—Sections moving for Dove Dale and Ham. One enthusiast found breakfast at Alstonfield, right through the dale: good Jacobean woodwork in the church there; and sunshine all the way back to Thorp Cloud. General satisfaction, and remembrance of Izaak Walton (Hotel) and the *genius loci* thereafter. One needs not absolutely be a brother of the angle to indulge in pleasant self-exaltations. Indeed to whom, if not architects with good memories, did Dove-loving C. Cotton address his italicised exhortation to,—

> "Think themselves, in such an hour,
> Happier than those, though not so high,
> Who, like *leviathans*, devour,
> Of meaner men the smaller fry?"

(1) Ashbourne Church: a brass, 8th May, 1241, date of consecration; the whole church laid out 1220–1241; two triple lancets in east wall of north transept chapel. -the gems. Complete change of plan. -nave, 1330, an elegant arcade; numerous windows of this date. Arcade between the north transept and its aisle; the original work taken down, new Rectilinear detached pier put, and the old Lancet arches replaced,—not very carefully, the curves not true (dog-legged). Carlisle Cathedral choir affords a somewhat similar instance,—Curvilinear piers built and old Lancet arches put in over them on the south side. Note the jointing of arches in all good Mediæval work: each order treated as a separate arch, regardless of its neighbours, barring approach to an average size for stones. Emphasis of the constructional idea and an easy naturalness (*négligé*),—also scale, given. In piers, vertical joints valuable. Gothic essentially an architecture of small stones. Given painted walls, the Mediæval architects scraped joint-lines occasionally, or otherwise marked them. Should, then, plain plaster be jointed? Left a plain surface,—uninteresting, and at times repulsive Formally jointed as ashlar a sham and not pleasant; no varied colour or texture. Is a surface-decoration wanted, formal enough to do what jointing does so well (divide the surface, give scale, keep a sobriety among architectural lines), -perhaps do something beyond? Sgraffito? Or scraped, or stamped, right-lined (mainly) ornaments? R. Banks's Penelope Boothby. Is it art? Or a sorrow in marble? (2.) Mayfield. Transitional arcade, with the early clumsy foliage,—and semi-arches. In parish churches, with small intercolumniations, semis thus used, after their being given up for arches of construction in large buildings, and used only in arches of decoration (arcades, window sub-arches, &c.). In glazing such a church as this,—(1) best light from above—from clear-story: put glass of light tone there; (2) a stronger tone in the great windows of the transepts,—untoned they frequently confuse light and shadow; (3) for aisle windows, also darker glass; (4) the west window. Select this, first of all, for glass with any brilliancy. Much Jacobean woodwork. Once more, a scramble into, and for the lighter-limbed aloft upon, vehicles, and a look towards the sometime cottage home of Tom Moore (Lallah Rookh time); down the Dove Valley to Ellaston, reputed the natural setting of the story of "Adam Bede," the local learned tell of the personages and of their doings, that needed only genius to make the simple annals pathetic and pleasurable to all the world. A mile or two to the north-west, at Wootton, Jean Jacques during the autumn and winter of 1766, wrote the first six books of his so uncomfortable "Confessions." (3). Norbury. Stained glass. In four three-light windows each side of chancel (eight in all),—qy. about 1320. The windows unusual of intersecting tracery uncusped, and bosses at the crossing on the centre line. Is Checkley, or Chaplain's chancel, six miles off, the only other example? The glass of light tone, now a faint brown, slightly drawn over in patterns:—lozenges and shields in brilliant colour. The five-light east window, similar design,—the glass later (fifteenth century). Such glass at Altenburg. Mr. Sharpe remarks, alluding to his say "On Colour in Churches." Is there such another wealth in England as at Norbury? Checkley has some. Why not thus temper the light and enrich the effect of interiors, and be sober the while? Why is the beggar at the Beautiful Gate clad in robes of Tyrian purple, apostles in salmon-coloured silks, &c.? Mr. Sharpe think garish taste in colour a national defect, perhaps in slow process of amendment. Fine tombs in chancel and south aisle. Picturesque gabled stone houses hereabouts; mullions and strings, well marked eaves, and broad wall-spaces. Uttoxeter and Stafford Railway, past Chartley Park, the home of the wild cattle, and past the grey castle. (4). St. Mary's, Stafford. Transitional (about 1170).—Nave and aisles and crossing piers. Many new caps. If old ones destroyed hopelessly, should there be substituted caps in block or new designs? or imitations of old caps of the same date? Here the last. South transept: Rectilinear windows, &c., pulled down some years ago, and new Lancet ones put; Lancet windows also in south aisle of chancel. Did such portions exist in the Lance time? *The* problem of restoration would be solved if it was decided that a conjectural restoration is in principle permissible, and only amenable to criticism as to its own merits or the reverse. Octagon central tower not tall; the whole effect (forgetting the high yard-railings) sufficiently stately. Old timber houses, just afflicted with strong paint. (5.) St. Chad's Church,—a Norman nave, till now bricked solidly up between the piers—soon to be a new-looking aisled church, with west end fit to see from the street. Houses to be cleared away. Tower of red sandstone, three parts of it worn like the ribbed sea sand. Tixall white (quarried six miles off) being used in the present works. A quick run down to the Trent Valley, skimming past Cannock Chase,—by Colwich and Rugeley—dotted with camps;—white tents on hillsides half in haze of grey smoke. Lichfield. the three graceful sisters, known in the district as the "Ladies of the Valley," dark against the dying light. An organ recital, and the lighted cathedral,—gradually let back into gloom. A single light,—black choir, aisles in shadow, and upward shades. A painter might fill a canvas with the scene, but -as to making it strike.

Saturday, August 23.—The water-colour drawings, sketches, &c., by the late Rev. J. L. Petit, shown in the hall at Bishop's Palace. Marvellous in number (he sometimes made six or more a day). Breadth of effect well known, but at times a tender delicacy also. Nature and architecture not separated; here buildings are man's furnishing of Nature's palaces. The cathedral carefully described by Mr. Sharpe. Transitional, three bays in choir, and crossing pier, 1180 to 1185, anterior to presbytery of Chichester (1188), which is still Transitional: all fresh and vigorous. Lancet transepts, 1215, &c. The chapter-house and passage later Lancet, 1230–1235: caps of conventional foliage, modelled by master hands. Nave, Geometrical, 1260 to 1270: following the angel choir of Lincoln (1256) in date, hardly *following* in design, proportion, details, and execution. In those times the work, almost always built from east to west,—thus the west towers, 1270–1280. Then the eastward works, the lady chapel, started by Langton (bishop 1296–1321), and a gradual movement westwards, till once again the central tower reached,—thus surrounded with some of best work of full five generations. "St. Chad's Gospel," shown by the dean,—gospels of the seventh century, attributed to the great patron saint of Lichfield (bishop 669–672), on slender grounds of conjecture. Writing about ¼ in. high, black and full of character, elaborate twisted devices; and

figures,—very much conventionalised. "The Swan;" and the final dinner, and a little speech-making. Strong shouts in honour of the leader. "A cup of kindness yet." Finis.

SUMMARY.

1100—1145. [Norman.]

1110. *Southwell.*—Nave and transepts (the commencement of the later Norman work; the earlier Norman works very few).
1120. *Tutbury.*—Nave.

1145—1190. [Transitional.]

(From 1145 to 1165, very few buildings remaining.)

1165. *Stafford.*—The crossing (if copied from destroyed work).
Mayfield.—Nave (ground story).
1170. *Newark.*—Crossing piers.
Grantham.—Nave, ground story, &c.
1175. *Beckingham.*—Nave, &c.; on doorway the zigzag and dog-tooth together.
1180-85. *Lichfield.* The crossing and three bays of choir.
(Compasses much used in profiling mouldings.)

1190—1245. Early English [Lancet].

Lichfield.—South transept.
Lichfield.—North transept.
1210. *Newark.*—Lower part of tower.
1215. *Southwell.*—Choir, east transepts, and Lady Chapel.
1220-41. *Ashbourne.*—Chancel, transepts.
1235. *Lichfield.*—Chapter-house and passage, &c.
1240. *Upton.*—Nave.
(Mouldings probably drawn with free-hand.)

1245—1315.—Early Decorated [Geometrical].

1250. *Grantham.*—Nave and aisles.
Stafford.—St. Mary's: south of chancel.
1260-70. *Lichfield.*—Nave.
1270-80. *Lichfield.*—West towers.
1300. *Lichfield.*—Lady Chapel and west spires.
1315. *Stafford.*—St. Mary's: north of chancel, part of north aisle of nave.

1315—1360. Late Decorated [Curvilinear].

(Curves struck with compasses again used.)
1320. *Norbury.*—Chancel.
Hawton. Chancel.
Newark.—South aisle of nave; much of other substructures.
1325. *Newark.*—Upper part of tower and spire.
Lichfield.—Choir.
1330. *Grantham.*—South aisle of chancel.
Ashbourne.—Nave.
1335. *Claypole.*—Nave.
1340. *Brant Broughton.*—The frame of the church.

1360—1550. Perpendicular [Rectilinear].

Brant Broughton.—Tower and spire, aisles and porches.
1400. *Grantham.*—Completion.
Later. *Newark.*—Nave and chancel.
Nottingham.—St. Mary.

PROPOSED RESTORATION OF KIRKSTALL ABBEY, YORKSHIRE.

At the closing meeting of the annual excursion of the Architectural Association in Lichfield, on Saturday, August 23, already referred to, Mr. Sharpe said,—You would hardly believe it, but there is really a plan on foot for the conversion of the ruins of Kirkstall Abbey into a modern Anglican church; and no less a person than Sir Gilbert Scott has undertaken to carry this almost incredible proposition into execution.

In the first place, as regards the employment of the term which constitutes the chief plea under which this proposition is brought forward, can a more unreal and untruthful application of this word "Restoration" be imagined? For what was the primitive condition of this building? Well; it was the conventual church of a Cistercian monastery; and most of you have, I dare say, learned, from what I have already published on the subject, what such a church was like, with its simple outlines; its massive proportions; its peculiar divisions to suit its twofold occupation; its utterly plain appearance, devoid of all colour and ornamentation; its puritanic, even poverty-stricken simplicity, and its unmusical ritual. We all know, on the other hand, what sort of aspect the modern church, that we shall have at the hands of Sir Gilbert Scott, will present,—with its alabaster reredos, its gilt choir-screens, its painted vaultings, its gaudy stained-glass windows, and its brilliant encaustic floor, after the 40,000*l.* or 50,000*l.* are expended that he proposes to lay out upon it.

Can a more striking contrast, or a more untruthful "Restoration" be conceived? Nor is there, in this case, the pretext of necessity, or even of a useful object; for there is no lack of church accommodation in this district, nor is this, indeed, the pretence for this large expenditure of money. "Restoration" is apparently the sole object the proposers have in view: they have, in fact, apparently, to cast about for the use to which they will turn the building when completed. It is true that Sir Gilbert Scott, in his report, suggests the establishment of a college for the education of clergymen, and the further utilisation of the remaining conventual ruins in this way. But a more unsuitable, or unhealthy site, in the smoky suburbs of a large manufacturing town, could scarcely be found. Nor would one of these additional buildings, admirably planned as they were for the requirements, the duties, and the occupations of a body of cloistered Cistercian monks, be at all suitable for the modern requirements of a college of English youths.

Who then are to be the gainers of this so-called restoration, if at all truthfully carried out? It is difficult to say. As to who would be the losers, it is easy to answer. To the archæologist, the artist, and the art-student, the loss would be irreparable. To them the glories of Kirkstall Abbey, as an object of picturesque interest, and as an authentic record of a peculiar phase of the art history of the middle ages, will be a thing of the past; for I need scarcely repeat, that whatever the tool of the modern restorer passes over, loses at once its authentic character, and its historic value; and that Kirkstall Abbey will, from the day that its "restoration" is complete, and that it is delivered over, spick and span, to the bishop of the diocese, for consecration, be to all intents and purposes a modern church. That on that day there will be none so painfully conscious of the grievous transformation that their ill-advised prodigality has produced in what is now a grand national monument, than those who have brought forward this proposition, I am firmly persuaded; and I take this opportunity,—the first public one I have had,—of protesting, in the name of the thousands by whom Kirkstall Abbey has already been visited, and of the thousands to whom hereafter its picturesque ruins would have been a source of pure enjoyment and interesting instruction, against this preposterous conversion of their remains into a form which they never possessed, under the pretence of their application to a use for which they are ill-suited, and to satisfy which a building infinitely more convenient could be constructed at half the cost.

To my mind, there is only one use to which these ruins could, with any degree of consistency, be applied, and only one in which the term "Restoration" could be really said to be justified.

An incident which occurred to me once in the south of France will enable me to realise to you the nature of this restoration, if thus carried into effect. Most of you, I dare say, know that I have made the buildings of the Cistercian order of monks my particular study. I have followed these monks and their buildings all over Europe; and there are, I believe, few, if any, of their principal abbeys in France, Germany, Italy, and England, that I have not visited. The whole of them are in a more or less ruined condition, and untenanted. I never travel without a complete list at hand of the whole of the 1,500 abbeys that were founded during the first two centuries of the existence of the order, and a description of the particular locality of each abbey. Finding myself at Narbonne, three years ago, I consulted my list to find whether a Cistercian abbey had ever existed in that diocese. I found one under the designation of Fons Frigida, and, on reference to my Ordnance Map, I found, after some search, a village named Fonte-Froide, about six miles from Narbonne; and hearing, on inquiry, that there existed some ruins there, I hired a vehicle, and went on a voyage of discovery to Fonte-Froide. Following for some distance the high road to Lesiguan, my driver at last turned up a small valley to the south, in which I soon recognised all the special features of a genuine Cistercian valley, with its cultivated bottom, its wooded sides, and its pretty wandering stream, just like that of Fountains or Furness; and after following it a mile or two, we arrived at a group of half-ruined buildings, planted, as usual, in the narrowest part of the valley. Knocking at the solid broad door of the old gateway, it was promptly opened, and I was struck dumb at the sight which presented itself: there before me stood the figure of a veritable Cistercian monk, that I knew so well by the drawing and description, but had never seen and never expected to see in living form as long as I lived. There he stood with his long, loose white woollen robe, a cord round his waist, his cowl, his rosary, his bare head, and his shaven crown, looking more like an object from the other world, and a vision of the past, than a living being of the present day. On recovering my senses, I inquired whether I could see the building, the silent figure motioned me to enter, and I soon found myself in the midst of an extremely interesting group of conventional buildings, of the twelfth century, which had been, it appeared, disestablished, like the rest,—abandoned, ruined, purchased, within a recent period by a neighbouring landowner, and restored to their primitive use by the establishment in them of a brotherhood of thirty Cistercian monks, who had begun to restore the church, and repair the monastery buildings, so far as to make them habitable; realizing thus, in an almost identical manner, the primitive process, by which the earliest abbeys of the order had been founded and peopled. They were miserably poor, and completely isolated, and their very existence, even, was almost unknown to those living in their neighbourhood; they subsisted on the produce of their gardens and the few acres of land attached to the convent, and carried out the original regulations of the order, as regarded diet, isolation, and silence, to the fullest extent, the "Hotelier," or receiver of guests, and the principal, being the only persons allowed the privilege of speech, except during the half-hour permitted to all for conversation on Sundays. I spent three days of a very singular and interesting existence in this retired convent, measuring and drawing its buildings, listening to the chanting of the monks, watching their noiseless processions, and the silent wanderings along the cloisters of these voiceless, ghost-like, white figures, and realising completely all that I had imagined of Cistercian life in its earliest and truest aspect; the rigour, the isolation, and severity of which, especially during winter, and for the latter part of a man's life, must be appalling.

Of the usefulness or profitableness of such a state of existence, as that of these poor monks, this is not the time or place to inquire; but of the reality and truthfulness of such a restoration as that which I have just described, if applied to the conventual remains of Kirkstall Abbey, there could be no doubt: and if these Yorkshire gentlemen are really animated with a true desire to restore these buildings to what they originally were, this is the only direction that their efforts can take. I would, in that case, counsel them, when they have correctly restored the conventual church, with its attendant buildings, to its original condition in the twelfth century, omitting all those disfiguring insertions of the fifteenth century, of which Sir Gilbert Scott advises the perpetuation, to send for a colony of real Cistercian monks from Fonte-Froide, and so to carry out in this nineteenth century the intentions of Henry de Lacy and its original founders in the twelfth century. This, at all events, would be a genuine and honest realisation of the pretensions on which this so-called restoration is based, and the only possible justification for the annihilation of all the interest and romance which at present surround these venerable remains, and attract annually so many thousand visitors and admirers to their neighbourhood.

The Duke of Brunswick.—The enormous fortune left by the late Duke of Brunswick to the city of Geneva (some say eight millions sterling), will probably give work to architects, sculptors, and builders. A new theatre and university are talked of, and his monument is to be elaborate and costly. It seems very terrible that the court of Queen Victoria of England should be ordered to go into mourning for such a contemptible wretch as this Duke of Brunswick was.

AWARDS AT THE VIENNA EXHIBITION.

We have been favoured with a long list of awards to exhibitors in the British section of the Vienna Exhibition, extracted from the *London Gazette* of August 26th. As, however, it has been already extensively reprinted, we do not think it necessary to find space for it. Of the six or eight architects who exhibited, two have received medals,—Mr. Street and Mr. Waterhouse. Medals have been given to nineteen of our painters in oil, to nine water-colour painters, eleven engravers, and five sculptors. Mr. Owen Jones receives the diploma of honour.

We may mention that Messrs. Doulton & Co., by their two firms, have obtained five medals for general stone-ware and architectural materials and appliances

Fifteen hundred pounds, in sums of from 1*l.* to 20*l.*, have been subscribed by the British exhibitors as a testimonial to Mr. Philip Cunliffe Owen, secretary of the British Commission, in recognition of his exertions and attention. This well-deserved testimonial, consisting of candelabra and vases by Elkington, and jewelry for Mrs. Owen, the remainder in a purse, will be presented in London on October the 1st.

WHO IS TO BLAME?

It would appear that there are no just grounds of appeal against the judgment of a contemporary, that for downright ruffianism no nation under the sun can begin to compete with our own. The late charge against one of our unique fraternity for wanton destruction of iron railings upon the Victoria Embankment, is not perhaps a very bad case in point, but it is important as indicating the inherent spirit of Vandalism which still prevails amongst a large section of our population in spite of all our educational efforts indoors and out to reclaim and civilise it.

Throughout France and Germany the entire population—men, women, and children of all classes—has the almost unrestricted run of the public squares and imperial and royal palace grounds; and though they be laid out with all the lavish art of modern horticulture, unrestricted by any considerations of labour or expense, there are required no iron barriers nor wordy cautions to preserve them. There the individual respects that which is the right of the community; and the good sense of the people is barrier enough against encroachments which would be liable to injure property manifestly intended for their use and enjoyment. To the foreigner the very presence of iron railings within our public pleasure-grounds must be a matter of surprise and an eyesore, as the absence of them in Continental parks is a subject of delight to us who are apt to regard these things from an æsthetic point of view. It would no doubt be argued by our irreclaimables that the easy preservation of all this property is due, not to any real respect the populace have for national institutions, nor to any superior sense of the beautiful in nature and art, but to a slavish fear of transgressing the "arbitrary laws of despotic governments," and by a parity of reasoning they would justify their own vandalic tendencies by the assertion that free-born "Britons never never will be slaves." The falseness of such an assumption is, however, shown in the fact that the same considerations by which our Continental neighbours are actuated towards public property, rules them in all their private and social relations, until the distinction of class is almost lost in the universal country and good feeling which prevails in all large assemblies or popular places of resort.

Nor does it appear that we suffer more from the premeditated ruffianism of our adult population than from the incorrigible ignorance, insolence, and daring of our youth. Probably in no other city of the civilised world would it be possible to witness a similar exhibition to that which is on public view nightly at Trafalgar-square. Whatever may be our opinions of the National monuments which grace our thoroughfares, from an art point of view, we have a right to expect that so long as they exist they should be safe from the wanton assaults of the unreasoning rabble into whose hands the Nelson Monument, at least, would seem to have been ignominiously surrendered. We say ignominiously, because there was a time when our police made some show of resistance to the *gamin* horde that laid siege to it, and it is difficult to believe that the immunity with which it is now held and utilised as a compendious centre of athletic sports could exist for any length of time without the knowledge and tacit assent of the authorities at Scotland-yard. One thing is certain, that it is nightly the resort of scores of youths, who, with all the insolence of victorious ruffianism, disport themselves over every accessible point of the base, climb upon or cling to the bas-relievos, and beard the British lions even under the very nose of Nelson himself, and that all pretence at resistance by the police has been withdrawn. Shall we charge this to the account of our much-enduring late First Commissioner of Public Works? Is it possible that he has been induced to take a physiological and philosophical view of the matter, and agreed to concede this monument to the aspiring gymnasts, believing that thereby the nation will be repaid for its outlay in the bone and sinew of the hardy athletes thence developed? We are bound to say that the suggestion, although our own, is not a bad one, and it has the supreme merit of practical economy. It does, however, like most expedients, bear within itself the seed of future difficulties, and the question may reasonably be asked how long it will be before the Albert Memorial is appropriated to a similar purpose? By its superior size alone it would seem admirably suited to the growing requirements of the case, and there really does not appear any sufficient reason for drawing the line between them. Perhaps, under the circumstances, and seeing this danger ahead, it would be well to reagitate the question of public gymnasiums. The present writer has a youthful recollection of more than once walking many miles for the purpose of practising in the arena then open at Primrose-hill, but failing by reason of the numbers always there in advance of him to get more than his walk for his pains. It does not appear that healthy out-door physical exercise is less necessary for our growing population now than then, and it is very painfully apparent that it is as eagerly sought for. The question then remains, shall we perpetuate the scandal which attaches to such scenes as those nightly witnessed at Trafalgar-square; crush out with the strong arm of the law that normal tendency of youth to muscular sports; or, by affording it legitimate outlets, give it that aid and direction which it requires only to make it an important element in the future prosperity of the nation?

C. Henry Whitaker.

NEW BOARD SCHOOLS IN SOUTH LONDON.

Amongst other portions of the metropolis in which new schools in connexion with the School Board are being erected, great activity at present prevails in South London. A large school in the New Kent-road is rapidly approaching completion, and the erection of three others is about to be commenced. One of these is in Johanna-street, Lambeth, and the building will accommodate 800 children. The cost of the building is estimated at 6,740*l.*, Messrs. Mansbridge, Brothers, being the contractors. The same firm have been engaged to erect another school in Marlborough-street, New-cut, for 1,021 children, the estimated cost being 6,606*l.* A third school is about to be built in Laxon-street, Long-lane, Bermondsey, to accommodate 784 children, the estimated cost being 5,770*l.* The contractors are Messrs. Cooke & Green, of Marlborough-street, Blackfriars-road.

ART CONGRESS.

From the 1st to the 3rd of next month a novel congress will be held in Vienna,—a Congress of Artistic Sciences. On several occasions fine-art writers and *savants* have manifested the intention of meeting together at periodical epochs, like most other scientific corps, in order to discuss professional interests, and form professional acquaintances. The exhibition consecrated to Holbein, and held at Dresden in 1871, was a partial and provisional realisation of this project. There it was decided that the original plan should be fully executed, and a committee of Viennese *savants*,—MM. Eitelberger, Von Edelberg, Lippmann, Lukow, &c.,—was appointed. This committee has issued invitations for *séances* to be held in the Austrian Museum of Industrial Art. The following programme defines the object of the deliberations:—1stly. On the manner of classing, cataloguing, and administrating museums; 2ndly. On the preservation of works of art,—pictures, public monuments, objects of religious art, miniatures, drawings, &c.; thirdly, on the teaching of art history in establishments of superior education and in middle-class schools; 4thly. On the formation of a *repertoire* of fine arts, and the necessity of forming an inventory of their history; 5thly On the reproduction of works of art, and on their propagation in the interest of the museum and of general artistic education.

CHURCHES OVER RAILWAYS.

Sir,—Having observed some correspondence on this subject, and in which my name has appeared, will you permit me, as one who is necessarily well acquainted with the matter, and who is also anxious not to appropriate undeserved laurels, to say that your correspondents, "Z." and "H. A. R.," are perfectly right, and that "K." has committed so far an error in describing St. Paul's Church, St. Leonard's, as being *immediately* over the Hastings Tunnel.

The outer wall of the south porch is as near as possible over the side of the tunnel, and this places the church north of the tunnel, as your correspondents state.

As regards "K.'s" appreciation of the difficulties overcome, and referring to your other correspondents' statements, I may mention that the underlying strata were of an extremely treacherous character (except, fortunately, where the tower stands), a very large sum having been expended on the foundations in consequence.

The distance from the foundations to the tunnel varies considerably, as does the nature of the subsoil; and as at the west end the floor level of the church is considerably above the level of the ground, and the foundations correspondingly below. The distance from the "floor level," as alluded to by your correspondent "Z.," affords no criterion as to the relative positions of the railway and the church. The south-west corner of the latter is, I should say, about 25 ft. from the haunch of the tunnel. I may add that, from the nature of the strata (clays and sands), it is quite a question if the church is not in a more critical position, as regards the stability of the foundations and possibility of vibration, than if it had been immediately over the tunnel.

I have never experienced any vibration resulting from the traffic through the latter, nor have I ever heard of any such existing; if it be so, however, it is gratifying to me to know that no settlements have resulted. The Architect.

THE DRAINAGE AND HEALTH OF MARGATE.

Reverting to this subject, and in continuation of the article which appeared in our columns on the 9th instant (p. 631), it is interesting to note the result of some investigations made by the members of the sanitary committee of the borough on the death-rate and morphology of the district. Mr. Councillor Mottley, who has for many years given great attention to statistics of the health of the borough of Margate, the council of which caused his portrait to be painted and hung in the council-chamber of the Town hall, in recognition of his services in getting up very useful little work on "The Vital Statistics of the Borough," the compilation of which occupied some years, has again come to the assistance of the Local Government Authority by the publication of some further statistics on the subject in question, and in classifying the cases of disease which have had a fatal termination.

Of course, Margate, visited as it is by thousands and tens of thousands of our London citizens in the summer of every succeeding year, has a mortality in large excess of its own many a poor soul hastens to its waters, and to inhale the fresh sea-breezes which bring renewed life and vigour to others, when, alas! all hope of life is waning or gone; and in this manner the mortality of Margate, more, indeed, than that of many other sea-side resorts, is augmented to a considerable degree. The following table will speak for itself:—

Year.	Total Population.	Deaths from all Causes.	
		Visitors.	Inhabitants.
1870	13,600	98	217
1871	14,000	82	230
1872	14,555	93	208

And this shows a total of 928 deaths from all causes in a population of, say, 42,155, or 22 to

1,000; but of the inhabitants only 655, which is an average of 15·7 per 1,000 for the three years of 1870, 1871, and 1872; and as the normal average for England during the three years in question was 17 deaths per 1,000 inhabitants, it must be admitted that the resident population of Margate are exceptionally healthy.

These facts, which we believe are unquestionable, must be of considerable interest, not only to the 14,000 residents of the district, but to the hosts of summer visitors; for with a resident normal population of, say, 14,500 only, we find the returns of the South-Eastern Railway Company show no less than 898,093 passengers to have arrived and departed by that line alone within the year 1872, and it is to be remembered that the London, Chatham, and Dover Railway conveys at least an equal number to the town, while the number of visitors landing and embarking from the pier and jetty by the steamboats (of which there are sometimes five in the course of the day), from London only, have reached the high figure of 3,000 and upwards in a single day of July this year. It has been estimated that a census taken, say, about the 10th of August, in any average year, would show the population of Margate at the height of her season to be 44,000 or 45,000, or more than three times the winter average. Few watering-places on the entire English coast can at all compare with Margate in her great popularity as a resort both for health and amusement. To her especially the *vox populi* is and has been the *vox Dei*, and she has well justified the legend on her corporation mace, "*Porta Maris, portus salutis.*

But there is among the members of the town council too much disposition to bask in the sunshine of a good name, and make no preparation for the evil day to come. Evil days *will* come, and fair reputations will be at least tarnished, if not wholly lost, so soon as the report of Dr. Gwynne Harries, the Government Medical Inspector, who has lately made an official inspection of the town, is published. We understand that Dr. Harries has given the Sanitary Committee of the borough a semi-official intimation of what the nature and purport of his report will be, and we can assure the council that it will not be a flattering one. The entire medical staff of the borough have concurred in a representation to Mr. Simon, the Chief of the Medical Staff of the Local Government Act Office in Whitehall, pointing out that the cesspool system of drainage has been worked here to its utmost verge of safety, and that the tone of public health in the district is lowered by its continuance, and yet we observe that at an election of councillors, which has taken place since our last article upon this subject, one of the two elected candidates swims into office as the representative of the Pier Ward, saying,—"I shall oppose the introduction of tubular drainage, believing that our existing sanitary arrangements" (*i.e.*, the overdone cesspool system) "are capable of being made equal to our necessities." Of the "*existing sanitary arrangements*" of the Pier Ward which has elected this gentleman as its representative, we may have something to say on a future occasion. Meantime, we are glad to know that Mr. Councillor Fagg will meet in the council with some other members who do not coincide with his opinion. The corporation, we believe, numbers sixteen members, among whom there is an M.D., an Architect, a F.S.A., and a member of the Society of Engineers, and we certainly look to them to give a decided, and we trust a successful, opposition to a perpetuation of the abominable and unwholesome cesspool system that has now become a public reproach to the authorities of the town.*

* We find the following in the *Thanet* (Margate) *Guardian* of the 23rd inst.:—"On Monday afternoon, while a labourer, named Setterfield, was engaged in sinking a new cesspool, close by an old one, on the premises of Mr. Scoates, Cavendish-street, the ground separating the two cesspools gave way, when the noxious gases from the old cesspool rushed in upon Setterfield, rendering him unconscious. The son of Mr. Scoates promptly went down to his assistance, but was obliged to retreat; he, however made another attempt, at considerable risk, and succeeded in bringing the man to the surface, when he was found perfectly unconscious. Mr. Fisher, chemist, was sent for, and promptly attended, but finding his attempts unavailing, Mr. Austin, surgeon, was summoned, who, after very great exertions to restore animation, finding all attempts unavailing, suggested that a galvanic battery should be brought into requisition. Mr. Jarman was sent for, and applied the battery with great success, thereby restoring partial animation. More than an hour elapsed before animation was restored, and the man appeared to be fast sinking, his teeth being clenched. Setterfield was conveyed to his home at St. Lawrence, and we are glad to hear that he is progressing towards recovery."

THE BRANCH INSANE ASYLUM, NAPA, CALIFORNIA.

An asylum for 500 insane patients being required for Napa, designs were invited in competition, and from those submitted the *projet* we now illustrate was selected, and will be carried out. The architects are Messrs. Wright & Sanders. The architects say they have worked on the principles laid down for the construction of hospitals, at the convention of medical superintendents of American institutions for the insane, in 1871.

The new asylum is intended to face the west, and consists of a centre building with wings extending on each side, and exactly alike—the divisions for the sexes being equal; twelve wards on each side, exclusive of the infirmaries, and one ward on the fourth floor of the centre building, and has accommodations for 500 patients. The style of architecture is Domestic Gothic. The building will accommodate:—

Females.

First floor, four wards	74	
Second floor, four wards	74	
Third floor, three wards	60	
Fourth floor, one ward	20	
	—	228

Males.

First floor, four wards	74	
Second floor, four wards	74	
Third floor, three wards	60	
Fourth floor, one ward	20	
Fourth floor, centre building, one ward	44	
	—	272
		500

The outside walls of the basement story were designed to be built of stone from the quarries adjoining the asylum property; but it has been determined to use pressed brick facings and stone dressings. The walls will be 16 in. thick, laid hollow, with an air space of 4 in.; the interior walls on the corridors will be 16 in., to leave room for the ventilating and heating flues; the division walls between the single rooms will be 9 in. thick. The roof will be framed in wood and prepared for slate or medallion metal. The plastering will be done directly upon the brick walls, and the floors will be deafened with spent ashes and mortar, with view of rendering the building as nearly fireproof as possible, without going to the expense of iron joists and brick arches. The circular towers at the intersection of the wards are to be built upon a system of fireproof construction with stone staircases and well-holes built up solid. The floors will be on the Dennett arch principle, and paved with artificial stone. The doorways connecting with the wards on the different stories, are all to have stone sills with iron doors, in addition to the ordinary wooden ones. The upper stories of the towers are intended for water-tanks.

The *basement*, about 5 ft. above the ground, contains the hot-water boilers for supplying the wards, the tramway, which extends through the basement of every ward—and also to the basement of the laundry,—dumb-waiters from the kitchen and laundry, with the other dumb-waiters for supplying the dining-rooms on the different floors, the clothes and dust-shafts, also the hot-air chambers for heating the building, and a number of storerooms under the kitchen wing.

On the *ground floor*, the main centre building is divided by the centre hall into two equal parts; that to the left contains the apothecary's shop, superintendent and secretary's offices, with private staircase communicating with the superintendent's apartments above, and in the rear the steward's office and men's reception-room; while that to the right contains the public parlour, library, and officers' dining-room, and immediately behind these the matron's room and ladies' reception-room.

The *second floor* is reached by the main centre staircase, and is appropriated exclusively to the use of the medical superintendent's family. It contains a parlour, sitting-room, library, dining-room, and three bedrooms, water-closet, bath-room, dumb waiter, and three clothes-closets, and in the rear four large spare rooms, and also a private entrance and staircase from the ground floor.

Each ward has connected with it a day-room, a corridor, single lodging-rooms for patients, an associated dormitory communicating with a chamber for two attendants, a clothes-room, a bath-room, a water-closet, a lavatory, soiled-clothes shaft, closet for brushes and buckets, a drying-closet, a dust-fine and two fire-proof staircases to each, so that the patients will be able to reach the enclosed yards in the rear, or the pleasure-grounds in front, without communicating with the other wards. Every room in the building has a flue communicating with the fresh-air duct for warm or cold air, with ventilating-flues terminating in the various ventilators in the roof of the building. The water-closet, lavatory, and bath-room open from a small passage, and not from the main corridor; and the bath-room and the lavatory have a communicating door, in order that the latter may serve on bathing-days as dressing-room to the former.

The wards for excited patients are to have on one side of the corridor a conservatory for flowering plants, birds, &c., and a water fountain in the centre of each.

Laundry, bakery, and engine-house are placed in a detached structure 100 ft. to the rear of the hospital buildings, and containing on the first-floor the engine-room, workshop, bakery, bread-room, store-room, foul linen-room, mending-room, laundry, with staircase to the drying and ironing room on the second-floor.

In detached buildings in the rear of the last wings, but connected by means of covered corridors, infirmaries are provided for each sex.

It is proposed to light the building with gas, to be manufactured from gasoline, without the use of fire, the works to be placed in a brick building adjoining the dead-house.

Hydrants are to be placed on the landings of each staircase throughout the building, and supplied direct from the main, with hose constantly attached, to be used in case of fire.

The boilers for heating the building are placed in the detached building in the rear of the hospital, and are also used for driving the machinery, cooking, washing, and heating the hot-water boilers in the basement for supplying the baths in the different wards.

It is also proposed to have in the basement story hot-air chambers, built in brick, to receive the steam-chests, which are supplied with steam from the boilers, with direct flues leading from them to the wards above.

With a view to thorough ventilation, it is proposed to place above the collar-ties a horizontal galvanised iron tube, to receive the vitiated air through separate vertical flues from the different wards below, terminating in the towers and ventilation turrets.

Downward currents of air, for the ventilation of the water-closets, urinals, bath-tubs, and sinks, are to be secured through an arrangement of pipes terminating in the fire-boxes of the boilers.

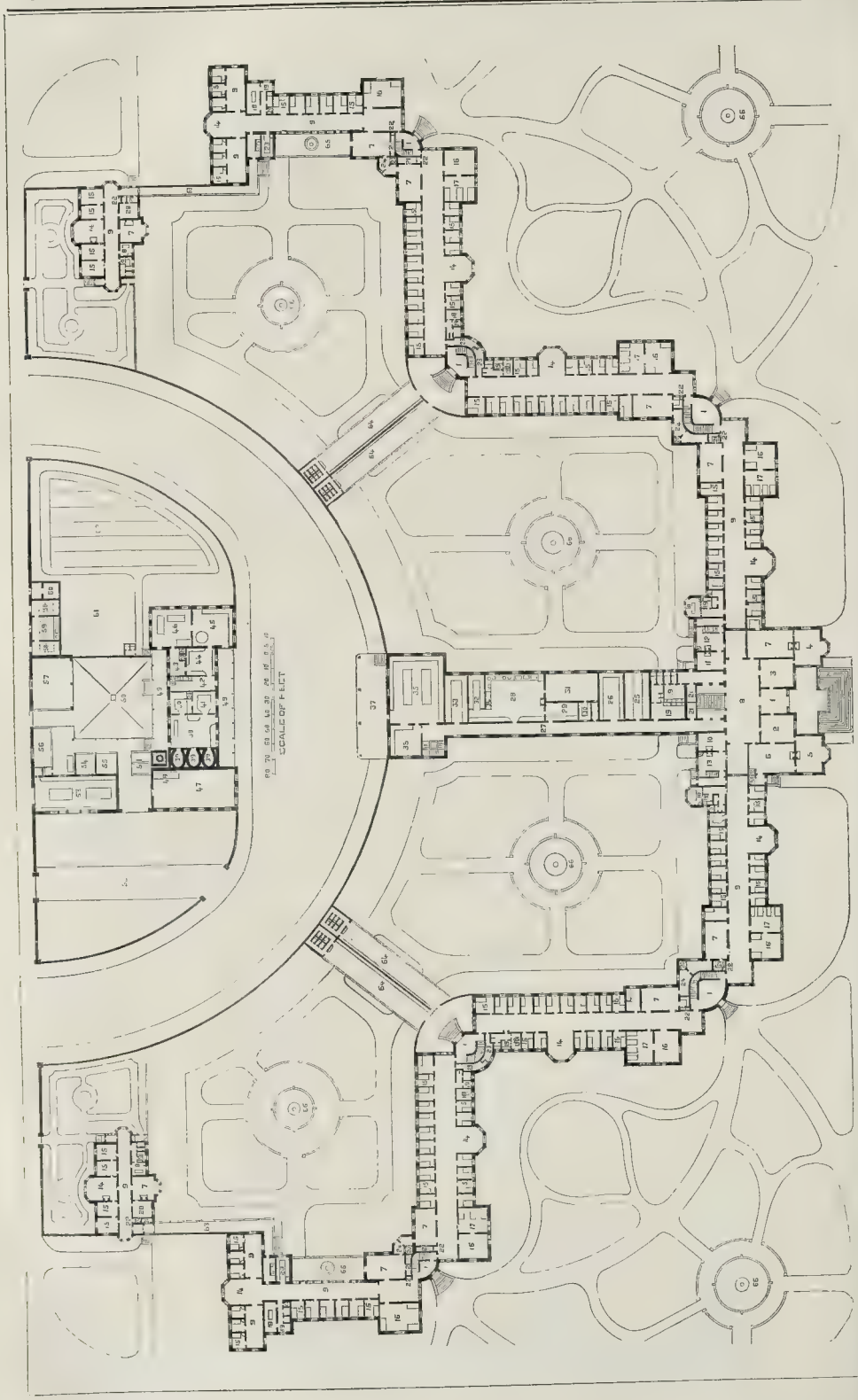
In the rear of the building there are three private yards on each side connected directly with the adjacent wards, for the use of the patients, with large airing sheds, and water-fountain in the centre of each.

The stipulated cost is 600,000 dollars.

REFERENCES.

1. Vestibule.
2. Office.
3. Waiting-room.
4. Library.
5. Apothecaries' office.
6. Superintendent's office.
7. Dining-room.
8. Central hall.
9. Corridor.
10. Steward's room.
11. Matron's room.
12. Female reception-room.
13. Male reception-room.
14. Day-room.
15. Single rooms.
16. Attendants' rooms.
17. Dormitory.
18. Bath.
19. Lavatory.
20. Lift.
21. Closet.
22. Dust-shaft.
23. Linen-closet.
24. Service.
25. Trunk-room.
26. Clothes-room.
27. Kitchen corridor.
28. Kitchen.
29. Kitchen pantry.
30. Dry pantry.
31. Kitchen dining-room.
32. Kitchen stores.
33. Store-room.
34. Range.
35. Servants' stores.
36. Steward's office.
37. Stoop.
38. Bakery.
39. Ovens.
40. Bread-room.
41. Flour-store.
42. Hall.
43. Foul-linen-room.
44. Brewery.
45. Wash-room.
46. Ironing-room.
47. Machine-room.
48. Engines.
49. Verandah.
50. Yard.
51. Boilers.
52. Lumber-yard.
53. Carpenter's shop.
54. Wood-bin.
55. Coal-bin.
56. Wood-store.
57. Coal-store.
58. Dead-house.
59. Dissecting-room.
60. Gas.
61. Bleaching-grounds.
62. Drying-grounds.
63. Covered-way.
64. Shed.
65. Conservatory.
66. Fountain.

New Road at Edmonton.—A new road from Edmonton, Enfield, and Ponder's End, to Chingford and Woodford, was opened last week. Although the road is only about three-quarters of a mile long, the cost of two bridges in its course has brought the expense up to 1,900*l.* The money for the making of the road has been subscribed by gentlemen in the neighbourhood.



THE BRANCH INSANE ASYLUM, NAPA, CALIFORNIA.—*Plan of Ground Floor.*



THE BRANCH INSANE ASYLUM, NAPA, CALIFORNIA.—Messrs. Wright & Sanders, Architects.

VENTILATION OF SEWERS.

Sir,—There is a feature in questions of ventilation which, I venture to suggest, is too generally lost sight of, namely, the interference with the circulation of fluids, caused by such changes of weight as are due to chemical action, apart from heat and cold. The instance of the two men suffocated in the rosin still, given in the *Builder*, p. 630, will do as well as many others, to quote in illustration of this suggestion. I mean to say that your correspondent, when giving as the temperatures 103° on the top of the still, and 81° inside the still, and attributing the deficiency of circulation to the difference, might justifiably have joined an additional cause, namely, the excess of weight of carbonic acid over ordinary air, even when at the same temperature. In this case, two causes contributed towards one result; but it is obvious that many cases may arise where two such causes may tend to conflicting results.

Thus, suppose the question arises,—"Shall we or shall we not use chloride of lime to purify a water-closet?" I answer by asking a question, "Is the place to be purified upstairs, or in a basement floor?" Because, if upstairs, any free chlorine that escapes, being double the weight of air, may descend and be a nuisance in the house, independently of any consideration of temperature; and so also in a less degree, with the muriatic acid caused by a combination of chlorine with the hydrogen of the objectionable effluvia.

But in a basement story these chemical weights must be absolutely beneficial towards the object of freeing the house of them; for their tendency would be to descend into the drains in all weathers, and remain as low down there as there is room for them to stay.

When official sanitary recommendations are issued, there is probably some delicacy about giving preference to one or another disinfectant, because of interference with trade; but there need be no such scruple in laying down a few simple chemical and mechanical principles, with plain illustrations, to guide us on questions of vital interest. G. M.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

This new Association has published a report of the proceedings at their inaugural meeting, mentioned by us at the time, Mr. Angell's inaugural Address, and a list of the members and officers, with the Rules. We shall look with interest to its progress and doings. The members represent 137 towns. The honorary secretary is Mr. C. Jones, C.E., Ealing.

SANITARY AFFAIRS IN ABINGDON.

A report of a committee appointed at a late council meeting at Abingdon, to visit Nottingham, for the purpose of inspecting the systems of sewage in operation in that town was read at a recent meeting of the Abingdon council. In it the committee, after reporting that the wants of the town of Nottingham were partially provided for by the dry-earth closet system, go on to say that the street-sweepings in summer, when sifted, are used advantageously [horse-dung and other *et cæteras* inclusive, we presume] as an absolvent, and carbolate of lime as a disinfectant, when necessary. On removal the tubs, principally in the daytime, are conveyed through the streets, like ordinary merchandise, to a wharf, where barges convey it to agricultural districts. "Your committee," continues the report, "from the information and experience they have obtained, have no hesitation in recommending for this town the adoption of the tub system, and dry earth, or earth-closets, and the discontinuance of privies, cesspools, and water-closets, now in use, and that some suitable locality should be at once selected where the system may be tried previous to its general adoption."

A lengthened discussion ensued, in the course of which it was pointed out that the difficulty was as to how they were to get rid of the sewage other than the excreta of the town. Before they could adopt the tub system there must be no doubt about this matter, and the question how remained, could they, by filtration or other process, purify it so that it might be permitted by the Thames conservators to run into the river?

Ultimately the Mayor proposed that the report should be referred back to the committee for them to continue their inquiries as to the effluent water; that subject disposed of, he thought they could see their way clearly, but until then they had only got a part of the question before them. The proposition was agreed to.

CONCRETE AND STONE FACING.

Sir,—Your correspondent asks whether he could not substitute concrete for brick, for backing up walls and for inner walls of buildings. If he will visit Southport, and go to see the new Winter Gardens in course of progress there, he will find this is being largely done, between 30 and 40 tons of cement being put in weekly, in the form of concrete, and we find it answers the purpose admirably.

Maxwell & Tuke.

THE RECENT DISCOVERIES IN ASSYRIA.

The more portable of the treasures of antiquity discovered for the *Daily Telegraph* proprietors by its Assyrian commissioner, Mr. George Smith, have arrived in England. They are to be deposited in the British Museum, along with 250*l.* worth of purchased relics, in which Mr. Smith invested, but for which the *Telegraph* repays him, to swell its contribution to the national storehouse. There are yet some heavier articles to come, including an important monolith, and the editor briefly sketches some of the additions thus made to our knowledge of the Assyrian empire.

"We believe that the portion of the Deluge Tablet which our erudite commissioner hit upon so fortunately will be found to add the missing page to that very interesting part of the legend where the building of the ark was described. The narrative, which excited so profound an interest last December, broke off after this point; but the new piece goes on to recite how the god Hea enjoined the constructor of the ark to put into it the various animals in their order. In the course of his excavations, Mr. Smith came upon a broken signet-cylinder, made of black and white banded agate, which he is convinced will prove to be the missing portion of an important seal of Sennacherib, the other moiety of which was already in our Museum. Among other valuable items in these boxes will now come to hand the tablet of Assyrian law denouncing those who disobey the statutes and take bribes in the seats of judgment; the syllabary,—a sort of dictionary throwing fresh light upon all cuneiform texts,—and a bilingual inscription in Akkad and Assyrian of much value for archæologists.

There will arrive a very curious fragment proving that the Sabbath was an institution of those ancient monarchies, prescribing the food to be eaten on the seventh day, and forbidding the king's chariot to be brought forth, with other remarkable enactments.

A cylinder of Sargon is among the relics, which illustrates in the most striking manner a passage in the book of Isaiah; and there will be a new text of the reign of Assus-bani-pal, giving the history of the original conquest of Babylon, 2,250 years before the Christian era.

A brick inscription of Shalmaneser, and of his son, Tugultininip, the builder of the great Temple, will be of interest to chronologists; and equally attractive to students of the religious history of mankind will be some tablets from Babylon bearing on rites and ceremonies."

Proof that the observance of every seventh day as a Sabbath, or day of rest, after a week's work, was established before the time of Moses, would indeed be remarkable. The Jews themselves are of Assyrian origin: at least Abram was a Chaldean and a Pagan; and it would be a most notable circumstance if the Jewish Sabbath had its origin in a previous Assyrian dispensation, as the Lord's Day of the Christians had *its* origin in the Jewish Sabbath. The Lord's Day, however, is the first day of the week,—not the seventh, as was the Jewish and Assyrian Sabbath, -and was established by the disciples by way of contrast,—not identity,—with the Jewish seventh, or Sabbath, or day of rest after six days' labour, and which is still held by the Jews, as of old, on Saturday, while "the first day of the week" established, as the Lord's Day, by the early Christians, is Sunday.

An interesting letter, by Mr. George Smith, on a remarkable mythical tablet relating to the story of the goddess Ishtar, the Assyrian Venus, "daughter of Sin," the moon god, has been published in the *Telegraph*. As Diana, the moon goddess, we may observe, transforms Actæon into a stag, who is hunted by his own dogs, so Ishtar, the Assyrian Venus, and daughter of the moon-god, transforms her lovers into animals, who are hunted by their own dogs; and this sort of treatment reminds us of the Assyrian Queen Semiramis, who lived with her lovers by night, and killed them in the morning. If we mistake not, this Assyrian Venus, Ishtar, daughter of Sin, will be found to have some kind of relationship to Eve, who, we think, was called in Hebrew Isha, or Ishi,—our recollection is not very clear which of them, or whether Ishi was not Eve's husband There is a curious legend in Mr. Smith's narrative as to the stripping and re-clothing of Ishtar, which may have some relationship to the nakedness and the clothing of Eve. The husband of Ishtar was "the Son of Life," whom she treated badly, and betrayed and deserted; and we may note that the "old Adam" is the "Living Soul," and that Adam was betrayed by Eve in the apple incident. There are many curious points in this mythical narrative of Ishtar, to which we cannot here more particularly refer.

REBUILDING THE ALEXANDRA PALACE.

We understand that the plans for the reconstruction of Alexandra Palace having been drawn up and agreed upon, the ruins have now been handed over to the builders, and that the rebuilding of the palace will be commenced as soon as the *débris* can be cleared away. It is said that, with the exception of the walls of the centre transept, the building will be entirely reconstructed. The new palace is to be larger than the old building, being both longer and broader. It is to have three transepts, one forming a concert-hall, another a theatre, and the third is, it is stated, to be devoted to bazaar purposes. These will be connected by corridors, in which light goods will be exhibited for sale. In some respects the new building will resemble the Crystal Palace, it having been decided that iron and glass shall be largely used in the construction of the building. It is expected to be completed and ready for opening in June next.

CAUTION TO ARCHITECTS GIVING CREDIT.

In the Bloomsbury County Court, the case of Thomas *v.* Dean afforded an unfortunate instance of architects giving credit to speculative concerns.

The defendant, Mr. Dean, carries on business as an architect and surveyor at 5, Mark-lane, City, and now stated that he had no means of paying the plaintiff and a number of other creditors. He had acted as architect of the Elephant and Castle Theatre, and which he designed, but he had not received any money from Mr. E. T. Smith, for whom he did the work, and he had given it up as a bad debt. His earnings, with the exception of Mr. Smith's job, had not since Christmas exceeded 100*l.* He paid 65*l.* a year for offices in Mark-lane, and lived at Kew in furnished apartments, at a rental of 1*l.* a week. He had six judgment summonses against him in the City Courts, to the extent of 9*l.* a month, and there was a bankruptcy summons out against him for 50*l.* This unfortunate state of things was brought about by his not being paid by Mr. Smith.

The Judge, Mr. G. L. Russell, commiserated the architect, and made a fresh order of 10*s.* per month.

OPENING OF THE ALBERT BRIDGE.

This bridge, which crosses the river at the Cadogan Pier, Chelsea, and connects that part of the metropolis with Battersea, near the west side of the park, was opened to the public on Saturday last. The design was prepared by Messrs. Ordish & Le Feuvre, engineers, and we gave a view of it, with details, so long since as 1865 (pp. 260-261, vol. xxiii.). There was no formal ceremony at the opening. The first toll was paid by the youthful daughter of Mr. Birnie Phillip, sculptor. The bridge is on the suspension principle, somewhat resembling the structure a little farther down the river, nearly opposite the Chelsea Hospital and Barracks; but the new bridge differs with the before-named inasmuch as it is a more rigid example of the suspension principle. The total length of the bridge is 710 ft., with a carriage-way 25 ft. in width, and two footways, 8 ft. in width each. There are four ornamental towers, which carry the main chains of the bridge. They are placed in pairs at the east and west sides of the bridge respectively, some distance from the shore. Each pair is connected by the suspension-chains and an iron archway, at an elevation of 60 ft. above the roadway. A special feature in this portion of the structure is that the towers are placed outside the parapet girders, which leaves the carriage-way and footpaths clear and uninterrupted the entire length of the bridge. Each tower is carried on a pier constructed of cast-

iron cylinders, sunk down to the London clay, and filled in with concrete. The foundations of the piers also consist of cast-iron cylinders, the bottom or cutting ring being 21 ft. in diameter. The towers are also of cast iron, and have a light and ornamental appearance. The carriage-way over the bridge is laid with wood pavement, and the footpaths with large, varied-coloured tiles in diamond form.

This bridge forms an important link in the line of direct communication between the districts of Kensington and Chelsea on the one hand, and of Battersea and Clapham on the other, and one advantage which it confers on the residents in Chelsea and Kensington is that it gives them immediate access to Battersea Park, and renders unnecessary the river journey between the Cadogan-pier at Chelsea and Battersea Park-pier. The opening of the bridge also completes a wide and continuous thoroughfare between Oakley-street, King's-road, Chelsea, and York-road, Battersea, skirting the west side of Battersea Park; and it is by no means improbable that the opening will, ere long, render it necessary to make a good thoroughfare from the top of Oakley-street to the Fulham-road. This could be accomplished by widening Arthur-street and Charles-street, bringing out the new street close to the western side of Onslow-square, by the Hospital for Consumption. This would open out a very direct thoroughfare between Clapham and the South Kensington Museum, the Albert Hall, and Kensington-gardens, and it cannot now be very long before it will be called for.

TYPHOID FEVER AT BRIGHOUSE.

Alarm has been caused by the outbreak of typhoid fever at Brighouse. Dr. Britton visited the district, and found that there were sixty-eight cases, sixty-five of whom had received milk from a certain farm. The sale of this milk has been put a stop to, and, it is said, there are very few fresh cases: in all, only six deaths had occurred. Dr. Britton had visited the farm, and found the cesspools filled up, as well as the drains which ran into the fields. The farmer was supplying his cows with good water; and the doctor had no doubt that in a few days the milk from the farm would be all right.

Other precautions were being used to prevent the spread of the disease; and it was hoped, by a vigorous application of disinfectants, the cleansing of drains, ashpits, &c., that the town would soon become free from the scourge.

THE "TRIBUNE" OFFICES, NEW YORK.

A large building, eight stories in height, and with a lofty turret, marked by piers running down to the ground in the principal façade, is in course of erection at the corner of Spruce-street and Nassau-street. The New York *Daily Graphic*, which gives a view of the intended building, says,—"When completed its height will be greater than that of any other structure in New York, the new Western Union Telegraph building excepted. The upper stories will tower high above the new Post-office, Court-house, and the City Hall, and from the upper windows of the clock-tower, which surmounts the whole, a grand view of the city, New Jersey, Brooklyn, Staten Island, and away out to the Narrows, will be obtained. The new building will be supplied with three elevators, and furnished with everything calculated to make it at once the most imposing and convenient newspaper office in the city."

The architect is Mr. Hunt, who deserves some credit for the design.

ASHBY AND NUNEATON RAILWAY.

This line of railway, the construction of which has occupied some three years and a half, has recently been opened for goods traffic, and will be opened for passenger traffic on the 1st proximo. Railway No. 1 commences near Moira Station, on the Leicester and Burton Railway, three miles from Ashby-de-la-Zouch, and terminates with a junction on the South Leicestershire Railway, near Hinckley Station. There are in all five railways, with ten junctions, the total length being twenty-nine miles. There are ten passenger stations.

The contractor for the general works is Mr. John Barnes (late Barnes & Beckett). The station buildings on the southern half have been erected by Messrs. Geo. Lilley & Son, of Ashby-de-la-Zouch; and on the northern half by Messrs. J. & E. Wood, of Derby. Mr. John L. Crossley, of the Midland, and Mr. William Baker, of the London and North Western, are the joint engineers, and Messrs. W. D. Robotham & E. B. Thornhill, the resident engineers for the railway companies.

The general work executed includes about ninety-seven bridges (twelve of which are of iron and the remainder of brick), 130 culverts, about seventy miles of fencing, 450 gates, fifty miles of drains, 2,000,000 cubic yards of excavation, 300,000 cubic yards of ballast, sixty miles of single line permanent way, and 60,000 tons of metalling to roads.

THRIFT AND HEALTH.

Thrift is a virtue that few possess,
In the days of their youth, I mean;
Thrift is a blessing, nevertheless,
That stands to a man in his sore distress,
And saves him from crime and wretchedness,
And from pangs of remorse more keen.

Oh, would that all mankind had this gift,
What a mine it would be of wealth!
The lowliest worm to power 'twould lift;
And, come indigence however swift,
'Twould nerveless drop at the feet of thrift,
And its robust companion, health.

Health is a prize the many may gain,
With a steady and thriftful care;
Health is a fortune man should maintain,
And keep, like his honour, free of stain.
If the world can be made pure again,
'Tis by cleanliness, light, and air.

STEAM IN GAS MANUFACTURE.

An invitation to visit Chichester on an afternoon recently, returning at night, all at the railway and other cost of "the New Gas Company, limited," in order to witness the way in which that town is lighted with their gas, seems to have been largely distributed in the form of circulars and railway and dinner tickets; for it is said that something like a hundred persons went by special train, and 130 dined with the company at Chichester. We have already spoken not unfavourably of this gas, in the production of which steam is used, with coke or petroleum, and iron oxide, and without any coal, or with any sort of small coal instead of other coal, coke, or petroleum. It so cheapens the manufacture, it is said, that the cost of 1,000 cubic feet is only 1s. 8d. The gas companies appear to be much interested in it, since they were represented by more than twenty persons at the meeting. These companies, at least, may perhaps make a good thing of it; if, as appears, it merits their adoption; but it remains to be seen whether the public will benefit ultimately by it, in any reduction of price to consumers.

THE STRENGTH OF ODOURS.

Sir,—Permit me to bear testimony to the efficiency of the odour from the deodorising pits that are situate about one mile or so north of Burton-on-Trent, and on the east side of the line of the Midland Railway, that goes from Gloucester to Derby.

Merely passing by it in the train nearly caused the death of a relation. It actually caused *her* to be spent in two doctors' bills, intense suffering for four days, and much weakness for as many days more. Pro.

THE PAINTERS' MOVEMENT IN LONDON.

Sir,—In your report of the above movement in your last issue, the chairman of the Decorators' and House-painters' Society stated, "when the workpeople had received the 1*d* per hour which they now requested, they would be 1*d*. per hour under all other trades."

I do not think that house-painters, as a body, should receive so much as joiners, stonemasons, or plasterers Before a joiner can get employment he must provide himself with a lot of very expensive tools; the stonemason the same; whereas the painters have nothing but a putty and chisel knife, at the cost of 2*s*., to supply, and I am sorry to say that nine out of every twelve have not even these two articles. Thus it is that among painters there are less skilled workmen than in any branch, from this very fact; it is so very easy for a man to become what he calls a painter, because he has nothing to provide. When a shoemaker is tired of his last, or a tailor his needle, he turns painter; and it is a well-known fact that there are numbers of so-called painters who have never served an apprenticeship, but are seceders from the last, the needle, or were bricklayers' labourers. I contend that such men are not entitled to the wages they are receiving, and they still want more. It is very unjust to employers. But why are they employed, is asked? An employer is not aware such men are on his jobs. They are mixed up among forty or fifty others, and pass with the rest, and are in many instances protected by the foreman of a job, upon paying to him certain moneys. I have seen such men upon my own jobs, and when I have expressed myself as to their capabilities, and ordered their discharge, I am simply told that if he is ordered off, the rest would leave the work. There are some men who are worth all the money they ask for, whose mind is in their business, and who thoroughly understand what they are doing and what they have to do. For such men to be brought to work, perhaps in the same room, with one of the before-mentioned men must be simply disgusting. They must bear it because the society says so. It appears that resolutions were passed "requesting the men in firms or on jobs not to take any action except through the committee." How long will men be governed by such arbitrary laws? Why should a clever man be compelled to work for 8½*d*. per hour when he is worth 9*d*., or why should an employer be forced to pay 8½*d*. per hour to a man that is not worth 6*d*.? It is the society that enforces it. I am strongly in favour of societies and combinations for the protection of all trades, but not as they are now constituted.

I could quite understand the house-painters of London or of England forming themselves into a kind of trade guild, and one of their first rules being that no one should become a member with them unless he has served a proper time to some qualified master, and from whom he should produce a testimonial as to his fitness. House-painting is now considered the very lowest on the list of the building trades, whereas it should be considered the very highest. There are some bright spirits, whose work decorate the walls of the great mansions and public buildings of this country, who have received their first instruction as house-painters. I think that before the advance of 1*d* per hour be given to house-painters, there should be a general sifting of the chaff from the wheat.

Decorator.

LOCAL BOARD SURVEYORS.

Sir,—I can truly endorse "A Candidate's" letter in your recent impression. I have tried nearly all the advertisements for the last six months, and have invariably found some local man or the old surveyor has been appointed. On one occasion I received a letter from the chairman to one of the local boards, stating no objection would be taken to my practising on my own account, as long as my doing so did not affect the board's work; and on the strength of this I actually went to the place, some two hundred miles from here; and, on making inquiries to my amazement, one of the members told me "I did not stand any chance, as the man was in the town who would get the appointment." I have come now to the conclusion that it is only waste of time answer ing the advertisements, as they are mostly "a delusion and a snare."

A Victim.

ARCHITECTS' ACTIONS.

At the Otley County Court, recently, before Mr. Daniels, Mr. Edward Smith, of Ilkley and Bradford, was sued by Mr. James Atkinson, architect, Ilkley, for the sum of 37*l*. for professional services rendered. Mr. Sudall appeared for the plaintiff, and Mr. Lockwood for the defendant. It appeared from the evidence that plaintiff had been engaged to prepare plans and specifications for a villa residence at Ilkley, on the understanding that he received 5 per cent. on the cost of the works. The defendant dispensed with his services as superintendent of the works, and refused to pay him more than 1½ per cent. John Smith, of the Grove, made plaintiff an offer on behalf of the defendant of 18*l*. 15*s*.; but when the latter heard of this he refused to accede to it. Mr. Marshall, architect, Otley, was called, and he proved that it was customary for an architect who prepared the plans to superintend the works, and have 5 per cent. The defendant's case was that the charge was excessive. Two Bradford architects were called, one of whom stated that he should have been glad to have done the work for 18*l*. 15*s*. The Judge, in summing up, said the value of an architect's labour was not to be judged by the hours and labour in preparing the plan, but by the labour, thought, and skill he had displayed. From Mr. Marshall's statement it was evidently customary to pay the 5 per cent., and he thought the plaintiff been suing for it he doubted not the evidence was sufficient for him to recover it. Verdict for 18*l*. 15*s*. the amount offered by the defendant.

ALLEGED BREACH OF CONTRACT.

Morton and others v. Eastwood and others.

This was an action, at the Liverpool Summer Assizes, to recover damages for breach of contract. Mr. Littler, Q.C., and Mr. Butler, appeared for the plaintiffs, Messrs. Morton & Co., manufacturers of iron houses, Liverpool, and Mr. C. Russell, Q.C., and Mr. Edwards were for the defendants, Messrs. Eastwood & Co., contractors, of Derby. The case for the plaintiffs was that the defendants had engaged them to construct an iron house, which was required by one of the colonial governments, and that, in consequence, the defendants purchased the iron necessary for carrying out the contract. The defendants, however, countermanded the order, and the plaintiffs now claimed 72*l*., the profit that would have resulted if the order had been carried through. For the defence, Mr. Swingler, one of the defendants, was called, and he stated that a foreman in the employ of the firm sent the letter accepting the tender to the plaintiffs by mistake. It should have forward the letter to another firm in Birmingham. When the mistake was discovered, a telegram was sent to the plaintiffs, cancelling the order. The jury gave a verdict for the plaintiffs for 20*l*. Leave to move was given.

A NATIONAL SCHOOL OF ART.

Sir, The whole subject treated of last week demands ample treatment and illustration. I trust your article may lead to some discussion of views very vital, I am persuaded, to the interests of English art, particularly architecture. The false pretences which now too often pass for art and its criticism, could not long endure under some such thorough change as indicated, and the cruel disappointments now so often suffered at seeing patronage distributed in such questio

ble directions would cease in the dignity, onour, and reward which art should have for s own sake. The subject is wide and im- ortant. T. H.

THE SANITARY STATE OF NORTHAMPTON.

In a letter to the chairman and members of ie Northampton urban sanitary authorities, eir officer of health, Mr. Alfred Haviland, calls ttention to some facts connected with the sani- ry regulations adopted by the Northampton mprovement Commissioners, viz., that of empty- g the excreta of more than 40,000 people rough a 10-ft. culvert into an 18-in. drain. He ys :—

"1. In the lower levels of the main culvert the solid ortion of the sewage settles, swelters, putrifies, and hales pestiferous sewage gases.

2. When a storm of rain occurs, during which a little ore than half an inch falls, the small 18-in drain blows o in eight or nine different places, and, as I have said, spreads the Cow Meadow with the putrid accumulation the main sewer.

3. A storm of rain in Northampton, instead of relieving e drains by flushing, actually increases the evils at- ndant upon the sanitary regulations of the Improve- ent Commissioners The extra water drives all the wage gases back into the town, and especially into its gher parts."

This evil, he adds, is an ever present one, in- nsified, however, by the very rainfall, which ould cleanse and purify every other town but orthampton. He exhorts the chairman to sert his authority for the sake of the public od, and not allow the lives of his fellow- wnsmen to be jeopardised or sacrificed, as ey have been in former years; but rather let e sad experience of the past teach him that in is matter promptitude in action will alone ve the people from disease and death, and the uthorities of the town from censure.

THE STOMACH AND ITS DANGERS.

It is, of course, only where it is believed to ontain the subtle fever ferment that milk is now pposed to be dangerous; and for all that ay one yet knows, if this be so, other substances, oth fluid and solid, the number or kind of which nnot yet be limited or restricted, may be qually capable as milk of conveying that rment. This may apply to a penny loaf no ss than to a pennyworth of milk; since, in the norance of medical men still as to it, there is eally no end to possibilities of this kind; and nerefore it would be quite as unreasonable to ake a run against the dairyman and milk in e abstract, as upon the butcher, the baker, the nfectioner, &c., who may have typhoid fever their premises. Milk has been especially nfortunate of late in other respects. The analyst" appears to think it a fitting subject which to try his tyro hand, because it is easy "analyse" so as to estimate the amount of ostly harmless though cheating water which it ay be "adulterated" with, or charged with con- ining, while poisonous maddening beer and gin, d-leaded cayenne, and a host of other danger- s things escape detection.

Let us also gently remind West-enders that ch and highly stimulating foods and drinks, en perfectly pure from stomach-fever taint, are most as dangerous as typhoidal or stomach-fever rments, even when such rich stimulants are ed in what may be regarded as quite a mode- te degree. They must keep the poor stomach id bowels in a perpetual state of feverish ex- cement from overwork, preparing the way but o well for the action of the subtle stomach- ver enteric or typhoidal ferment, whether at comes slyly in with a pennyworth of milk, first-rate juicy rump-steak, or a twopenny pater. It is thus that the rich and the poor act upon each other for evil, and thus that a prevalence of typhoidal fever among the ill-to-do can but too readily be accounted '. The ideas that prevail among the upper sses as to what is absolutely and essen- lly requisite to support the organic frame rough the awfully overworked and fevered mach, are really most surprising. A west- d gentleman lately excused a lady for having led to come up to the expectations of her ad- rers, on a certain occasion, by saying, apolo- ically, that she was somewhat exhausted (and quired a stimulant doubtless), having fasted for ree or four hours! If stomachs could only ar and think, one can imagine the horror with ich such an apology would be received amongst whole party of them!

OLD SCOTCH HOUSES *REVIVIVUS*.

Sir,—Year by year we see in Edinburgh more freedom of design and less servile imitation in hodge-podgestyle of the ideas of many Scottish generations, where the various builders' hands had managed to combine beauty with utility, unthought of by the æsthetic architect of our day, whose many excrescences and stuck-to features in costly stone have as yet been unable to rival in romantic effect the quaint timber lath-and-plaster projections of the historic old houses of Edinburgh.

Strange to say, the old rugged side of St. Mary-street is more effective to the eye than the extravagantly Scotch baronial side, which puzzles the weary sight in the search for some plain space free from imitative effort: happily a change has now come over the spirit of our old Scotch dreamers, which will ere long enable them to concentrate their architectural skill with more telling effect on the street architecture of Edinburgh. In too many cases one sees with regret much effort, both of design and execution, lost in reproducing some tumble-down-looking effect in towers and turrets and wall projections, that only shows some skill in hanging one stone over another, by the aid of cast and wrought iron. We have also some nondescript efforts made for effect where often it is not at all required. The adaptation of street buildings to their site in relation to high or low localities seems little thought of until some glaringly abortive erection is reared up. Where some noble vista wants a tower or spire, we find a shoal of stunted details, too often neither new nor very true in style or taste.

Seeing that the old Scotch house architecture must be imitated in our new street and villa erections, they might be marshalled more effectively so as

"To catch a grace beyond the reach of art."

even in a city that is beautiful for situations. The towers and turrets that are now being built anyhow might have increased the charm of many a site and vista. K.

THE TRADES MOVEMENT.

London.—A general meeting of the painters and decorators in the employ of Mr. Crace, Wigmore-street, and Messrs. Jackson & Graham, Oxford-street, was held on Monday night at the Three Doves, Berwick-street, Soho, to receive a report of a deputation appointed to wait upon those firms, to effect, if possible, an amicable arrangement as to the required advance of ½d. per hour, making the wages 8½d. per hour. There was a crowded attendance. Mr. Moss occupied the chair, and briefly stated the object of the meeting.

Mr. George Shipton then reported on behalf of the deputation. He stated that Mr. Crace not only agreed to the terms asked, but at their request handed to the deputation a written memorandum as follows:—"I propose to pay the painters in my employ, from the 30th August next, 8½d. per hour, and none less.—John G. Crace." Mr. Crace added that he did not pledge himself to give the additional ½d. per hour to his men who were now in receipt of 8½d. per hour, but must hold himself at liberty to make any selection he thought proper. After this satisfactory interview, the deputation proceeded to Messrs. Jackson & Graham, but that firm declined to see them. Before adopting ulterior measures the deputation at once proceeded to visit the men employed on the largest job of the firm, in the Camden-road, and having called the men together, they were informed that the head foreman had just been to his job, and officially notified to the men that the firm intended to pay the 8½d. per hour to the painters in their employ from the 1st of September, and that there would be no classification of men or prices. The deputation were informed that the same notice had been given to the men on the other jobs. The deputation, therefore, had not the disagreeable duty of calling any men out, and they believed and hoped the example of the two firms in question would be followed by the five other large decorating firms who had not as yet given the advance.

Mr. Murdoch moved,—"That this meeting considers the terms offered by Mr. Crace and Messrs. Jackson & Graham to be satisfactory and acceptable, and that the best thanks of the society are due to the deputation." He was pleased to think that a strike of several hundred men had been thus avoided.

Mr. M'Intosh seconded the resolution, which was adopted.

SCHOOL BOARDS.

Liverpool.—A great scheme of school extension is projected at Liverpool. The local School Board held an adjourned meeting to decide upon the manner in which they should meet a deficiency of school accommodation for 10,496 children. The Board had to provide for the education of 74,597 children. There is at present, or there is being provided, accommodation for 72,518 children, but after deducting the school space which cannot be utilised on account of the population having migrated from the districts in which certain schools are situate, the sub-committee reported a net deficiency for 876 boys, 1,020 girls, and 8,600 infants—total, 10,496. They therefore proposed the immediate erection of schools for 1,476 boys, 1,470 girls, and 2,460 infants—total, 5,400, and recommended that present schools should be re-arranged so that they would be able to accommodate a larger number of infants. No estimate of cost was embodied in the report, but it was stated by the chairman of the Board that the proposed outlay, added to the cost of schools now being built by the Board, would bring up the expenditure to about 200,000*l*. An amendment was submitted propo-ing to postpone the further consideration of the matter for six months on the ground that there were 21,522 vacant places in existing schools, irrespective of accommodation of 8,000 or 10,000 children in schools not recognised by the Board, and the debate was adjourned in order that public opinion on the matter might be ascertained. The discussion terminated in the adoption of the report of the sub-committee by a majority of 10 to 5.

The Island of Lewis.—The School Boards of Stornoway, Lochs, Barvas, and Uig, have agreed to erect twenty-four new schools, and the same number of schoolmasters' dwelling-houses, throughout the Island of Lewis, at a cost of fully 15,000*l*. As all the Boards in Lewis have, however, assessed this year at the rate of 9d. per l*l*., they become entitled to the special grant given to Boards in the Highlands for building purposes, and as these grants will in the aggregate amount to nearly 10,000*l*., the burden upon the ratepayers will not be so great as it would appear at first sight.

CHURCH-BUILDING NEWS.

Scarborough.—Christ Church, Scarborough, has been re-opened. The alterations comprise the erection of a chancel, which has been effected by continuing the structure eastward from the limits of the old building. On the left of the new chancel has been erected a vestry. The entire cost of erecting this room has been borne by Mr. J. Eley Sykes. A new organ-chamber has been erected on the south side of the chancel, and will hereafter be occupied by a new organ. Two of the lights of the chancel window have already been filled with stained glass. The centre light, given by Miss Williamson, South Cliff, in memory of her two deceased sisters, represents the raising of Lazarus, the raising of Jairus's daughter, the widow's son, and Christ appearing to Mary before the Ascension. The light on the right, contributed by Mr. W. S. Theakston, in memory of his late wife, embraces the four ancestries of our Lord. The remaining light, with the exception of the tracery, has not yet been filled with coloured glass. This portion of the work has been carried out by Messrs. Clayton & Bell, of London. The sittings occupying the body of the church have been replaced by open sittings, by which 100 additional seats have been gained. The flooring of the aisles and the nave has been laid with tesselated tiles. The organ of St. Mary's parish church is about to be rebuilt and enlarged at a cost of 500*l*., and when complete will be placed in the new organ-chamber of Christ Church. The church has also been supplied with a warming apparatus, by Messrs. G. Haden & Son, of Trowbridge. The total cost of the alterations, inclusive of the stained windows, is estimated at 1,500*l*.

Bristol.—The new church of St. Silas, St. Philip's Marsh, has been opened for divine worship. The old structure had to be taken down in consequence of a disastrous subsidence

which rendered the walls and roof so cracked that it became dangerous to enter the church. The work of taking down the former church and rebuilding it has cost about 2,000*l*. The foundations have now been piled to a depth of 32 ft., at a cost of 464*l*., and the weight of the side walls has been greatly reduced, so that there is now no danger of a recurrence of the calamity. The parish schools, which will accommodate 750 children, and have cost 2,500*l*., are also completed.

Botley.—The chief stone of the new church of St. John, Hedge End, has been laid by Mrs. Haselfoot, of Moorhill, who has not only been a large contributor to the funds, but has also offered to complete the tower and spire at her own cost. The site selected for the church is the gift of Mr. William Warner, of Botley, and stands on rising ground commanding an extensive view for many miles around. The architect is Mr. John Colson, of Winchester, F.R.I.B.A., and the builder, Mr. Thomas Robert White, Southsea. Clerk of Works, Mr. J. C. Harrison.

Gloucester.—The chapel recently erected to accommodate the increasing number in the County Lunatic Asylum has been formally opened. Mr. Medland is the architect, and the building in design and construction very much resembles the new church of St. Catherine, Gloucester, of which Messrs. Medland & Son were also the architects.

Lyonshall.—The parish church of Lyonshall, says the *Hereford Journal*, after undergoing partial rebuilding and restoration, has been re-opened for divine service. The church is dedicated to St. Michael and All Angels, and occupies a picturesque position on an eminence adjoining the ruins of the ancient castle of Lyonshall. When visited by the Cambrian Archæological Society, in the autumn of 1863, it was pronounced an interesting church, and worthy of attentive observation. While it has undergone one of the most complete restorations short of absolute rebuilding that could be effected, the ancient characteristics of the church have been retained. The building is chiefly of the thirteenth century, though there are remains of an earlier edifice on the same spot. Owing to the utter want of foundations, it was deemed advisable to rebuild entirely the south arcade, as also the north and south outer walls, which, by the ravages of time, had become entirely perished. The work of restoration includes two new arches, with four columns, fifteen new windows, and new stone floors. With the exception, too, of that of the north transept, all the roofing is new, as is also the seating. The wood employed is, in both cases, oak. A warming-apparatus has been supplied; the upper part of the tower, which, with the roof of the same, was in a dilapidated condition, has been rebuilt; the tower itself has been raised some 10 ft., and the old roof replaced by a lead flat. The work of renovation likewise includes a new porch on the south side of the church, new doors, the reglazing of the windows, the supplying of new church-furniture, &c. The cost of the rebuilding and the restoration is, exclusive of specific offerings, 2,700*l*. The architect employed was Mr. Bodley. A series of five memorial windows in stained glass have been presented by the Rev. J. Davies, Moor-court, the Rev. J. E. Cheese, Mrs. Robinson, Colonel Fellowes, and "A Lady," respectively. There is a new organ, the result of the personal exertions of Mrs. Maddison Green, wife of the vicar. The instrument was built by Messrs. Walker & Sons, from plans and specifications prepared by Mr. Charlesworth, the organising master of the Herefordshire Choral Union. The front is of carved oak; and the organ comprises two manuals, great pedal and swell organ, with the necessary couplers.

Bishop's Itchington.—The Bishop of Worcester has opened a new church at Bishop's Itchington, a small village about eight miles from Leamington. The church is in the Gothic style, and capable of seating about 700 persons. Mr. Christian, architect to the Ecclesiastical Commissioners, is the architect; Mr. Watson, of Napton, the contractor; Mr. Dicks, of Derby, clerk of the works; and Mr. G. Eyres, of Leamington, has carried out the ironwork, plumbing, &c. The total cost is 3,000*l*., of which the Rev. Blain Mandale, vicar, has presented 1,000*l*. The edifice is constructed of Warwickshire blue lias, with Bath stone dressings for the windows, the roof being covered in with Broseley tiles. The interior consists of a nave, a chancel, a north aisle, and a vestry. The old church, which was an unsightly structure, had been in existence for more than 400 years. With it were associated historic names, such as Dr. Abernethy and Chief Justice Willes. The new building is the last of three works just carried out by the parishioners, at a cost of 6,000*l*.; namely, new schools, new vicarage, and a new church.

Jevington.—The parish church here has been restored, and reopened for divine service by the Bishop of Chichester. Jevington is an agricultural village in the Eastbourne range of Southdowns. The church formerly consisted of nave, north aisle, chancel, and at the west end a massive square tower, with the remains of semicircular arches. It was erected, it is believed, in the eleventh century, but there were traces and remains of earlier Saxon work. The plans, furnished by Mr. E. Rumble, of Eastbourne, preserved the best features of the old church. Some of the windows in the tower and the three semicircular arches separating it from the nave, resemble the restored Saxon church at Worth. The chancel is lighted by an eastern and three other windows. The nave has two windows, one Pointed and the other Decorative, and in the north aisle are a series of narrow lancet lights. In the chancel is an arched recess for the organ, and beyond that a small vestry. The material employed is mainly flint, with dressings of the hard green stone found in the neighbourhood of Beachy Head. The floor has been paved with encaustic tiles, and the old pews have been replaced with open benches of stained wood. In cold weather the building will be heated by the patent stove of Steward & Smith, of Sheffield, and lighted for evening service with pendants. The belfry now contains but two bells, one of which bears the inscription in old English "Sauncta Katurine ora pro nobis." There was formerly a peal of eight bells, which no doubt furnished the sign for the village inn, but we are told that more than a hundred years ago the then rector sold six of them in order to provide funds for repairing the church. A local legend says that all the horses which drew the bells out of the churchyard died, and the men engaged in the removal came to unpleasant ends. Previous to the work being taken in hand, the church was saturated with damp, all the windows had decayed, and the sittings were the usual high pews. The lower and west end of the nave had large square windows, with a brick-and-plaster entrance-porch. The tower is the oldest part, having Saxon belfry windows and "long and short" masonry up the quoins. The old plastered roof has been opened out, the oak ribs and beams restored and boarded over with battens, and new cornices all in oak. The chancel and aisle roofs and the vestry are all new. The stalls in the chancel, the screens, pulpit, and reading-desk are of carved oak. The aisles and passage-ways have been repaired with Godwin's tiles, all the stonework throughout has been restored, and the windows have been filled in with green rolled cathedral glass. The ground outside has been lowered between 3 ft. and 4 ft., and drained. On the south side there is a new open-timbered and carved porch, the tracery being filled in with green cathedral glass. The tower has been pierced with two extra arches, and thrown open to the church. There is also a new organ built expressly for and fitted up in the organ-chamber.

Little Dunmow.—The parish church of Little Dunmow, which for some time past has been closed for the purpose of restoration by Mr. James Brown, of Braintree, builder, has again been opened for divine worship. All the windows in the south side have been restored, the east window alone being entirely new, and are all Gothic in the style of architecture. Under the east window a reredos has been exposed; it had once been an elaborate piece of carved masonry, but is now very much destroyed in parts. The spandrels under all the windows on the south side are filled in with various ornamental carvings, some very grotesque. The pillars which formerly divided the nave from the side aisle have been cleaned and restored, and the wall on the north is now carried some distance further out than formerly; these pillars, which are of the Tuscan order, stand in the church. The roof is of open timber, high pitched. A vestry has been added to the church. The benches are of varnished pine. Suitable situations have been found for the monuments of the Lady Juga, the founder of the church, Sir Walter Fitz-Walter and his lady, and also that of Matilda, second daughter of Sir Walter Fitz-Walter, who, according to the Monkish story, was poisoned by contrivance of King John, for refusing to gratify his illicit passion. She also is legendarily famous as the wife of Robin Hood the outlawed Earl of Huntingdon.

Stoneby (Leicestershire).—The parish church is about to undergo restoration, under the superintendence of Mr. R. W. Johnson, of Melton Mowbray, architect. The works comprise new roof to nave, restoration of stonework generally, new benches, pulpit and reading-desk, restoration of font, &c. The contract has been taken by Mr. G. Chester, of Waltham, builder.

SCHOOL-BUILDING NEWS.

Burrough-on-the-Hill.—A new school is being built here. It is of brick, with Bath stone dressings, and has porch and bell-turret. Mr. R. W. Johnson, of Melton, is the architect, and the contract for the works has been taken by Messrs. Hayes & Son, of Melton.

Pockwell.—The parochial school and art buildings have been undergoing restoration and enlargement. An entirely new roof has been put in, and new three-light windows inserted in each end. Mr. R. W. Johnson, of Melton Mowbray, is the architect employed to superintend the restoration.

Stanford-in-the-Vale (Berks).—A new Church of England school has just been completed in this parish, for the accommodation of 190 children. It consists of a "mixed" school-room (divisible into two), an infant school, and a class-room. The materials used are local stone with Bath stone dressings, Broseley tiles, with Cooper's ridges and finials, and deal casements; windows, all woodwork being stained and varnished. The total cost, including fence-walls and gates to large playground, and National desk-fittings, &c., was 704*l*. This sum was raised by voluntary contributions, aided by a Government grant, the deficiency being made good by a voluntary parish-rate. The site was presented by Mr. Chas. Morison, of Basildon Park. A master's house has also been erected at a cost of 300*l*. Mr. Edward Williams, of Abingdon, has carried out the works, from the plans and under the superintendence of Mr. Wm. Penstone, of London, architect.

Bridport.—The foundation stone of new National schools has been laid in the parish of Allington, borough of Bridport, on a site near the church. The plans were drawn by Mr. Cornick, architect, one of the churchwardens of Allington. The contract was taken by Mr. Gerrard, of Bridport, the amount being about 960*l*. The building, which is designed in the Gothic style, will consist of a principal school-room, 49 ft. long and 20 ft. wide; an infants' room, 39 ft. by 20 ft.; and a class-room, 20 ft. by 12 ft.; with a cloak-room, lavatory, and other offices. It is being built of local stone,—Bothenhampton stone outside and Loders for the inside face of the walls,—with Ham Hill dressings. The roof will be slated, and the rooms will be lighted by eighteen windows, and well ventilated. In front of the building is sufficient space for a playground, and the premises will be enclosed by a wall 8 ft. high.

Derby.—The school recently erected in Gerard-street, by the Derby School Board, have been formally opened. This school is the first which has been built for the Derby Board. The design was by Mr. T. Coulthurst, and was selected by the Board in open competition from among eleven sets of plans submitted. The schools have been built by Mr. R. Bridgart, of Derby, whose tender was 2,895*l*. Accommodation is provided for 750 children, the whole of the entrances being in Gerard-street. The boys' school, which is L shaped, is on the ground floor, the total length being 77 ft. by 20 ft., and 15 ft. high; there are also two class-rooms, each 20 ft. by 15 ft., and 15 ft. high. The lavatory and hat and cloak room adjoin the entrance. There is a spacious play-ground at the rear, the space underneath the class-rooms being converted into a covered play-ground. The girls' school is immediately over the boys' school, the size and arrangement being exactly similar. Access is obtained by a stone staircase. Suitable cloak and lavatory accommodation is provided on the ground floor adjoining the entrance. The infants' school is on the ground floor, and is 50 ft. by 30 ft., and 22 ft. high by the collar-beam. There are also two class-rooms, each 20 ft. by 15 ft., and 15 ft. high, with the necessary cloak and lavatory accommodation. There is a spacious open playground in the rear, with covered playground underneath the class-rooms, both of which will be used by the girls and infants, each school being provided with a distinct

trance from the playground. The total cubic ace of the entire building is 101,300 cubic t. The whole of the school and class-rooms e wainscoted to the height of 4 ft. 6 in., and the inside woodwork throughout is stained d varnished. The desks provided are Colman Glendenning's patent, which are made so as seat the children in pairs. The total cost of school, inclusive of land, furniture, and ings, is 4,592*l.*, made up as follows :—

Erection of building, including additional and extra work	£3,099	10	0
Fixtures, stoves, gaslittings, &c., not included in contract	247	10	0
Land, architect's commission, and law charges	955	10	0
Furniture	290	0	0
Total	4,592	10	0

e total cost per head for the number of olars to be accommodated is 6*l.* 2s. 8d. nearly, e estimated cost of the building was 4,500*l.*, ich sum the Public Works Loan Commissioners agreed to lend to the Board at the rate 3½ per cent. per annum, to be re-paid within y years. Arrangements have been made with Loan Commissioners by which both principal l interest will be re-paid by fifty equal annual talments of 191*l.* 16s. 3d., which is at the e of 4*l.* 5s. 3d. per cent. on the total sum rowed.

Books Received.

Trial of Sir Jasper: a Temperance Tale in Verse. By S. C. Hall, F.S.A., Barrister-at-Law, and Editor of the *Art-Journal*. Virtue Co., Ivy-lane.

ATEVER difference of opinion there may be to the point chosen for attack by the author his tale, there can be none as to the goodness of the motive, the vigour of the onslaught, the overwhelming importance of the object view. Many will differ from Mr. Carter ll in ascribing guilt of the deepest dye to the ker and seller of drink, but none in his nest and able effort to set forth the miserable ults of intemperance, with a view to check terrible progress. Evidence is piled on dence, and art of the highest kind is called o help to show the fearful and fatal evils ught on by intemperance. The following s introduce one of the most telling cuts in book (by H. R. Robertson) :—

hat pallid wretch comes next? His hands are red!
s a tale of horror best unsaid.
s that the hand? Is that the fatal knife?
that the body of a murder'd wife?
t fall the curtain! Close it! Let the shroud
de ghastly terror from a gasping crowd.
He beat her thrice within an inch of death:
e neighbours counsell'd 'Punish him!' But no!
e waited calmly for the latest blow.
It came, and with a panting, parting breath,
e told the almost pardonable lie—
t is not by my husband's hand I die.'
d so these neighbours found her: and they laid
e dead wife on the floor,—there was no bed;
t a Samaritan had gently placed
decent covering o'er the woman dead,
rough which dim outlines of a form were traced."

t effective, too, are the illustrations by Elmore, l Paton, Doré, Gilbert, Tenniel, Boughton, ndy, and Hardy,—in fact, all that are n. Mr. Cave Thomas strikes the right key- in his drawing which has been chosen for frontispiece, where he makes the Angel perance stand, "the Golden Mean," between oop of ascetic monks drinking only water n the spring and a group of abandoned uchees lost to all sense of shame and ncy. We quote a portion of the author's estive description of a workman who has sted temptation :—

s gift is but a very common gift:
rethought for self and others; liberal thrift!
e charity that will not wildly roam;
e charity that does not *stay* at home.
He squanders nothing, nothing leaves to chance,
t prays, and trusts, and knows that God will bless
e Heaven-directed source of all success,
The mainspring of his guidance—Temperance!
e Member chosen by his native place
s but a workman once. You still may trace
e signs of labour on his sinewy hand.
e Peer who ranks the loftiest in the land
s swept his father's shop; nor thinks it shame
tell his fellow-lords, as whence he came.
e cases such as these, in England, rare,
men who rise to rank, by toil and care?
lf-taught, self-trained, self-disciplined self-made:
ecm'd, respected gentlemen in trade.
hat hinders *him* from rising as *they* rose
share the many blessings Toil bestows?"

ith this we must end our notice, not for t of will to say more on the subject, but for t of space to say it in.

"The Trial of Sir Jasper" is a very remarkable little book; the price is only a shilling, and it cannot be too widely circulated.

Handbook of the Telegraph. Being a Manual of Telegraphy. By R. Bond. Lockwood & Co. London, 1873.

The telegraph offers employment to so large a number of young persons that any good work conveying information on the subject was sure to have a considerable sale. We are therefore not surprised to find a fourth edition is required of Mr. Bond's manual, and has been published.

A series of questions on magnetism, electricity, and practical telegraphy, by Mr. McGregor, has been added, and will be found valuable by students who will work them out with the aid of proper books. Mr. Scudamore having accepted the dedication of the volume, additional assurance is given that Mr. Bond is well fitted for the task he took upon himself.

The Roman Forum.

A number of the *Revue Archéologique* before us contains a paper on Recent Discoveries in the Roman Forum, translated from the *Gazetta ufficiale del Regno d' Italia*, and annotated by M. Chas. Lucas, one of the most active of the literary architects of France.

Elementary Principles of Carpentry. Also a Treatise on Joinery. Edited by E. Wyndham Tarn, M.A., Architect. Lockwood & Co. 1873.

This in its original form was one of Weale's Rudimentary Series, and in the main an abridgment of Tredgold's well-known work on Carpentry. The present edition is somewhat more comprehensive, and its very competent editor, Mr. Tarn, has added a useful treatise on Joinery. The whole forms a cheap little introductory volume. Reference is made in parts to an Atlas of engravings, but this we have not seen.

A Descriptive Treatise of Mathematical Drawing Instruments. By W. F. Stanley, 5, Great Turnstile, London. 1873. Fourth Edition.

We gave warm commendation to Mr. Stanley's book when it was first published. It is now a standard work on the subject of which it treats, and this new edition is much enlarged and improved.

Sewage: Suggestions for its Utilisation, having special Regard to Sanitary Requirements. E. & F. Spon.

This pamphlet furnishes an account of the mode adopted at Carlisle, the special feature of which is the combination of the antiseptic treatment with irrigation, and is intended, in fact, quite fairly, as a recommendation of McDougall's Patent Sewage Carbolic Acid.

VARIORUM.

"Spon's Architect's and Builder's Pocket-Book," by W. Young, architect, will be found a very useful companion. It contains a large amount of information in a small compass.——"The Buyer's Guide to the Manufacturing Towns and Manufacturers of Great Britain," and "The Hotels of Europe" (both published by H. Herbert, Charterhouse-buildings), are Directories, and only partial ones at present, but are printed and adorned as Directories seldom have been.——The second volume of "Beeton's Science, Art, and Literature" (Ward, Lock, & Tyler), is described, and with some truth, as a Dictionary of Universal Information. The volume contains 2,088 columns of matter, and 1,000 engravings. Some of the prints illustrating architectural subjects show, as usual in such works, the want of a proper superviser. Nevertheless, we recommend the book as mostly fulfilling its professions.——Messrs. Weeks & Co. have sent out a new trade book, which includes a number of designs, good and bad, for horticultural buildings. They would be better without the colour, which vulgarises them.——The "Revised Illustrated and Descriptive Catalogue," issued by Whitley Partners, gives particulars of many improved European and American mechanical inventions, manufactured by special machinery.——A new edition has been published by Messrs. Longmans & Co., of "Elements of Mensuration," by the Rev. John Hunter, which forms part of Gleig's school series. A short treatise on "Land Surveying" has been added as an appendix.

Miscellanea.

The Old Toll Booth and the New Town-hall, Northallerton.—The old toll booth in the centre of the Town-street, Northallerton has at length been sold by auction for 18*l.*, to be pulled down, and the market cross for 5*l.* This has been done by the Tolls Company, who have erected a new town-hall and covered market a little lower down the street. The new building, which approaches completion, consists of a basement, ground, and first floors. In the basement are a market cellar, 60 ft. by 30 ft., for the storage and packing of butter and eggs, &c.; and cellarage to the shops on the ground floor; and a chamber for heating apparatus to the large hall. On the ground floor are a covered market, 60 ft. by 32 ft.; seven shops; and entrance-hall and staircase to the large hall. The floor of the market is formed with Dennett's patent arching, carried on iron girders and columns, and finished with Wilkinson's (Newcastle) grooved cement. In the floor are inserted lights of thick rough plate-glass in iron frames, to light the basement. The first floor contains a large hall, 72 ft. by 32 ft. A gallery is carried across one end, and the platform with semicular recess behind is placed across the other. The large hall is calculated to seat upwards of 600 people. The building is of bricks, with stone dressings. The architects are Messrs. Ross & Lamb, of Darlington.

The Purchase of Northumberland House. The Act of Parliament to make a new street from Charing-cross to the Victoria Embankment, and to purchase Northumberland House, has just been issued. It states that a new street from Charing-cross to the Victoria Embankment would be a work of public utility and an important metropolitan improvement, and the Metropolitan Board of Works are authorised to carry the same into effect. The agreements made between the Duke of Northumberland and Earl Percy with the Metropolitan Board of Works are annexed to the statute, and it appears that 497,900*l.* are to be paid by the Board for the property in twelve months. The new street is to be formed according to the plans deposited at the office of the Clerk of the Peace for Middlesex. The railings are to be removed from Craven-street, and the property is to be purchased to effect the intended improvements. There is other property to be purchased for 2,100*l.* The schedules to the Act set forth the description of the property. In the second schedule the fixtures and works of art are to be removed, and among the former is the well-known lion on the top of the mansion. The compulsory purchase of the property required for the improvements is to be made within five years, and the new street is to be constructed in seven years.

The Improvements and Extensions in the Southampton Docks.—The preliminary works connected with the extended dock accommodation at Southampton have now commenced, the first pile having been driven. Various additions, alterations, and other improvements have recently been effected by the directors of the Dock Company, or are still in progress, to provide increased facilities for the rapidly growing trade of the port, in addition to the extended dock works now commenced, and which will be pushed forward with the utmost energy. The contract for them has been let to Messrs. John Aird & Sons, of Lambeth. This firm constructed the Millwall Docks, London, and is now occupied upon the docks at Fleetwood. The first part of the extension will be a quay, 1,500 ft. long, extending along the right bank of the Itchen, with a depth of 20 ft. of water at low spring tides, and provided with all necessary appliances for convenient and rapid work. It will form one side of a future dock, about 30 acres in extent. The channel of the Itchen will be much improved by these works. A large portion of the quay will be completed next summer, and be put into immediate use.

Monmouthshire and Caerleon Antiquarian Association.—The annual meeting of this association was held in Usk Castle. The day being fine, there was a large number of ladies and gentlemen present. The members were congratulated on the publication of a work on the monuments in Abergavenny Church. The president gave a history of Usk Castle, which he traced from the time of William the Conqueror. He also sketched its chief architectural features, and spoke of the priory and the church.

Archæological Discoveries in Warwickshire.—During the present week a party of archæologists have been inspecting a series of camps, mounds, and earthworks, which have been discovered during the past twelve months by Mr. J. Tom Bargese, the author of "Historic Warwickshire," in the woodlands of central Warwickshire, all within an easy distance of the Royal Spa of Leamington. According to the *Leamington Courier*, these earthworks, strange to say, have hitherto been unknown to any local antiquary or wandering archæologist. The first of these (which was visited in company of Mr. Matthew Bloxham), is a large entrenched camp near Claverdon, situate in Barmoor Wood. A deep fosse surrounds an elliptical area of some four acres, which is connected with a level plateau of *faha* of much greater extent on the north, by a narrow causeway. On Yarningale-hill, to the east, there is a twin tumulus, and some three miles to the north is the great mound of Donnilee, near Henley-in-Arden, on which the De Montfords erected their Castle of Beaudesert. In Oakley Wood, on the road between Banbury and Warwick, the party inspected a formidable vallum and fosse, enclosing an area of some six acres, and it was pronounced of decidedly military character.

Costly Plate-Glass Windows.—The magistrate at Woolwich Police Court has expressed himself strongly with respect to the practice which has grown to such a large extent since the introduction of plate-glass insurance, of fitting up shop-windows in a costly style. In a recent case a person was summoned for throwing a stone in the public street, and breaking a pane of glass worth 5*l.* in the window of the Mitre Tavern, High-street, Woolwich. The defendant, in order to drive off a dog which threatened to fly at him, threw a stone, which, instead of striking the dog, went through the tavern window, and the landlord claimed 5*l.*, saying, however, that the insurance agent had offered to let the defendant off if he would pay 2*l.* The magistrate, nevertheless, said he should not think of allowing any such sum. This was admittedly an accident; and, although it was illegal to throw stones in the streets, persons who put such expensive panes of glass in their windows must understand that they did so at their own risk. He adjourned the case, in the hope that it might be arranged.

Inscription on the Wall of a House in Tewkesbury High-street.—During the progress of the alterations now being carried out at the premises of Messrs. Hayward & Son, in High-street, the following inscription has been found on the wall forming a mantelpiece to a fireplace (now bricked up), in an upstairs room. The inscription, which is on the whitewashed bricks, is painted in black old English characters, with red initials. It measures 3 ft. 2 in. wide by 1 ft. 6 in. deep, and is still in a fair state of preservation. It is supposed to be nearly three centuries old:—

"Three thinges pleseth booeth god and man:—Concorde
Be twene bretheren: Amytie betwene nayghbowers:
And a man and his wyfe that agreeth well to gether.
Fower things hurt much the site of man Teares, smocke, wynde, and the woorst of all to se his frends unluckye and his fose happye. These fyfe thinges are rare sene:—A fayer yonge womane with ought a lover, A yonge man with ought myerth, An old useerer without money, Aney great fayer with ought theffes, A fare harne with ought music."

Promenade Concerts, Covent Garden.—Middle-aged playgoers who recollect the promenade concerts with which Jullien pleased the public for many seasons, and will compare his programme with that provided by M. Rivière on the present, will see how much more the public now expect than then contented them. In Jullien's time one vocalist was found to afford sufficient variation from the instrumental staple; now Miss Rose Hersee, Mdlle. Pitteri, Mdlle. Kortense, Mr. H. Pearson, and three others, besides a chorus of fifty voices, and the "Bijou" choir of boys, lend their aid every night; Mr. J. Levy, the prince of *cornet*-players, taking the place of one equally celebrated in the earlier days. Suffice it, M. Rivière is providing a very attractive and varied entertainment, and the public show their appreciation of it by filling the house every night, though "every one is out of town."

Herne Bay Pier.—On Wednesday last a new pier here was opened by the Lord Mayor. To what extent the agitation in our columns some time ago (in the interest of the place) contributed to this result we are not aware.

Boarding-out *versus* Farming-out Pauper Children. The National Committee for Promoting the Boarding-out System are about to circulate (gratuitously) a pamphlet titled "Pauper Children, their Training in Model Unions," containing recent information on the boarding-out system of placing children, one or two—not more than two—in one cottage, by contrast with the farming-out plan, which was a gross abuse of the Poor Law system in former years. The boarding-out system has been universal in Scotland for many years, and is general in Ireland. Its success in these parts of the kingdom is fully proved by long and wide-spread experience. It has also been extensively tested and adopted in Germany, Holland, the United States, Australia, and other countries. The committee's secretary is Miss Mary J. Catlin, and the address 21, Arthur-road, Stoke Newington, London.

Algeria.—The forests of Algeria are very valuable, though they are occasionally injured by periodical conflagrations, caused by the Arabs, in order to gain better pasturage. They produce several species of oak and cork, the Aleppo pine, from which resin is extracted; the cedar of the Atlas, a most valuable timber for building purposes and cabinet-making; the thuya, celebrated even in the time of the Romans as an ornamental wood; ash, elm, &c. These forests cover an area of about 3,500,000 acres, and of these 376,355 acres have already been conceded to private individuals, and 200,000 have been given up for the use of the native population; but it has been determined that in future no forest land is to be alienated from the State. The mineral resources of Algeria are very considerable, and British capital is largely employed in this direction.

A New Town on the Lancashire Coast.—A new church has been built at Heyhouses, near Lytham, by Lady Eleanor Cicely Clifton, and it is proposed to establish a new seaside resort at that part of the coast, to be called St. Anne's-on-the-Sea. The new town will stand just at the bend of the coast about half-way between Lytham and South Shore, and the lord of the manor, Mr. J. Talbot Clifton, is now having laid out a new road from Lytham, in continuation of that which gives access to the mansions at the west end of Lytham. The new road will be continued through the sandhills, and will be two miles and a quarter in length, making the distance from Lytham market-house to St. Anne's-on-the-Sea about three miles and a quarter. It is probable that the first building to be erected at St. Anne's-on-the-Sea will be a large hotel.

Shocking Fatality.—A terrible disaster has just occurred at Busto Arsizio, in the province of Milan. In the Via Santa-Croce existed a house belonging to the church of that name, and which had remained empty for a long time, being insecure. The *curé* opened it as a school for young girls. On the 17th, about 100 of these, of from fifteen to eighteen years of age, were assembled on the first and second stories. All at once the floors gave way, and the unfortunate pupils fell in a heap, mingled with the beams and rubbish. Six were taken out dead, and some twenty more seriously injured. The priest took to flight, but a warrant for his arrest has been issued.

Memorials.—The fund for a Sorby memorial of the late Earl of Galloway has now reached the sum of 192*l.* The memorial is to take the shape of a stained-glass window, which is to be placed in the new church about to be erected for the parish of Sorby. This memorial is independent of the public one to be erected at Newton Stewart.——The monument at Hawkesbury Upton has had a new gilded cross fixed upon its summit. The cross itself is made of sheet copper, ¼ in. in thickness, weighs upwards of 120 lb., and is 6 ft. 3 in. in height. The old cross, which was a stone one, and weighing about 10 cwt., was blown down during a gale of wind on December 9th, last year.

The Assistant Surveyorship of Leicester. A new assistant surveyor to the borough of Leicester was recently appointed, but did not make his appearance at the time agreed upon, and managed to keep the place open for himself by farther postponements, till at last he declined the appointment altogether. The consideration of the question was referred back to the highways committee. It was said the candidate had already been paid his expenses to Leicester and back, and ought to be made to refund the amount.

Old London.—In the course of excavatin for the foundations and basement of the intende new building for the National Safe Depos Company, at the bottom of Queen Victori street, the contractors have laid bare a portic of the course of the Old Wall Brook, and hav also come upon some specimens of ancie pottery, as well as a few gold trinkets, and number of bones, considered to be those Saxons, Romans, and Ancient Britons. deep have the excavators gone that the have reached the London clay, upon which thick bed of concrete has been placed, an flagged as a sub-basement to the building.

Opening of the Exeter Licensed Vi tuallers' Asylum. These buildings, in th Union-road, are now completed, and the occ pants have been formally installed by the May of Exeter. The style is Gothic, the buildin being of red bricks, relieved with Bath-ston dressings, freely used. The architect was M A. H. Wills, of Exeter. Mr. J. Slade was th builder. At present the block consists of on four houses; but it is proposed, if requisite, add another block. The cost of the buildin has been about 1,300*l.*, and the amount su scribed up to the present time is 950*l.*

Bath Stone.—The great extension of t demand for Bath stone during the last fe years has led to the apprehension that th existing quarries would soon be exhausted. Th apprehension has been dispelled by the discove of a large extent of building stone in the neig bourhood of Corsham, which is now bein opened by Messrs. Randell & Saunders. T quantity is sufficient to supply the existin demand for half a century. It will be connecte by railway with the Great Western system. *Bristol Daily Post.*

Royal Masonic Institution for Boys. A considerable addition is being made to th school, consisting of dormitories, bath-room lavatories, and a new block of water-closets, & to meet the increased requirements of the ins tution. According to the *Freemason*, the wor which, since its commencement, has proceede very rapidly, has been carried on under th immediate superintendence of the architec Mr. J. W. Dennison, of King-street, Cheapside by Mr. Thomas Boyce, builder, Hackney, and now fast approaching completion.

Oriental Congress and Exhibition.—T organisers of the congress which is to be held Paris on the 1st of September to discuss vario questions connected with Japanese literatu and the best means of bringing the Japanes intellect into profitable conjunction with that Europe, have added another feature to its pr gramme which cannot fail to be an attraction namely an exhibition of the products of China and Japanese art.

Office of Works.—The Civil Service Co missioners have issued regulations for an ope competition, to be held on the 7th of Octobe for two appointments as assistants to th assistant-surveyors in the Office of Works. T salary attached to one appointment commence at 210*l.* a year, that of the other begins at 100*l*

Mr. Hawkshaw, C.E.—It is understood th her Majesty intends to confer the honour knighthood upon Mr. Hawkshaw, superintendent engineer of Holyhead Breakwater.

TENDERS

For the erection of a banking-house and premises, the Market-place, Derby, for Messrs. S. Smith & Co. M. Geo. R. Isborn, architect. Quantities supplied:—

Thompson	£17,000 0 0
Jones & Sons	16,995 0 0
Dennett & Co.	16,600 0 0
Humphreys	16,300 0 0
J. & E. Wood (accepted)	16,200 0 0

For rebuilding rice-mills, Bromley-by-Bow, Middlese for the Bromley Rice Mills Company (Limited). Messr Arthur & C. Harston, architects. Quantities supplied:—

Munday	£7,200 0 0
Knox	6,960 0 0
Wicks, Bangs, & Co.	6,950 0 0
Mann	6,930 0 0
Killby	6,630 0 0
Sheffield (accepted)	6,585 0 0

For repairing and painting No. 8, High-street, Bloom bury, for Messrs. Nutter & Co. Mr. W. P. Griffith architect:—

Lidstone	£300 0 01
Devereux	338 0 0
Lister	247 12 0
Cornwall (accepted)	230 0 01

For alterations and additions to Grove-villas, Ea India Dock-road. Mr. Owen Lewis, architect:—

Blandford & Jones (accepted)	£175 0 0

For rebuilding Crown and Anchor and shop adjoining, New Kent-road. Mr. J. H. Green, architect :—

Cooper	£5,700	0	0
Wood	5,475	0	0
Heath	5,400	0	0
Wright, Bros.	5,215	0	0
Matthews	5,200	0	0
Price	5,100	0	0
Dover, Son, & Co.	5,189	0	0
Pitcher	5,133	0	0
Crockett	5,055	0	0
McGlachlan	5,000	0	0
Mears	4,980	0	0
Ring	4,850	0	0
Blackmore & Morley	4,785	0	0
Carter	4,777	0	0
Smith	4,725	0	0
Cosier	4,709	0	0
Bruce	4,656	0	0
Lawrence	4,590	0	0
Knight	4,575	0	0
Riches	4,250	0	0
Cook	4,246	0	0
Chunnock	3,988	0	0
Tull	3,772	0	0
Michael	2,977	0	0 !

For alterations at No. 27, Pavement, Finsbury, for Mr. James Quinton. Mr. Thomas Durrans, architect :—

Heeps & Co.	£572	0	0
Taylor & Baden (accepted)	523	7	0

For erection of pianoforte factory, Arlington-street, Camden-town, for Mr. Henry Ward. Iron doors not included :—

Scrivener & White	£3,673	0	0
Axford	3,629	0	0
Langmead & Way	3,595	0	0
King	3,330	14	0
Bamford	3,300	0	0

For stabling, &c., and additions at Bramley Park, Surrey, for Mr. Percy Ricardo. Mr. Alexander Peebles, architect. Quantities supplied. :—

Nye & Moon	£1,471	0	0
Clark	1,441	0	0
Mitchell	1,412	0	0
Brown (accepted)	1,354	14	0

Tenders for new Baptist Chapel at Surbiton. Mr. Jas. Abbitt, architect : -

Cullum	£2,685	0	0
Staines & Son	2,276	0	0
Adamson & Sons	2,222	0	0
Todd & Saunders	1,991	0	0

For alterations and additions to Nos. 38 and 40, Queen Victoria-street, for Messrs. Standing & Marten. Messrs. E. Barlow & J. C. Boys, architects. Quantities by Mr. W. B. Buckshell :—

Elsden	£8,492	15	0
Sowell & Sons	7,670	0	0
Manley & Rogers (too late)	7,600	0	0
Colls & Sons	7,500	0	0
Scrivener & White	7,408	0	0
Bayes & Ramage	7,000	0	0
Newman & Mann (accepted)	6,476	0	0

For a small detached dwelling-house, near Woking Station, Surrey. Mr. Henry Peak, architect :—

Mason	£531	0	0
West (accepted)	520	0	0

For rebuilding the Miller's Arms, Guildford, Surrey, for Mr. George Trimmer. Mr. Henry Peak, architect :—

Strudwick	£454	0	0
Mason	449	0	0
T. & J. Loe	432	0	0
West	429	15	0
Mitchell & Son	419	0	0
Hughes	409	0	0
Bristow & Burdett	379	6	6
Duke & Fowler (accepted)	372	0	0

For drainage works for the Guildford Local Board. Mr. Henry Peak, surveyor :—

Garnett	£169	0	0
Pollard & Son	122	0	0
Mason	105	0	0
Burdett (accepted)	87	4	7

For the erection of warehouse and manufactory, Johnson-street, Pentonville, for Messrs. Symmons & Sons. Quantities supplied :—

Beaves (accepted)	£4,950	0	0

For block of three shops and business premises in Colston-street, Bristol, for Mr. Matthew Dunlop. Mr. J. Bevan, architect : -

Eastabrook & Sons	£4,399	0	0
Dument	4,295	0	0
Howell	4,269	0	0
Davis & Son	3,985	0	0
Wilkins & Sons	3,900	0	0
Church & Phillips	3,795	0	0

For block of two shops and dwelling-houses in Colston-street, Bristol, for Mr. Matthew Dunlop. Mr. J. Bevan, architect : -

Dument	£2,289	0	0
Eastabrook & Sons	2,280	0	0
Davis & Son	2,180	0	0
Church & Phillips	1,945	10	0
Wilkins & Sons	1,940	0	0

For shop and dwelling-house in Victoria-street, Bristol, for Mr. T. C. Stock. Mr. J. Bevan, architect :—

Davis & Son	£865	0	0
Eastabrook & Sons	833	0	0
Wilkins & Sons	738	0	0
Church & Phillips	725	0	0

For an addition on the west side of the Stock Exchange. Mr. John J. Cole, architect. Quantities supplied by Mr. James Barnett :—

Dove, Bros.	£11,148	0	0
Bill & Sons	10,992	0	0
Ashby & Sons	10,900	0	0
Colls & Son	10,777	0	0
Browne & Robinson	10,583	0	0
Kilby (accepted)	10,448	0	0

TO CORRESPONDENTS.

Amateur ("Health and Comfort in House-Building" next week).—C. T. H. (next week).—Quo Minus (we do not publish affronts on anonymous information).—L. W. G. (letter has been cancelled, having appeared elsewhere). We have not space to print *carculars*. J. W. G (cancelled, having appeared elsewhere).—C. J. (we shall be happy to receive copy).—C. C.—G. R. L.—A. M.—A. H.—C.—F. J.—E. L.—C. J.—C. G.—J. C.—B. T.—D. S.—Strive.—C. C. & Co.—W. H.—H. P.—W. & Sons.—H. P. P.—T. D.—A. M.—B. A. E.—P. C. O.—P. & T.—D. M.—S. & M.—W. P.—B. B.—D. & Co.—J. C. B.—J. H.—Mr. P.—W. E. U.—R. R. G.—H. W.—J. B.—T. W. B.—W. H. S. A.—B. G.

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EDWARD R. S. ESCOTT, Borough Engineer.

Town Hall, Halifax, August 7th, 1873.

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By order of the Board,
WM. WHITE GOODE, Clerk.

Loughborough, 20th August, 1873.

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The Builder.

VOL. XXXI.—No. 1596.

The Railway Moloch.

AINFUL and distressing are the accounts, flashed week after week over the wires of the telegraph, of fatal and disastrous occurrences, called by the name, not always strictly correct, of railway accident. Railway calamities they certainly are;—calamities to the corporate body of shareholders as well as to the individual sufferers. But in the use of the phrase "accident" there is, consciously or unconsciously, a begging of the question. Accidents, properly so called, are casualties that arise from causes beyond control. At least it is in that sense that we generally use the term. Injuries to life or to limb at arise from carelessness, or from causes at ought to be, but are not, within con-ol, are not true accidents, but offences. In e case of the gravest crime, except treason, own to our law, a person may be brought der the penalties of *murder* for a sheer act of anton carelessness. When disaster follows easter, under circumstances that have a cer-in family likeness, the question will force elf on the mind,—Is this the result of gligence or of incapacity? Have we, as a ilised people, neglected to take the proper ecautions to protect life and limb, or are we, an educated people, in a state of too great norance to know what precautions we ought to ke?

We use no editorial plural. We speak of rselves, meaning the English people. The estion of personal safety, in the only mode travelling by which long distances can w be traversed, is one that comes home to erybody. Few are there among us to whom large black letters,—now, alas! but too miliar to the eye,—in which the damp cards that dangle at the railway stations or k up from the mud at certain well-known eet corners, tell of "Terrible Railway cident," or "Fatal Railway Accident," or nother Railway Accident," do not cause a ill of alarm, or, at all events, of pity. A son is thus given to the dullest; and an rm, used in its real sense, *à l'arme*, to arms, o the most intelligent and to the most rageous.

The press is almost mute, in face of the mag-ude of the evil. Mute, that is to say, as far practical and hopeful counsel is concerned. ough, indeed, is *said*, but people are hardly ficiently aware how sure a method of con-ling an evil it is, to envelope it in a cloud of rds. There are no means of choking off an welcome inquirer that are at once more plau-le and more effective than to smother him in ails. So it is in the present instance. What he cause *this time?* is the inquiry. Are the oints" ill constructed, or out of order? Is signal-man to blame? In what minute ail has the enormous and delicate mechanism of the railway system failed this time? In this sort of inquiry time may be absorbed till the public attention is wearied; and with what result? Generally with the satisfactory one,—to some persons,—that the cause of mischief was altogether exceptional. It was something that has been hitherto overlooked, and that will be attended to in future; something that has always been weak, but will now be made strong; or something that, as its nature eludes all attempts at detection, is, of course, never likely to occur again.

Let it not for a moment be supposed that we are about to attack or to depreciate the railway system of this country. Nothing can be further from our wishes. In every way we have a right to feel, to a great extent, proud of that system. Every Englishman feels, or ought to feel, an honest pride that Watt, Stephenson, and Brunel were his countrymen. We say Brunel, because England claims, and indeed numbers among some of her greatest benefactors, many of these families, of French origin and name, who were driven to her shores by the intolerant cruelty of priest and king combined, and to whose members her stormy and uncertain climate seems to have imparted the sturdy perseverance of her own children, without depriving them of the brilliant qualities which they brought from the land of their birth. That English enterprise should have carried to so admirable an excellence, in comparatively so short a time, the machinery used for producing rapid locomotion, by land and by sea, is matter of just satisfaction for Englishmen. And to those of us who have stood by the very cradle of the locomotive; who have heard its first whistle in many a fair county throughout the kingdom; who have witnessed the open-eyed awe with which the rustic population came out to watch the strange advent of the iron horse; who have, may be, accompanied the last journey of the once cheerful and well-appointed stage; and who have yet fresh and pleasant reminiscenses of postchaises-and-four; the locomotive has that sort of fascination which is exerted over a man by the horse reared in his own establishment. Every fresh triumph is a cause of self-congratulation. Our speed, our comfort, our cheapness, all are admirable. And although we believe, and have before expressed the opinion, that we are yet at the first, rather than the last, letter of the alphabet of mechanical progress; that we have, in many respects, been really at work in the wrong direction; and that the railway system of 1973 will be as unlike that of the present year as our actual arrangements are unlike those that prevailed a century ago; this does not prevent us from admitting that we have made a wonderful progress during the last fifty years.

Again, it is perfectly true that the percentage of accident, or calamity, taken as regards the actual number of travellers, is small,—far lower than that by any other method of conveyance. When last we looked at the statistics of this question they showed that the mathematical expectation of accident was less to the traveller who set out on a long railway journey, than to him who set out on a stroll from Hyde Park-corner to St. Paul's Churchyard. It was far more likely, as matter of figures, that a man should be knocked down and run over at a crossing in the streets of London, than that he should come to any harm on a railway,—if he followed the simplest rules of care. And, whatever may be our personal experience, and however distressing individual calamities may prove,—we must always bear in mind that safety, in proportion to the number of passengers conveyed, is a marked characteristic of our railway system. The question is,—can that safety be made absolute? And if not,—why not?

The rate of average and percentage explains the comparative immunity from accident of foreign lines. Comparative, as far as the returns that reach us go. Comparative, more certainly, with reference to the actual number of passengers. For it is well known to those of us who are familiar with the Continent, that the care and respect shown to the English railway traveller by the officials and servants of the railway companies, as a general rule, are unknown across the Channel. On many a line in France or Italy, or Germany, the unfortunate passenger is dealt with as if he were a criminal. He is locked up in a pen, into which he is compelled to enter,—at all events if he has any luggage,—perhaps fifteen minutes before the time for the starting of the train. From this pen the inmates are hurried, like so many convicts, by the imperative and contemptuous command of some semi-military official. If delicate health or advanced age require deliberate movement,—if youth and inexperience are in doubt which way to turn, the sharp, shrill, angry "*Sortez, messieurs, vite! vite!*" of the conductors does not mend matters. All that we are spared. All that is, perhaps, only possible among people who are enamoured of a kind of liberty and fraternity that have never taken root in England. Most haste, quoth the proverb, worst speed. There are haste and hurry enough on the French railways. But for speed, commend us to our own,—for speed, and for safety too. For, in spite of the great severity of the Code Napoléon,—and we have known a French engineer-in-chief of the highest eminence condemned to *fine and imprisonment* because an accident happened on a line of which he was engineer, although he was in no way cognisant of the circumstances of the special case,—the comparative safety of the passenger we believe to be greater in this country,—fewer individuals, per million, of travellers, are killed or injured, than on the Continental routes.

Per centage, however, may be differently regarded; and there is a very important difference, which lies at the root of the question of safety, between a rate per thousand and a rate per million, if the thousand and the million are regarded under different conditions. Thus, if the arrangements of a steamboat were such as to convey with perfect safety say 300 passengers, the risk of the trip would be considerably enhanced if 600 were crowded on board. We could analyse, in this instance, some of the reasons why this should be the case. We should find the vessel to be submerged below the proper line of flotation; undue stress would be thrown on every part of the propelling machinery; the signals of the steersman would be liable to interruption; some foreign object might be thrown down into the engine-room. In a dozen ways we may see that the danger *per cent.* to the 600 passengers would be appreciably greater than to the danger *per cent.* to the 300.

The same rule prevails in our railways. There is a certain maximum amount of traffic which each line can convey without strain. Augment the amount, and you put on strain. Where this strain will tell is probably unknown. It will find out the weakest place; and then occurs what we call accident. We ought no longer to deal with the cause of that individual accident, like the physician who sets himself to deal, not with a disease, but with symptoms. We want to go to the root of the matter.

The occurrences of railway calamities in this country are chiefly notable at two periods of the year. The most serious are those of the augmented summer traffic and of the blinding November fogs. In the first case we see a direct addition to the strain to which the system is exposed. Every portion of the great machine has to work harder. Every porter, switchman, guard, or other servant has, if not to work for longer hours, at all events, to do much more while he is actually on the service of the line than at other times. The jaded aspect of the men tells

this story pretty plainly. Every carriage has to carry more weight; every engine has to draw a heavier load; every joint and fitting of the permanent way has to undergo more service,—in a word, the strain is increased, and often enormously increased, everywhere; and so the weak point is found out, but found out by a fatal calamity.

One portion of the remedy for this evil lies in the hands of the companies themselves. Of that we have not now to speak. It would be idle to attempt to prescribe rules, which must either be so general as to be vague, or so special as to require special knowledge of each case to which they should apply, before attempting to frame them. Not to overtask the men; not to underpay them; — not to attempt a false economy,—in a word, not to be greedy, is the first of those laws of action for the managers of all railways, which are imperatively called for by the public safety. But, having enounced this general law, the application of it must be left to each individual authority. It is only in some case of terrible break-down from the over-driving of the *personnel* of the railway (a case, indeed, which is far from rare), that public indignation is aroused, and that directors are taught that there is such a thing as penny wisdom and pound folly.

But we come to a more practical matter,—to one in which, in our deliberate opinion, legislative intelligence is not only proper, but necessary.

We have seen that either great augmentation of traffic, or such diminution of the natural powers of a system to convey traffic (as in the case of fogs, rendering slackness of speed necessary) as comes to the same practical result, may be taken as a *predisposing* cause of railway casualties. Next, we find that the main *effective* cause is the collision of trains. It is a natural inference, that we ought to inquire how it is — not that collision is not avoided, but that it is possible that it should occur. Were we working out a railway system on paper, one of the postulates would be that, under the arrangements proposed, collision should be impossible.

When two tracks of railway are laid side by side, at a distance of only a couple of yards apart, it is clear that if a train running on one of them is thrown off the rails, the carriages may so fall as to obstruct the other line of way, and thus to be run into by a train on that line. This kind of collision has occurred, but it is now extremely rare. It is the result, when it does take place, of the failure of some element either in the first train, or in the first line. If the wheel of an engine flies, if an axle breaks, or if the plate-layers have left a hole in their work, this accident may occur. It is to be guarded against by a careful inspection, both of way and of rolling stock, and in point of fact, it is not a danger that we believe now to be very pressing or alarming.

The most frequent causes of collision some years back, were single lines of railway. That such should be the case was almost incredible. It may be added that it was totally inexcusable. This has been tacitly admitted. By the constant use of the telegraph, and by the adoption of the block system, this cause of what formerly were frequent accidents have been brought, as a rule, under proper control. It is a cause, moreover, which moral considerations affect. For it is surely fit that the utmost severity of the law should visit such departure from well-known rules as alone renders collision on single lines possible. And in this severity there will be a great safeguard for the public.

We come, then, to the sore place at last. Over-traffic,—over-stress of some kind is the predisposing cause. Collision is the active cause. When and how does collision occur? Not, as a rule, from the breakdown of trains; not from the use of single lines. It occurs, in the great majority of instances, from the passage of *two lines of traffic*, in different direction, *over the same spot*. If we prevent this, we shall prevent collision; or at least we shall so far reduce the possibility of its occurrence as to render it almost a *lusus naturæ*.

Can this be done? the reader who is not an engineer may ask. Certainly and absolutely, is the reply. It is a question, not of engineering contrivance, but purely and simply of expense. "Do you mean," our querist may proceed, "that structural arrangements are within the skill of the engineer to effect what shall render collision, from what we may call the usual cause, impossible?" "Certainly, is the reply. "And that the non-adoption of such safeguards is a mere question of saving money?" "Undoubtedly." Such is the real state of the case; let the men who act as jurors on coroners' inquests once get thoroughly hold of that truth, and railway collisions will cease to disgrace the civilisation of the day.

It is no mere matter of theory or of opinion that we now, and that not for the first time, bring forward. When the railway system was first introduced, extreme care was taken that ordinary highways should not be crossed by the locomotive on the level. Bridges were almost everywhere built to carry the road over the railway, or the railway over the road; and, speaking at a venture, we may say that at least a third of the cost of the formation of what are called the works of our railways (not including the metal way) was caused by the rule that railway and road traffic should only cross *on different planes of elevation*. Then collision was impossible. In some places, where traffic was small, the right to make a level crossing was fought out in committee; but a lodge and a permanent porter were, in those cases, made imperative. What is the resulting experience? We cannot cite a single instance of collision between road and railway traffic that has taken place at a bridge. All that have occurred, and the total will be found to be considerable, have taken place at level crossings. And with this plain truth staring us in the face, we allow one railway to run across another, or to run over its own lines, in a manner to render collision possible; if we ought not rather to say, to render its prevention matter of extreme difficulty.

We have an example of how this may be avoided, and is avoided, in the Victoria Station. A perfect web and tangle of railways converges on that metropolitan centre. Looked at from a balloon, it would seem as if they had been planned for the very purpose of homicide. But there is a method in their madness. Viewed on the earth, they will be seen to occupy three distinct planes of level. We believe that it is to the ingenious suggestion of an engineer to whom England owes many useful inventions,—Mr. J. C. Haddan,—that the arrangements are to be attributed. It was by the long experience, and tried mechanical ability, of Sir Charles Fox, one of the few surviving assistants of Mr. Robert Stephenson, that they were carried out. But the fact is, that the numerous inlets and outlets of three great main lines, and we cannot tell how many branches and loops, that come into the Victoria Station, are so carried above and below one another, that the ordinary cause of collision is removed, and that, come fine come fog, the trains may run at full speed, confident that they shall not cut into one another at some half-turned switch or ill-signalled crossing.

We do not of course say that in a terminal station it should be impossible for a proper exchange of carriages to be made from line to line. Where a slow speed is invariably maintained, we think it permissible; but in any case where rapid *through trains* at any time pass, we hold that it should be absolutely prohibited so to lay the way as to make collision possible. In one case of a well-known metropolitan line, where another crosses on the level just without the terminal station, we think that the authorisation should have been refused by Parliament. It is a case where, now, most of the trains stop or move slowly. But there is no safety in the word "most"; safety lies in all or none.

If in the costly precincts of the metropolis, where a paving of silver, if not of gold, would not equal the money-value of the area of the ground it covered, it has been found practicable to carry railways on different planes, and thus to remove the danger of collisions; if in the cases we name the wise and salutary rule of structural provision for traffic has been substituted for that reliance on human care and industry, which generally results, sooner or later, in disaster; what can be said as to great stations and junctions in the country? Take an actual example. A well-known station is so planned that the down trains from London, running on the left-hand of the line, have their platform on the same side of the railway as that which it is also employed for the up-trains to London, the two not being, as is usual, on the right and left hand of the main line, but both of them to the south. This is not an imaginary example. The case is further complicated by the entrance of branch lines close by. Now, in all stations of this nature, if we take the number of trains running through them each day, we shall find the mathematical expectation of collision to be very great. Constant care and skill may prevent mischief. It may be the case that no accident has ever occurred on such a spot as we have in our mind. But the application of a certain amount of skill and of cost would provide such courses for the several streams of traffic as would render collision as impossible as in the case of a road bridge. Ought this precaution to be neglected because of its expense? That expense, no doubt, would in some cases be considerable, but it would be incurred once for all, and in very many cases, it would be recouped within no very long time by diminution of the costs for the damage and legal expenses to which the companies are so constantly liable?

So many lives for 1,000*l.* sterling? We have before suggested that sanitary authorities were in doubt as to the solution of that equation. We fear it is the case with some other authorities. If it be true that, in a recent case of disaster the company had one station-master, whose hours of duty extended from six a.m. to half-past nine p.m.,—that is, one man from whom, for the pay of one man, they demanded the work of two,—we think that the persons who authorised the time-sheet and the pay-sheet deserve that the notice of the CORONER should be turned in their direction. If "manslaughter" should be a verdict in such a case, we should be disposed to attribute to the Directors of the line the first degree of blame, to the fifteen-hours-and-a-half-per-day official only the second.

THE BRIGHTON NEW FREE LIBRARY AND MUSEUM.

THE sleeping population of the City of London is constantly diminishing, as appears from each successive census, but the day population keeps on the increase. In 1861 the sleeping population of the City proper was 112,063; whereas in 1871 it had sunk to 74,732, with a day or occupation population of many times that number. Even in such districts as the Strand, St. Margaret's, and St. George's, Hanover-square, considerable reductions in population were shown by last census. Other districts, however, especially suburban,—and London's suburbs have long stretching radii,—show a large increase in the population. Brighton, otherwise London-*super-Mare*, can scarcely be regarded as a suburb of London, but it is, *par excellence*, the seaside resort of the Londoners, and the kaleidoscope population of Brighton presents probably more curious phenomena than those of almost any other town in the United Kingdom. In 1801 the population of Brighton was 7,339; in 1861, it had risen to 77,693; in 1871, it reached with the western suburb of Hove, 101,231. These figures do not, however, give an accurate idea of the summer and "season" population of Brighton. The last census was taken on the 3rd day of April, 1871, as for several past decades the census has been taken at the beginning of that month. The contrast between the population of Brighton at the beginning of April, 1871, suggestive of the bleak and dismal, and the population of Brighton at noon of any fine day in September, 1873, is very remarkable. The sleeping population is probably trebled, and the day population quadrupled, at the one period as compared with the other. If it be asked concerning the enormous increase "whence, and for what come they?" it may be answered broadly from London, and for change of scene and circumstance, and for recreation. Well, change of scene and circumstance the visitors are sure of, but what of the recreation? Both piers are open, and promenading can be done to one's heart's content, excellent music being discoursed on the west pier; there are brilliant shops, equal to many in Regent and Oxford streets, London; there is the Aquarium, with first-rate music again, and the best institution of the kind in the world, to which, by the way, important additions have been made and immense improvements effected in the course of the last twelve months, as witness the additional sea anemones, the sturgeon, the seals, the porpoise, the alligator, and divers other wonders of the waters. Failing satisfaction from pursuit of these means of catching pleasure on the wing, there are the rival "town bands," the Ethiopian serenaders, and a trip to the Devil's Dyke, and this exhausts "doing" Brighton. No, we had forgotten the ever-delightful recreation of reclining upon the shingle and shying, with a number of stones, at one particular stone, or of throwing stones in rapid succession without aim into the ever restless sea, watching the while the rising tide

ut having done all this,—the lounging on the rade, on the piers, and at the shops; having ne "the Dyke," and the Aquarium, and the one-throwing, what is left for a visitor? Not uch. It is well that the corporation of righton should take an anxious and enlightened ew of this inquiry, as they seem to have done, the establishment of a Public Free Library id Museum.

Few public or private buildings, or properties of te, have undergone more remarkable, and withal untary, changes in their character, and the es to which they have been applied, than the righton Pavilion, absurdly fantastical in design, d worse than foolish in the uses to which it as originally applied. The Pavilion, with the thouses and grounds, were purchased from the own by the corporation of Brighton in 1850 r 52,000*l*. The investment was an excellent e for liberal municipal authorities to make, hough it may not give promise of directly rofitable occupation" in all the uses to which e property is applied. The Pavilion proper is ed for corporation and other public purposes, d part of the premises are leased to the ighton School Board. The grounds are thrown en to the public as a people's garden; and e conversion of the stables, stable-yards, d coach-houses, to the purposes of a Public ee Library and Museum, is on the point of mpletion. If the corporation has desired to omote the interests of the people of Brighton, d to continue or increase the attractions of the wn, they could not have done better than by stituting the New Free Library and Museum d Picture Gallery.

To those who know nothing of the Pavilion d the grounds, and what were formerly the bles, coach-houses, and their adjuncts, it is icult to convey a correct idea of the trans-mation that has been made. The Pavilion, royal residence, stands distinctly, although widely apart from what were the stables, ch-houses, riding-school, loose-boxes, and at not, that are in a separated group of build-s. Between the Pavilion and the stables re was a subway that allowed means of com-nication between the one place and the other, hout the necessity of stable-men, on the one nd, or the august occupant of the premises, or valets, on the other, appearing in the grounds. s subway, 8 ft. high, it may here be mentioned, been utilised as a chamber for warming and tilating the New Library and Museum, which part of what were once "the first gentle-n" &c.'s stables and coach-houses, much of space now utilised for such a grand purpose ing been open to the sky during the original upation.

The skilful adaptations of what may be called stable buildings of the Pavilion, are highly ditable to Mr. P. C. Lockwood, C.E., architect d surveyor to the corporation. The style of Pavilion—if it has a style—may be pro-nced a sort of bastard or outraged Moorish, which Mr. Lockwood was bound to conform ar as he could do so with self-respect. His ptation may be pronounced a species of ified Moresque.

t is intended that the entire suite of rooms t are now converted from stables, &c., which ude the rooms of the free library and museum, uld be connected, and a general reference to premises should include notice of the whole, re or less particularly. The dome, originally stable, which furnished stalls for forty-eight ses in the time of the Prince of Wales, after-rds George IV., has been converted, with ndant decorations, into what singers and sicians pronounce a capital concert-hall, the ustical qualities of the space being very good first-class singers, but very bad for third-class tors, who fail to keep *en rapport* with their iences. Mr. Lockwood was concerned in ning this grand rotunda to account to make ermanently available for public uses at the allest cost in first outlay and for maintenance. en he took it in hand, the light received was n dull green glass. He introduced stained s groups, arranged between the rib spaces the dome, and above these, at a sufficient ght not to obstruct the play of light, he fixed upper and outer glass roof. The effect is irely satisfactory, in obviating either the nipulation of blinds, rendered unnecessary, he cleaning of glass. The party colours and ing of the dome remain at the end of seven rs absolutely untarnished. Great changes e been made in this rotunda in construction, well as in decoration, as any one would detect visited it now, and was present in it about two years ago, when it was temporarily used as a place of worship. The inner periphery was then enclosed by felt curtains. It is now opened out, and the grand diameter of the dome is 124 ft., with a diameter between the pillars that support the front of the galleries of 80 ft. The hayracks of the stables remain, only appropriately coloured.

Another fine room, with which the dome is to be brought into immediate connexion, is what was known formerly as the Riding School, but is now used as a corn exchange. In this hall, 172 ft. long by 72 ft. wide, the British Association held their aggregate meetings in August last year; some of the decorations are still remaining. The rooms, even as they existed then, gave most satisfactory accommodation to the Association for its aggregate and sectional meetings.

The entrance to the New Library and Museum is from Church-street, by a pair of cast-iron gates. The entrance-hall is about 25 ft. long by 16 ft. 9 in. wide. To the right and left of the entrance-hall are committee-rooms, 29½ ft. long, the one to the right 22 ft., and the other 18 ft. 5 in. wide. On the left of the entrance-hall there is abundant accommodation in the way of closets and lavatories.

The central hall is 115 ft. long by 30 ft. wide, and is a splendid apartment. It is lighted entirely from the roof, which is double; the ribbed glass employed for the outer roof entirely prevents glare. At each end of the central hall, a space, under the galleries, of about 12 ft. wide, is laid with parti-coloured tiles.

The rooms to the right of the central hall, and ranging with it, are three in number on each floor, and respectively 31 ft. 5 in., 24 ft. 9 in., and 41 ft. 10 in., in length. These (six) rooms are on the ground and first floors, the same in length, and all about 19 ft. wide. To the left of the central hall, on the ground floor, there are two library rooms, each 50 ft. long by 20 ft. wide. These rooms are already filled with excellent standard works, and many scarce, curious, and valuable publications, all inclosed in oak cases glazed. The cases secure the advantages, amongst others, of preventing the abstraction of the books and of defending them from the injurious effects of the products of combustion. The books collected, as yet, are almost entirely contributions. Amongst the contributors are Dr. Ormerod, who has given a very large and fine collection of books; the Rev. Henry Venn Elliott, from whose excellent library book-cases as well as books were received; and Mrs. Richard Cobden, who has contributed a unique collection of the works of others and the writings of her late eminent husband. The stock of the Albion reading-room and library has also been acquired by the Corporation. The reference department will be rich in the possession of publications that cannot be purchased. Amongst others, we noticed a valuable collection of London and provincial directories; forty volumes of the *Times*; fine sets of Lords' and Commons' journals; vols. of collated newspapers from the introduction of the Reform Bill, March 2, 1831, to the prorogation of Parliament, April 22nd, 1831; newspapers "Annus Terribilis," 1848, 2 vols., that include a great variety of papers of the period, carefully collated, including numbers of the *Times*, *Le National*, the *Illustrated London News*, the *Historic Times*, *Daily News*, *Standard*, and numerous other papers, furnishing valuable materials for a history of the French Revolution of 1848.

Before disposing of this portion of the subject we feel disposed to say that, in our opinion, in the allocation of space, the library, as compared with the museum, has scarcely had its fair share allotted. For visitors, the museum will be of course the chief attraction, but the permanent inhabitants of Brighton, the ratepayers in a word, have to be cared for primarily by their local representatives; and the library, in its lending and reference departments, is the portion of the institution most likely to be useful to them.

It has been already stated that to the right of the central hall there are, on the ground and first floors, six rooms, three on each floor. The library-rooms above referred to as on the ground-floor have over them two rooms of the same size devoted to museum uses. They are each about 50 ft. long by 20 ft. wide. Communicating with the museum galleries there is a fine room, available for lectures, concerts, or other purposes. It is 60 ft. long by 29 ft. wide, and has a double roof. In fine, the central hall has one floor, that is lighted from the roof, and gives an excellent light for the exhibition of paintings, sculpture, and other works of art; it is surrounded on the ground-floor by library and museum rooms, and on the first floor by rooms of like dimensions, the two end rooms being as galleries of the central hall. The west side of the museum and library rooms adjoin the parochial offices, and Mr. Lockwood has, on that side, obtained his lights from glass roofs, and wells for the ground-floors of the three museum rooms. It is intended to make a communication between the museum galleries and the galleries of the dome, which can be easily effected. The whole of the spacious rooms we have named will then be in direct communication with each other.

The museum will open very strong in various departments, and is especially rich in fossils from the chalk formation, with very good collections in general natural history, including ornithology, ichthyology, entomology, and the other branches.

The Brighton Free Library and Museum is *not* established under the provisions of any existing Acts, but is provided by and is under the control of the corporation. The contracts, signed 18th October, 1871, are principally with Messrs. V. P. Freeman and C. & F. Cheeseman, for 6,300*l*. The total cost of the works will be something less than 10,000*l*. The lighting of the building will include 983 lights in all. The central hall will be lighted by two rows of burners, 756 in all, from a 1½-inch pipe run along under the roof. A basement chamber in the north-west corner accommodates the boilers for warming the rooms. The contracts have been executed under the direction and authority of Mr. Alderman Lester, chairman of the Pavilion Committee.

The Free Library and Museum are to be publicly opened on the 8th of September.

STREET IRON RAILINGS AND STREET ARCHITECTURE.

It has been often enough remarked that things always in sight are not very curiously looked at, and do not obtain that amount of attention which they sometimes well deserve. It is a trite remark, and if ever it should stand in need of proof it would be found in the scant notice given to the common *street iron railings*, whether ornamental or plain. It may, perhaps, be difficult to account for this, for it is impossible to move a few yards through London streets without seeing, and even tumbling up against them. Other things, whether architectural or not, may be avoided, and passed almost unseen, but the "railings" cannot be. And, more than this, there is a fashion growing up to make of these hitherto plain and unornamented objects works of art, and no small items of expense. Indeed, if we look closely to the matter, it will be found not a little significant of the tendencies of the time, and indicative of the way in which its *artistic* energy exerts itself. We have been at some pains, and spent some little time in the effort to grasp the railing question; and it may interest a thoughtful reader here and there to follow us in our inquiries. They are not a little curious, all things considered. The ordinary house area railing, as everybody knows, was, up to very lately indeed, a simple square bar of iron, let into a stone curb at its base, and kept upright above by a cross piece or iron fillet. It is entirely without "ornamentation,"—to use the favourite word,—of any kind, except at the top, where it is hammered into a blunt point. A useful object, no doubt, but hardly a striking one. But if we go back in time, we shall find that this plain bit of iron work sprang out of a far more elaborate object, for every here and there in the older and "unimproved" parts of London are fragments of iron railings of quaint design, and even elaborately-designed scroll-work. Many will, of course, have noticed this, and will have perhaps been puzzled at the "extinguisher," which forms, with the ring for an oil lamp, so marked a feature in it. This extinguisher, by the bye, was for the purpose of putting out at night the torches or links which were carried by the servants who attended the "sedans" through the ill-lighted streets, and through some doubtless not lighted at all. This ironwork is at times—as may be yet seen in some fine old houses in Chelsea and other places—not a little elaborate, and cleverly designed. The iron gates may be cited in St. Paul's, both those that are yet visible, and those which have been

removed in the late alterations. It would be difficult to find finer specimens of elaborate and carefully-designed and well wrought ironwork. But this by the way, for our present object is to note what is *now* doing in the "railing" way.

The square and plain unornamented iron bar railing is certainly dying out, for in most new and improved localities there is to be seen substituted for it some ornamental patterned railing of cast metal quite in the spirit of the time, for it shows none of that hand-work for which the old ironwork of whatever date was so famous. We may almost ask, is it an improvement or a good sign? But the manner of the death of the good old plain matter-of-fact railing is in some cases not a little curious to note. Round Westminster Abbey, for example, this iron square bar was to be found in all its primitive simplicity, and it seemed to do its work of separating the little plot of green grass close to the venerable walls of the abbey from the adjoining churchyard full of grave-stones. But the spirit of improvement is now everywhere, and this plain ironwork has felt it with the other things round and about and in the old abbey. Small scrolls of wrought iron have been added to the upright square bars, and riveted into them and the cross-piece above, so that this railing may show how to ornament, before it is too late, a plain piece of construction. We allude to it because it was among the first of the old square bars which felt the magic touch of improvement. The iron gates in the archway leading into the cloisters, as plain as the aforesaid bars, were at the same time made not a little ornamental by the same process, and by the addition of some cast-iron details screwed on to the wrought-iron uprights. How far this is from the old way of work we need not hint at. It is modern imitative Gothic, but it shows what can be done with the square bar work in poor localities. We might go on to note some of the elaborate ironwork which is so fast displacing the square bar, as round the plots of grass and flowers in New Palace-yard, and the yet more ornamental ironwork enclosing New Palace-yard itself, and decorated with gilding in a lavish manner. Indeed, in and about the venerable abbey and the Palace of Westminster is a perfect paradise of ironwork, as far as we modern men can do such work. But it is to be feared that all this expensive work is a very long way, indeed, from the idea of the genuine wrought metal as it has come down to us from the past. Ironwork, even "iron railings," offer chances for the display of real artistic skill and taste, not only on *paper*, and as matter of design, but in the actual metal, the hard iron itself: not a mere series of repetitions of the same forms and details, as though cast in the same mould by a firm, but as offering opportunities for artist workmanship, not a little tempting and attractive! Are we really improving and progressing in artistic matters? Is it not better to leave the old square bar to do its useful work, and to remove it only when it can be supplanted by real art-work in iron, in small quantities may be, but still real, and true, and expressive, and *not* past the hand of an executive artist-workman?

The public, it is true, have yet to be taught what is real and what is false in these things; but the public is right willing to learn, provided only that the teaching be practical, and eventually visible and tangible in result. It is the artist workman that is needed for these things.

Another remarkable difference between the old and the new fashioned system of treating railings is the practice nowadays growing up of colouring and gilding them. Dull iron-coloured oil paint seems to have satisfied the artistic longings of our fathers and grandfathers, but now simple iron colour, or dull green, for bronze, is not enough. The fashionable colour is a dull chocolate or reddish brown, with plenty of gilding. Iron, could it but be kept of its natural colour without rusting and destruction, would be all that could be desired. Nothing can be better in its way than the colour of good iron. It tells its own tale of hardness, and strength, and durability; but the rusting of it compels some sort of protective coating of varnish or paint, and it is an art misfortune, as we take it, that no substance sufficiently transparent has been found or invented that shall sufficiently protect the metal while preserving the colour of the iron, and yet allow of its natural surface being seen through it. Might not the finding out of such varnish, or other substance, be a good subject for a Society of Arts prize? It might, too, be not a little useful for other metals, as silver, liable to tarnish. Should not all natural material, as stone, wood, and metals, be allowed to show as such where possible,—*decoration* not hiding wholly the natural surface, but ornamenting it in parts?

It is, of course, useless to try to stop the course of building improvements, but it is unfortunate that there is no one to care a little for the things necessarily destroyed in the act of pulling down so much. Surely there ought to be some public official sufficiently qualified to look after these things, and to save a fragment here and there.

THE NEW OPERA HOUSE, PARIS.

FOR some time past the works of the new Opera-house,—that dream of the Haussmann era,—have been performed in isolated sections. There was a lack of funds and workmen sufficient to continue operations simultaneously in all parts of the building. Thus the greater portion of the proscenium was completed several months ago, as were the actors' and actresses' dressing-rooms, the *foyer des artistes* (save the medallions which are to contain the portraits of all the artists employed in the building of the Nouvel Opera), and the mosaics of the pillars and pavements, for the execution of which a troop of Italian workmen was expressly engaged. The contractor's staff is at present employed on the grand staircase leading to the auditorium. As it may be seen now, this part of the building, vividly illuminated from above, encumbered with scaffolding here and there, and peopled by a legion of workmen, offers one of the most picturesque spectacles imaginable. In one corner the sculptors are at work by the light,—even at noon,—of numerous gaslamps fixed on movable supports, and fed by india-rubber tubes. On the stairs, marble-cutters are polishing the balusters; others, by the aid of an ingenious contrivance, hollow out the marbles which are to be traversed by gas conduits: a tube of iron plate, to which a rapid rotary movement is communicated, penetrates the marble by the force of its own weight; and when the piercing is complete, instead of the *débris* left by other processes, a little column of marble is withdrawn from the block, cut and polished by the friction of the iron plate, which, according to the thickness of the marble, has made, in traversing it, from 60,000 to 80,000 revolutions. Above, the bronze-workers are constructing the balconies of the upper stories; lower down, the clever carpenter, Saintonge, and his gang, move heavy *madriers* without an accident, amidst the finest pieces of sculpture and delicate decorative work. Everywhere the noise of hammer and the screech of machinery add to the animation of the scene.

The works are sufficiently advanced to enable one to foresee the effect that will be produced by the grand staircase. The thirty columns of Larancolin marble, with capitals and bases in white marble of Saint-Béat, glitter already, and harmonise marvellously with the tints of the pilasters in violet *brèche*. The carving of the tympans of the arches, faces in bas-relief, executed by M. Chabaud, is quite finished. Little remains to be done to the details of the balustrades and vaults of the staircase. At the nine balconies of the first story, balusters in soft spar are being placed, surmounted by slabs of onyx. This is only one of the many finished portions which already give the building an air of Oriental richness. And yet much remains to be added. The enormous marble steps brought from the quarries of Gerraveza lie already cut in the cases, just as they arrived. The balustrades in antique red marble are yet in the municipal warehouses, awaiting the moment when they shall be placed on their basement of green Swedish marble, and surmounted with the onyx slabs. At the bottom of the staircase the marbles are being adjusted, on which will stand the two large groups of M. Carrier Belleuse, supporting candelabra. At the entrance of the *parterre* the architectural lines are interrupted at the space left for M. Jules Thomas's two caryatides, executed in variously-toned bronze, and draped with marble of different colours. Above every group of columns a space is reserved for the medallions of enamelled lava, whereon M. Solier executes, on a blue ground, designs of musical instruments of all times and countries.

Lastly, the ground is not yet quite levelled, nor sufficiently to receive its marble pavement; and on the ceiling four large cases alone indicate the spaces to be occupied by M. Pils's frescoes. The most hopeful among the architects will n vouch for the building being completed befo eighteen months. The new Opera-house w then have been about ten years building.

NEW RAILWAY EXTENSIONS AND BUILDINGS.

STARTLING INTENTIONS.

AN analysis of the proceedings at the rece half-yearly meetings of the several railway co panies throughout the country, reveals the fa that on many of the leading lines new works a extensions on a scale of considerable magnitud are about to be entered upon, involving an en mous outlay of capital.

Commencing with the London and Nor Western Company, we find that the shareholde in this leviathan corporation, at the meeting the 23rd ult., authorised the expenditure 244,250*l.* in the enlargement of stations and purchase of land. These extensions incl 13,000*l.* for additional offices at the Eust station, 8,000*l.* for a new station at Old Fo 9,000*l.* for new permanent goods offices at Bro street, 16,000*l.* for the rebuilding and enlar ment of the Nuneaton station, 7,600*l.* for additi to the works at Crewe, together with the sum 58,364*l.* for additional accommodation at ot stations along the company's lines. The estima cost of the land alone for these new work 115,559*l.* At the meeting of the company, chairman made an interesting statement specting the company's present rolling st He said that the number of locomotive engi which in 1862 was only 1,000, had increased 1,900 at the present time. The number of riages which, in 1862, was 30,000, was 40,000. The number of wagons had increa within the past ten years from 18,000 to 36,0 and the traffic receipts, which in 1862, amoun to 2,100,000*l.*, now amounted to 4,038,0 During those ten years, they had conve wooden bridges into iron, at an outlay of 59,0 It was now about five years since they introduced the locking-up apparatus, and du that period they had carried out that alterat at a cost of about 500,000*l.* In addition to t they had been introducing the block syst and it was now in operation to the extent of miles of their line, while 381 other miles w fitted with the permissive block, which he lieved to be the best system of the two. very nearly 900 miles were on the block syst out of a total length of line of 1,600 miles.

The sanction of the shareholders at the me ing of the Great Northern Company was gi to the expenditure of 185,365*l.* in new and larged stations and other works. These incl 50,000*l.* for new offices and platforms, and a new engine-shed and sidings at King's-cr 45,000*l.* for a new goods depôt at Farringd street, on land which the company have le from the Metropolitan Railway Company. depôt includes the erection of large new go warehouses near the junction of Charterhou street with Farringdon-street. The intend new works also include the construction duplicate tunnel at Maiden-lane, King's-cross an outlay of 50,000*l.*; also the enlargement Lincoln station, at a cost of 4,000*l.*; the re struction of Ratcliffe Viaduct in iron and bri instead of timber, 4,000*l.*; new signal-loc apparatus, offices, and water-cranes, at Gr ham, 3,995*l.*; proportion of cost of new sig box, locking apparatus, and additional sidings Leeds; 6,200*l.* for proportion of paving Yo road, King's-cross; together with upwards 20,000*l.* for extensions at sundry stations on railway. The report states that a considera saving in the working of the London goo traffic will be effected by the erection of the n depôt at Farringdon-street, consequent on great reduction in cartage; and with refere to the extensions at King's-cross, it states th the passenger-station there, erected twen three years ago, requires enlargement, da experience proving that the existing accomm dation is inadequate to the traffic, and also t the duplicate tunnel under the Regent's-ca has become indispensable. It may be add that, beyond the extensions at King's-cr above named, it is ultimately intended to ca out still more extensive and important enlar ments, by the construction of a large cent platform running the entire length of t station, together with the erection of a n frontage towards the Euston-road, in a line w the Midland Station and Hotel. These n buildings will contain an entirely new set

es, board-room, refreshment-rooms, waiting-
us, and other apartments. In addition to
outlay above stated for new works, 144,162*l.*
about to be expended on new rolling-stock:
21,600*l.* for new engines, 21,505*l.* for new
iages, and 101,057*l.* for new goods wagons.
t the Great Western meeting, the share-
ers sanctioned the expenditure of 199,645*l.*
new works and stations, and purchase of
; also 40,225*l.* for the purchase of the
fyddfa canal; and 80,000*l.* for new engines
carriages. The intended outlay for new
s includes 103,849*l.* for an extension line
new station at Birkenhead; 16,270*l.* for a
station at Stourbridge; 9,400*l.* for engine
s at Gloucester and Swindon; 10,000*l.* for a
goods station at Bristol; and 20,000*l.* for
telegraph for signalling and locking
ratus on the line generally. The new line
een Bewdley and Kidderminster, authorised
e Act of 1861, the estimated cost of which
000*l.*, is also at once to be proceeded with.
eport also states that the permanent shaft
e Severn Tunnel railway was commenced
rtskewett in March last, and has been sunk
depth of about 60 ft.

e Midland Company, however, almost
es all others in its past and prospective
nditure on works in progress and intended.
utlay which this great company is incurring
w works and buildings is something fabu-
as is proved by the remarks on this subject
by the chairman at the half-yearly meet-
He stated that the Midland Company had
laying out capital during the last few years
ery large extent. Indeed, he did not know
ny company ever laid out capital at the
rate that the Midland had done during the
x years. He went on to show that within
riod named the company's capital outlay
een between 2,000,000*l.* and 3,000,000*l.*
g annually. In 1867 their outlay was
070*l.*; in 1868, 2,012,063*l.*; in 1869,
541*l.*; in 1870, 2,037,059*l.*; in 1871,
957*l.*; in 1872, 2,740,424*l.*; the total
an expenditure on works, in six years,
698,814*l.* The capital expenditure during
x months ending June was 1,385,850*l.*,
he estimated expenditure for the current
onths was 1,358,000*l.*, and 4,007,385*l.* in
quent half-years, making 5,366,286*l.* more
l to be expended. Several of the new lines
have for some time been in progress of
uction, are to be opened within the current
nths. These include the Liverpool exten-
nd new central station, which is advan-
asly situated in Ranelagh-street. Also that
n of the Mansfield lines known as the
op and Shireoaks line; the Radfield and
ll; the Duffield and Selston; the Breedon
shby; the Ashby and Nuneaton; and the
n and Weston. On these several lines
000*l.* have been expended. On the Settle
arlisle line, now in progress, 1,620,072*l.*
lready been expended, and a still further
rge outlay is necessary. The works are
ding actively towards completion, but
difficulties have been encountered in
g labour and materials for the construction
line. The company have made an engage-
with the Forth Bridge Railway Company,
aranteeing a certain amount of revenue to
mpany formed for constructing the great
over the river Forth a short distance
f Edinburgh. The amount of revenue
tee in all is 75,000*l.*, of which the North
guarantee 60,000*l.* and the Midland
l. per annum. The Midland directors
the construction of this bridge as a most
ant improvement of the through route to
rth and east of Scotland, in which they
Midland Company) are very largely
ted. Referring to the ultimate cost of
at St. Pancras Hotel, the chairman stated
he contract price for the hotel was
0*l.*, but that the completion of the build-
l cost between 30,000*l.* and 40,000*l.* more
he contract price in consequence of the
e of materials and labour. It will be
months before the building can be finally
d. It transpired at the meeting that the
apital of the company at present is
000*l.*

rding to the proceedings at the meeting
South-Western Company powers have
btained for enlarging the company's works
ations at several points on the line.
nclude the improvement of the approaches
Waterloo Station; the enlargement of the
depôt and the locomotive establishment
e Elms; additions and extended station accommodation at Clapham Junction, at Basingstoke, and at Poole; and an extension of the Southampton Station. The works on the Barnstaple and Ilfracombe railway are approaching completion, and the line is expected to be ready for opening at the end of the year. New railways in the districts of Windsor, Ascot, and Aldershott, are also about to be commenced, as well as the extension of the Joint Portsmouth Railway to the water-side at Portsea, undertaken in conjunction with the London, Brighton, and South Coast Company.

The North-Eastern Company are about to expend the sum of 679,699*l.* during the next half-year in the erection of new warehouses, stations, cottages, sidings, and new lines in progress and about to be commenced. Of this sum 200,000*l.* are to be expended in new warehouses and stations at Newcastle, Leeds, Hull, Gateshead, Hartlepool, and Middlesbrough; 286,699*l.* for additional sidings, cottages, station accommodation, turn-tables, cranes, and other works; and 193,000*l.* in the construction of entirely new lines. In addition to these sums, the shareholders voted 468,263*l.* for stock actually ordered but not delivered, whilst the chairman stated that in subsequent half-years they would require to spend an additional sum of 2,136,302*l.*, making altogether for new works yet to be executed, 3,284,992*l.* The new lines in progress of construction, are the Helmsley and Pickering, the Knaresbro' and Boroughbridge, the Masham and Melmerby, the Leeds and Wetherby, and the Castle Eden and Stockton lines; also the extension works of the Hartlepool docks, and a large new station at York. The directors have also entered into an arrangement with the corporation of York for the construction of a new line of railway to the east side of the city, and it is intended to apply to Parliament in the next session for the necessary powers.

At the meeting of the Great Eastern Company, the chairman stated that the cost of the metropolitan extensions would not be less than 3,600,000*l.* net, but that if they exceeded it by 100,000*l.* he should consider the expenditure within the estimate. The cost of the Liverpool-street new station will be 250,000*l.*, but a temporary station is to be first erected, and the contractors are now under notice to proceed with the works at this temporary terminal station, which is expected to be completed and opened for the suburban traffic in October next. The permanent new station at Liverpool-street will take upwards of twelve months to build.

It was stated at the meeting of the London, Chatham, & Dover Company, that the new warehouses at Blackfriars are completed, and will be opened this month, along with the necessary connecting works and sidings for goods trains and wagons. Six lines of metals have been laid down on these sidings. The works in connexion with the new Holborn Viaduct Station have not progressed as quickly as was expected, and it is believed that that station will not be opened before November. The chairman stated at the meeting that under the award of Lord Cairns and the Marquis of Salisbury, they had sold surplus property to the amount of 450,000*l.*, and that they had still to sell property which was valued by Messrs. Vigers at 150,000*l.* With reference to the surplus land yet to be sold, the chairman observed that the sale of land of this description in London was a very difficult thing if they tried to get its full value. The increased price of labour and building materials had so completely revolutionised the building trade, that they had had a very anxious time with regard to this surplus property.

The proceedings at the meeting of the Lancashire & Yorkshire Company showed that during the past half-year a considerable quantity of land had been purchased for new and enlarged station purposes, the increasing traffic of the company demanding further accommodation. The meeting sanctioned the expenditure of 200,000*l.* for station extensions during the current half-year.

It was stated at the meeting of the North London Company that the widening works on the City Extension line between Haggerstone and Broad-street are now rapidly approaching completion, and will shortly be opened for traffic. The chairman, referring to the competition with tramways, against which the company had to contend in North London, said the company had good cause of complaint with regard to that competition. Tramways paid no Government duty, nor local taxes to any extent, and they even used the streets and roads to which that company contributed very largely in the shape of local rates. The tramways, without any restrictions whatever, were allowed to deprive the railway of a large portion of its traffic. Their competitors had not even to pay for the land they used, without having further privileges. The chairman added that the land required for the construction of their line had cost the company more than a third of its entire capital.

At the meeting of the London and Blackwall Company, the chairman stated that the two Bills in Parliament for improving the Stepney Station, the construction of a pier in connexion with the Millwall extension, the making of a short branch from Bow, and the using of steam vessels, having received the Royal assent, the works would be at once commenced.

It was stated at the meeting of the Metropolitan District Company that during the Parliamentary session they had succeeded in getting their Bill for an extension from West Brompton to Hammersmith, and that the construction of the line was now proceeding. It was also stated that the subject of completing the inner circle by extending the line from the Mansion House Station to Aldgate, would come before Parliament next session, and be promoted by an independent company. The Metropolitan Board of Works were anxious that something should be done in the matter, and it was expected that the scheme would be aided by a considerable contribution from the Board and the City.

The proceedings at the half-yearly meeting of the Furness Railway Company show that extensive works are in progress in new branches, and also at the dock works at Barrow, with which the railway company is connected. The Stank branch railway has been completed, and satisfactory progress has also been made with the foundations of the Bela Viaduct, the principal work on the Arnside branch. The main line is also being widened at various points, which will be completed this year. Very active progress has also been made with the Devonshire and Buccleuch Docks. The walls for the lock and ocean steamship berths in the Ramsden Dock and Basin have likewise been commenced, and the outer sea embankment for reclaiming the whole area of 250 acres is well advanced. Upwards of 240,000 cubic yards of material have been removed by dredging during the half-year, and additional anchorage for large vessels at Piel has been made. The sum of 500,000*l.* for the execution of these works is required.

THE REBUILDING OF ANTIOCH.

PROVIDING FOR EARTHQUAKES.

OUR readers will doubtless remember that, in the spring of last year, disastrous earthquakes occurred at Antioch, which devastated almost the whole of the town, and which certainly offered an opportunity, in the rebuilding of the place, for considerable improvement. We note, however, that the engineer-in-chief of the province of Aleppo (Mr. Haddan, an Englishman), has in vain displayed both science and energy in his efforts to introduce a mode of strengthening the houses and widening the streets of ill-fated Antioch, which may at any time have to undergo a repetition of its dangers. History, indeed, records several such calamities at Antioch, and they appear to have a periodical recurrence which ought to bring about the adoption of proper devices for the preservation of life. It is a significant fact, that many of the victims on the occasion of the last earthquake might have escaped if the walls of the houses had been built with lime or bound with wood, and if the streets had not been so narrow that the rows of falling buildings met as they crumbled down, to form one destructive heap over the crowds of people who were thus engulfed. Mr. Haddan has spared no exertion in pointing out these defects to the Governor-General of the province, and even devised a special mode of construction of the town on a new plan, with improved lines of internal communication. He proposed that skeleton houses should be erected with timber-battens, well-tied together with iron bands, on which overhanging roofs would rest. Stone walls cemented with lime were then to be run up around the wooden frames, in order to afford protection from sun or rain. A shock of earthquake, how formidable soever it might be, could thus do no more than throw the stone-walls outwards, while none of the falling stones could injure those in the houses. The new plan of the town, by straightening and widening the labyrinth of tortuous lanes which previously existed,

would save the inhabitants from much of the danger after escaping from their houses; but we regret to say that these suggested innovations have been disregarded, and the town is beginning to rise again on its old foundations, built with mud instead of lime, and likely, as one writer states, to destroy its future population in even greater proportions than it did last year, for increased poverty makes the new houses weaker than even the old ones were.

NEW LIGHTHOUSE, BIRD ISLAND, CAPE TOWN.

The Bird Islands are a group of small islets situated in Algoa Bay, about thirty-three miles E.S.E. of the town of Port Elizabeth, South Africa. Besides the three largest, which are called the Bird, Seal, and Stag Islands, there are a number of half-sunken rocks around these larger islands, extending about two miles in different directions. The group are about seven miles from the main land, the nearest point of which is Woody Cape. The farthest rock to seaward is the Dorington Rock, where the ill-fated *East Indiaman* was wrecked rather more than a century ago; the anchor and gun of which vessel is still to be seen lying between the rocks on Bird Island at low water. I have seen them many times. They must have been carried by the current from the spot where she struck to the place where they now lie: the distance is about a mile.

Bird Island is still the resort of thousands of sea-birds, principally penguins, and what they call here the malgass, but which is very much like the ganat, or sea-goose. These birds make their nests in the guano, and sit together in one large flock, covering the greater part of the island. Any one attempting to go among them stands a chance of having his legs torn and scratched, for while the female bird is sitting on her one egg, she is very vicious; she sits all the time, which is about five weeks, and her food is brought her by the male bird. When the young ones are old enough to fly, they are taken away by the old ones in large droves, and it is supposed that they go to sea, for they do not return to the island for about three months. The penguins are a curiosity to look at, with their little flappers, with which they are very active in the water. It is astonishing how fast they run. When they are pursued, they always make for the water; when once they are there they are safe. One would think at night that there were thousands of donkeys let loose upon the island, for the noise which these birds make is very much like the braying of that animal. The eggs of both these birds are eaten by the light keepers and those who visit the island; they are very wholesome, and not unpalatable.

There is a vegetable grown in the guano, and which covers a part of the island. It is very much like spinach, and it is eaten by those on the island. There is a large quantity of guano, which in some parts is as deep as 14 ft. There is an abundance of shells, but not a particle of sand or earth of any kind. There are a large number of seals, on one of the rocks, called the Black Rock: they are seldom disturbed, excepting by parties who go there sometimes for guano.

In 1851 the Cape Governor erected a wooden lighthouse upon Bird Island, for the benefit of vessels going in and out of Algoa Bay. It was a rather curious-shaped-looking building as seen from the sea. There were exhibited from the tower, in different positions, two fixed white lights. The tower was a pyramidal-shaped building, with a projecting landing or platform, upon which each of the lanterns was fixed. It had been noticed for some years past that this building was fast going to decay. It was built of wood, the framing part of which was connected with iron bolts; the iron seemed to be very much affected by the action of two salts, one arising from the water, and the other from the ammonia.

This building has been taken down, and close to where it stood a new and more substantial building has been erected. In 1871 the Colonial Government granted the money for this work. Drawings were at once prepared for the same, and the contract was signed in November of the same year, but the works upon the island did not actually commence until March, 1872; and the whole of the work would have been completed by the end of last year had it not been for the delay which took place in getting the lighting apparatus and other ironwork done in England. But it was so far finished by the 1st of May last, that the new light was exhibited for the first time on that day. It is a fixed red light, of the Third Dioptric order, the height of which is about 80 ft. above the level of the sea, seen about twelve miles off.

The buildings are now entirely finished, and the workmen have all left the island.

The whole of the work has been carried out according to the drawings. The tower is 60 ft. high from the level of the rock to the focal plane, or centre of light. It is a square building, quite perpendicular, showing on its north and south sides four circular apertures, which are connected with each other by a recess formed in the work, and a large moulding forming the whole into a cross, which is intended as a day mark; on the east and west side there is only one aperture.

The parapet is finished in the form of battlements, with small coved recesses under the cornices. The outside of the tower is coloured gray or light stone colour. The inside of the watch-room and cleaning-room is fitted with cupboards and other fittings to hold the different articles required for the establishment. The whole of the inside fittings are of teak and mahogany, and varnished.

All the lighting apparatus, as also the iron watchroom, lanterns, iron floors, girders, and stairs, were supplied by Messrs. Chance Bros., of Birmingham. Besides the tower, there are two cottages (which are connected on each side with the lighthouse) for the use of the light-keeper and his assistant.

The greater part of the buildings have been constructed with the stone found upon the island, and pointed outside and plastered inside. The arches are of brick and cement, which had to be taken to the island.

The roofs of the cottages are covered with slate, and provision has been made for preserving the water, which is a very scarce commodity at times. To each keeper's quarters an underground tank, holding about 2,000 gallons, has been constructed, and a 400-gallon iron tank has also been supplied to each house.

In connexion with the establishment a flagstaff and signal-house have been erected, so that the light-keeper can communicate with vessels passing.

The works have been carried out under the superintendence of Mr. Joseph Flack, of the Colonial Engineer Department.

The cost of the work is understood to be about 7,000*l*. Mr. B. Godfrey, of Cape Town, was the contractor for the whole of the work, excepting the part supplied by Messrs. Chance Bros.

ARMAGH ROMAN CATHOLIC CATHEDRAL.

This Gothic edifice, which crowns the crest of Armagh, has been dedicated. Its erection has extended over no fewer than thirty-three years, the foundation-stone having been laid in 1840. This delay is accounted for by the nature of the undertaking and local financial difficulties. The building has cost upwards of 60,000*l*., a sum which may be regarded as equivalent to 80,000*l*. considering the period over which it has extended, and the enormous increase of late in the price of labour and material. The original designs for the church were prepared by the late Mr. Duffy, of Newry, and were of the Perpendicular Gothic style. The work executed during his lifetime extended only as far as the top of the aisle walls and the arches between the nave and aisles. The erection of the building having been arrested for seven years, Mr. J. J. McCarthy, professor of architecture at the Roman Catholic University, was entrusted in 1854 with the completion of the cathedral. In the fourteen years which had elapsed between 1840 and 1854, a revolution had taken place in ecclesiastical architecture. Mr. McCarthy, therefore, modified very considerably the original design. The flat roofs, pinnacled buttresses of the clearstory, flat roofs of towers with angled pinnacles, and other features of the Perpendicular style, he discarded for the simpler and purer form of Decorated Gothic. He omitted the pinnacles of all the buttresses, substituting geometric and flowing for the stiff forms of Perpendicular tracery; introduced for the first time in modern Irish architecture the triforium; raised the roof from an almost imperceptible pitch to nearly an equilateral triangle; and, instead of towers rising to an altitude of 128 ft. from the ground-line, substituted towers rising to the height of 210 ft.

The plan of the cathedral, which is cruciform, comprises nave and chancel or choir, with aisles to both north and south transepts, and two western towers. The south transept is at present screened off as a provisional sacristy, but it is intended to erect suitable sacristies and chapter-house at a future time. The dimensions within the walls are:—Total length, 210 ft.; width across nave and aisles, 72 ft across transepts, 112 ft.; and height from floor to ridge, 91 ft. The nave is separated from its aisles by three bays of similar shafts and arches. Over these arches are the triforia, consisting of marble shafts with moulded bases and carved capitals, with moulded tracery filling up the arches. Above the triforium rises the clear-story, containing in each bay three-light traceried windows. The principal entrance to the cathedral is by a moulded doorway in the west end of the nave, and also by similar doorways in the towers. Over the west door of the nave is a series of moulded and canopied niches, to be hereafter filled with statues of the saints. Rising above the niches is a seven-light traceried window, while the west gable terminates in a floriated cross. The towers rise in grades until they terminate in the bell stages, containing two double-light mullioned and traceried openings in each face. From these stages rise the spires with tiers of lucarnes on alternate faces, each lucarne terminating with a gilt cross, till the entire is surmounted with beautifully wrought iron gilt crosses. Armagh was anciently the ecclesiastical metropolis of the island, and the aim of the builders of the cathedral has been to make it worthy of its historical position, which is rendered increasingly interesting by the tradition that on this spot, fourteen centuries since, Ireland's Apostle stood to defend the Christian religion.

LARGE MALT-HOUSES AT SHOBNALL ROAD, BURTON-ON-TRENT.

Messrs. T. Lowe & Son, and Mr. H. Mason, contractors, of this town, have been engaged in the past twelve months in the erection of the block of four malt-houses and engine-house, for Messrs. Bass, Ratclyffe, & Gretton, which are now near their completion. They were to have been completed in the beginning of this year, but owing to the excessive rains of last season and the scarcity of building materials, it was impossible, as the buildings took 4,000,000 bricks, about 7,000 cubic feet of timber, and 400 tons of ironwork.

The houses were commenced in the first week of June of last year, and will be quite ready for the malting season of this year. The buildings are from the design of Mr. W. Canning, the firm's engineer, and have been carried out under his superintendence. The dimensions of each of the buildings externally are 240 ft. by 90 ft. and 35 ft. high to the wall plate. The elevation presents no grand feature, but the buildings, though plain, are substantial. The materials used are common stock bricks, with a light sprinkling of Hollington stone dressings.

The external elevation is divided into bays of 8 ft. each, with a 3-ft. pilaster, which terminates with a stone impost, off which spring semicircular arches, the crown of which carries a line about 12 in. below a substantial brick cornice. The roof is divided into three spans, and covered with Bangor slates, 16 in. by 10 in. The gables have stone springers, which form a return to the brick cornice that runs up the gables. The gables are coped with Hollington stone.

The buildings have four floors, three of which are for the growing of barley. The dimensions of each are 126 ft. by 86 ft. 9 in., and 9 ft. 2 in. from floor to floor. Each floor is lighted by twenty-four sash windows. The cistern is at the west end of the ground-floor. Its dimensions are 81 ft. 6 in. by 9 ft. 5 in., and 3 ft. 4 in. deep, and it is capable of wetting 200 quarters of barley. It is constructed of brick in cement with pressed brick lining; the channel is formed of white Minton tiles. Immediately over the cistern are two garners, provided for the screened barley to supply the cistern; their dimensions are 83 ft. 9 in. by 22 ft. 9 in.

The third floor is wholly devoted to the storing of barley; the dimensions of which are 149 ft. 3 in. by 86 ft. The floors are supported by iron columns, which stand 10 ft. 6 in. apart, carrying beams of Memel timber 14 in. by 7 in. and joists 7 in. by 3 in. Barley-garners and store-rooms have beams 14 in. by 9 in., and joists 11 in. by 3 in. The floors of each are laid with

½-in. grooved boarding, tongued with hoop-iron. The working-floors have 1½-in. rough boards, over which are laid 9-in. red quarries, 2 in. thick, bedded and jointed with Portland cement.

At the south-east end of the working-floors is the kiln. It is provided for drying the grown barley. The kiln is of modern arrangement, and stands transverse with the main block of the building. The internal dimensions are 86 ft. by 50 ft. The roof is divided into two spans, and supported in the centre by octagon columns, which have intermediate flanges cast on for carrying the floors, which are constructed of cast iron, having girders which run longitudinally with the main building, 9 ft. apart, carrying iron joist, upon which Fern's kiln-tiles are used. The fire-grates are Albird's patent, of this town. At the south-east end of the kiln are store-rooms for receiving the malt from the kilns. The internal dimensions are 85 ft. by 35 ft. 10 in. There are three floors,—ground, first, and second. The ground-floors are used for storing tools, &c., for malting purposes; the first floor for storing malt; and the second for screening malt as it leaves the kiln. The floors are supported by iron columns, 7 in. in diameter, standing 10 ft. 6 in. apart, carrying beams 9 in. by 14 in.; flitched with ½-in. boiler-plates; joists 11 in. by 3 in., and boards 1¼ in., grooved and tongued with hoop iron.

The houses are divided by streets 30 ft. wide, and a gangway is provided from house to house and the top barley-stores by a bridge, formed of iron lattice-girders, lagged by 7-in. by 3-in. planks.

The engine-house stands at the south-west angle of the fourth house. Its internal dimensions are 37 ft. by 30 ft. The external elevation is the same as that of the malt-houses, but has a bold cornice of Derbyshire stone; it is covered with a large cast-iron water-tank, 41 ft. by 34 ft., and 4 ft. deep, for the supply of water to the malt-houses. The water is obtained from two large wells, 20 ft. in diameter, and 25 ft. deep. The water stands in the wells about 18 ft. deep. The engine-house is fitted up with four three-throw pumps, for pumping the water into the tank, and two 25-horse-power engines for the working of the houses. The engines are being supplied by the firm, but were built by Mr. Bell, of Derby, engineer, &c., who has supplied and fitted up the whole of the machinery and lifting of the houses. There is room in each house for storing 3,600 quarters of barley, and about the same quantity of malt. The estimate for the four houses and engine-house was 40,000*l.*, but this does not include the ironwork for the iron floor, which is about 240 tons, nor the fitting for the houses. The houses promise to be when completed four as fine maltings as any in the kingdom. The total outlay will be about 50,000*l.*

It is the intention of the firm, next spring, to build four more houses on the south side of the engine-house, precisely the same as those already described.

The whole of the work has been done in a substantial manner. Mr. C. Garlick is clerk of the works. Messrs. T. Lowe & Sons are the contractors for the brickwork, earthwork, and masonry; Mr. H. Mason does the carpentry, joinery, and ironwork; and Mr. T. Turner is the plumber, glazier, and painter. Messrs. H. Edwards and Raynor are the foremen.

To make the work complete, Mr. G. Woodcock, Jun., of Derby, builder, has entered into a contract for building twelve houses and six blocks of offices, and mess-rooms. The estimated cost is about 6,000*l.*, and will be completed about Christmas next.

NEW COUNTY POLICE COURT AND LOCK-UP FOR BLACKBURN.

A COMMODIOUS structure has just been erected in King-street, nearly opposite Montague-street, Blackburn, combining a magistrates' court, offices for the police, and cells for prisoners. The internal arrangements are not wholly finished, but the magistrates' court has been occupied. The style of the building is Venetian Gothic, freely treated, with red bricks and stone dressings to the doors, windows, string-courses, and cornices. Above the label-moulds to windows and doors, which are terminated by foliated bosses, are relieving blue Staffordshire arches. The front of the building is set back from the street, and inclosed by ornamental iron railings, gates, and moulded stone gate-posts.

The ground-floor is divided into two blocks of buildings by an entrance-passage, 10 ft. wide,—the walls being built of red bricks, with stone dressings to doors, having a varnished boarded ceiling,—with doors leading on the right-hand side to police waiting-rooms, 24 ft. by 16 ft.; store-room, 24 ft. by 7 ft. 6 in.; magistrates' and advocates' staircases, leading to court-room; and weights and measures office, 19 ft. by 16 ft. On the left hand of the entrance-passage is placed the charge-room, 18 ft. by 21 ft., having a bay-window to the King-street front. Adjoining this room is the office of the superintendent of police. Behind these last-named offices is a passage, 7 ft. 6 in. wide, leading to the cells, prisoners' exercise-yard, and staircase leading direct from the cells to the prisoners' waiting-rooms, adjoining the dock in court. A stone staircase, 7 ft. wide, leading to the court-room, for the use of the general public, is placed at the extreme east end of the building. Behind the prisoners' exercise-ground is a gig-house, loose-box, urinals, closets, &c.; and at the extreme end of the drill-ground, and facing Chapel-street, are two dwelling-houses for married constables. Above the offices and cells is the court-room, 48 ft. by 40 ft.; and adjoining are the magistrates', advocates', and witnesses' retiring-rooms, lavatory, closets, &c. The court-room is lighted by ten large windows, glazed with embossed plate-glass, having the arms of the county palatine in the centre of each window. Pilasters, supported on moulded stone corbels, divide the windows, and the ceiling is panelled and moulded in plaster. In the centre of each panel is a perforated medallion, for the purpose of ventilation. The benches and other fittings have the panels in varnished pitch pine, contrasting with the painted panel-work. The seats for the use of the public are open benches, having Macfarlane's bench-standards.

Ventilation is provided by grates in each window-bottom, and perforations in the ceiling. The court-room is lighted by gas-brackets fixed in each pilaster and by standards fixed on the dock and the attorneys' table. The whole of the offices and retiring-rooms are heated by open fireplaces. The court-room, cells, store-room, advocates' room, &c., are heated by hot water.

The whole of the works were let to Mr. Benjamin Abbott, builder, Blackburn, in June, 1872. The sub-contractors have been Mr. Peter Walsh, plumber and glazier; Mr. A. Airey, plasterer; Messrs. Embley & Pilkington, painters; and the whole of the hot-water apparatus, fire-grates, chimney-pieces, iron railings and gates have been supplied by Messrs. Mercer & Thompson, of Northgate. The floor of the magistrates' entrance has been laid with the tiles of Messrs. Malkin Edge, of Burslem, Staffordshire. The carving has been executed by Mr. Gregg, of Darwen. The whole of the work has been designed and carried out under the supervision of Mr. W. S. Varley, architect, Blackburn, at a cost of about 4,000*l.*

HEALTH AND COMFORT IN HOUSE-BUILDING.

SIR,—I have read in your pages Dr. Haywood's paper "On Health and Comfort in House-building," but I fail to observe how house-building for the million can be obtained, insuring either health or comfort, if such expensive plans for ventilation as he suggests must be adopted. The first and most vital question which the architect has to consider is,—"How can I build a house which shall prevent the occupier from being slowly poisoned from breathing an impure atmosphere." Your ranks are now filled with such educated scientific men,—is there no one of these who can lay down a cheap but really effectual plan for insuring the health and comfort of the people?

After all these years of discussion, and the full recognition by the public of the immense importance of thorough ventilation in all buildings, how is it that as yet there is no one who can carry into effect the aspirations of every thinking man? Dr. Haywood suggests it to be the duty of every medical man to imbue the minds of the public with the great importance of ventilation; to me it seems more desirable to imbue that of the architect. As an amateur, I have had for years experience in building. Fifteen years ago I built several houses; and, after some difficulty, my architect put in three of Sheringham's ventilators, which soon became useless; and now, being about to build a rather large house, my architect,—a gentleman of the very highest position in his profession,—has handed me his plans, which contain no plan whatever to render my house either "comfortable or healthy."

Dr. Haywood tells us "that we must have an inlet for fresh air, and an outlet to discharge the used-up atmosphere in *every room* in the house." The public are sufficiently educated upon the subject to give their universal assent to this proposition. To effect this object it appears to me that he, like all architects, is only catering for the occupation of houses by noblemen and wealthy proprietors. He says,—"The outlet must pass through some contrivance for keeping it constantly and permanently heated," night and day, winter and summer; and, "the inlet should open out of a warm lobby or corridor." Every room in the house is to have a shaft through the ceiling, and, to promote suction, these are to be constantly and permanently heated. How less pretentious houses are to be supplied with heat to keep the shaft in action in every room, and how corridors and halls and passages are to be built, and how the warm air to supply all the rooms is to be procured, he does not tell us. Before the doctor and architect again consult upon a plan for general and universal ventilation, I suggest that some of the "plobs" be taken into their confidence.

No one now denies the paramount importance of supplying every room with an abundance of uncontaminated air, and the general public expect that architects will settle the most effective plan at the least possible cost. If the large and lofty rooms of the rich require ventilation, how much more imperative has it become to afford some thoughts upon the overcrowded, suffocating rooms of the labouring classes, where sickly women and children are slowly but certainly starved to death from the want of an uncontaminated atmosphere. Practically there is no plan yet suggested for rendering house buildings "comfortable or healthy." If architects would pay a little more attention to the general defects of the internal construction of the building, and less of advertising themselves by an elaborate exterior, they might possibly succeed in furnishing such a plan as would be at once effective and of general application.

Some time since, I saw, I think in your paper, a simple plan for ventilating rooms. Place in the hall or passage a ventilator, near the ceiling, opposite to the fireplace; in the centre of the ceiling let the air pass out through a ventilator into a shaft running through each floor; or the foul air might find its way among the joists, and there deposit its carbon and other impurities. This plan is very simple, but is it practicable?

How am I to solve the question as to setting the grates, so as to throw as much heat into the room as possible, and at the same time avoid a smoky chimney? My architect gives the size of the openings, but leaves the construction possibly to some ignorant sub contractor.

How far, then, should the fireplace project into the room? How soon should the open fire-space be contracted to the size of the chimney-flue; and what cubic space should be allowed to each chimney? Should the space be the same in all the flues, whether the opening be 4 ft. 6 in. or 2 ft. 3 in., or should all these details be left to the hazard of a man who takes the job, and who only seeks to make as much money out of it as possible?

If I happen to get an intelligent and careful mechanic, I shall owe no thanks to my architect if I get a "healthy and comfortable home" as a residence.

AN AMATEUR.*

HOW SHALL I BUILD?

IT is, perhaps, not a little remarkable that the question "How shall I build?" and an essay on the subject, should appear in the same issue of the *Builder*. Doubtless the paper of Dr. J. W. Hayward, of Liverpool, will be read with interest, especially by "An Amateur," who is about to erect for himself a residence. Indeed, the eighteen "points" have been often insisted upon in the pages of the architectural journals, and although it may not be novel reading for architects, it is at the same time highly refreshing to find the medical profession aiding in so desirable an object.

About three years ago the reports of a very interesting discussion on the ventilation of hos-

* In reply to a letter from this correspondent in a recent issue, three patentees or manufacturers, notably Messrs. Cowan Ching & Co., say no one can have the information he desires if he will apply to them. This, however, is not the sort of reply the letter was intended to elicit.

pitals appeared in the *Builder*. Both medical and engineering, as well as the architectural professions, then unanimously agreed that ventilation by warmed air, washed, admitted along the skirtings, and having a sufficient exit near the ceiling, was the best possible scheme, and the most perfect system. It might be asked, with a fair prospect of an answer in the affirmative,—Is not the best system for hospitals the best system also for dwelling-houses, inasmuch as the manner of occupation is somewhat identical, and the convenience, comfort, and health of the occupants to be aimed at equally in each?

Dr. Hayward advocates a system of special ventilation at the ceiling, and the ceiling only; that is, the inlet of warmed air, and the exit of vitiated air to be in juxtaposition, or of necessity nearly so. There is, to my mind, not only a doubt as to its thorough efficacy, but it will for certain involve considerable expense by a vast and complicated system of pipes and perforated cornices, and which may possibly require considerable looking after and repair. The current of warm air, because it is warm, would have a tendency to escape, and to drive the vitiated air back on the heads of the occupants, so that there would be no direct unimpeded course for the vitiated air to take. When, moreover, the details of the system come to be worked out, I think it will be found that Dr. Hayward, like many other theorists, has described a system (far easier to do than to adopt it), but which even on paper appears too complicated, involved, and uncertain, to recommend itself to ordinary house proprietors for general adoption.

The arrangement I propose would be simple, permanent, and cheap. The walls are to be built hollow, to prevent the percolation of damp, and along the hollow space passes a hot-air pipe. They are thus rendered less subject to changes of atmosphere by the current of warm air continually passing up the cavity from the hot-air pipe. The warm air, therefore, not only keeps the walls dry, it also keeps them warm, and is admitted into the room at dado height. The pure air is admitted through one or more gratings, either from the exterior or from the cellar, and passes over the hot-air or water pipe. It may be contrived for the air to pass a considerable distance along the course of the pipe before it enters the room, which should be at no great distance from the floor. Passing upward through the room, which is its natural course, it again finds its way into the hollow of the wall, whence it escapes to the upper regions by flues arranged for that purpose. These flues should, like smoke-flues, be carried high into the air, because the air at considerable altitudes is lighter and colder than that near the ground, so that the greater the height the greater the suction of warm or vitiated air, and the more thorough the ventilation, and less subject to back draughts. This plan is equally applicable to all the floors of the house, and that, too, without any or but trifling additional expense. It is easily controlled by the inlets at the bottom of the wall, or by the inlets into the rooms, which would be similar to the sliding ventilators of railway carriages. The author does not claim originality for such a system; it at once suggested itself when arranging for the heating apparatus and pipes for a conservatory to be built along with the dwelling-house, so that by an extra expense of about 35*l.* in pipes and sliding ventilators, a house of considerable size will, I trust, be both warmed and ventilated, without additional continuous expense, a system as permanent as the building, almost self-acting, and so simple as to commend itself to ordinary intelligences for adoption.

J. HICKS.

THE following suggestions are for the use of "Amateur." I have given each system practical test, and can in confidence place them before his notice:—

For ventilating near the centre of basement of building, have a bricked walled room 10 ft. by 6 ft., with a plate-iron door. In this fix a coil of high-pressure pipes, 8 ft. by 4 ft., heated. One of J. L. Bacon & Co.'s would be very suitable. From the centre of this coil run a tunnel of 8-in. earthenware pipes to outside of building, taking great care to have the mouth away from all drains or other objectionable matter. Over the external mouth fit a fine-mesh perforated zinc cover, and in any convenient part place an iron throttle-valve—an inexpensive one, formed of plate iron. Have all joints made good in Portland.

Over the coil fix a sheet-iron hood, with 4½-in. flange all round, to be bedded in side and end walls; three or four courses of brickwork to run on the flange. From the centre of crown of hood run a diagonal sheet-iron tube, 1 ft. 10½ in. by 4½ in., up one of the ascending walls, branching from this to each room with same shaped pipe, 6 in. by 2 in., between joist or behind skirting to under the window; the end of pipes to be T-shaped, parallel with the wall. The skirting to be iron trellis, or, if required, a dado of same. A simple valve introduced would be useful as a check to heat. Have all joints branching from main rising pipes made Y-shaped. By this means you will have a pure warm air in winter, and cold without draught in summer.

For egress have a perforated centre in ceilings, or gratings in wall or cornice, from which carry a tube, as for ingress, to rising tube same size. Let the end of this egress-tube pass through your hot-water circulating cistern, which have fixed in roof. I take it for granted that you will not have a 20-roomed house without hot-water for bath, &c. Let the tube be large in cistern, and from the top take a pipe, with cowl on top of all, into outer air.

For stoves, let "Amateur" have register-stoves, with a well-fitted register on top, and on line of fire-bars, or bottom, have a 3-in. opening. This opening to go direct into a 4½-in. by 4½-in. flue running up the back of coves; on top, or nearly so, fit a small damper to each side of stove. In ash-pit under flues, fit a small cleaning door. By these means you will have no down-draught, nor any soot blown over your furniture, save half your coal, and gain twice the heat as from a common register. The top damper to be kept shut; only used for cleaning.

BONEL A. EVANS.

SCIENTIFIC INSTRUCTION.

THE Third Report upon Scientific Instruction and Advancement of Science, in connexion with the two Universities of Oxford and Cambridge, has been issued by the Royal Commissioners appointed to inquire into this subject. The report takes a hopeful view of the future. In dealing with the relations of the universities with science, the Commissioners say that their use of the word was limited to the "Sciences of Organic and Inorganic Nature, including under that general designation the sciences of number and magnitude, together with those which depend on observation and experiment; but excluding the mental and moral sciences, as well as all those parts of human knowledge and culture which are not usually regarded as having any scientific character." They state their opinion that neither the literary nor the scientific branch of education and research can be neglected without detriment to the other. The following are the subjects referred to in the evidence:—1. The Courses of Study and the Examinations; 2. The Professoriate; 3. The Scientific Institutions within the Universities; 4. The Colleges; 5. The Relation of the Universities to Technical Education, and to Education for Scientific Professions; 6. The Duty of Universities and the Colleges with regard to the Advancement of Science.

Proposed Examination on Leaving School.—The Commissioners are favourable to an examination, at Oxford or Cambridge, on leaving school, as open to fewer objections than a matriculation examination on entering the university.

The Scientific Curriculum: Proposed Arrangements.—When Mr. Mark Patteson was asked if he would allow a young man without literary training to enter himself on the scientific side in the University of Oxford, he replied that he would have the University take no cognisance of the matter if he chose to enter as a scientific student. Professor J. C. Adams, of Cambridge, thinks literary culture extremely important, as without it the mind is apt to become narrowed, especially if it be devoted exclusively to material objects, and that, in consequence, even physical studies themselves are likely to be pursued with less success.

University Scholarships in Natural Science.—It is proposed to found these scholarships at both Universities. The Commissioners suggest three every year,—one in physics, one in chemistry, and one in biology. The natural science tripos has not proved so attractive as the mathematical tripos. The establishment of University scholarships would foster its growth.

Technical Education.—With regard to technical education, the difficulty of making either Oxford or Cambridge into a great school of medicine is very considerable; these places are both comparatively small, and their hospitals, therefore, inadequate for large medical schools. The absence of manufactories raises equal obstacles to the study of civil engineering. Preliminary scientific training, however, both in medicine and civil engineering, may be given at the Universities. A professorship of civil engineering is a desideratum, the Commissioners think.

General Advancement of Science.—On no point are the witnesses examined by the Commissioners more united than they are in the expression of feeling that it is a primary duty of the Universities to assist in the advancement of learning and science.

GREEN LANES WESLEYAN CHAPEL, HIGHBURY NEW PARK.

FOUR architects were invited to submit designs in competition for this chapel. The selected one emanates from the offices of Messrs. Satchell & Edwards, under whose superintendence the chapel is in course of erection.

The building is planned to accommodate 1,000 persons, viz., 700 on the ground floor and 300 in the galleries. Two vestries and a lavatory are provided in the rear. The interior consists of a nave and side aisles, divided by an arcade of five arches executed in Bath stone, resting on columns with richly-foliated caps, which carry the clearstory walls. In the rear of the pulpit and reading-desk is the communion-table, in an apsidal recess which is railed off with ornamental iron standards surmounted by an oak rail. The seats are 20 in. wide, with book-shelves and hat-rails. Umbrella-stands will be affixed at the ends of the pews. A most spacious vestibule is provided in connexion with the principal entrance, the walls of which are 4 ft. 6 in. deep, acting as a covered porch, into which a liberal amount of carving will be introduced. This vestibule, while leading into the nave and aisles, will also communicate with the side entrances which serve the galleries. The sub-story, standing 8 ft. out of the ground, is 14 ft. in height, and contains a schoolroom (acting also as a lecture-hall) for 300 children, an infants'-room for 100, four large class-rooms, distinct and commodious lavatories, and a chapel-keeper's residence.

The building, from the ground floor to the collar of its roof, at which point it is boarded in, represents a height of 56 ft., the height from the basement to the ridge being 80 ft. The tower rises to a height of 150 ft., the side-towers acting as staircases being 75 ft. high.

The internal fittings will be of deal, stained and varnished. The windows will be filled in with leaded lights, having rolled cathedral glass of varied hues. The building will be lighted by means of suspended star burners and brackets under galleries, and will be heated on the warm-air system by Messrs. Haden & Sons. Ample provision is made for ventilation by means of chambers in the roof and tower. The whole of the exterior will be faced with Kentish rag stone, Box-ground stone being employed in the entrances, windows, dressings, quoin-stones, &c., and red Mansfield in the shafts of columns. The boundary-walls will be similarly treated, surmounted with ornamental ironwork and gates.

The contract has been taken by Mr. Chessum, of Shoreditch, at 6,100*l.*

ASSESSMENT OF RATES ON GOVERNMENT PROPERTY.

THE parochial authorities of Chelsea and Woolwich, being parishes burdened with barracks, are again at issue with Government with respect to the insufficient contribution paid towards the parochial rates. The local Board of Health at Woolwich have been informed that an appeal which they made for an increase of the contribution paid by the Government in lieu of rates, on the ground that new properties have recently been acquired by the Crown, and that nothing is paid towards the highways and drainage, is under consideration. The half-yearly payment of the War Office towards the relief of the poor of Woolwich is 2,500*l.*, but if the Government property were rated in the same proportion as that of tradesmen, the amount would reach ten thousand pounds a year. In Chelsea, the rating of the barracks and hospital is much less, and the parish are threatened with a cavalry barracks as soon as Knightsbridge Barracks are evacuated or tumble down.

ARCHÆOLOGICAL SOCIETIES.

The Bedfordshire Society.—The locality chosen this year for the annual excursion was St. Alban's. We glean from the full reports in the local *Times*. The excursion party upon their arrival from Bedford proceeded to St. Peter's Church, where they were met by the rector, the Rev. H. Dudding, and one of the churchwardens, who kindly pointed out the most prominent features of the building. The company next drove out of the town northward in order to take a cursory view of Barnard's Heath with its earthworks, reputed to have been the scene of the Yorkists' defeat under the Earl of Warwick at the hands of Margaret of Anjou in 1461, in what is commonly called "the second battle of St. Alban's." Upon their return they alighted at the Clock Tower, said to have been built between 1402 and 1427: possibly it may have been erected at first to bring the curfew bell near to the centre of the town. Sir Gilbert Scott considers it to have been the old tower belfry, similar to those in the cities of Belgium, and remarks, "the whole is a very curious structure and unique in this country." The party enjoyed the great advantage of being accompanied in their inspection by Mr. Lloyd Ridgway, local honorary secretary of the Hertfordshire Archæological Society, and Mr. Chapple, the clerk of the works. Under their guidance nothing was wanting to make the three hours spent within this wonderful pile enjoyable and instructive which could be supplied by an intimate acquaintance with its history and structural features, and an enthusiastic admiration of its grandeur as a whole and of its marvellous details. We may mention in passing a remarkable discovery made in examining the foundations of the piers supporting the enormous tower: one of them had been hollowed out to a considerable distance and the cavity roughly filled up with wood, apparently with a view to the destruction of the tower by setting fire to the wood and so removing one of its supports. Happily by some means the object was defeated; but this discovery leads to the suspicion that many of those majestic buildings of which we now know nothing except from history or tradition or from the silent witnesses afforded by their ruins were thus undermined and laid low. Reluctantly turning from this enduring memorial of the pious munificence of its respective builders, the company, after partaking of luncheon at the Green-hen Hotel, made their way to St. Michael's Church, on the south-west side of the town, within the boundaries of the city of Verulam, from which the materials of its earlier remaining portions were derived. Those who had previously visited St. Michael's, the object of greatest interest, after the Abbey Church, traced with satisfaction the judicious hand of Sir Gilbert Scott in its improved condition. The Rev. B. Hutchinson, vicar, was present, and obligingly described the work of restoration which has been carried out. Apart from its antiquity, this church is well known as the resting-place of Lord Bacon, Baron of Verulam, and Viscount of St. Alban's. His alabaster statue fills a recess in the north wall of the chancel: he is represented in his Chancellor's robes, reclining in an arm-chair. Within sight of these ruined walls the party next turned their steps towards the Shrine of Abbot Wulsin's foundations, the church of St. Stephen, on the Roman road of Watling-street, where the Rev. P. U. Brown favoured them with particulars. The return-path to St. Alban's afforded a distant view of the ruins of Sopwell Nunnery. Camden and Stukeley record the tradition that Henry VIII. was here married to Anna Boleyn. Sir Richard Lee, who became possessed of this house, repaired and enlarged it with the materials of the dissolved Monastery. It fell into decay in the reign of Charles II. In a field near the town, between these ruins and the abbey, is the ancient well from which the nunnery obtained its name, protected by an arch of brickwork, and indicated by a tree planted beside it. Thus concluded an excursion which will long be remembered with interest and satisfaction.

The Sussex Society.—The annual meeting was held at Winchelsea, being the second visit of the Society to that place; the previous one having been in the year 1854. On arriving at Winchelsea Station, the members proceeded at once to the town. The first place visited was the Priory, which is in the grounds of The Friars, belonging to Major Stileman. The only part of the Priory which remains is the chancel of the chapel. Major Stileman gave particulars as to the Priory. The party next proceeded to the church, where an interesting history of the building and of the town was given by the Rev. E. Whitehead (the vicar). They then proceeded to inspect the church and the churchyard, and afterwards the old gates of the town. The dinner was served in the Town-hall,—originally the Water Bailiff's Prison,—where the chair was taken by Mr. G. B. Gregory, M.P.

Somersetshire Archæological and Natural History Society.—The twenty-fifth annual meeting of the members of this society was held at Wells on Tuesday in last week. After a short address, Mr. W. A. Sandford, the president, vacated the chair in favour of the new president, the Bishop of Bath and Wells, who delivered an inaugural address; after which the company repaired to the chapter-house, where Mr. J. T. Irvine read a paper on the architecture of the cathedral, and after service he conducted the members round the building, pointing out its peculiar features and practically illustrating his paper by showing the relative ages of the different portions of the structure. In the evening there was another meeting at the town-hall, when several papers were read. In connexion with the meeting a museum was formed at the town-hall. The *conversazione* on Tuesday was well attended, and some interesting communications were made. The Rev. Prebendary Scarth read a paper descriptive of an inscribed stone which was found within the Roman station at Sea-mills. He combated the idea of a Fellow of the Society of Antiquaries, that the stone was Mithraic, contending that it was a Christian tombstone. In this view he was supported by Mr. Parker, and the Rev. Prebendary Earle gave it as his opinion that the word "Spes" engraved on the stone was a religious sentiment, and not a name, as had been suggested. On Wednesday, the first excursion of the meeting was made into the country, the places visited being Compton Martin, West and East Harptree, and Chewton Mendip. The excursion party was a very numerous one. The greater part of the drive was accomplished in a pouring rain. After dinner at Wells there was another meeting at the town-hall, when Dr. Beddoe, of Clifton, read a paper on "The Ethnology of Somersetshire." Then followed a brief discussion and a paper by Mr. B. Ferrey, diocesan architect, on the sculptures in the west front of the cathedral, and other minor communications. On Thursday, the concluding day of the meeting, the first place visited was the old church of St. Cuthbert, upon the history of which Mr. T. Serel read a short account, while Mr. Freeman described its architectural features. A very old canon's barn and a Mediæval house, which has been restored by Mr. Parker, were next inspected, and the majority of the party then took carriages for Wookey-hole, while others bent their steps towards Wookey church, lately restored. On their return to Wells they went to the palace, in going over which Mr. Parker acted as *cicerone*. This work accomplished, the party, numbering upwards of a hundred ladies and gentlemen, by invitation of the Bishop and Lady Arthur Hervey, had luncheon in the crypt of the palace.

BRANSGORE CHURCH.

THE district church of St. Mary, Bransgore, near Christchurch, Hants, has lately been reopened after undergoing the addition of a chancel with a semi-octagonal apse, together with reseating the nave, the benches being open and of stained deal. The main material of the walls is red brick, with Box-ground Bath stone dressings, the roof being covered with Bangor slates. It has been found difficult to deal satisfactorily with a church, the body of which is utterly at variance with present notions of architectural propriety, but the addition of a chancel has somewhat made an improvement. A stone arch carried on corbels now separates the nave from the chancel. The chancel has a panelled and ribbed semi-circular ceiling of stained deal. The lectern and altar-table are of pitch pine, and from the architect's design. The chancel-seats with prayer-desk are also of the same wood, with moulded and shaped ends and an arcaded book-front. The paving is of encaustic tiles. The pulpit is of Box-ground stone, with square ornamental panels. The organ is placed on the south side of the chancel, in a recess contrived for that purpose. The total cost has been about 1,000*l*. Mr. J. Lander, of Burton, near Christchurch, was the builder; and Mr. Ferrey, F.S.A., the architect. The warming is managed by one of Porritt's stoves.

SANITARY QUERIES.

Is it not true that the old cesspool system in cities is being exploded, and main drainage and sewerage systems are adopted, and that the results are shown everywhere in improved health and a decreased rate of mortality?

Is it not true that the contents of cesspools have been from time immemorial used on farms, market gardens, and for many agricultural and horticultural purposes?

Is it not true that modern sewage, which is a more diluted article than the former, has been used for similar purposes with a similar beneficial effect to the soil and the products of the soil?

Is it not true that mankind in these kingdoms subsist mostly on what comes from the soil and through the soil, and that what comes from the soil once more goes to the soil?

Is it not true that the earth is the great universal and purifying filter through which all putrefaction passes, our own bodies included, and that it only fails to perform its offices when man fails to do his duty by it?

Is it not true that the earth is a perennial farm and fountain of all healthy life and living, from the blade of grass and the ear of corn to the seam of coal and the crystal spring?

Is it not true that men stumble at a gnat and swallow a camel when they are actuated by other than lofty motives for the common weal, and that interested considerations are the ruin of society?

Is it not true that there is a proverb which says, "Conceit is as good for a fool as physic," and are there not cats and dogs who eat grass as well as geese and swans, the former as a medicine and the latter for food?

Is it not true that the world has long since heard that "What is one man's meat is another man's poison," and are we not aware that where the bee extracts honey the man extracts inebriating liquor or poison?

Is it not true that butter that is scalded when making gets rancid in a few days, and that hot water is often added in private and public dairies to hasten the churning?

Is it not true that the colour of butter is guided much by public taste, and that white and yellow quality, when not produced in the churning, is produced afterwards by the adding of other ingredients?

Is it not true that hundreds of milch cows are kept tied up in London dairy-yards from one year's end to the other, and that a mere partition often separates the cow-shed and undrained yard from the dairy?

Is it not true that at some metropolitan dairy-yards pigs, poultry, and dung-heaps, consumptive pumps and sunken vats for the drain of the sheds and other outhouses are to be found within a circuit of a few yards?

Is it not true that there is a most unhealthy combination of matters scarcely dreamt of by the noisy opponents of sewage farms and sewage grass?

Is it not true that ventilation and temperature are most important considerations in the management of dairies, and that, notwithstanding this knowledge, the milk in our dairies is often left to take care of itself?

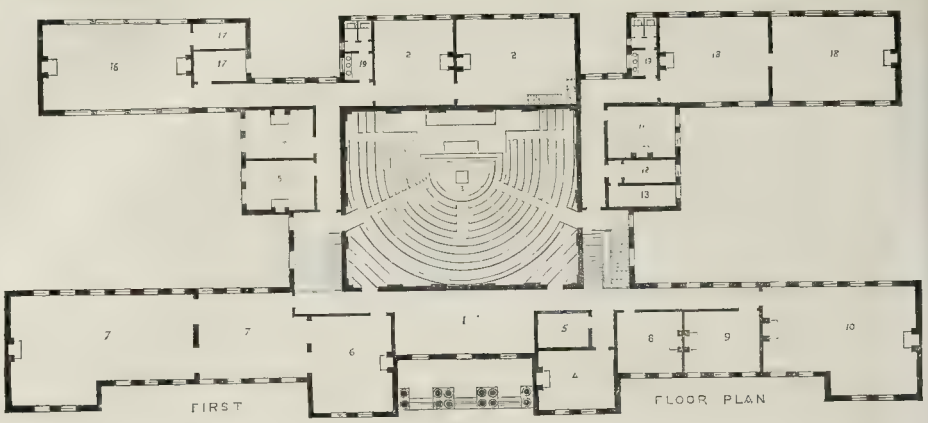
Is it not true that a large number of milch cows have been fed on sewage grass and sewage farm produce for the last few years in many places, with the best results, and that wherever complaints have been made they have been disproved, on inquiry, as groundless?

Is it not true that sewage is sewage and that grass is grass, and that there is about as much difference between the component parts of the one and the other as between the cow and the cauliflower, that may be found on the same pasture and utilised alike for the food of man?

Is it not true that dirt and uncleanliness in air and aliments are the chief causes of epidemics, and that in the prevention of these causes will be found the cure and the personal and public safety?

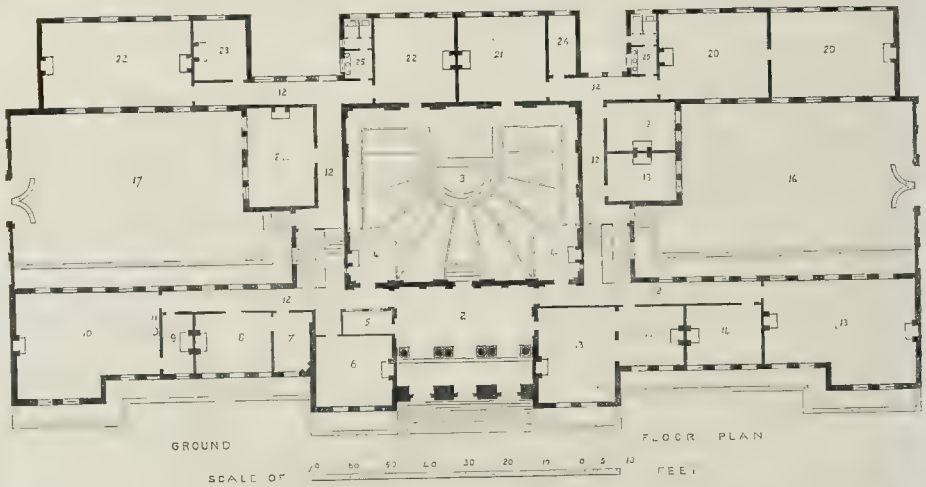
THE ROYAL ENGINEERS' INSTITUTE, CHATHAM.

THE School of Military Engineering at Chatham, was originally established to provide for the professional and technical education of the officers and men of the Royal Engineers. During the last few years, however, the rapidly increasing demands for the services of both officers and non-commissioned officers of Royal Engineers in India, as well as the necessity for meeting



REFERENCES TO FIRST-FLOOR PLAN.

1. Gallery.
2. Photography.
3. Lecture Theatre.
4. Draughtsmen.
5. Messenger.
6. Museum for Inventions.
7. Museum.
8. Testing-room.
9. Construction Instructor.
10. Construction: Officers' Hall of Study.
11. Survey Instructor.
12. Survey: Instructor's Store.
13. Survey Messenger.
14. Instructor.
15. Assistant Instructor.
16. Glass-house.
17. Dark-room.
18. Survey: Officers' Hall of Study.
19. Lavatory, &c.



REFERENCES TO GROUND-FLOOR PLAN.

1. Vestibule.
2. Hall.
3. Lecture Theatre.
4. Retiring-room.
5. Messenger.
6. R. E. Committee.
7. Secretary.
8. Clerks.
9. Librarian.
10. Library.
11. Gurney stove.
12. Corridor.
13. Construction: Model-rooms.
14. Construction: Assistant Instructor.
15. Construction: Men's Hall of Study.
16. South Court, Construction: Survey and Signalling.
17. North Court: Telegraphy and Photography.
18. Survey: Assistant Instructor.
19. Signalling: Assistant Instructor.
20. Survey: Men's Hall of Study.
21. Signalling.
22. Telegraphy.
23. Instructor.
24. Drawing-room.
25. Lavatory, &c.
26. Store.

THE ROYAL ENGINEER INSTITUTE, CHATHAM.

the call for higher scientific education for all branches of the army, have led to considerable extension in the area of its operation, and to a great increase in the numbers of those who yearly pass through its courses. The accommodation of the instructional departments has been added to from time to time to meet, as far as possible, their increased requirements, but it has long been found both inconvenient and insufficient. In order, therefore, to concentrate in one building the various educational branches, and to provide for their accommodation on a scale better suited to their wants, a sum of money was, in accordance with the recommendations of the Royal Commission on military education of the previous year, voted in 1871 for the erection of a Royal Engineer Institute, and the building, of which plans and a part elevation are given, was designed at the War Office by Lieut. Ommanney, R.E., under the direction of Sir Frederick Chapman, R.E., K.C.B., inspector-general of fortifications and director of works. It is Italian in style, the details of the main front being somewhat freely treated in order to give scope for the employment of terra-cotta instead of stone in the whole of the ornamental work except the upper members of the cornices, and the columns over the entrance, as will be seen from the plans. The Institute consists of a front and rear range connected by a central block, so that the buildings enclose between them two courts, upon which open the various classrooms allotted to the instruction in telegraphy, surveying, construction, army signalling, photography, &c. The schools for printing and the chemical laboratory, are in the half basement of the front, the ground and first floors of which are occupied by a museum, libraries, committee-rooms, and offices. In the central block is a theatre capable of seating 400, and intended for the delivery of lectures on subjects connected with military science.

The building is executed in brickwork, with terra-cotta cornices, window dressings, string courses, &c. The front up to the first floor is faced with white Suffolk bricks, with a horizontal course of terra-cotta dentil bricks at every fifth course; above the first floor the face work is of yellow malms, giving a good contrast with the terra-cotta. General Scott's Selenitic mortar, supplied by the Selenitic Mortar Company, has been used throughout: the proportion of four sand to one lime for face work enables a good clean joint to be struck, while six to one for all other parts makes very strong and good work.

The contractor for the erection of the building is Mr. Sollitt, of Strood; the terra-cotta work being supplied by Messrs. Doulton & Co., of Lambeth. The cost of the building is 21,000*l*.



THE ROYAL ENGINEER INSTITUTE, CHATHAM.—DESIGNED BY LIEUT. ORMANNEY, R.E., UNDER DIRECTION OF SIR FREDERICK CHAPMAN, R.E., K.C.B.

A GLASS CAMEO VASE.

MR. JOHN NORTHWOOD, of Wordsley, near tourbridge, has completed, after nearly ten ears' labour, a vase which will doubtless be alked about. According to the Birmingham *Daily azette*, it resembles in its general character the ortland and Pompeiian vases. It is a two-andled or Amphora vase, decorated with Greek rnament. Around the body is a broad band of meo ornament, consisting of two well-selected uestrian groups from the frieze of the Par-henon, more generally known as the Elgin arbles. The vase is made of pure flint glass, id, therefore, is much more brittle and difficult work upon than ancient glass. "The groups relief are finely deadened, raised against a ore densely deadened ground. Each portion delicately and perfectly finished, the action the horses, the accurately delineated figures the riders, whose features must be examined nder a magnifying glass to be fully appreciated, e nostrils and the hoofs of the horses, and the rious trappings, all alike display the marvel-us skill and patience of the artist." The reaking off accidentally of a small piece would ve spoiled the whole work, the loss of a horse's oof, a man's hand, or any similar accident, ould have been irreparable, and it is in the ot that the vase is completed, and completed rfectly that value is given to the work.

THE PRESENT AND FUTURE OF THE COAL TRADE.

THE inquiring mind might find a good deal of od for reflection, if he chose to turn his ttention to the question of the future of the al trade, a subject on which it must be owned good deal of speculation has already taken ace. This subject seems just now to be more an ever complicated, inasmuch as the returns the quantity forwarded to London during the onth of July, showed that even in the midst summer the demands from the metropolis ere greater than they were in either December January, or, in other words, the tonnage sent as larger than at the period named. At the resent time the demand on the collieries in th Yorkshire and Derbyshire is fully as large it was last month; seeing then that stocks of als to the extent known in past years are not be found on the pit banks for winter supplies, becomes a question of more than ordinary cerest as to how the coming winter will find e coal consumer. It is, however, pretty nerally admitted that the public are laying in ocks in the hopes of preventing being imposed on as they were but a short time ago; and re are those to be met with who hold that al will be as good if not better to buy at ristmas than they are at the present time. pursuing such an important theme as the ure of our coal field, it may not be uninterest-g to glance at the progress which is being made the various parts of Yorkshire and Derbyshire, m which a large proportion of railway-borne al finds its way to the metropolis. Throughout Derbyshire district several new collieries are ing opened out, which when properly at work ill add to the output to a large extent. the county of Leicester borings are, it said, about to be made, with a view of proving measurers. Around the ancient town of akefield, and more particularly in the districts Walton, Crigglestone, Harbury, and Ossett, rood deal of coal is being raised, for the most rt from thin beds near the surface, which a w years ago were counted as worthless. It is, wever, from the South Yorkshire district that lief is to be obtained in time to come, if such hing is possible. Within an area of six or eight les of Barnsley, four or five very large collieries now either in the course of being sunk, preparations are coming on to that end. In ch case the seam of coal to be worked is the kstone bed, which is known to be one of the heat seams that can be won. The distance tween the Barnsley seam and the Silkstone y be said to be from 370 to 390 yards. In veral places in the district, large coalfields ve been leased by important and well-known ns and companies, and in several instances kings have commenced to the Barnsley ms. At the present time the Barrow matite Iron Company are sinking to the kstone seam. At Worsbro', Messrs. Newton, ambers, & Co., of the Thornecliffe Iron Works, going down to the same bed, near Hoy-id Common. A new company is going down with two very large shafts at Darfield, on the Midland Railway. Near to Barugh, the same well-known seam is about to be sunk to on the estate of Mr. J. S. Stanhope, of Cannon Hall. Several new shafts on a very large scale are also being put down to the Barnsley bed, within a few miles from the town of Barnsley. Doubtless one of the most interesting problems connected with this rapid extension of coal mining, and one which will require solution, is that of meeting with labour in the present state of the market. To many the only visible relief is to be found in the development of coal-cutting machinery, which has not made so much progress as it ought to have done, and which those who have devoted their time, talents, and money to accomplish had a right to expect.

THE CENTRAL RAIL RAILWAY.

WE have no sooner concluded that human invention has attained its limit in this, or that, special direction, than all at once we are startled by some announcement which shows that what we supposed to be its ultimate form was only a stage in development. Who would have thought till a few months since, notwithstanding the "pannier" railway proposed last year, that trains would ever run upon other than two rails? And now such a project is before the world, which, its promoters assert, will probably revolutionise the present system. In this project, which we noted in our issue of the 23rd ult., the inventor utilises the principle by which the bicycle rider travels balanced and steady above two narrow wheels. In the proposed single line of rail system the carriages and engine will have a single row of central and double-flanged wheels striding or saddling the single central rail.

The recollection of mishaps and upsets to bicyle riders in starting will probably excite the reader's smile as soon as the project is proposed to him. But the inventor does not intend that his engines and carriages shall struggle into steadiness like the bicycle rider: he provides balance-rails and wheels. The balance-rails are provided for some distance in and out of stations. The carriages and engines will be brought very much nearer the ground, and many other sources of danger in our present railway system will be mitigated,—at least so says the inventor, who proposes lighter trains and engines, and that trains shall run more frequently. Existing lines would be able to accommodate three or four "ways" of the new style within the compass of the usual "up" and "down" lines.

The inventor suggests several forms in which, under different circumstances, the system may be worked.

OPENING OF A JEWISH SYNAGOGUE IN MIDDLESBROUGH.

ON a site in Brentnall-street, the foundation-stone of a Synagogue has been laid in Middlesbrough with fitting ceremony. The site runs between Brentnall and Baxter streets, 100 ft. by 44 ft., and will contain in the basement a large kitchen for the "reader" (who it is intended shall reside on the premises), bath-room with "Miva" or dip, pantry, closets, and other conveniences, and is approached by a flight of stone steps through two arched doorways flanked with brick piers and stone capitals, with an entrance-hall 12 ft. square, laid with Webb's encaustic tiles to a pattern, out of which are the entrances to the committee-rooms, staircase to gallery, synagogue proper, and reader's sitting-room. The committee-room is 15 ft. by 12 ft., and will also be used as a ladies' cloak-room. The synagogue proper will be 32 ft. square, and is laid out with the intention of including an additional 32 ft. as soon as the room is required. It will be seated for 132 male adults. On the ground floor the seatings throughout will be of pine, and the seats will have solid ends, panelled fronts, and book-boards. The whole of the interior woodwork will be stained and varnished.

The Almemar (or reader's desk) will be lighted by eight small standards, and a star or sun light will be suspended from the centre. Twelve gas brackets will be fixed under the galleries. The synagogue is lighted with six semicircular-headed windows on the ground and fourteen on the gallery floor. The first floor is approached by a flight of steps, with turned banisters and rail to architect's design, and is lighted by oriel windows with margin lights. This story will be 12 ft. in height, will contain a large roomy landing, and a schoolroom 28 ft. by 12 ft. This room is lighted with two double windows, with a front aspect, and one facing the yard. It is estimated to hold upwards of fifty scholars, according to the regulations of the Educational Board. The gallery of the synagogue is approached from the landing on this floor. The gallery is supported on five cast-iron columns, and is seated for 120 female adults. The seats will be similar to the ground floor. The gallery front is panelled and finished with top-rail. The ceiling of the synygogue will be a feature in its construction. A plaster cornice will be run round above the windows, springing from which will be a coved ceiling, formed into squares, with panelled beams, the centre having an elaborate centre flower. At each of the beams a plaster cap is inserted, and a plaster enrichment is run round at the springing of the arches of the windows. The panelled beams have ventilators inserted of perforated zinc. The front of the building will be set back 5 ft. from the street line. At the outer edge of this area there will be a dwarf wall, with stone coping, and an ornamental iron railing. The height of the synagogue, from the pavement to the eaves will be 31 ft., and from the eaves to the ridge will be 11 ft. The materials used in the construction will be brick and stone, the front facing to be of red pressed bricks, with Forcett stone facings. The design is Classic in character. The windows are double, having flat heads with stone column between them, and carved capitals. The synagogue is ventilated with Archimedian screw ventilators. The contract has been let to Mr. Joseph Lord, of Middlesbrough, who is to complete the work by January, 1874, for 1,650*l.*, from the designs prepared by Mr. E. Tidman, architect, Middlesbrough. The amount already raised by public subscriptions exceeds 1,000*l.*

DOOM OF THE CITY CHURCHES.

AMONGST nineteen old churches in the City of London marked out for destruction are St. Martin Outwich, near the Bank, in Thread-needle-street; St. Antholm, Watling-street; and All Hallows, Bread-street. In the last edifice our great John Milton was baptised, and the register kept in the church there proves it:—"The 20th day of December, 1608, was baptised John, the sonne of John Milton, scrivener." The font is still in the church. Milton was born in the same street.

A visit round last Sunday showed most of the City churches to be free of worshippers, except St. Mary Woolnooth, Lombard-street, of which the late vicar of Holy Trinity, Brompton, the Rev. W. J. Irons, D.D., is the rector. We are disposed to believe that our City churches would not be so empty at service hours but for the quality of the ministration.

IRON IN SUSSEX.

SIR,—In reference to a recent notice of the above subject in your paper, it has been generally supposed that the railing around St. Paul's Cathedral was cast in two different localities on the borders of Sussex, viz., some at or near Lamberhurst, in East Sussex, upon the borders of Kent, and some at Chiddingfold, near Haslemere, in Surrey, but on the borders of West Sussex.

Having resided some time in this locality, I have reason to think there were several small ironworks in the neighbourhood, as Burnfold and Chiddingfold; whether these folds designated ironworks or not I cannot say, but some persons think they did, as there are Lichfold, Dunsfold, and Aldfold. Even at the present time there is evidence of the country roads having been repaired with furnace slag. Of course, the iron ore of the Sussex district was smelted with oak charcoal. There are some ponds near Hindhead, upon the Portsmouth and London turnpike road, called Hammer Ponds to this day; and it is probable there was a tilt hammer or hammers worked by a water-wheel at each of these ponds, and they have retained the name ever since.

I have had the iron ores of these localities examined: they contain about 25 per cent. of iron upon an average, some of the samples are a little richer, and some a very great deal poorer. The Cleveland iron ores contain about 28·57 per cent. of iron, and they are obtainable in vast quantities, and not far from the Durham coal-pits. Yet they bring hematite iron ore from Bilboa, Spain, to mix with the Cleveland iron ore, and I guess at ten or twelve times the cost per ton of Cleveland ore; and also peroxide iron

ore from Northamptonshire, and probably from other localities. Therefore, unless the Sussex iron ore possess special qualities there is little probability of its being used, as its carriage to iron-making districts for admixture would be too expensive; were it near the sea perhaps it might answer to ship it to the north, but, I look upon it, the carriage would be too great for the idea to be entertained. HENRY TURNER.

P.S.—I think your correspondent must labour under some misconception about iron deposits near Brighton. I know of no iron deposits except on the north side of the county: still there may be some; but all around Brighton is of the chalk formation.

RE-OPENING OF ROLLESTON HALL, DERBYSHIRE.

FESTIVITIES have recently taken place at Rolleston Hall, in celebration of the restoration of the old hall, and in honour of the marriage of Mr. Mosley.

The dining-room and morning-room are restored, and the new works already finished consist of a billiard-room, 36 ft. long by 21 ft. wide, and communicating by glass doors with a conservatory, 60 ft. long and 40 ft. wide. There are also mahogany doors, with plate-glass upper panels in the conservatory, leading to the main passages and an adjacent saloon, about 50 ft. long, over 30 ft. wide, and about 25 ft. in height, and fitted with oak floor, and gallery or orchestra. This saloon has a roof, with a lantern light, from the sides of which it is wholly lighted, and can be ventilated, supported on ornamental iron principal ribs, with scrolls at the bearings leading down to the caps of pilaster on the walls. The exposed woodwork of the roof is covered with parquetrie by Messrs. Howard & Sons, London. The decoration of the walls is not complete, but we hear that marble will be introduced. Near to this saloon is the private entrance to a suite of rooms on the ground floor, with cellars below, fitted with Farrow & Jackson's iron bins. On the other side of the saloon are gentlemen visitors' offices, baths, &c.; also general offices for men-servants, and their working rooms. The kitchen, which has been entirely remodelled, is fitted up in a complete manner with roasting-range, oveps, hot plates, steaming apparatus, hot table and closet, smoke-jack, &c. (furnished by the Derwent Foundry Company, Derby), gas stoves, ventilators, &c. The entrance, or west wing, is still in course of construction. The external face has a large carriage porch, supported by Ionic columns and pilasters in the centre, with balustrade parapet, and the superstructure is of Italian architecture. The plan contains large entrance-hall, or vestibule, in character to suit the front, separated from the inner hall by opaque glass and mahogany screen with folding doors. The floor is to be laid with squares of marble to pattern. The inner hall will contain a rich oak staircase, now being prepared by Messrs. Slater, of Derby. Starting from the centre, and rising to the first landing (about 11 ft. in width), it continues on each side to the upper landing. At the stair-foot and landings are six large bronze figures (supplied by Messrs. Haywood, of Derby, and made expressly for the purpose), each supporting a cluster of gas-lights. The hall has a large lantern light at the top, and a coved ceiling beneath the whole. The walls will contain a large number of family portraits and pictures, forming a gallery. On either side on the upper floor are large chambers. On the north side of the principal entrance is the library, nearly 40 ft. long and 22 ft. wide. On the south side besides a smaller room, is the drawing-room, about the same size. The chandeliers in the conservatory and all the principal rooms are Benham & Co.'s patent, which secure perfect ventilation, and are supplied with fresh air from the external walls. These have been put up under the superintendence of Mr. Church, district manager. The passages, staircase, and rooms generally are warmed by hot water, and lighted with gas, for which purpose new works have been erected just outside the park. The south front is 250 ft. in length; the west, 115 ft.; while the whole of the buildings, &c., occupy just one acre of land. Along the south front of the hall a terrace has been formed, with broad gravel walk, having on either side vases filled with flowers, and mounted on stone bases. The gardens, lawns, and grounds generally, as well as the glass houses, which are very extensive, and the produce large, are all in order. All the gas works and fittings, hot water supply, and plumber's work have been executed by Mr. T. Crump, of Derby. Mr. Upton has done the bricklayer's work; Mr. Forbes a portion of the joiner's work; while the joiners on the estate, with their foreman (Mr. Rushton) are completing the remainder. The painting and decorations have also been executed by the men on the estate, with Mr. Rushton (brother of the foreman) as head of the staff. Messrs. Clarke, of Burton, have executed the mason works, and Messrs. Bird & Dyer, of Ashby-de-la Zouch, the plastering. The whole of the works throughout have been designed and carried out under the direction of Messrs. Giles & Brookhouse, of Derby, architects.

FOREIGN LOANS AND VENTURES.

THE writer thinks this a fitting opportunity to direct attention to the enormous losses that have been sustained by this country under this head; he moreover trusts that Government may initiate plans for the employment of surplus capital and savings in the reclamation of waste lands, the embanking of rivers and coasts, and works of public utility, in place of investments in the sinking funds of Foreign Loans, at present as rife as ever.

Some time back he was induced by a relative to invest nearly 2,000*l.* in American State Stock Securities; he received two dividends, and the principal is now hopelessly gone, although the faith of the Sovereign State was inviolably pledged.

Previously to another exodus of British capital, let holders of money reflect whether an investment in this country may not be more secure, at all events more tangible. CAVE.

HERNE BAY.

THE preservation and reclamation of the coast line between Herne Bay and the Reculvers is becoming a serious question. The inroads made by the sea, and the want of land drains, are making ravages that can only be met by the erection of a proper "sea embankment wall," and the trimming of the slopes of the ground: in many cases these reach an elevation of 80 ft. to 150 ft.; and a carriage-road might be formed in connexion with the sea-wall, of say 50 ft. in width.

Some remarks in your columns, some time back, have apparently been attended with good results. May we hope that the attention of the proper authorities,—*query*, who are they?—will be directed to the "preservation and reclamation" of the coast line of England.

CAVENDO TUTUS.

BOARD SCHOOLS.

Croydon.—The Bynes-road Schools, the first set of schools erected by the Croydon School Board, have been publicly opened. The total number of children belonging to the Board's schools is 999. The group of buildings, which are of yellow stock bricks, relieved by Bath-stone dressings and red bands, have been erected by Mr. Hyde, under the superintendence of Mr. J. Berney, architect. They consist of two residences, one for the head-master; and the schools, which are divided into four sections,—a senior boys', a senior girls', a junior mixed, and an infants' school,—are designed to accommodate 544 children, of which nearly 200 are already on the books. A spacious playground is attached to each school, and a covered shed has been provided for wet weather. The rooms are fitted up with the necessary school appliances, and the arrangements for lighting, heating, ventilation, and drainage are of approved modern character.

Liverpool.—The first of the School Board's temporary schools has been opened. It is situated in Love-lane. The construction of the building, which was designed by Messrs. Reade & Goodison, architects, is peculiar. It is almost entirely composed of American spruce, and is capable of being removed from one site to another, whenever occasion may require, without damage. In fact, with the exception of the slating, the whole may be taken down and re-erected without driving or drawing a nail. The whole is constructed in sections of 10 ft. long, so that the schools can be lengthened or shortened at will. The original structure has, indeed, been already divided into two parts, one of which is already finished, in Love-lane, and is intended to accommodate 400 pupils. The other is placed in Mill-street, and will hold 300. The contract price for the work was 1,145*l.*, and it was undertaken by Messrs. Jones & Son, of Liverpool.

SLIGHTLY DEFECTIVE RAILS.

SIR,—*Apropos* of the shocking waste of life by railway accidents at this moment, I have just read in one of our most largely circulated Northern newspapers the subjoined advertisement, which, under the most unfeigned hope that it may be capable of some other and possibly more technical interpretation than that which I am compelled to put upon it, I leave to the meditation of your readers who are in the slightest degree interested in the vital questions arising from railway accidents:—

"RAILS.—For sale, 2,000 tons of perfect and new, *slightly defecti e*, of various sections and weights, from 30 lb. to 80 lb. per yard.—Address," &c.

VIGILANS.

THE TRADES MOVEMENT.

MESSRS. JACKSON & SHAW, builders and contractors, of Earl-street, Westminster, were summoned to the Westminster Police Court, by Reuben Lee, one of their stonemasons, for 2s. 4½d. due to him as wages. Mr. Morten, barrister, appeared for the complainant, and Mr. Braid, chief foreman, represented the firm. It appeared from the opening statement of the counsel and the evidence of Lee, that the complainant had been in the service of the defendants for eighteen months. When he first went the wages were 8d. per hour, but afterwards were raised to 8½d. In July of this year a deputation of the men employed at the new Midland Hotel waited on Messrs. Jackson & Shaw for an increase of wages to 9d. Messrs. Jackson & Shaw said they would be guided by the decision of the masters' meeting, and that decision was that from and after the first Saturday in August the pay should be at the rate of 9d. per hour. On the 9th of August some of the men were paid 9d., but the complainant, without any cause being assigned, only 8½d.: hence the summons. These facts having been proved, Mr. Braid admitted that the resolution passed by the masters had been acquiesced in by Messrs. Jackson & Shaw, who were paying the best hands 9d., but the complainant was only worth 8½d., and as such was paid: other men in the yard were paid from 6d. upwards. Mr. Morten said the man had drawn first-class pay for eighteen months. Mr. Braid said, after the dispute was settled the complainant left the job at the Midland Hotel, and got under a new foreman in the yard. Mr. Arnold said, if the firm had not intended to pay the complainant 9d., they should have had a contract to that effect. Mr. Braid said that was impossible. This was a very important case, and would govern hundreds of others, and the case was that of the Society of Masons, not of the man Lee. Mr. Arnold agreed that it was a very important case, and it was very hard that the master or any one should pay for work not done; still, the firm had agreed to pay the advance, and had shown no excuse for not doing so. The case was extremely clear, and he wished one of the firm had been present to explain the circumstance. The defendants would have to pay the 2s. 4½d., and 2*l.* 2s. costs.

WATER FOR LONDON.

THE water examiner, Mr. Frank Bolton, in his last report, says that the Kent Company are giving constant supply of water to about 1,000 houses in their district, situated in the parishes of St. Mary, Rotherhithe, and St. Paul and St. Nicholas, Deptford.

The New River Company have now the power of affording effective constant service in their district. They have also commenced a new high-service covered reservoir to contain 1,000,000 gallons at Southgate, in anticipation of the requirements of the water supply to Edmonton parish.

The East London Company, in accordance with their notice previously given to a special district of 6,328 houses, turned on the constant supply on the 25th of March. The district was altogether unprepared for the constant supply, and the Company has had to overcome the tardiness of the small landlords by cutting off the water supply of nearly 500 houses in this block,

and the owners of such houses have thereby been compelled to amend the fittings. The district is under rapid improvement, and the tenants are gradually deriving the benefit of the constant supply.

The Southwark and Vauxhall Company are constructing covered service reservoirs at Nunhead, to contain 18,000,000 gallons, and are erecting additional engine power for high pressure constant supply. Additional boilers and works are also being constructed at Hampton.

The West Middlesex Company are giving constant supply to a number of houses on the application of the owners, who have provided fittings according to the Board of Trade regulations of the 10th of August, 1872, and are fully prepared to extend the constant supply when called upon. This Company is also constructing additional engine power at Hammersmith and at Hampton to ensure effective constant supply.

The Grand Junction Company have completed a high service reservoir near Kilburn, to contain 6,000,000 gallons for constant supply, and are now laying a line of main pipes to connect up this reservoir with the works at Campden-hill, and are likewise erecting additional boilers and works at Hampton.

The Lambeth Company are carrying out extensions and improvements in their works. At Molesey, the construction of reservoirs is being proceeded with to contain 110,000,000 to 120,000,000 gallons of water, with pumping engines to fill them to a level of 12 ft. above the river.

If the following clause of the Board of Trade Regulations, 1872, relative to waste-pipes is carried out in its integrity, it will prevent contamination of the water from the gases generated by sewage, which are extremely liable to flow back into the cisterns and become absorbed by the water.

Regulation 14. "No overflow or waste pipe other than a 'warning-pipe' shall be attached to any cistern supplied with water by the company, and every such overflow or waste pipe existing at the time when these regulations come into operation shall be removed, or, at the option of the consumer, shall be converted into an efficient 'warning-pipe,' within two calendar months next after the company shall have given to the occupier of, or left at the premises in which such cistern is situate, a notice in writing requiring such alteration to be made."

The particular object of the above is to prevent any waste of water, but it will also effect an object of far greater importance by getting rid of the poisonous effluvia and gases from the drains which would otherwise ascend through the pipe, and not only be partly absorbed by the water in the cistern, but be partly mixed with the air in the houses, thereby becoming a cause of fever and disease.

NORTH SURREY DISTRICT SCHOOLS, ANERLEY.

THESE schools, which last year suffered much from ophthalmia amongst the children, are about undergoing considerable alterations, with a view to stamping out the disease and providing against its spread in future. The existing buildings are to be thoroughly cleansed and disinfected, and means taken to secure more perfect ventilation.

A new swimming-bath will be constructed, in addition to ordinary baths, and the washing of the children will take place under jets of water constantly running, basins being entirely abolished. New play-sheds for boys and girls, school and class-rooms for infants, workshops, and extended playgrounds are also to be provided.

The works are being carried out, at the suggestion of the Local Government Board, at a cost of over 10,000*l.* Mr. A. G. Hennell is the architect.

THE CHILDREN'S HOME.

THE Lancashire branch of the above institution, at Edgeworth, near Bolton, was formally inaugurated on Saturday last, the 30th of August, when a memorial pillar was placed in its position in a conspicuous corner of the grounds by the Rev. W. M. Punshon, LL.D., in the presence of a large concourse of people. On the same occasion the corner-stone of a new house for girls was laid by the Rev. Charles Garrett, Wesleyan minister, of Liverpool.

The third house now being erected will be a detached building, and is intended to be a house for a family of girls, who will be trained in laundry work, and will have suitable outbuildings erected, and drying-grounds, &c., attached, for carrying on that work. This house, with outbuildings, will cost upwards of 1,000*l.*, contributed or collected by the children of the Wesleyan ministers in England and Ireland, and will be known as "The Ministers' Children's Gift-house."

Additional farm-buildings have also been erected, and a house for a farm bailiff is in course of erection, in addition to those already named. The whole of the buildings are of a plain but substantial character, being erected principally of stone got from a quarry on the estate. The works have been carried out by local contractors, under the direction of Mr. Thomas Ormrod, architect.

A NATIONAL SCHOOL OF ART.

SIR,—A national school of art, as England is at present constituted, is a moral impossibility. No country in Europe,—in the world,—has at the present moment more schools and machinery for art-instruction than England; but England is too sectarian, too divided in its foundations of thought, for that at-one-ment of opinion and purpose essential to develop a national art, a school, in the same sense that the Grecian and Italian schools were national schools of art. We begin by grafting instead of growing, and "marry a scion of a nobler stock to bark of baser kind," and the consequence is that we get neither the native crab nor the splendid old fruit, but a hybrid, which advanced taste pronounces unsatisfactory.

If, however, we would only be patient, and grow art from the very seed and root, and out of some future unification of opinion and purpose we should, in the course of time, have a national school of art in its very truest sense. My axiom, and I have intently studied this subject, is that in order to obtain a school of art such as desired, we must first look to the national school for intellect, and see that our system of general education is right. If this is right, depend upon it art will take care of itself.

W. CAVE THOMAS.

COVENT GARDEN.

PLACE of wondrous recollections,
Noble deeds and imperfections,
Haunts and homes where art and fancy,
Letter'd ease and necromancy,
Lived and moved, and had its being,
When old London loved the seeing.
Hallow'd ground of facts and fables,
Antique crypts and crowfoot gables,
Churches, schools, and halls of lecture,
And dead and living architecture;
Works begot of men's high culture
Still outliving their sepulture.
Shorn of flowers our hearts would harden,—
Bless thee for them, Covent Garden!

"A NUT FOR CHICHESTER."

SIR,—I opened my *Builder* this morning in the hope of finding some reply to your correspondent "Gargoyle": but none having appeared, permit me a few words. To begin:—He is not very happy in his *nom de plume*, for it is clear that either he has never visited the city he has undertaken to lecture on matters sanitary and architectural, or, as his name would imply, he has viewed it from so lofty a position that his sketch fails to be recognised by those who really know it. He tells us that "it stands on a gravelly flat, and that the houses are built of the largest (*sic*) boulders from this gravel." Now, sir, Chichester is built almost entirely of brick, chiefly red, and notably has two or three houses of that material, of fine elevation (said to have been built by Sir Christopher Wren), nor can I at this moment remember any built of the "largest boulders." East-street, as he admits, is a noble one. Unfortunately, as in many other towns, a large number of our old houses have been covered with that modern abomination cement; and although its architecture cannot be said to be of a very high order, yet there are few more picturesque cities. Its four streets of unusual width, meet at the exceedingly beautiful market cross, which has recently undergone considerable improvement. The unsightly iron railing so long enclosing it has been removed; the stone steps and paving are restored, the former giving it a well-defined base line; and it is hoped that reviving taste will ere long decree the removal of the white clock dials and other disfigurements which now so mar its beauty. I will pass over his remarks on the council-chamber, with its "lively lion," but the rooms in it are not without grace, or are finely proportioned. The chief charge against us, however, is that we are a dirty city. Now, sir, I am no defender of dirt,—and here permit me to acknowledge how much we are all indebted to the *Builder* for the sanitary lessons so long and ably taught,—lessons, I trust, not altogether lost on us,—but this charge is contrary to fact; and let me say that the "stranger passing through" will not be offended either in sight or smell. We have an unusual amount of open space in proportion to our area; indeed we have been called a "city of gardens"; and in old coaching-days I have heard it said that we were celebrated for pretty faces, clean pavements, and windows. We have certainly no modern system of deep drainage; but this question, in connexion with other sanitary matters, has been much debated, and it is doubtful whether, in the present not very encouraging state of things exhibited in other cities, our governing body would have shown much wisdom in adopting extensive drainage works. Let it not be supposed, however, that we are quite so lethargic as represented. Mr. T. Hawksley, one of our most eminent engineers, has been the adviser of the council, and we have removed from the streets our large cattle-market; and, under his superintendence, constructed, at a cost of 15,000*l.*, one of the finest and best-arranged markets in England. He states, in his report on the sanitary condition of Chichester, "his decided conviction that it has been unjustifiably charged with being an unhealthy and uncleanly city." A Bill has just been passed for the construction of waterworks; and the recent reports of our sanitary officer, a medical man of high standing and experience, are singularly favourable, showing an absence of those diseases of a zymotic type which so surely follow a neglect of the laws of health, and a death-rate of 14 in the return of last quarter is one that few cities can boast.

The Lavant stream, as its name implies, is intermittent, and some time since a survey was commenced by a competent engineer, with a view to its improvement; but until very recently a full volume of water has been flowing, rendering any works impossible. I feel confident, however, that our governing body will not neglect this important matter. As to our social shortcomings, the artizan class, or as he pleases to call them, the "great unwashed," are neither worse paid nor are they worse conducted than in other towns, nor is "property valueless." We fully recognise our great want, that of new houses and villa residences; and house-agents will tell you that inquiries for them are frequent; but to build houses we must have land; and, sir, if you will walk round our city, you will find that nearly all the building land is in the hands of that incubus on all improvement, the Ecclesiastical Commission. Let these lands be enfranchised on fair and equitable terms, not on their own valuation, and our critic "Gargoyle" will perhaps see, as in other places, the villas he speaks of. It is well sometimes to "see ourselves as others see us," and fair criticism is at all times useful; but I trust, sir, you will admit that we are not quite "benighted" nor so black as we have been painted.

CICESTRENSIS.

*** Even if we go so far as to admit the "not quite," we must still earnestly advise Chichester to set itself vigorously to the work of improvement rather than attempt to defend its present condition.

GRINDING MORTAR.

SIR,—Most of those who, like myself, are connected with the building trade, must have commented on the frequent insertion in architects' and engineers' specifications of a clause to the effect that the mortar used in the building *must be ground in a mill*. Now I should like to know if mortar so mixed is really better than if prepared in the ordinary way. I think it questionable. We know that in the best of lime there are certain hard lumps, unyielding to the water, and destitute of all the properties requisite for forming good mortar, which the men always throw on one side as unfit for use; whereas when a mill is used, these lumps are never extracted, but the lime, good and bad, is all shot in and mixed up together. Doubtless this method is not so wasteful and even more economical for the contractor, but is it calculated to produce as strong and durable work for the owner in whose interests I suppose the clause is inserted?

A. B.

CHURCH-BUILDING NEWS.

Hutton.—The new church of Hutton has been consecrated by the Bishop of Rochester. The edifice is rebuilt upon the old foundations, save that the chancel is an extension over and beyond the ancient site. The building is entirely new, except that the old tower and porch have been restored. The former is done up with new oak shingle, and contains the old five bells, which have been rehung. The porch is of ancient oak carving, elevated on a new base, and restored in accordance with its former character. The edifice is in the Early English style, with flint walls and Bath stone dressings, and pointed arched windows, several of which are filled with stained glass by Messrs. Clayton & Bell. The interior is divided into chancel, nave, north and south aisles, and there is separated from the chancel, by a carved oak screen, a south chapel, and on the north side are the organ-chamber and vestry. The steps leading to the altar are in Mansfield stone, and the chancel and aisles are paved with Godwin's tiles. The roof is open-timbered, in oak, with oak boarding upon the rafters throughout the nave and chancel. Below the line of the east window the chancel is decorated with ornamental tiles. The seating is by means of plain oaken benches, and the evening lighting by brass candelabra. The woodwork was left as it came from the joiners' tools. The architect was Mr. Street, and the builder Mr. Cross, of Hutton. Mr. Wray, of Springfield, did the stonework for Mr. Cross. The cost of the building amounted to 2,500*l.*, of which 2,100*l.* were subscribed prior to the opening. The whole expenditure will be about 3,000*l.*, including more than a quarter of an acre of land, which the Lady of the Manor granted to make an addition to the burial-ground. The new portion has, with the old, been inclosed within a ring fence of oak. The stained windows referred to are six in number. The west window, representing the Annunciation, the Adoration of the Wise Men from the East, and the Presentation of the Infant Saviour in the

Temple, is the gift of Mr. Offin, of Hutton Park. That in the south aisle tells of the Conversation of Christ with the Samaritan Woman of Sychar, at Jacob's Well, and was presented by Mrs. Baker, the Lady of the Manor of Hutton. In the chancel aisle, in memory of two infant children, two windows have been placed by Mr. Johnson, of Hutton, one representation being that of the Virgin and Child, and the other the Good Shepherd; while the south window in the sacrarium, which represents the Visit of the Holy Women to the Sepulchre on the Morning of the Resurrection, was presented by the wife of the rector of the parish. The large east window, consisting of three lights, contains the representation of several of the principal incidents recorded in the story of the Crucifixion of our Lord, and seems to be an offering in memory of a pilgrimage to the Holy Land by the rector.

Frickley.—The church of the villages of Clayton and Frickley has been reopened after having been nearly rebuilt at the sole expense of Mr. W. Aldam, of Frickley Hall. The walls were cracked and rickety, the roof far from perfect, and the whole fabric in a very dilapidated and unsightly condition. Most of the walls have been rebuilt, the interior partly refitted, a new baptistery added, and, with the exception of the west end of the church and the ancient Gothic tower, most of the edifice is now entirely new. In the interior of the church the old Norman arch leading to the chancel is still preserved, but thoroughly cleaned. Two other ancient arches, said to be of the thirteenth century, also remain as in former years, but the south transept arch has been rebuilt. Most of the roof, particularly the portion covering the nave and part of the chancel, was found to be bad, and all has been restored. In carrying out the whole of the repairs the ancient style of architecture has been adhered to. A new baptistery has been added for the accommodation of the old font; the floor of the room being laid with encaustic tiles. All the south transept has been restalled, and the old pews made to look like new. The architect selected to carry out the work was Mr. G. Williams, of London, and the renovation was effected by Messrs. Anelay, of Doncaster. The cost of the whole was about 2,500*l.*

DISSENTING CHURCH-BUILDING NEWS.

Driffield.—The foundation-stone and some special bricks of a new Primitive Methodist Chapel and Schools have been laid, on a site recently purchased in George-street. The chapel is from designs by Mr. Wright, of Hull, architect, and will cost 4,000*l.* The contractors are:—Mr. M. Gage, bricklayer; Mr. T. T. Dickinson, joiner; and Mr. J. Hickson, stone-mason.

Harlestone (near Northampton).—The foundation-stone of a new Baptist chapel has been laid at Harlestone. The old chapel and site was taken by Earl Spencer in exchange for a piece of land midway between the two portions of the village, and which is sufficiently large for the erection of a chapel and for a burying-ground. The plans for the chapel were prepared by Mr. Ingman, of Northampton, and the contract for its erection was given to Mr. G. Hall, of Hardingstone. It will be a plain, unpretending structure, built of the local stone; and, when completed, it is calculated, will afford sitting accommodation for about 150. Its floor measurement is 34 ft. by 24 ft. It will have an open roof; will be lighted by side, back, and front windows, which are to be filled in with green-tinted glass; and will have open movable seats, the object being to readily remove them, so that the space may be conveniently arranged for tea festivals. The total cost will be about 250*l.*

Bradford.—The range of buildings erected in Harris-street, for the congregation who have hitherto worshipped in Sion Baptist Chapel, Bridge-street, has been opened, with a public prayer-meeting, in the large school-room. The old chapel and schools were inadequate to accommodate the people and scholars, and hence the necessity for new buildings. The chapel and schools have been erected from the designs of Messrs. Lockwood & Mawson, Bradford. The chapel, which fronts to Harris-street, is in the Italian style, and in the rear are a large school-room and nine class-rooms. The proportions of the structure are large. The front is composed of Corinthian columns and pilasters, supporting an ornamental pediment, the tympanum containing the name of the chapel and the date when it was erected. A flight of steps leads to a roomy vestibule, in which are the gallery-staircases, and the entrances to the body of the chapel. Two other doors, at the ends of the vestibule, facilitate the means of entrance and exit. Two other staircases are also provided, by which the galleries can be gained from the rear. The chapel will seat upwards of 1,200 people. The fittings are all of pitch-pine, varnished, and the pews are so disposed that the whole congregation can see the minister. Above the baptistery is the pulpit, and the baptistery is so placed that as many people as possible can see the act of immersion. Behind the pulpit is the choir-gallery and a large recess for an organ. The chapel is well lighted. The front of the gallery is divided into panels, filled with ornamental ironwork, gilded. Light is gained at night from sunlights in the ceiling and from pendants under the galleries. The ceiling is panelled, containing ornaments, and round the walls run a frieze and cornice. The large schoolroom is lighted from the top and sides, and by the removal of sliding-doors a room at either end can be added to it. In the basement are the chapel-keeper's house, heating apparatus, and other conveniences. The entire cost will be about 18,000*l.* The contractors for masons' work were Messrs. Beanland; joiners, Messrs. Illingworth & Son; plasterers, Messrs. Howroyd,—all of Bradford. The chapel is surrounded by an iron palisading.

Books Received.

Professional Papers on Indian Engineering. 2nd Series. Edited by Major A. M. Lang, R.E. Nos. 7 and 8. London: Spon & Co. 1873.

These papers, printed and published at the "Thomason College Press," Roorkee, are issued quarterly, and if more particularly useful in India are interesting in England, as showing the subjects which occupy our engineer officers in India, and the progress of some of the public works. No. 7 has as frontispiece a photograph of the Mysore public office, Bangalore, designed by Lieut.-col. R. H. Sankey; and No. 8, one of the Delhi clock tower, designed and built by Mr. E. J. Martin, of the Rajpootana State Railway. Of the latter we have an engraving in hand, and will hereafter give some particulars of the work. The offices of the Mysore Government, at Bangalore, form a large building, with wings and a central block, in the whole 636 ft. in length. The contractors were Messrs. Wallace, Bumselal Abeerchund, and Narrainswamy Moodlear. The greater part of No. 8 is occupied with a "History of the Water-Supply of Bombay."

We have several works before us connected with India, particularly Lieut.-col Medley's useful lectures on "India and Indian Engineering," and Lieut.-col. Tyrrell's "Public Works Reform in India," and will find another opportunity to speak of them.

The architect and engineer must play important parts in India for a long time to come, and much will depend on the way in which they do so. Enormous interests are at stake.

On the Arrangement, Care, and Operation of Wood-working Factories and Machinery, forming a Complete Operator's Handbook. By J. Richards, Mechanical Engineer. New York and London: Spon. 1873.

Mr. Richards is the author of a treatise on Wood-working Machines, noticed at some length in our columns at the time of its publication. That treatise is supplemented by the less expensive work now under notice, directed to the care and management of such machines, including the plans of arranging and equipping factories for wood-work, and particularly the details with which the practical workman has to deal. The work is mainly based upon American practice, but is by no means a compilation, this and the author's previous work being the first of their kind. The present treatise, moreover, is much more than a mere operative's handbook for the care and management of wood-working machines.

If wood-machine workers will only look into this volume, they will find something decidedly to their advantage. The information given is based on the personal experience of the author himself, and is not gleaned at second-hand from any other source.

Elements of Mineralogy. By James Nicol, F.R.S.E., F.G.S., &c. Second edition, illustrated. Edinburgh: Adam & Charles Black. 1873.

This treatise, which contains a general introduction to the science of minerals, has been improved, in the present edition, as the author states, by new matter and careful revision and correction. The call for a new edition shows that it has been appreciated. In the last few years important additions have been made to the science of mineralogy. Its facts and principles are here stated in the simplest language which the author deemed consistent with scientific accuracy. It treats of the chemical as well as physical properties, and the crystalline forms of minerals, their classification, and a description of mineral species.

VARIORUM.

The new part of the "Journal of the Royal Historical and Archæological Association of Ireland" contains an illustrated account of the ancient cemetery of Killeen Cormac, which until a few years ago had been unaccountably overlooked. An existing mound appears to have been triple-terraced and crowned by a primitive church. Before the introduction of Christianity, Killeen Cormac was used as a place of Pagan sepulture, evidences of which appear to remain.——The *Contemporary Review* is meant for the thinkers and searchers, and discusses all sides. Thus the September Number, while it contains an important article on the study of Sociology, by Mr. Herbert Spencer, includes another, signed St. George Mivart, to prove how very wrong Mr. Herbert Spencer's chief views are. Out of collision, the truth is to be hoped for.——The value of Hardwicke's *Science Gossip* is well kept up. The September Number contains some capital matter.——In the *Antiquary*, Mr. Walter Thornbury continues his accounts of London Riots. Those brought about by John Wilkes, 1763, are now engaging him.——The *People's Magazine*, the *Leisure Hour*, and the *Sunday at Home*, all contain their usual amount of safe and pleasant reading.——The principal story in *Cassell's Magazine*, "Hester's Promise," is gathering to an end, and with increasing interest.

Miscellanea.

Leeds Theatre Royal.—This theatre has been redecorated, papered, and painted. The new ceiling is elaborate. Round the centre light is a band of blue, from which spring twelve circles, each circle being cusped to a centre pattern, the points of the cusps studded with gold stars. The circles are again inclosed with a band of blue, bordered by red and studded by gold stars. The ground of the ceiling is a warm vellum, the whole being finished by a broad soffit ornament in green, red, and gold, on a blue ground. The square inclosing panels are in white and gold, picked out with red. The cove of the ceiling is diapered in vellum, chocolate, and red, springing from a band of leaves in green. The walls of the upper box-stalls are tinted a green shade, with Pompeian red dado. The walls of the private and family boxes are intended to be draped with crimson and gold curtains. The pit walls have been hung with a choice paper. The proscenium is in white and gold, with delicate tints of grey and warm red. The fronts of the boxes are decorated with a diaper of green quatrefoils and gold ornament. The box-entrance and staircase-walls are painted a delicate shade of green, and have a dado of chocolate and gold. The decorations have been carried out by Messrs. Wood & Sons, of Sherwood's Yard, Leeds, from drawings supplied by Mr. J. R. Watson, architect. Mr. James Wood, of St. Columba-street, has executed the general alterations.

Scarlet Fever from a Dead Horse.—Scarlet fever having attacked a whole family at the port of Amble, one of whom has died, Dr. Easton, the medical officer of health, has reported to the local authority his belief that the fever was produced from the family residing near a pond in an old quarry, in which was floating a dead horse. The family lived over a boat-house on the links, and being quite isolated, the fever has been confined to the inmates. Orders have been given to prevent dead animals being thrown into the pond.

Dyers' Hall Wharf. The buildings here are approaching completion, and the *Metropolitan* gives some particulars. The land has a frontage towards the river of more than 100 ft., and a depth of 120 ft. Reckoning up the area of the stowage on the floors, which will probably be used for tea-warehouses on the upper stories, and for wine-vaults below, we get a total surface of two acres and a half. The works have been carried out under the superintendence of Messrs. H. & J. Eastman, architects, by the contractors, Messrs. Crockett & Dickenson. The basement is laid with asphalte, by Mr. J. A. Lawford, of Leadenhall-street. The public passage, with which many of our readers are doubtless familiar, as leading away from the landing-place of the river boats on the right, has been lined with white glazed tiles. As a metropolitan improvement of detail, we may recommend this course to many public authorities who have "dark entries" to deal with. The tiles were supplied by Mr. W. England, of Bury-street, Oxford-street. The iron girders and joists throughout were by Messrs. Homan & Rodgers, of Gracechurch-street. A contrast of colours in yellow and dark-red bricks marks the front; long piers of yellow bricks, with the windows intervening, and the space between head and cill fitted in with red; while round the pointed arches that surmount the various bays there runs a single line of blue Staffordshire bricks. The facing is of Medway gault bricks from the West Kent Company. The cast-iron columns required in the erection, weighing altogether about 350 tons, were from Mr. Thomas H. Head, of Cannon-street. The regulations of the new Act for constant supply by the water companies have been complied with by the adoption of fittings from Messrs. Tyler & Son, of Newgate-street; and some terra-cotta enrichments and decorations have been supplied by Messrs. Doulton & Co.

The St. Gothard Tunnel. — The route through this tunnel is designed to carry the traffic of Germany and Northern Europe to the Mediterranean by avoiding France, and, to further the project, Germany has contributed twenty millions of francs, Switzerland a like sum, and Italy thirty-five millions, the rest being made up by the shares of private individuals. Whilst the Mont Cenis tunnel is 5½ miles long, that of St. Gothard will be 9¼ miles. The whole way from Goschenen to Amstag will be one succession of bridges and viaducts. The workmen, mostly French and Italians, number at present some thousands, on both sides of the mountain; but it is hoped that shortly twice that number will be employed. The boring is conducted on exactly the same principle as it was on the Mont Cenis, and is worked, as there, by hydraulic power, which, however, is not yet strong enough. The line will be in working order, it is estimated, in seven years. The route will probably join the Italian system of railways at Camerlata, and the Swiss at Zurich, with a branch line to Lucerne, and the tunnel will pass exactly below the parish church of Andermatt. The project will, it is believed, completely eclipse the Mont Cenis route, for two reasons: first, because this will raise Brindisi to the level of Marseilles, and will shorten the journey to India; secondly, because whilst the Mont Cenis route has only a single line of rail outside the tunnel (the cause of endless blocks and unpunctuality), this will have two. The enterprise has nothing to fear but the opening of the Simplon route.

The Warwick Water-supply.—The borough surveyor, Mr. Pritchard, having prepared plans and a report, as engineer to the corporation for the Haseley scheme, Messrs. Cawley & Newton were appointed by the council to report on the scheme, and have now done so favourably, with some minor modifications. The two reservoirs and other works connected with Mr. Pritchard's scheme they state can be carried out at an estimated cost of 15,000*l.*, including land but not water privileges. Mr. Newton, who was present, complimented Mr. Pritchard on the excellence of his scheme. The supply will equal 300,000 gallons a day, or 25 gallons per head for a population of 12,000.

Ancient Ironworks.—An English gentleman has recently discovered, near the Wells of Moses, by the Red Sea, the remains of ironworks so vast that they must have employed thousands of workmen. Near the works are to be seen the ruins of a temple, and barracks for the soldiers protecting or keeping the workmen in order. These works are supposed to be at least 3,000 years old.

New Bowling-green at Heaton Chapel. New and extensive premises have been opened by the Bowling-green and Billiard Club Company, at Heaton Chapel. The premises are situated between Derby-road and the railway, the extent of the ground being about two acres. A bowling-green, measuring 60 by 50 yards, is separated in the centre of the grounds from the croquet lawn, by a border, planted with flowers, shrubbery, and young trees. On the side next the Derby-road, the premises are erected for in-door amusement. In the centre is a large pavilion for gentlemen, with billiard-rooms and refreshment-rooms. The left wing from the entrance is set apart for various purposes, card-rooms, &c., and the right wing will be occupied as a dwelling-house by the gardener. In the south-west corner, adjoining the croquet lawn, is the ladies' pavilion, and at each side are erected two strong gymnasiums, one for boys and the other for girls, the children of the subscribers. The opposite corner is set apart for a quoiting ground, a wooden enclosure surrounding the whole. The builders were Messrs. Davison & Mawdsley, Chorlton-upon-Medlock, and the grounds were laid out by Messrs. J. Yates, Dickson, & Co., of Stretford-road, Manchester. The whole of the work cost between 16,000*l.* and 17,000*l.*

Working Men's Club and Institute Union.—Mr. Buckmaster has delivered a lecture at the School of Cookery of the International Exhibition to the members of this union. The lecturer called attention to the preparation of the *pot-au-feu*. He had had prepared that evening a sufficient quantity of this dish to give 200 persons a good supper. This was the cheapest and most palatable way of preparing food for the people. He then showed how a good dinner could be made for a family of five persons, at a cost of 1s. 2½d.,—about 3d. each, the meat costing 6½d., vegetables 3d., potatoes 2d., bread 2d., and herbs 1d. The company partook of some of the *pot-au-feu*, a dish of tripe, onions, and potatoes, and afterwards some potatoes fried in the fat skimmed from the stew. Mr. Hodgson Pratt mentioned that, consequent on a meeting held at the house of the Marquis of Westminster, a national school of cookery had been formed, to which all classes were to be admitted.

Society of Arts Technological Examinations.—At these examinations, which have been held this year for the first time, the subjects selected being the manufacture of cotton, steel, carriages, silk, and paper, the examiners have reported favourably of the following candidates:—In steel manufacture, W. H. Warren, of Dublin, who obtains a first-class certificate, with a prize of 10*l.*, and the offer of a studentship of 50*l.*, given by Her Majesty's Commissioners for the Exhibition of 1851. In carriage building, T. F. Mullins, of Preston, who obtains a first-class certificate, with a prize of 5*l.*, and the offer of a similar studentship of 50*l.*; and M. Mullins and J. J. Heywood, who each obtain certificates and prizes. In cotton manufacture, Thomas G. Mills, of Longsight, near Manchester, who obtains a first-class certificate, with a prize of 5*l.* At the examinations of 1874 the same subjects will be continued, with the addition of glass manufacture, cloth, pottery and porcelain, and gas-making.

The Monument of Victory at Berlin.—The colossal Monument of Victory, on the King's-square, at Berlin, is now for the most part exposed to view. On a square sub-structure of dark-coloured granite, ornamented with relievos, stands a round hall in the shape of a temple, also of granite, the roof of which is supported by sixteen columns. Out of the centre of this rises the principal column, in the interior of which an iron staircase leads to the gallery around its top. Three rows of gilt pieces of cannon, taken in 1864, 1866, and 1870–71, connected by garlands of leaves, and crowned by wreaths of laurel, form the ornament of the shaft of the column, the capital of which is ornamented with eagles. Upon a socle stands the statue of Victory, a work of Professor Drake, elevating with the right hand a laurel wreath, and carrying in the left the victorious banner. The column measures 195 ft. Rhenish to the crown of the head of the Victory.

Grimsby Docks.—The construction of a canal to connect the Royal and the Old Docks at Grimsby has commenced. The work is of some magnitude, and will occupy two years and a half.

Trees in Piccadilly and Metropolitan Streets.—The vestry of St. George's, Hanover-square, have consented to a liberal offer of Mr. Barlow, a vestryman, to plant trees in Piccadilly, on the footway running from the Hyde Park Corner up to Arlington-street. The trees selected are planes, similar to those on the Victoria Embankment, and which stand the London smoke better than poplar or elm; in fact, the plane species are partial to soot, and the leaves keep green longer than the elm, which rots at the core, and becomes dangerous to life in high winds. The trees standing beside the roadway in Piccadilly were saved, as our readers may remember, through the *Builder*, some years ago. The example thus set in Piccadilly might very usefully be followed in other parts of London.

Freemasonry in Palestine. — The first Masonic Lodge has been organised in Palestine, the locality chosen being the Royal Quarry, beneath the city, from which may have been taken the stone for Solomon's builders. The *New York Herald* gives a long account of the ceremony, and adds,—"It has been demonstrated by instruments that the floor of this cavern is higher than the surface of the temple site, a quarter of a mile south, and as the great stones which still remain in the walls around Mount Moriah unquestionably had their origin in this quarry, much light is thrown by this fact upon the manner of moving them. The operatives had only to construct an inclined plane, and roll these blocks, which are 20 ft., 30 ft., and 40 ft. in length, down to their places."

Gift of a Park to Birmingham.—The Cannon-hill Park,—a gift by Miss Ryland to the town of Birmingham,—has been opened to the public. By the wish of the donor, there was no opening ceremony. The park covers sixty acres of ground, and has been laid out by Mr. Gibson, landscape gardener, London. Pools for boating and bathing have been provided. The deed of conveyance to the Corporation provides that no intoxicating liquors shall be sold within the park; that the boats shall not be used on Sundays; nor shall any bands of music be played, nor athletic exercises or games be permitted on that day. Miss Ryland has previously made several munificent gifts to the town, its churches, and charities. The value of this latest gift is over 30,000*l.*

Bricks and Mortar for Clapham Common.—The inhabitants of Clapham and suburbs are up in arms with respect to probably a well-grounded rumour that Clapham Common is to be handed over to speculative builders. The ponds on the common are now used as a receptacle for dead cats, dogs, and stinking fish, and no one appears to be responsible for the common, which has now become a "No Man's Land." Whether the "Inclosure of Common Land Commission" will stop the contemplated villas and streets is not yet known, and it is difficult to find out an owner nearer than the lord of the manor. If the common be dedicated to the parish, the latter certainly ought to keep the ponds clear of the abominations that poison the neighbourhood with fever and cholera.

The late Mr. Henshaw. — The will and codicil of Mr. William Henshaw, builder and contractor, of Nos. 13 and 15 Wharfs, City-road-basin, who died at his residence, Tottenham-lane, Hornsey, on the 13th ult., were proved on the 1st inst. by Messrs. Harriet A. Henshaw, the widow; Mr. G. E. East, Mr. S. Fletcher, and Mr. J. W. Clarke, the executors, the personalty being sworn under 40,000*l.* According to the *City Press*, the testator gives to his mother, Mrs. E. A. Henshaw, a legacy of 200*l.*, and an annuity of 50*l.*; he also gives an annuity to his wife's mother; to his wife he leaves 500*l.*, all his household furniture and effects, and one-third of the income of the residue for life; the residue he gives to his children.

St. Mewan, Cornwall.—Public elementary schools are being erected in this parish from the designs of Mr. Silvanus Trevail, architect, for the local School Board. They comprise a mixed school, 58 ft. 6 in. by 18 ft.; class-room, 18 ft. by 16 ft.; infant-school, 18 ft. by 16 ft., with the necessary cloak-rooms, offices, &c. Accommodation is provided for 180 children, at a cost of 852*l.* 13*s.*, including boundary walling, fittings, &c., complete. The style adopted is a plain Gothic. The bronze medal of the Royal Cornwall Polytechnic Society has been awarded to Mr. Trevail for his designs for the St. Colomb Central Board Schools.

New Process of Iron-making.—This process, which dispenses with the blast-furnace, has been practically tested, and specimens of its produce shown at Wolverhampton. The bloom is made direct from the ore, which, it appears, is ground, mixed with lime and pitch, and baked in a coke-oven. This is treated as pig-iron, and, a furnace being charged with it, it is ready for the helve or the squeezers in half an hour. The inventors claim that by their process they can make a ton of finished iron from the ore at an expenditure of only two tons of coal; that they can make German steel as cheaply as cast iron, and can, besides, make the latter equal in purity to charcoal iron.

Accident at Tay Bridge.—A fearful accident has occurred near Dundee. The North British Railway Company are engaged in the erection of one of the largest bridges in the world across the Tay at a point where the breadth is nearly three miles. Ten men were engaged at a set of columns which were being placed in deep water at a distance of about half a mile from the shore. The work was being done on the compression system, the water being excluded by the pumping of air into the cylinder. The upper portion of the cylinder suddenly gave way, and the water rushed into the aperture. The result was that six men were drowned.

Fungi in a Church Roof.—At the last meeting of the Royal Horticultural Society (Sept. 3), Sir Geo. Gilbert Scott sent a group of leathery fungi found growing from the interior of the roof of Croydon Church. They proved to be specimens of *Lentinus lepidens*, a species considered to be rare in this country until quite lately: it cannot grow without a good supply of moisture, so there can be little doubt of a serious leak in the roof. A year or two ago the *Builder* recorded the occurrence of this agaric upon the fir timber of railway bridges in Wales, and upon the sleepers of the North London Railway in London, where it has been again seen quite recently.—W. G. S.

Hall-marking of Jewelry.—The Council of the Society of Arts, learning that what is termed "Hall-marking" of jewelry and articles of gold and silver is inadequate to secure to the public that protection in the quality of the materials for which it is intended, have accepted the offer of one of the members, Mr. Edwin W. Streeter, to place 25*l.* at their disposal, to be awarded as a prize for an essay treating on this subject, with suggestions for an improved system.

The Painters.—Messrs. Pitman & Cuthbertson, in notifying to their workmen that on and after Friday, August the 29th, it was their intention to increase the pay of their journeymen one half-penny per hour, and the labourers one farthing per hour, said,—"We hope every one will take interest in his work, and exert himself to do his best, that the alteration may be to our satisfaction, and the increase of wages a mutual advantage." We should rejoice indeed if such were the result.

The Science and Art Department.—The number of persons who have during the year 1872 attended the schools and classes of science and art in connexion with the Department is as follows, viz.:—36,783 attending science schools and classes in 1872, as against 38,015 in 1871; and 244,134 receiving instruction in art, showing an increase upon the previous year of 31,633, or nearly 15 per cent.

The Hyde Park Memorial.—Mr. Foley's model of the Prince Consort statue, for the National Memorial, Hyde Park, is now completed, and will be forthwith executed in bronze. According to the *Art-Journal*, as a separate statue, it is grand in line, and regal in aspect and bearing.

Mr. Buckeridge.—The death is announced of Mr. Charles Buckeridge, architect, of Oxford and London, at the early age of forty.

TENDERS

For Blunham Rectory, for Rev. T. M. Berry. Mr. John Usher, architect. Quantities supplied:—

Twelvetrees	£2,827 0 0
Cunvin	2,544 0 0
Carter	2,470 0 0
Moore	2,421 0 0
Corby & Son	2,403 0 0
Hull	2,380 0 0
Foster	2,341 0 0
Moore	2,421 0 0
Spencer (accepted)	2,159 0 0

For the re-roofing and re-pewing of the parish church of Dumsbo, county of Down, Ireland. Mr. Wm. James Watson, C.E. architect, Newry:—

McCullough & Bennett	£852 0 0
Lennon & Millan	582 0 0
McKeown (accepted)	552 0 0

For alterations and additions to Gloucester-place, Portman-square, for Mr. H. Chatteris. Mr. H. H. Collins, architect:—

Clarke & Mannooch	£2,573 0 0
Longmire & Burge	2,782 0 0
Oliver	2,550 0 0
Vernall	2,406 0 0

For erection of a warehouse, Bury-street, St. Mary Axe. Quantities supplied. Mr. H. H. Collins, architect:—

Browne & Robinson	£2,937 0 0
Henshaw	2,919 0 0
Merritt & Ashby	2,857 0 0
Wicks, Bangs, & Co.	2,874 0 0
Ennor	2,695 0 0
Oliver	2,645 0 0
Newman & Mann	2,620 0 0
Kirk	2,568 0 0

For decorative works, Warrington-crescent. Mr. H. H. Collins, architect:—

Cohen (accepted)	£480 0 0

For decorative works to North London Synagogue, John-street West, Islington. Mr. H. H. Collins, architect:—

Oliver	£596 0 0
Ebbs & Sons	535 0 0
Clarke & Mannooch	527 0 0
Ball	383 0 0
Vernall	380 0 0

For Enfield Congregational Church. Messrs. Tarring, architects.:—

	If Bath stone ashlar	If stucco to inside walls
Myers & Sons	£3,175 0 0	£954 0 0
Shurmur*	7,313 0 0	817 0 0
Kilby	7,270 0 0	890 0 0
Brass & Co.*	7,260 0 0	830 0 0
Field & Sons	7,210 0 0	868 0 0
Patman	7,190 0 0	840 0 0
Hill & Sons	7,170 0 0	820 0 0
Luscombe	7,100 0 0	600 0 0
Dove Bros.	7,095 0 0	800 0 0
Jackson & Shaw	6,500 0 0	710 0 0
Bayes & Ramage	6,450 0 0	559 0 0
Perry & Co.	6,393 0 0	560 0 0
Cooke & Green	6,236 0 0	531 0 0

* Too late.

For alterations to 39, High-street, Marylebone, for Mr. Broadbent. Quantities by Mr. Charles Bradley:—

Rudkin	£737 0 0
Longmire & Burge	636 0 0
Perkins	609 0 0
Botting	606 18 4
Brown	565 0 0
Higgs	557 0 0
Harris & Son (accepted)	529 0 0

For Holy Trinity Schools, Hastings. Messrs. Jeffery & Skiller, architects:—

Howell	£1,937 0 0
Rodda	1,977 0 0
Vidler	1,894 0 0
Hughes (accepted)	1,833 7 5

For taking down and rebuilding No. 2, Moor-lane, Cripplegate, for Mr. Thos. Sadler. Messrs. Archer & Green, architects. Quantities by Messrs. Argent & Woodward:—

	General Works.	Repairing Stables.
Cooke & Green	£1,070 0 0	£135 0 0
Lathey Bros.	1,083 0 0	114 0 0
Bostell	1,068 0 0	112 0 0
Blake & Ramplen	981 0 0	116 0 0
Hearle	997 0 0	89 0 0

For repairs at the Duke of Marlborough, Richmond-road, Dalston. Mr. H. J. Newton, architect:—

Brindle & Co.	£236 0 0
Taylor	229 10 0
Shurmur	225 0 0
Hockley (accepted)	219 0 0

For repairs at the Jolly Anglers, Kentish-town. Mr. H. J. Newton, architect:—

Taylor	£140 0 0
Hockley	140 0 0
Shurmur	139 0 0
Brindle & Co. (accepted)	132 0 0

For alterations to Little Wyld-street Chapel. Messrs. Searle & Son, architects:—

	Chapel.	Gallery.
Feltham	£5,295 0 0	
Allan	3,199 0 0	£236 0 0
Linfield	2,930 0 0	270 0 0
Cook	2,661 0 0	
Battley	2,560 0 0	
Cohen	2,460 0 0	130 0 0
Allard	1,999 0 0	155 0 0
Horne	1,823 0 0	
C. A. Cook	1,166 0 0	70 0 0

For rebuilding No. 32, Walbrook, City. For Mr. James Smart. Mr. James Harrison, architect. Quantities supplied:—

Ashby & Sons	£4,832 0 0
Little	4,657 0 0
Merritt & Ashby	4,644 0 0
Colls & Son	4,611 0 0
Kilby	4,556 0 0
Browne & Robinson	4,547 0 0
Ennor	4,490 0 0
Williams & Son	4,395 0 0

For alterations to No. 1, Baker-street, Portman-square, for Messrs. Cobb & Son. Mr. Alfred Wright, architect:—

Longmire & Burge	£480 0 0
Botting	475 0 0

For alterations at No. 43, Elizabeth-street, Eaton-square, for Mr. D. A. Key, jun. Mr. James Harrison, architect. Quantities supplied:—

Little	£577 0 0
Aitchison & Walker	525 0 0
Merritt & Ashby	518 0 0
Watson Bros.	512 0 0
Ennor	488 0 0

For the erection of new Deaf and Dumb Asylum at Margate. Messrs. Drewe & Bower, architects. Quantities supplied by Mr. C. A. Gould:—

	If executed in Bath Stone.	If executed in Ransome's Patent Stone.
Brass	£20,967 0 0	£21,366 0 0
Bushell & Son	20,967 0 0	21,148 0 0
Dove Bros.	19,975 0 0	20,375 0 0
Rider & Son	19,768 0 0	19,988 0 0
Downs & Co.	19,315 0 0	19,597 0 0

For rebuilding No. 23, King-street, Hammersmith, for Mr. Angell. Mr. Edmund Woodthorpe, architect. Quantities supplied by Messrs. Welch & Atkinson:—

Perry Bros.	£1,620 0 0
Hill & Sons	1,589 0 0
Adamson & Sons	1,565 0 0
Pritchard (too late)	1,540 0 0
Turner & Son	1,519 0 0
Larke	1,447 0 0
Chamberlen Bros.	1,447 0 0

For erection of premises at Circus-road, St. John's-wood, for the London and South Western Bank. Quantities supplied by Mr. Henry Lovegrove. Mr. C. Bell, architect:—

Tavener & Son	£1,919 0 0
Nutt	1,789 0 0
Bracher & Son	1,750 0 0
Barford	1,683 0 0
Scrivener & White	1,666 0 0

For additions to Aubrey House, Notting-hill, for Mr. W. C. Alexander. Mr. T. E. Collcutt, architect. Quantities by Mr. J. Gandy:—

Dove Bros.	£2,983 0 0
Hill & Sons	2,884 0 0
Macey	2,870 0 0
Jackson & Shaw	2,825 0 0
Cooke & Green	2,816 0 0
Ennor (accepted)	2,805 0 0

For a pair of semi-detached villas on the Lynn-road, Wisbeach, Cambridgeshire, for Mr. Henry Hudson. Mr. Alfred Wright, architect:—

Challans	£1,400 0 0
Girling	1,200 0 0

For new road-sewers, curbs, &c., for the Palatine Estate, Stoke Newington. Mr. William Reddall, architect:—

Crockett	£2,150 0 0
Peach & Sons	2,105 0 0
Tay	2,099 0 0
Jackson	1,900 0 0
Keeble	1,714 0 0
Chick & Co.	1,680 0 0
Bloomfield	1,548 0 0
Pettigrew & Moyes	1,454 9 0
Marshall	1,430 0 0
Meston	1,317 8 9
Goddard & Nicholson	1,306 9 0
Goodair	1,253 10 0
Capper	1,248 1 5
Dover & Co.	1,197 8 9
Potter	1,138 0 0
Riley	1,112 0 0
Gardner	1,053 0 0
Taylor	1,050 1 4

For alterations and additions to No. 13, Somerset-street, Portman-square. Mr. J. H. Rowley, architect. Quantities not supplied:—

Sharpington & Cole	£830 0 0
Wagner	795 0 0
Boyce	666 0 0
Vaughan	532 0 0

For alterations and additions to farm-house at Beddenham, Beds. Mr. John Usher, architect:—

Carter	£1,130 0 0
Foster	949 0 0
Cunvin	875 0 0
Moore	861 0 0
Hull (accepted)	840 0 0

For church to be erected at Havant, for the Rev. E. Rearden. Mr. John Crawley, architect:—

Moore & Son	£1,890 0 0
Nightingale	1,688 0 0
Bullivant	1,629 0 0
Stallard	1,603 0 0

For alterations and additions at the North Surrey District Schools, Anerley. Mr. A. G. Hennell, architect. Quantities supplied:—

Peskett & Taylor	£14,960 0 0
Smith	13,898 0 0
Hollidge	13,500 0 0
Crockett	12,911 0 0
Williams & Son	12,578 0 0
Axford	12,380 0 0
Hill & Sons	11,980 0 0
Willson Bros.	11,875 0 0
Rider & Son	11,828 0 0
Cooke & Green	11,811 0 0
Wright Bros. & Goodchild	11,375 0 0
Browne & Robinson	10,130 0 0
Downs & Co.	9,990 0 0
Moore	9,099 0 0

For converting premises at Woodford, Essex, into sixteen cottages, containing four rooms each, for Mr. Arthur McNamara. Mr. J. W. Forge, architect:—

Martin	£1,300 0 0
Arber	1,295 0 0
Bangs	927 0 0
Wells (accepted)	835 0 0

For the erection of retail shops, houses, and outbuildings, Soho-hill, Handsworth, for Mr. George Heaton. Mr. W. T. Foulkes, architect. Quantities supplied :—

Garlick	£3,030 18 4
Whittall	2,950 0 0
Jones & Edwards	2,900 0 0
Steel	2,867 10 0
Parton	2,866 0 0
Surman & Son	2,837 0 0
Lidsey	2,749 0 0
Hartley	2,697 0 0
Barker & Son (accepted)	2,688 10 0

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Wood, Portsmouth (particulars for illustrations are wanted).—Ashburnham (Outram's statue is but placed temporarily; it is going to Land).—W. L. L. (employ an architect).—C. L. (compliments).—J. W. (in type).—J. C. (next week).—J. S. (next week).—Clevedon-road: no name (thanks; we have plenty of such matter).—R. C. (all names of the accepted).—J. T.—C. T.—W. S. V.—P. M.—W. F.—Messrs. C.—W. S.—Messrs. C. & Sons.—W. F.—C. C. H.—B. & B.—C. J.—A. G. H.—M. & C.—B. & Son.—G. S. A.—T. C. W.—J. U —Mr. T.—B. N.—M. & Sons.

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WANTED, a Man who can thoroughly perform the duties of HOUSE CARPENTER, and do General Estate Repairs. To a steady, sober, active man, the situation would be a permanency.—Apply, by letter, stating age, qualifications, and salary required, to J. HALL, Clerk of the Works, Frecfolk, Michel-dever Station, Hants.

WANTED, in an Architect's Office, a BOY. One who can trace preferred.—Answer in own handwriting, addressed to Mr. J. HAHN, 3, Old Fish-street hill, E.C.

JUNIOR CLERK WANTED in a Builder's Office. Must be quick at figures, and willing to make himself generally useful. Apply in own handwriting, stating salary required, to JORDAIN & PAINE, 17, Colvestone-crescent, Kingsland.

GLASS PAINTERS.—A good ORNAMENTAL MAN WANTED; also One or Two Improvers.—Apply at the Stained Glass Works, Cambridge.

PRIME-COST CLERK.—WANTED, a good, practical PRIME-COST CLERK, in a Builder's Office.—Address, 815, Office of "The Builder."

TO GLASS PAINTERS.
A FIRST-CLASS PAINTER WANTED. Also a GOOD LINER.—Apply to F. BARNETT, Edinburgh and Leith Stained Glass Works, Leith, N.B.

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WANTED, an ENGAGEMENT in London, as MANAGING CLERK, or DRAUGHTSMAN.—Address, C. B. 13, Moorgate-street, E.C.

WANTED, an ENGAGEMENT, by an ARCHITECT and SURVEYOR'S ASSISTANT. Well up in Gothic working drawings and details. Outdoor work. Good testimonials.—Address, 809, Office of "The Builder."

WANTED, a RE-ENGAGEMENT as SHOP FOREMAN of JOINERS. Good references.—Address, E. C. 8, 33, College-place, Camden-town, N.W.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN or CLERK of WORKS. Joiner by trade. Aged 40. Good references from architects and builders in London.—Address, T. H. 69, Waterford-road, Fulham, S.W.

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WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN. A carpenter and joiner by trade. References to last employer.—Address, E. J. L. care of Mr. Polden, No. 19, York-road, Lambeth, S.

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TO BUILDERS AND OTHERS.

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WANTED, constant EMPLOYMENT, by a good Carpenter and Joiner. Well up in bench, fixing alterations, or any kind of jobbing work. Wages, 27s per week.—Address, W. T. Victoria Cottage, New-road, Lower Wandsworth-road, South Lambeth, S.W.

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WANTED, a SITUATION, by a thorough practical PLUMBER, GASFITTER, and GLAZIER. Has no objection to fill up time in painting. Address, stating wages, H. R. 42, Leader-street, Chelsea, S.W.

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TO BUILDERS AND OTHERS.

WANTED, by a young Man, a SITUATION as CARPENTER and JOINER. Used to bench, and can work machinery. Wages low.—Address, J. E. W. Post-office, Uckfield, Sussex.

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WANTED, by a young Man who has been in the trade four years, a RE-ENGAGEMENT as IMPROVER in a London firm.—Address, W. J. No. 15, Abbey-square, King's-road, Reading.

TO BUILDERS AND OTHERS

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TO PLUMBERS AND BUILDERS.

WANTED, by a young Man, a first-class PLUMBER, a JOB. Piecework or Daywork.—Address, C. P. No. 67, Phillip street, Kingsland road, N.

TO ARCHITECTS AND SURVEYORS

WANTED, by a neat and quick Draughtsman and good Colourist, an ENGAGEMENT. Eight years' experience. Just left a London office. Well up in design and coloring. Can send specimens and testimonials. Address, H. M. K. No. 36, Claremont street, Pentonville, N.

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WANTED, by a young Gentleman, a RE-ENGAGEMENT, as JUNIOR ASSISTANT. Is a fair draughtsman. Terms moderate.—Address, C. D. 50, Crawford-street, W.

WANTED, by a thoroughly practical Man, Carpenter, a SITUATION as FOREMAN or CLERK of WORKS, on a Job or on a Gentleman's Estate.—Address, A. F. 42, Bu khold-street, New North-road, N.

WANTED, by a thoroughly experienced MACHINIST, a SITUATION, to Work Moulding Machine. General Joiner, &c. Can make cutters and do own repairs if required. Address, A. B. care of Mrs. Jennings, High-street, Shifnal, Salop.

TO BUILDERS, DECORATORS, &c.

WANTED, by an experienced Man, a permanent SITUATION as FOREMAN of PAINTERS, &c. A good grainer and marbler and will be bestowing. Specimens of graining can be seen and first-class references can be given, including one from last employer.—Address, 846, Office of "The Builder."

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WANTED, by a thoroughly-practical CLERK of WORKS, who has had thirty years' experience, a SITUATION. First-class testimonials.—Address, W. W. Post-office, Blackheath-hill.

TO BUILDERS.

WANTED, by a Youth, aged 16, a SITUATION, as JUNIOR CLERK. Has had two years' experience in an office.—Address, A. B. care of Mr. Smith, 294, High Holborn.

WANTED, by a thoroughly-qualified ARCHITECTURAL DRAUGHTSMAN and COLOURIST, a RE-ENGAGEMENT. Has managed an office. Salary moderate. Specimens and references.—Address, W. 36, Sudeley-street, N.

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WANTED, by an ARCHITECTURAL ASSISTANT, aged 24, eight years in the profession, a RE-ENGAGEMENT in Town. Well up in general design, &c. details, and a good knowledge of perspective.—Address, Mr. BYRNE, 67, Great Portland street, W.

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WANTED, by a steady, respectable Man, constant EMPLOYMENT, as first-class PLUMBER, PAINTER, GLAZIER, &c. Neighbourhood of London preferred. References if required. Address, J. S. 30, Heygate-street, Walworth road, S.E.

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WANTED, by a respectable Man, a RE-ENGAGEMENT, as PLUMBER, &c. in Town or country. Good references if required. Address, S. W. 228, Copenhagen-street, King's-cross.

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WANTED, by a respectable Man, a thoroughly good PLUMBER and GASFITTER, can do plain Zincwork, a JOB or a SITUATION, as THREE-BRANCH HAND. A good reference can be given.—Address, T. T. No. 21, Abbey-street, Bermondsey square, Southwark.

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WANTED, by the Advertiser, a RE-ENGAGEMENT as JUNIOR ASSISTANT (London preferred). Address, T. J. 28, High-street, Clapham, S.W.

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WANTED, by the Advertiser, Constant EMPLOYMENT, in Town or country. Is a good jobber. Wages, 30s. Aged 27.—Address, G. R. W. care of Harrop, Stationer, Lewisham, Kent.

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SITUATION WANTED, as ENGINE-DRIVER or to Take Charge of Builders Painter or Waterworks (good references.—Address, ENGINEER, 29, Shrubland road, Queen's-road, Dalston.

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SITUATION WANTED, by an energetic young Man, as FOREMAN and TIMEKEEPER. Good references. Country not objected to.—Address, H. T., Grove-street

REQUIRED, by the Advertiser, aged 23, a SITUATION, as OUT DOOR CLERK, or any position Out partly Out-doors. Has been engaged as clerk for the past four years in the works of a manufacturing firm. Is used to mechanics and labourers. Unexceptionable references.—Address, B. C. care Davies & Co. Advertising Agents, Finch-lane, Cornhill.

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EVENING EMPLOYMENT WANTED by a young Architect, who is engaged part of the day. A neat draughtsman, quick tracer, and well up in details and construction. Address, H. C. 2, Buckingham street, Strand, W.C.

CLERK, &c. Ten years' varied and practical experience. Reference to last employer.—Address, R. J. 2, Pascoe-road, Lambeth, S.E.

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AN ARCHITECTURAL DRAUGHTSMAN requires an ENGAGEMENT. Salary not so much an object as a permanent situation in an office where he could make himself useful. Specimen drawings and references.—Address, 824, Office of "The Builder."

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A GENTLEMAN, who has been Principal ASSISTANT in the first offices in Town and country for the last ten years, will be open to an ENGAGEMENT after the 7th inst.—Address, 826, Post-office, Forest Hill, S.E.

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A CLERK of WORKS, of great experience, is open to an ENGAGEMENT. Town or country. Good references from late employers.—Address, G. P. 97, Camberwell road, Bromley-by-Bow, London, E.

A BUILDER'S SON desires a SITUATION as GENERAL ASSISTANT. Can prepare drawings, set out roofs, assist in estimating, and fill up time at bench. Fair writer, South Kensington. Good references.—London or near, references. Aged 20.—Address, E. P. J. care of Mr. Down, Croydon-road, Caterham Valley.

TO BUILDERS.

A FOREMAN, with a good practical knowledge of the management of buildings, WANTS an ENGAGEMENT, for the Charge of a Job, or a Joiner's Shop and Job.—Address, Y. Z. 238, Westminster Bridge road, S.E.

AS Good PLUMBER, PAINTER, GLAZIER, &c.—WANTED, a SITUATION, by a respectable Man.—Address, PLUMBER, 161, Drummond street, Eustons-square.

TO PLUMBERS, BUILDERS, AND OTHERS

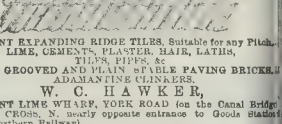
A RESPECTABLE, married Man, aged 40, seeks a SITUATION as PLUMBER, GASFITTER, and ZINCWORKER. Is a good painter, lead and sash glazier. Can say if constant, and the wages.—Address, A. E. 1, Staines place, Broadstairs, Kent.

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A YOUNG Man, aged 23, BANKER'S MASON, would be glad to meet with a JOB in a good yard (not L.C.C.), where he can improve himself.—Address, stating wages, &c. A. N. Post-office, Stroud, Gloucestershire.

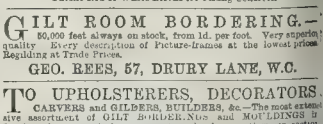
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TO UPHOLSTERERS, DECORATORS, CARVERS and GILDERS, BUILDERS, &c.—The most extensive assortment of GILT BORDER-ings and MOULDINGS in London always in stock, or made to order from pattern or section at the shortest notice, at the most reasonable prices.—JOSEPH ROGERS, 10, Broad-street, Bloomsbury, W.C. Established 25 years.

EDENT & CO. Manufacturers of TURRET CLOCKS, Chiming, Ringing, Fog Bell Machinery, &c. to Her Majesty and H.R.H. The Prince of Wales. Makers of the GREAT CLOCK of the HOUSES of PARLIAMENT. Detailed plans on application.—61, Strand; 34 and 35, Royal Exchange (adjoining Lloyd's); and the Factory, Savoy street, Strand, London.

The Builder.

VOL. XXXI.—No. 1597.

The Ruin of the Rivers.

THE pollution of rivers is one of the evils brought about by a century of neglect of public interests, while individuals have been sharp enough to see the opportunity and to penetrate the weak places of public law. So do thieves where there are no policemen. In this way an unpatriotic spirit has been begotten, and selfishness has taken root in the public mind. The natural advantages of the country have almost n turned into a curse to us, for want of regu- on and of law and order. We see this every e the subject of river-pollution is broached. us see what we can by the light of the ort of the Select Committee of the House of ds on this subject, dated July 21, 1873, which recently been issued, together with minutes evidence. It will be remembered that the ers Pollution Commission of 1868 proposed heir first report, in 1870, standard degrees of ution beyond which no refuse liquids ought e discharged into streams of water of general .

The refuse of manufactures as well as n sewage was embraced in these proposi- s, and it has been pretended by the manu- urers and others having private interests agonistic to those of the public that the pro- d standards would be unattainable.

r. Lyon Playfair, a chemist, a manufacturer, a member of Parliament, says that the ndards proposed by the Commissioners are is opinion not severe enough, although they expressed in such scientific language as to hten the manufacturers, who think them e severe than they are in reality, and he has wn up another set of standards meaning the e thing, but couched in more popular guage. These amendments of Dr. Playfair e approved by Mr. Stansfeld, the president he Local Government Board, but he thought esirable, before embodying them in any Bill e submitted to Parliament, that they should submitted to public criticism. We have pretime given the standards proposed by the mission, but we repeat them here in aposition with Dr. Playfair's amendments.

uids exceeding the following degrees of ution are to be prohibited from discharge watercourses in the purity of which other ions than the polluters are interested.

Dr. Frankland's Scale.	Dr. Playfair's Scale.
A distinct colour by daylight when a stratum 1 in. deep is placed in a white porcelain or earthenware vessel.	
$\frac{1}{10}$ part by weight of metallic arsenic in 100,000 parts by weight of the liquid.	$\frac{1}{10}$ grain of metallic arsenic in a gallon, either in solution or suspension or in any form of combination.
2 parts by weight of any metal except calcium, magnesium, potassium, and sodium, in solution in 100,000 parts by weight of the liquid.	1 grain of metallic copper or lead, in any form of combination, in a gallon.
1 part by weight of free chlorine in 100,000 parts by weight of the liquid after acidification with sulphuric acid.	
1 part by weight of sulphur, in the condition either of sulphuretted hydrogen or of a soluble sulphuret.	1 grain of sulphur, either as sulphuretted hydrogen or as soluble sulphuret, in a gallon.
An acidity greater than is produced by adding 2 parts by weight of real muriatic acid to 1,000 parts by weight of distilled water.	An acidity greater than is produced by adding 100 grains of real muriatic acid to a gallon of distilled water.
An alkalinity greater than that produced by adding 1 part by weight of dry caustic soda to 1,000 parts by weight of distilled water.	

It is proposed also to prohibit the discharge into any stream, of such manufacturing waste products as will raise, whether in suspension or solution, the foreign matters in the water of the stream to the extent of five grains in the gallon, provided that the water so polluted is not taken for examination from any part of the stream (and in the case of a tidal stream at low tide), at a less distance below the place of discharge than the breadth of the stream opposite to it, and at no greater distance than twice the breadth of the stream at the place of discharge. This last precaution, of prohibiting the discharge into a stream of such refuse as would raise the foreign matters in the stream itself to five grains in the gallon, is an addition of Dr. Playfair's to "catch the stream itself," for the other standards merely catch the drains going into the stream. "I want to catch the stream, and see that the stream itself, as an additional precaution, is not polluted by a number of drains going into it." And as to the precaution of taking the water for examination from within and without certain prescribed distances from the outfall of a drain, as described above, the object is to prevent the sample intended to be analysed being taken too near the drain's mouth; and so not indicating fairly the state of the bulk of the stream water for some short distance below the point at which the impurity is discharged into it. It appears that it is a practice at many works to discharge during the day very fair waste water into the stream, and then when nobody is watching at night to flush down a great quantity of impurities; but by adopting this additional precaution that practice would be discovered, and the manufacturer held accountable. None of these standards represent perfect purity at all; they only represent a much greater purity than is attained now.

Dr. Lyon Playfair is a director of Young's paraffine oil works at West Calder and at Bathgate, in Scotland, and he confesses to the committee that he is himself a great polluter of streams. But he wants to see the prohibition carried out which affects the pollution from this very manufacture, which is the most difficult of all to grapple with. "I think that if you force us to purify the water which we discharge fouled in this way, before long we shall find efficient modes of doing it. At the present moment we have not efficient modes of doing it, and yet as one of the largest polluters of water in the kingdom from this very thing, I advocate that you should make me purify the water before I discharge it." It is a curious proof of the want of law and order amongst manufacturers that Government should be appealed to in this manner. One would at first suppose that a director of one of the largest manufacturing works in the kingdom, who should acknowledge that he is himself a great polluter of streams, would put a stop to it at his own works, and we may well suppose he would do so if his were the only case to be dealt with; but he wants a general law to be enacted which shall compel those who are reluctant to assist in the public welfare.

When large quantities of water are required in manufacturing operations, it is usually taken from the stream immediately above the works, and returned to it immediately below them. From the bad state of the law at present, with regard to pollution, any man may have a pure stream fouled by works being built above him, and very often water is sent down fouled to the extent of these standards, or nearly so, and the manufacturer has to commence by a purifying process before he can use the water for his own works. If the law of pollution were rendered general, he would save the enormous amount of reservoir room which he now requires to purify the water which other people have fouled, and which he must purify before he can use it.

Dr. Playfair believes that if the manufacturers were compelled to follow these standards, they would find, as in the Alkali Act, that they would in a very short time exclaim against their being too light, and not against their being too severe, but he thinks that at present, until the manufacturers see that great advantages to themselves will accrue by purifying the rivers, it is desirable not to be too extreme in the first instance. As to the Alkali Act, which was at first much opposed by the manufacturers, he believes there is not a manufacturer now in the kingdom who does not remove the muriatic acid (one of the chief sources of pollution of the atmosphere formerly from the alkali manufacture) to a greater extent than the Act requires, and who does not find it to his own profit to do so. And he believes it will be the same in the pollution of rivers; it may not always be a direct economy, but it will be an indirect one, giving the manufacturer security that the people below him on the stream will not prosecute him for a nuisance, and that the people above him will be obliged to purify the water before it reaches him.

Dr. Frankland states to the Committee, that, as one of the Rivers Pollution Commission, and having now been engaged in this inquiry for five years, the chief causes of the pollution of rivers in England and Scotland are, first, the casting in of solid rubbish of all kinds. The Commissioners found that the watercourses generally in the kingdom are made use of to carry away worthless stuff, which would be otherwise expensive to get rid of, or to cart away to waste land. This is cast into the stream, and in time of flood is washed down into the lower and stiller reaches, and there it silts up the river, raises the bed, and in many cases causes the flooding of the adjoining lands. The second cause is the discharge of the sewage of towns into rivers. That is a liquid somewhat peculiar, although not differing very essentially from the discharge from some manufactories. Then comes, in the third place, the refuse from manufactories of various kinds, some similar to sewage, others differing from it in their qualities. Fourthly, and lastly, there is mining refuse, which spoils completely for fish, and also for human use, and for agricultural purposes, many rivers in the mining districts. The Commissioners have investigated every river basin where pollution to any considerable extent has already taken place, and they have had abundant evidence that the evil is very great at present, and that it is rapidly increasing both in quantity and in intensity.

In the town of Birmingham at present, General Scott's process (throwing down the solid matters in suspension with quick lime, and

converting the solid residue into cement) is partially applied to the sewage, and the effluent water is discharged into the River Tame; but, as the process does not much affect the matters in solution in the sewage water, the river is still highly polluted. It is necessary to take out the matters in solution, either by irrigation, or by intermittent filtration through the soil.

With regard to the manufacturers, Dr. Frankland states that the Commissioners have in all cases indicated how each specific form of pollution may be obviated and got rid of in a manner which shall not be unreasonably expensive to the manufacturers, and in most cases not expensive at all, but profitable, he believes. This is an entirely new subject, and it cannot be paid attention to for the next few years without new discoveries in the direction of better purification being made, which would enable a manufacturer at less cost, and, in most cases, at greater profit to himself, and with a smaller amount of plant, to do a greater amount of work in the way of purification. One may reasonably hope for that, says Dr. Frankland, as soon as the attention of manufacturers is directed to purification. "At present, they care nothing about it, but send the water into the stream just to suit their own convenience, without turning their attention at all to this subject of purification."

Mr. J. C. Stevenson, M.P., representing the views of the alkali manufacturers, says, in answer to the question,—

"What is the colouring matter which constitutes the manufacturers' objection to the third test [as given above, it is the fifth]?—A. It is of a brownish colour.

Q. Would that be a very poisonous solution?—A. Undiluted, it would be a strong acid solution.

Q. As you pour it into the river, would it be poisonous?—A. In point of fact, it gets so enormously diluted in the river into which we pour it, that no evil comes from it.

Q. It is not diluted, is it, when it passes from the manufactory?—A. No, it is diluted from the volume of the stream."

No comment is needed on such evidence as this to show the enormity of the practice.

One of the objections of the manufacturers is that they ought not to be obliged to employ a patent process in order to comply with the requirements of an Act of Parliament, and that seems a very reasonable objection. There are only a few known processes by which the refuse of alkali works can be purified, and they are patented; there are indeed only two in use. Now it would seem that patents for inventions of a character beneficial to the public health ought not to be granted, and yet encouragement of a money value to inventors is necessary. Could there then be any more legitimate object of a Ministry than to encourage these inventions by setting aside a sufficient sum out of the national revenue for this purpose, or to buy up and make free to the public any patent already taken out by an individual at his own expense, the patent being one of recognised value, as those above-mentioned are, on the authority of Dr. Edward Frankland, one of the Rivers Pollution Commission?

Mr. Richard Nickols represents the tanning trade of Leeds, where there are, within the borough, twenty-six large tanyards, employing 2,400 hands. By-the-bye, how suggestive of human machinery, merely, is this word "hands," when used in this sense, and how strongly, though unwittingly, it shows the actual relations that exist between the master and the people who work for him!

Mr. John Botterill represents the dyeing trade, and both these witnesses advise that the refuse should be run into the sewers, and be dealt with by the corporate body, there being no room sufficient for the purpose on the premises of the works; and this view is supported by Dr. Frankland, who says that, in cases where the manufacturers are so situated as to be unable to perform the process of purification themselves, it should be undertaken by the communities in which they live, and that surely some arrangement could be arrived at between the municipality and the individual manufacturer, by which that could be done. The manufacturer might contribute a little more to the rates if needed.

With the exception of galvanising works, tin-plate works, and wire-drawing, there are no manufactures carried on in this country from which such portion of the discharges as would be polluting under the suggested standards could not be admitted into the sewers of the town, to be treated at the outfall along with the sewage.

And this witness, having heard all the objections which were stated to the Committee, some of which are given above, says he has heard no objection that he has not repeatedly heard previously from manufacturers; but he thinks there are very few manufacturers in the country who understand what these standards really require them to do; what amount of purification is required. They look upon them as very much more stringent than they are. They are really very lax, and could be complied with in most cases with very great facility. If the manufacturer *bonâ fide* desires to prevent pollution, he has no difficulty in complying with these standards; but he has difficulty if he only wants to make believe that he is preventing pollution. There are sometimes, for instance, attached to works, small catch-pits, that pretend to be purifying the liquid from those works; but the liquid flows out of such little catch-pits just in the same condition that it enters them,—it is only a pretence of purification.

Mr. William Crookes, F.R.S., gives his evidence to the effect that he would make the standards "elastic," varying them to suit circumstances; and Dr. Frankland agrees with him so far as that it is desirable that the Local Government Board should have power to exempt, for a certain length of time, at all events, manufacturers who are situated, perhaps, in some very unfavourable locality for carrying out the provisions of the Act; but not that elasticity should be given in the standards. He does not see how the standards could be made elastic and effective at the same time.

The minutes of evidence upon which the third report of the Rivers Pollution Commission was based has also recently been issued. The Commissioners addressed questions to the manufacturers and traders which were intended to help them in framing their report, some of which only were answered. One of them was whether the manufacturers had any suggestions to offer as to the best means of avoiding pollution in future, and as to the conservancy of rivers and streams. It is curious to observe the chorus of their answers to these very civil questions. "No suggestions to offer as to the best means of avoiding pollution in future," and "No suggestions to offer as to the conservancy of rivers and streams." And these are the very people who could have offered valuable suggestions on both these questions, and would have done so if they had had any public spirit at all; but selfishness possesses them.

MOTTOES ON MASONRY.

THE custom of inscribing legends upon houses appears to have been most in vogue in the sixteenth and seventeenth centuries. We are not without many instances of earlier and later dates, but the great bulk of examples left to us belong to Tudor and Stuart times.

In the days of Sir Christopher Wren, we may assume, they were beginning to be removed; for, in his "Parentalia," he quotes a particular motto as a thing of the past. This was "TURBINIUS SUPERESI CŒLA DUCE PRÆSCIUS," which, with the family crest,—a wren and coat,—*stood*, he says, in the south-west window of the lodging at the north-west corner of the inner cloister at Windsor College, in the year 1633, "having stood there," he computes, "full 116 years, viz., from April, 1527, in which year and month Geoffrey Wren died, after he had been canon of the said chapel twelve years." The fashion for Classic art so freely followed in his day led to the obliteration of many more important features in old works than inscriptions, we know.

Many of the mottoes we find on ancient masonry in this kingdom belong to the heraldic insignia of the owners of the property; but not all. Some inscriptions are simple statements of proprietary interest, such as that which occurs above a window on Dalston Hall, Cumberland, which runs thus:—"John Dalston Elsabet wiphe mad ys byldyng." Others combine the pride of proprietorship with a sense of the aid to remembrance furnished by rhyme, as in the inscription on the grey old manor-house of Hewthwaite, near Cockermouth, in the same county, which says:—

"John Swynburn, Esquire, and Elizabeth, his wyfe,
Did make cost of this work in the daies of ther lyfe.
Ano Dom 1551. Ano Reg 23."

The pleasant jingle of "wife" and "life" had charms for many builders in those times, for it occurs on several buildings. An old Devonshire merchant intending to build an almshouse with a portion of his gains, in 1519, possibly had th same rhyming sounds in his mind when, lik John Swynburn, esquire, he "did make cost o this work"; but, before his scheme was accon plished, there was cause for another couplet c a different character, and which, we mus conclude, was composed by another hand:—

"John Waldron, merchant, Richoard, his wife,
Buildet this house in tyme of their lyfe.
At such time as the wals were fourtyne foote Lye,
He deparded this worlde, even the eightynthe of July.
A.D. 1519."

Other inscriptions, again, are admonitory There is one on the front of an almshouse a Leominster, beneath a figure of a man wit an axe, of this kind:—

"He that gives away all before he is dead,
Let 'em take this Hatchet, and knock him on ye head.

There is a curious example of a disputatio legend over the door of a house in Galligat Hexham:—

"Reason doth wonder, but faith he teli can
That a maid was a mother, and God was a man.
Let Reason look down, and Faith see the wonder;
For Faith sees above, and Reason sees under.
Reason doth wonder what by Scripture is meant,
Which saith that Christ's Body is our Sacrament;
That our bread is his body, and our drink is his blood
Which cannot by Reason be well understood;
For Faith sees above, and Reason below,
For Faith can see more than reason doth know."

Somersetshire has an example with a Shak perian curse in it. It occurs upon an almshou at Minehead, in conjunction with a represent tion of a ship, and the short and frequent mott "God's Providence is my inheritance." It say severely and precisely:—

"Robert Quirk built this House, Anno 1630,
and doth give it to the use of the poore of this parish
for ever. And for better maintenance
I do give my two inner cellars at the inner end of
the Key, and cursed be that man that shall
convert it to any other use than to the use of
the poore. 1630."

Like the Cumberland legends we have quote this inscription partakes of the character of statement. It is one of the most freque description, and similar testimonies are to found on many a sun-baked old almshouse unpretending ancient school-house in out-of-th way places, down to a late period. On the riv Coquet, at Warkworth, for instance, just aft you have crossed the bridge and passed throug the old gateway, defending the steep, wide stre between the water and the castle, you will see square grey old house. Over one of the window there is a high lintel, with this sentence incise upon it:—"In 1736 Mr. George Lawso, Gloste Hill, built this house and gave it to the town f a school house." In earlier times there was blending of piety, and sometimes loyalty, in t wording of similar notifications of charity th renders them more interesting. On the front the Bridewell at Aylsham, Norfolk, the o founder caused to be inscribed these words:—

"God save oure suppreme kyng Henry the Hyght.
Pray for the good prosperyte and assiate of Roberd
Marsham and Jone his wyfe, the wiche this house
they caused to be made to the honor of the towne
be thar gwyck lyves fines. 1543.

Here is another inscription with a supplicatio in it. It occurs on a strong and large squar tower, built by one of the ancient Percies within the walls of Hulne Abbey, on the wooded bank of the Alne, in Northumberland:—

"In the year of Crist Ihu MCCCCLXXXVIII.
This towr was bilded by Sir Henry Percy,
The fourth Earl of Northumberland, of great hono
and worth,
That espoused Maud, the good lady full of vertue an
beauty,
Daughter to Sir William Harbirt, noble and hardy,
Erle of Pembroke, whose soulis God save,
And with His grace conserve the builder of this tower."

It would not be difficult to guess who composed this inscription. There is a document extant among the accounts of the Earl's receiver o rents and revenues, stating the expense o building this tower, in which it is set forth that the prior of the house of the Carmelite Brethren within the park of Hulne, received 10l. 6s. 4d. for cartage and a portion of the materials for it Were these lines a grateful tribute from th prior, or were they a specimen of the scholar ship of one of the monks whose grave-slabs now lie so peacefully among the ivy and mosses and ferns in the ruined priory close by?

The later the inscription, as a rule, the lighter its tone. In the heart of London, in St Martin's-le-Grand, is a row of large, lofty brown brick houses, of the Harley-street and Baker street type. Two or more of them are now thrown into one to form an hotel. Between the first and second floors of one of these Georgian town-mansions is a large panel, wreathed with

foliage and surmounted by a bull. On the panel are incised this astonishing narrative and amusing reflection :—

"Milo, the Cretonian,
An ox slew with his fist,
And ate it up at one meal:
Ye gods, what a glorious twist."

Lighter still is a later inscription, said to be seen on a slab built into the middle cottage in a row erected by the artist of the cork model of Salisbury Cathedral exhibited at Brompton in 1862 :—

"Perseverance, cork, and glue
Built these cottages you view.
See what these three things can do,
In hundred and 62."

This is altogether removed from the dignity and poetry of ancient inscriptions. It reminds us of the comic utterances of Dutch wits on the gateways into their Dutch gardens,—"Not so bad," "Jolly enough," "Pleasure and ease," "The flesh-pots of Egypt," &c.

The chief centre of ancient inscriptions, now-a-days, is Edinburgh. Many of our readers will call to mind that William Chambers accredits one of the oldest legends, on one of the oldest houses, "*He yt tholis overcummis*," with the encouragement that enabled him to persevere in his wonderful industry and self-exaction. Robert Chambers, too, describes several of the old mansions bearing mottoes in his "Traditions of Edinburgh," for the sake of the former residents in them; and in an essay on "General Invitations" he quotes a motto upon another as a guide to the way with which such inhospitable compliments should be viewed, "*Tecum Habita*." Although many examples have been removed in quite recent times, the regal city has, perhaps, twenty or thirty left for us to admire. When the houses upon which they occur have been the town mansions of Scottish nobles, the mottoes are generally those belonging to the heraldic bearings of their former owners; but when the dwellings have been erected by prosperous merchants, or other devout builders, the legends are generally taken from the Scriptures. "Blessit be ye Lord for all his gifts, 1578," was to be read on a house in High-street, not long since taken down. "In the is al my traist, 1569," is still to be seen over a doorway in the Old Bank-close. On the famous bank that gave its name to the dim close was the legend "*Spes altera Deus*;" but this building was taken down in 1834. In Lady Stair's-close there is a goodly mansion with initials and date 1622 appended to his text: "Fear the Lord and depart from evill." In Blackfriars-wynd there are three latin inscriptions: "*Pax intrantibus*," "*Salus exeuntibus*," and "*Miserere mei Deus*." On John Knox's house, in the Netherbow, there is a free rendering of the golden rule, in the vernacular: "LVFE · GOD · ABVFE · AL · AND · YI · NYCHTBOOR [AS] · YI · SELF." On the mansion of the Sempel family in Sempel-close, over the entrance of the staircase turret, is inscribed a pious ejaculation, "Praised be the Lord my God, my strength, and my Redeemer, Anno Dom. 1638," besides over another doorway, "*Sceles marret optima cœla*." Another mansion, in an alley, is ornamented with a device :—A cock on a trumpet, with the word "*Vigilantibus*," and date, 1633. The inquirer, indeed, looking for ancient inscriptions in this ancient city, must be prepared to seek them in the narrowest closes and wynds and other hidden nooks. The spacious modern streets have not a single example indicative of any lingering of the old appreciation of them. The latest date we have observed occurs on a gabled house near the old corn-market :—1675, with the motto, "Fear God, Honor the King."

If London ever possessed the same number of inscriptions, the hand of the destroyer has gone more rapidly to work in the metropolis than in the Scottish capitol. But, as we have seen, the custom has not been so speedily forgotten in the South as in the North. There is one motto, however, that may be almost claimed for London, now that Kilburn is stretching out and up to Hampstead in one light and leafy suburb, that has somewhat of a Scottish resonance. It occurs on one of the detached houses that appear to nestle in the tall elms and poplars by which they are screened in West-end-lane, which line communication connects those once distant villages. It is associated with a coat of arms, like so many others, and runs,—"*Furth fortune and fill the fetters*." In other words, it advises that the ill use of fortune fills the prison. Ancient examples are scattered all over England. Devonshire has several; Lancashire is not destitute. One of the half-timbered Elizabethan mansions in the neighbourhood of Manchester is chosen as a family record, thus :—"This house was builded in the year of our lord God 1557 by Miriam Brereton Knight whom maryed Margaret daughter and heare of Willyam Handforth of Handforthe Chause and had issue 6 sonnes and two daughters." Yorkshire can point to Fountains Hall, built out of the ruins of the abbey in 1611, which has, with the crests of Sir Stephen Procter and his lady, the motto,—"*Rien trovant gaineray tout*."

We can quote a Scottish provincial example. It is to be seen on Branxholme Hall, the seat of Sir Walter Scot, of Branxholme, Knight, and Margaret Douglas, and is dated 1571 :—

"In · varld · is · nocht
Nature · hes · vrought.
Yat · sal · lest · ay ·
Therfore · serve · God ·
Keip · veil · ye · rod ·
Thy · fame · sal · nocht · dekay."

It is difficult to trace the custom to its source. The Jews, we know, were told to write their laws upon their doorposts: consequently we are not surprised that they still write the name of God upon them, and we might be content to consider them the originators of the fashion but for the circumstance that the Mahometans in Egypt have the same practice. Their doorways, enriched with arabesque ornament, and of the horseshoe-arch form, are often inscribed, in Arabic, "God is the Creator and the Eternal," or with passages out of the Koran. The Assyrians placed inscriptions over most of their works of art. The Egyptians availed themselves of them. In fine, we must go a long way up the stream of time to come to the authors of the first mottoes on masonry.

Not only did the ancient Romans use them as a matter of course, to welcome strangers, to bid them beware of the dog, and wish them farewell, but the modern Italians seized the opportunity they gave to convey advice, or make reflexions, permanently. There are many examples in Italy. One occurs over the doorway of a fine palace in Perugia :—"QVÆ IGNORAS TACE."

In one of John Stirling's letters to his great friend, Thomas Carlyle, there is this account of the house of the grandest of French essayists :—"Of my expedition to Montaigne's old house I cannot say much, for I indited notes thereof for my own use, and also wrote something about it to Mr. Dunn, which is as much as the old walls would well bear. It is truly an interesting place, for it does not seem as if a stone had been touched since Montaigne's time; though his house is still inhabited, and the apartment that he describes in the '*Essai des Trois Commerces*' might, barring the evident antiquity, have been built yesterday to realise his account. The rafters of the room which was his library have still his inscriptions on their lower faces; all very characteristic; many from *Ecclesiastes*." Thus we find, at least, a phase of the custom in the South of France. Neither M. Viollet-le-Duc, nor any other French antiquary, so far as we are aware, mentions inscriptions. Further inquiries would, doubtless, lead to many interesting discoveries, both in this region and elsewhere. Our present notes are but an additional instalment of information on the subject, given in these columns in 1868, and at other times.

NOTES ON FOREIGN PUBLIC WORKS.

A GOOD deal of interesting information with regard to this subject is contained in several Foreign Office reports which have just been issued, and from which we condense the most salient features for the benefit of our readers. Commencing with Germany, we note that, in connexion with a new harbour which is being constructed at Cuxhaven, the works are being vigorously pushed forward. The capital of the company which is undertaking the work has, it is mentioned, been chiefly subscribed in London and Berlin; but the Municipal Council of Hamburg, although it granted the necessary land, declined to vote the annual subsidy of 9,000*l.* for twenty years, which originally formed an attractive feature in the programme. The engineer of the works is Mr. A. Giles, under whose superintendence they are being carried out. The new harbour will be 1,590 ft. in diameter, and will contain two solid jetties, each 400 ft. long and 100 ft. wide, and one pontoon about 300 ft. long, and 80 ft. wide. The depth will be 20 ft. under the ordinary low-water line on the tide-gauge at Cuxhaven, and 32 ft. below the high-water line. A proposed large inner dock, 2,000 ft. long and 670 ft. wide, will be connected with the tidal harbour by a lock 400 ft. long and 66 ft. wide. This dock will be kept to a depth of 17 ft. below the low-water mark. The new harbour will be constructed so as to be ice-free, and accessible at all times of the tide to the largest vessels afloat; and the tidal dock, which will have an area of about 45 acres, will be provided with dry docks, large warehouses, and all needful appliances. With regard to public works in Hamburg, we learn that one of the greatest wants of this town for many years, was that of quays and docks for the loading and discharge of vessels. A new quay, therefore, called the Kaiser, has been constructed, and has been found exceedingly useful to shipping generally. A company has also been lately formed in Hamburg for the construction of extensive docks and warehouses at Steinwarden for the use of sailing vessels, but the project has made little progress as yet, owing mainly to the difficulties which have arisen from the unsatisfactory nature of the soil. From Bremen we also learn that public works there of various descriptions are being actively carried out. Important amongst these is the erection of a large central railway-terminus, the building operations in connexion with which are being very vigorously pushed forward, but it is not expected that the work will be completed before two years have elapsed. An English company has constructed large new waterworks in Bremen, which are intended to improve and facilitate the water supply of the city. A new bridge across the Weser—the third of its kind—which is intended to connect more closely the commercial quarters of Bremen, is being constructed, and will be finished, according to anticipations, in about two years. The construction of a wide street leading from the new bridge to the central railway terminus, is being at the same time carried out by a private company. In addition to these important works at Bremen, there is being built an extensive structure for a higher class public school, while the erection of several other public buildings is projected; but it is feared that the state of the public finances will not allow of such projects being carried out just yet. Railway works are also extensive here, and are being energetically pushed forward to completion. What is termed the Paris-Hamburg Railway is finished, with the exception of the portion between Bremen and Hamburg, which it is hoped will be completed by the end of the present year. This line is a very important one, and will shorten the distance between Hamburg and Bremen by about nine hours, and the distance between these two cities and London or Paris by several hours. Other important lines have been or are being constructed. The railway from Cuxhaven to Stade, built by the Prussian Government, has been entirely laid out, and the works have been commenced by the Cuxhaven Railway, Steamship, and Harbour Company.

The next report to which we shall briefly give attention, refers to Genoa (Italy), whence we learn that public works during the past year have not been particularly active. The exceptionally bad weather which prevailed there greatly impeded all building and out-door work; but it is stated that too little attention is given by the authorities to the question of public works, and that instead of progressing they are rather retrograding in this respect. A new line of railway is being constructed from Savona to Turin, but it has advanced very little; while a new line from Sestri to Spezia, which was to have been opened in June last, has been delayed in construction by the Government till the end of the present year, and it is stated that it cannot be finished even by this time. In fact, public works in Genoa seem to have had rather a bad time of it during the past year. A great quantity of money has been, and is being, expended on so-called improvements and embellishments of doubtful taste and questionable utility, whereas little or nothing of practical use is done to meet wants which are absolutely pressing. The three principal wants of Genoa are described as quay-room, additional warehouses, and easy communication with the interior, requirements to satisfy which little or nothing is being done, or even proposed. Turning, however, to the report which refers to several places in Russia, it is satisfactory to find that a healthier state of things prevails with regard to public works. The construction of new railways is an important feature of such undertakings. A new line (extending a distance of 130 miles), from Nicolaieff to Znamenka, has been completed, and without any difficulty as

tunnels and bridges, as the ground was very advantageous for the purpose. Other new lines are also projected in this part of the country. The municipality of Nicolaieff are interested at present in the construction of new docks and wharfs, and designs have been prepared for the purpose, but unfortunately the want of sufficient funds will not even admit of the work being commenced. House-building has been carried on with much greater activity at Nicolaieff of late years, and the appearance of the place, architecturally speaking, has been considerably improved. The scarcity of hands, however, increased wages, and the dearness of materials naturally make the work costly, and assist in keeping up high rents. From another Russian port (Poti), we learn that extensive harbour works, which were commenced there some years since under the direction of a Russian military engineer, have proved a complete failure, after an expenditure of more than 1,000,000 rs. A new railway between Poti and Tiflis has been recently opened, but no tunnel having been made under the mountain of Surham, and the pass over the mountain being considered dangerous, the passengers are obliged to cross in diligences, and to pay an extra charge. The distance is about eighteen miles. It is the intention of the company to make a tunnel. It is stated with respect to Poti, that the climate is of the worst kind; that fevers prevail all the year round; and that the houses, which are all made of wood, stand on wooden pillars over a marshy ground. They are very low, cold, damp, and uncomfortable, generally speaking. With regard to Taganrog (another Russian port), we find that nothing novel in respect to public works was undertaken there during the past year. A new mole is being constructed, but little progress was made with it, owing, it appears, to a temporary inadequacy of funds. The main railway lines connected with this place are completed; while a new line, which will put Taganrog in connexion with the Caucasian possessions and the Caspian, is to be taking in hand immediately, and will necessitate a large importation of railway materials. Building operations have been very active here, and large ranges of warehouses and commercial premises have been erected.

We have next to turn our attention to Spain. The report referring to Corunna states that with regard to public works there is a sad want of local enterprise. There is indeed very little activity with regard to building or to improvements of that character; while as to the roads, it is stated that they are in a very bad condition, and are continually getting worse, owing to the total absence of repairs from want of funds. Travelling thus becomes a work of considerable difficulty. From a second Spanish port, however (Palma), we get better news. Here public improvements are carried out with commendable perseverance. A fine building for the Balearic bank is being constructed, and many new houses of an improved style have been built, which are entirely changing the character of the city, and for the better. Old narrow streets, too, have been widened, and given place to convenient and respectable thoroughfares. A project was mooted some time since for extending the port of Palma, but it has not yet received the necessary sanction of the Cortes. A new railway is also projected from Palma to Inca, and the preliminary works are being proceeded with, the company having been fully formed and the required capital subscribed. The water-supply of Palma is susceptible of improvement, and it is mentioned that a good field of enterprise is open for providing the inhabitants with an adequate supply of water. They are at present dependent upon wells and tanks, which for the most part become dry in the summer.

As a rule we do not hear much of the public works of Morocco, and consequently some information upon this subject may not be unacceptable. From Tangier we learn that the custom-house there, which for some time past has not been sufficiently commodious, has recently been enlarged, an extensive and commodious warehouse having been added to the buildings previously existing. The great desideratum, however, of the port of Tangier is a mole, there being no kind of pier or landing-stage either for goods or passengers. The remains of an old mole, which was destroyed by the English when evacuating Tangier in the year 1683, are still visible at low tide, and serve partly as a breakwater. It was proposed shortly after the termination of the late war between Spain and Morocco to construct a new mole, and the consent of the Sultan was obtained for the purpose by her Majesty's representative; but the project unfortunately fell through, owing to the opposition of foreign representatives.

HOUSE-BUILDING AND THE CENSUS.

THE fact that the population of England and Wales has been constantly increasing ever since the first census was taken, in the year 1801, and that there appears every reason to believe that it will continue to increase for many years to come, is one which cannot fail to possess a peculiar interest for the architect and the builder. For as we may have to house two and a half to three millions more people every coming ten years than in the ten years preceding, our builders and architects must provide us with a proportionate increase of houses or dwelling accommodation. And this, it must be understood, is quite independent not only of all uninhabited edifices, including shops, workshops, factories, and public buildings, but also of the large number of dwellings which must be erected in order to replace those which have become untenantable through age and other causes.

In the following lines we purpose to collect from official and other sources * some of the principal facts and figures bearing upon this subject, so that, by reviewing what is actually known to have occurred in the past, we may arrive at some general idea of what may be expected in the future. It must not be forgotten that we are not about to deal with every kind of building that is erected, but exclusively with houses and buildings in which persons are domiciled. In the eight censuses which have been taken in this country, large classes of edifices have been entirely ignored. No account whatever has been taken of churches, chapels, schoolhouses, warehouses, factories, shops, workshops, or public halls or other edifices, except in those cases where persons have been found residing and sleeping on the premises.

At the first census, in 1801, there were 1,633,399 houses standing in England and Wales, of which there were 1,575,923 inhabited and 57,476 uninhabited. At the last census, in 1871, the total number of houses standing was no less than 4,520,462 (4,259,117 inhabited and 261,345 untenanted). Hence it appears that, in the interval of seventy years, besides replacing all the old houses that had become uninhabitable, our builders had erected the astonishing number of 2,887,063 new and additional houses. The number of dwelling-houses, in fact, has been very nearly trebled since the commencement of the present century. Between 1801 and 1871 the population of England and Wales had increased from 8,892,536 to 22,712,266 persons, an addition of 13,819,730 to the inhabitants in the seventy years, so that our builders have had not only to keep up the requisite dwellings for the original number of 8,892,536 inhabitants, but have had to erect additional houses sufficient to accommodate an extra population of 13,819,730 which has since been added to; and, as a matter of fact, the census returns show us that they had actually provided 2,887,063 new houses for this purpose. When we ask how many houses altogether have been built in England and Wales during the seventy years 1801–1871, including both the additional houses required by the increased population and those which have been erected in place of dwellings which have been demolished on account of dilapidation, age, fire, or railway, street, and other improvements, we have first to inquire what is the average length of time for which a house will stand. This, however, is a question in which we are left principally to conjecture. In the General Report of the last census the Commissioners assume that, taking all causes of demolition and all classes of houses, from the palace to the cottage, into account, their average duration or "life" may be roughly estimated at 100 years. If this estimate be adopted, it follows that in the seventy years from 1801 to 1871, seven-tenths of the 1,633,399 dwellings in existence at the beginning of the century have been rebuilt or replaced. This would make the number of houses rebuilt in that period 1,143,379. If we add this to the additional houses (2,887,063) erected within the same time, we find that the total number of houses built in England and Wales in the seventy years since 1801 i 4,030,442, or rather more than 4,000,000. If th average cost of erecting these houses, includin everything, from the most splendid palace to th meanest cottage, be taken at 250*l.* apiece, follows that, in the seventy years, upwards 1,000,000,000*l.* (a thousand millions) have bee spent in England and Wales on bricks an mortar, &c., in the way of dwelling-house alone.

To arrive, however, at any adequate notion what we are doing at the present day, we mu confine our attention to the changes which hav taken place within the last few years. Takin the period between the last two censuses, an looking back as far as the year 1861 we fin that between that year and 1871, the populatio of England and Wales had increased fro 20,066,224 to 22,712,266, showing an addition 2,646,042 persons to the population within th ten years, and this was the number of perso for which the building interest had to provid additional dwelling accommodation in thi period. The number of additional houses whic were built between 1861 and 1871, was 596,26 as there were 3,924,199 houses standing i 1861, and 4,520,462 in 1871. In addition these, 596,263 new houses, our builders had replace those which had become untenantab during the ten years; and if we assume, before, that this was at the average rate of 10 p cent., they had to rebuild 392,420 houses, b sides the 596,263 required by the increased popu lation. Altogether, therefore, in England an Wales, there have been 988,683 houses erecte between the years 1861 and 1871. This is ver little short of a million houses erected with ten years. If the cost of these has averaged, we assumed before, 250*l.* a-piece, it is clear th upwards of 220,000,000*l.* have been expended the erection of dwelling-houses alone in thi country, between 1861 and 1871.

The substance of what we have said abov may be very briefly summed up as follows:— We have built in England and Wales, in the we of dwelling-houses alone, upwards of one thou sand millions' worth of property, roughly speak ing, since the year 1801; and within the te years only between 1861 and 1871 we hav built dwelling-houses to the value of more thn 220,000,000*l.* sterling.

What, now, have our builders to do by 188 when the next census is taken? How man dwelling-houses will they have to build? H how large an additional population will th have to provide? Is there a prospect of th same rate of increase continuing till the en of the present century? All these and othe cognate questions we shall recur to on anothe occasion.

THE LAST OF THE "GAFFS," AND A PASSING THOUGHT ABOUT IT.

WE suppose that we shall hardly be likely meet many objections to the dictum that if the be anything more interesting to the world large than the "works" of a great man, it his *personality*, *i.e.*, what sort of a man he wa how he looked, what he did with himself all da long, what his express money-earning professio was, what *sort of house* he lived in and wha kind of neighbours he had, what he said to thes and what they said to him, and, lastly, wit whom he was on the most friendly and familia terms. And if this be matter of interest a regards most great men, then is it specially so of *Shakspeare*, whose place in the roll o the greatest it is needless to refer to, but of hi whereabouts and surroundings, theatrical an "building" surroundings and otherwise, it must be not a little curious to get a glimpse, or, a Shakspeare himself defines it, the exhibition o a faint resemblance. We some short time back endeavoured to do a little in this way by giving readers a "section,"—a correct one, as we believe,—of the famous Globe Theatre, as it existed in Shakspeare's day, and as he himself performed as an actor in it. We compared it as far as is possible, with our great theatres in these improved and advanced days. We thu tried to realise to ourselves, if not to others some idea of the Theatre of Shakspeare, and the look of it, at the moment he performed on th boards of it, and thus further to see, in a dim sor of way, perhaps, what the immortal play-write himself did as an actor in it, and what he him self was,—how he worked; in short, what sor and manner of man he was. We are now again led to the subject from the fact of some disco veries made by Mr. Halliwell as to the connexion

* "The Census of 1871: Vol. I., Area, Houses, and Inhabitants," and "A Digest of the English Census. By James Lewis, of the Registrar-General's Department, Somerset House." London: Stanford. 1873.

Shakspeare with the Globe and Blackfriars
eatres, and to the certainty, as proved by
uments still extant, of the great dramatist
ing a regular hired actor, and one of a regular
ompany" of players. It is indeed most
eresting to know this for certain, and thus to
quite sure of a *fact* here and there in the life
one whose way of life and *personality* must
otivate all English-speaking people all the
rid over. It is in some sort, too, a subject of
rchitectural" looking into and curiosity, for
London of Shakspeare's day was as unlike
London of the present day as any one thing
be unlike another. How different the
ises, and the rooms in them, and the streets!
worn prints give a little of this, but only a
le, and that little but dimly. There is indeed
one way in which Shakspeare's localities,
pitation, and playhouse can in these days be
alised, in London at least, to those who long to
even a passing glimpse at them, and from
nce at him.

We did, as we have said, try to find a way to
and an entrance into the Globe Theatre in
s way, and then contended that to do so no
nor theatre, as theatres now are, and most cer-
nly no major theatre, as Covent Garden, or
ury Lane, would or could avail;' for Shak-
eare himself could never even have imagined
h houses, or the lighting up of them, or their
liences, or their stages, or their actors. Com-
ed with his little Globe, the stage of Covent
rden is a vast palace, or a wide battle-field,
Garden of Paradise, as the play might need
o be. And this being so, and none will cer-
nly dispute it who will make for themselves
section and plan" of the Globe, we must
d, as we then did, go lower down in the scale
hings, and we found in the "Gaff," as it is
ed when talked about at all by the enlightened
he earth, a very and living counterpart and
ress spiritual likeness of the famous little
be or Blackfriars, with pretty nearly all its
roundings, its needs, its actors, and its plays
n, and more than all, perhaps, its audience, its
e door,—a something in theatrical life, by the
,—and the veritable back street in which its
oundlings" found their way into its pit, may
o *stand* all the time as in the open street
w. It may be not a little difficult for the un-
iated in matters architectural to realise to
mselves from mere geometrical drawings, the
spective of the interiors of the Globe or the
ckfriars, or from thence the streets of houses
which they were situated. But in the genuine
ff, as it exists at this day, this might be done
h no small an amount of vividness and truth-
ess, and power of life-like reality. And this,
ides being a something in itself, and for its
n sake, puts the man Shakspeare on the
oards" again, and we can thus see him as he
lly was, and as he walked somewhat ill at
e through life, and on *his* stage of it! So
erent from the fashionable present, and yet
ike to some of the humbler phases of it. It
great thing to have proved beyond possibility
doubt or dispute any one thing or item in the
, obscure as it was, as the world then went,
such a notable man as Shakspeare. All of
m when gathered together, from Stephens,
pe, Knight, and not a few others, up to Mr.
lliwell, make up the *proved* life of Shakspeare,
d we can but feel rejoiced at it; but still it is
reat thing in the life of a great man the being
s to get at the capacity in some way or other of
cing at him, and the precise *circumstances* in
ich he was; and at the character of those
ut him, at his *business*, such as it was, and
n at *himself* may be. That is the question!
know that Shakspeare rented a house, and to
sure of the dates of entering such house and
ving it, to know the name of the landlord of
nd all down to the minutest particulars as
sted by actual written and signed documents,
ld indeed be valuable. But to be able to see
n dimly down the actual street, or one just
it, in which Shakspeare dwelt, to catch but
limpse of the house in which he lived, and
n thence at himself, going to and fro. To
ch sight of the Globe, or its counterpart, as
certainly can do, and its little stage, and to
ple that small stage with veritable actors,
ler difficulties and disabilities, as they in
kspeare's day, is surely a gain. Only for a
ment let us imagine the "Globe" to be still
actual existence, and the narrow street in
ich it stood to be intact—buried in some
ure region of London, out of the way of
nprovements" and embankments, absolutely
hing to be known of the poet but his portrait
d his "Book of Plays," and the knowing that
he was an "actor" by profession. What a revelation it would needs be of him and his work to but *see* the street and the little play-house in which he acted his strange part in the battle of life. And if in addition to this looking at the natural street of dull, quaint, out-of-date houses, and impossible theatre, we caught sight of actors and audience not a little like to those with whom he lived and worked, how this would realise to us the veritable man himself; and take the world, as by touch of magician's wand, into the very time and place itself, and well nigh into his very presence! And it was this that the Gaff really did do. If the acute reader will only collect the curious but scanty notices which yet exist of the Globe Theatre, and of the neighbourhood in which it was situated, and of the sort of people who lived there, and who regularly frequented the Globe, he will find out, to his no small surprise, how the past still runs into the present, and how we may yet with bodily eye see into that dead past by looking into the often despised present, neglected by all that is reputable may be, but still there in living reality.

We should scarcely have ventured to say much, if indeed anything, on the final disappearance of the last of the veritable "Gaffs," even with a Shakesperian excuse for such, had it not been for one or two things connected specially with it not a little noteworthy and significant. It is to be borne in mind always that as an idea dies out, however it may have originated, and whoever may have been the author of it, it is compelled by dint of sheer necessity to come down lower and lower in the scale of things mundane. The Gaff all may be sure is at the lowest point at best, and the "house" gets to be shabbier and shabbier, and dimmer and dimmer, and to present to the eyes of those used to the garish lighting up of the fashionable theatre a nearer and nearer resemblance to the candle-lit Blackfriars! Its audience gets more and more into that primitive order which nature and not art produces. In short, it is, if truth must be told, of the very roughest possible even in improved London City. The consequences are inevitable and certain,—the whole thing collapses, and comes to an end. More is the pity; for there *may* be a something in it better worth the keeping than the thing which replaces it. The last of the London Gaffs proper was that known as the Garrick Theatre, Whitechapel. It had been in its day a somewhat grand and respectable place enough, so it is said. But down it went, from some cause or other, lower and lower into that abyss of poverty from which there is no rising, as it would seem. Down it went into ruin and dull shabbiness, till, suddenly taken to by a company of players, and got at once to be a "penny" house, with all those surroundings which that term implies. Indeed, it would be not a little difficult to make intelligible all that is implied in that magic word, penny. It serves to characterise the audience, and the said audience, whatever it may be, get to be reflected on to the stage, and actors, and we may well add the scenery, and all else. A wonderful process, if we will but bring ourselves a little to think about it, and ponder over it. For it is never to be forgotten that, as are the play and the actors, so are the audience; and as are the audience, so must be the play and the actors. Like to like, even in these days, and in Shakspeare's. Shakspeare's Globe and Blackfriars are both gone, that is certain, and so now is our Gaff. "Improvement" and more gas-burners are nowadays everywhere, and they have overtaken our little playhouse, and completely turned it topsy-turvy, and into something else,—must we say it? into a right respectable minor theatre of a certain sort. It is really quite orthodox. Its queer antecedents stick to it a little awkwardly at first, in spite of gas and new "decoration," for the word "Garrick" being got rid of at once, with the dust of it, the Lord Chamberlain was petitioned, so says the poster, to allow "The Royal Albert" to be loyally substituted. But this could not be. Another name had to be substituted. Alas! could but some few of the old world's "pilgrims" come to life again just to look at things as they now are,—at improvements, railway travelling, theatres, musical instruments, orchestral bands, and even new names of places,—what would they say? All was vanity, that is certain, in their own day; now all is gentility. How can such things ever be got to harmonise together, as old-world usages and modern outward mechanical surroundings? And yet, for another memory, did this rough abode of the Muses,—rough and ragged, and full of discords as it was,—hold within it the germ at least of a really fine and magnificent dramatic idea. We have touched on it before, and it would need considerable space to do full justice to it. We refer to the special and peculiar work of the orchestra as accompanying the action of the play,—the tragic play, be it noticed, for the play at a Gaff must needs be tragic. Music to accompany and go along with the action of the play is common enough, as all know. The snatches of "tunes" and popular melodies heard during the progress of a burlesque has not only no analogy to it, but is, in fact, almost its opposite. So, too, is opera, properly so called, wherein the words of it are sung, the music being set to the words. All beautiful enough in its own way, but here in this odd and unexpected place, where no mortal could ever have thought or dreamed of its being, there was, as we have said, a really fine thought, one, indeed, which Beethoven himself almost tried after, and had indeed every now and then in his mind's ear, but never realised. It is the dramatic expression of an idea in music, *i.e.*, by an orchestra, but without special reference to the *words* of it, and while the uttered words and action are going on simultaneously with it. The idea is, likely enough, as old as the hills. There are magnificent snatches of it in the works of the great masters of musical drama which some may call to mind, but the completed and finished idea, great as it is, does not exist. It is strange, indeed, that it should have found utterance and a cadence in such a place, and with such an audience,—but it was never lost!

MELBOURNE, VICTORIA.

PUBLIC OFFICES.—TECHNOLOGICAL COMMISSION.

THE Colonial Government, several months ago, obtained the concurrence of the Parliament to a scheme for the erection of public offices on the spacious and costly foundations laid fifteen or sixteen years ago in the Treasury reserve, at the rear of the Treasury building. The contemplated structure is intended to accommodate the various departments of the public service, which are at present scattered over the eastern and western parts of the city,—viz., the Public Works, the Crown Lands, the Crown Law, the Mining, the Water Supply, and the Treasury departments. The amount needful for its construction being provided for by the Public Loan Act of last session, competitive plans were called for. The designs having been examined, the choice fell upon that of Mr. M. Egan, Collins-street; Messrs. Fox & Oakden, of Ballarat, obtaining the second premium of 150*l*. Some alterations of detail may probably be made before tenders are invited. The new offices, as designed by Mr. Egan, are a plain barrack-like structure, with two wings of lower height, and will be very much larger than the Treasury buildings. They will face Wellington-parade, and stand directly behind the Treasury. The fact that the new offices will stand close to the Treasury and the Government Printing-office, is said to have limited the architect in his choice of style, and obliged him to propose a group in keeping with the edifices named. Therefore the style is Italian, of a plain character. The offices will consist of four stories high in the centre, and three stories high at the wings. The total length along the front is 375 ft.; the depth of the wings, 150 ft.; the depth of the middle part, 75 ft. The basement story will be divided into storerooms for the various departments, and accommodation will, moreover, be provided for the Stores and Transport branch of the public service. The internal arrangements upon the floors above-ground may be said to resemble, pretty closely, the arrangements at the Treasury. Three large entrances have been provided. The principal is in the centre; the other two are in the wings. The first-floor will be reached by four staircases,—namely, one staircase opposite each of the wing entrances, and two opposite the main entrance. The staircases from floor to floor will consist of stone. The ground-floor will be divided into offices which the public will chiefly need to frequent. The first-floor will contain the offices of the Ministers, the permanent heads of departments, and the principal officers under them. The second-floor has been allotted to clerical staffs and draughtsmen. The clerical and technical branches of the Crown Lands department are to occupy the rooms at the top of the middle block. Two years will probably elapse before the works are completed. As the new offices

will be reared on the highest part of the Treasury garden, and as they will have a front over 100 yards long, and be correspondingly lofty, they will be decidedly more conspicuous than ornate. At the same time, the present Treasury will hide them from the view of persons in Collins-street. As to the approach from Collins-street, Mr. Egan has arranged matters in such a way that the traffic will not be through the gardens, lest they should be injured. He proposes to commence an embankment at the south end of the Treasury, and extend it in the direction of the new offices. Another embankment will be constructed along the front of the offices, and advanced to meet the embankment from the Treasury. The two will then be connected by a bridge, 150 ft. long, 33 ft. wide, supported upon cast-iron pillars. The embankment will be on the same level as Collins-street.

By way of contrast, the *Illustrated Australian News* gives two views, one of the accepted design, and another of the design of Messrs. Crouch & Wilson, which is more ornate in outward appearance, but contains the same apartments as that of Mr. Egan. Messrs. Crouch & Wilson submitted a modified elevation, showing how their design might be shorn of some of its ornateness, and yet retain its leading characteristics. The central tower, too, could have been omitted, and with these alterations the design of Messrs. Crouch & Wilson, says our authority, would not have cost more to carry out than that of Mr. Egan. A good deal of public comment has been excited in one way and another about these new public buildings. The appearance in the *Sketcher* of a picture of the proposed building drew attention to the edifice. It is hoped that the Government will not have the design carried out.

"Notwithstanding the scandal which arose concerning the designs for the new law courts," says the *Sketcher*, "the plan which was accepted, —that of Mr. A. L. Smith,—is to be carried out. Mr. A. E. Johnson, of the Public Works Office, made a confession that he had assisted Mr. Smith in drawing his plans, and an unfair advantage was thus taken of the other competitors, in addition to which Mr. Johnson was the officer selected to report upon the designs. A Board is now sitting for the purpose of ascertaining the precise amount of blame which is to be attached to Mr. Johnson, but as it appears that Mr. A. L. Smith's design is on its merits better than any of the others sent in, the Government has determined to have it carried out."

From circulars sent us, we note that the third annual exhibition of the works of pupils in the various schools of design associated with the Technological Commission was to be opened on the 1st of July, and the exhibitions held at the Public Library, on the 8th of July. The drawings in the several classes were to be executed either in pencil, chalks, or colours. Prizes were to be awarded to senior and junior students exhibiting the best works in the following classes:—Drawing of the human figure; ornamental drawing; landscape drawing, comprising finished landscapes and details of landscape, as studies of trees, rocks, flowers, fruit, leaves, &c.; mechanical drawing; architectural drawing; drawing from nature or from the round; perspective and isometrical projection; and a prize of 5*l.* was to be given for an original design for a certificate of honourable-mention for the commission. Examinations, open to all students who had been members of a school of design for six months previous to 30th of June, 1873, were to be held at the Public Library, on the 8th of July, in practical geometry, mechanical drawing, architectural drawing, and free-hand drawing. In the mechanical and architectural examinations the candidates were to be examined as to their knowledge of the use of instruments, and drawing of details. In the free-hand examinations there was to be set, either a group of models, plaster casts of ornament, figures from the round, or flat examples. "Cassell's Linear Drawing," "Gleig's Practical Geometry," and "Davidson's Drawing for Carpenters and Joiners," were recommended as the basis of examination. Special arrangements were to be made with the railway department to enable students to attend the exhibition and examinations. Not more than two prizes were to be awarded to the same individual. Certificates of excellency would be given, in addition to prizes, to those who were excluded from taking more than two. Mr. Samuel H. Bindon is the chairman of the Commission, and Mr. S. H. Roberts, inspector of schools, the acting secretary.

THE FINE ARTS IN LIVERPOOL.

At a recent meeting of the Liverpool town council a long discussion took place upon a report prepared by the library, museum, and arts committee, recommending the erection of a gallery of arts in the town. The committee proposed the laying of a general rate of 1d. in the pound for the support of the gallery, by which an annual sum of 9,000*l.* would be raised. The cost of the proposed buildings was estimated at 18,000*l.*, and the expenses at 2,065*l.* per annum. The majority of the speakers were in favour of the scheme, but thought it unwise to press it in the face of the present state of public feeling; and it was ultimately decided not to receive the report of the committee. It was stated in the course of the discussion that there was a collection of pictures, valued at 20,000*l.*, waiting to be given to the town as soon as a proper building could be erected. Mr. Picton has since offered 1,000*l.* towards a subscription for building a permanent fine-art gallery for Liverpool, in supercession of the proposal to attain the same end by the unpopular expedient of a rate upon the burgesses. And already his example has been followed by similar offers from Mr. Kurtz, Mr. James Houghton, and Mr. John Parrington.

The autumn exhibition of pictures collected by the arts committee of the corporation, has been opened at the library and museum buildings. The works exhibited were oil and water colour pictures, and some sculpture by modern artists. The collection has been formed with much care and judgment, and the result, it is said, bids fair to be even more financially successful than collections on previous occasions.

A letter was read lately at a council meeting, from Messrs. Thomas Agnew & Sons, offering to present to the town a set of the Turner proof engravings, recently purchased by them from the representatives of the Turner estate. The offer was accepted with thanks.

THE NORTH SOMERSET RAILWAY.

THE railway between Bristol and Radstock, after long delay and many difficulties, is at last finished and opened. Messrs. Perry & Co. were the contractors. The failure of the Pensford Viaduct, the most expensive part of the line, was a great blow, but this has been overcome, and the viaduct is reconstructed. It is of sixteen arches, its height to the level of the rail being 95 ft., and its length 995 ft. The viaduct is of stone, and it is surmounted by a parapet wall 18 in. in thickness.

The length of the line is 15½ miles. The junction with the Great Western at Bristol is opposite the Avonside Tannery, in St. Philip's Marsh. There are stations at Brislington, Whitchurch, Pensford (for Chew Magna and Chew Stoke), Clutton, Welton (for Midsomer Norton, Farrington Gurney, and Paulton), and Radstock, which is the terminus. At present only a single line of rails has been laid, but the arches are wide enough for a double line if necessary. The narrow-gauge system will be adopted.

A LOW-BREAST WATER-WHEEL.

A NEW low-breast water-wheel has recently been erected at the Molewood Mill, Hertford. It has been constructed to work four pairs of stones, 4 ft. 4 in. diameter. The old wheel barely did that amount of work with the supply of water, which at its fullest flow did not exceed 27 cubic feet per second, giving the wheel a peripheral velocity of between 2·5 ft. and 3·5 ft. per second. To ensure efficiency, a velocity of about 4 ft. per second was requisite, to obtain which the new wheel has been constructed with curvilinear ventilated buckets, accurately pitched to the flow of water, with a special means of ensuring an economical delivery of water at the varying heights of the overfall. The body of the wheel consists of English oak; main arms, 5 in. by 4 in.; subsidiary bracing-arms, 5 in. by 3 in.; all halved at the crossings and secured with iron cover-plates bolted through; rings, 5 in. by 5 in., similarly secured at the butts. The arms are attached to the rings by straps capable of adjustment, in case of its being requisite to tighten up the parts. Straining pieces are inserted at right angles to the arms, dovetailed transversely across each pair to receive the compressive thrust at the eye. There are three sets of arms and rings. The shaft is wrought iron, 7½ in. by 7½ in., with forged and turned bearings. The buckets are No. 12 B. W. G., forty-eight in number, fixed directly on to the oak rings by bolts, with washers, passing through. Pitch of buckets, 12·697 in.; depth of shrouding, 16 in., which is riveted to the buckets by angle-irons, 1½ by 1½ by ⅜ bent to their curve. Stays are also riveted between the buckets in the centre to maintain them in an equidistant position.

The total diameter of wheel is 17 ft. 6 in. width, 9 ft. bearings, 10 ft. 4 in. between centres. There are several improvements in the method of connecting the arms with the rings, and also surrounding the shaft calculated to ensure great stability and rigidity under the never-ceasing and often irregular strains to which these machines are exposed.

The pen-trough and sluice-gate are of iron, fitted closely to the curve of the wheel, and arranged to allow the water to be drawn off with facility at any level.

The actual effectiveness of the wheel justifies, we believe, the anticipations of the engineers, who were Messrs. Archibald D. Dawnay & Twyman, of Walbrook and Hertford. The contractor for the works was Mr. Cook, Millwright, of Hertford. The works have occupied nearly six months.

OPENING OF BRADFORD TOWN HALL.

THIS costly edifice was opened by the Mayor on Tuesday with public ceremonial and rejoicing. We gave a view and plan of it, with sketches of sculpture, in our last volume, pp. 906, 907. The architects are Messrs. Lockwood & Mawson. The style is Mediæval.

The structure contains no large room, but comprises a multiplicity of apartments arranged for carrying on the work of the corporation. It is situated in the centre of the town, on a triangular piece of ground 2,000 yards in extent, and has frontages to New Market-street, Leeds-road, and Chapel-lane. The principal front towards New Market-street is 275 ft. long, 70 ft. high, and is broken by projecting gables at each end, and by the centre entrance gable, immediately behind which is the clock tower. The centre gable is advanced and forms a porch where the principal entrance is. The end gables are flanked with buttresses and pinnacles. The Leeds-road side is in the shape of an octagonal apse; whilst the Chapel-lane front is plainer than the other portion. The westward end is carried up to a bold gable and finishes with a stone finial. The grand entrance, in New Market-street, is through a moulded, carved, and shafted doorway. At either side of the entrance are canopied niches, in which are statues of Queen Elizabeth and Queen Victoria. Above the doorway is a large oriel window, 17 ft. across and 37 ft. in height. Round the top of the window is a machicolated cornice and parapet. The gable has massive crocketed coping, and is flanked by octagonal buttresses, with pinnacles, 6 ft. square, and bearing gargoyles. Behind the gable rises the tower, 23 ft. square, and 200 ft. in height. The design of the tower is based on that of the Palazzo Vecchio at Florence, and is placed much in the same position in the valley of Bradford as its original in the valley of the Arno. The hall comprises a basement, ground-floor, first and second floors, and attic. The ground-floor windows are square-headed, deeply moulded and recessed; those of the first-floor have pointed arches, also deeply recessed and shafted, forming two-light windows, with cinquefoil heads. Between the windows are clustered shafts and capitals. The next floor is treated as an arcade along the whole front, with openings for the windows, niches between each window being occupied with statues of the kings. A machicolated cornice and open parapet terminates the façade, above which are dormer windows, lighting the attic story. The high-pitched roof is covered with green and blue slates, with ornamental iron cresting along the ridge, and the chimney-stacks are a suitable appendage. On the buttresses are canopied niches. In these and in the niches between the windows of the third-floor are ranged the statues of the sovereigns who have reigned in England, and also that of Cromwell. The statues, thirty-five in number, beginning with William I. and ending with Queen Victoria, have been executed at the works of Messrs. Farmer & Brindley, London. They have been chiselled out of the same kind of stone of which the hall is built, from the Cliffe Wood quarries, near Bradford. The figures begin with William I. at the corner of the apse in Chapel-

lane, and stand round the hall in chronological order, William IV. completing the group on the westerly gable. An exception to this arrangement is made in the case of the statues of the two Queens gracing the grand entrance. The carved stonework on the exterior, as well as that in the borough court, council-chamber, and corridors, was done by Messrs. Farmer & Brindley.

The masonry, joiner-work, and oak fittings for the borough court and committee-rooms were executed by Messrs. Ives & Son, of Shipley, the general contractors for the building; the ornamental ironwork and the gates for the front entrance, by Messrs. Hodkinson, Lester, & Poynton, of Coventry; the oak panelling and furniture of the mayor's rooms, the decoration of the borough court and council-chamber, and the fittings of the latter, by Messrs. Gillow & Co., of Lancaster and London. The stained glass came from the works of Messrs. Camm, Bros., Smethwick; the carving generally was done by Messrs. Farmer & Brindley, of London; the whole of the decorations of the hall, by Mr. H. Briggs, of Bradford; the furniture of the offices throughout, by Messrs. Marsh, Jones, & Cribb, of Leeds; the parquet floors were executed by Messrs. Arrowsmith, of London; the grates and ranges, by Messrs. Longden, of Sheffield; the marble chimney-pieces, by Messrs. Stake & Co., of Bradford; the plastering, by Mr. B. Dixon, of Bradford; the clock and carillon-machine, by Messrs. Gillett & Bland, of Croydon; the bells, by Messrs. Taylor, of Loughborough; and the linoleum, for the floors of the offices, was from Mr. C. Illingworth, of Bradford. The total cost of the Hall, exclusive of site, which was estimated to be worth 20,000*l.*, but is really worth double that sum now, will be about 100,000*l.* Mr. J. S. Wilson has acted as clerk of the works, and Mr. W. Spence has been foreman under Messrs. Ives. No serious accident has occurred during the progress of the works.

THE BRADFORD TRADES PROCESSION.

THE great feature of the proceedings on the occasion of opening the new Town-hall in Bradford on Tuesday last was a procession of trade trophies. We condense a few particulars from a very full account in the local *Observer*. The staple trades of the town made, of course, the most important display; but we shall confine ourselves to what was done by the building trades. They were headed by a band of music, and a wagon bearing a large banner of crimson cloth, with yellow fringe, bearing on both sides the inscription, "The Building Trades of Bradford." In this wagon was the trade trophy of the brickmakers, who came first of the building trades. The trophy consisted of specimens of bricks, pieces of terra cotta work, &c. The master brickmakers, in a wagonette and pair, came next; and operative brickmakers on foot brought up the rear.

The Quarryowners and Quarrymen were headed by a number of the masters in a wagonette and two horses, after which came the trophies in the shape of two wagon loads of stone, each drawn by four horses. In the first was a quantity of rough stone, as taken from the quarry, and in the second a number of flags half worked up. The workmen, to a considerable number, followed on foot.

The Masons and Bricklayers presented an imposing appearance. They were headed by a large banner with a suitable inscription, after which came a wagonnette, drawn by five grey horses, and carrying a number of the employers. The trophies of the trade then followed, and consisted of the following articles:—In the first wagon, drawn by four horses, were numerous samples of worked stone, including two balustrades, fluted pilasters, two pedestals, two fluted columns, four sawn mullions, just as they come from the saw, a beautiful head for a circular window, &c. Two or three apprentices were seated upon the lorry in working attire. This first lorry was followed by a second, on which were exhibited three masons at work on a corresponding number of fluted columns. By their side was a kit of the tools they employ. Both of the wagons were appropriately decorated with small flags, &c. Not less than 600 masons, all attired in their wash-leather aprons, marched on foot. Mr. Wm. Pyrah and Mr. Samuel Clarke were the marshals for this portion of the building trades.

The Timber Merchants also came out pretty "strong." They had a neat banner, after which came a wagonnette containing several of the principal employers. Their trophy occupied two long wagons, each of which was drawn by four horses. The one wagon exhibited a quantity of what is called "heavy" timber, while the other contained samples of "light." Nearly 200 hands, on foot, followed the trophies.

The Joiners followed, and after a wagonnette and four horses, containing some of the employers, their trophy, consisting of some specimens of joiners' work, was placed on a lorry drawn by two horses. The trophy consisted, in the first place, of an oak door, which had been executed for Holker Hall, one of the seats of the Duke of Devonshire. This door was divided into sixteen panels, which were not made in the ordinary way, but the mouldings of each were cut through, as in the old style, the amount of work being far greater. Each of the panels was carved in imitation of folded drapery, and was a good specimen. Each of the sides of the wagon displayed a massive oak window-sash, also for Holker Hall. At the ends of the three sashes were carved oak pilasters, with capitals, and in the rear of the whole was another window-sash, which had been made for the new District Bank, Market-street. The lorry containing this trophy was appropriately decorated. Another lorry followed, carrying a second trophy, in the shape of a portion of a staircase, which had been constructed for the house of Mr. Henry Yewdall, solicitor, in Manningham-lane.

The Slaters were headed by a wagonnette with two horses carrying a number of the employers. Immediately following came a wagon, also drawn by two horses, bearing the trade trophy. This consisted of a very neatly constructed model of a roof beautifully slated with different coloured slates. On the roof was a gilded weathercock, with the points of the compass properly delineated. In addition to this there were a number of pieces of various kinds of Welsh and Westmoreland slate tiles, stone ridges, workmen's tools, &c.

The Plasterers were as successful as any other body in producing a graceful emblem of their handicraft. First came a wagon, on which was a design in plaster. The object selected for representation was the model of a pavilion, such as would suit a gentleman's pleasure-ground. The pavilion represented four pillars, of a composite style, supporting a roof, the pilasters, capitals, architraves, friezes, and cornices being all completely imitated. Between the columns what would have been open in the real pavilion was filled up with an entablature, on which was executed, with every detail, a relief of the Bradford coat of arms and motto. At the foot of the columns were figures of children, and in front and rear of the pavilion were placed a number of other specimens of plasterers' work, in the shape of capitals of columns, figures, &c. The lorry was tastefully hung round with evergreens, and otherwise decorated.

The Plumbers, Glaziers, and Gas and Steam Fitters, who came next, had evidently given attention to the introduction of something worthy of their trade. The first part of their display was a wagon which carried a banner, measuring 9 ft. by 7 ft. 6 in., and made of blue silk with yellow fringe. This banner displays in the centre, on both sides, the plumbers' coat of arms, consisting of a shield, on the inside of which are a number of emblems illustrative of the several branches of the trade. The inscription, "The United Plumbers of Bradford," surrounds this coat of arms. Underneath the banner was placed the trade trophy. On the body of the wagon was placed a kind of bank, some 2 ft. high, covered with green baize, and with rich gilded mouldings running along the edges. On to this bank were attached specimens of workmanship in all the departments of the trade. In front of it was stationed an ale-pump in mahogany, with ivory handles. On the front of the bank were two ornamental conductor-heads, and standing at each side were portions of the stand-pipes and other apparatus in connexion with fire-extinguishing. On the sides of the bank a large number of small articles, such as water-taps in polished brass, rough brass, and in electro-plate, ale and spirit taps, steam-cocks of all sizes and in every style of workmanship, gas and steam fittings, ornamental gas-brackets, steam-gauges, and a variety of articles of a similar kind. On the back of the frame in the middle was a specimen of work in silvered glass, which reflected the rays of the sun. On each side of this was a design for gas-brackets in the shape of a winged figure in bronze holding the gas-burner in his two hands. On the top of the bank, at each corner, was a small bronze figure; in the centre is a crate of glass, as an emblem of the glazing portion of the trade, and one of the Jennings's patent tip-up lavatories.

The Painters and Decorators made a gay display, although a portion of it was got up rather hastily. The order of procession was as follows:—The marshal, then a wagon on which was displayed specimens of various kinds of painted woods, in oak, walnut, marble, &c., decorative screens, and paper-hangings. Over this trophy floated the banner of the operatives' society, which is 11 ft. by 9 ft. 6 in., and painted on both sides. On the front was the painters' coat of arms, with the motto, "Amor et Obedientia," and the inscription, "The Bradford Operative House Painters' Association." On the reverse was a representation of Art in the form of a Cupid with palette and brush, surmounted by the Bradford crest and boar's head, and encircled by the inscription, "The General Alliance of Operative House Painters, Bradford District." Then followed the trophy furnished by Mr. Henry Briggs, mounted on a lorry drawn by two horses, which were decorated with rosettes, &c. This trophy consisted of practical specimens of workmanship as applied to house-decoration, the front representing a library-room door in mahogany, with ornamental door-head and casing in silver bronze. On one side was a handsome drawing-room door, also with ornamental door-head, with cornice and pilasters decorated with floral devices. The opposite side of the trophy consisted of dining-room door, decorated with ornamental panels in bright enamel.

The Marble Masons and Carvers were headed by a banner containing an inscription of the name of the trade. This was succeeded by a wagonnette and pair, containing some of the employers; after which came the trade trophy. This was contained on a wagon drawn by two horses, and consisted of several specimens of marble-work, some of them in the rough, and some of them polished up. Some 150 of the workmen then followed on foot: as in each of the previous cases.

The want of real art in all that was done was, nevertheless, very striking.

FROM SHEFFIELD.

THE sanitary condition of Sheffield is not what it should be,—very far from it; and this is not unknown in the town. The local *Independent*, in one of its articles on the recent visit of the British Archæological Association, says:—

"It is not, perhaps, the business of an archæological association to meddle with sanitary reform, but there are among the visitors to Sheffield some sanitary reformers of the highest eminence. One of the vice-presidents is a host in himself; and when we remember that one of the local secretaries is the medical officer of health for the borough, and as a new broom, ought to be sweeping very clean, we feel it is not out of place to refer to the sanitary condition as well as to the archæological interest of the places we have mentioned. Let us hope that the peculiar aroma of the Manor reached the olfactories of the gentlemen we have named, for they will the better understand what we mean in assuring them that perfumes scarcely less choice may be found hard by 'The Hawle at the Poandes.' Nearly opposite its door may be seen a lake, not pellucid, alas! but black,—a stiff compound of putrifying mud and water. The Sheaf, that classic stream that gives its name to Sheffield, flows within a stone's-throw of its walls, exhaling odours disagreeable to the nose, sickening to the stomach, richly charged with the germs of disease, which are deposited with fatal effect in bodies susceptible to their action. While we look at our antiquities, let us also contemplate our ancient dirt; and if from this congress we may date the more reverent preservation of the one, let us also make it the commencement of a vigorous crusade against the other."

It would be a fortunate thing for Sheffield if this should prove to be the case. Several parts of the town are in as bad a condition as they were on the occasion of the visit of the Social Science Association in 1865, when we felt compelled to comment somewhat strongly on the neglect that was evident. The river Sheaf, too, is still in a frightful condition, and calculated to produce much evil. We would call it a Sheaf of deadly arrows, but the subject is too serious to pun upon.

Turning in another direction, we are very sorry to hear that Mr. W. H. Sounes, head master of the Sheffield School of Art, died suddenly in the town last week. Mr. Sounes was not forty-three years old, and had done much for the school.

The Improvement Committee of the Town Council has adopted a report stating the

negotiations that have taken place between the committee and the Town Trustees, with a view to agreeing upon a plan of street improvements, and the final adoption of a number of proposals for that purpose, prepared by the town surveyor and the surveyor of the Town Trust, towards the carrying out of which the trustees have agreed to contribute 40,000*l.*, spread over a period of twelve years. The Improvement Committee recommend the plan agreed upon to the adoption of the Town Council, and present a lithographed plan of the proposed new streets and widening of streets. The mayor has given the Council notice that he will move that application be made to the Local Government Board for permission to put in force the powers of the Lands Clauses Consolidation Act, 1845, to enable the Council to purchase certain lands, buildings, and premises, for the purpose of making new streets, and for street improvements.

YORKSHIRE ARCHÆOLOGICAL ASSOCIATION.

THE archæologists of Yorkshire visited York this year. The visit was the first one by the society since its constitution in 1865, and it was arranged in a manner which did great credit to the energy of Mr. Fairless Barber, F.S.A., of Brighouse, the honorary secretary. The party, who were from all parts of the county, though mainly from the West Riding (where only within the last few weeks the annual meeting of the British Archæological Association has been held), numbered 200; and, in accordance with the arrangements, which were set forth in a complete and model programme of the day's proceedings, with a key map of York, they assembled (in something like equal proportions as to sex) in the Guildhall. Here they were welcomed (in the unavoidable absence of the Lord Mayor) by a deputation of the Corporation. Mr. Barber read a paper from Mr. Davies, on the Guildhall and guilds.

The excursionists were then directed towards the council-chamber, with a view to an inspection of that place and of the ancient records of the city, which had been arranged by Mr. R. H. Skaife, and were exhibited in the charge of Mr. Giles, the deputy town-clerk. The latter included some interesting documents in connexion with the rights and privileges of the citizens. An inspection of these curiosities appeared to afford considerable interest to the excursionists; who next went to the Mansion House, where in the dining-room they were received by the Lady Mayoress, and partook of champagne and light refreshments. Here they inspected the civic regalia and plate, laid out in the state-room.

At one o'clock the blast of a trumpet told them that the next item in the programme was due, and a move was made to the cathedral. There they were received at the west door by the Ven. Archdeacon Jones and the Rev. Canon Hey, and proceeded to an inspection of the edifice, the order in which it was taken being the nave, the north transept, the chapter-house, presbytery, choir, and crypt. As to each of these features the programme contained interesting information, and for the use of the members of the Association it contained the valuable block plans prepared in 1846 by the Rev. R. Willis, M.A., F.R.S., &c., Jacksonian Professor in the University of Cambridge. These were five in number, and afforded a capital idea of the various changes which the cathedral had undergone from 1150 up to 1470. The programme also contained the following chronological table of the history of the cathedral:—Saxon church, begun by King Edwin, 633 A.D.; Saxon church, repaired by Wilfrid, 699; Norman nave, transepts, &c., by Archbishop Thomas, 1080; choir and crypts, by Archbishop Roger, 1154–1181; south transept, 1230–1241; north transept, 1241 1260; nave (except west front), 1291–1324; chapter-house, 1320; west front of nave, 1338; wood vault of nave, 1354; presbytery, 1361–1370; choir, 1380–1400; lanthorne tower, 1400 1418 1423; south-west bell tower, 1433–1447; north-west bell tower, 1470 1474. Principal monuments of archbishops:—Archbishop Gray, died 1255; Archbishop Greenfield, died 1315; Archbishop Bowett, died 1423 (the monument was erected before 1415); and Archbishop Savage, died in the sixteenth century.

Archdeacon Jones, in receiving the party, explained that he had been requested to conduct them over the minster, and had pleasure in acceding to the request. He took it for granted that most of those present were familiar with the history of the general church, but for those who were not he explained that the general outline of the building was a cross of the simplest form. When they had gone through it, they would observe that it consisted of a main central member of one design, and another member of earlier design; that was to say, that the nave and choir were of one design, and the transepts of another. He then entered into verbal explanations as to the successive restorations and extensions which different parts of the edifice had undergone, and in the interesting occupation of inspecting and listening, nearly a couple of hours passed away.

The trumpet once more summoned the party to a fresh scene of the day's proceedings in the De Grey Rooms, where under the superintendence of Mr. Ellison, the steward, an excellent luncheon had been prepared for them. Thence the party were summoned to the Museum Gardens, where they had the opportunity, under the guidance of the Rev. G. Rowe, Secretary of the Yorkshire Architectural Association, of inspecting the well-stocked and arranged museum of the Yorkshire Philosophical Society, as well as the remains of the multangular tower, part of the Roman walls, part of the more subsequent city walls, St. Mary's Abbey, St. Leonard's Hospital, the Hospitium, &c.

At half-past four the company assembled in the Lecture Theatre of the Museum, where the Archbishop took the chair, and the Rev. Canon Raine, of York, read a paper on "The History of St. Mary's Abbey."

A full and good report of the meeting, and of papers, &c., appears in the *York Herald*.

OPENING OF THE WORCESTER SCHOOL BOARD SCHOOLS.

THE Worcester School Board Schools, situated in Hounds'-lane, have been formally opened by the Mayor of Worcester (Mr. E. Wall), in the presence of the members of the School Board, the corporation, and a large number of persons interested in the event. The buildings are not situated in a part of the city where they will attract attention on account of their architectural proportions; but they are in the midst of that portion of the population of the city who are most likely to benefit by their erection. The buildings are central. Under the provisions of the New Education Act children cannot be compelled to walk farther than a prescribed distance to school. The building is designed after Gothic models, having its principal fronts in Hounds'-lane, Group-lane, and Hare's-lane.

The Hounds'-lane front is composed of a large one-story gable with tracery window, and bell-turret surmounting it; girls' entrance and a long range of buildings, two stories in height, one skyline being broken up by gablets and chimney-stacks. The Group-lane portion of the site is chiefly used as an entrance to the boys' school and play-ground; portions of each play-ground being covered in for the convenience of the children in wet weather. From Hare's-lane the approach to the infants' school is obtained. The entrances to the schools are protected by covered porches, which have been utilised and fitted up as hat and cloak rooms. The infants' school is 73 ft. long and 30 ft. 6 in. wide, having two large gable windows and other smaller ones. The roof is partially open, the principals being visible, and from thence are suspended gas-pendants of a Mediæval pattern. This room has also two class-rooms attached to it, one 24 ft. by 18 ft., and the other 18 ft. by 13 ft. 6 in. Each school is supplied with a lavatory, with hot and cold water supplies. The boys' and girls' school are both the same size, viz.:—86 ft. 6 in. by 20 ft., with two class-rooms to each, 18 ft. by 18 ft. The boys' school is on the ground-floor, and the girls' above; each room has two fire-places, in the chimney-breasts of which are inserted a series of lids or trap-doors, which admit hot air from the fireplaces and cold from the exterior, as the case may require. In addition to the fireplaces, the building can be heated by a hot-water apparatus in the basement. The system adopted is that of Mr. Ballard, of Colwall. Further ventilation is provided by having hopper casements in each window, also an arrangement for extracting the vitiated air from the various rooms by means of an exhaust-shaft.

The building is of red brick, relieved by longitudinal bands of various colours. The windows and dressings are of Bath stone, and the roof is covered with Broseley tiles in bands of red and blue, the whole building being fenced in with brick walls, excepting the Hare's-lane and Hounds'-lane fronts, which have dwarf walls surmounted with iron fencing. The old cottages upon the site have been utilised, as a cottage for the custodian, and as w.c.s for the infants. The accommodation is as follows, allowing 8 superficial feet per child:—Boys, 297; girls, 297; infants, 362; making a total of 956. The desk and gallery accommodation would be about:—Boys, 200; girls, 200; infants, 300; total, 700. The works have been executed by Messrs. Wood & Sons, of Worcester; Messrs. Goodman & Ward, of the Butts, were the contractors for the hot-water apparatus; Mr. Forsyth, of the Tything, the carving; Mr. George Hammer, of London, supplied the desks; and the gas works and fittings were made by Messrs. Greenway & Son, of Worcester. Mr. Adams was the foreman of works; and Mr. Ernest Augustus Day, of Worcester, was the architect. The amount of the contract for the works was 4,937*l.* The works were commenced about twelve months ago.

CHICHESTER CAMPANILE AS A WATER TOWER.

A SUPPOSED agreement between the New Waterworks Company and the Dean and Chapter of Chichester Cathedral for converting the campanile into a water-tower is exciting no small interest at Chichester. In order to get at the facts of the case, the editor of the *Sussex Express and Surrey Standard* applied to one of the solicitors for the company, and that gentleman informs him that the Dean and Chapter have for some time had under their consideration the advisability of constructing a tank of their own on this tower, to be filled by hydraulic pumps, for the protection of the cathedral from fire. When the Water Bill was passed they were still resolved on having a tank, and this coming to the knowledge of the company, that body proposed to the Dean and Chapter, that instead of having a tank to hold 2,000 gallons, one capable of holding 20,000 gallons should be constructed, the company undertaking to erect it, free of cost, in consideration of the saving they would effect by the abandonment of a tower (though not of a reservoir) at the Broyle. The company also offer to carry hydrants round the cathedral; and in the event of the Chapter adopting hydraulic machinery for blowing the organ, to supply the necessary water free of cost. There is a strong feeling against the proposal. The Dean and Chapter, however, adds our authority, have been advised by an engineer and architect that there can be no possible injury to the structure, and that the tank will be concealed from view, it being intended to place it in the story beneath the lantern, and above the bells. The pipes will also be concealed from view. The Dean and Chapter have not given their consent to the project at present, but are waiting for counsel's opinion as to their power in the matter. The campanile, it will be remembered, stands at a short distance from the cathedral.

ROUNDHAY PARK COMPETITION, LEEDS.

THE designs of the various competitors are on view in the law library, in the town-hall, Leeds. We give a list of their names:—Messrs. Charles Owen Adkinson, Battersea; T. H. Clarke, Putney; Stuart Coleman and William Pountney, Bristol; George Corson, Leeds; H. Goddard, Edgeware, and Stewart & Robertson, London; A. G. Hennell, London; Lewis Hornblower & Son, Liverpool; William Milne, Belfast; Edward Milner, Norwood; Pearse & Rake, Liverpool; Usill & Willcocks, Westminster; William Perkin & Sons, Leeds; Thomas Shelmerdine, Liverpool; Page Spencer, Dewsbury; William Wing, Henley-on-Thames; and George Albert Milling, Holbeck. The estimates vary from 29,000*l.* to 165,000*l.*

Chelsea Bridge.—A correspondent says the iron curb of Chelsea Bridge, as designed by the engineer, has perforations to take away the rain-water from the roadway, and that many of these, during the repair of the roadway, have been industriously stopped up. He wants to know why this has been done; to the obvious injury of the bridge?

MANCHESTER WHOLESALE FISH MARKETS.

THESE markets, built by the Manchester Corporation, are situated in High-street and Little Stable-street, Shudehill, and were opened for business on the 14th of February last. They were designed by Messrs. Speakman, Son, & Dickson, architects, of Manchester, and cost about 20,000*l.* The main elevations on High-street and Little Stable-street are alike formed of stock bricks and Yorkshire stone dressings. The base, which also continues along the whole of Edge-street, is of Bolton stone and fine tooled. The Edge-street elevation, above sill, is formed of iron and wood framing, filled in with rough plate glass and upon the top is wrought ironwork.

The whole of the ground-floor is devoted to the sale of fish and poultry, covering an area of about 2,000 square yards. The main roadway is of sufficient width to admit of three lorreys, side by side. The whole of the area beneath is devoted to storage purposes. The small cellars are entered through wrought-iron trap-doors in floors, and iron ladders to descend by. The large cellar, next Edge-street, is approached by stoneways and stone steps from High-street and Little Stable-street. Offices are provided for the salesmen, as shown on the ground-plan, and are constructed of wood and glass. Each contains desk and drawers, and all are built alike in character with the buildings. The larger salesmen have offices provided above, next to the bank wall, and which are approached by stone steps. These offices have command of the whole market. Every manhole is provided with blocks and pulleys, for lowering and raising the boxes, baskets, and so forth.

There are eight ice-houses, and they are constructed in the following manner:—The floors, ceilings, and sides are formed with 1½-in. grooved-and-tongued white deal planking, not exceeding 7 in. wide, and well nailed to joists and rounds. There is a space of 4 in. between the brick walls and planking, which is filled in with the finest sifted ashes, well rammed down. The lids to the manholes are of wood, 6 in. thick, scooped out on the top, to receive any water that may pass through the crevices of the trap-doors above, with iron handles inserted to each, by, let into 6 in. by 3 in. wood curbs. Above these are wrought-iron doors. Access is also obtained into the ice-houses from adjoining cellars, by two wooden doors in each, one above the other, as seen in the section which we shall give on another occasion. They are formed 9 in. thick, wrought and cross-jointed in two thicknesses of 1½-in. grooved-and-tongued planking, hung to wrought and rebated door-frames, with extra strong wrought-iron bands and gudgeons, and secured with wrought swing bars, with pins and plates. A channel is formed the whole length of the houses, to drain away superfluous water, which channel is connected with the sewer, and is particularly well trapped. The roofs are constructed with wooden backs, framed with wrought-iron tie-rods, and cast-iron bosses, heads, and struts; the purlins are of wrought iron, and secured to wooden backs; the whole supported on cast-iron columns and wrought-iron lattice-girders; and louvres extend the whole length of the building. The roof is covered with glass, where shown, and the remainder with 1½-in. grooved-and-tongued boarding and slates.

The gates and grill-work in all cases are of wrought-iron; the main entrance-gates are of ornamental design.

The whole of the basement is of fireproof construction; the arching is covered with asphalte 1 in. thick, to prevent any water passing through.

The roadway and footpaths are paved with Mr. Bugsworth sets, laid upon a proper bed, and run with hot asphalte; the curbs to them are of Newry granite; the remainder of this floor, as also the cellars, are laid with 3-in. Barnsley paving; the joints run with hot asphalte.

The tympanums over entrance-gates are filled in with stone carving, representing "Fishermen Putting to Sea," and "Fishermen returning from Sea."

The whole of the ground-floor is thoroughly washed every day; unions are dispersed very ingeniously, so that hose can be attached for the purpose. There are also two stone troughs, where pure water can be obtained.

The carving has been executed by Mr. Bonehill, of Manchester; and the wrought-iron work by Messrs. Hodkinson, Poynton, & Lester, of Coventry; the general contractor was Mr. Southern, of Manchester.

References to Plan of Ground-floor.

A C. Communication with cellars beneath.
B. Communication with ice-cellars.
D D. Offices.

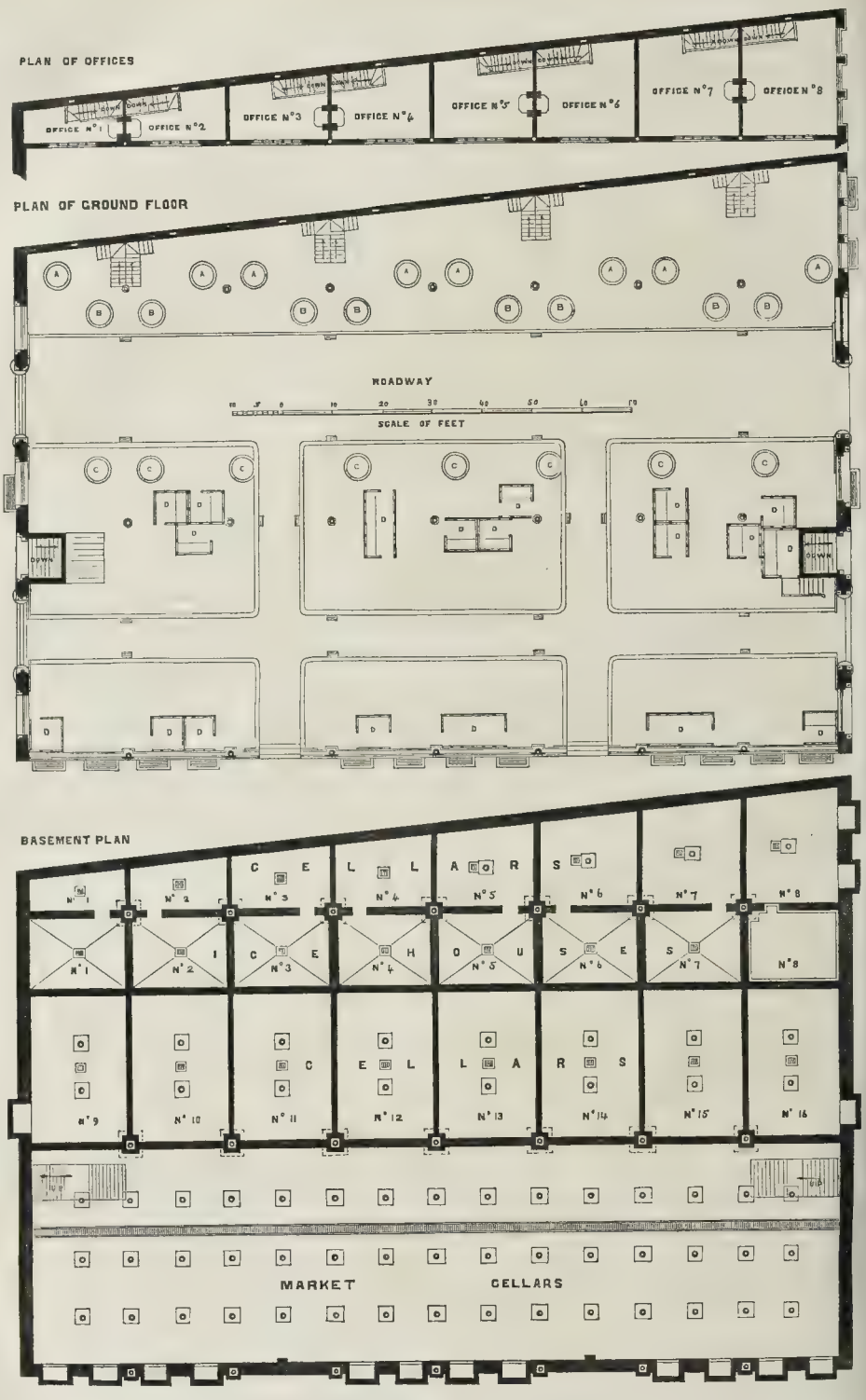
ART CONGRESSES.

IN speaking of the Art Congress which is fixed to be held in Vienna, it must not be considered the first of its kind. Our older readers may remember that in 1861 such a congress was held in the city of Antwerp, when representatives of different artistic bodies, to the number of 1,000, were invited from many countries, and the Corporation, the Academy of Arts, and other cognate societies vied in their attentions to the strangers. The meetings were held on the 18th, 19th, and 20th of August. Various subjects were discussed and resolutions passed, and some account of the proceedings will be found in our volume for that year.* We have before us, as we write, a bronze medal commemorating this *Antwerpen Kunstfeest*, the like of which was presented to every delegate on leaving. The obverse shows the city of Antwerp, a draped female figure with mural crown, receiving the Genius of Art, who bears in her right hand the emblems of painting, sculpture, and architecture, and below is inscribed *Welkom*. Right royally had the sincerity of this welcome been made manifest, and few who were present will soon forget that pleasant visit to the land of Rubens and Vandyck.

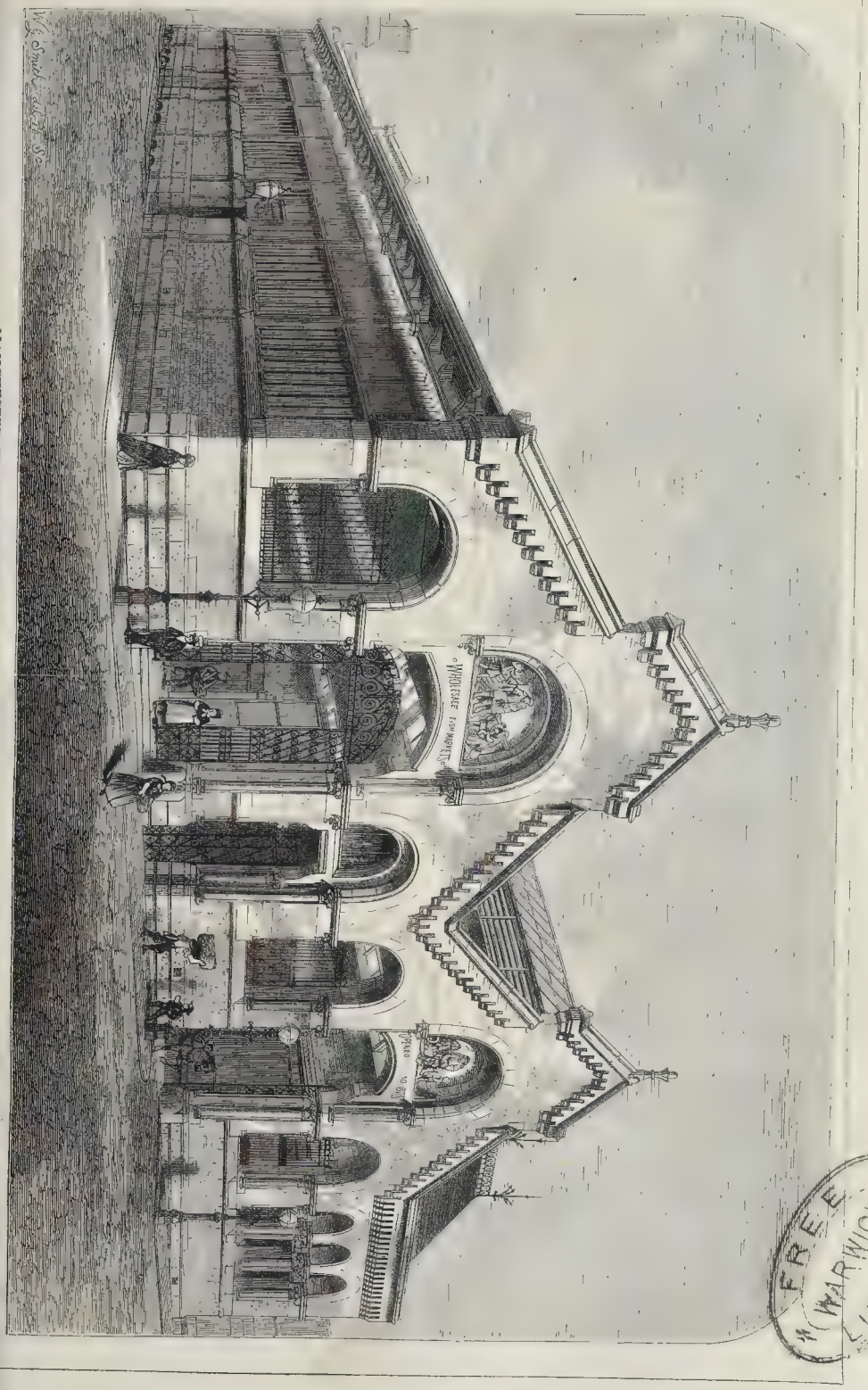
WELLS AND THE CATHEDRAL.

AT the recent meeting of the Somerset Archæological Society, mentioned in our last, Mr. E. A. Freeman said Wells was a city of purely ecclesiastical origin, but they did not know its origin and history with the same clearness as they knew the history of Durham in the tenth century and Salisbury in the thirteenth, though, no doubt, it was a town of essentially the same class. An ecclesiastical foundation arose there in the tenth century, and most probably in the eighth century Ine founded something there—a church of secular priests, and that Edward planted his bishopric there when he came from Sherborne. There could be no doubt that the ecclesiastical element came their first, the civil second, and the military element was nowhere at all. In Wells the bishop did not find himself a place within the walls of the city, because there was no city and no walls; the bishopric was founded at the place, and the other ecclesiastical foundations grew up around the bishopric, and the people came and lived under the shadow of the Church of St. Andrew. In process of time a town grew up and received a franchise from the bishop, who was the lord; and it was from the bishop that the city received the first beginnings of the franchises which it still enjoyed. There was a great contrast between a city like Wells, which had simply grown up by the bishop granting privileges to the people coming to live on his own lands, and the people at Exeter and other places, where the city had existed with rights of its own, and where the bishop came in at a comparatively late period. He hoped he need not tell any one that Wells had always been a secular foundation; there never was a monk there by any chance; it had always been a foundation of secular priests from the beginning. Wells being in that way purely an ecclesiastical city, it so happened that it was the very best example to be found in the whole world of a secular church, with its subordinate buildings, and there was no other place where they could see so many of the ancient buildings remaining, and so many still applied to their own use. The palace was still the residence of the bishop; various houses of the canons and other dignitaries were applied to their ancient use; the close of the vicars still remained mainly the property of the vicars, and was to some extent inhabited by them. The only foundation quite gone was the college of the chantry of the priests; nearly everything else of the ecclesiastical foundations of the city continued—a little lame perhaps, but still in a wonderful degree of perfection as compared with other places, so that there was no place where they could see so well what was a great secular foundation. The buildings belonging to the different ecclesiastical persons were all scattered about, and were built exactly as happened to be convenient, and a great number of them remained still. Approaching the town on the east side from Shepton Mallet the view was one which could not be surpassed; they could see the best and most beautiful part of the church, the chapter-house, the cloisters, the palace, the gate, the vicars' close, and several of the canons' houses. But they had other things in that city besides those which were immediately connected with the bishopric and clergy attached to the cathedral. In Wells they had a singularly fine parish church, the parochial history of which was a thing which ought to be thoroughly worked out, because it had some peculiarities different from any parish which he had heard of, and the origin of which he would like to know. In the parish of St. Cuthbert there were some most curious usages with respect to the two churchwardens. There was one warden for the in-parish and one for the out-parish. The churchwarden for the in-parish was not appointed by the vicar, nor elected by the ratepayers, but by the town council, and was paid for his services. He did not know that there was no other churchwarden on the same terms elsewhere, but the case was exceedingly rare, and he never heard of anything like it. There seemed to be a close connexion between the parish church and the corporation of the city. That was a point for local antiquaries to work up in detail. In domestic antiquities there were several houses and other buildings to be seen in the city. There was one ancient building in Wells, which he had never seen, and which he hoped to see,—a certain barn. He must make his salaam to Mr. Irvine, for there was no one who had more reason to thank him than he (Mr. Freeman), for what he had done that morning. What Mr. Irvine stated had somewhat taken the breath out of them all; he had put forth views as to the history of the cathedral so utterly unlike what had been in the head of anybody else, and any one who had not his (the speaker's) advantage of knowing those views must have been altogether taken back. He began to feel a little cock-a-whoop about the matter, and Mr. Parker must feel so too. Mr. Parker and he some ten years ago looked over the cathedral, and came to the conclusion that the west front was older than the nave; it was very singular that it should be so, because the style looked more advanced than the nave. Then came Professor Willis, who said that it was not so; and the Professor being the greatest authority, Mr. Parker and he fell in with his views; but it was pleasing to hear Mr. Irvine confirm what they had made out for themselves, although, of course, they did not want Joceline to be pulled down. He could not talk of the buildings of the city without mourning the way in which they were perishing. [No one seemed to care about its antiquities. Where was the prebendal house in the North Liberty, and what had become of the organist's house? Who pulled it down? and, would anybody stand up and tell them why he did it? Then there was the history of the city; within the last few years it had been wiped out by pulling down the wall of partition which had for ages previously existed between the Close and the city. Pull down the houses by all means, so that the wall could be seen, and no one would have grudged them, but an absurd and foolish hole had been made in the middle of it for the only reason that when they went out of the western door of the cathedral they might have a view of the Swan Hotel. To go down to the smallest things,—not far from St. Cuthbert's Church was a tavern called the City Arms, which a few years ago had a good doorway and window, but they were now gone and some trumpery modern thing was put up in their places. There was a good house, too, in Chamberlane-street with a label over the window. Recently he saw a man with a chisel cutting the label away, and a few days later it was all gone, and something "spick and span" was put in its place. He spoke out his mind on these things, and did not care for anybody. He only wished to see the people who did such things, but they kept themselves in the dark and did not show themselves. Let such people stand up and answer him, and let him know their names. He had told them now what there was in the city, and what there was not; what there was a little time ago, and what there ought to be at present.

* Vol. xix. pp. 573, 589, 606, 625, &c.



MANCHESTER WHOLESALE FISH MARKETS.



MANCHESTER WHOLESALE FISH MARKETS.—MESSRS. SPEAKMAN, SON, & HICKSON, ARCHITECTS.

FREE LIBRARY WARWICK

SIR JOHN HAWKSHAW.

He was born at Leeds in 1811, and received early education at the Grammar-school of t town. On leaving school he became a il under Mr. Charles Fowler, who was aged in the construction of turnpike-roads in West Riding of Yorkshire, and afterwards ame assistant to Mr. Alexander Nimmo, who s engaged by the Government on public ks in Ireland. At Mr. Nimmo's death, Mr. wkshaw proceeded to South America, where had charge of the Bolivar Copper-mines, and his return to England became engineer to Manchester and Bolton Canal and Railway. was afterwards engineer to the Lancashire Yorkshire Railway (nearly the whole of ch line was constructed under his superin- dence), and to several railways in the north other parts of England. Among other rail- ys and public works with which Mr. Hawk- w's name is connected, may be mentioned Riga and Dunaburg and the Dunaburg and epsk Railways in Russia, the Penarth Har- r and Docks in Cardiff Roads, the London- y Bridge in Ireland, the District Railway n Charing-cross to Cannon-street in the ropolis, the new docks at Hull, the great h-canal from Amsterdam to the North Sea, new East and West India Docks in London, He was also connected with the Govern- nt railways in the Mauritius, and is consult- engineer to the Madras Railway and the stern Bengal Railway. Besides his connexion h the Government as engineer to the Harbour efuge at Holyhead, he has also been engi- to the War-Office for the foundation of the forts at Spithead, and has been consulted he Government in other matters of a pro- ional character. On the failure of the great ge at St. Germains, in Norfolk, Mr. Hawk- w was requested by the Commissioners of the lle Level to take measures to stop the inun- ons and to remedy the evils caused by the ater, which he did successfully, and there, he first time, he substituted large syphons he fallen sluice. He was nominated one of City Commissioners of Sewers when that was formed by the Crown; and in 1860 appointed the Royal Commissioner to decide een contending schemes for the water- ly to the city of Dublin.

A NATIONAL SCHOOL OF ART.

R,—The assurance given by Mr. W. Cave nas in the *Builder* for September 6th, that we will only be patient, and grow our art the very seed and root, we shall in the e of time have a national school of art in very truest sense," will, I feel sure, if it not entirely allay all apprehension for the e, still go far towards checking the de- ling tendencies inherent in our artist-nature. national school of art, as England is at nt constituted, is a moral impossibility"; hen our fondest hopes may be realised in a ed "system of national school education." hat is right" (and Providence will kindly care of the artist), "depend upon it," adds omforter, "art will take care of itself." now! Nothing can be simpler, clearer, re encouraging than that. You have the problem, and its possible solution, in the ass of a single sentence; and there are hree *primâ facie* objections to its universal tance:—Firstly, the difficulty of finding particular quality of "patience" which will come exhausted in the "course of time;" dly, the fact that the national school m of culture has already been on trial for a quarter of a century without producing atillation of the brilliant results predicted ; and thirdly, the impossibility of esta- ng or maintaining the conditions indicated ssential" to develop a "national art" in sense contended for. Style! style!! !!! When shall we fully realise that the ctive characteristics of ancient art were s in direct proportion to the isolation, and verse proportion to the civil and religious y of the nations? And that if *we* have no ial style, in the "sense that Grecian and u were national schools of art," it is be- the ready intercourse of modern times has yed national individuality; and all that is literature, science, and art has become orld's common property.

have it on the authority of Mr. Ruskin he "painter's curse of to-day is too many s." In science we are beginning to sus- pect that the too rapid accumulation of facts has left the astronomer, the chemist, and the naturalist no time to arrange or systematise our knowledge; the architect has found an *embarras de richesses* in the number of his newly-acquired materials and appliances, and there is no hope for his art until he has thoroughly mastered their use, genius, and capabilities. Then, as we call that one man "great" who in history or in science displays the co-relation of isolated facts, educes the truth, and brings into unison the chaotic labours of a thousand minds; so in art we shall recognise the greatness of him who shall first grapple successfully with the complex question of modern architecture, and harmonise into one homogeneous style all the diverse materials at his command.

Now, with all deference to Mr. Thomas, whose opinions would still be entitled to respectful consideration even if he had not "intently studied the subject" upon which he happens to be writing, I fail to find anything in our national idiosyncrasy, or in our professional temperament, to render the establishment of a national school or university an impossibility. "Sectarianism" prevails in every country, in every branch of the arts and sciences, in religion and philosophy; nor are we at all in the habit of thinking that the absence of an "at-one-ment" of opinion is an element of weakness in these organisations. The rivalry of schools is, on the contrary, rather an element of success than of failure, and is calculated to bring out whatever of truth and strength there be in each. Nor can I conceive of any means so likely to create the healthy manifestation of latent talent on the one hand, or to suppress the noxious outgrowth of empiricism, or the servile copyism on the other, than those suggested in your own article of the 23rd ult.

The historian is bound to revise, modify, or even reverse his judgment of past events in the light of newly-acquired facts; there is no rest for the philosopher; and the architect who would be abreast with the times must avail himself of all the aids of modern arts and science. When such a one shall arrive he will not seek to disguise in counterfeit and borrowed forms the various materials with which he builds; but, being master of all his forces, he will make each speak its own emphatic language, and by the intelligent and exhaustive utilisation of all the means at his disposal, he will become the founder of a style.

And now is our time to strike! The least delay may be fatal to our hopes, and the much-coveted honour will be rifled from us for ever and ever. Let us then at that auspicious moment be prepared to put an effective curb upon the progressive and inventive tendencies of the age; isolate ourselves from foreign influences, making no further exchanges of thought or information; and that "style" will in due course become "national," and the highest aspirations of our art-patriots will be in a fair way towards realisation in the minds of a remote posterity.

W.

SIR,—Mr. Cave Thomas has struck a chord which ought to vibrate through the whole kingdom. If the sentiments expressed in his letter were responded to as they deserve, we should not be long ere we made some attempt to establish a school of art based on intellect and reason instead of, as now, on Mediæval superstition. Much of English art and science at this moment is based on the very same theories as were propounded 3000 years ago. I am speaking as a civil engineer,—a profession I loved, but gave up in disgust at finding I dared not give an opinion or state the most positive facts if such facts were contrary to the prescribed formulæ of the Astronomical or Geographical Societies! Can any condition be more enslaving to the mind than such thraldom? If the very basis,—the very fundamental principles,—of scientific education are not established on truth, which both our intellect and reason and practical experience can confirm, what is national art or science but a pretentious fraud and deception? Mr. Thomas is perfectly right in saying "art will take care of itself" when based on sound principles and allowed to keep pace with the intelligence and progressive tendency of the age. It is at present compelled to creep along, or rather to stand stationary in the ruts of thoughtless prejudice and bigotry, simply because if it dared to make an independent step, this or that "royal" society would consider its interests jeopardised, or its principles called in question. I do not at all know to what particular phase of science or art Mr. Thomas may more particularly refer, but I simply plead with him for the employment and exercise of more intellect, and less slavish adherence to the thoughts and systems of anonymous pretenders who lived 200 or 300 years ago. I am prepared to prove that much or most of our "general education" is based on fallacious and false principles, and that ninety-nine out of every hundred of our students are unable to give any reason why they believe this or that of what they have been taught! So that their time is really worse than lost; they are compelled to resign their faculties to authority; they are made to improve their memories instead of their understandings, and thus are prepared for every kind of mental slavery which the ignorance or credulity or interests of others can impose upon them.

N. G. S., C.E.

HOPES FOR POOR STUDENTS.

SIR JOSEPH WHITWORTH has been led by the experience of the past competitions for his scholarships to establish fresh rules to insure that the holders of the scholarships shall devote themselves to the studies and practice necessary for mechanical engineering, during the tenure of the scholarships. These will have to be looked to by candidates.

The number of scholarships in the competition of 1874 will be reduced from ten to six. Each scholarship will be of a fixed annual value of 100*l.*, together with an additional annual sum determined by the results of the progress made in the preceding year. After an examination at the end of each year's tenure of the scholarship, the following payments, in addition to the 100*l.* before mentioned, will be made among each year's set or batch of scholars:—To the scholar who does best in the examination, 100*l.*; to the second, 60*l.*; to the third, 50*l.*; to the fourth, 40*l.*; to the fifth, 30*l.*; and to the sixth, 20*l.*; provided that each scholar has made such a progress as is satisfactory to the Department of Science and Art, which will determine if the sum named, or any other sum, shall be awarded. Then at the expiration of the three years' tenure of the scholarships under these new regulations a further sum of 300*l.* will be awarded, in sums of 200*l.* and 100*l.*, to the two scholars of each year's set or batch who have done best during their tenure of scholarship; so that it will be possible for the best of the scholars at the end of his period of tenure of the scholarship to have obtained 800*l.*, and the others in proportion.

NEXT YEAR'S INTERNATIONAL EXHIBITION.

SANITARY appliances are to form part of the London International Exhibition of 1874, and the Commissioners are seeking to form a strong committee in order to obtain as complete a representation as possible. We will publish the names when the list is complete; meanwhile we suggest to such of our readers as are interested to consider how they may aid in making the Exhibition as interesting and valuable as possible.

Civil engineering, architectural and building contrivances, and materials will form one of the industries which will be represented at the same time, and the Commissioners, desirous of making the representation of this class as complete as possible, have sought the co-operation of the Company of Tilers and Bricklayers, inviting them to nominate three of their members to serve on a committee of advice and selection for the class referred to, in conjunction with the members appointed by her Majesty's Commissioners. The court of the company have accordingly nominated Mr. Richard Moreland (engineer), Mr. John Young (architect), and Mr. John Bird (builder).

THE BUILDING OF COUNTY BRIDGES AND THE MIDDLESEX MAGISTRATES.

THE erection of what are called county bridges, has generally been thought to rest upon the county authorities, but the Middlesex magistrates appear to hold different views on the subject. It is proposed to replace the present Barking-road Bridge by a new iron structure, the existing bridge not being considered safe, and the Poplar Board of Works have memorialised the Middlesex bench of magistrates, asking them to construct the new bridge. It transpired at the meeting of the Poplar Board, held last week, that at a late meeting of the Middlesex magistrates, they refused to erect the bridge, denying their liability to do so. It appears that the magistrates, during a discussion on the subject, admitted that a new bridge was necessary, but they contended that the county could not be called upon to build new bridges to meet increased traffic, and that to erect a new bridge would be to acknowledge the liability of the county in such matters, which would be highly dangerous and improper. In a discussion on the subject, at the meeting of the Poplar Board, the chairman stated that the Essex magistrates were taking an opposite view to the Middlesex county bench, and were disposed to admit their liability, jointly with the Middlesex county authorities, to build the new bridge, and that they are to consider the matter at the next meeting of the Essex bench. The chairman of the Poplar Board ob-

served that he had a very strong opinion as to the liability of the magistrates, not only as regarded this particular bridge, but others in the county, and that in the event of any accident happening, the county would be liable. The Board resolved to await the decision of the Essex magistrates before taking any further proceedings against the Middlesex bench to compel them to build the new bridge.

INJURY TO LEAD BY INSECTS FROM DECAYING WOOD.

IN making some repairs lately, it became necessary to remove some 5 lb. lead flat, which had been down about thirty-five years: one of the boards was found *extensively wormeaten and decayed*, also one of the next partially so. Upon examining the lead which covered the decayed wood it was found full of holes, similar to those in the wood beneath, the other portion which covered the sound boards being perfectly sound.

I have shown it to some practical builders, and they say they never came across such a thing. Will you please mention it in your journal, to learn whether such a thing has occurred elsewhere; as, if it is established, it will readily account for the pin-holes plumbers find in guttering, or other leadwork in combination with woodwork? JNO. MURRAY.

THE VALUE OF DUST.

THE value of dust has of late years been steadily decreasing. In the year 1864 it was of such value as to induce the contractors to pay to the vestry of St. Pancras the sum of 1,810*l.* for the privilege of collecting it from the houses in that parish; and now the vestry has to pay 5,000*l.* a year to the contractors to have it removed; this difference in its value being equal to a 1¼d. rate. Mr. W. B. Scott, chief surveyor to the vestry, accounts for the decreased value of dust from the circumstances that the supply is not equal in quality to what it was and has been in years past, because of the greater proportion of inland coal consumed. The coal brought to London, even up to 1864, was principally coal that produced cinder, but now the proportion has increased, and is increasing, that produces nothing but ashes,—gray flaky ashes (with little or no cinders), by which the quality of the breeze is deteriorated. The more extensive the metropolis becomes, the greater is the cost of collecting the dust, and the greater activity of the sanitary authorities renders the operations of dealing with the accumulations more expensive.

HOW SHALL I BUILD?

SIR,—Is it just to lay so grave a charge as the sadly imperfect manner in which our dwellings are built to architects or doctors of medicine? How much has been written and said by the best intentioned and most scientific men of the age upon the impure misconstruction of dwellings? How often have the pages of the *Builder* rung out on this subject? And how many thousand pages of matter lie unprofitably on the publishers' shelves finding no readers?

If "An Amateur" looks around London and all other of our large towns, he will find hundreds of houses being built; and who is the architect? Why, the speculating builder,—who copies some house somewhere, the size of which will suit his land. Let him ask the aforesaid builder what provisions he has made for ventilation, and he will be shown a few perforated bricks between floor and ceiling lines; but in most instances he will be told there are the doors, windows, and flues. And now let him ask, how, when windows and doors are closed, and, as is the case in many instances, a bag of shavings bungs up the flue in winter, are the products of animal combustion to be got rid of and fresh fuel to supply the vital spark let in? And what will be his answer eight times out of ten. Why,—a grin. He may as well talk of the component parts of Cynthia. Or he will be told flatly,—"It will not pay; for not one out of a hundred will give me 5 per cent. more if I spend 15 per cent. in properly ventilating these houses." The fault lies in the ignorance and carelessness of the general public.

Therefore I say, so far as our common dwellings are concerned, architects, as a rule, are not to blame. But can they be exonerated in this matter in our large buildings and mansions? From what I have seen I doubt it. What is ventilation? I take it to mean an admission of sufficient pure air for the healthy breathing of the inhabitants of a chamber, and this without draught and at a proper temperature for the lungs to inhale. For you would not cram twenty persons into a dining-room constructed for twelve to breathe comfortably in, and what with the heat of their bodies, hot food, fire, and artificial light, raise the temperature to 60°, and then admit air at from 30° to 40°. If you do it must fall to the ground direct, no matter from what part of the room you admit it; and the result is, the air we have exhausted of its purity goes from us, ascends to the ceiling, becomes of the specific gravity of the atmosphere of the room, and in struggling to get to the flue, its only general exit, we have it to breathe second-hand, mixed with the products of combustion from lamps. Did you ever hear a person, when making up the eligible for a dinner-party, ask, "Well, now, how many will our rooms allow to breathe comfortably in?" The fresh air should come into each room gently and at a proper temperature, governed by the heat of the external atmosphere. It is wrong to have your house at 60° to 65°, when out of doors it is only 32°. And so far as science has yet made known, we must use mechanical power to obtain this, and in twenty years' practice and observation over many thousands of miles, I have not seen any contrivance so cheap, simple, and perfect, as that I suggested of making the hot-water tank give the motive-power for taking off the used gases; and I would ask, why not adopt it in small houses? It would tend to cleanliness, and the cost of a small circulating boiler with tank and ¾-in. flow and return pipes, with a ½-in. pipe to one or two useful places in the house for bathing, &c., would not be more than from 10*l.* to 14*l.* Even now, as to channel for air, it may be made in brickwork; but, if so, it must be well parged, or it will be useless, and if this is done piecework, it will want well looking after. I do not think iron tube made of 20-gauge would cost much more, and the joints can be made of a simple india-rubber flat ring, $\frac{1}{16}$ in. thick and ⅝ in. wide; by this means you would obtain a continual displacement of the air, for the tank would retain its heat sufficient for the purpose until the fire was relighted. And if there is not a range, a small boiler to form back and sides of register-stove fire-pot would be all-sufficient.

As to so-called ventilators fixed in walls connected with flues, &c., examine the neighbourhood of one after it has been fixed a few months; smell the wall around it, and you will find that the backward or closing action is a fallacy; for set them as carefully as you may, they will allow return draughts in time, and this is not pleasant when the return current is smoke. Sit under a window in which is fixed one of the glass or louvered ventilators, and if the wind is on that side of the house leave your seat, or a stiff-neck or something worse will follow. Thus it appears, to have perfect ventilation, we must have the air brought from an external part of the house, away from all dams and close spaces, or bring it down a descending shaft, about 20 ft. high, on one side of the building; and this must be warmed to be tolerated in winter; and to be done so purely, should pass over hot-water pipes or tank. It is an indisputable fact that to pass air over highly-heated dry surfaces, either metal or clay, makes it unfit for human inhalation. Nor need this be a weighty matter, for a small contrivance can be made suitable to the meanest class of houses at a very small cost (when you have educated the people to feel its necessity, and to know how much more healthy and comfortable their homes would be with it).

I do not mean to use any more fuel, for I affirm that one-half of the heating properties of our coal is sent out of our houses to destroy our buildings and poison the atmosphere.

I would suggest in these School Board days, that they be petitioned to cause to be hung on the walls a printed card, stating thereon the amount of air each adult inhales at every respiration, the quantity in twenty-four hours, and the poisonous nature of gases given off; also the approximate number of pores or cells in the human body, and their functions, so that the young mind may be made to see the necessity of bodily cleanliness. If "An Amateur" mixed with the "Plebs," he would find gross ignorance in this matter, and thousands that never give a thought as to what we should breathe; yes, and thousands that never remember having had a bath. The card would draw attention for the next generation, and could do no harm to this.

If the hot-water tank is not liked, build a separate clean parged flue between the stove flues, running it at the back of stoves most used, and take branches into this; but would this answer at night when all is closed, and therefore most important? I think not.

If you perforate your ceilings, and leave the impure air to distil itself among the joists of keying of ceilings, you will find, let the floo above be ever so well laid, that you only tak it out of one room to distribute it over others;— not a very fair process, if you do not occup the upper ones.

If you use register grates, have the curve o th coves the right sweep, to reflect the heat th direct into the room; and by adopting the bac flues as I suggested, and keeping your grate fins with the breast, you would find a 9-in. flue, wel broken or curved, answer thoroughly. Thi would give you 14½ in. breast, 9 in. flue, 4½ i face, and 1 in. for plaster. By using side cove flues to the registers, you will consume th chief of the heavy carburets, and thus obtai more heat, and make less smoke or soot for yo flue. If the cone plates were groined and ke clean, more heat would be reflected, and by th system the contraction of the mouth of the fi may begin directly upon the top of the stove.

In conclusion, I would ask "An Amateur to have an old grate altered, and try it.

BONEL A. EVANS.

THE ROADS AT KING'S CROSS.

SIR,—You noticed in the *Builder* of August 1873, the subsidence of arch of the railw bridge at King's Cross. I wish to draw yo attention to the great, and, as it appears to n unnecessary thickness of this bridge (about 8 7 in.). Could not a bridge half this thickne be made by a girder dividing the road of t bridge into a double thoroughfare, one for tra east to west, the other traffic west to east? T advantage of this reduced thickness, by this any other plan, would be that York-ro would be saved being raised by 1 ft. 3 in., a consequently the paving next the houses on t east side of York-road might have been l undisturbed, or nearly so, and channels for wa and mud or snow on the pavement prevent which may prove annoying and dangerous winter especially. The gradients over t bridge must be very trying to cattle, and t slopes of the pavement very dangerous in win to all passengers on foot. Ought not su bridges to be made thinner to save the gr gradients?

JNO. ELDRIDGE,
A Vestryman of St. Pancras

THE TRADES MOVEMENT.

London.—On Saturday night an aggreg meeting of builders' labourers was held in T falgar-square to consider whether they shou strike against a continuance of any rate of p less than 6d. an hour. There was a stro desire on the part of a large number to strike once, and the proposition was supported several speakers, who, on a show of hands bei taken on the proposal as an amendme declared that it was carried unanimous The other proposition, for the adjournment the strike for a week, was pressed, and t majority, amid some confusion, voted in favour. The meeting ended quietly, though t difference of opinion among those present at t meeting, who were chiefly Irish, seemed at o time likely to have a less agreeable result.

Liverpool.—The operative house carpente and joiners have at last put an end to the strike by adopting 7½d. an hour as the rate wages for the district. In doing this, howeve they have not obtained the standard they soug for, neither have they accepted the offer ma on behalf of the master builders. The co mittee decided to adopt that plan in consequen of allegations which they say have been made the effect that certain leaders among them w endeavouring for their own benefit to coerce t men and prolong the strike. It was also stat that there are now only about 160 men out employment, and that work can be at o obtained for these at the rate of wages wh the meeting agreed to.

Newcastle.—At a general meeting of t operative stonemasons of Newcastle and distr held the other day, it was resolved to give masters six months' notice of the follow alterations in the local code of rules, notice

pire on the first Saturday of March, 1874:—
le 1. That the wages be 34s. per week from
e 1st day of February to the 30th day of
ovember, both days inclusive; and 31s. per
ek from the 31st day of December to the
st day of January. 3. That meal hours be
e half-hour for breakfast, and one hour for
ner all the year round. 4. That sheds and
ss-houses be erected for masons on all jobs
ere found necessary. 5. No overtime to be
rked, except in cases of necessity. 6. All work
be done by day, except building boundary walls
d dressing blockers, such work to be done by
sons only. 7. That employers pay lodgings
the rate of 6d. per day or fraction of a day.
That employers commence paying wages not
er than twelve o'clock on pay-day. 10. The
egoing rules to be enforced within three
les from the districts, as stated in rule 7.

A NEW CHURCH IN DULWICH.

A NEW church is about to be erected in West
lwich, near the Norwood Cemetery. The site
the intended new church, which has been
sented by Mr. John Westwood, of the Manor
use, extends from Hamilton-road to Croxted-
d, and the building will therefore stand in
o parishes, one portion being in Camberwell
d the other in Lambeth. The principal
rance will be from the Croxted-road, and the
proach from the road to the church will be
ough an ornamental ground. We understand
t no fewer than ninety-five architects are
mpeting with designs for the building, which
to cost 7,000*l.* A parsonage, corresponding
h the architectural character of the church, is
o to be erected in connexion with it. Certain
tructions, with reference to the building,
ve been given to the competing architects.
e style of architecture is to be Gothic, and
edifice is to have a tower and spire. The
igns are to be submitted to a competent
dge, whose decision is expected to be given in
vember next, and the erection of the building
l be commenced as soon afterwards as pos-
le, so as to be ready for opening in the course
next summer. Emmanuel Church is the
me which has been given to the edifice. As
neighbourhood in which the intended church
situated is, to a great extent, occupied by
deners and out-door servants in the employ
the merchants and other wealthy families
iding in the district, one-third of the seats in
church are to be free.

E CITY CORPORATION'S EXPENDITURE ON BUILDINGS.

A STATEMENT of the receipts and expenditure
he City of London Corporation during the last
years, which has just been published, shows
t within that period the outlay on new and im-
ved buildings amounts to 921,506*l.* 6s. 10½d.,
le up as follows:—On the Metropolitan Cattle
rket, 27,442*l.* 6s. 6d.; erection of a pauper
tic asylum, 59,018*l.* 18s. 3d.; improvements
he Guildhall, 50,183*l.* 15s. 8d.; contributions
id of public improvements, 42,248*l.* 6s. 9d.;
ction of library and museum, 44,689*l.* 5s. 4d.;
proved dwellings for the labouring poor,
49*l.* 2s. 10½d.; construction of the meat and
try market, 305,495*l.* 6s. 6d.; drinking
tain in Smithfield, 1,585*l.* 5s. 8d.; con-
ction of the new Foreign Cattle Market,
057*l.* 15s. 3d.; enlargement of Billingsgate,
34*l.* 8s. 10d.; and purchase of premises,
07*l.* 16s. 1d.

n addition to the above expenditure on build-
, the statement gives the following items
er the head of extraordinary payments,
nd the sum of 1,653,440*l.* 13s. 2d. on ordi-
y expenditure, and which included, amongst
r items, 60,973*l.* 15s. for allowances to Lord
yors; expenses of the Mansion House,
21*l.* 14s. 2d.; allowances to the sheriffs,
9*l.*; and 67,442*l.* 10s. 9½d. for expenses of
Guildhall and Law Courts. Debt discharged
account of the Metropolitan Cattle Market,
000*l.*; transfer to reserve fund, 263,853*l.*;
stments (including a temporary investment of
of the Meat Market loan), 191,809*l.* 18s. 3d.;
ption of and wedding-gift to the Princess of
es, 34,354*l.* 10s. 2d.; entertainment of the
ce and Princess of Wales, 16,690*l.* 5s. 8d.;
rtainment of the Sultan and Belgian Volun-
s in 1867, 30,683*l.* 0s. 10d.; thanksgiving-
expenses, 9,617*l.* 15s. 3d.; and disbursement
account of supply of gas and water to the citizens, 23,461*l.* 13s. 7d.; the total expenditure in the ten years being 3,709,938*l.* 10s. 5½d., or an average annual expenditure of 370,993*l.* 17s. The aggregate receipts during the same period amounted to 3,721,325*l.* 13s. 6½d., showing a yearly income of 372,132*l.* The rents in the ten years amounted to 987,721*l.*; the market-tolls, 499,025*l.*; brokers' rents and fees, and Mayor's Court fees, 61,143*l.* Among the extraordinary receipts were 1,658,380*l.*, being loans raised for public improvements, or resulting from the sale of securities.

KIRKALDY FINE ART ASSOCIATION.

THIS exhibition (the second here) has been open for three weeks, and has been very well attended. The exhibits consist of 257 paintings and drawings, and 9 pieces of sculpture. The chief works on view are from the studios of James Cassie, A.R.S.A.; William McTaggart, R.S.A.; Gourlay Steell, R.S.A.; J. C. Wintour, A.R.S.A.; T. Danby, R.A.; Arthur Pengal, R.S.A.; Erskine Nicol, R.S.A.; Waller H. Paton, R.S.A.; Alexander Johnstone, R.A.; Charles Lees, R.S.A.; C. N. Woolnoth; Abraham Stork; James Archer, R.S.A.; Wm. Fettes Douglas, R.S.A.; Sir J. Noel Paton; John McWhirter, R.S.A.; J. Linnell, sen.; Alex. Fraser, R.S.A.; Sam Bough, A.R.S.A.; R. T. Ross, R.S.A.; John Smart, A.R.S.A.; James Eckford Lauder, R.S.A.; Alexander Green; Norman Macbeth, A.R.S.A.; Horatio McCulloch, R.S.A.; Patrick Nagsmith; J. B. Macdonald, A.R.S.A.; Henrietta Ronner, R.A.R.; J. F. Herring, sen.; John Burr; John Ballantyne, R.S.A.; W. Beattie Brown, A.R.S.A., &c.

Since the opening of the exhibition, works to the value of nearly 300*l.* have been sold, and it is expected that more will be disposed of before the close.

SCHOOL BOARDS.

Cardross.—At a meeting of the Cardross School Board, held on Monday last, the plans advertised for, in addition to Renton Public School, were laid before the Board (five in number) from local and Glasgow architects. The design given in by Mr. John McLeod, architect, Glasgow, was approved of as the most suitable. The plan of Mr. George Banks, of Dumbarton, was the next most favourably considered.

TECHNOLOGICAL EXAMINATIONS.

SIR,—Permit me to say, with reference to the notice respecting the Society of Arts technological examinations, in the *Builder* of September 6th, that Mr. Thos. F. Mullins, who obtained the first prize and a studentship of 50*l.* in the examination in carriage-building, is a native of Cork. His brother, Mr. M. Mullins, obtained the second prize. Both have been steady, hardworking pupils at the evening classes of the Cork school.

JAMES BRENAN, Head-Master.

WESTMINSTER CLOCK TOWER.

SIR,—Parliament being prorogued, and the alleged use (to indicate to distant members when the house is sitting) of the lighthouse lanterns placed near the summit of the clock-tower of the Houses of Parliament having ceased, I beg to inquire whether they may not now be removed, or whether the disfigurement of that prominent and costly erection is to be permanent?

I take also this opportunity of protesting against our public buildings being disfigured for merely fanciful purposes. F. J.

*** The light seems to us by no means objectionable, quite the reverse. What is wanted is that it should be so placed or formed as not to disfigure the building.

THE PAINTERS' MOVEMENT IN LONDON.

SIR,—In your issue of August 30th appears, under the above heading, a letter by "Decorator," who does not think that "house-painters, as a body, should receive so much as joiners, stonemasons, or plasterers," as joiners' tools are expensive, "whereas the painters have nothing but a putty and chisel knife, at the cost of 2s., to supply." I have worked for the last twenty years for various legitimate painter-firms in the West-end, and I do not remember seeing those 2s. kits in those firms; I mean by legitimate, the master being a practical painter, or employing a good practical painter as foreman, either of which would soon detect shoemaker, tailor, or bricklayer's labourer, even if they were "mixed up among forty or fifty others": and I do not think they would allow the foreman of the job to protect them. I belong to a society, and am well acquainted with most other painters' societies in London; and I can venture to say that none dispute the right of a master or foreman to discharge any man whom he considers not worth his wages, or skilled enough for the work he is required for. Indeed, I know of no better method of rewarding the best workman than by keeping him longest in employment; and nothing better to wake up the energy of the worst than by discharging him first. "Decorator" says, why should a clever man be compelled to work for 8½d. per hour, when he is worth 9½d.? I say "Society" does not even advise him to do so. "Society" would assist him to obtain as much as 8½d. per hour; and if by his own ability he can get 1s., "Society" will congratulate him.

There are some curious signs in London; still, I do not think we shall find "*Tailor* and Decorator," although we often find the latter following something nearly as foreign to it. Probably in such a shop "Decorator" has seen the gentlemen of the discarded last, needle, and hod wielding their 2s. kits. Men who never learned painting become master painters, and somehow get jobs, and manage to get over them without employing those men who are worth 9½d.; neither are those masters compelled to pay even 8½d. "Society" never interferes with them. Such men as they get they are welcome to. Society will not have them, nor will the leading firms: so what "Decorator" calls "simply disgusting" seldom occurs.

The question of tools does not decide the value of a man to his employer. A clerk, with a pen that does not cost 6d., earns more money than a carpenter with the most expensive chest. I do not wish to shield painters from castigation, but that they should be touched in their faulty locality; and in behalf of the "Society," to which I have the honour to belong, I must beg of "Decorator" not to mix the "wheat" with the "chaff."

A JOURNEYMAN HOUSE PAINTER.

KIRKSTALL ABBEY.

SIR,—The remarks of so impartial an authority as Mr. Sharpe, will surely for ever set at rest the Kirkstall Abbey restoration proposal. Imagine the process applied to all our Mediæval ruins (and if to one, why not to the rest?), and the results would be such that no amount of modern design, however excellent, could compensate for. The work of restoration is intensely interesting to the individual restoring, but to the profession at large, who can no longer study at the fountain head, the operation is often otherwise.

How much of the interest of these ruins rests in their intermixed architecture, and the many problems which are thereby suggested, which for the exercise of imagination are best left unsolved!

How interesting, historically, to trace the rise and course of a building in the "mosaic" of its varied styles—the ambition and the advancing art of each succeeding generation imprinting themselves in durable stone and lime! But of this interesting study the restorer would deprive us. There is, however, one plea for restoration besides that advanced by Mr. Sharpe, and that is, the ruins have unnaturally become such, the hand of man has reduced them to wreck, and the hand of man should therefore reinstate them.

The proper answer to this is a practical question,—Is it worth the outlay? Restoration would be a loss æsthetically, archæologically, and architecturally, would it be a gain practically? Will it create a church, which by no other means, and in a no less costly manner, would answer the purpose of a modern place of worship? G. S. A.

CHURCH-BUILDING NEWS.

High Wycombe.—The proposed restoration of St. Mary's Church, High Wycombe, is meeting with every prospect of success. At a large and influential meeting in the Town-hall, the Bishop of Oxford, Archdeacon Bickersteth, the Duke of Buckingham and Chandos, Lord Carington (in the chair), and other influential gentlemen were present, and passed appropriate resolutions; and Mr. Street, the architect, sent in an estimate of 10,000*l.*, which was adopted. Upwards of 2,000*l.* have already been either contributed or promised. Lord Carington has headed the subscription list with a donation of 1,000*l.*

Weston Bampfylde.—The parish church of the Holy Cross, Weston Bampfylde, near Ilchester, has lately been reopened after reparation. In plan the church consists of a nave without aisles, chancel, with a western tower, and a south porch. Before the recent works no vestry existed, but one has now been built on the north side of the chancel. The church is small, the total accommodation being for about 100. Previously to the reparation the interior was coated with white-wash and yellow ochre, and the roofs and ceilings were in a rotten condition,—in fact, almost dangerous. In the new ceilings the characteristic Somersetshire type of the old work, *i.e.*, the barrel or cradle form, has been retained, though the cornices and ribs are of much bolder and more substantial dimensions, and boarding substituted for the objectionable lath and plaster. The material is deal, stained and varnished; but the carved bosses to the chancel are of oak. The floors and seating throughout the church are entirely new, the latter having deal framing and solid square moulded oak ends. The chancel is paved with encaustic tiles of Mr. Godwin's manufacture, the patterns arranged by the architect.

The chancel stalls are of oak, with moulded and shaped ends and ornamental book-board fronts. The whole of the interior of the church has been cleansed of whitewash, and the natural rough stone shown. Several of the windows (of the Perpendicular period) have been renewed. The porch being dilapidated, and possessing no particular interest (it was built about 130 years since), was taken down, and rebuilt from a new design. The roofs are covered with local stone tiling. The curious old floriated cross to the east gable has been preserved and reset. The ground outside the church has been lowered, and a stone channel course 1 ft. 6 in. wide has been made. The niche to the west end formerly blocked up has been opened out, and also the little lancet window under it, which has been pierced and filled with cathedral glass. The Jacobean pulpit has been cleaned and refixed on a plain Ham Hill stone base. The old font (the bowl of which is Norman, the stem Late Decorated) has been most carefully cleaned, and its very defective parts renewed. The church is heated by one of Porritt's underground stoves, which has necessitated the erection of an ornamental chimney-shaft. The steps up to the rood-loft and the corbels which used to support it still exist. It should be mentioned that the tower is not of the normal Somersetshire type, for it is octagonal above, and square in the lower stage, a peculiarity shared by one or two other churches in the immediate neighbourhood. The total cost has been about 700*l.* for the restorations. The contractor was Mr. Alfred Caines, of Sherborne; the architect, Mr. Edmund B. Ferrey.

Piercebridge.—The new church of St. Mary's, in the village of Piercebridge, has been consecrated by the Bishop of Durham. The church is a small building in the Early English style, and consists of nave and chancel, with a bell-turret at the west end. The entire structure is of Forcett stone, the walls being of rubble masonry, while the mouldings of the door and windows are of chiselled ashlar. The nave is lighted with two small lancet windows, and a double one to each side; the east end of the chancel is also provided with three windows of the same style, the centre one of which is higher than the others. The entrance is on the south-west side, a space between the outer and inner door constituting a small porch. On the south side of the chancel is the vestry. All the doors and windows have hooded mouldings, terminated with carved finials. The bell-turret, which is arcaded, stands on two projecting buttresses, and is surmounted with a pyramidal top, decorated with ornamental bands of freestone. The recess beneath the buttresses forms a place for the bell-ringer. The bell has been brought from the old parish church at Gainford. The roof is covered with slate, and has a deep pitch. The gable of the chancel is surmounted with a stone Gothic cross. Internally, the church is seated with open benches of pitch pine, varnished, and will accommodate about 120 persons. The roof, both of nave and chancel, is wagon-headed, of Memel pine. The nave windows are stone-arched. The church is provided with a hot-water warming apparatus. The building was erected from the designs of Messrs. Cory & Fergusson, architects, Carlisle, and the contractors for the whole of the work were Messrs. R. & S. Adamson, Gainford, who executed the masonry; Messrs. Wharton, of Darlington, being the sub-contractors for the slating, and Mr. Gent, of Gainford, for the plumbing. The entire cost, irrespective of the ground, which is the gift of the Duke of Cleveland, is estimated at about 1,400*l.*

Ashbourn.—Mr. George Frith, of Coventry, builder, has entered into a contract with the Vicar of Ashbourn, by which, in consideration of the sum of 199*l.* 10s. which he is to receive, he has agreed to take down and remove the spire of the parish church to the top of the spire lights, and to rebuild the spire to the height of, and in the same line as, the original spire. Repairs are to be done on the lower part of the west and south sides of the spire, &c.; and a new spindle and copper vane and a new lightning-conductor are to be fixed. There are other repairs which are needed. Of the 500*l.* which the committee determined to raise, 320*l.* have been promised.

Advance of Wages to Metal Workers and Labourers.—Messrs. Cubitt & Co. have advanced to all their metal workers, numbering over 250 men, one halfpenny per hour on their former rate of wages, which makes the wage equal to other portions of the building trades; and to their labourers one farthing per hour.

Books Received.

Dictionnaire Technologique dans les Langues Française, Anglaise, et Allemande; Rédigé par M. ALEXANDRE TOLHAUSEN; *revu par* M. LOUIS TOLHAUSEN. 1re *Partie, Français—Allemand—Anglais.* Leipzig: Tauchnitz. London: Sampson Low & Co., 1873.

WE have before us the two little volumes forming the first part of this work (French, German, and English): the second, giving English, German, and French; and the third, German, French, and English, are to follow with all speed. The editors claim to have brought together within narrow limits, about 65,000 technical terms, by the aid of abbreviations and small type. In these times when the commercial and industrial connexions between England, France, and Germany are so intimate as they are, such a dictionary as this has become a necessity, and we are glad to be able to say, after some examination, that the present part is very well done. It is very portable, and not expensive.

Miscellanea.

Extraordinary Bequest.—Recently a Mr. Edward Stuart Wilson died, and by his will the city of Carlisle was thought to become possessed of a large sum of money, including 10,000*l.* for building a new town-hall, and 3,000*l.* for erecting a reredos in the cathedral. Other bequests, principally to Roman Catholic charities, amount to something like 150,000*l.* In 1855, when 34 years of age, Wilson was tried and convicted at Carlisle Assizes on a charge of forgery. For this he was sentenced to twenty years' transportation; but after a few years he was released upon a "ticket-of-leave." During this part of his career, a friend of his named Upcroft, a money-lender, died, leaving property worth some 150,000*l.* A will, purporting to be the last will and testament of Upcroft, appeared, by which he left the whole of his estate to his friend Edward Stuart Wilson, in whose career he professed a deep interest, from having in some respects resembled his own. Upcroft had not signed this will; he had merely made his mark, because, it is alleged, his right hand had been permanently injured; but it was attested by a man who is now living. This will, strange to say, was never proved, and Wilson became a religious enthusiast, and erected a stained-glass window in the Roman Catholic chapel at Warwick, bearing the inscription, "Pray for the soul of Edward Wilson." Previously to his death he made the will in which the bequests to the city of Carlisle appear. There now arises the question as to the genuineness of Upcroft's will, and unless this can be established Wilson's money must revert to the Crown. Carlisle has given up the hope of any advantage resulting to the city.

Medical Officer of Health for Herefordshire Rural Sanitary Authorities.—The delegates of the Rural Sanitary Authorities, comprising the Hereford, Ledbury, Leominster, Weobley, and Bromyard Unions (exclusive of those portions within the Hereford and Leominster urban sanitary districts), in the counties of Hereford and Worcester, assembled at the Board-room of the Hereford Union-house, on Saturday before last, to appoint a medical officer of health for the above-named combined districts, when after some procedure Dr. Sandford and Dr. Symmons were selected as the most suitable candidates, and finally Dr. Sandford was elected by the casting-vote of the chairman. The gentleman who thus becomes the medical officer of health for a large district is M.D.; L.R.C.P., London; L.R.C.S.G.; L.M.; L.R.P.G.; Government Certifying Factory Surgeon; and lately Medical Sanitary Officer and Instructor of Sanitary Science and Hygiene. He is likewise the author of several works upon "Sanitary Science" and kindred subjects, and five of his students in the metropolis are this years prizemen. He was a student of Professor Liebig, and is an analyst of repute. The salary of the newly-elected officer will be 500*l.*, derived from Hereford, 136*l.*; Ledbury, 100*l.*; Leominster, 88*l.*; Bromyard, 98*l.*; Weobley, 78*l.*

St. John's Church, Kennington.—It is stated that the incumbent of St. John the Divine, Kennington, has received a gift of 10,000*l.* from an anonymous donor, towards the building of the nave of his church.

The Tomb of Joshua.—M. Guerin, who has been engaged for the French Government in researches in Palestine, has discovered what he believes to be the tomb of Joshua, the son of Nun. The tomb is situated at Tigné, which he considers to be the ancient Timnath Serah, the heritage of Joshua. In the hill at this place are many tombs, and this one has a vestibule, into which the light of day penetrates, supported by two columns, while the place is furnished with nearly 300 niches for lamps, and is soiled evidently from their use. This vestibule gives entrance to two chambers, one containing fifteen receptacles for coffins, and the other but one. In this latter one M. Guerin supposes the body of Joshua to have been deposited, and he thinks he has discovered strong evidence of this in the statement that the sharp flint knives with which Joshua used to circumcise the Children of Israel at Gilgal were buried in his tomb. On removing the dirt which covered the floor of the tomb, a large number of flint knives were found, and on making some excavations at Gilgal, the passage of the Jordan, a number of similar knives were discovered. The pillars in the vestibule of the tomb are surrounded by a fillet, in the style of Egyptian monuments.

Discovery of Human Remains in Newarke-street, Leicester.—An interesting discovery has been made at 15, Newarke-street. In excavating for cellarage, the workmen discovered, at a depth of 7 ft. a large leaden coffin enclosed in a wooden chest; the latter, however, crumbled away as soon as air was admitted. It lay cast and west, and contained a skeleton, of which the skull is very fine and perfect, and is of the dolichocephalic or long-headed type. Fragments of Samian ware were also found during the excavating. The coffin is of cast lead, with a wavy or rippled surface, the only ornamentation being a treble line drawn close to its edges. Nothing apparently was found in the coffin, but since its removal to the museum, in a concretion of lime (with which the coffin seems to have been partly filled) a large shining greyish seed was found. The date of the interment is a rather difficult question, but it lies between Roman and mediæval times, for there are hardly any instances on record of Anglo-Saxons using lead for such a purpose. It has been conjectured that the graveyard of the Grey Friars may have extended to this spot, but Mr. Harrison, the curator of the local museum, thinks it is more probably of Roman date.

The Potter Memorial at Cramlington.—The clock and peal of bells which have been erected in the tower of Cramlington Church, as a memorial of the late Mr. Edward Potter, of Cramlington House, have been inaugurated. For a long period the late Mr. Potter was the resident managing owner of the Cramlington Collieries, and was highly esteemed by a large body of pitmen employed under him. Friends of Mr. Potter added their contributions to those of the miners, and the result was that a large amount was subscribed, and the memorial took the form of a clock and peal of bells in the tower of the church at Cramlington. The bells, six in number, are in the key of G, and have been cast at the works of Messrs. Taylor & Son, of Loughborough, Leicester; and the clock has been made by Mr. Trotter, Newcastle. The tenor bell weighs 21 cwt. 1 qr. 16 lb. The cost of the bells is 850*l.*, and the clock 250*l.*; and in addition there has been work done in preparing the tower to the amount of about 250*l.*, making a total cost of 1,350*l.* Towards that sum the pitmen have subscribed 300*l.*, and the colliery workmen have, after the conclusion of their daily labour, made the oak frame for the bells, and done other work, to the value of 200*l.* to 300*l.*

Discovery in Switzerland.—Antiquaries have been of the opinion that the weapons and implements of bronze found in Switzerland have been manufactured not in that country, but beyond the Alps, and that they had been obtained thence by the Helvetians in the way of trade. Latterly, however, a few more have been discovered in France and Germany, and very recently Dr. Gros, of Neuville, has made a discovery in the course of researches at the lake station of Meyringen, a site remarkable for the quantity and excellent condition of bronzes which have been found. Here the doctor has unearthed sundry highly interesting things, among which are crucible-beds, channels for the overflowing metal and other matters, giving evidence that a foundry had existed on the spot; besides a large number of moulds for the castings.

Underground Railways in America.—The city of Baltimore is now in possession of an underground railway system first amongst American cities. There are now two distinct lines of tunnels in Baltimore, which have been completed at a cost of nearly five millions of dollars, whereby nearly all the various railways centreing in the city have been brought into connexion. The underground railway consists of the Baltimore and Potomac tunnel, whence it extends in a north-easterly direction through the city, under some twenty-one streets and avenues, emerging at North-avenue, where it joins the track of the Northern Central Railway. The Union Tunnel extends from tide-water at the Canton portion of Baltimore, under some thirteen streets and avenues, to the Northern Central Railway. The total length of the Baltimore underground railways is three miles and a half, of which about two miles are closed tunnels, and the remainder open cuts; over which the streets are carried on bridges. The tunnel arches are from 22 ft. to 27 ft. 6 in. high, and from 26 ft. to 27 ft. wide, have rings of brick thick (from stone springers), backed with rubble masonry.

Landslips in the Salt Districts. — The residences and landslips in the mines and towns of the salt districts of Cheshire, have of late years become so serious, that the Government instructed Mr. Joseph Dickinson, inspector of mines, to investigate the matter and report. Mr. Dickinson has accordingly prepared an interesting report, which has been recently published. From this report, it appears that in both towns as Northwich there is scarcely a wall which is perpendicular, or a floor that is horizontal. Sometimes, though not often, houses have been suddenly swallowed up with all their contents. There is one house in which the first floor has become the ground floor, with a new door in the wall, the original door showing only the top at the ground level. And yet Northwich is a thriving town, and the people take the matter easy, and buy and sell their house property just as is done in other towns. Sometimes the houses are built with wooden framework to keep them together, but there is frequent pulling down and rebuilding going on, and the place is a good one for the building trade.

Opening of Flushing Docks.—The opening of the new docks and harbour-works at this port has been inaugurated by the King of Holland with ceremonial on a scale creditable to the energy and public spirit of the inhabitants. The authorities did much to encourage their efforts, and by a small act in particular effected a great deal. They offered the sum of ten guilders as a reward for the most prettily decorated house, and this prize was eagerly competed for by the residents of the lanes and alleys as well as by those of the main streets. Every thoroughfare in the town was planted throughout its whole extent with fir-trees, which were linked together in a tasteful manner with evergreens, the effect being further heightened by the aid of artificial fruit and flowers, and ribands of various hues. Triumphal arches were raised at the more important points, and flags streamed gaily in every direction. The new docks are completely finished. The basins are capable of receiving the largest ships, and all sorts of accessory accommodation and appliances suitable for such a place are to be found in the neighbourhood.

Social Science Congress.—The seventeenth annual Congress of the Social Science Association will be held at Norwich on October 1st, and successive days, under the presidency of Lord Houghton. A great feature of the meeting, as we have already mentioned, will be a sanitary and educational exhibition, the object of which is to bring under notice the latest scientific appliances for the improvement of the public health and the promotion of education. Intending exhibitors should make early application for space to the secretary, Mr. James Robinson, 1 Adam-street, Adelphi. The three special subjects for discussion in the Health Section, under the chairmanship of Captain Douglas Galton, are:—1. What are the most convenient administrative areas for sanitary purposes and what are the best means of administering the sanitary laws? 2. Should there be a special diploma for medical officers of health, and, if so, how should it be granted? 3. What provisions are required in a general Building Act so as to secure necessary sanitary arrangements?

Coal-cutting Machines in the United States.—The efficiency of Brown's Monitor coal-cutter has been practically proved at the Coal-brook mines of Messrs. Niblock, Zimmerman, & Alexander, near Brazil (Indiana), where, for some time past, they have been carrying out the necessary experiments. It consists of a 5-horse-power steam-engine, worked by steam carried into the mine by means of an iron pipe, terminating in a few feet of rubber hose, which is attached to the steam-chests, and allows of the free motion of the machine. It is the intention to use compressed air in place of steam as soon as the experiments are completed. Colonel Zimmerman estimates that one machine, by being run on the "double shift"—that is, night and day—will cut 100 tons of coal in twenty-four hours. Wages amount to $11 per 100 tons of coal. As it is now, mining costs $1 per ton, and in some cases even more. The machine does not cost more than $700 to $800. It cuts away only 1¼ in. of waste each cut, thus saving 10 tons per 100. The machine now in use is the first one of the kind that has been built.

A Monument to Lord Nelson. — An interesting ceremony has taken place at Anglesey, namely, the unveiling of a colossal statue of Lord Nelson. The statue forms a leading mark for ships in the new Admiralty chart of the Menai Straits. It was modelled and executed, in two years' patient labour, by Admiral Lord Clarence Paget, and it is below his residence in Anglesea that it is placed. The material is a combination of lime-stone and Portland cement, and the figure is strengthened by the insertion of a central iron core. The primary object was to show that statues can be constructed of a material little inferior to marble in appearance, and probably more durable, at one-tenth the cost; thus carrying out a desire of Prince Albert. The statue, including plinth, is 19 ft. in height, and the pedestal and basement tower are 22 ft. high, making a total height of 41 ft. It is intended as a landmark to warn mariners of dangerous rocks on the Carnarvonshire and Anglesea side of the straits, and was dedicated by Lady Clarence Paget "To all Mariners."

Concrete and Beton.—The invention of Mr. Humphrey Chamberlain, of Round Green, Barnsley, consists essentially in the application and use to and in the manufacture of mortar, béton, and concrete, of the waste lime from gas purifiers, which has hitherto been treated as a comparatively useless refuse. He has found by experiment that this "gas-lime" produces an equally good or superior mortar to fresh lime. It is simply requisite to grind it up in the usual mortar-mill, or to mix it, as ordinary lime, with sand, ashes, and such like materials. The said refuse lime is also suitable, as a substitute for fresh lime, in making concrete or "béton," which may, or may not, as required, be moulded into bricks or blocks in any well-known manner, and in the event of a very hard substance being required, a portion of Portland cement may be used in combination with the said refuse lime.—*Mining Journal.*

Improved Kiln for Burning Bricks, Tiles' Terra-Cotta, &c. — Mr. George Smith, managing director of the Midland Brick and Terra-Cotta Company (Limited), Coalville, Leicester, has patented an improvement in kilns for burning bricks, tiles, terra-cotta, pottery, pipes, quarries, &c. The new invention, which is now in operation at Coalville, combines the advantages of an ordinary kiln for burning pottery, and the common descending kiln used for burning bricks; and to those practically acquainted with the business we need not point out the great convenience of such an arrangement. The improvement can be adapted to the kilns now in use at a very reasonable cost. Independently of effecting a very considerable saving in labour, time, and fuel, it is asserted that the arrangement will consume nearly all the smoke produced.

Neglected Property. — A correspondent wishes to draw attention to a block of property lying between the Edgware-road, Chapel-street, and Marylebone-road, which remains still in the extraordinary state of neglect under which it has suffered for many years. He says justly that a man has not a right to do what he likes with his own, if it is a nuisance to his neighbours, and the condition of the houses is injurious to those neighbours. In a populous and respectable part of London it is a public outrage for houses to be left for years in an unfinished, unrepaired, and deserted state.

Nottingham Temperance Hall.—The commencement of the erection of a Temperance Hall in Nottingham has been celebrated. The site which has been purchased for the building fronts the Derby-road and Circus-street opposite St. Barnabas's Roman Catholic Cathedral. The designs have been prepared by Mr. Fothergill Watson, architect; and the contractors are Messrs. G. Bell & Son. Only the works connected with the foundation are at present contracted for. The building (which is being erected for a limited company) will be of a rectangular form, 141 ft. long by 66 ft. wide, and will comprise, on the basement floor, lodge-rooms, ante-rooms, and a lecture-room; above which, that is to say on the next floor, will be a large hall, having two tiers of galleries, and capable of seating at least 3,000 people. There will also be on this floor a retiring-room. The building will have a stone front, full of carved work, and it will have a large central tower.

Windsor Castle.—At the west entrance of St. George's Chapel a pair of wrought-iron gates has been erected at the top of the flight of steps leading from the Horse-shoe Cloisters. As the ancient wooden doors are occasionally left open, a great portion of the interior of the nave is visible from without. The library of the dean and canons of Windsor, in the Horse-shoe Cloisters, recently erected by Messrs. Field, Poole, & Son, of Westminster, is being fitted with Spanish or wainscot oak furniture, of which material the bookshelves, panelling, and ornamental work are manufactured. The roof of the library is open, with carved oak tie-beams. The fireplace of the library, with its wrought-iron dog-irons, brass rosettes, and Mediæval tiles, is in accordance with the date of the original building, The face of the Queen's library, on the north terrace of the castle, is under repair.

Wills and Records.—The rooms and vaults at Somerset House recently vacated by the Admiralty are going to be handed over by her Majesty's Commissioners of Works to the authorities of Doctor's Commons. The spacious vaults beneath the terrace facing the river are being converted into strong rooms, for which purpose the earth and lead,—the latter of which has become defective,—have been removed from the crowns of the arches to admit of a foundation of concrete on which will be laid Claridge's patent asphalte of Seyssel to ensure the vaults being made thoroughly waterproof. It is said that the sale of the lead will more than repay the cost of the concrete and asphalte. The works are under the direction of Mr. J. Taylor, architect of the Board of Works.

A Mace for Bradford. — The Mayor of Bradford has employed Messrs. Cox & Sons, of Southampton-street, to produce a silver gilt and ebony mace, which he will present to the corporation of Bradford. It is rather over 4 ft. high, surmounted by the orb and cross, carried by a group of engraved scrolls, shields, and heraldic devices,—the boar's head, the crest of Bradford, being conspicuous; the shields are enamelled with the royal and municipal arms. Midway there is a knop, and on the foot a circlet and ferule jewelled and gilt in harmony with the upper part: the circlet bears an inscription. The staff is of ebony, polished; the orb, knop, and foot are of silver gilt, enamelled and jewelled.

Vienna Exhibition.—We are asked to mention that the Messrs. Milner obtained the medal of merit in Group 7, Vienna Exhibition, for strong holdfast and fire resisting safes, and fire resisting gunpowder magazine. Also that a medal for progress has been awarded to Messrs. Hayward, Tyler, & Co., the hydraulic engineers, for their patent "Universal" Steam Pump. This is, we are informed, the only medal awarded to direct acting steam-pumping machinery.—Messrs. Whitley, partners, have been awarded the "medal of merit," for excellence in material and workmanship, and the employment of improved machinery and tools.

Threatened Destruction of Lima by Water.—Despatches received from Lima state that a serious accident had occurred 60 miles from that city. A body of earth, estimated at 10,000,000 cubic yards, fell from a mountain side into a valley, damming up a river, the water of which had risen 109 ft. above its usual height. Engineers were of opinion that the water would soon burst its barriers, when it would rush towards Lima, sweeping everything before it, and submerging the lower portion of the city.

Pending Sale of Cyfarthfa Ironworks.—Negotiations for the sale, by Mr. Robert Crawshay, of the Cyfarthfa Ironworks, have been pending for some months. It is understood that the intending purchasers consist of a number of capitalists, who will, in all probability, retain the proprietorship of the works in their own hands; and, though forming a limited liability company for the purpose of carrying on the undertaking, will themselves subscribe the whole of the necessary capital. The price originally asked by Mr. Crawshay amounted to 1,250,000*l.* The gentlemen referred to offered a million in round figures, which was refused by the Iron King of South Wales. Ten days were given in which to decide.

Destructive Fire at Quebec.—Advices from Quebec state that on the morning of the 19th ult. a fire broke out in a cabinet manufactory employing 400 hands, and that owing to defective pipes the pressure of water was so slight that the flames could not be subdued, but spread rapidly to some adjoining buildings and lumber-yards. At noon an explosion occurred, and the scattering of the burning timber threatened at one time to cause a calamity of a very serious nature. Two schooners at the wharves were burned, and a district of ten acres was in flames at once. Towards evening, however, the fire was got under. The loss of property was estimated at $400,000, of which about one-seventh was covered by insurance.

Serious Outbreak of Typhoid Fever at Wolverhampton.—The Corporation of Wolverhampton have had a long discussion upon a serious outbreak of typhoid fever there. The medical officer reported that there had been sixty cases and four deaths. The outbreak is said to have originated in the milk supplied by one dairyman. He found it consisted of three parts milk and one part water. The water was obtained from a well connected with a dwelling-house in which typhoid fever existed. When the use of the offensive water was prohibited, the milk became pure; but the fever was spreading, till more recent advices, from which it appears to have abated.

Lewes School of Science and Art.—An effort is making to raise this establishment to its proper position, the sum now required being only about 600*l.*, private contributions already made and a grant from Government having brought in 850*l.* It is seriously intended, should the 600*l.* not be forthcoming, to sell the building as it stands, and divide the proceeds among the contributors. The Lewes School of Science and Art, it is said, has displayed great promise, and might contribute even more than at present to the successful study of that "technical education" of which it affords the foundation.

Sunderland Improved Dwellings Company.—The annual meeting of this company has been held. The directors reported that, after very considerable delay, the first block of houses, containing twenty-two tenements, was got ready for occupation at May term last; that the whole of the tenements were taken and have continued let at good rents. The revenue, after deductions for outgoings, would pay a dividend at the rate of about 6 per cent. per annum on the capital subscribed. The directors did not recommend any present division. They proposed to proceed forthwith with the second block. The report was adopted.

Cuba Mahogany.—Messrs. Barnes & Sons have just discharged a cargo of fresh Cuba mahogany, ex *Venancio*, from Cien Fuegos. It is many years since a cargo of this wood was brought into Bristol, Mr. Williams, the last importer, having retired in 1867. The wood will be sold by auction on Thursday, the 18th inst., by Messrs. Barnes & Sons, in Bristol.

New Town-hall for Dunoon.—The foundation-stone of a new town-hall for Dunoon has recently been laid, with Masonic honours, by Mr. Grieve, M.P.

TENDERS

For alterations at Little Heath, Potter's Bar, for Mr. J. F. Fulcher. Mr. C. L. Luck, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Little	£2,759 0 0
Gammon	2,672 0 0
Foster	2,358 0 0
Manley & Rogers	2,496 0 0
Dove, Bros.	2,395 0 0
Hockly	2,100 0 0
Pocock	1,985 0 0

For the erection of an oil-mill, engine-house, chimney-shaft, cottage, and boundary-walls in Church-street, Sculcoates, Hull, for Mr. J. G. W. Willows. Mr. Robert Clamp, architect:—

Bricklayer.

Marshall	£1,124 5 0
Kelsey	970 0 0
Stanley	880 0 0
Evington	859 10 3

Carpenter and Joiner.

Grassby	£747 11 2
Lison & Wilkinson	692 15 0
Habbershon	668 2 8

Mason.

Crawford & Scott	£31 10 0
Grassby	23 12 0

Ironfounder.

Young & Co.	£202 12 0
Dossor & Co.	193 17 0
Perkins	183 11 8

Plumber and Glazier.

Harrison	£50 6 6
Freeman	48 3 0
Gouldesbro'	44 10 0

Slater.

Wylde & Sons	£63 15 0
Danber & Son	61 15 0

Painter.

Stainforth	£27 0 0
Wardle	26 7 0
Wynch	19 10 0

For the first portion of the roadmaking and fencing on the Abbey Hill Building Estate, Kenilworth. Mr. E. H. Lingen Barker, architect:—

Robbins	£525 1 2
Moreton	484 0 0
Clifford	462 17 9
Palmer & Lea	407 0 0

For rebuilding Old Ivy House, Goswell-road, for City of London Brewery Company, Limited. Mr. J. Jewhurst, architect:—

Langmead & Way	£2,620 0 0
Pain	2,600 0 0
Palmer & Son	2,349 0 0
Taylor	2,187 0 0
Carter	2,170 0 0
Thompson	2,125 0 0
Ellis (accepted)	2,085 0 0

For repairs at the Black Horse, Brixton. Mr. H. J. Newton, architect.—

Hockley	£189 0 0
Brindle & Co.	182 0 0
Shurman	176 0 0
Taylor (accepted)	169 0 0

For erection of chapel-keeper's cottage in Belmont-road, Clapham, for the deacons of Grafton-square Chapel. Messrs. Goulty & Gibbins, architects:—

Elsden	£425 0 0
Lacy	359 0 0
Cobden*	315 0 0

* Accepted, subject to reduction.

For repairs and alterations at Verulam District Church, Lambeth. Messrs. Goulty & Gibbins, architects:—

Gammon & Sons (accepted)	£500 0 0

For alterations and repairs at the Catherine Wheel, Little St. James's-street, W. Mr. H. W. Budd, architect:—

Brindle & Co.	£139 0 0
Hockly	133 0 0
Taylor	129 0 0

For alterations, &c., at the Catherine Wheel, Kensington. Mr. Williams, architect:—

Hockly	£169 0 0
Marr	167 0 0
Hanley	146 0 0

For additions to Blewbury Schools. Mr. James H. Money, architect:—

Watson	£270 0 0
Pether	238 0 0
May (accepted)	205 0 0

For alterations and additions to North Heath Schools, for the Chieveley School Board. Mr. Money, architect:—

Hitchman	£178 3 0
Benham	169 10 0
Winter	150 0 0
R. & W. Harrison (accepted)	141 3 6

For alterations to house for Mrs. Hemsted, Bartholomew-street, Newbury. Mr. Money, architect:—

Boyer & Co.	£276 2 0
James (accepted)	245 14 9

For residence at Pile Hill, Newbury, for Mr. Arthur Southby, exclusive of stables and offices. Mr. James H. Money, architect:—

Adey (accepted)	£2,400 0 0

For the new church of St. Thomas of Canterbury. Mr. John Green Hall, architect.—

Lyon & Bourne	£10,174 0 0
Gaskin & Godden	9,500 0 0
Wright, Bros., & Goodchild	9,000 0 0
Cosens	8,950 0 0

For alterations at the Kenton Arms, Hackney. Messrs. Humphreys & Son, architects:—

Blackmore & Morley (accepted)	£537 0 0

For stabling (with coachman's cottage) and lodge at Hayes, Kent. Mr. Dinwiddy, architect. Quantities supplied:—

Downs & Co.	£1,637 0 0
For Vinery, Potting-house, &c.	
Downs & Co.	£394 0 0

For Woodnorton Schools, Norfolk. Mr. John B. Pearce, architect:—

Cornish	£350 0 0

For warehouses and stores, Norwich, for Mr. W. Boston, Mr. J. B. Pearce, architect:—

Rogers	£403 10 0
Wilkin	400 10 0
Taylor (accepted)	398 0 0

For Strumpshaw Schools and teacher's residence, Strumpshaw, Norfolk. Mr. J. B. Pearce, architect.—

Lacey	£1,250 0 0
Youngs	1,240 0 0
Withers (accepted)	1,180 0 0
Nelson, Bros.	1,125 10 0

For alterations and new class-room at St. Saviours Schools, Norwich. Mr. J. B. Pearce, architect:—

Bishop	£352 13 4½

For Ludham Schools and teacher's residence, Ludham, Norfolk. Mr. J. B. Pearce, architect:—

Batchelor	£1,315 0 0
Hubbard	1,165 0 0
Wright	1,138 0 0
Hawes	1,070 0 0
Withers	1,050 0 0
Brown & Bailey*	1,040 0 0

* Accepted, but carried out by Withers.

For new buildings in Chancery-lane, for the Law Courts Chambers Company (Limited). Messrs. John Giles, Gough, & Quilter, architects. Quantities by Mr. C. H. Goode:—

Bayes & Ramage	£13,304 0 0
Higgs	12,990 0 0
Thorn & Co.	12,985 0 0
Sheffield	12,879 0 0
Perry & Co.*	11,800 0 0

* Understood to be withdrawn, owing to error.

For the erection of London and South-Western Branch Bank, Circus-road, St. John's Wood. Mr. Charles Fox, architect. Quantities by Mr. H. Lovegrove:—

Tavenor	£1,919 0 0
Nutt & Co.	1,789 0 0
Bracher & Son	1,760 0 0
Burford	1,689 0 0
Scrivener & White	1,686 0 0

For rebuilding 190, 188, 186, and alterations at 18 High-street, N.W. Mr. H. H. Bridgman, architect:—

Darke (accepted).	

For cottage at Wood-green, for Mr. B. G. Barker. Mr. H. H. Bridgman, architect:—

Darke	£430 0 0

For auction-room and alterations at 76, High-street, N.W., for Mr. W. Wade. Mr. H. H. Bridgman, architect:—

Darke	£320 0 0

For the erection of new schools at Wimbledon. Mr. Jabez Bignall, architect. Quantities supplied by Mr. T. Mundy:—

Joice	£1,830 0 0
Linzell & Son	1,793 0 0
Macey	1,685 0 0
Harmer (accepted)	1,570 0 0

For the erection of St. Edmund's Church, Millwall (exclusive of foundations). Mr. Francis W. Tasker, architect. Quantities supplied by Mr. T. E. Mundy:—

	Church.	North Chapel
Linzell & Son (accepted)	£4,090	£900

For the erection of a house, for Mr. Thos. Galpin. Mr. T. E. Mundy, architect:—

Perkins	£1,395 0 0
Lewis	1,379 0 0
Linzell & Son (accepted)	1,173 0 0

TO CORRESPONDENTS.

R. R. G (at the Office for Sale of Parliamentary Papers, Great Queen-street, W.C.).—R. A. E. (send description of system alluded to).—J. B (particulars of the Alexandra Palace will be found in an earlier volume of the *Builder*).—A. R.—H. W. K.—B. & M.—Builder of Justice.—T. D.—C. H. G.—H. L.—H. H. B.—G. & Son.—L. & P. & Co.—A. G. D.—M.—J. E.—J. W.—E. C.—S. S.—T. B.—G & G.—B & Son.—M. T.—J. M. N.—J. H. M.—C. & Sons.—H. & N.—W. J. E.—J. C. T.—L. & Co.—W. L.—G & C.—C. R. F.—P. & R.—S J H.—J. B P.—G. B (next week).—J. C (next week).

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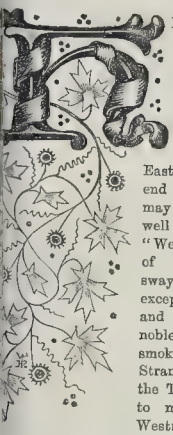
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The Builder.

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nething about St. George's, Hanover-square.



HITHERTO the nations of the world, in their gradual growth, have followed the precedent set them by the sun. History commenced in the East, and will probably end in the West, and it may be said of cities, as well as of countries, that "Westward the course of empire holds its sway." London is no exception to this rule, and the prelates and nobles who fled from the smoke of the City to the Strand and the banks of the Thames, went forth to meet the city of Westminster, which at same time was gradually enlarging her ndaries. By King Edgar's charter, of the 951, the western boundary of Westminster that little River Eye, which, after giving its e to Tyburn (afterwards Mary-le-bourne, or ylebone), passed by New Bond-street through Green Park, by Buckingham House to the nes, near Vauxhall Bridge, and is now, like e other London streams, a miserable sewer. he west of the boundary was the manor of which, in Domesday Book, is described as aining ten hides of land. This manor was ded on the west by another small stream, the Westbourn, on the north by the road Oxford-street), and on the south by the nes. Soon after the date of the Domesday it was divided into the three manors of p, Neyte, and Eybery, the names of two of h remain, in Hyde Park and Ebury-street, ico. In course of time these manors included in Westminster, and thereby great metropolis was enlarged. Maitland, ng nearly 150 years ago, in speaking London, says,—"This ancient city has lphed one city, one borough, and forty- villages,—namely, the city of West- ter, the borough of Southwark, and the ges of Mora, Finsbury, Wenlaxbarn, Clerk- ll, Islington, Hoxton, Shoreditch, Homer- Norton-folgate, the Spital, Whitechapel, end New-town, Mile-end Old-town, Stepney, ar, Limehouse, Ratcliff, Shadwell, Wapping ney, East Smithfield, the Hermitage, St. Ca- ne's, the Minories, St. Clement Dane's, the id, Charing, St. James's, Knightsbridge, St. Giles's-in-the-fields, Bloomsbury, Port- Saffron-hill, Holborn, Vauxhall, Lambeth, beth-marsh, Kensington, Newington-butts, ondsey, the Grange, Horselydown, and Ro- ithe." Were Maitland living now, he would been able to make large additions to his In the year 1222 the parish of St. Mar- constituted the whole of Westminster; very few years afterwards a large portion bstracted to form the parish of St. Martin- -fields, which, for four or five centuries led nearly all the west of London. The h of St. Paul, Covent-garden, was carved f St. Martin's in 1645; that of St. Anne, in 1678; and that of St. James in 1685; but it was not until 1725, when the parish of St. George, Hanover-square, was constituted, that the extreme west was taken away from the parish of St. Martin.

In 1710 the crying want of church accommodation in London was recognised, and an Act of Parliament was passed, ordering that "fifty new churches should be erected in or near the populous cities of London and Westminster, or suburbs thereof." To meet the expenditure, a duty of two shillings was laid upon every chaldron or ton of coals brought into the port of London. The Church of St. George was built by the commissioners appointed under this Act of Queen Anne, upon ground given by Lieut.-general Stewart, and the ceremony of laying the first stone was performed on Tuesday, June 20, 1712, by General Stewart, assisted by the clergy and a large number of persons of distinction. After the stone had been placed in the east wall, the general struck it several times, and making a libation of wine, pronounced the words, "The Lord God of Heaven preserve the Church of St. George." Nearly twelve years after (on the 23rd of March, 1724), the church was consecrated, and in the following year the vestry, in gratitude for General Stewart's generosity, desired him to choose any pew in the front of the gallery, and two pews behind it, so that they might give them to him for his use.

The architect was John James, and the church is a rather handsome specimen of a style of ecclesiastical architecture now out of favour. The window over the altar is a fine specimen of old sixteenth-century glass, representing the Tree of Jesse, which was given to the church at its first building. It has since been rearranged and altered in form.

The present rector (Rev. Henry Howarth) is the fifth since the consecration, and was presented to the living in 1845. His predecessors were the Rev. Andrew Trebeck, D.D. (1725); the Rev. Charles Moss, D.D. (1759), who was consecrated Bishop of St. David's in 1766, and translated to the see of Bath and Wells in 1774; the Rev. H. Reginald Courtenay, D.D. (1774), who was successively Bishop of Bristol and of Exeter; and the Rev. Robert Hodgson, D.D. (1803). The two first churchwardens were Lord Carpenter and General the Right Hon. William Stewart, and during the period from 1725 to 1870 the office of churchwarden has been held by sixty-seven noblemen, besides baronets, members of the Privy Council, &c. The list is a remarkable one, and many historical names may be found in it. Lord Carpenter was one of the first inhabitants of Hanover-square; and General Stewart, besides giving the ground upon which the church was built, bequeathed the sum of 4,000*l.* towards erecting and endowing a charity school in the parish.

It is impossible to mention St. George's, Hanover-square, without calling up the recollection of many fashionable marriages. From the first foundation of the church to the present time it has been recognised as the chief temple of Hymen in this great city; but perhaps its palmiest days were in the first quarter of the present century, when between 1,100 and 1,200 couples were married in a year. Some years ago it was difficult to get a sitting in the church, which was filled with the *crème de la crème* of society, and every official connected, even in a humble way, with so distinguished a place was a person to be looked up to, because he had the keys of a "fashionable heaven." That glory has passed away now, for fashion has swept on further west, and the Church of St. George has to be contented with a more commonplace congregation. In spite of all this, however, the church still keeps up its pre-eminent character as *the* place for weddings. Although habits have changed of late, and a greater number of the nobility and gentry are married at home, in their little country churches, yet candidates for matrimony come from all parts to obtain some of that odour of aristocracy which is supposed to cling around the church, and novelists continue to consider it as the goal up to which all the troubles of their heroes and heroines (through three volumes) should ultimately lead.

The registers kept in the vestry form quite a library of thick folios, the entries in which are made with great care and fulness, and are written on vellum with admirable neatness. Here may be found the names of a large number of distinguished persons, and in turning over the leaves many a romance and many a sad page in domestic history are brought back to remembrance. In reading down the entries we feel as if we had suddenly stepped into very high society, for although the names of the undistinguished are naturally the most numerous, yet dukes and earls are as plenty as blackberries! Not only are many of the entries of considerable interest, but among the signatures of the witnesses are to be found the names of some of the greatest in the land. The "Iron Duke" was in universal request as giver away of the bride at these grand weddings, and his characteristic signature "Wellington," with the bold cross to the *t*, frequently attracts our eye as we rapidly glance over the registers.

We have noted above that the Rev. Dr. Courtenay was appointed to the rectory in 1774, but before his appointment a better-known man had tried to obtain it by means which got him into great trouble. The notorious Dr. Dodd addressed an anonymous letter to the wife of Lord Chancellor Apsley, offering 3,000 guineas if by her assistance he was appointed to the rectory. On its being discovered that he wrote the letter he was dismissed with disgrace from his office of chaplain to George III., and Foote and the newspapers poured out ridicule and invective upon him, so that he was forced to retire to the Continent for a time.

We will now pass from the church to the square, which was commenced about the year 1718. At this time George I. had not long been upon the throne, and the house of Hanover was in an early stage of its popularity, so that this square, which, when it was first planned was to be called Oxford-square, was named instead Hanover-square, and the church was dedicated in honour of the king to St. George the Martyr. The building of the square was commenced just at the time of the financial panic caused by the bursting of the "bubbles," and in consequence did not at first go on very rapidly, so that we find the place mentioned in 1719 as Hanover-square-street. Strype published his edition of "Stow's Survey" about the time when these houses were being built, and he refers to them in the following passage:—"Among these suburban territories on this side, in the way towards Tyburn, there are certain new and splendid buildings, called, in honour of his present Majesty, Hanover-square, some finished and some erecting, consisting of many compleat and noble houses; one whereof is taking by my Lord Cowper, late Lord High Chancellor of England. And it is reported that the common place of execution of malefactors at Tyburn shall be appointed elsewhere, as somewhere near Kingsland; for the removing any inconveniences or annoyances that might thereby be occasioned to that square or the houses thereabouts." We have before us two very fine views of the square, one dated 1755, and the other 1787. In the first engraving, the centre is shown with a wooden railing round it, but open, and with paths across from each corner, so that any one could walk in it. In the second, the centre is laid out as a grass-plot, and enclosed with railings, but there are no trees or shrubs. Squares, as we understand them, or enclosed gardens, seem to have sprung up in London about 150 years ago, and they are essentially of English growth. Other cities have their

empty open spaces, but the squares of Paris are an importation from England. The Piazza, Covent-garden, when first laid out, and long before the present market was built, was an imitation of the foreign *place*, or piazza, and some of the other London squares were originally like it, till they became the dust-heaps of their respective neighbourhoods. The wretched condition of the centre of St. James's-square was for years a crying evil, until in 1727 the centre was railed in and beautified by the inhabitants. In an edition of Ralph's "Critical Review of the Public Buildings, Statues, and Ornements in and about London and Westminster," published in 1783, it is remarked that "All the squares in London at present have their areas inclosed by neat iron railing. We cannot, therefore, mention this circumstance as a matter of merit in Cavendish-square, though a few years ago it might have been noticed as such." The exclusiveness of the dwellers in the squares is often remarked upon, but it is not clear that it does harm to any one, for the public gain the advantage of a pleasant place to look at, and have little cause to regret not being allowed to walk in it. Government will not beautify a public place (witness Trafalgar-square) and if the inhabitants subscribe together for the purpose of keeping their squares in order they would seem to have a right to keep them to themselves when they have succeeded in making them what they wish.

Soon after the square was built a proposal was made to bring the water of the river Colne to it and the western parts of London. A statement of this proposal exists in manuscript in the library of the British Museum, from which we learn that "the inventor, by observation and levelling, having found that the river Colne, at St. Alban's, lay as high as the top of the cupola of St. Paul's Church, has formed a design to bring a river from thence and to refurnish that river with springs and small streams from other rivers in Hertfordshire." For this end he obtained subscription of partners, about 1719, and procured a Bill to be brought into Parliament; but he was opposed by the New River Company, who stirred up the millers to make a clamour, and in consequence the Bill was dropped. The inventor was not to be daunted, and purchased some springs "to avoid the millers," which he stated to be so strong that they would yield as much water as the New River, and, as to height, would deliver water 10 ft. higher than Cavendish-square. In the new scheme, the inventor states that "no doubt the New River Company will raise all the clamour they can, because that company would have no water but their own brought to town"; but, on the other side, he expected "the Middlesex gentlemen and freeholders to petition, because it will improve their land."

The consideration of the rise and decay of the different districts of a large city is an interesting study. Some streets and squares sink utterly, and the houses, once inhabited by wealth and fashion, become the home of squalid poverty; others remain highly respectable, but fall from fashion to trade. A hotel first obtrudes itself, then a quiet shop, and then the great leave it for ever. This has been the case with Hanover-square. The inhabitants in 1720 were Lord Carpenter, Sir Theodore Jansen, Lord Hillsborough, Duke of Montrose, Lord Dunmore, Colonel Fane, Mr. Sheldon, Earl of Coventry, Lord Brook, General Stewart, Duke of Roxburgh, and General Evans. In 1873 an earl and a dowager countess only remain, and the other inhabitants are music-sellers, dressmakers, tailors, and dentists. Besides the noblemen mentioned above as the first inhabitants of the square, we can add four more who have left behind them distinguished names. One of these was George Granville, Lord Lansdowne, called by Pope "Granville the Polite," a pleasing versifier, who has been enrolled by the booksellers among the British poets. He died here on January 30th, 1734-5. Sir Richard Temple, Lord Cobham, to whom Pope addressed the first epistle of his Moral Essays, had a house here. The poet, after referring to the last words of several persons, ends with the following lines of praise:—

> "And you, brave Cobham! to the latest breath
> Shall feel your ruling passion strong in death;
> Such in those moments, as in all the past,
> 'O save my country, Heaven!' shall be your last."

George, Lord Anson, the great circumnavigator of the globe, had a house in the square. He lost large sums in gaming, and it is said that the sharpers in Bath robbed him of his prize from the Spanish galleons, on which occasion it was remarked that "Lord Anson had been *round* the world and *over* the world, but never *in* the world." The brilliant George, Lord Rodney died at his house in the square in 1792, ten years after his famous victory over the French Admiral De Grasse. Horace Walpole notes in his MS. additions to Pennant's "London," that "Count Kinski, the Imperial Ambassador, resided at the north-east corner" of the square, and that "with him lodged, while in England, the Duke of Lorraine, afterwards Emperor by the name of Francis." Ambrose Phillips, the pastoral writer, whom Pope ironically praised for his "eminence in the infantile style," died here in 1749. Another inhabitant nearly died in the square in a peculiarly unpleasant manner, for he narrowly escaped being shot by one of his aristocratic neighbours. The celebrated Mrs. Montagu relates the following curious anecdote of the Duke of Hamilton's passion for shooting. "He has exercised himself with shooting across Hanover-square out of a wind-gun, to the utter dismay of old Lady Westmoreland and Sir Thomas Fredericks. A bullet whistled by the ear of the latter as he sat in his dining-room, and lodged in the wainscot; two more penetrated into other parts. Surprised at so dangerous an incident, he ran to the window, and there saw the duke, his *vis-à-vis*, at *his* window, with a gun in his hand. He immediately sallied forth to give his grace a deserved chiding, but during the time, the duke, having had leisure to charge again, shot dead a favourite dog which bore Sir Thomas company."*

The houses are mostly built plainly, with red brick; but there was some little attempt at an architectural effect according to the taste of the day. In Lambert's "History of London" (1806) it is observed that "the houses, which are built in the modern taste, make an elegant appearance, and are inhabited by persons of the first distinction. The house in the south-west corner is considered the best piece of brickwork in the metropolis." Ralph mentions the west side as the only one deserving any attention. Harewood House, on the north side, at the corner of Harewood-place, with its stables reaching to Oxford-street, still makes a noble appearance, as one of the old-fashioned residences that are fast passing away. The square has among its present occupants, besides tradesmen, two of the most successful London societies, two clubs, a hospital, and a well-known concert-room. The Royal Agricultural Society was instituted in 1838 as the English Agricultural Society, and incorporated in 1840 by its present name. During the thirty years and upwards that the society has been in existence, it has done an immense amount of work, and grown to be a power in the country. The Zoological Society was started in 1826, "for the advancement of zoology, and the introduction, exhibition, and acclimatisation of the subjects of the animal kingdom." The society opened their gardens in the Regent's Park two years afterwards, and in 1849 added a collection of reptiles to the existing collection of mammals and birds. More recently fish and the lower aquatic animals have been added. The Oriental Club, at the corner of Tenterden-street, was founded in 1824 by Sir John Malcolm, and is composed of noblemen and gentlemen who have travelled or been connected with the East and our Indian possessions. The rooms of the club are ornamented with portraits of Lord Clive, the Hon. Mountstuart Elphinstone, Sir Eyre Coote, the Duke of Wellington, and other celebrities. The Queen's Concert Rooms, more generally known as the Hanover-square Rooms, were built by Sir John Gallini, formerly one of the managers of the Italian Opera at the King's Theatre in the Haymarket, and they still keep up their ancient repute as the chief home of chamber music in spite of many rivals for public favour.† The bronze statue of Pitt, by Sir Francis Chantrey, was set up in its present position at the south end of the square in the year 1831, and cost 7,000*l*.

St. George's parish is so large that we could not describe it all within any reasonable limits; but, in conclusion, we will journey "all round the square," and take note of the streets leading out of it. Brook-street takes its name from the Tyburn brook. It is now chiefly inhabited by physicians and surgeons, and is further remarkable as containing the aristocratic hotel formerly called Mivart's and now Claridge's, where it has been said no one under a crowned head could obtain accommodation. When the Khedive of Egypt visited England he was to have stayed here if the Earl of Dudley had not stepped in and offered him the use of his mansion in Park-lane. Mr. Harry Emanuel, the diamond merchant and jeweller, built a house a few years ago on the north side of the street, a few doors from the square, in a very ornate and over-done style of architecture, and with a specially elaborate roof to the back part. Mr. Emanuel shortly afterwards left the house, and it is now inhabited by Messrs. Hart, the well-known Mediæval iron workers. Handel lived for a time in a house on the south side, a few doors from Bond-street. Gerard Vandergucht, the engraver, had a house in this street, where he sold pictures, and where he died on March 18th, 1776, aged 80. The great room at the back of his house was afterwards let to the Society of Painters in Water Colours, and their first exhibition of drawings was opened here April 22nd, 1805.

Tenterden-street is short, and of little importance, but it contains the Royal Academy of Music, an institution founded by the Earl of Westmoreland in 1822. Bochsa, the composer and harpist, who was musical director at the King's Theatre before Costa took the bâton, was the first organizer and director of the Academy. The present principal is Sir Sterndale Bennett.

Harewood-place, which takes its name from the Earl of Harewood's mansion, is remarkable for containing but one house, No. 1, and that is inhabited by the famous surgeon and much esteemed man, Sir James Paget, bart. The two corner houses, although their doors are in this place, belong to Hanover-square. The two streets leading into Regent-street, viz., Hanover-street and Princes-street, have little to distinguish them, except that they contain the shops of several well-known tradesmen. We now return to George-street, which has a peculiarity in its construction that was noticed by Ralph in his *Critical Review* as follows:—"There is something particular in the manner of George-street which deserves our attention; it being laid out so considerably wider at the upper end towards Hanover-square that it quite reverses the perspective, and shows the end of the vista broader than the beginning, which was calculated to give a noble view of the square itself at the entrance and a better prospect down the street from the other side. Both ways the effect answers the intention." In another place Ralph praises the view from Oxford-street, and says, "in the prospect the sides of the square, the area in the middle, the breaks of the buildings that form the entrance of the vista, the vista itself, but above all the beautiful projection of the portico of St. George's Church, are all circumstances that unite in beauty and make the scene perfect. If anything is wanting, it is a graced building at the end of the vista." The side view of the portico of the church is certainly effective, but the street is not wide enough for the spectator to obtain a front view, and it must always be a source of regret that the tortuosities of Maddox and Grosvenor streets have prevented an opening being made that would allow St. George's Church to end the vista from Grosvenor-square. We have a few celebrated persons to mention as inhabitants of George-street. Lady Mary Wortley Montagu died August 21st, 1762, aged 73, in a house which she described as consisting of "two very decent closets and a cupboard on each floor." Lord Chancellor Cowper died at his house on the west side (No. 13), in 1723. This house was lately occupied by the well-known James Silk Buckingham's British and Foreign Institute. An uncle of Thomas Pennant, the historian of London, had a house here, and the nephew often lodged with him. Thomas Phillips, R.A., the portrait-painter, lived for many years at No. 8, and died there on April 20, 1845. A large number of celebrities have sat in his studio, when their features were about to be transmitted to canvas, and two of these were Lord Byron and Thomas Campbell. Herbert Mayo, the well-known surgeon, lived at No. 19, in 1829, as did another eminent surgeon, Henry Earle, at No. 28. No. 25 was for a long period the residence of the painter, John Singleton Copley, and of his more celebrated son, Sir John Copley, solicitor and attorney general, and afterwards Lord Chancellor Lyndhurst. Soon after the death of the venerable lord, the house was handsomely rebuilt with stone. George-street has been a favourite resort of physicians and surgeons, and it still keeps up that character, for several medical men of the highest eminence are at present resi-

* Doran's "Lady of the Last Century," p. 237.

† The premises, at present unlet, at the opposite corner of Hanover-street, afford such extensive accommodation as would seem to fit them for a large club or other exceptional important occupation.

nts in it. At the corner of George and Conuit streets, is Limmer's, the well-known hotel, hose fame is world-wide. We will just step to Conduit-street, in order to mention that the story connected with this street principally ntres in the chapel, and in two taverns. rinity Chapel had its origin in a timber travelng church, which James II. had conveyed out with him in order that mass might be perrmed wherever he was. For a time it was on nnslow Heath, but after the Revolution, it as removed to the top of Old Bond-street. In 91 it was rebuilt, at the instance of Archbishop Tenison, then vicar of St. Martin's-in-thelds. The Prince of Wales Tavern was formerly e resort of literary men, and in 1772 David Wilms suggested here a fund for the relief of erary men, which afterwards grew into the yal Literary Fund; and at the Coach and rses, John Thurtell, the murderer of Weare, s taken prisoner. No. 9 belongs to a limited mpany of architects, who bought it for the rpose of providing meeting-places for various chitectural and artistic bodies now located re.

In this street, too (No. 59), is the residence of . Henry Leslie, whose Choir and Concerts ve become an established and esteemed instition, and to whom London is indebted for ch wholesome pleasure.

We must here conclude our present notices of arish which, previous to the death of Dean dgson, in 1841, when it was divided, was of at extent, and most unwieldy proportions.

THE LEEDS PARK COMPETITION.

PROBABLY few large commercial towns, of average type, possess greater natural advanes for the realisation of picturesque pleasureunds and residences in their immediate irons than are to be found at Leeds. Nor he picturesque element, or the possibility of ntirely wanting in the town itself. On the trary, the rise and fall of the ground, and winding lines of the old thoroughfares ich have been mostly followed in the more dern rebuilding of the streets) furnish, ready le, a good deal of the necessary conditions a picturesque town; and Briggate, the long e street rising in a tolerably steep incline in centre of the town, still retains some of the rmality of the earlier period, and presents arked contrast to the frigid squareness and ess of the neighbourhood immediately adja- to the railway station, the character of which ot inaptly responded to in the town-hall, with classical and somewhat inexpressive symry. It is in the ordinary street buildings Leeds is deficient in interest; though we glad to observe works in progress in the gate that seem to promise a step in the t direction, which, it is to be hoped, will be ued; for there is here the opportunity for ing, in time, one of the most effective town ts in England.

ne of the finest public parks in England, ever, is already almost ready made, about e miles to the north of the town, as far as important elements of natural scenery and ation are concerned. The Roundhay estate, ill be remembered, was purchased by the oration of Leeds, and formally opened as a ic park by Prince Arthur, exactly a year o (19th September, 1872). On the 31st of ch last the corporation advertised for plans, n "architects and landscape gardeners," for laying out of the estate in a more suitable ner for the purposes for which it was pured, by making new roads, enlarging or ing old ones, placing in the park suitable dings for refreshment, &c., and for rest for ors; and by indicating the best way for sing a large proportion of the land as sites illa residences. Three premiums of 200, and 50 guineas offered for the best plans brought into the field seventeen competi- whose drawings, mostly of considerable oration, have been open to public inspection ng this week at the town-hall.

ne materials to be dealt with consist of 764 s of land, 38 acres occupied by water in two s, a long one ("Waterloo" lake), running n and south, near the east side of the estate, a smaller lake to the north-west of this, and ected with it by a stream or canal; an lian" mansion (which it is proposed to con- into a hotel), near the western boundary, a canal garden attached to it (*i.e.*, a garden a long pond); a large extent of open ground, mostly with a gentle slope towards Waterloo lake, occupying the south-western portion; a considerable amount of wood skirting the lakes and open ground to east and north; natural ravines near the head of the lake, or between the two lakes, over which bridges can be made; and last, but not least, a ruined castle of modern erection, and well covered with real ivy, which it is proposed to preserve. The instructions to competitors include provision for two cricket-grounds, for a floating swimming-bath in the large lake, a police station, and "suitable buildings" generally, such as would be supposed to conduce to the comfort of a park. The park is to be entered from the south-west corner (nearest to the town), where lodges and gates were to be provided. The term "suitable buildings" has of course been read rather largely by some competitors; but the nature both of the site and of the instructions leads to the inference that here is an opportunity for trying something in the way of picturesque artificial treatment. Now, however, it appears from what we could gather, that the authorities lean towards a repudiation of all these picturesque tendencies in the way of accessory objects, and are disposed to adjudicate on the consideration, which plan offers the highest return in rentals of villas. It was hardly worth while, for this purpose only, to have invited elaborate plans from architects, or even from Mr. Ayrton's friends, the "gardeners"; but corporations have that way with them. While looking at the plans, therefore, not without a view to these considerations, let us at the same time express a hope that a beautiful estate will not be spoiled by cupidity, resulting in over-building, or in buildings of an inferior type.

The plans submitted by Mr. Adkinson, of Bridge-road, Battersea (we take them as they are placed, in alphabetical order, or nearly so), have apparently been devised in a great degree with special regard to the number of houses to be got on the ground. The competitors being restricted from building on the open space forming the centre of the more southern portion of the estate, and which, as observed, is flanked by wood and water on the north and east, the building land consists mainly of a belt outside this, which extends on the north and east sides to a pretty wide area. A triangular extent of land to the south-west of the open, next to the main entrance, is also available for building, and is variously utilised by different competitors, either for villas or in laying out an impressive and beautiful entrance to the estate; which latter seems to us by far the most sensible use to make of this portion. The houses in this plan are shown extended all round the outskirts of the estate, not in separate villas but in close terraces or semi-detached houses, with very small lots of land allotted to them. In short, the building lots are a "squeeze"; and no doubt this would be a remunerative plan (if all the plots were let), but certainly not one to be recommended, unless on the "penny wise and pound foolish" principle. The best class of houses or of tenants could scarcely be secured in this way, and the ground would be built up disproportionately. The architectural (?) details accompanying this plan are beneath criticism; the entrance-gates are a sort of "gardener's Italian," and the clock-tower (a feature proffered by several candidates) seems a cross between an old-fashioned kitchen clock-case and an engineer's water-tower. Estimated outlay on this plan, 78,781*l.*

The plans of Mr. T. H. Clarke, architect, of Putney (marked B, each set of plans being distinguished by a letter), give a larger amount of grounds per house in laying out the building land, which is almost entirely for detached villas; this being the method proposed, in fact, by nearly all the competitors. The estate is nearly surrounded by two drives, one at some distance within the other: the instructions direct two such drives, one within and one without the park boundary, except at one point, where they are to converge into a wide public road; but the competitors differ much in their method of rendering the instruction on this point, some placing the drives in close contiguity, others at some distance. We should prefer the latter arrangement. There is nothing to call for special remark in this plan. The architectural details are indifferent. Estimated outlay, 53,670*l.*

C.—Messrs. Coleman & Pountney, Bristol, have a more distinct scheme for the apportioning of the building land than most of the competitors. They concentrate the house property on two comparatively limited areas to south-west and north-east of the estate; the former portion (nearest to the principal entrance from the town) being laid out in terraces, with gardens and a central crescent, for the better class of houses; the latter in more closely-planted terraces of smaller houses. The advantages of this scheme are that it leaves a great quantity of open land entirely undisturbed by building or inclosure, and distinctly divides one class of dwellings from another; which is considered an object by many of those who rent the best houses in such situations, however questionable a social trait this may be. The closer contiguity of one's neighbours may or may not be considered a gain. The drawback to this scheme is of course the small amount of ground attaching to each house; the private gardens are sacrificed to the public park. It also seems questionable whether, as a matter of remunerative building, the smaller class of dwellings should not have been the nearer to the town and to a line of omnibuses, &c., the occupants of such houses being dependent on public conveyances mostly. This question of access makes an immense difference in the letting of middle-class houses. This plan, however, evinces and deserves consideration. There is not much attempt at effect in the laying out of the grounds. The architectural details, the police-station, &c., are well drawn and of fair average merit; the clock-tower proposed to be placed to the west of the lake would scarcely repay the outlay, as to appearance. A clock-tower, however, might unquestionably be a very useful as well as ornamental object in a public park. Estimated outlay, 76,000*l.*

D.—Mr. Corson, of Leeds, the author of this plan, has evidently gone in to win, and is to be complimented, at least on the fine and elaborate set of drawings he has got up. He divides all the outlying land, beyond the centre belt of wood and water, into villa residences with large plots of ground. A very large proportion of the land is thus occupied, though the number of houses put on it is not very large. The rents would have to be high in this case to furnish an equal return with some of the other plans. The open space west of the lake is divided into cricket, football, and archery grounds. The triangular portion running down towards the main entrance is reserved for effect, a circular arboretum being placed here, with a fountain in the centre. A straight boulevard extends from this down to the entrance and up to the cricket-fields, &c. Perhaps the uninterrupted boulevard would have been better here: artificial effects like these are more properly reserved for the further portions of the ground than placed in the line of the main entrance. A number of sketches of various buildings are given, mostly of the "picturesque" order, of which the boat-houses are the best. The main entrance, however, is completely at variance with these in style, in a mixture of French and Italian Renaissance. Triple arches are divided by lodges, the same cornice and balustrading carried through, and the lodges marked only by Mansard roofs rising above. There ought to be a dignified entrance to such a park, and the idea of this entrance is good, but we cannot admire the way it is carried out here. The estimated outlay of this plan is 84,600*l.*

E.—by Mr. Goddard, of Edgware, and Messrs. Stewart & Robinson, of London. In this plan the outlying land is divided for villas, the land being laid out in nearly symmetrical portions, divided by straight roads,—a treatment which is advantageous in avoiding awkward and unavailable angles in the various sites. The building sites are sufficiently utilised without being crowded. The entrance consists of simple iron gates and piers, scarcely important enough in appearance. The indication here is of Gothic treatment; but in the numerous drawings of villas, bridges, &c., every style seems to be resorted to by turns. The absence of all idea of unity of architectural treatment in such a case is very marked in most of the plans; a park seems to be regarded as a natural museum of architectural styles. The architectural drawings are all good, but as designs they have no particular merit. Estimated outlay on the plan, 76,500*l.*

F.—by Mr. A. G. Hennell, London,—is a beautifully got-up set of drawings, but does not after all contain very much that is noticeable in itself. The villa system is adhered to in laying out the building land, in this case with entire and almost studied irregularity. The houses and lots are

large, and in the arrangement of this part of the plan rather resembles Mr. Corson's, before mentioned. The entrance is a simple gate and piers; the lodges and other small buildings are got up in stone and timber in a uniform and pleasing style. The author volunteers designs for residences, one of which is picturesque; but of course these are "not in the bond." The best point in the laying out of the park is the arrangement of the cricket-grounds, which form two large ovals immediately contiguous, between which a long "two-decked" open pavilion is provided, giving a view of either ground; the club offices are placed in the centre. Some of the competitors have separated the required two cricket-grounds, but they are much better concentrated. The outlay on this plan is given at 86,077*l.*

G,—by Messrs. Hornblower & Son, Liverpool. In this plan the building-land is laid out for villas, much as in several other plans, except that less use is made of the available land towards the southern part of the estate, which is retained rather for effect, a straight drive running from the entrance right up to a large fountain which forms the centre of the "recreation ground,"—the latter a circle of about 2,000 ft. diameter, surrounded by a drive. This would be effective without involving any great outlay. The entrance, a large Roman arched gateway, forcibly reminds us of another provincial park entrance we remember to have seen, and which was scarcely worth imitating. The drawings of the architectural accessories are very good, but not remarkable as to design. The fountain proposed to be placed in one part of the grounds is good as to idea, but somewhat common-place in detail, and the large stone bridge, of which a careful drawing is given, looks lamentably like engineers' architecture. It is singular how little the possibilities of a bridge, as an opportunity for picturesque architectural treatment, seem to be realised in these cases. There are many bridges, some of them very carefully and elaborately drawn, among the plans in this competition; but we did not notice one which could be considered to be really an ornament to the landscape, or any addition to what may be called the æsthetics of bridge-building. The estimated outlay on this plan is 164,953*l.*

H, by Mr. W. Milne, Belfast, presents little for comment. The general laying out of the building land is much as in the last-named plans, but somewhat more formal. The getting up of the plans is somewhat crude, and the architectural designs are *nil*. Estimated outlay, 56,889*l.*

The plan J,—by Mr. E. Milner, of Norwood,—covers nearly all the available building land with villas, tolerably closely set, though not with the minimum of land to each which some of the plans show. The main entrance opens on a straight avenue leading up to the cricket-ground and pavilion. In other respects effect is not sought so much by the arrangement of the roads or drives, as by the treatment of certain parts of the site as gardens, &c.;—a terraced garden near the "castle," a rock garden elsewhere in an old quarry. The villa gardens are shown as partly planted with trees; but they are too close to each other for that to be very advisable. The principal entrance-gate is ornamentally treated in a somewhat common Renaissance manner; the cricket pavilion is very passable; the garden pavilion an ordinary specimen of the conservatory "classic" style; the other adjuncts, band pavilion, &c., partake of the tea-garden manner. The floating swimming-bath is well treated and arranged. There is a Gothic stone bridge carrying one of the roads over a ravine; at least, it has pointed arches, and is so far Gothic. But in the main this is a gardener's plan, and it would probably be a success chiefly in regard to the method of dealing with the ornamental gardening. The estimate is 143,880*l.*

K,—by Messrs. Pearse & Rake, Sefton Park, Liverpool,—occupies rather less than the average space in building land; there is no attempt at any definite system of arranging the houses, which are merely scattered about irregularly, the only point being the provision of a semicircular crescent terrace towards the north-east, facing south-west. The architectural details, though unpretending, have been drawn by a good hand, and show better taste and more suitability of treatment than in most cases; the entrance-gates, though in a manner which we do not altogether admire, are exceedingly well treated; they have, perhaps, more the appearance of a private than a public park entrance. The entrance to a public park should not appear so much confined to one gate, so easily capable of being closed, in other words, as a private one. In this respect the best idea for an entrance is that of Mr. Corson's, before referred to, though it is capable of being made much more of than as shown in his drawing. The estimate for this plan is 148,933*l.*

L,—by Mr. J. W. Peggs, and Messrs. Usill & Willcocks, of Westminster,—is a plan on which much trouble has been expended, and is one of the few which shows a definite motive in the arrangement of the building land. This is nearly the reverse of that shown in plan C. The authors concentrate the residences on two sites, one at the north-east of the park, for the best class of houses, which are comparatively detached; the other occupying the lower part of the western portion, to the left of the main entrance drive, where the smaller class of residences are arranged in four rows running nearly north and south. This, we imagine, will be found a more workable plan than the reverse arrangement in plan C, as it places the two classes of residences more suitably. The close arrangement of the residences in a kind of village may be a source of economy in regard to sewerage, road-making, and so on. The question between this and the extended placing of residences is, as we before hinted, one between pleasing the public who are to visit the park, or those who are to live in it. By the concentrated arrangement, the residences are, practically, thrown out of the park, and become an institution apart. The feeling of a good many people would be, perhaps, that it was scarcely worth while to go so far out of town to live in a street or a square, or to form one in a row of houses, instead of having your own land all round you. For land which is to be sold for the owner's occupation, in fact, the concentration system would be a fatal arrangement; that which is to be rented, or sold to the speculating builder for subletting, may answer better in this way; but it depends very much on the social and business habits of the neighbourhood. The plan under consideration shows a number of architectural adjuncts; three bridges, two of stone, Gothic, solidly but not artistically treated; a suspension-bridge of iron, which would have a good effect but for the bad design of the piers. Some of the half-timbered erections are better; a banqueting-hall is provided, to be available also for indoor band performances, &c. The entrance-gates are well meant, with two large pointed arches, and a corbelled-out gate-tower between; but the whole is somewhat too flighty in style, and the arches are deficient, to the eye at least, in abutment. The gate-tower, however, is not a bad idea for an entrance of this type, as marking the spot from a distance. Total estimated outlay, 113,146*l.*

M,—by Messrs. Perkin & Son, of Leeds,—is an admirably got-up set of drawings; but in an evident desire to make the most of the land, the authors have rather overshot the mark, and cut up the estate too much. Besides occupying the whole of the ground to the north-east, chiefly destined for building, to its utmost extent, they have cut out also from the western portion of the estate

> "A huge half-moon, a monstrous cantle out,"

to be applied for the same purpose, as well as part of the south-eastern portion. The open part is thus considerably reduced, and that again is divided out symmetrically by straight parallel boundaries, into garden, football, cricket, and archery grounds, and a circular botanical garden, a maze (that old-fashioned source of garden amusement), a prospect tower, a camera obscura, and other such toys are dotted about; but in the meantime the park proper, the open ground, has all been cut up, expensively, and with questionable advantage, for the sake of these things. The residences are laid out with a certain order and symmetry, in blocks of larger and smaller dwellings; but there seem to be too many on the land, and some of the lots and the houses are undesirably small. There are a number of elaborate drawings of architectural objects, well drawn, but presenting very little merit in design. The best thing of this class is the arrangement of the pavilions and terrace beneath the mansion (the proposed hotel), which stands on a bank high above them. There is a good water-colour drawing of a very poor elliptical stone bridge below a cascade. The entrance-gate is poorly designed. The estimate for many parts of the work is ridiculously below what is possible; the total outlay is stated at 94,239*l.*

N,—by Mr. T. Shelmerdine, of Liverpool,—is a plan in which a distinct system is followed in the laying out of the building land, and in this respect it appears to us to be the best, as combining utility with effect. The residences are arranged as separate villas, in a single belt running all round the outside of the estate except at the south-east portion, and sweeping (also in a single row) round the cricket and parade ground, which occupy the south-western portion of the estate. The houses are, perhaps a little too close, and the frontage of the sites too narrow in some parts, but there is no crowding, and the extended line of residences with its broad road round the park, gives a great spaciousness of effect. The drives are well laid out, in curves occasionally uniting in completely symmetrical circles of large radius; the open ground in the centre is left comparatively clear only broken by a row of flower-gardens crossing it from west to east below the mansion. Different angle-spaces between the lines of drive are made available for flower-gardens also. This strikes us as, on the whole, an exceedingly good plan. The author has added a great number of architectural designs of which the like cannot be said; they are carefully finished, but essentially common-place and even vulgar in design; an entrance of bad Gothic of the pinnacle species, a Gothic (?) bridge, which might be cited by a Yankee as a specimen of the "almighty gim crack" style; a floating bath in the form of a big canoe; and such gauds. The author has better have stood upon his plan. The estimated outlay is 110,000*l.*

O,—by Mr. Page Spencer, architect, of Dewsbury,—goes on the separate villa plan, giving a great deal of land to each house, but spreading the residences very much over the south-western portion, encroaching more than most competitors upon the park land. The plan shows a want of purpose; there is a wide boulevard from the principal entrance, which, instead of culminating in any special termination, is turned off ignominiously to one side, and loses itself in an ordinary drive; another wide road called a "boulevard" wriggles irregularly among the residences in the northern portion of the estate. A boulevard, properly so called, implies a certain stateliness of effect, only to be obtained by more or less symmetrical treatment; and a main entrance boulevard, to be effective, should always lead up to something. The architectural designs accompanying this plan are very neatly drawn in pen-line, but present no originality or feeling for architectural style. The estimated outlay is 97,540*l.*

P,—by Mr. W. Wing, Henley-on-Thames,—shows separate villas spread over the land, to the north and north-east, with a large proportion of ground to each of them. A long, straight boulevard runs directly north from the principal entrance, and on the west side a smaller class of houses are arranged with roads in strictly symmetrical lines parallel to the boulevard. This seems a good arrangement, so far as the houses are concerned. It, of course, robs the entrance of some part of its dignity, by making it, so to speak, "lob-sided"; and this boulevard, again, leads to nothing. The cricket-ground is placed in a kind of accidental manner on one side of it; the other cricket-ground is placed a great way off, behind the mansion-house, in a very out-of-the-way corner. There are a great number of small architectural drawings, well executed, and in good taste, but very destitute of character or interest. The lake front of the refreshment-room is the best, and some of the resting-places are nicely treated. The speciality of this plan lies in the arrangement of the building-land to the west of the entrance, which has something to recommend it. There is little attempt at effect beyond the rather inconsequential boulevard alluded to. The estimated outlay is 69,780*l.*

Q is an unfortunate termination to the series, which we may pass with the remark, that if the author has any ideas as to the laying out of land, he has not acquired the art of expressing them on paper; nor has he much idea of the cost of such work, his total estimate being 29,333*l.*

In regard to this question of expenditure, we may call the attention of those most concerned to the fact that three estimates much exceed the others in amount, and that those three are by the competitors who have probably had most opportunity of acquiring practical knowledge as to the expense of work of this kind on a large scale,—viz., Messrs. Hornblower, who first designed (in conjunction with M. André) the Sefton Park, at Liverpool; Messrs. Pearse & Rake, who state that they have since been

mployed on the completion of the said park; nd Mr. Milner, whose experience in these mat- ers is well known. The corporation of Leeds ay rest assured that the larger figures are much earer the truth than the smaller ones, some of hich only require to be glanced at in detail to e convicted at once of complete misrepresenta- on (we do not say intentional,—"the wish is ther to the thought," pretty often, in these mputations). In regard to the general scheme, e may observe that there are three points of iew in which it may be considered:—first, as a heme for laying out building land in an conomical and remunerative way; secondly, regard to effecting this in a picturesque and leasing manner, so as to add to, rather an detract from, the natural beauty of the cality; thirdly, as an occasion for the erec- on of architectural adjuncts of more or ss elaboration or importance. In refer- nce to the first two aims, we have already ated that N appears to have hit the medium ry successfully, and to have combined these vo desiderata more equally as far as we could dge than any other. The plans marked C, , and M, are also worth consideration, as being ntrived upon a definite plan, and with a finite object in view. Merely spotting houses out a plan can scarcely be called laying out e land. As regards the second object only, cturesque effect and arrangement, what is nerally called "landscape gardening," those arked G and J may be the best; D and K em also to promise well in regard to scenic fect. As to architectural details, we strongly unsel the authorities to eliminate these from eir consideration, and adjudicate upon the ans and estimates for laying out merely. For me reason the faculty of laying out grounds d designing architecture seldom seems to be mbined in one person; the late Sir C. Barry rtainly combined both in a very high degree, d some architects of the present generation ay do so for all we know, if they have a chance showing it; but in general the man who will sign you an ornamental park will put tea- rden architecture into it, and utterly vulgarise and the most beautiful grounds may soon be lgarised by bad, pretentious, or flimsy build- gs. The best architects seldom put in for mpetitions of this kind, and it would be much tter to get one or two first-class architects to sign such buildings as are wanted afterwards; d then to keep rigid restrictions over both the ilding materials and the architectural design the residences erected on the estate. The rson who begins to spoil a park generally is e landscape-gardener, when he puts his arbours d bridges in it, and the person who completes e work of vulgarisation is the speculating ilder. Let both these evils be avoided in undhay Park, which is too fine a place to be naged in this way.

QUERIES AS TO "RESTORATION."

LET us put aside such a case as Kirkstall bbey for the nonce, so fully argued out on his n side by Mr. Sharpe in the remarks printed your number for August 30th. For the sake conscience, one would, however, interpose a nt that there is probably another side that ay not stay to justify its deeds; but do them st, and, if need be, argue of accomplished cts. With some disadvantage, doubtless, eing that any realised work must have ubtful points, even to those who would have borne the principle that presided over its ception; but with considerable, almost over- helming, advantage as well, in the appeal to terest and romance,—to the feelings to be pressed by the untrained voices of the "many ousand visitors and admirers hereafter to be nually attracted to the neighbourhood." Per- aps the real love of ruins is a thought less idely spread than we reckon! One cannot, owever, in any case (leaving that) be unconscious the fact that although everybody who thinks out or meddles with the work of "restora- on," in old churches and other buildings, may em fairly agreed; there is apparently found the common creed room for wide difference,— r "High" and "Low" Restorationists,—sug- esting to some the same sort of misgivings as possible schisms, as do their Church proto- pes. What common bond is there beyond the cent reverence for what is old and well aised, and the desire not to diminish our pos- essions in the way of buildings and other gear at have come down,—from before the middle of the sixteenth century? Beyond these articles,—understood as to be liberally con- strued,—where is the practical accord in any regulating principle useful in actual day-by-day arising needs? Is this accord anything more than nominal?—when,—

1. The "High Restorationist" aims at bring- ing back every old thing from time to time to what it ought to have been if the original designer had done everything wisely; and

2. The "Low Restorationist" treats the pre- sent form of any work as by preference to be maintained, as long as iron bands, and not too unsightly props, and all the care that loving hands can bestow, will stave off the day of inevitable final disintegration and hopeless ruin:——?

When, to ascend to details, 1 will remove later window-tracery from earlier jambs, and (when consistent), if possible, substitute new high-pitched roofs for the flat roofs aged three centuries;—put heads and noses on statues that have lost them, and let in stones and carve afresh the wreathed foliage of a canopy in the way, and therefore thoroughly destroyed on the putting up of a merely useful gallery four generations ago:—

When 2 will keep to his Manchester card, leaving the fragmentary scraps of meaningless colour on the stonework he has cleaned, and will piece (at times) with material of another colour the ruined portions of a screen so that the work of his hour may be readily recognised, by the enterprising, otherwise too-heavily-taxed antiquary of 2000:—When, his conscience wrought up to extreme scrupulosity, he will actually leave records in inscriptions,—dated bits of brass, stone, or wood,—of the period when "these five stones and a cap and base found in a wall" gave the details of the new nave ground-story; or when the purchase of 4 ft. of screen from the place to which it had strayed made all complete except the new door which bears on the lock the record of the whole in small but fairly legible lettering——?

Can we draw these two extremes together by a *tertium quid*, a "Broad" professor,—who shall be all things to all men,—so long as good old (or new) work is recognised: who will not destroy (unless very strongly urged to do so by irresistible authority) anything at all tolerable brought into existence before the mystic 1550; will also on occasion direct the cleansing and maintenance of good (and rich) Jacobean wood- work; will not put up entirely new work *by choice*, and will not *by choice* complete (restore) what has been aforetime lost or damaged——? Can such a *via media* of architectural restoration be trod by the well-disposed; or does it resolve itself into an unmade road strewn with rocks, full of pitfalls and thickets, along which the task of progression would be all too arduous for ordi- nary wayfarers,—tempting the traveller to devia- tions from time to time into the roads above and below, till the necessity of not seeming habitually to use them drives him for a while back to his own ground;—or may we rather call such middle path a smooth seeming railed-road, sure, as other such, to bring to grief a good percentage of those who, in the hurry of life, allow them- selves to be carried along it——?

Mr. Sharpe, in his anxiety to touch a prin- ciple, and afford wholesome guidance in real work, in his address at Newark (given by you, *ante*, p. 672), has produced an intelligible system, so far as it goes, and has illustrated its practice by examples. Would it be possible for him, or for one of his disciples, to overlook the no doubt deplorable appearance of unholy wavering that the aspect of the Restorationist world may seem to have brought about; and give the practical help towards the acceptance of a system that results from the clearing up of a difficulty, and from the application of a general principle to dubious cases. As thus:—

1. When, say a century ago, the end of a church was pulled down, and strange substitu- tion made in place of the work of the old time,—whose character cannot be ascertained, and at the same time cannot be inferior, or indeed at all in the same rank with the work that sup- planted it,—what is the duty of the "Re- storer"? The existing work was not done with any art, and is quite hopeless. Is he "to introduce and construct fresh work, for which no authority or precedent previously existing in the building can be alleged"? These are Mr. Sharpe's own words of utter reprehension, and I suppose he would therefore give an indignant negative. Is, then, something already in the building to be copied?—or, to give a clue to the architectural type on which a design may be founded as good in itself, and at the same time as harmonious to the old work as may be? And if this latter, how is the authenticity of the rest to be secured? It would almost seem that the better the new work (the more like good old work), the worse it would be for the historical value of the real old work in the building.

2. What is to be done when windows without tracery present themselves, with the wooden frames and large panes, to be made comely and at all architectural?—once obviously three-light curvilinear windows,—now they are mere broken arches and mutilated jambs. Will they be properly, as usual, fitted (not many remain to be dealt with after the work of the last twenty years) with carefully adapted copies of the windows of Heckington or Grantham, or of others so care- fully delineated by Mr. Sharpe years agone? May traceries be varied? Where there are no mouldings may they be invented? Or must authenticity exercise sovereign sway? and the attempt be made to produce what may, in twenty years with good luck, be mistaken for a real window of 1330?

3. As to carving and delicate mouldings.—An example from Lichfield Cathedral gives us (on the south side of choir) fully-developed Lancet capitals to the piers of one of the Transitional bays. The old ones were disfigured beyond the preserving point amid the smoothness and lavish finish recently obtained. Is the fact that the capitals thus put in are good of their kind, and —suppose we say for the sake of argument—of a finer art type than the old ones, a justification of the substitution? And is the additional fact that no one will mistake them for the originals in their favour, or the reverse? Of a truth no light visitation has come on the unlucky directors of such substitution in other years. What is correct to-day?

It will be seen that none of these questions touch on the point that, among the many sub- jects that Mr. Sharpe handles, may at the present time be considered his favourite—that of the non-alteration of the surfaces of old mouldings and carvings. As a quite un- necessary piece of dulness, with no solid gains, this will probably never find an articulate defender. The construction of a complete copy in one jamb of the fast disappearing forms seen in the other would, however, have its advocates in case of contest. But all that Mr. Sharpe has deduced from the principle of "doing *as little as possible* to the masonry of a building," may be accepted and acted upon; and still as 1, 2, 3 above, and a hundred other such practical pro- blems make clear to us, we seem to want some- thing that shall guide without question in the cases still awaiting "restoration," where doing a little seems out of the question; when some- thing more than repair (and still much less than rebuilding) is a necessity. Are we likely to be able before long to put such a principle before students and outsiders, with a pretty general agreement that it has a certain definite mean- ing? X.

PUBLIC WORKS IN JAPAN.

As a rule we do not get much information with regard to the public works of Japan, and there- fore a little information upon the subject will be acceptable. From several official reports we learn that public works of various kinds are being actively carried out in different Japanese ports and cities. Thus, from Hiogo we learn that many public improvements have been and are being effected there. Last year the autho- rities published a new plan of roads for the town, which it was proposed to make on the slope of a hill behind Kobe; the work was com- menced without any delay, and has since been carried on with considerable energy. In the native town of Kobe, moreover, a large number of old houses have been lately cleared away in order to make room for a new wide street, which is to extend the whole length of the town from east to west. In consequence of these improve- ments it is mentioned that a large increase has taken place in the value of land and house pro- perty. A great number of new houses have also been built of late in the town, and these, being on an improved principle of construction, are considered quite in the light of an architec- tural reformation. In Hiogo, too, building operations have been steadily carried on, and the largest warehouses and stores erected by foreigners in Japan have been built in that port. The streets, which are regular, spacious, and

excellently drained, have been macadamized; and large wells are being sunk in different parts of the town in order to give a more abundant and convenient water supply for the extinguishment of fires which may occur. Extensive new municipal buildings are also being built in a central position. They will consist of a municipal hall, which will contain accommodation for the municipal superintendent and the foreign police, a prison, and permanent sheds for the fire-engines. The streets of Hiogo have hitherto been lighted with kerosene, but for the future arrangements have been made to light them with gas. This work is in the hands of a company. At Osaka, too, a new municipal hall is now in course of construction; while the paving and draining of the streets have been completed, and the pier for ferry-steamers has been considerably extended. In the native town old wooden bridges have hitherto been in existence, but these are gradually being replaced by substantial iron structures of a much improved character. Large additions have been made to the Imperial Mint buildings for the minting of copper coin, and for the manufacture of sulphuric acid. These additional works, however, have not as yet been completed. A new railway is in course of construction between Hiogo and Osaka, but its progress is very slow, and it is not expected that it will be finished until next year. A new line is also projected between Osaka and Kioto, and a large quantity of material has been prepared, but the order for its construction has not yet been issued. Telegraphs in this part of the country have, it is said, proved a very great convenience, and are much appreciated.

From Kanagawa we learn that public works there have been actively carried out. Railway construction is a feature of these works, and last year witnessed the opening of the first railway in Japan. It is mentioned appropriately to this, that the cost of railway construction in Japan should be cheap, as money is easily procurable, material is plentiful and readily obtainable, and labour cheap. Preliminary outlay, such as parliamentary expenses, should be almost *nil*, and sums given as compensation are not likely to amount to much. The introduction of gas into Yokohama during the past year also deserves notice. The company is a native one, but the machinery and various materials were purchased in England. The gasworks are capable of producing 1,500 cubic metres of gas in twenty-four hours, feeding 2,500 burners. The consumption of coal is about 200 tons a month. The first section of the trunk railway intended to connect Yedo and Yokohama with Kioto, Osaka, and Hiogo, has been opened, and already attracts more traffic than can conveniently be carried on a single line of rail. Telegraphic wires have been stretched from Yedo to Nagasaki; but the line, which is 830 miles long, is not yet pronounced in working order.

From another Japanese port (Hakodade), we learn that the local government has done a great deal of late towards improving the streets of the town. A destructive fire lately occurred there, and advantage was taken of this to straighten and widen the streets in that district, which in some quarters are now lighted with oil-lamps. A new style of building, similar to the European, has also been adopted in the construction of houses for the Government officials, and for a new custom-house. A new road has been constructed from Hakodade towards Sappara, extending over ninety miles. This road has been much wanted. A few miles from the port the site for the erection of an agricultural college has been prepared.

WOLVERHAMPON GRAMMAR SCHOOL COMPETITION.

AT a meeting of the Governors of the Wolverhampton Grammar School, held on the 16th, the designs submitted by four invited architects were considered, and that of Messrs. John Giles & Gough, of Craven-street, was accepted.

The building is to accommodate about 300 boys, chiefly day scholars, and has a headmaster's residence attached.

The estimated cost is 10,000*l.*, exclusive of fittings, boundary walls, and other external works.

India.—Speaking broadly, the total area of British India is 1,000,000 square miles, and has a population averaging 200 for each of those miles.

LICHFIELD CATHEDRAL.

A FRAGMENT.

ONE Sabbath evening in the time
Of autumn, dull and cold,—
A stranger there,—I chanced to stray
Through Lichfield's city old.

Before me, stretching east and west,
Its grand cathedral lay,
On whose high spire the restless vane
Waved with its gilded hands again
Adieu to dying day.

The bells to prayer from out its towers
Call'd solemnly and slow;
While round the pile a misty shroud,
That spread as doth an incense cloud,
Rose from the moat below.

With hurrying throngs of worshippers
I through the streets was led,
And sought the portal, but mine eyes
Soon stay'd my forward tread
In wonder at the imagery
So quaintly carved o'erhead.

It seem'd as if some artist sage—
Divinely taught—this stony page
Had wrought with purpose to engage
The thought on that within;
And as one with expectant look
Doth scan the preface of a book,
So read I, with inquiring mien,
Each object of the sculptured scene
Before I enter'd in.

I enter'd in; 'twere vain to dare
Description of the scene so fair
That burst upon my sight.
I halted as the door swung to,
Enraptured at the sudden view,
And gazed in calm delight.
But nought of words, or storied rhyme,
Or picturing tale, or song of mine,
Could tell the glories of this shrine
Or paint its charms aright.

My fascinated eye, spell-bound,
Travell'd the spacious circuit round,
From east to west, from west to east,
Each part a visionary feast,
Each stone induced a thought.
The broad arcades, whose massive piers
Have borne their load six hundred years,
Firm-planted there by hands well skill'd
Each for a purpose well fulfill'd,
A pregnant lesson taught.

Taught me that men who labour'd then
This glorious fane to raise,
Labour'd with brain, eye, heart, and hand,
In Love and Faith, a willing band,
That God might own in this fair land
A temple for His praise.

No mercenary motive theirs,—
The honest pride of Art
Inspired each worker as he wrought
With careful skill his part.

Proudly they watch'd from day to day,
Like a parent doth a child,
While the offspring of their hands apace
Grew upwards with a stately grace
As stone on stone was piled.
And when aloft the scaffold rose,
Round the ascending spires,
That each might live until the end
Was first in their desires.

* * * * *

A blessing on those men of old,
Who wrought so well and true,
And he who plann'd the mighty pile,
His name be honour'd too.*
Long may his work adorn the land,
Long may this fane all storms withstand,
And youth its age renew.†
A sign and guide of yore and now,
No lovelier gem on Earth's fair brow
Reveals itself to view.

JOHN COTTON.

* Bishop Roger de Clinton is reported to have entirely rebuilt the cathedral during his time of office (1129-1148), but as it now stands, the edifice doubtless owes most of its grandeur to the skill, munificence, and enterprise of Bishop Walter de Langton (A.D. 1296-1321), who also expended a sum of 2,000*l.* upon a monument of St. Chad, besides the structural works which he initiated.

† Alluding to recent restoration.

LOCOMOTIVES ON ROADS.

THE use of steam traction and other engine on roads is regulated by two Acts of Parliamer (24 & 25 Vict., cap. 70, 1861, and 28 & 29 Vict cap. 83, 1865), one of which regulates tolls an limits locomotives to 7 ft. in width and 12 ton weight, and enforces a maximum speed of t miles an hour in the country and five miles hour in towns; while the other reduces t speed to four miles and two miles respectivel and increases the maximum width of engines 9 ft. and their weight to 14 tons.

During the last ten years the use of sel moving engines for use over ordinary roads h greatly increased, and it is felt that the existi Acts are insufficient for the present day. T select committee appointed last session to inqui into the subject have issued a report, in whi they recommend various alterations in t law to meet the altered state of affairs. T evidence given before them by engineers, su veyors, and others, both advocates and opp nents of steam road-engines, leads them to r commend that two classes of engines should formed: the first,—the *heavy* class,—to inclu all locomotives exceeding 6 tons in weight, having separate carriages attached to them the second,—the *light* class,—to include se contained locomotive carriages or engines, n exceeding 6 tons in weight, making no sou from the blast, and consuming their own smok the former should only be permitted to travel a speed not exceeding three miles an hour town and four miles an hour in the countr while the latter should be subject only to t same regulations as ordinary horse-traffic.

The question of the destruction to roa caused by steam-engines or their carriages, one of great importance. Some witnesses we in favour of tramways being laid down in li of engines being allowed to use the ordina road, and were of opinion that this course wou be both less expensive and less obstructive ordinary traffic. The committee, however, r commend that the width of the wheels of loc motive carriages should be regulated accordi to the following scale, and are of opinion th this regulation would obviate the danger breaking up roads:—When the weight on ea wheel does not exceed ¾ ton, 4 in. in widt exceeding ¾ ton and not exceeding 1 ton on ea wheel, 6 in. in width; exceeding 1 ton and n exceeding 1½ ton on each wheel, 8 in. in widt exceeding 1½ on each wheel, add 1 in. for eve ½ ton in weight.

It is to be remarked that the use of hea engines with broad wheels is rather benefici than injurious to the road, when it is well ma and wide; though in the case of narrow roa or roads that are slightly metalled, there is doubt that damage is done by the freque passage of heavy locomotives. "While," t committee add, "some persons attribute t damage done to roads to the engine, and othe to the wagons drawn by it, it is clear that, some instances, the damage has really be caused by the additional traffic, rather than h the means used for its transport, and that portion at least of the injury would equal have been caused by the use of horses."

The provisions of the existing Acts, givi power to the surveyor or master of a bridge close it against a locomotive if he sees fit, a found to be very vexatious, and they render th owners of locomotives liable for all dama directly or indirectly caused by such locomotiv The tolls, too, are fixed on an anomalous scal and are prohibitory, and the committee reco mend:—

1st. That no owner of a locomotive engi shall be liable for any damage done to a bridge by the passage of his engine, provide that the weight of such engine does not exce 20 tons, and provided that no notice be affixe to the bridge.

2nd. That if such notice be affixed, the own of a locomotive shall be liable for damage don by his engine if the weight of the engin exceeds that named in the notice.

3rd. That if the engine exceeds 20 tons t owner should be liable, whether notice sha have been affixed or not.

4th. That any person taking an engine more than 20 tons in weight on a public ro shall be liable for all injury to the road whic can be proved to have been done by the passag of such engine.

The provision which requires that a flag sha be carried 60 yards in front of a steam loco motive is found to be useless in practice; an

ust which enables any one with a horse to stop
e engine till he has passed by is, no doubt,
xations. The committee recommend that they
ould be repealed, and generally are of opinion
at all such minor points should be left to the
scretion of the driver of the engine. The
mmittee say that "the interests of the owners
engines appear to give the strongest guarantee
gainst accidents, so long as they remain liable
r the consequences of such accidents."

Commander De Lousada gives some interesting
vidence as regards the use of steam locomotives
the streets of Glasgow, where he has been
mitted by the local authority to run his
gines without limitation as to speed or time.
is experience shows that, with properly con-
ructed engines, properly driven, the largest
eights are very little obstruction to the
dinary traffic. He finds that horses soon
come accustomed to the engine, and take no
otice of it after meeting it two or three times.
he committee, considering the number of
gines in use that do not consume their own
noke, and that are not provided with a noiseless
ast, do not feel justified in making any recom-
endation for the compulsory adoption of
easures for obviating the noise and smoke;
t engines of any size that have not adopted
ch measures should be classed as "heavy,"
id made subject to the regulations proposed
r "heavy traffic."

An engineer stated that out of 800 road loco-
otives built by his firm, up to the date of the
quiry, 500 are believed to be employed in this
untry. Another witness informed the com-
ittee that he had supplied nearly 1,000 self-
oving engines to British owners.

No recommendations are made as regards the
e of steam on ordinary street tramways,
ough evidence was taken on the point, to the
fect that the power of control and stoppage is
least equal to that possessed on ordinary street
amway-cars drawn by horses, while there need
e no noise greater than that produced by the
ovement of the cars. There are two or three
odels of steam tramway-cars at the Inter-
ational Exhibition, which are ingeniously con-
ived so as to reduce to a minimum the effect
noise, steam, and smoke.

There is hardly any doubt that the use of
eam on our common roads is destined to
come very general, and it is urgently neces-
ry that new regulations should be legalised:
e recommendations of the committee appear
afford a sound basis for future enactments.

SEWAGE FARMING.

THE Merthyr Tydfil sewage-filtering and
wage-irrigation scheme having now been in
peration for nearly three years, Mr. T. Williams,
erk to the Merthyr Tydfil Local Board of
ealth, has published, at the desire of his Board,
extract from the periodical report of Mr.
yke, the medical officer of health for the dis-
ict, in which he says:—

"Much discussion has recently arisen as to the supposed
jurious effects which would follow upon the use of
getable food by men and animals when that food was
own on land watered by sewage. To you and to the
blic of this town and neighbourhood it is well known
at now for three summers and two winters large quanti-
s of vegetables have been grown on land specially pre-
red, watered by the strained sewage from this town,
d also that very large supplies of green food for
imals have been obtained therefrom. The use of these
getables and grasses for so long a period by men and
imals would certainly by this time have shown some
idences of the evil consequences assumed to result from
e mode of growth. It has been my duty carefully to
tch the mode of culture and to note any unfavourable
gns; but, so far from being able to discover any such, I
n with confidence point out to you certain facts which
ow that the assumed perniciousness of the use of
getables so grown is without any basis of truth. . . .
ere any pernicious effects in the health of children
tticed? Certainly not: for, while the mortality of the
ung under five years old formerly averaged 48, 50, and
out of each hundred deaths, in the second quarter of
73 the average was but 30 per cent. Secondly, diarrhœa
uld be a form of disease that would very quickly be
t up in human beings by the use of vegetable food
ected by sewage. The number of cabbages grown on
e filtration and irrigation areas during the last thirty
onths would number many tens of thousands. All have
en consumed by the inhabitants of Merthyr and the
ighbourhood. Has diarrhœa been thereby incited? On
e contrary, last year the Registrar-General called atten-
n to the fact that diarrhœa was less prevalent in
erthyr than in any place in England and Wales; and,
I have already stated, the fatal cases from this disease
the second quarter of 1873 were but two, and those
fants at the breast. Tried, then, by these two tests,—
e use of fresh fodder grown on sewage-watered lands by
lk-giving animals, and of vegetables (similarly grown)
human beings, the experiences of the population of
is town and neighbourhood demonstrate the perfect
lubrity of the vegetable food so grown."

The system of sewage-farming has emerged
tisfactorily from the controversy excited by
Mr. Smee's suggestion that the introduction of typhoid fever into certain parts of London might be traced to the consumption of milk furnished by cows which had been grazed on fields fertilised with sewage. Mr. Smee has bowed, though not with the best grace, to the testimony borne by Dr. Rees-Phillips, of the Exminster Asylum, and other experienced authorities on the other side. He has, in fact, admitted that, under certain precautions, the system he has run foul of may be practised with excellent results, and another medical authority has declared that the origin of the typhoid epidemic in London has no connexion with sewage-farming, and is traceable to the pollution, by typhoidal excretions, of the well attached to the dairy whence the milk was supplied. Dr. Carpenter dealt the hardest blow of all to Mr. Smee's hypothesis. The Doctor, after maintaining that the typhoidal contamination of the water was the real existing cause of the mischief, defends the system of sewage-farming for the following weighty reasons:—

"1. The disposal of town sewage by irrigation is the safest way of dealing with it, and the only way in water-closet towns of preventing pollution in our water-courses.

2. It is a sanitary advantage to a dense population to have a well-conducted sewage-farm in close proximity.

3. It is a means by which the produce of the soil may be quadrupled, and thus milk and vegetables being cheapened, may be brought within the reach of those classes who now scarcely ever get them.

4. It is highly necessary for the welfare of our teeming population that our meat-producing power should be increased; otherwise, in the event of our foreign supply being cut off, the chances of famine will be imminent."

A good case, in short, has been made out so far on behalf of sewage-farming; on the condition, of course, that the system is practised only under competent and intelligent oversight.

A sub-committee of the Leeds Town Council, appointed to investigate the utilisation of sewage have presented a report, in which they detail the result of six experiments in the cultivation of grass, each experiment conducted with a different kind of manure, but in all cases of the same value. Six plots of ground were employed for this purpose, each measuring half an acre, and each plot was dressed with manure to the value of 30s. Street sweepings were valued at 1s. 8½d. per ton, stable manure at 4s., Peruvian guano at 15l., native manure (a mixture of native guano and night soil), at 4l., native guano, at 3l. 10s., and sewage mud, at 1l. 10s. The grass was all cut at the same time, and made into hay, and the committee report that "the finest quality of all, as decided by a competent judge," was that grown on the plot manured with the native guano. Allowing for the cost of cartage and labour, the value of the hay manured with Peruvian guano exceeded the cost by 1l. 3s. 9d., while that manured with native guano showed a value of 1l. 4s. 9½d. above the cost. The excess value of the stable-manure crop was 13s. 2d.; of the native manure crop, 14s. 6d; and of the crop from sewage mud, 9s. 2d. The street-sweepings showed a loss of 1l. 9s. 8d., but had the best crop of after-grass. The committee propose to let the several crops remain exactly as they now are, without any fresh dressing, and to observe the result next year. Peruvian guano is exhausted in the first year, but it is claimed for the native guano that the effect will be seen for one year or more afterwards.

DALTON HALL, NEAR BEVERLEY.

THIS mansion,—a seat of the Right Hon. Lord Hotham,—after having been untenanted for more than half a century, is at present receiving very considerable alteration and extension, with a view to its becoming an attractive palatial residence.

The old house consisted of a principal block, containing many large and lofty rooms, connected by corridors with wings, the whole occupying three sides of a quadrangle. The corridors are now removed, and upon their site, and extending far back in the rear, looking westward on to the splendid lawn, the new buildings are rising. These comprise on the one side a dining-room, with all adjuncts, in convenient proximity to the wing in which the kitchen department is situated. The corresponding block will contain a drawing-room, opening by French casements into a large conservatory at the side, and at the end upon a terrace extending the entire length of the west front. A billiard-room and gun-room, with their special lavatories and some other less important rooms, complete this block as far as regards the ground plan. Above and extending over all the new buildings are to be numerous suites of bed and dressing rooms, with their full complement of bath-rooms and closets. The present entrance-hall, with the staircase removed, will remain as the grand entrance, and a new staircase-hall and broad staircase, in Aubigny stone, will be constructed to the right of the entrance-hall. This staircase will be supplemented by secondary ones in each of the new blocks, and others in the wings of the building; and all the corridors and passages will be as nearly fireproof as possible.

Externally, a carriage portico and colonnade of eighteen columns will occupy the front of the central block upon the east front, and serve to connect the two new blocks; and in the angles formed by the projecting wings two circular porticoes will mask the approaches to the luggage-entrance on the one hand, and the private entrance to the billiard and gun rooms and the steward's rooms on the other.

The elevations have been designed in a plain Italian style, to accord precisely with the existing work, the materials being white brick and Ancaster stone, the latter unsparingly employed, and the materials used in the internal work will also be of a class consistent with the importance of the mansion, solid walnut having been selected for the doors of all the principal rooms.

The park and gardens have received attention, new roads having been opened up, and parterres and terraces designed for the west and south fronts by Mr. Thomas.

In the gardens an extensive range of conservatories, vineries, and other horticultural houses have been erected by Messenger, of Loughborough, and at a short distance from these is a snug Italian cottage residence for the head-gardener. Similar in size and design to this will be the lodges, one of which, a single one, with iron entrance-gates and stone piers, will be on the Kiplingcotes-road, and the other, a double one, on the road from the village of Dalton Holme. The whole of the architectural works have been designed by Messrs. Payne & Talbot, architects, and are being executed under their directions by Mr. John Briley, of Birmingham, whose contract is to be completed in rather more than two years from the present time.

IMPROVED METHOD OF CONSTRUCTION WITH METALS, GLASS, AND OTHER MATERIALS.

UNDER this title the "Journal of the Franklin Institute" describes the invention of Mr. William Haggett, which consists in giving to the materials used in construction a peculiar form, in virtue of which the strength and adaptability of the same to civil, military, and marine constructions is claimed to be much improved.

The process, in general terms, consists in giving to plain plates or sheets, of uniform thickness, of the various kinds and qualities of metals, glass, tiles, and other substances, compound undulating forms, the undulations crossing each other at right angles, or obliquely, or radially and circular. These forms, it is claimed, impart to the plates great lateral strength and rigidity; and as the undulations extend in opposite directions they afford equal compensation for contraction and expansion in all directions, a desideratum of great practical importance in construction, since, if realised, it makes it practicable to attach the borders of such plates firmly to adjacent unyielding masses.

The process for undulating the plates is varied to suit the character of the material operated upon, some by direct casting in matrices of the desired form, others by being heated and then pressed between rollers, stamps, and dies; but in all cases it is necessary that the alternate convex and concave parts of the rollers, &c., actually fit and work with each other.

The following estimate is claimed to represent the strength of the undulated over the plain plates:—Iron and steel, about two-fifths; galvanised iron, three-fifths; sheet tin, three-fifths; brass, three-fifths; zinc, two-fifths; copper, four-fifths; lead, three-fifths; cardboard, one-fifth; while glass is nearly doubled in strength.

In construction of the ordinary kind the plates may be attached one to another, with some overlap, and then attached simply at the ends. An interior wall of similar character is also erected, and the space between the two filled up with some non-conducting material, which shall make the building independent of the external temperature.

Bricks and tiles of this form are constructed and employed for roofs, sewer and wharf con-

struction, with success; while, applied to glass for skylights, illuminating panels in buildings or conservatories, there are claimed for it the several advantages of increased strength, with no decrease of light, and nearly perfect absence of lateral expansion.

OPENING OF THE BIRKENHEAD AND HOYLAKE TRAMWAY.

By a new company, under the name of the Birkenhead and Hoylake Rail and Tramway Company (Limited), a street tramway has been provided for Birkenhead and Hoylake, at a cost of nearly 20,000*l*. The line has just been inaugurated. The contractors were Messrs. Henry Tabiner & Joseph Perrin, of Birkenhead, the rails and other materials being supplied by the company, and the work executed under the supervision of Mr. Wade, the resident engineer. The gauge is 4 ft. 8 in., and the width of the double line, including 1 ft. 6 in. on either side paved with square sets, 17 ft. The rails are of a new pattern, with double flange, and dogged at each side. The line is a double one throughout, except at the descent of Hamilton-street, and at Woodside it again forks into a double one to the new ticket-office, just built adjoining the Ferry-buildings, and in close proximity to the pay-gates. After leaving the Woodside Ferry approaches, the line mounts the brow of the hill towards Hamilton-square, but turns off along Canning-street, thence into Bridge-street, crossing the dock line of railway, thence by Cleveland-street, Corporation-road, and Beaufort-road, across Mr. Vyner's field to the Docks Station. The route has been selected not only for the connexion with Hoylake but as a convenient means of access to the graving docks and the great engineering and other works, which are located at the north end of Birkenhead.

HEALTH AND COMFORT IN HOUSE-BUILDING.

Sir,—I have just read in your issue of the 6th instant the letter of "An Amateur," and I am sorry that the paper you did me the honour to publish has failed to produce in his mind the conviction I hoped for, viz., that houses may be rendered healthy and comfortable at a comparatively small cost; in fact, I say in my paper that the plan recommended is "uncostly," and that for the benefits received "the outlay is very small indeed."

Your correspondent appears to have mistaken my recommendation. He says "every room in the house is to have a shaft through the ceiling, and, to promote suction, *these* are to be constantly and permanently heated." My expression is "*this* should be kept permanently heated"; "*this*," that is the one common abstraction flue, not all the flues separately. Moreover, the heating Dr. Drysdale and I recommended costs nothing, because it is done by the *waste* heat of the kitchen fire. He then says, "How the warm air to supply all the rooms is to be procured Dr. Hayward does not tell us." Surely he cannot have read the paper carefully, for I say distinctly, "The only complete and effectual remedy is a direct opening from the outer air into the lobby, only protected by shutters to regulate the supply according to the requirements of the house, and by hot-water pipes to regulate the temperature according to the season of the year." He complains that the plan recommended is "only applicable to noblemen and wealthy proprietors." Surely he must have read only the "abstract," and not the "paper" itself; and certainly he cannot have read the *book*, of which the *paper* was only an epitome. If he will let me have his address I will send him the original paper.

In the plan recommended, nearly all that is necessary is to have a hole in the lobby wall, behind a stove or other means of warming; a hole through the door, or wall, into the room; a hole through the ceiling; and flues left in the walls and kitchen-chimney whilst building; and surely these cannot add much to the cost of building even the most humble dwelling. Of course, they must cost something; health and comfort cannot be procured for nothing.

In reply to Mr. J. Hicks, who appears to think the plan more easy to describe than to adopt, I would say again, as I said in the paper, that it has already been adopted by Dr. Drysdale and myself; and in both houses it is found comparatively uncostly, and to act perfectly; much more so in both respects than would the plan he recommends, on mere theoretical grounds only. The same remarks are applicable to the letter of Mr. Bonel A. Evans. John W. Hayward.

INJURY TO LEAD BY INSECTS.

Sir,—In stripping old lead flats you will often find the whole under-surface much oxidised, and where the boards are much decayed the oxidation is always greatest. I have never found an insect in old lead, nor have I heard or read of one whose digestive organs were strong enough for so tough a morsel. I have often known mice to gnaw a hole through lead pipe, but you may always find the shavings under its work. Is it not likely to be the acid formed in decomposition of the insects, or their excrement, that has destroyed the lead? I once met with a cistern 6 lb. lead bottom that had not been used for several years. The water that was left in it had evaporated long since; and on the bottom were the dried remains of a number of wirey worms, and these lay in a perfect bed of oxide of lead, whereas all other parts of the bottom and sides were sound.

The pin-holes mentioned in lead valleys, &c., are caused by oxidation, either from vegetable or sooty deposit, and sometimes from dross flaws in the lead, which are soonest acted upon.

Bonel A. Evans.

NORTH COURT, FINCHAMPSTEAD, BERKS.

North Court is a house upon the estate of John Walter, esq., M.P., not far from the lately-constructed Bearwood, the very fine residence of that gentleman. North Court, the building shown by the view, is placed upon one of the noblest eminences of his picturesque property, commanding an extensive view of the country around, and has recently received considerable additions and alterations. The garden-fronts have been altered by enlargements made to the dining and drawing rooms, and an entirely new office-wing has been added; the former stable-buildings which adjoined have been converted into domestic offices, and brought into connexion with the additions.

New stable-buildings, suitable in size for the enlarged house, and corresponding in style, have been erected at a convenient distance within the grounds; also an entrance-gate lodge next the public road.

The original style of architecture has been followed in the additions and in the new buildings, so as to obtain a general uniform appearance. All the buildings are executed with red bricks, made upon the estate, relieved with bands and figures worked in with dark-coloured bricks. The chimney-shafts are built with moulded bricks, the caps and bases being formed of the same materials. The gables have pierced and moulded verge-boards, with pinnacles and pendants. The roofs are covered with Bangor green slates, and are finished with ornamental ridge-crest of red tile. The new stable-buildings and gate-lodge are covered with Penmoyle green slates.

The plans for the alterations and additions and for the new buildings were prepared by Mr. A. Ritchie, architect, Chester, and the works were carried out under his supervision, with the valuable assistance of Mr. Samuel Deacon, the resident surveyor upon the Bearwood estate. The builder employed was Mr. John J. Collings, of Kingston-upon-Thames, who performed the work chiefly under contracts.

The first house and offices, North Court, were erected about eighteen years since from the plans of Mr. Decimus Burton.

The grounds, though not large, are laid out with taste, and have recently been enlarged by Mr. Walter.

CARVED STAIRCASE, RUE DES NOBLES, MORLAIX, BRITTANY.

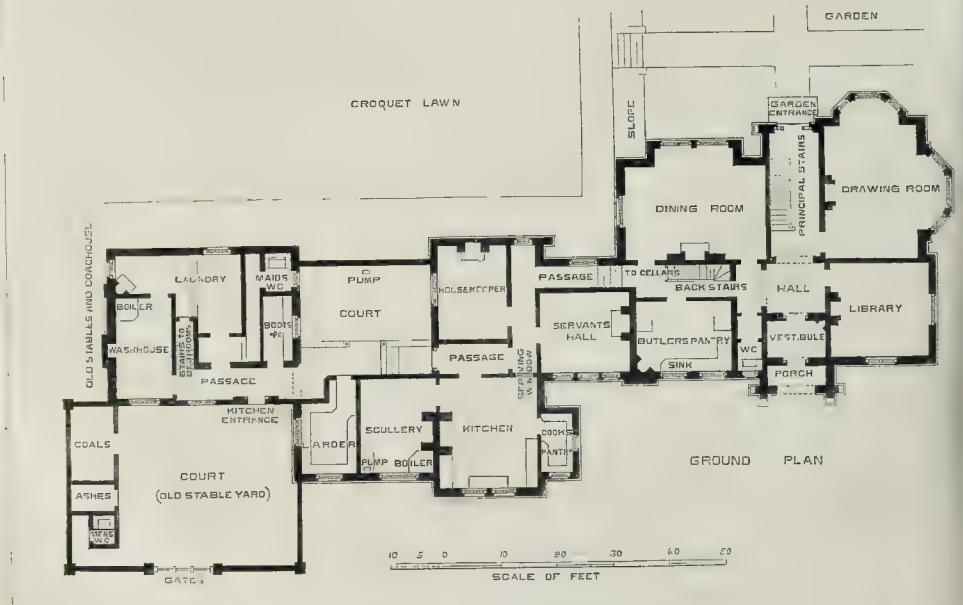
Few towns in France are so rich in ancient domestic architecture as Morlaix, and although terrible havoc has been made amongst its interesting streets and houses of late years, nevertheless so much remains that it may still claim to be one of the most interesting old towns in the north of Europe. It is common enough in all the French cities and towns to find interesting and often splendid examples of ancient domestic architecture, but they are generally isolated specimens, and give us little idea of the exceedingly picturesque effect of a whole street of such buildings; but two or three of the Breton towns have quite retained the ancient character of their streets, and this remark refers especially to Dinan and Morlaix, perhaps, of the two places, the streets at Dinan are the more picturesque, and the examples they contain of ancient domestic buildings are more numerous; but, on the other hand, Dinan can show nothing for richness to compare with the Rue des Nobles or the Grand-rue at Morlaix. The two last-named streets are the most perfect examples of thoroughly Mediæval streets now to be found in France, and what makes them the more valuable is the fact that the houses they contain are all of a superior class,—in fact, the Rue des Nobles (as its name signifies) was originally occupied entirely by members of the Breton and French nobility, and this accounts for the amount of carving and enrichment which decorates the exterior and even the interior of most of these houses. We say *even* the interior because it is so much more rare to find the original internal fittings and decorations of a house still existing than to find the exterior comparatively unaltered, and this is one of the reasons why these Morlaix houses are so valuable from an antiquarian and archæological point of view. Examples of ceilings, doors, fire-places, staircases, &c., are numerous, and some of them of the most elaborate and ornate description. The most interesting features, however, are the staircases, of which there are several in existence, and three of these are very elaborate and beautiful in design. Of these, the best preserved is the one in the house No. 14, Rue des Nobles, of which we give an illustration from a drawing made upon the spot.

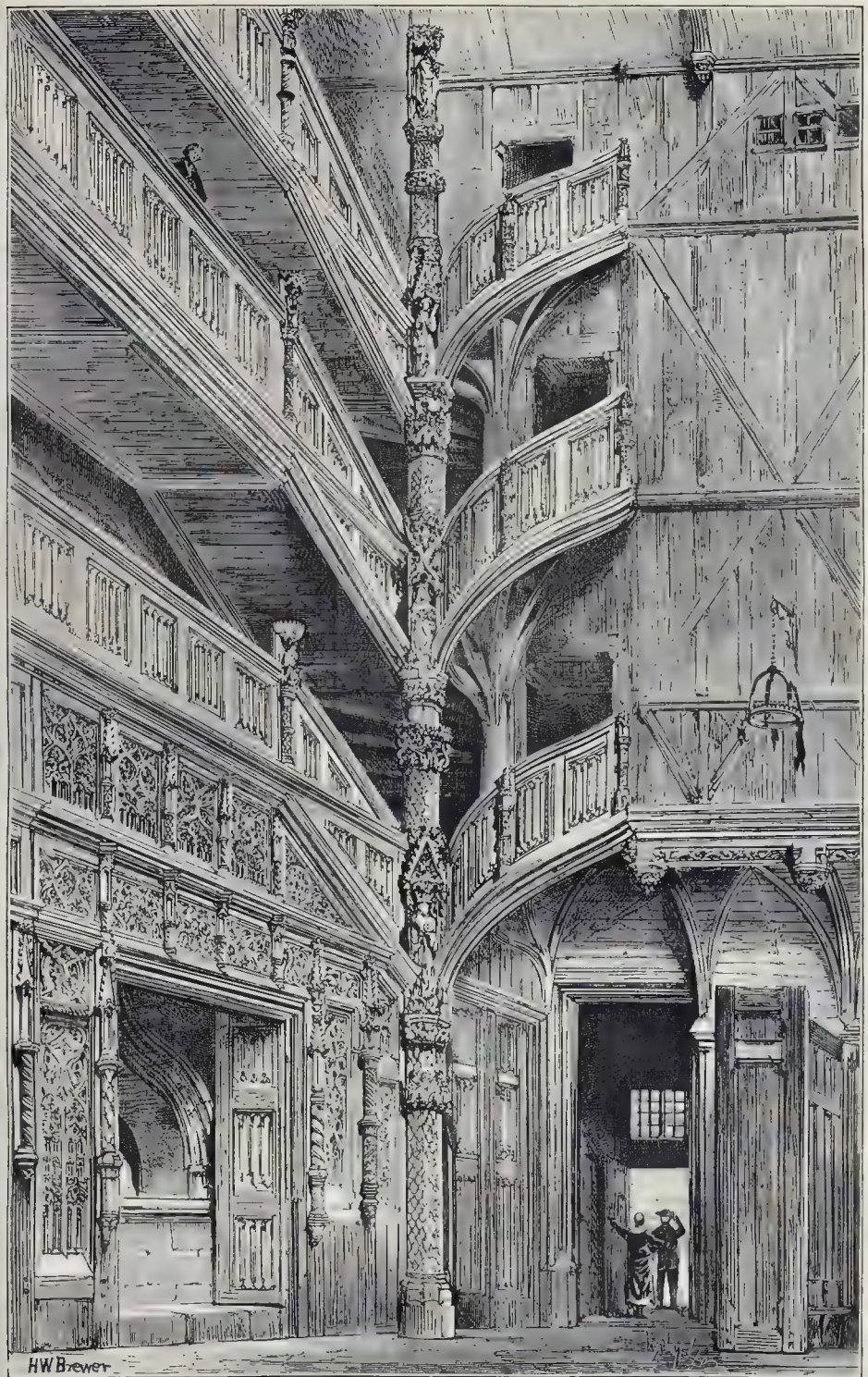
This very remarkable staircase is of the best period of the Third Pointed style, and is adorned with a great deal of carved foliage, and beautifully-designed Flamboyant tracery. Each "stage" is marked by a large niche containing a statue of a saint. Amongst the saints represented are St. Margaret, St. Catherine, and St. Dominic. And in addition to the large statues, are small statuettes sitting under canopies which mark the junction of the staircase with the three galleries. The parapets both of the staircase and galleries are ornamented with "linen panels," and small pinnacled buttresses. These "linen panels" are not equal to the rest of the work either in design or execution, as they are flat and tame. The newel is a mass of carving from the floor to its summit, which is about 50 ft. The spaces not occupied by the great niches are covered with a leaf pattern. Below the staircase is a large closet containing a stone sink, with a bold ogee canopy over it. The panelling outside this closet or cupboard is exceedingly rich, the panels being ornamented with most intricate and elaborate Flamboyant tracery. This fine staircase is composed of oak, which has fortunately never been painted, and is consequently rich and beautiful in colour. *It is said* that the great newel is entirely out of one piece of timber. We are not able to state positively whether this is or is not the case. We saw, however, no appearance of its being joined. The galleries which form the approach to the upper chambers from this staircase only run along one side of the hall, but are continued outside it on one side, and are cut off from it by a partition running the whole height, and supported upon a richly carved beam and semi-vaulting on a level with the first-floor.

The hall in which this staircase stands is very nearly in its original condition; it is nearly square in plan, and has a good high-pitched roof with arched principals resting upon corbels. The sides are composed of timber framing filled in between with lath and plaster. A portion of this hall is partitioned off by a low panelled screen, and is used as a kitchen. This arrangement is ancient, and the whole remains pretty much in its original condition. This hall receives light from a large "saddle-light" in the roof, which does not appear to be original, and it is probable that there was formerly a "Louvre" similar to those existing over some of our old English dining-halls, and this would account for such a very short roof being strengthened by principals. We cannot commend the practice of placing the kitchen in the hall of the house, and although it is common in Brittany, at least in ancient houses, we think it would be difficult to find a worse position for it; and nothing but the excessively primitive style of life led by even the nobility in Brittany before the great revolution, could have made such a state of things endurable.



NORTH COURT, FINCHAMPSTEAD, BERKS: LAWN FRONT, SHOWING ADDITIONS.
MR. A. RITCHIE, ARCHITECT.





CARVED OAK STAIRCASE, MORLAIX, BRITTANY, FRANCE.

EGLETON CHURCH, RUTLAND.

THE parish church of Egleton has been re-opened, after having undergone some much-needed repair and renovation.

The architecture of the ancient fabric is of an interesting and valuable character. A very narrow and depressed semicircular chancel-arch, the jambs having shafts and capitals, covered with elaborate archaic ornamentation, and a south door of similar but even more elaborate detail, are the most ancient portions of the building. The south porch and lower part of the tower belong to the fourteenth and the rest of the pre-Reformation edifice to the fifteenth century. An aisle, which formerly existed on the north side of the nave, was pulled down apparently at a period not far back, and the arcade walled up.

Portions of the old church are now discovered to have been used in the construction of this screen-wall, amongst them the bowl of the Norman font, which has been cut out, and now awaits restoration, also what appears to be the base of the churchyard-cross.

In the recent work of renovation the old "three-decker" pulpit, with its corresponding pewing, stove-pipe spanning the nave, and other unsual accompaniments has been removed. The old wrought stonework has been cleansed and repaired; and funds not being available for rebuilding the north aisle, the modern work of the north wall has been cut away, so as to expose the buried columns and arches to the extent of a third of their thickness, and the plain surface of the screen-wall decorated with masonry patterns in colour. The plastering has been cut from the window-jambs, the quoins being of wrought stone, and the jambs have been pointed. The doorways to the rood-loft have been exposed to view.

New joinery of oak to the chancel, and pitch-pine and deal to the nave, have been introduced. The floor has been laid with new stone paving, except the communion-space, which is laid with tiles.

The builders engaged in the work were Messrs. Halliday & Cave, of Greetham; and the architect was Mr. Tait, of Leicester.

A NATIONAL SCHOOL OF ART.

IN my letter of the 6th on this subject I used the word "school" in its widest art-sense, as we use it in speaking of the Grecian or Italian school. In the narrower sense we could certainly have a school or college of art: such a special college I have more than once suggested in these columns. It would probably prove the most useful form of art-institution, as the students who would be thus brought together to pursue their special, *pari-passu* with their general studies, would soon bring a keener logical acumen to bear upon art, and the more frequent conflict of mind with mind would rapidly lead to common-sense conclusions upon all matters connected with it.

If we study the remains of Grecian and Italian art, we shall detect a precisely analogous evolution of the art-faculty from its infancy to its maturity and mastery several centuries afterwards. Art grew with the intellect of Greece and Italy; and as physical science has grown in England since we cast off from the schools. But whilst pursuing an independent course with regard to science, we have clung to precedent, to the old system, in respect to art.

We should recollect that the moderns only inherit the results, not the art-intelligence, of the past; and from the absence of any compendium upon, or outcry for art-education, we must conclude that it was then considered a very simple and straightforward matter. This, however, we do know, that they did not establish national galleries of old masters or museums of ancient sculpture, or organise science classes, or in fact attempt it by any of the means we now adopt. It is not England alone, but all Europe, which has been going wrong in this matter since the decadence of Italian art. Most of the means just described have been tried for more than a century, with confessedly unsatisfactory results, yet we still blind ourselves to the fact that the study of ancient art has not proved the readiest way to rival it.

In reference to the inconsistency of opinion prevailing on matters connected with art, what, for instance, can be hoped for when we find men maintaining with one breath that art is above rule, that it has no science, and with the next deploring the absence of art-education in this country. The want of means for teaching that which, according to *their* own premiss, cannot be taught! We have not yet the courage to apply the same rigorous method of inquiry to art as to science, as we shall when our system of education shall be improved and deal more with fundamental principles. I have yet to learn that there can be any sounder and more enduring basis for the greatness of a nation in art or in anything else than a true system of education. Our present system I believe to be wrong in many respects, but radically so in putting *quantity* before *quality*. "How poor are they who have not patience" is as applicable to nations as to men. The great epochs of art were not reached *per saltum*,—by any art-"forcing" establishment that either has been or can possibly be devised. We must place our art intelligence on a level with our scientific, before we can hope to have a National School of Art.

W. CAVE THOMAS.

A NUT FOR CHICHESTER.

SIR,—Will you permit me, as I am well acquainted with Chichester, to say a few words upon the subject introduced by "Gargoyle," whose letter, however, I regret to say, I did not see?

The ground on which the city stands may be described as gently rising from the walls towards the centre of the town, so that the market-cross, which stands there, is on the summit-level. The fall from the cross is not considerable in any direction, but is greatest towards the west and south. The north street is practically level from the cross to the city wall, after which the road rises for some miles.

The town is built on a gravelly formation, lying in a basin of chalk. The porous gravel readily allows of the admixture of the contents of the cesspools with the water in the wells.

The general level of the subsoil-water is probably from 3 ft. to 8 ft. below the surface.

The four principal streets, called respectively North, South, East, and West streets, are, as "Cicestrensis" says, unusually wide; and, since the new market has been built, are clean and pleasant; but the back streets and lanes are by no means so good, being narrow and dirty.

There are three crying evils in Chichester:—

1. There is no water-supply, and the inhabitants, not to put too fine a point upon it, drink their own sewage.

2. There is no system of sewerage, or subsoil drainage, and the cesspool abomination is in full force; and

3. The state of the intermittent brook, the Lavant, has been for many years, and is now, an open shame to those who are in authority in Chichester.

With regard to water, a supply is about to be provided: so nothing further need be said about it.

As to sewerage, it seems obvious that a town situated as Chichester is, particularly needs a system of sewers, even if water be supplied from other sources than the contaminated wells. The last time I was in Chichester, I walked through most of the streets between ten and eleven o'clock at night, and was struck with the peculiar faint, sickly odour which pervaded every part of the town. I could not help saying to myself,—"The whole place is saturated with sewage." Nor need this be wondered at, when we consider the circumstances;—an ancient town, surrounded by walls, built on a porous soil, all the houses having cesspools (in one case, by the way, covered with the Ten Commandments from some old church) close to, or not far from, the family well.

The cesspools should be filled up, and a proper system of sewers constructed having an outlet on some part of the land which lies conveniently round the city. The construction of the sewers would be neither difficult nor expensive.

The last evil I have mentioned, viz., the Lavant, is, and always was, a thorough abomination. The stream does not come within the city walls, but flowing at the back of the houses on the south side of the road leading from Chichester to Goodwood, receives the drainage of these houses, and thus polluted passes under a suburb of the city just beyond the site of the last gate. Here its pollution is increased, and is continued until the brook passes under the South-street, also just beyond the site of the gate, where there is again much pollution, some of the waterclosets being built in the arch over the stream. The Lavant is then again an open stream, or rather sewer,—black, filthy, and stinking. Nor is this the worst, for at times the brook is nearly or quite dry, and then there is an accumulation of filth, until a flood washes it away.

Another small stream flows on the north-west side of the city, and after running under the west street and through a tanyard, joins the Lavant about a mile south-west of Chichester. This little stream is, if possible, more vile than the Lavant, and their united stinks may be smelt a long way from the junction.

The corporation has been going to deal with the Lavant any time these fifty years, but the only way in which they have dealt with it is by turning it into an open sewer.

It is a pity that want of energy and divided councils have so long delayed sanitary reform; but if Mr. Hawksley be the adviser of the corporation, and they will follow his advice, we may hope for better things. It is unfortunate for Chichester that its supplies of gas and water should be in the hands of companies and strangers, rather than under the control of the ratepayers.

C.E.

THE FIRST SCHOOL BOARD SCHOOL IN WAKEFIELD.

THE corner-stone of the first School Board school in Wakefield, Yorkshire, was laid on the 8th inst. by Mr. Edward Green, chairman of the Board. In the course of his address Mr. Green said the buildings to be erected would comprise a mixed school for boys and girls, 63 ft. long by 20 ft. wide, and a class-room 20 ft. long by 18 ft. wide, accommodating 164 children. There would also be an infant school-room, 61 ft. long by 26 ft. wide, and a class-room 22 ft. long by 26 ft. wide, accommodating 273 children. Altogether, the two schools would accommodate 437 children. The site, which had concerned the Board very much in consequence of the expense, had cost 1,538*l.*, and the building was estimated to cost 2,300*l.*; altogether, 3,838*l.* The school would be built in the Gothic style of architecture, of red brick, with stone dressings. There would be two entrances in Piccadilly, and lavatories and playgrounds behind the school building, with out-offices, &c. At the east gable facing Piccadilly would be a bell-turret.

Mr. Watson is the architect of the new building, and Mr. Fawcett the contractor for the brick-work, Mr. W. W. Speight for the joiner's work, Mr. C. F. Rycroft for the slating, Mr. C. Driver for the plastering, Mr. Leake for the painting, Mr. Cuthbert for the plumbing, and Messrs. Heaps & Robinson (Leeds) will supply the iron-founder's work.

NEW TRAINING COLLEGE, DARLINGTON.

THE Committee of the British and Foreign School Society, being about to erect a new college at Darlington for training seventy-five mistresses, invited the local architects to send designs in competition, Mr. Beck, of London, the consulting architect to the Society, being professional adjudicator, and an "honorarium" being presented to each unsuccessful competitor.

Mr. Beck having reported in favour of the design submitted by Mr. J. P. Pritchett, estimated to cost 12,000*l.*, the committee have awarded the premium to that gentleman, who is to carry out his design, with any alterations recommended by Mr. Beck.

THE STATUE OF NELSON AT THE MENAI STRAITS.

THE statue of Nelson recently unveiled, as already mentioned, was executed by Lord Clarence Paget, and, together with the base, is composed of a combination of limestone and Portland cement, the latter furnished by Messrs. Basley White, of Gracechurch-street, London. It is supported within by an iron core running up the centre of the legs and of the cloak, which trails on the ground, thus forming a tripod. These bars, which are 4 in. in thickness, are secured to a plate at the height of the waist, and thence to the head rises a single bar of iron, which supports the body, and to which is clamped the left arm and sword, which are also strengthened by an iron core. The feet of the tripod are secured to an iron foot-plate underneath the plinth, and that is tied to the living rock below by four iron bars. It was first moulded in clay, and then

cast. The height of the statue, including its plinth, is 19 ft.; the pedestal is 9 ft., and the basement 13 ft.; the total height of the structure being 41 ft. from the summit of the rock, which stands out in a prominent situation on the beautiful shores of the Menai Straits. The surface of the statue is covered with a silicate, which it is hoped will, to a great extent, resist the effects of the atmosphere.

Lord Clarence Paget mentioned that Messrs. White declined to accept any payment for the large amount of Portland cement used in the work; and that Messrs. Emmerson & Murgatroyd, engineers, Stockport and Liverpool, had been equally generous with regard to the iron-work. Of the artistic merits of the work we cannot yet speak.

WATER-WHEELS.

I TENDER you a few remarks on the Hertford water-wheel. It resembles in design a larger wheel my father built here (Bedford), seventeen years ago, and which has worn well in these heavier waters. Five years ago I designed an iron wheel, and bought it of the Coalbrookdale Company, which has worn as well. Both wheels are lighter, and I suspect much cheaper, than that you describe.

I have now cast bearings in all my water-wheels, and take them (especially large ones) to be invariably preferable to wrought ones, as I have known the latter wear according to the lamina of the metal. I would have nothing but hollow cast shafts from a reliable founder, and wrought iron for the entire wheel, excepting the naves.

From what I know of water-wheels, those of the simplest construction tell the best tale.

E. R.

ENLARGEMENT AND DECORATION OF LEICESTER THEATRE ROYAL.

ABOUT 3,000*l.* have been spent in the reconstruction of the Theatre Royal at Leicester, adding seat-room for fully 400 more persons than hitherto, the dress-circle being calculated to hold 300; pit-stalls, 60; balcony-stalls, 120; upper balcony, 200; pit, 620; gallery, 700—in all about 2,000. Everything has been so provided for that a full view of the stage may be had from every part of the house. The dress-circle has movable seats, covered with rep. The ceiling has been brought 6 ft. nearer the stage than previously, and instead of being flat, as hitherto, is now dome-shaped and panelled—showing figures of Griffins, finished in arabesque, and in the several panels medallions of Shakspeare, Byron, Dante, Goldsmith, Mozart, Mendelssohn, Beethoven, and Rossini. The medallions are the work of Mr. Earle, of London. The drop-scene shows a view of the ruins in Bradgate Park. The front of the boxes is of sunk fret work, with a blending of warm grey, salmon, white and gold colouring. The artists were Messrs. Arthur Sullivan & Co., of London and Manchester. The centre sunlight gives the light of 190 gas jets in nineteen clusters. The builder employed was Mr. Bland; the gas-fitter, Mr. Lyons, of the Drury-lane Theatre, London; the stage machinists, Mr. Roberts, of Nottingham, and Mr. Goodyer, of the Surrey Theatre, London; and the fitter, Mr. Lewis. A refreshment-room has been constructed, in anticipation of a licence.

MEMORIAL WINDOW TO SIR WILLIAM WALLACE.

IN the Abbey Church, Paisley, a window which has been placed there and dedicated to the memory of Scotland's hero, Sir William Wallace, who was born at Elderslie, near Paisley, has been unveiled before a large assemblage of people. The window is a gift of the members of the Glasgow St. Andrew's Society. It is the work of Mr. Jas. Ballantine, of Edinburgh. The centre figure is one of Samson, represented as, after his conflict, uttering his thanks to "the God of Battles,"—"Thou hast given this great deliverance into the hand of Thy servant" (Judges xv. 18),—which is inscribed underneath. The base of the design contains the shield of Wallace, wreathed with the Scottish thistle, and supported by swords of his time,—all upon a groundwork formed of the St. Andrew's Cross argent, upon an azure field. In the upper arched part of the window, emblematical of Freedom, is an ascending angel, rending asunder the chain and shackles of Bondage. The window bears the following inscription:—"To the memory of the Knight of Ellerslie, in this parish. Erected by the Glasgow Saint Andrew's Society."

In a heathen temple, dedicated to Mars, this would have been a very fitting ornament, especially considering that it must have been a work done *con amore* by the artist, who is a good poet no less than a good artist, and on this occasion breathed (poetic) fire and fury against the "foreign rule or yoke" of "the vaunting Southrons": we had almost said by mistake "the vaunting Northrons." On the unveiling of the window, Mr. Ballantine read an original poem composed for the occasion, and which says:—

> "When Wallace was but seventeen winters old,
> He'd grown up seemly, strapping, stout, and bold;
> Was with the Southrons frequently at strife,
> And sometimes twined them of their precious life,
> By hewing down all grew above the neck,—
> A certain token of true Scots respeck;
> Then left them weltering in their blood and gore,
> A full foot shorter than they were before."

The poem, however, forms no part of the inscription on the church window; and it is better it does not. Mr. Ballantine struck a wrong note.

THE COAL QUESTION.

THE first of a series of district meetings preparatory to an aggregate gathering in the Agricultural Hall, Islington, has been held at the Victoria Park Hall, Three Colts Tavern, South Hackney,

"to take into consideration the alarming prospect of the thousands of innocent lives that will be sacrificed this coming winter if something is not done to break up the iniquitous coal-ring."

Mr. Geo. Brooke, of the Metropolitan Meat Market, who occupied the chair, said the gentlemen with whom the movement had originated, were determined to spare neither trouble nor expense in carrying out the agitation. He was authoritatively informed the output of coal this year would be two million tons less than it was in 1872, which meant that instead of the price to the household consumer being 40s., it was more likely to be 60s. a ton. The cause of all this was not the scarcity of the article, but the determination of the miners not to allow a second shift, and of the coal-owners, who were pocketing millions sterling by the restriction, to connive at the ill-advised action of the men. He was told there was coal enough in England to last a thousand years and more. He had authority for stating that Earl Dudley, rather than permit a coal famine to prevail in the metropolis this winter, was prepared to sell 500,000 tons of coal at 18s. a ton at the pit's mouth; and if the movement now being set on foot were vigorously carried out, there would be no difficulty in bringing both capital and labour to their senses. The following resolution was carried unanimously, viz.:—

"That the report of the Mundella Coal Committee is unsatisfactory, and does not meet the requirements of the people; that the winter is at hand, when warmth is almost as necessary as food for the poor; which justifies the formation of a league for working a reform in the supply of coal to the people at large and the manufacturing interest."

Nearly seventy members of the South Staffordshire Institute of Mining Engineers and the South Midland Institute of Civil and Mining Engineers have paid a visit to Pelsall for the double purpose of inspecting one of Messrs. Baird & Firth's coal-cutting machines at work in the No. 10 pit of the Pelsall Coal and Iron Company, and bidding farewell to Mr. W. Ness, who was about to leave England for the purpose of undertaking the superintendence and development of the Windale Valley coalfield, in the Central Provinces of India, on b half of Government;—a coalfield extending over a surface area as much as 60 miles in length, by from 15 to 20 miles in breadth, and in which one seam of coal 52 ft. in thickness has been proved at a depth of 149 ft., and another seam, 32 ft. in thickness, at a depth of 180 ft. The motive power to the coal-cutting machine is compressed air. The machine was at work in a seam some 5 ft. thick, with a solid stony roof, necessitating but little timbering, and affording favourable conditions for the trial of the invention. In shape the machine is somewhat like an oblong box, a little over 5 ft. long by nearly 2 ft. wide, mounted on wheels which raise its upper surface about 2 ft. from the ground; and is supplied with a seat for the driver at the rear end, where the controlling handle and wheel are immediately under his hand, and with a sort of double pick at the other, not unlike an elongated lobster-claw, excepting that the inner claw turns outwards, instead of inwards. This claw, which can be worked either to the right hand or to the left, and at any angle, drove on with a steady crunching beat, close to the bottom of the seam, the first or inner half cutting in a distance of 18 in., under the most favourable circumstances, and the second or outer half carrying on the work of its partner in the previous beat to a depth of 36 in. Thus with every beat there were two cuts into the solid coal, the one being just double the depth of the other. That depth varied, however, from 3 ft., as stated above, under the most favourable circumstances, viz., when the machine could be worked close up to the face, down to 2 ft. 5 in., the cut into the coal being not more than 2 in. in width. The estimate of the capabilities of the machine was stated to be that it would do the work of nine men in holding, and, in addition, save a very large proportion of slack; but, although arranged to be worked by one man, in this case the want of agreement between the wheels and the rails named above rendered the services of a second man necessary, and consequently, so far showed the invention to a disadvantage. An average of from 18 ft. to 20 ft. of work from 2½ ft. to 3 ft. in depth, per hour, was shown, however, in this trial, after allowing for stoppages; and Mr. Ness, under whose personal direction the trial was conducted, expressed himself sanguine that an average of 15 ft. could be maintained, being 50 per cent. more than the average he anticipated when he first brought the matter under the notice of the Dudley Institute. Mr. Ness, who speaks after experience of all known machines at work, and whose opinion is therefore of weight, believes that this coal-cutter can be worked under any but the most exceptional circumstances, and that of all existing machines it is the most suitable for use in the shallow coals of South Staffordshire.

In consequence of the high price of coal it has been resolved to stop the Great Work Mines, near Breage, West Cornwall.

MOTTOES ON MASONRY.

SIR,—"I have been young and now am old," and since I was a young man I have not opened a book on heraldry. Still, if my memory does not deceive me, I recollect reading that the motto, "Furth fortune and fill the fetters" (mentioned in your interesting article "Mottoes on Masonry"), is the ancient motto of the Murray family, of which, I believe, the Duke of Athol is the head. It would be interesting to know if the coat of arms in connexion with which it is carved is the Murray coat of arms, and also whether or not any member of that noble Highland family ever occupied the house on which it is carved.

I have seen a suggestion as to its meaning by no means so moral as yours, *i.e.*, "Go forth, trust to fortune, and fill the fetters with prisoners who will pay ransom." I leave it to your readers to judge which interpretation is more consonant with Mediæval usages in the far North. Perhaps some of them can supply the information I have mentioned as interesting.

H. R. P.

ACCIDENTS.

Pimlico.—For some time past the extensive brewery premises of Messrs. Watney & Co., Pimlico, have been undergoing repair, Messrs. Moreland & Son being the contractors for the works. A number of massive girders, 50 ft. long by 10 in. wide, are fixed, connecting the large receptacles for beer one with another, and along the edges of these girders are iron uprights, projecting 3 in. above the surface of the girders, which are laid in pairs, each pair being 6 in. apart. Two workmen were carrying a heavy plank along one of these narrow girders, when one of the men either stumbled over an upright or missed his footing, the result being that he fell over the edge of the girder and dashed headlong to the bottom of an empty bin, a distance of 40 ft., sustaining injuries which caused death half an hour afterwards. A coroner's verdict of "Accidental death" was recorded.

Stonehouse.—Some persons were working near a wall in Stonehouse, near Plymouth, where six houses were recently burnt down, when the wall fell upon them, killing four men and three boys.

The Local Board determined at the inquest to show that the owner had notice of the dangerous condition of the wall, and the coroner has appointed an architect and builder to examine the scene of the architect.

The Hartlepools.—At West Hartlepool a bricklayer was at work on the summit of the chimney of one of Messrs. Richardson's new blast furnaces, when he missed his foothold upon the scaffolding and fell to the bottom, a distance of nearly 80 ft. His thighs were both fractured, one of them in two places, and he was somewhat seriously injured on the head, but he was not killed, and was taken to the Hartlepool General Hospital.

York.—Whilst a stonemason was engaged in dressing some stone on a scaffolding connected with the new church now being erected at the North-Riding Asylum, near this city, he was seized with a fit of giddiness and fell a distance of 21 ft. to the ground. His legs were paralysed, and one of his arms partially so: he had also concussion of the spine; and, being sensible, he explained that he had felt giddy that morning, and had not been well for two or three days. He died from the injuries he had received. At an inquest which was held before Mr. J. P. Wood, on Tuesday, it was shown that there was no fault in connexion with the scaffolding upon which the deceased was working, but that his death was purely the result of an accident, and a verdict was therefore returned accordingly.

SCHOOL BOARDS.

South London.—In connexion with the London School Board, a large school in Harper-street, New Kent-road, is rapidly approaching completion, according to the *South London Chronicle*, and three others have been commenced. One of these, in Johanna-street, Lambeth, will accommodate 800 children; another, in Marlborough-street, New-cut, 1,020; and a third, in Laxton-street, Bermondsey, 784.

Huddersfield.—Tenders for the erection of the Moldgreen School have been accepted, amounting to between 7,000*l.* and 8,000*l.*; also tenders for Stile-common School for 5,892*l.*

DIFFICULTIES AT THE NEW ALBERT BRIDGE, CHELSEA.

THE gradient at the foot of the new Albert Bridge, on the Chelsea side, is giving rise to complaints that may take some expensive measures to remedy.

At the last meeting of the Chelsea Vestry, a vestryman said the road was very dangerous indeed, particularly of a night-time. The parish road, in Oakley-street, would have to be greatly raised to make a gentle gradient on to the bridge itself; but in doing this there would be a high rise across the road from Cheyne-row, which would be still dangerous and heavy for horses. No one seemed to know anything of the plans of the bridge when submitted to the Vestry when the company first proposed the bridge. If the vestry had foreseen the danger of the approach to the bridge, certain it is the Act for building the bridge in its present state would have been opposed. There were three contending parties,—the Metropolitan Board of Works, the Bridge Company, and the Parish of Chelsea; and action should at once be taken by the Metropolitan Board.

Eventually it was resolved that a letter be written to the company pointing out the dangerous state of the road, and requesting the engineer to meet Mr. Pattison, the parish surveyor.

At present a horse with a heavy load would be unable to draw up to the foot of the bridge, and how the difficulty can be overcome is a query.

THE GAIN OF TECHNICAL EDUCATION.

SIR,—I observe from time to time articles in the columns of the *Builder* and other newspapers recommending technical education to artizans and mechanics. Well, I hope you will excuse the liberty I take in laying before your readers the result of my experience. In 1871 Mr. Buckmaster visited this locality, and I went, along with others, to hear that gentleman. The result was that I joined a class formed for "building construction" (being a carpenter and joiner by trade), and at the close of the session gained a Queen's prize; in 1872, a second-class certificate in advanced stage; and in 1873, passed in honours, which is the highest stage. I also, during 1872, passed in mathematics, and in 1873 passed in mathematics, and gained a Queen's prize in applied mechanics, as well as studying theoretical mechanics. I mention this to show that I have in some measure a right to speak on the subject.

Well, as to the result, during my studies I began to see many things that were done in the shop and by my shopmates in our daily employment could be easier and quicker done, and often spoke about it to some of them, and I began to see that things passed as work that were really not work at all. The result was, I became a marked man, a knowing too much, and it did not pay to make things in this or that way, and I was soon made to feel that if I knew anything more than my superiors I had better find some other place. This was not so easy to do, as there are few shops in the place. I once or twice had the courage to apply for a place as clerk of works, but on being asked by what architects I had been employed, of course I had to confess to being still at the bench, upon which my certificates were generally returned with a "Humph! Can't employ you."

Now I happen to know that mine is not a solitary instance of parties learning and acquiring an accurate theoretical knowledge of their trade, and when foremen came to know that such was the case the men were soon made to feel that official dignity was not to be lightly laid on their shoulders; and I know also of parties who have been deterred from those classes by the very same thing. If employers and architects would take more interest in those classes, and visit and countenance them more, it would no doubt very soon benefit all classes; but so long as it is to the interest of parties to do as has been done, and let things take the usual course, and allow none of those who execute the work to have or give an opinion therein, so long must we all remain mere machines.

Dumbarton. A CARPENTER.

THE IRON BRIDGE, BOW CREEK.

SIR,—Referring to a paragraph in your last number on this subject, I inclose for insertion (if you see fit) a copy of a report I made in 1861, after a careful survey of the structure, and I beg at the same time to state that it was then substantially and thoroughly repaired, and is, wear and tear considered, in as efficient a state for the purposes for which it was designed,—viz., the ordinary traffic of a suburban turnpike-road,—as when first erected.

This is due to the memory of the engineer who constructed it more than half a century back, my late friend and master, James Walker, the Government engineer of the day, and for ten years president of the Institution of Civil Engineers, and whose partner, Alfred Burges (father of the well-known architect), is still living, and who worked out all its details and superintended its erection.

An exaggerated statement is now often trotted out by one of those modern vestry or district boards to get a local improvement carried out for their benefit from other funds; for in this case the Poplar Board of Works have a very shadowy claim to any special interest in the matter, beyond any adjoining parish, their territory ceasing at its site, as does that of the West Ham Board of Works on the other side of the river.

The structure has of course now more a metropolitan than suburban character, and it is legally a county bridge, situated in two counties (Middlesex and Essex), and, not counting the two surveyors to the District Boards, blessed with two surveyors of bridges for the respective counties, Messrs. Pownall and Stock, who both have had from me copies of the inclosed report, and they have caused to be continued notices respecting excessive weights of machinery, &c., which were first exhibited by me, and similar notices may be seen throughout the country, on the approaches to other county bridges, respecting steam-engines, agricultural machinery, &c., warning the carriers to cross at their own peril.

J. B. REDMAN, Memb. Inst. C.E.

BUILDERS AND ESTIMATES.

SIR,—Last July a gentleman directed his architect to ask the four builders as under to tender for a house which he was about to build in Cambridge. A friend of mine, being one of the four, was written to as follows:—

"Dear Sir,—I am directed by ———, architect, to write to you to know if you will compete with other builders in your neighbourhood to erect a new house for ———, esq., at Cambridge, from quantities prepared by myself and Messrs. ———, surveyors. The quantities, when ready, shall be sent to you in due course." Signed (the surveyor's name).

My friend replied that he would tender. He duly received the quantities, with letter as follows:—

"The tenders are to be delivered on Friday, 22nd July, at architect's office, —— Oxford-street, at two p.m., and the drawings can be seen there on and after Tuesday, 19th July, between hours of ten and four."

The tenders were sent in at the appointed time, and were thus:—

Gray & Son	£6,695	0	0
Loveday	6,348	0	0
Bell & Son	6,289	0	0
Thoday	6,279	15	0

My friend's tender being the lowest, he naturally expected to have the job. He had been asked to compete with the others, nor was there anything in the surveyor's letter to imply but that the lowest tender would be accepted. On hearing that the work had been given to Bell & Son, my friend wrote to the owner, and received reply as follows:—

[The architect says in this, that the tenders, being practically equal, he had preferred Mr. Bell, and that this preference was not owing to any distrust of Mr. Thoday's merits.]

Now the above contains no substantial reason for not accepting the lowest tender; on the contrary, the letter expresses every confidence and satisfaction as to the character of the builder, and his work.

Now, Mr. Editor, will you kindly, in one of your next issues, express an opinion as to whether a builder may legally claim a compensation for such usage and trouble taken, and what per-centage on the amount of Tender.

A TWENTY YEARS' SUBSCRIBER.

*** Mr. Thoday having been invited to compete, and having sent in the lowest tender, had every right to expect to be employed to carry out the work. We have a strong belief, moreover, noting the terms of the invitation, that he would be able to maintain a claim for expenses, if not damages: this, however, would have to be looked into.

BATTLE BRIDGE ROAD, KING'S CROSS.

At the meeting of the St. Pancras Vestry on Wednesday, a report was brought up from the Highways, Sewers, and Works Committee, stating, in effect, that the works had been executed satisfactorily, and in the manner most likely to be beneficial to the public.

Mr. H. North, chairman of the committee, moved that the report be approved. The committee, he said, had very carefully considered the matter, and all who went to view were very well satisfied with the state of the road, and the committee had passed the report unanimously.

Mr. John Eldridge opposed the approval of the report, and read his letter, which appeared in the *Builder* last week, on the subject.

The chairman, Mr. Churchwarden Nodes, said the bridge had been built under the powers of an Act of Parliament, and the plans had been sanctioned by the Board of Trade, and approved by the vestry when Mr. Eldridge was present, and it was too late now to object to them.

The report was then approved.

INCREASED VALUE OF LAND IN THE SUBURBS.

AT an inquiry held on Monday, before two justices of the peace, Messrs. W. P. Bodkin and J. H. Lermitte, at the Gatehouse Hotel, Highgate, to determine the price to be paid by the parochial officers of Finchley for 530 loads of gravel, taken compulsorily, under the provisions of the Highway Act, from certain lands in the occupation of Mr. Linn, situated at Whetstone, for the purpose of repairing the highways in the northern parts of the parish of Finchley. It was given in evidence by Messrs. Leighton, Linn, and others, that land in the parish had greatly increased in value. It had been known to be sold within the last twenty-five years for 75*l.* an acre, while lately 800*l.* an acre had been offered for land, and refused, and some land had been sold for 1,000*l.* and 1,200*l.* an acre. The increased value of land in the parish was attributed to the increase of population in consequence of the facilities given by the railway for travelling between Finchley and the metropolis. It was decided that the gravel, for which the parish not long ago paid 9d. per load, is now to be paid for at the rate of 1s. 4d. per load, the question of the compensation to be paid for the injury done to the land from which the gravel was taken being still to be determined.

CHURCH-BUILDING NEWS.

Aspenden.—The ancient parish church of Aspenden, a village about a mile from Buntingford, has, after undergoing restoration and repair, been reopened by the Bishop of Rochester. The partial restoration has consisted chiefly of a general repair and refitting of the interior, the funds at disposal being insufficient to defray the cost of a thorough renovation of the exterior of the building, which, more especially as regards the tower, is much needed. The gallery, which formerly obstructed the west end of the nave, is taken down, and the whole of the tower arch is now exposed to view. The organ has also been removed from the tower to the south aisle. A new window and doorway have been placed in the west wall of the tower. The west window was formerly entirely blocked up, and was in a very dilapidated condition. A new window in the Early Decorated style, by Messrs. Heaton, Butler, & Bayne, of London, has been built in the north wall of the nave. The window is filled with stained glass to the memory of Mr. William Overell, of Wakeley, and his wife. In the centre light is a representation of our Lord, and on the other side Nathaniel, and Hannah, with the child Samuel. During the restoration a saint's niche was discovered in the east side of this window. A recess for a holy-water stand was found in the south aisle. In removing the plastering and wood panelling from the chancel walls, a piscina, with credence-table, and an aumbry, were found on the south side, and a lancet window in the First Pointed style, and a smaller window of an earlier date, were also discovered in the north wall. These are all preserved and restored. To increase the light in the church, three clearstory windows have been inserted each side of the nave. All the masonry throughout the church has been cleansed from limewash and cement, and is reworked; the walls are replastered, and all the old windows repaired and reglazed. The chancel has a new panelled roof of stained deal with painted and gilded ribs, and is copied from the ceiling of the choir of Jesus College Chapel, Cambridge, of which college the rector was formerly a scholar; and the floor is laid with Godwin's encaustic tiles. The panels of the reredos, which is executed in Bath stone, are filled in with variously coloured tiles by the same manufacturer. Maw's 6-inch plain black and red tiles are laid in the passages of the nave and aisle. New stalls executed in wainscot oak are fixed in the chancel. The font is restored and provided with a new cover. The old square high-backed pews no longer disfigure the nave and aisle, new wood floors are laid, and the seats generally are all repaired and rearranged, and now present a uniform appearance (with the exception of the Freman Chapel, occupied by Sir Henry Lushington and his tenants, which is raised above and screened off from the other part of the church). The seats in the south aisle are new, and accommodation is provided for children by new seats at the west end of the nave, and in the tower. Porritt's warm-air stove has been introduced for heating the church. The architect was Mr. Blomfield, of

London, and the work has been carried out by Mr. Gibbons, of Buntingford, at a cost of about 800*l*.

Brighouse.—An examination of the tower of St. Martin's Church has been made by Mr. Mears, of the firm of Messrs. Mears & Stainbank, bell-founders, as to whether it was capable of carrying a peal of eight bells. After thoroughly investigating every part, he came to the conclusion that the tower was capable of carrying such a peal with safety; to be constructed in two tiers. The project also includes a new organ, a much-needed acquisition to the church. It is proposed to call a public meeting of the parishioners, to ascertain their feeling in the matter; and should the project meet their approval, the funds necessary will be raised, there being already several large subscriptions.

Aghadown, Ross.—The new parish church commenced about a year ago, and the first erected in the united diocese since the Act of Disestablishment, has been consecrated by the Bishop of Cork, Cloyne, and Ross. The church, which occupies a commanding and central position on a site granted by Mr. John R. H. Becher, of Longhine, and calculated to seat 260 persons, is in the Early French Gothic style, consisting of nave, transepts, and chancel. It was built by Mr. Thomas Pemberton, of Dublin, under the superintendence of Mr. William Hill, diocesan architect, according to plans supplied by Messrs. Henry & Arthur Hill, of Cork. A stained-glass memorial window adorns the east, and is the gift of The O'Donovan.

Baddesley (Warwickshire).—The church here is to be restored, at the cost of Lady Chatterton. The works at present intended are the following:—The floor to be taken up and levelled, all sound memorial stones to be relaid, those which are too far gone to be replaced with small slabs, marking the place of sepulture, with name and date inscribed thereon, and recording also the recent inscription; the walls to be stripped of all old plaster, and the lime-white washed off; the rubble walls in the nave it will be imperative should be replastered; the rest will be repointed, all scraping or tooling the masonry being scrupulously avoided. The pews and gallery to be removed, and open benches substituted for the former; the ends to be worked from an old example existing in the church, and all such old ones to be reused; the opening of some good Decorated windows, now blocked up; the repair of the fine Perpendicular roof of the nave; reglazing in cathedral-glass all the windows; and arrangements for remedying damp and warming the church, new pulpit, desk, and Litany-desk comprise the chief points of attention. Messrs. Payne & Talbot, of Birmingham, are the architects employed. The same gentlemen have recently completed, for Lady Chatterton, the restoration of Shakspeare Hall, Rowington.

DISSENTING CHURCH-BUILDING NEWS.

Hereford.—The new edifice replacing the ancient Congregational Chapel at Eign-brook, Hereford, has been opened for divine service. The building, a parallelogram on plan, consists of entrance-porch, vestibule, two gallery staircases, nave and side aisles, an apsidal organ-chamber in the rear of a preaching-platform, and a vestry, with heating-chamber under. The entrance-porch is broad, with a vaulted stone roof, ancient in character. The vestibule affords ample ingress and egress to the aisles, as well as a shelter from the outer porch on the right and left of it. Communicating therewith are the staircases leading to the gallery. These staircases are fitted with broad, easy-going stone steps, with spacious landings, so arranged that in the event of side galleries being inserted (for which provision has been made by the architects in designing and developing the building), they may be readily approached. The nave, in the centre of the building, is 70 ft. long and 24 ft. wide, 28 ft. high to the top of the clear-story, and 45 ft. high to the ridge. It is divided on each side into five bays of arcading, with clean cast-iron columns, having undercut moulded bases, imposts, and caps, the latter foliated. These columns support the roof principals, which are of king-post and tie-beam construction, with moulded caps, &c., filled in with curved trefoil-shaped ribs. The spandrels forming the arcading, also curved and perforated, support the clearstory, which is wholly executed in timber, and consists of a series of lancet-headed lights. The roof is of equilateral pitch, ceiled to the collar and to the under-side of the rafters. The purlins, plates, and principles are all wrought and exposed to view, with intermediate ribs, which divide the whole into panels. A portion of the clearstory lights are made to open on centres, and these, in addition to iron grating ventilators in centre panels at the ceiled collar, provide means of ventilation. The side-aisles are each 56 ft. long and 8 ft. wide, 17 ft. 6 in. high to wall-plates, and 23 ft. 6 in. high to intersection with nave immediately under the clearstory. These roofs are of lean-to construction, of third pitch. The principals have curved ribs, and all the timber is wrought and exposed to view, the space between the rafters being plastered. In the centre of each bay is a two-light cusp-headed window, each fitted with a hopper ventilating casement. The apse, half-octagonal in form, in which the organ is placed, and accessible by an outer door; is in rear and on a level with the raised dais, or preaching platform; is 3 ft. above the level of the aisles and nave floor, and is screened by an arcaded tracery screen of early type. In each side of the octagon is a two-light tracery window. The roof is of hexagonal shape, with moulded ribs and principals, and divided into boarded panels. The vestry, 12 ft. 6 in. by 11 ft., is approached directly by a door from the preaching platform, which has a fireplace, &c., and an outer entrance. Underneath this is a chamber for the heating apparatus, from whence hot and cold air flues are conveyed into chambers formed in the floor, and covered in the passages of aisles with iron gratings. The whole of the heating appliances have been executed by Messrs. Haden & Son, of Trowbridge. The seating is arranged to radiate from the centre of the pulpit, thus enabling each and every person to command an uninterrupted view of the preacher. They are all open benches, with ample space from front to back. The backs are sloping, and the ends have cut and shaped elbows. Each seat has, moreover, a specially-arranged hat-rail, book-box, and umbrella-stand, a gutter being formed in the floor of the aisle passages, whence all drippings are readily conveyed. The floors under the seat are boarded. The passages, vestibule, and staircases are paved with encaustic tiles, of Godwin's manufacture. The raised dais, or preaching platform, is a combination of pulpit and communion arrangement. The pulpit is half octagonal, with geometric tracery, panelled front, carved and cut brackets, and is approached right and left by two flights of steps, each provided with moulded hand-rail, newels, carved shafts, and arcaded balustrading. On the lower level, and immediately in front of the pulpit, is a stall, with elbows for the minister. Fronting it is a horse-shoe shaped communion-table, and surrounding it is the communion-rail, semicircular in form, supported with cut and carved uprights. The arch of the apse is equilateral, moulded, and supported by sister responds, having carved capitals representing "Morning and Evening," and moulded dated bases. This end of the building is arched with triangular tracery window over the apse, organ-screen, and preaching-platform combined. The choristers occupy the seats facing each other on the right and left of the dais. The columns supporting the clearstory are of cast-iron work, executed by the Coalbrookdale Iron Company. The floor of the nave and aisles has a slight incline from the entrance front to the pulpit. The walls in the interior are finished to a rough finish-skin floated surface, with a cemented dado all round at the window-sill level. The walls of the vestibule and the staircases are faced with pressed Broseley white bricks, with parti-coloured relieving arches. All the woodwork (except the entrance-doors, which are of oak) is of pitch pine, relieved with white wood and varnished. The windows are glazed with cathedral-tinted glass in lead quarries, geometric patterns being introduced in the tracery. A gallery with perforated open front occupies the full width over the entrance end of the fabric, and in depth extends over the first bay of the arcading; this gallery has seats somewhat similar to those in the body of the building, and affords accommodation for about 150 persons. The ground-floor affords accommodation for 400 sittings, making a total of 550 sittings, which, by the introduction of the contemplated side-galleries, might be increased to at least 700. The whole building is lighted by gas, with a nine-light corona in the centre of each bay of arcading, nine-light brackets on each side of apse, six-light brackets under and nine-light brackets over each side of gallery. All these fittings were specially manufactured by Messrs. Hart, Son, Peard, & Co., London. The belfry is surmounted with corbel-table, cornice, and lofty roof, covered with slates, in bands of two colours. On the crest of the roof is an ornamental wrought-iron ridge and finials. The total height from the surface of the ground is about 80 ft. The whole of the front, the vestibule, and the inside of the staircases are faced with pressed Broseley white brick, forming a slight contrast with the dressings, which are of Bath stone. The carving throughout was by Mr. John Welsh, of Hereford. The work has been executed by Messrs. Welsh & Son, of Hereford, builders, from the designs and under the superintendence of Messrs. Haddon, Brothers, of Hereford and Great Malvern, architects, at a total cost of about 3,000*l*.

Tavistock.—The new Congregational church, built from the designs of Messrs. Taming & Son, the architects of the chapel on Southernhay, Exeter, has been opened. It stands in Brook-street, and has a spire rising to an altitude of 135 ft. The style of the church is Decorated Gothic, and the building is erected with its west end abutting on the street, and immediately in front of the schools connected with the denomination, put up in 1863. The materials used in the exterior are principally local walling stone, but the copings, quoins, and plinth are of grey granite, and the other dressings of Portland and Bath stones. The church is entered from Brook-street, by three large doors, each of which is decorated with carving. There is a tower with broached spire. The windows are glazed with cathedral-tinted glass. The galleries are of pitch pine, and all the seats are open, and of the same material. The pulpit is also of pitch pine, and bears within a centre cinquefoil panel the sacred monogram of I.H.S. The roof timbers are shown, and are stained and varnished. The church will be lighted at night from brass and painted metal coronæ, suspended from the roof. The chancel arch, which, together with the internal stonework, is of Bath stone, is a prominent feature; it is moulded, the capitals, corbels, bosses, &c., being carved, representative of natural foliage. The rose and lily are worked out respectively in the capitals, and the corbels are carved to represent the vine, passion-flower, &c. The pelican feeding her young with her life's blood, symbolical of our Lord's love and redemption of the world, is also represented. The end of the chapel is polygonal, and on one side of the apse is the organ-chamber. The choir-seats are arranged looking north and south, and are immediately behind and at right angles with the pulpit, which occupies the centre of the chancel-arch. The aisles are laid with encaustic tiles. The contract has been carried out by Mr. Luscombe, of Torquay, builder. The carving throughout is by Mr. Harry Hems, of Exeter. The clerk of the works was Mr. Bailey, of Plympton. Mr. Luscombe is carrying out a much larger church for the same denomination, and under the same architect, at Blackburn, in Lancashire.

VARIORUM.

IN a recent notice of "Elementary Principles of Carpentry" (Lockwood), we mentioned an Atlas of Engravings referred to in the work but not forwarded. It is now before us, and we can speak well of it. Besides numerous plates from Tredgold, it includes various valuable details from executed works. —— The "Household Edition" of *Little Dorrit*, by Charles Dickens, just now issued by Chapman & Hall, is certainly a miracle of cheapness, and that too without any sacrifice of goodness. 420 large pages of good type, and fifty-eight effective engravings, all for 3s. And yet we have to pay 6d. for a play-bill! This, however, is a parenthesis. The edition before us will make *Little Dorrit* and her surroundings known to thousands of new readers. ——A correspondent of the *Garden* says, the following curious derivation of the name horse-chestnut (*Æsculus hippocastanum*), as well as the fact giving rise to it, may possibly be as new to your readers as it was to me, particularly as neither Loudon in his *Encyclopædia*, nor any French book on the subject, that I have seen, makes any mention of it. On examining, either with or without a glass, the mark left by the leaf-stalk after its fall, a very distinct impression of a horseshoe imbedded in the bark may be observed, bearing in relief seven dots, simulating the heads of as many nails. This mark assumes much more accurately the shape of the horseshoe on the twigs of last year'

growth than on older wood.——On "Electricity, as the Expansive Force of Steam. By G. A. Rowell. Printed for private distribution by the Author, 3, Alfred-street, St. Giles's, Oxford. 1873.—This tractate is in the form of "A Letter to the Secretary of the Smithsonian Institution, Washington, soliciting an experimental Investigation of the Theory." The author is an honorary member of the Ashmolean Society, and an assistant in the Oxford University Museum. He is an author of essays on the cause of rain, and other subjects. The theory under notice is certainly a very important one. A jet of steam issuing from a boiler is in a negative electric condition near to the orifice, *where the expansive force is greatest*. It is neutral at a distance from it, where the expansive force has been, so far at least, expended; and positive at a greater distance, where the steam is returning to its more condensed state. These facts accord with an idea broached occasionally in our columns, that *negative* electricity is *expansive* or radiative, and *positive* electricity *concentrative*, or contractive. In short, the analogy between electricity and heat and cold holds good only while we analytically regard the *negative* electricity as being analogous to *heat*, and the positive to cold. If this be correct, it is not sufficient theoretically to regard "electricity as the expansive force of steam," but negative electricity alone as such, the positive electricity being the contrary. In electricity we have two forces to deal with, just as we have in heat and cold themselves; and however "negative" we may regard "cold," as the mere absence of heat, it is a powerful force, as every one knows; but it is curious that, in the parlance of science, it should be the radiative or expansive force, as regards heat, that is considered to be the positive, and the contractile the negative; while, as regards electricity, it is the radiative or expansive which is called the negative, while it is the positive that is the reverse. The remarks now made result from many years' reflection on the subject of the corelations of the physical forces; and they may help Mr. Rowell in the establishment of his theory; as also may the theory broached about a quarter of a century since in the *Builder*, by the present writer, in an article partly titled "What is Electricity?" in which the molecular and atomal or organic relationships of physical forces to each other are treated of.——"Borough of Salford: Tramways Reports. Salford: Roberts, printer." This is the report of a Parliamentary sub-committee, with the mayor, Mr. T. Barlow, as chairman, recommending the local council to defer the proposed application to Parliament on the subject of tramways for another session beyond the first, and in the meantime to "mature a general system of tramways for the borough of Salford and city of Manchester, and such of the outlying townships as may be willing to concur"; and they accordingly advise the council to rescind their resolution of the 5th of February, 1873, so far as it directs application to be made in the ensuing session of Parliament. The report is approved by the council. The committee visited London, Glasgow, and Edinburgh, and give useful information on the subject in their report.

Miscellanea.

Fixing a Weathercock on Ashbourn Church Spire.—A new weathercock has been placed on the spire of Ashbourn Church, Derbyshire, by the vicar, the Rev. Edward Marsham Moore, M.A. The spire is said to be 252 ft. in height, measuring from tower to capstone. The top, for 30 ft., had been rebuilt by Mr. George Frith, of Coventry. The work was all done on stages formed by planks screwed together round the spire. In fixing the weathercock, the vicar ascended from the roof of the church on a small seat suspended by a rope which passed through a pulley fixed at the top of the spire, carrying the weathercock on his back. The sun shining on the gilded bird, produced the effect of a gigantic insect crawling up the steeple. On reaching the spindle, the vicar placed the weathercock on it, amid the cheers of the people, and much amusement was caused at the moment by the whistle of a railway engine at the station close by screeching out a shrill "cock-a-doodle-doo." The restoration of the spire is, we understand, but the commencement of the restoration of the whole of this church.

Wood-Pulp Mills, near Derby.—Mr. Henry Voelter has invented an ingenious apparatus for making wood-pulp for paper. He accomplishes this in an easy and expeditious manner, it appears, and at a much cheaper rate than by the chemical process. The production of the pulp in this system is brought about solely by mechanical agency, and the pulp thus produced from Swedish pine has been found to answer well the purpose for which it is intended. Wood-pulp mills constructed on Mr. Voelter's plan are already in existence in Germany and Sweden, but at present they have not been adopted in England, except in one instance, on a small scale in Northumberland. A number of gentlemen, however, have purchased the Brook Paper Mills at Little Eaton, about three miles from the town of Derby, and there they have had erected on a complete and extensive scale machinery patented by Mr. Voelter for the making of wood-pulp. The company has been established with a capital of 20,000*l.*, and three large machines have been erected in the mills. The wood is cut into blocks of the requisite length (about 1½ ft. long), and then each block is put under an iron cleaver, which splits it instantaneously into the number of pieces requisite to prepare it for the grinding mills. The blocks thus broken up are conveyed by an elevator into the machine-room. A cylindrical-shaped machine or box then defibres the wood by pressure upon a rotating stone, under a constant afflux of water, and by self-acting screws. A sorting apparatus excludes the coarse wood splinters, and mixes the pulp. The refiner cleanses the fibres, and makes them pliable. The pulp attains a rag-like consistency, and is then ready for storing boxes where the water is drained from it, and the pulp is ready for sale to the manufacturers of paper, to mix in proper proportions with rag-pulp. Wood-pulp manufactured by this system may be mixed with rag-pulp in quantities of 15 to 18 per cent., according to the quality of the paper, and it has been discovered that the company will be able, from the wood-pulp alone, to manufacture a brown paper suitable for hosiers and other manufacturers.

New Bank Buildings for Derby.—The banking premises of Messrs. S. Smith & Co., in the Market-place, are about to be rebuilt upon a much larger scale, extending over the site of their own premises and those lately occupied by Mr. Inott. The principal counting-house will be 18 ft. high, the entrance fronting the Market-place of panelled wainscot, with tesselated tiled floor. There are to be partners' private rooms leading out of the counting-house, and also a private side entrance, with fire-proof book-room over. An arrangement of fireproof strong rooms and safes will be built under the floor of the counting-house, of Staffordshire bricks, with hoop iron interlaced in each joint of the brickwork, laid in cement. The strong rooms will be approached by a stone staircase, and the books and money raised and lowered by a hoist, made by Messrs. Bunnett & Co., who are also makers of revolving iron blinds to the new bank windows. The office front will be in polished red and grey granite, with Grecian Doric columns and pilasters, the superstructure of Darley Dale stone, and surmounted by a carved cornice. The building is to be heated and ventilated by Messrs. Price & Co., of London. The whole of the works are to be carried out by Messrs. J. & E. Wood, of Derby, and under the superintendence of Mr. George Risborn, of London and Derby, the architect to the firm, who is also preparing plans of a similar building for Messrs. S. Smith & Co., at Nottingham.

An International Bridge.—It is expected that the great international railway-bridge, to span the Niagara river between Buffalo and Fort Erie, will be completed and opened some time in October. It is the enterprise of an independent company; was commenced in May, 1870; and its cost will be something over 1,000,000 dollars. The superstructure is of iron, supported on stone piers, with the necessary draws for the passage of vessels. The length of the main bridge across the river is 1,968 ft.; thence across Squaw Island to the west end of the bridge over Black Rock Harbour is about 1,200 ft.; and the bridge over the harbour to Niagara-street is 617 ft. The "swing" over the openings will be opened by steam in 50 seconds. The depth of the water in the river where the bridge crosses is from 10 ft. to 40 ft. The iron-work for the bridge is manufactured at Phœnixville, near Philadelphia, and the superstructure is known as the Pratt Truss.

Warrington.—A new congregational church was opened in this town on Thursday, the 4th instant. It is situated at the corner of Bewsey and Edgeworth-street, and is a commodious building in the Byzantine style. The building is a parallelogram 94 ft. by 61 ft., with tower at each angle in addition; the one at the corner of the principal streets being 120 ft. in height; the remaining three towers, 50 ft. high, in which the staircases are built for communication with the galleries from the several entrances, of which there are six. The body of the chapel is separated from the front entrances by two vestibules. The galleries are large. The orchestra, which is 30 ft. in width, is very lofty. The ceiling in the centre is segment-shaped, and flat at the sides, formed in panels with cornices throughout. Under the orchestra, at the back of the chapel, is a vestry 29 ft. by 16 ft. 6 in., and four other vestries, each 16 ft. by 13 ft. The roof is supported by coupled cast-iron columns. The church is arranged to seat about 1,100 persons. The works have been executed by Mr. William Richardson, builder, of this town. The heating was done by Messrs. Whittaker & Constantine, of Bolton. The architect is Mr. George Woodhouse. The total cost is about 7,000*l.*

Brighton School of Art and Science.—The annual distribution of prizes and certificates awarded to the pupils of this Institution have taken place in the Town-hall, the mayor presiding. The report of the committee congratulated the subscribers and the public on the very marked advance which the school had made under the mastership of Mr. Alexander Fisher. Out of the works selected for national competition, one pupil gained a National Bronze Medal and another a National Queen's Prize; the former being awarded to Miss Annie Hamblin and the latter to Mr. William Michell Alderton, who also gained an Art Master's certificate. The desirability of Brighton possessing an edifice specially constructed for the purposes of an Art School was particularly dwelt upon by those who spoke after the distribution had taken place; and the mayor offered to give 100*l.* towards it, if ten other gentlemen would do the same; and several gentlemen at once responded to the offer.

Comparative Cost of Gas at South Shields.—At the half-yearly meeting of the South Shields Gas Company an interesting document was placed before the shareholders—"A Comparative Statement of the Cost of working per ton of Coal employed in the Manufacture." In this paper South Shields is compared with the average of the nine London companies. The statement goes to clear up a popular fallacy—that gas should be dearer in London and other places than in colliery districts. If coal is bought cheaper, the remaining products are sold for less. As regards total results, we find the gross profit is in favour of the London companies to the extent of nearly 1s. 9d. The papers read by the company's engineer, Mr. Warner, at the annual meetings of the British Association of Gas Managers form, it has been said, almost a series of lectures on gas engineering economy.

A Wayside Pillar.—The Attorney-General has just erected a wayside pillar to the memory of his cousin and friend the late Bishop Patteson, in the parish of Ottery St. Mary, Devon, at the intersection of four roads. The *Standard* says: The design is by Mr. Butterfield, who has erected an unpretending structure of red brick and stone, the idea of which was taken from something of a similar character set up in 1743 by Mr. Denys Rolle, and still standing in excellent condition at the intersection of four cross-roads between Bicton House and Otterton. On the four sides are the names of the places to which the four roads lead, and on each face is inscribed a text of Scripture containing reference to paths or ways. Bishop Patteson was formerly incumbent of a district church close to the spot.

Progress in Egypt.—In Cairo, gaspipes have been laid down in all the principal streets, and these are better lighted than those of some European capitals. The principal thoroughfares are supplied with water-mains, and good water is distributed throughout the city. According to the *American Artizan*, new streets have been opened, and narrow ones widened. An artificial lake has been formed, and surrounded with iron railings, in a fashionable part of the city, which was formerly traversed by an offensive ditch. About the lake have been placed gravelled walks, flower-beds, stands for bands of musicians, and canopies for theatrical representations.

Artizans at the Guildhall Library. -A large number of artizans visited, by invitation, the new City Library at the Guildhall, on Saturday afternoon. The men were received in the Council Chamber, where also Mr. Hodgson Pratt and other gentlemen had assembled. The Lord Mayor was accompanied by Dr. S. Saunders, the chairman, and some of the members of the free library committee. Dr. Saunders made some instructive remarks on libraries. He also stated that in the new library there were in March last, 9,394 readers; in April, 10,033; May, 11,543; and July, 10,956, exclusive of visitors. The visitors numbered about as many as the readers. He then described the new library and its adjuncts, the cost of which, he stated, had been 100,000*l.*, and the charge out of private funds of the corporation was 2,000*l.* per annum, without a rate in aid.

In Memoriam.—A reredos has just been placed underneath the chancel window of St. Stephen's Church, at Winsham, Chard, to the memory of the late vicar, the Rev. G. Ware, M.A. It is composed of polished alabaster, with Plymouth marble facings, and consists, principally, of three arches. In the centre arch is a representation of Christ holding the universe in His left hand, while two fingers of the right hand point heavenward. Beneath the right arch are figures of the Apostles St. Peter and St. John, with the prophet Elijah in the centre. To the left are the Virgin Mary and St. Paul, between whom is the patriarch Abraham in the supposed attitude of sacrificing his son Isaac. Surmounting these groups are cherubim and seraphim, with harps, tabrets, cymbals, and pipes. The tablet was executed by Mr. Harry Hems, of Exeter, sculptor.

Asphalte.—The Camberwell Vestry have received from their surveyor (Mr. Reynolds), the following report:—"It is but too evident that the asphalte used in this parish by the Tramway Company, is of such a character as only to be condemned. The necessary repairs which have been going on since it was laid, have been a source of great annoyance to the neighbourhood, and impediment to the traffic. This work not having been certified by me, no payment has as yet been made by the Vestry, the contract being to the effect that it was to be done to my satisfaction. The proposed alteration of the tramways will afford a favourable opportunity for this portion of the work to be finally amended. I believe it will be found necessary wholly to relay it with a better material."

A New Tramway in Birmingham.—The first tramway in the borough of Birmingham was opened last week in the presence of a large concourse of spectators, several members of the town council, the Handsworth Highway Board, and surveyors and officers of the town. The line extends from Monmouth-street to Hockley, and the greatest traffic is on the route from Monmouth-street to Villa-road; the cars are timed at these stations every ten minutes; and from Dudley Port and Hill Top to Birmingham, and, *vice versâ*, every half-hour. As a single line only is laid on the Holyhead-road, it is intended at an early date to have sidings at New Inns and Nineveh-lane. The cars run daily, from eight o'clock in the morning until eleven at night.

Incrustation of Water-pipes.—American fire insurance companies are calling attention to the condition of the water pipes in Boston. It seems that the water-supply is greatly diminished by the incrustations formed on the inside of the iron pipes by the action of the water, so that a 3-inch pipe that has been laid ten years becomes reduced to 2 in., those of 4 in. to 3 in., and the 6-inch mains reduced to 5 in. and 4 in. The *New York Times* says a pipe was recently taken up in Howard-street through which one could not see, though water flowed slowly; and a pipe of 3-inch bore was taken up in Beacon-street, filled up with solid rust.

Fall of a Church Clock-weight.—While the heavy striking-weight of the illuminated clock in the Vaughan Tower of St. David's Church, Neath, was being wound up, the wire-rope suddenly broke. The mass, weighing over 3 cwt., broke its way through the double floors of the belfry and tower, falling on the swell-box and pedal pipes of the new organ, and partially demolished these parts of the instrument, besides injuring the mechanical portion of the "tracking." Prompt measures were taken by the rector for repairing the damage.

Sewage and the Social Science Association.—To meet the anxious desires of many persons, an alteration has been made in the list of special questions for discussion, for the second of which the following has been adopted:—"What are the best means, sanitary and economical, of disposing of the sewage of inland towns?" It is to be hoped that some definite opinion may be arrived at.

New Public Hall for Dovercourt.—The excavations for the foundation of a new public hall for Dovercourt have been commenced. It will not meet the requirements of Harwich, as might have been the case had the site selected been more central. The hall is a private speculation.

Society for Improving the Condition of the Labouring Classes.—This society, so long known in connexion with its object, has been awarded the Exhibition medal for merit at Vienna. This is the fourth award of the kind the society has received since its first establishment in 1844.

A New Town-hall for Oswestry.—The foundation-stones of a new town-hall, assize court, and market-hall, have been laid by the Earl of Powis and Mr. David Pryce Owen, mayor of Welshpool, at Oswestry. The estimated cost of the building and land is about 10,000*l.*

The New Prison at Wormwood Scrubs. Preparations are now being made for the erection of the new Government prison, on the ground purchased by the Government, at Wormwood Scrubs, which, it is stated, is to supersede that at Millbank.

American Iron in the English Market. The *Liverpool Daily Post* states that 100 tons of American bar iron, guaranteed equal to Staffordshire, have been sold to a Liverpool firm at 11*l.* 10*s.*, delivered in Liverpool, thus underselling the English iron market.

TENDERS

For house and offices, at Bebington, Cheshire, for Mr. J. Rowland Hill. Mr. Cornelius Sherlock, architect. Quantities by Mr. W. J. Wood:—

Jones & Co.	£3,562	0	0
Dobson	3,514	5	10
Jones & Sons	3,500	0	0
Nicholson & Ayre	3,469	0	0
Fisher	3,435	0	0
Tomkinson & Sons (accepted)	3,400	0	0

For cottage and granary, at Wingrave, Bucks. Mr. Frederick Gotto, architect:—

Newman	£214	17	6
Denchfield	185	11	0
Heley	184	0	0
Gibbs	180	0	0
Cook	159	10	0
Fleet (accepted)	159	0	0

For the erection of new workshops, at York-street, Lambeth, for Messrs. Merryweather & Sons:—

Belham (accepted)	£585	0	0

For works, at New Gloucester-street, Haggerston, for Mr. H. Baker. Contract No. 4. Messrs. Ebbetts & Cobb, architects:—

Steel (accepted)	£585	10	0

For warehouse, at 162, Sloane-street, for Messrs. Barker & Co.:—

Haringay	£1,414	0	0!
Turrell	1,409	0	0
Waller	1,384	0	0
Groom & Co.	1,375	0	0
Carter, Brothers	1,350	0	0
Mathews	1,285	0	0
Goff	1,230	0	0
Wagner	1,200	0	0
Heath	1,200	0	0
Cook	1,194	0	0
Pitcher	1,183	0	0
Henday	1,103	0	0
Barter	1,093	0	0
Hunt	1,082	0	0
Snowball	1,060	0	0
Sawyer	1,060	0	0
Temple & Foster	1,008	0	0
Chinnock	1,000	0	0
Rudkin	962	0	0
Holderay	950	0	0
Mills	895	0	0!

For the erection of two warehouses, Queen Victoria-street, and two warehouses, Lambeth-hill, for Mr. William Collis. Messrs. J. Young & Son, architects. Quantities by Mr. H. L. Buzzard:—

Trollope & Sons	£9,830	0	0
Lucas, Brothers	9,558	0	0
Clark & Bracey	9,298	0	0
Robbins & Co.	9,288	0	0
Conder	9,274	0	0
Sewell & Son	9,123	0	0
Ashby & Horner	9,030	0	0
Merritt & Ashby	8,787	0	0

For the erection of premises, No. 78, Cornhill, for Mr. A. Purcell. Mr. C. Humphreys, architect:—

Ashby & Horner	£2,899	0	0
Newman & Mann	2,865	7	0
Moore & Nixon	2,789	0	0
Brass	2,722	0	0
Nightingale	2,547	0	0

For repairs, painting, &c., to Grosvenor Chapel, South Audley-street. Mr. H. Burden, architect:—

Sprake	£937	0	0!
Stoner	905	0	0
Searle	875	0	0
Foxley	744	0	0
Cairns	739	0	0
Foster	711	0	0
Carter	697	0	0
Powell	600	0	0
Curtiss	593	0	0
Heath	580	0	0
Henderson	399	0	0!

For the erection of school premises, fencing, &c., at Waltham-cross. Mr. A. R. Barker, architect. Quantities supplied by Messrs. Goodman & Vinall:—

Bunce	£1,727	0	0
Pocock	1,687	0	0
Patman	1,435	0	0
Archer	1,398	0	0
Bentley	1,378	0	0
Sanders	1,194	0	0

For additions, &c., to the residence, "West Sea," Wormley, Herts, for Mr. George Ireland. Mr. William Reddall, architect:—

Barber & Sons	£1,711	0	0
Rayment & Son	1,583	0	0
Hunt	1,498	0	0
Patman (accepted)	1,498	0	0

For the erection of a house, at Hampstead, for Mr. F. Huntington. Mr. Theodore K. Green, architect:—

Cowland	£2,200	0	0
Adamson & Son	2,100	0	0
Browne & Robinson	2,010	0	0
Dove, Brothers	2,010	0	0
Newman & Mann	1,996	0	0
Scrivener & White	1,995	0	0
Longmire & Burge	1,988	0	0
Simpson & Baker (accepted)	1,962	0	0

For additions and alterations to St. Jude's Schools, Chelsea. Mr. E. H. Lingen Barker, architect:—

Adamson & Sons	£1,035	0	0
Crockett	986	16	11
Nightingale	955	14	2
Richardson	930	18	0
Nixon & Sons	930	0	0
High (accepted)	849	7	5

For the erection of a warehouse, in Bath-buildings, Baldwin-street, City-road, for Messrs. Tubbs & Lewis. Mr. J. Collier, architect:—

Bostel	£1,630	0	0
Carter	1,575	0	0
Perry, Brothers	1,380	0	0
Elkington	1,375	0	0
Nightingale	1,369	0	0
Crabb	1,325	0	0

For erecting Wesleyan chapel and school, at Pirton, Herts. Mr. J. Shilcock, architect:—

	Chapel.	School.
Harvey	£155	£120
Redhouse	391	91
Stapleton	364	109
Grieves	362	103
Leatherdale & Son	352	95

For the erection of Baptist chapel, Clarendon-road, Lewisham. Mr. Rickwood, architect:—

		For Seats.
Lonergan	£1,320	£46
Dearsley	1,177	35
Moreland & Nixon	1,142	37
Jerrard	1,093	30
Kirk	1,091	42
Powell	998	36
Lawrence	950	35

For fitting up warehouse, Victoria-street, Bristol, for Messrs. Cole, Brothers. Mr. J. Mechelew Rogers, architect:—

	Second Contract.	Extra, if teak frames.
Hayward	£729	£36
Marshall	725	25
Brock & Bruce	725	23
Forbes & Son (accepted)	632	63
Glazing.		
St. Helen's Glass Company *	£97	10 0
Hall & Sons (accepted) *	97	0 0
Dix & Co.	96	12 0

* 2½ off for cash.

For the erection of a villa residence, at Richmond, for Mr. Wm. Betts. Mr. Joseph Clever, architect:—

Pearce	£1,468	0	0
Jopling & Co.	1,350	0	0
Rankin	1,290	0	0
Eydmann	1,270	0	0
Nias	1,259	0	0
Coles	1,257	10	0
Scott	1,150	0	0

TO CORRESPONDENTS.

Errata.—In article, "How shall I Build" (p. 730, *ante*), for "dams," in second column, read *drains*; and for "groined," in third column, read *ground*.

W. F. B.—C.—E. J.—W. H.—C. C. H.—M.—G. W.—Mr. P.—B. E.—P. & B.—D & H.—J. O. P.—L. & Co.—W. W.—T. H.—Mr. P.—J. D.—W. R.—E. R.—H. R. P.—C. H. W.—Mr. R.—B. B.—H. G.—M. T.—R. A. P.—A. G.—Y. & Son.—R. E. N.—J. M. R.—J. O. P.—G. M.—Misterton (we cannot undertake to give our readers estimates of the cost of buildings).—J. H. (we cannot look back).—Borough Engineer, Salford (we regret we cannot read signature).—Shams in type.

We are compelled to decline pointing out books and giving addresses.

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The Builder.

VOL. XXXI.—No. 1599.

House Building and the Census.

IN our recent observations on this subject, we assumed that the average value of a house was 250*l.* Some practical correspondents are inclined to think that we have struck the average too low. There will possibly be others who will take the opposite view. It may, therefore, not be out of place if we mention here how we arrived at the above estimate. The average annual rental of a house was estimated in 1862 to be 15*l.* 10s., and its value was taken at a figure equal to fifteen years' purchase. This would make the average value of each house 232*l.* 10s. This was the estimate for the year 1862, and it was based on the data supplied by the House Census of 1861, and on the Returns of Assessments to the inhabited House Duty. There can, however, be no doubt that the value of house property has greatly increased since 1862. It is a matter within every one's experience, and though it may be difficult, if not impossible, to determine the increase with exactness, yet if we only compare the number of houses of the assessed annual value of 20*l.* and upwards in 1862 and 1871, we shall find the clearest possible proof that the increase has been very considerable. In 1862 there were 519,991 houses assessed to the inhabited house duty. In the year 1871 the number had risen to 748,719,—an increase of 44 per cent. in this class of houses. Of the inhabited houses below 20*l.* rental there were in 1862 as many as 3,219,514, and in 1871 there were of the same class 3,510,398,—an increase of only 9 per cent. Hence, in the nine years' interval, while there was an increase of 44 per cent. in the better class of houses, the number of the lower class,— those below 20*l.* rental,— shows an increase of only 9 per cent., or little more than one-fifth the rate of increase in the class subject to duty. These figures plainly indicate the rapid development of the resources of this country between the last two censuses. They show that to every 100 houses paying a rental of 20*l.* and upwards in 1862, we had 144 of the same class in 1871. While of houses paying under 20*l.* rental, to every 100 in 1862 there were only 109 in 1871. To show, however, with mathematical nicety the precise increase which has taken place in the value of house property would require a series of calculations of too technical a nature to be discussed in this place; and for the exact facts on this point the public must wait until the issue of the final report on the results of the last census. But, for the purpose of arriving at some general idea of the amount of money expended in house-building, it will hardly appear extravagant if we assume that their value had gone up 7½ per cent. between 1862 and 1871, and that if a house cost on the average 232*l.* 10s. in 1862, it would be worth 250*l.* in 1871. Very probably this will turn out to be an under-estimate, and, since 1871, house property and house building have no doubt become still more costly. We prefer, however, to be within rather than beyond the mark in our estimate, and for the purpose we have in view in these remarks, we believe that 250*l.* may be taken as a sufficiently near approximation to the average value of houses in this country during the ten years 1861–1871.

We roughly estimated the number of houses built between those two dates at 988,683, and their value at 240 millions sterling (by an error in transcribing, this was wrongly given at 220 millions). The more exact value of them would be 247,170,750*l.* We are now prepared to pass to the final question we have proposed to ourselves, and shall endeavour to form some rough estimate of what the building interest may have to look forward to in the immediate future.

In any attempt to estimate the prospects of the building trades in coming years, there is one fact which must never be lost sight of, for on it all calculations of this nature must necessarily depend. We mean,—what must be obvious to every one who has interested himself in this subject,—that the building interest, more than any other branch of industry of similar extent, is directly affected by the general state of the commerce and trade of the country. A period of commercial depression is at once felt by the builder through his business falling off to a greater or smaller extent. In a time of commercial prosperity, on the other hand, when new enterprises are started every day, and the general trade and population are on the increase, builders as a body cannot fail to thrive. There are, in fact, few more unfailing signs of the commercial prosperity or depression of the country, than the prosperity or depression of the building interests; and as a rule we may say that if builders are generally thriving, the country on the whole is in a prosperous condition.

If we want to know, then, how the building interest may expect to fare in, say, the next ten years, it is of the first importance to ask what are the prospects of the country generally during that period. One great criterion in judging this question is to be found in the relative extent of our exports and imports in recent years. On referring to the Board of Trade returns* we find that the total value of our foreign trade increased from 377,117,522*l.* in 1861 to 547,338,070*l.* in 1870, being at the rate of 13*l.* per head of the population at the former date, and 17*l.* 11s. at the latter. Our foreign trade during those ten years was, therefore, increasing on the average at the rate of about 9s. per head of the population per annum. Now, if we compare the returns for the year 1872 with those of the year 1871, we shall find that our total imports and exports increased at the rate of 30s. per head of the population in the year's interval, the aggregate value being 669,282,458*l.* in 1872 as against 614,590,180*l.* in 1871. Between 1870 and 1871 the increase was at the rate of 40s. per head of the population. The average rate of increase during the past two years has, therefore, been 35s. per head of the population, which is equal to nearly four times the annual rate prevailing between 1861 and 1870, during which period, as shown above, the average annual increase was only 9s. per head.

The result we have so far arrived at, that the commercial prosperity of the country has been greater in the past two years than it was ever before, is confirmed by general experience. Never has there been so general a rise of wages among the working classes. Never has capital been invested more abundantly or in a greater variety of ways. But the momentous question comes,—is the unprecedented prosperity of the past two years likely to continue increasing at the same rate in the future? The question must, we think, be answered in the negative. The recent returns of the Board of Trade, more especially those just published, show a falling off in some of the most important branches in our home and foreign trade, especially in textile fabrics, coal, and iron manufactures. The returns of the banking clearing-house, and of the Bank of England also indicate a stationary or diminishing trade. Into the details of the question this is no place to enter; but it is the opinion of the soundest commercial authorities, that when the returns for 1873 are made up they will show that the trade of the country is in a less prosperous condition than it was last year, and that if there is any increase at all, it will be trifling as compared with the past two years. Respecting the causes of this check in our prosperity, nothing more need be said than that it appears to be mainly attributable to the enhanced cost in the most important of all the agents of production. We refer to the rise in the price of coal and the consequently increased cost of iron and of all machinery; that is, just those articles on which the commercial and industrial pre-eminence of England principally depends. It must not, however, be forgotten that this check in our prosperity, which is now every week more clearly showing itself, is only a check as compared with the two exceptional years 1871 and 1872. As compared with the previous ten years, 1861–1870, the general trade of the country is even now increasing with greater rapidity, and unless some unforeseen calamity occurs,—unless, for instance, coal, and therefore iron and machinery, become dearer instead of cheaper,—or unless we have a great war, a famine, or a succession of bad harvests, there appears every reason to anticipate that the prosperity of the country, and the consequent increase of its population, between the years 1871–1881, will be at least as great as it was between 1861–1871.

Assuming, then, that only the minimum of increase will prevail between the last and the next census, our population, which in 1871 amounted to 22,712,266, will in 1881 number 25,698,013, and the building trades will have had by that year to provide us with additional dwellings for 2,985,747 persons, or very nearly three millions of people. The number of persons to each house standing in England and Wales is a fraction over 5 (viz., 5·0204). It follows, therefore, that if this rate of distribution per house continue, the number of additional dwellings which will have to be erected between the years 1871 and 1881 will be 594,722. In addition to these there will be, roughly speaking, at least 10 per cent. of the houses standing in 1871 (viz., 4,520,462) requiring from various causes to be pulled down and rebuilt. Adding the 452,046 that will have to be rebuilt to the 594,722 required by the increased population, and we find that the total number of new houses that will be erected between 1871 and 1881 amounts to 1,046,768. Adopting 250*l.* as the approximate average cost of erecting a house, we shall find that the amount expended in this country between 1871 and 1881 on the building of dwelling-houses will be not less than 261,692,000*l.* as against 247,170,750*l.* between 1861 and 1871. During the ten years now passing we may therefore calculate that capital will be invested, in adding to our house property, at the rate of not less than 26,000,000*l.* a year, or half a million sterling a week.

It must be understood that the above figures are only offered as a rough estimate, and they are given with all reserve, and under the conditions above specified. House building, after all, includes but one portion of the work of the building trades. We have left out of consideration the larger portion of the field in which they have to operate. We have not touched on that large class of structures which are not dwelling-

* Statistical Abstract for the United Kingdom from 1858 to 1872. Eyre & Spottiswoode. 1873.

houses,—we mean churches, chapels, and school houses, public halls, shops, workshops, and factories; nor have we glanced at the greater enterprises, such as railways, docks, harbours, bridges, and canals, which occupy our large contractors, and which form the most striking feature of the present age, regarded from the standpoint of the builder and architect. With respect to these departments of the builder's sphere of action, there is only one observation which we feel impelled to make at this moment. If our population continue to increase in the period we have been contemplating, even if it be only at the minimum rate of progress on which we have based our calculations, then the number of houses to be built and the money expended upon them cannot be less than what we have estimated above. But if our prosperity be greater, and our population increase more rapidly, there will be a proportionately greater amount of building to be done, and more capital will be invested in this form. But the point we would finally call attention to is that what we have just said of dwelling-houses applies with equal force to all other species of erections, and all other works included in the building trades. For with every increase of population there will be an increase not only in the erection of houses, but also of every kind of uninhabited building,—churches, chapels, workshops, &c., as above specified;—and the same may be said of the other class of works which we have mentioned,—the railways, docks, bridges, harbours, and canals.

THE PROPOSED TUNNEL UNDER THE RIVER HUMBER.

ENGINEERING EVIDENCE ON SUB-MARINE BUILDING.

DURING the late Parliamentary session one of the most protracted inquiries into private Bills was that in connexion with the proposal to construct a tunnel under the river Humber, near Hull, one mile and five-eighths in length, upon the pneumatic principle. The tunnel was to form a portion of a new projected line of railway, thirty-one miles in length, called the Hull South and West Junction Railway, promoted mainly by the merchants and trading interests of Hull, supported by the corporation, the local marine board, and other local authorities. The chief opponents of the project were the North-Eastern Railway Company, which is the only company at present having a railway and station at Hull. After a hard fight, which lasted for upwards of a fortnight, the Bill received the sanction of the Committee of the House of Commons, but was defeated after an equally prolonged and severe struggle before the Lords' Committee. We understand that the promoters of the measure intend to renew their application next session, the construction of the proposed railway and tunnel having already been affirmed by the House of Commons. The important engineering evidence already given as to the projected tunnel, which is of an entirely novel character, is therefore now invested with a special interest, so far as it has reference to submarine construction and building.

The several engineers who gave evidence on either side, as to the merits or otherwise of the projected tunnel, included some of the most eminent in the profession, Mr. John Fowler, the engineer of the proposed line, and the designer of the tunnel; Mr. J. J. Bramwell, vice-president of the Institution of Mechanical Engineers; Mr. James Abernethy; Mr. Thomas Hawksley, president of the Association of Civil Engineers; Mr. James Brunlees; Sir John Hawkshaw; Mr. G. P. Bidder; Mr. T. E. Harrison, engineer to the North-Eastern Railway Company; Mr. John Dixon, mechanical engineer; Mr. Thomas Clark, artesian well engineer; &c. These gentlemen must be allowed to tell their own story.

According to the statement of Mr. John Fowler, C.E., he proposes to cross under the Humber at Hessle, near Hull, the tunnel emerging on the other side of the river, at Barton, in Lincolnshire. The total length from shore to shore is 2,840 yards, or nearly a mile and three-quarters in extent. The crown of the tunnel will be about 10 ft. below the bed of the river, and as it will have to pass entirely through sand, it will not be possible to tunnel by the ordinary process of excavating and mining. In carrying out the works he therefore proposes to adopt the pneumatic process as follows:—Three working vessels are to be provided, the dimensions of each to be 160 ft. in length, by 42 ft. in width, and 23 ft. in depth. The upper half will consist of pontoons, and the lower half of a working chamber, or diving-bell. This working vessel will suffice for the construction of 160 ft. in length of a double tunnel in one section. The process will be first to moor the working vessel in the river over the site of the tunnel; secondly, to sink it to the bed of the river by the admission of water into the pontoon; thirdly, to expel the water from the lower portion or diving-bell by forcing in air, and this having been effected, workmen will enter the chamber, and excavate the ground for the 160 ft. length of tunnel. When the working vessel has been sunk through the material of the bed of the river to the depth of the inlet of the proposed tunnel, bricklayers will enter and commence to build the tunnel. When this portion is complete, the working vessel will be withdrawn and again sunk at another spot, in the manner already described, when a further length of the tunnel will be proceeded with as before. The joining together of the isolated lengths of the tunnel will be effected as the working vessel is being gradually withdrawn from the bed of the river. The machinery for supplying the required air, and the pressure to keep the diving-bell portion of the apparatus free of water, will be erected on a deck or table carried a sufficient height above the working vessel to be above the level of high water when the working vessel is in its lowest position. The excavations will consist chiefly of sand, which will be removed by sand-pumps worked by the compressed air in the diving-bell. The bricks and other materials will be lowered by machinery, from the stage or deck already referred to, into the working chamber below. The two inner rings of the tunnel will be of blue Staffordshire brick, set in the best cement. Mr. Fowler adds, that knowing all the conditions of the pneumatic system of construction, he was confident of being able to make the tunnel perfectly water-tight and safe. He also states that he has been connected with the construction of many works on the pneumatic principle, none of which have failed, and that the process is a certainty. As far as the work of excavating and brick-building is concerned, it is very much like an ordinary operation in the open air, except that the workmen are artificially supplied with air. The cost of making the tunnel he estimates at 343,000*l.*, which, at 2,840 yards, would be 120*l.* a yard.

Mr. Frederick Joseph Bramwell, C.E., said he had carefully examined Mr. Fowler's plan, and was confident that the tunnel could be easily and safely made according to them, and for the sum named in his estimate. He added, "I have considered very carefully the nature of the vessels proposed by Mr. Fowler, and the mode of using them, and I have not the slightest doubt that by them the tunnel can be successfully carried out. There will be no difficulty in supplying the chambers with air in order to enable the men to work. The thickness of the brickwork is amply sufficient to resist any pressure that could be possibly brought either laterally or on the surface. I believe it would not really crush under 900 ft. of pressure. The surface of the bed of the river is so far below high water mark that the working vessel or pontoon would be floated over any part of it where it is proposed to make the tunnel, except quite close to the banks."

Mr. James Abernethy, C.E., said that the pneumatic plan which Mr. Fowler proposed to adopt for the purpose of making the tunnel was, he thought, the very best plan he could adopt, and he also thought it was a plan that involved no risk. There would be no difficulty in joining the lengths of brick in the water. He saw no difficulty in forming the junction. It was a mere question of setting the bricks in about 6 in. of quiescent water. It was a common practice, and done every day. He had underpinned culverts under water. He had also constructed a very large culvert, 8 ft. 6 in. in diameter, where they were constantly under water. They never could keep it dry, but they had no difficulty in making a substantial job of it. In cross-examination by the counsel for the opponents of the Bill, Mr. Abernethy said that as far as joining the lengths of the proposed tunnel under water, it was new, and had, he believed, never been done before; but that it could be done and done easily he was quite confident. He thought the construction of brickwork within the air-chamber or diving-bell was quite as easy as constructing brickwork in the open air. He put a little higher price on it, but it was as easy to construct a tunnel 60 ft. or 70 ft. under water, within an air chamber, as it was to construct it in the open air.

Mr. James Brunlees, C.E., said he had had a large experience in the construction of railway-viaducts and embankments, particularly in connexion with tidal rivers, and he saw no difficulty in carrying out the tunnel as projected by Mr. Fowler. He had taken into consideration the depth of the water, and the passing of the tunnel below the bed of the river, and also the nature of the material forming the bed of the river. He had constructed several tunnels through various strata, and was now engineer for the Mersey tunnel. He was also in consultation with Sir John Hawkshaw, the engineer of the proposed tunnel under the Channel from Dover to Calais, and was also joint-engineer with him to that scheme. He did not think there would be any difficulty in bringing the pontoons over the exact site of the tunnel proposed to be constructed. Neither did he think there would be any difficulty in joining the lengths of the tunnel. There would, no doubt, be a little water in the bottom; but it was not at all an unusual thing to lay bricks in water to a certain extent. In cross-examination, he said no work like that had ever been done for a tunnel, but it had been done in foundations. The nearest thing to Mr. Fowler's proposal that he knew of was the foundations of a bridge in New York, which was a very good example.

Mr. Denison (counsel for the opponents).—You would hardly suggest that the foundation of a bridge is at all equivalent to a tunnel, which is a pipe, and has to be made in pieces, and joined?

Mr. Brunlees.—I do not apprehend the slightest difficulty. I have not the slightest doubt about Mr. Fowler carrying out the tunnel. Not the slightest. I have been carefully going through it with him. I have not had any tunnel-construction analogous to this. The tunnel under the Mersey is the nearest.

Mr. Thomas Hawksley, C.E., said he had informed himself of the local conditions under which it was proposed to construct this tunnel, and had visited Hull on the subject. He had carefully considered Mr. Fowler's plan for constructing this tunnel across the Humber. The principle was a common diving-bell of enormous size. He really did not see, after carefully considering the subject very attentively, that the difficulties in making the junctions would be considerable. In his opinion it would be easy to make the junctions by interposing clay-bags between the ends of the caisson and the stopping-wall which was intended to be built up. When a caisson was moved, and had to be resunk, it was the easiest thing in the world to cut through these clay-bags by the sharp edge of the caisson, and so effect the sinking without allowing the sand to come into the space between the end of the caisson and the end of the chamber. Complete watertight works could be effected under water. They sometimes performed that operation by means of a pump. They get very fine-sifted Portland cement, and sometimes, if they wanted the setting operation to be very rapid, they used Roman cement instead of Portland, and this fine cement was pumped through a tube so as to be kept out of contact with the water in the neighbourhood. It then went down exactly into the place where they wanted it, and the brick was set by it at once.

In cross-examination by Mr. Bidder, Q.C. (son of the engineer), Mr. Hawksley said, that this being a new work in some respects, experience would be gained. There would be a good many little accidents and little difficulties which would have to be remedied and overcome.

Mr. Bidder.—You admit, then, that there would be difficulties to be overcome?

Mr. Hawksley.—That is the function of the engineer. We would be of very little use if there were no difficulties to overcome.

Mr. Bidder.—You do not deny that the making of these junctions in the tunnel would be difficult?

Mr. Hawksley.—What I say is, that the building in of the junctions would no doubt be troublesome, but not difficult.

Mr. Bidder.—You are refining, I am afraid, Mr. Hawksley.

Mr. Hawksley.—No; there is a great difference between troubles and difficulties.

The foregoing was the engineering evidence in support of the project for constructing the tunnel. In opposition:—

Mr. T. E. Harrison, C.E., engineer to the North-Eastern Railway, was examined at considerable length by the counsel for the oppo-

nents of the Bill, and in the course of his evidence he admitted that the tunnel might be made on the pneumatic principle, as proposed by Mr. Fowler, but that in his opinion the joints of the tunnel could not be made water-tight, which he regarded as a serious if not fatal objection to the scheme. He also expressed an opinion to the effect that there would be greater difficulty than Mr. Fowler imagined in placing the pontoons. He thought it was a matter of strong doubt whether Mr. Fowler would be able to do it without making a proper staging, which he (Mr. Harrison) had invariably made whenever he had to put down cylinders by pneumatic pressure.

Sir John Hawkshaw, C.E., said he was Consulting Engineer to the Hull Docks, and built their new docks. He had had great experience in building under water for many years. He could see no difficulty in building within a caisson or large diving-bell in constructing a tunnel, because it had been done in various other places, but he did see very great difficulties, and he did not think it would be practicable, to make a secure connexion between the work built inside the caisson and the work outside. He might state that that was not an opinion arrived at in reference to this case at all. He was now constructing a tunnel through the London Docks, and he thought at one time of doing it in the way proposed by Mr. Fowler. He arrived at the conclusion that there would not be a difficulty in constructing the tunnel in the way proposed by Mr. Fowler, and by such an apparatus, but he dared not venture to make the connexion between the work constructed inside and that constructed outside, and therefore he abandoned that method. He did so because it appeared to him that it would be quite impossible to secure water-tight joints, and if he did not secure water-tight joints then he did not see any practical way of making them water-tight afterwards. He was not there to say that they could not sink a caisson in the Humber, and that they could not within it build the portion of work which the caisson was capacious enough to hold, but he did not see how they could make the junction in such a way that it could shut out the water from the Humber. He had not formed any opinion of what the proposed tunnel would cost, because he did not believe Mr. Fowler's plan was practicable. Mr. Fowler's estimate was 120*l.* per yard, whereas his work across the London Docks was let at 209*l.* per yard, and it was not so deep as Mr. Fowler's tunnel. He would not advise any contractor to undertake it at the sum set down by Mr. Fowler, and he would not undertake it himself.

Mr. G. P. Bidder, C.E., who was emphatically pronounced in his condemnation of the project, said, in his examination, that he had the same difficulty as Sir John Hawkshaw as to water-tight junctions, or rather water-tight closures. He knew of no instance where it had been effected. As regarded the pontoons in Mr. Fowler's plan, he did not think that they could be kept in their place considering the current in the Humber. He did not think that Mr. Fowler's mode of making the tunnel was one which he should be inclined to adopt. He certainly would not be responsible for it. In cross-examination by Mr. Venables, counsel for the promoters, Mr. Bidder said it was totally impossible to bore under the Humber.

Mr. Venables.—Then it seems to me, according to your theory, that it is impossible to have a tunel under the Humber at all.

Mr. Bidder.—"My belief is, I am bound to tell you, that passing the preamble of this Bill will have no more practical effect in getting a tunnel under the Humber than if you were to pass the preamble of a railway to the moon. There would be no difficulty in getting under the Humber if you found suitable material. If you found clay there would be no difficulty in getting under the Humber. I do not know how the water-tight joints are to be made. I have had a great deal of experience in my railway days, having attended personally to the making of good sound water-tight brickwork under water strata, but I never succeeded to my satisfaction in making sound brickwork either in cement or anything else. This work possesses so many difficulties and contingencies to my mind that to attempt anything like a detailed estimate would be a solemn farce." Being asked if, taking the whole scheme into consideration, he thought it was one which ought to recommend itself for practical adoption, he replied, "It may recommend itself in any shape you like, but there is nothing practical in it."

Such was the evidence of some of the most distinguished engineers of the day, for and against a project which was twenty-eight days before the committees of the Lords and Commons last session, and which is again intended to be fought out when Parliament meets next year.

PROFESSOR WILLIAMSON'S SCIENCE, AND A GLANCE AT ART.

IT will certainly be impossible for the youthhood of this present age to complain in the future,—that the question of its *education* has not been well looked after and thought about by those who went through life before it. Not a week, hardly a day, passes but some notable man or other is found stepping to the front and discoursing, not a little ingeniously sometimes, on the all-absorbing and comprehensive subject of "education." How best and most usefully to educate the rising generation,—that is now the question of questions, both here and pretty nearly everywhere else all the civilised world over. Each year the British Association for the Advancement of Science does a little towards this end, and in the present year of grace, Professor Williamson comes forward with a thoroughly scientific thought about it, and with an array of proofs in its favour which evidently cannot be gainsaid. The learned and earnest Professor builds on a right solid foundation. "Our very ideas," he says, "are useful only so far as they are *true*, and he must, indeed, be blind to interest and to duty who could wish to swerve from the path of truth." None will surely dispute this. Each student of nature, he contends, and searcher after truth, should be placed in such circumstances as shall be most favourable to efficient activity, and that the desire of such students for the acquisition of knowledge may be kept alive and fostered. Theoretical and experimental *chemistry* is of those sciences which most "enlarge and exercise" the mind of man, and he urges a public school of chemistry, and an organisation for the finding out who are most naturally and educationally fit for it. It would cost "just three iron-clads" a year to do this work of the finding out who, among our millions, are natural-born chemists and who are not. We must confine ourselves to fine-art matters and to architecture, and to those things educational which appertain to them. What would be said in fine-art circles if such a proposition as this were to be made,—to find out who they are, at the cost of "three iron-clads," who best shall manifest an artistic faculty of both a contemplative and a practical order. What, we may ask in some curiosity, would the Royal Institute say to such an idea as this?

But does not this proposition of the chemical professor naturally lead one to think a little as to what "education," both scientific and artistic, really and truly is; and whence it naturally springs, and what it naturally and most usefully leads to. In the first place, is not the all prevailing idea of education, whether scientific or artistic, somewhat artificial and stilted? We will venture to affirm that without a finding-out apparatus of any sort or kind, whether expensive or not, that all those who possess any strong native faculty for any one art or science, will find it out for themselves. It is, indeed, wonderful to witness how through hosts of difficulties and hindrances some will be found to follow up any certain pursuit. They seem to pick up their knowledge, and practical skill, by a sort of divine instinct; and the very first real difficulty they find is,—not, how or in what way to acquire more knowledge, but how to put into useful and profitable practice the knowledge they have at so great cost and perseverance acquired.

The learned Professor's idea, be it observed, in this clever address, is to urge the establishment of what may truly be called a "national system" of scientific, if not pure chemical instruction, and for the advancement of science, the scientific education even of children, for the better supply of teachers of it, and thus eventually to lead the way to *original* research. He does not propose to do things by halves,—nothing less than a national system suffices him, and the direct action of Government itself: for he contends that the only question to be considered is, how the action of Government can be so "systematised" as to give free play to the natural forces which have eventually to do the work. It is really quite curious to read all the Professor's enthusiastic educational talk, and then to think for a moment how things really are, and what a tremendous task it is in real practice to go to work and have to do with a school of any kind, and with pupils of *any* sort. We have had to do with workmen in this way, and sure we are that none but those who have tried it can know how hard a thing it is. As Cobden once said, nothing is so hard as to *help* a man. To teach any one by any sort of compulsion in any way is simply to throw away both time and capacity and money. To leave the door open is pretty nearly all you can well do. It is for the willing and earnest pupil to *learn* from the open books before him. In our own efforts we never found it avail to compel the student, and hardly,—and this is of no slight importance,—to lead him; the natural leanings and inherent faculties of the student must do the work in the main, if it is to be done with a practical end in view. The "conditions," as the Professor puts it, must first of all be "appreciated" by the pupil. Nothing can be truer.

May we not here, then, throw out a hint or two educational from an architectural point of view? To our minds, there can be no greater delusion than to suppose that any one trade, or business, or profession, can be thoroughly and adequately learned in any school, or academy, or college, however well it may be managed. It is, in reality, only in a shop, or warehouse, or *office*, that a competent and *practically* profitable knowledge of anything can be got at. Let any one consider what time in years it takes of daily routine practice to get a knowledge of architectural drawing, to master details of architecture, and to attain any competent knowledge of constructional art to found them on. Day after day, and year after year, is it required of the architectural pupil to get a practical and useful knowledge of "office" work only, to say nothing of much that is far higher, but which can alone become useful by a competent knowledge of the dull foundational work. The foundation of a house is not more necessary to the building of the house, and to its after security, than is the daily dull routine of the office to the future practice of the working architect. No amateur working, or method of work, no fancy practice, or playing at architecture, or building, can take the place of the real, and daily, and useful, professional work. It is the same in all things connected, however remotely, with architecture. There is no royal road to them; no easy learning the art and the practice of architecture in "six lessons." It is really wonderful to think how every man will acknowledge this truism in his own special business, but will, in most cases, never more than half allow its truth in anything he knows but little or nothing of.

One of the most notable thoughts in the Professor's earnest address was on the subject of a better supply of *teachers* of science; and may we not add, of art too, for the remarks he made apply as forcibly to the one as to the other? The thing most needed, he contended, at the present time for the advancement of science,—and art, we add,—is a supply of *teachers* devoted to the object, men so earnest after more and more knowledge as to be "model students." These are to inspire the younger investigators, and these again, as he continues enthusiastically, will and must in each succeeding age go on improving, getting more and more learned, and with a deeper insight into the mysteries of the speciality each one may take to. Their whole lives will be devoted to the extension of the domain of truth, and their highest reward the consciousness that their exertions have benefited their fellows, and been appreciated by them. What, indeed, can be better, and it is only to be earnestly hoped that, in the future if not in the present, the public mind generally will come to see this both in science and art, and that it will come to see as well that none can live on simple enthusiasm, however intense and however earnest. No one can fail to admire these fine and enthusiastic thoughts and longings, but we live in a world of business, and while these simple-hearted things are being thought out by retired students, thinking of nought but their noble work, it is to be feared that the outer world, unless well looked after, and perpetually reminded of it, may forget that the labourer is always worthy of his hire. *Thought* as well as work is worth the paying for sometimes.

There are, too, in this address, not a few able remarks on the value of teaching. No known conditions are so well calculated to give a young investigator the closest and strongest grasp of his special subject as those in which he is placed

when thus engaged in earnestly teaching in a college. There is, Professor Williamson contends, nothing like it in its effect in preparing and fitting the mind for original research. Of this there can be no doubt; for in the effort to make a thing clear to others it becomes clearer to yourself. But even here we must not exaggerate or make too much out of a little. It is quite certain, as we take it, that as much, if not more, depends on the student as on the master. A capable pupil gets on almost without a master's assistance. He learns almost unconsciously, and gets sometimes ahead of his preceptor. No power of teaching can create faculty in a stupid pupil, or elicit brightness out of dulness. It points out the road, but it is the pupil who must himself get profit by looking out before him, and to right and left, as he goes along. Art and science are here on equal terms. No master of a craft can take the hammer out of the student-workman's hand and strike for him, for that is to change the character and authorship of the work. He can but look on and give him friendly hints in true tones of encouragement, pointing to other noble work, and commending, may be, when a good and clever blow is struck. But the actual work must be the pupil's own, and nothing else.

By way of illustration, and to show how deep is the well of modern knowledge, though we must not here grow too scientific or speculative, we may mention there are not a few items in the Professor's address which are calculated to rouse not a few thoughts as to the ultimate nature of things. We can but say a word in parenthesis. *Art* is sometimes, not a little unfairly as we think, accused of indefiniteness, and positive doubtfulness, or even worse, —confusion dire itself; but what can be more obscure and hidden from mortal gaze and measurement than *atoms?* Ultimate indivisible atoms are mysterious enough, that is certain; so are they if infinitely divisible. Hard for the poor student to get a notion of, but still harder for the *master*, who sees more of the difficulty of it. What, then, can be the nature of that mighty influence or "force" which keeps these together, with so tight a grip, as in the diamond, or in hardened steel? Hard things these to get a clear idea of,—quite as hard and insoluble as in any difficult problem in art, full of contradictions, as it no doubt is, and of profound difficulties. Nothing seems, at first sight and superficial glancing at, to be more certain and understandable than these marvels of science, and they seem to have no small advantage over artistic speculations; but not so, for the deeper we look the more the difficulty. Where angels fear to tread, there, indeed, it is that the short-sighted go boldly in. Toleration, indeed, that habit of mind, as the president so well urged, is necessary here. It is, he said, one of the most hopeful indications of the moral improvement of man in these latter days. Here all will allow it to be needful, both in science and art.

THE FACULTY OF SUCCESS.

WHAT comfort to give tongue of our secret griefs to a sympathising or helpful confidant or confessor,—the burden lighter now the knowledge of it is shared! Not alien from the pleasure of airing cherished crotchets, or drawing the shade from gleams of insight, and other disburdening of spirit,—the sharer therein being a nearest intimate or perfect (*i. e.* not obviously evil) stranger. Who shall add a fresh word on the topic,—give a fresh turn to a conclusion so thoroughly accepted? True by all confession, almost to yawning-point, when enunciated; fitter in condensed form for copy-headings or other device for extracting, volatilising, the sapor of a sentiment, than for the well-relished speech of the world. And yet,—the new forms, the ever-renewed youth, the sense of first freshness,—the triteness all in the moral and not in the tale. Why should the drama not be inexhaustible, although the passions have been named and tabulated? Why should not "A Carpenter" write to us from Dumbarton (on "The Gain of Technical Education," p. 751, *ante*), and expect, and get, us to understand and be obliged to him, and not unwilling to print his letter? And more than that, shall he not receive from us, and from many a reader too, respect for a hard head and its successes, and regret for his failures; and, after all, only the particle of advice that the unangered feel a merit in shortening for their well-cholered friends?

Should we be perilling too much credit for such goodwill, running risk at the same time of being deemed inditer of essays concerning the "praise of incompetency," if, drawing on no ill-stored memory, we let our first placid comment take the form of a hint as to the rarity of omniscience? "A Carpenter," who has given good study to (1) building construction, (2) mathematics, (3) applied mechanics, and not neglected to look into theoretical mechanics, complains that he has not been promoted to the rule of men; that, striving thereafter, he has met with rebuffs; that, as yet, he has not won over the guarding dragons to admitting him into the happy gardens, where hard hand-work as a task is out of fashion,—where his useful training will make smoother for him the way of life. Who would speak lightly of the instinctive gravitation towards command,—the current of tendency that leads the efficient mind and spirit to desire to lend its capacities to the work of good governance,—to guide with mind and will, fashioned by nature and by culture, the less gifted or less self-mastering of their fellows? We, least of all, who see how much there goes to the making of the true "king of men." Not to speak of the ideal creature,—the perfection of the ruler—who sways not only minds by the force of his own, but rules equally all the sentiments:—we would show reverence also to all his working substitutes who do their endeavour,—who are bearers of serviceable light, although no universe-gilding sun strikes from them his penetrating beam. Who will not, that has a memory of such matters, fancy (and, of course, almost every one will be in error) that he should know X——, the worthy and responsible contractor? and recognise his form, now a little rotund, but yet full of activity,—he is still a good ten years short of his grand climacteric;——as well as his face, in which may be seen the shrewdness and decision, veiled by a wise reticence, that appear in his letters, his acts, his self-justifications,—his claims for extras and his manful struggle to maintain them——his personal visits to distant quarries or brick-yards, undertaken seemingly on the spur of the moment, and as stimulating as if that figure had in sharpest steel materialised itself upon his tongue? Cannot memory trace him back, a good tale of years,—and identify him with X——, the general foreman? No genius in truth,—as all who strove with his work could testify. Science absent; delicate interpretation of drawings not present; setting out,—wanting looking after. But the X - of to-day was there nevertheless! His then lithe form rested not, and he knew well when men were well placed and working to advantage. When did the work wait for materials?—and when did not times fit together happily to keep the staff all active? Were not the men of every arm so far his friends that they looked for "a straight bit of a work" as a chance to show him that their hands (and feet too) had not lost the powers they had of yore,—in former struggles under his leadership with time and nature? To arrange with him a modification of procedure, a temporary arrangement for occupation, to explain a drawing,—albeit, candour requires one to say that memory was frailer than comfortable:——none of these was much of a task.

Who, looking in fancy or in fact at the X—— of to-day, can forbear to think a smile in seeing how faintly the acquired phlegm and self-reliance suggest the agitation that in those years made —on odd desperate occasions—the burden of life very heavy?—when the evidence of mistake,—or the gloom, projected from coming difficulties, actually almost succeeded in winning for an instant a breaking voice or a moistening eye? The merit of toughness among others was yet wanting. Yet—considering that he got about him good foremen of trades,—would one if called on by some ruthless hypercritic to choose—to say which side kicked the beam,—have parted with this phase of good service, and given more honour to Y——?

An intelligent draughtsman, a careful director of workmen, an admirable interpreter of drawings and instructions,—why did the works under his charge so linger, and the reproofs brought upon him therefor seem to make a fixed scowl a weekly tenant of his naturally good-humoured face? Was his non-success—or incapacity—"to push the job" a merit over which architects might have shouted praise,—for holding manfully aloft a worthy but too often despised banner inscribed with the legend,—of "good work slowly done"? Peace be with him!—nobody would say so.

And are no over-estimates made in respect of nerves not yet tested—or tested in other exercises,—or in respect of the capacity for prompt seizing of the moment and method of right action in difficult conjunctures. What?——to disclose in parable a secret of the prison-house——What fortuitous compulsion by minor influences drove Mr. Alaric,—one of the well-known leaders of the wolfish Gothic school—his manner as nervous as his drawing—into the witness-box on a question of characteristic geniality in respect of the dilapidations of a rectory-house?——It will be seen we are speaking of years well agone,—but few such questions will reach the sacred fount of justice (and expense), it is to be feared in future——. And what evil impulse led him under the gentle suasion of Mr. Coax, Q.C., to state publicly his practice to claim for internal decorations,—temporarily oblivious of masses of judge-made law; and still further to flounder when asked to explain the items so gracefully set down by his painstaking helper and coach,—who dreamt not so naturally as he of short columns and machicolations, and laid no claim to the awful powers of his discomfited and afterwards indignant coadjutor. In this connexion,—might not Edinburgh-Review-Jeffrey's innocent explanation of "effectual calling"—shocking as it was to the ears of his parish pastor, and for the nonce catechist,—be looked on as not out of point? Who of mortals is wise all day and every day?

But why test the thin thread—of argument by suggestion—with illustration to the destruction of elasticity? Still might not something be said in somewhat similar strain "of things passed as work that were really not work at all"?—"The men have cursed the job two or three times at least," said the troubled foreman, in the woe of his heart; when the limits of possible outlay, and the necessity of self-restraint in the impulse towards thoroughness,—in a work not under a lump-sum contract,—were pressed on his attention. All honour to the sentiment of the workman,—the longing after well-doing, even though the language would need the introduction of the —— in these columns, if reproduced in its genuineness, instead of in tolerated translation! But (say) 1,000*l.* were allowed by the decision of the powerful as an outlay;—what eager impulses could stretch its non-elastic purchasing power? Who is to judge, if not the paid and appointed officer?—and why need the workman who can do anything likely to be required of him grudge his service for what now happens to be wanted?

Not that one need be credited,—as the result of this,—with shut eyes and a ludicrous resolution to speak only fair things of whatever exists, or is customary. Truth to tell, any statement that things seemingly imperfect may have their soul of goodness is liable to be read with an odd twist of meaning. We are forced to confess that there are needy and ill-intentioned contractors, venal and blundering foremen, ill-instructed and torpid workmen, and architects and employers worried with their own cares, or, sad to say, not perfect in temper, or endowed with other ailments. Yet,—the reader knows the rest.

The moral implied by "A Carpenter" would —if put into form by an intelligent *précis*-writer—stand seemingly thus:—If you work with your head, and come to know your trade well, and more things besides, you will have less well-being in your lot in life. Worst of all, when your faculties have been sharpened, your skin will grow thinner in the process. Of course, by the way, such a writer of *précis*, being a mere machine, would not stay to point out the compensating advantages in many an instance of some attenuation of that integument!

It has yet to be proved that the tendency unduly to depreciate, is much more judicious than the habit unduly to bepraise, manual labour as the means of getting a livelihood. It, as we all know, has its drawbacks and its solid advantages. No one can deny that the pursuits that require the agile mind and powerful will call into play finer things than the muscles,—or even than the power of endurance and the moral qualities that go to any hard labour done with a will. Still less would perversity itself deny that the extension of the empire of man over his own life, over nature,—the compelling of fate, the strife with elemental powers, are in themselves the sternest and at the same time most useful discipline;—that the world, in fact, is the arena of all others fitted to afford play for the once-aroused activities of its owner. Also that—in proportion to the conquests—the worlds to be conquered extend; and besides, by the rules of the warfare, the new acquirements are divided (it may

be roughly, and after years of waiting it is true), — "as his part is that goeth to the battle, so shall his part be that tarrieth by the stuff." And all the while that the result of culture, its bright success in what seems its ultimate aim — the enriching of human life,—may seem thus to leave lesser labours in gloom, those labours have their own vindication and satisfactions. From Virgil to Carlyle;—of the "too fortunate husbandman," —only ignorant of his happiness in the sense of not being able to compare with full knowledge his lot with that of others—sings the sage of old time;—the worker of any sort who puts his soul into the effort, realises the monkish "*laborare est orare*," says the teacher of to-day.

It being always understood that the worker is fit for the work,—not the least of the difficulties in this world being to secure that he shall be. Apart from, and, of conrse a little in advance of, the plea for education as in aid of police, comes the plea that it sifts a nation; and—affording an opportunity to the capable—should, if judiciously regulated, secure the largest possible number of valuable men, well trained and fitted for the direction of others; —at the same time making the directed understand the words of command, and the reasons why they should be given. Parliament, even, has not yet succeeded in getting much further than "police." It hits the tone of the assembly, which for the most part views only the practical,—*i.e.*, the nearest, most obvious,—gains.

But we need not all of us imitate the wisdom (or shrewdness) of the Commons, and leave entirely unsaid the part usually relegated among the silences,—the third,—which in fact includes all other pleas for useful and thorough training. The voice of statistics, the questions of expediency, the arguments of governors in favour of securing the really able on the side of order and rule,—all these subside, almost as voices swallowed in the thunder, when the strong, manly tones of Milton sound across nearly half a score generations,—in all their earliest power, to those who can interpret their true meaning into the language of to-day:—"The end, then, of learning is to repair the ruins of our first parents by regaining to know God aright, and out of that knowledge to love him, to imitate him, to be like him, as we may the nearest, by possessing our souls of true virtue, which being united to the heavenly grace of faith, makes up the highest perfection." This appeal to each for himself, — for his own sake—that one does not feel shamefacedness to make in the words of a master, — is to be taken as understood in all our appeals for general and technical culture. Society, — to come down again to our best-loved conversational tone,—is a joint-stock concern, a co-operative society, which improves in proportion as each partner makes himself more efficient. Things would seem in a bad way if we concluded that nobody valued capacity and worth, because they are at times not recognised beneath disfigurements. They would be in a very bad way if the majority of people were not able to see and value them at all. But things will always be hopeful while the healthful natures, or the contagion of example, or other sufficiently potent influences, constrain enough of us "to labour—and to wait." Will "A Carpenter" forgive us for being led by him into so long and strange a homily? Reciting some old sayings that, in moments of pique, or of overstrained patience, he,—like the rest of us for a few instants at times,—is mortal enough to deny their usual influence.

PICKINGS AT THE BRADFORD MEETING OF THE BRITISH ASSOCIATION.

In the department of Economic Science and Statistics, Mr. W. Morris (Halifax) read a paper on capital and labour. He condemned the aggressiveness of trade-unions, and said that the reduction of the hours of labour had been carried too far. Wages had been advanced to a point which must be attended with national loss, and would react upon each member of the community. If it went on much further, we should gradually but surely be beaten out of the foreign markets, and our export trade would be gradually destroyed. The interference with piecework by trade-union combination was inflicting an injustice upon the skilled workmen, whilst the unskilled obtained an advantage. Wages would no doubt fall to their natural level, but they might not do so until we had lost our foreign trade. The only remedy to arrest the existing evils brought about by the combination of workmen under the guidance of clever but ambitious and short-sighted men, was a counter organisation of capital, elaborately organised, and so extensive as to completely overlap trade-union combination.

Mr. Leone Levi next read a paper on the effect of the increase of prices in certain necessaries of life on the cost of living, and its relation to the rates of wages and salaries. He remarked that from whatever cause it might have arisen,—whether from the large addition to the stock of gold during the last twenty years, or from the excess of demand over supply of the principal articles of food and other necessaries,—it was a fact beyond question that the cost of living in the United Kingdom had become greater than it used to be, though the extent of the increase was by no means so great as many were disposed to imagine. On the economic importance of this fact it was almost needless to dwell. An increased cost of living of necessity demanded increasing wages. Increasing wages meant an increasing cost of production, and the latter meant a corresponding disadvantage in international competition. To arrive at the absolute increase in the cost of living of a town artizan or an agricultural labourer, of a middle-class or a nobleman's family, in consequence of the rise in prices of certain commodities, they must regard the relative position of such commodities in the ordinary budgets of the respective parties. It was important, however, to guard against exaggerations respecting the increase in the cost of living. The Professor, after speaking of the increased price of provisions during the last ten years, proceeded to review them in relation to the effect on the cost of living. He said that, having regard to the fact that the agricultural classes constitute almost one-fourth of the entire number of the labouring class, the actual increase of prices, and nothing else, was almost 15 per cent. The increased cost of living arose to a large extent from the demand for more expensive articles of clothing. The cost of luxury had no bounds, and it was not so easy to get out of this extravagant mode of living. When once a permanent scale of expenditure had been established, that article which had been formerly regarded as a luxury became a sheer necessity on all sides, though it was found that if the cost of living had increased, so had the rate of incomes, the general result being a decrease of pauperism and an increasing amount in the deposits of the savings-banks.

In the course of the discussion which ensued, Lord Houghton expressed the opinion that perhaps the question belonged rather to the sister association, the Social Science Congress, than to this Association. He would say it had already struck him that they talked a deal too much about the contest of capital and labour. He could not help thinking that when the question did come to be finally resolved and understood, it would be discovered there was no contest at all. The essential difference between employer and employed regarding accumulation of wealth was, that the capitalist, having saved money, was enabled to distribute it to the working class. The question was altogether one of distribution, and a man could not spend a great deal of money for his own personal real gratification without distributing it to others. If they could only make the working class clearly understand that there was no difference worth considering between the condition of the capitalist and their own, they would, he thought, be brought to a very different construction of the question. Mr. Powell, M.P., referred to the increased prosperity of the country, and observed that in a commodity which was brought from the ends of the earth there was not a corresponding increase in the price, but where they had a commodity produced in this country they had a sensible increase. Professor Levi said the expenditure in actual relief of the poor had increased from 6,077,000*l.* in 1862 to 8,070,000*l.* in 1872. That had arisen from the increase in the price of food. The President, referring to the remarks of Lord Houghton, said that one of the great causes of evil on both sides of the question was that the scientific laws which governed the relations of capital and labour were forgotten.

In the Mechanical Science Section, the opening address was delivered by Mr. W. H. Barlow, F.R.S. It was occupied with the nature, properties, and application of modern steel, and embraced the details of the committee appointed some years ago by the Institution of Civil Engineers, of which Mr. Barlow was a member. The president referred to the utility of steel for shipbuilding, boiler-making, guns, crank axles, and bridges, in replacing cast and wrought iron. There was a good attendance of engineers, many of whom were distinguished men, and some of whom spoke on the restrictions placed on the use of steel by the Board of Trade, which it was hoped would soon be relaxed. A hope was also expressed that the British Association would use its influence in calling attention to the subject.

The papers on the "Sand Blast Process" for cutting hard substances excited considerable interest. Specimens were handed round for distribution, and a discussion ensued on the extent to which the blast could be used for mining and other purposes.

Professor H. Smith, in the course of his opening address to the Mathematical and Physical Sections, spoke of the value of "original research," that is to say, search after new truths for their own sake, without any reference to their commercial value or immediate usefulness. Euclid and Apollonius, he said, studied the nature of the curves formed when a cone was cut in various directions by a plain surface; the said curves being known as "conic sections." Had they been asked,—"What was the use of these curves?" they could scarcely have given an answer, as conic sections had then no tendency to solve any scientific problem, and for 2,000 years were of little value; yet they afterwards gave splendid results in solving scientific problems which beset Kepler. Without conic sections there would have been no Kepler, without Kepler no Newton, and without Newton no modern science as it is at present. He spoke in favour of State aid to scientific education, and of better methods of teaching physical science in schools.

In Section D, Anthropology, a paper "On an Age of Colossi," was read by Mr. John S. Phenè, F.S.A. The paper commenced with a slight sketch of the theory of the ages of stone, bronze, and iron, as generally recognised by anthropologists, for the purpose of bringing forward a feature which, in the author's opinion, would at a future period considerably modify present ideas on this subject,—the geographical feature, the effect of which, he thought, could be hardly understood till we were able to correlate more perfectly the antiquities of distant countries. He argued that, assuming a wave of emigration from a common centre to bear forward any distinct characteristic, whether of these recognised features, or of colossi, or otherwise, such wave might, in pre-historic times, while portions of it terminated abruptly near its source upon desirable spots being attained, travel indefinitely by other sections over an enormous area, even giving rise to the secondary or sub-waves of exodus; the results of which might produce the strange features discovered by subsequent travellers of a civilised or historic age setting in, either from a succeeding wave or some other cause, which would reach to the settlements from which the sub-exodus proceeded, but not follow the offshoots; hence that in an age highly historic and civilised in a given geographical area, there might be found people with the same features, traditions, myths, and roots of language in a barbarous or pre-historic age or condition outside that geographical area; and that, in consequence, any particular age so identified might be, or seem to be, indefinitely long from the retainers of its characteristic wandering beyond the reach of communication. After drawing attention to the inhabitants of what he termed the three great centres of colossi, and which he designated as Egyptian, Malayan, and pre-Mayan or Mexican, he illustrated by diagrams and drawings the favourite emblems of these creators of colossi, from which it appeared that on a broad basis there were both an architectural and emblematic similarity in their works, the pyramid, the obelisk, the monolith, and the elevated platforms being prominent features in each, the worship of the sun apparently common, and colossal emblems of the human figure, reptilia, and birds abounding. Easter Island, as representing Polynesia, was included, and the same physical features and climatic conditions were found approximating in these different centres. He expressed a belief that a careful study of the poetic language of the Singhalese would aid and stimulate researches in the forest-covered cities of Ceylon; and those of the ancient Maya (if possible), and the Quiché peoples unravel the mystery of the now impenetrable cities of Mexico and Central America. While these

cities, with their colossi, were so buried, we had much to learn of the history of the human family, and the age in which their colossi were executed. This part of the question was too extensive for a single paper, and he would confine himself, by way of illustrating his argument, to what seemed to him the result of an offshoot from such a preceding wave as he had supposed, which he considered had laved its final billow on the shores of Britain. He first pointed out that the highly civilised nations of Greece and Rome were not originators of colossi, but elaborators of the raw-material ideas of the Egyptians, as shown by their exquisite symmetry, and the costliness of the materials of their gold and ivory colossi. He then gave a number of examples of similar accompanying features in Britain, Egypt, Mexico, and Malaya. He found parallels of design in the plans of some Oriental cities and the horse-shoe of Stonehenge, in the circle of Copan and those of Avebury, the Giant's Ring, and others; and finally argued that we had not only these collateral evidences, but actual colossi of the ancients in those lands, in enormous monoliths, in venerated idols, as, amongst others, the celebrated rock, the traditional goddess Andras, and the enormous Wilmington Giant, both in Sussex, and the latter of which is now being restored, with the consent of the Duke of Devonshire, and which, he quoted Cæsar and Strabo to show, agreed identically with the description given by those writers of the vast Celtic deity to which were sacrificed human victims, wild beasts, and cattle, and of which Cæsar says they had many images.

A lecture to working men, delivered by Professor Siemens, on the subject of "Fuel," attracted a crowded audience at St. George's Hall. The subject was dealt with under the following heads:—First, "What is Fuel?" second, "Whence is Fuel derived?" third, "How should Fuel be used?" fourth, "The Coal Question of To-day;" fifth, "Wherein consists the Fuel of the Sun?" Each of these points was elaborated in a popular manner, the one dealing with the use of coal being of necessity the most interesting. It was estimated by the lecturer that if coal were consumed in a careful and judicious manner the consumption might be reduced 50 million tons a year, though, of course, such an economy would involve a very considerable expenditure of capital. In 1872 no less than 123,000,000 tons of coal were got up from the mines of England and Wales as against 83,500,000 in 1862, a fact which led to the conclusion that unless economy were practised the consumption thirty years hence would be 250,000,000 tons per annum, and that therefore progress in effecting economy ought to be accelerated as much as possible.

A paper on the question of Railway Amalgamation was read at one of the meetings by Mr. B. Haughton, C.E., of London. He pointed out that objections were entertained both to the working of the railways by the State and to the present system of management. The first reason was, because the work would be too great for any Government department, and would be unremunerative; and the second, because it was regarded as unequal to the necessities of the age and the wants and demands of the public. As a compromise between both, he recommended an amalgamation of the existing railway systems into four groups, of which three would run north and south, from Inverness to Dover by way of London; and the fourth, from Land's End to Liverpool, Manchester, and London. He contended that this would produce a smoothness of action upon the railways, and would meet the ordinary wants of the travelling community.

A discussion followed, in which Mr. Botley, Major-General Synge, Mr. F. P. Fellows, Mr. F. Wilson, Mr. Chadwick, Professor Leone Levi and others having addressed the section, the president, in bringing the discussion to a conclusion, pointed out that railways were not entirely the result of unassisted private enterprise, but that they never would have come into existence at all but for the Government which helped them by giving them great power in forcing people to sell property, and in conferring upon them also a right of way all over the country, which they could not have obtained otherwise. As to the purchase of railways by the State, his own opinion was that the Government had quite sufficient work on their hands at present, and that such a scheme would place at their disposal patronage which would excite considerable jealousy throughout the country.

NEW ROLLING STOCK FOR THE SOUTH-EASTERN RAILWAY.

A SUGGESTION.

THE South-Eastern Railway Company are now engaged in the construction of a large and valuable addition to their rolling stock, at their extensive carriage and engine works at Ashford, which occupies an area of upwards of 12 acres. The new stock now building, consists of upwards of 130 first, second, and third class carriages, all of them on a novel and much improved principle; and in addition to these there are also in course of construction several large family saloon carriages, which are to be furnished with lavatories and closets, and fitted with water-tanks, and all necessary appliances, for the comfort of travellers. The new stock also includes several luggage and break vans.

The new first-class carriages are forty-four in number. These carriages, which are very roomy and handsome, are 27 ft. long, and 8 ft. 4 in. wide, 7 ft. high in the centre, and 6 ft. in the doorway, and each passenger has 21 in. lineal of seat-room. The seats have one elbow rest in the centre. There are four compartments in each carriage, and each compartment is seated for eight passengers. They are lined with fine blue cloth, and trimmed with blue and white cord and lace, into which the company's monogram is worked in reversed couples. In the construction of the new smoking-carriages in this class, Mr. Mansell's improvements have been adopted. In order to obviate the offensive odour with which the cloth linings of a first-class smoking compartment becomes saturated, the compartments of the new carriages set apart for this purpose, are lined with dark blue morocco leather, and the compartments are also fitted with brass spittoons, which have a slope towards the centre, and the contents are discharged through a tube at the bottom. The floors are covered with oil-cloth. Brass plates, with chequered surfaces, are also fixed in the smoking compartments for striking "vesuvians," and the side lights have the legend in frost work, indicating that they are for smoking. The whole of the carriages are fitted for the electrical communication between passengers and guard, as patented by Mr. Walker, the electrical engineer to the company. Over the seats of passengers in the ordinary first-class compartments, there is a series of three printed notices, surrounded by an ornamental gold border. The central notice, illustrated, explains the action of the communication with guards, and the consequences of tampering with it. This is printed in English, French, and German. The notice on the left announces the prohibition of smoking in the compartment, and the penalty. The notice on the right contains a caution against opening the doors, or attempting to alight before the train is at rest. On each side of these printed notices there are framed glass mirrors, 2 ft. long by 5 in. wide, very decorative, but undesirable in the event of a collision. In appearance the three classes of carriages are all very much alike, as to height, colour, and other features. They are painted crimson lake in the lower quarters, and picked out with deep gold, and fine lined with vermilion.

It would be a great advantage if, on all lines, the first, second, and third class carriages were painted different colours; and greater still if the same three colours were adopted on all lines, so that passengers would everywhere at once know into which carriages to enter. The new brake and luggage vans are large, strong carriages, and well adapted for the traffic for which they are designed. The guard's compartment is in the centre, which rises above the other carriages in the train, and is glazed at the top to the front and back. The compartment also projects at the sides, about 10 in., and is glazed, so that the guard can command a complete view of the line to front and rear while in the open, and in daylight, and the head and tail lights and signals after dark. The whole of the carriages and stock have been designed by, and built under the superintendence of, Mr. Cudworth, the company's locomotive engineer and superintendent, and Mr. Mansell. It may here be stated that the whole of the company's rolling stock, including locomotive engines, carriages, and wagons, are now manufactured at the works at Ashford, which may be regarded as the Crewe of the London and North-Western Company. Upwards of 1,000 artizans are permanently employed at the works, which has given a considerable impetus to the trade of Ashford.

BASSENTHWAITE CHURCH, CUMBERLAND; COMPETITION.

THE design selected to be carried out is by Mr. D. Brade, of Kendal,—motto, "Skiddaw." The second premium, 25*l.*, has been awarded to design under motto "Barf," by Mr. J. S. Seymour, of Carlisle. Mr. Jas. Fergusson, F.R.S., was the referee consulted by the committee.

HEALTH IN BIRMINGHAM.

WE understand that in one of the districts of Birmingham, where an epidemic of typhoid fever prevailed last summer, the disease has again broken out. The previous outbreak was investigated by Dr. Ballard, who censured the local authorities for inattention to drainage. Again typhoid fever has appeared, and, according to statements made in a memorial signed by the residents, the local authorities have been guilty of neglect of sanitary precautions. A piece of vacant ground in the midst of a large population has been selected as a depôt for the deposit of night-soil, which is carted thither by the servants of the Board. Two cases of fever exist in the street where this has been going on for some weeks.

We remember that when three or four years ago (during the meeting of the Social Science Association) the conductor of this journal ventured to point out the dangerous conditions existing in parts of the town, his statements were met with shouts of derision, and, in some quarters, of abuse, and the town was pronounced to be the healthiest in England. The authorities have had several practical warnings since then. Let them take heed.

THE SLEEPING SALOON ON THE LONDON AND NORTH-WESTERN RAILWAY.

A SLEEPING-SALOON has been built by the London and North-Western Railway Company, at their Wolverton Works, and will be run for the first time between Euston and Perth, on the 1st of October. Some account of it will probably interest our readers.

The saloon is 30 ft. 6 in. long, 8 ft. wide, and 7 ft. 9 in. high at the centre of the roof (all outside dimensions). The entrance is by means of a lobby from side to side; the framing of the body is of English oak and mahogany panels, and the under-frame is also of English oak, the sides of which are plated with ⅜-in. angle iron, 8 in. by 4½ in., and fitted with three pairs of Mansell's patent wheels and tyre-fastenings. The lower part of the body outside is painted a purple lake, and the upper part with pure white, the whole being picked out, lined, and decorated with gold-leaf. The interior of the saloon, which consists of three passenger compartments and two lavatories, one at each end (which include water-closets), and having a corridor through the centre, will seat four persons in each compartment by day, and sleep the same number at night. The arrangements for the latter are as follows:—The four seats, which are made in the frames, in each of the three compartments, and can easily be drawn forward so as to meet in the centre, will accommodate two persons at night, and there are upper berths, covered with a figured *cretonne*, for other two persons: these during the day are suspended against the roof, and being carried by quadrants or lazy-tops, and balance-weights (unseen), are easily drawn down to a height of about 4 ft. from the floor at night. To enable the passengers to reach these berths with ease, a pair of movable folding-steps is carried in each of the compartments, so constructed, by means of a movable top, as to form a reading or other table during the day. The interior of the saloon is handsomely fitted up. The roof is lined with sycamore panels, and Hungarian ash mouldings. The sides, ends, and lavatories are of walnut, with Hungarian ash mouldings, and surmounted with gold mouldings throughout. The trimmings are of a dark blue silk tabaret, and the carpets are of crimson pile. The compartments throughout, and the lavatories, are fitted with mirrors. Sabberton's patent ventilator, round the roof lamp in each of the compartments, is used as part of the ventilating arrangement.

The saloon will be run three times a week, namely, Monday, Wednesday, and Friday, from London to Scotland, and from Scotland to London on Tuesday, Thursday, and Saturday.

Ten shillings in addition to the first class fare will be the charge made to each passenger for the accommodation.

ROYAL HORTICULTURAL SOCIETY.

SOME of the fellows of the Horticultural Society, especially debenture-holders and compounders, feel a little disquiet in respect of the present position of affairs, and want to know what is doing at South Kensington and who is doing it. Since the old council went out, making a very poor fight, by the way, and the new council or *quasi* council went in, there has been a dead silence beyond the doors of their meeting-room. Whispers, or rather echoes of whispers, have, however, reached the outer body to the effect that the new council is no council at all, not having been properly appointed, and that any acts of theirs would be illegal, so that the old council could not even negotiate with them if it were desired. If this be true, we are not able ourselves to assert it, and that a lawsuit to settle the legality of the governing body looms in the distance, coupled with the assertion that the lease is actually forfeited to the Commissioners of 1851, to whom the Society owes some 30,000*l.*, it is surely time for the Fellows to look into the matter for themselves, and take such steps as may seem necessary. We have heard it said that the Commissioners would probably not object to release the Society from all their obligations, pay the debentures (19,000*l.*), and take to the gardens for the use of the public. But, of course, there would be two words as to that. Anyhow, *something* must be done.

A PLAN OF PARIS IN RELIEF.

THE central transept of the Palais de l'Industrie, Paris, is at present occupied by a novel exhibition. It is a vast raised plan of "Paris Besieged," minutely mathematically executed by the well-known engineer officer, Colonel Liénard. It is imbedded in the ground-floor of the Palais, and exactly situated with respect to the current of the Seine. The scale adopted is of one millimètre per mètre. This proportion, which is sufficiently large to give an accurate idea of the plane dimensions of the territory, would not be so with regard to the heights indicated. The visitor's point of sight is inverted: he sees as though from a balloon. The scale has therefore been doubled for the city monuments and the natural elevations of the ground. This fiction admitted, it is found that the position of the forts and batteries of the first and second zone, that of the villages, battlefields, and forests, is very accurately described. The plan has been constructed for a strategical purpose, for the instruction of military students and officers. It is easy to judge from this reproduction that the "circle of iron" was no vain picturesque phrase. Every Prussian gun is modelled and mounted. The fatal hills of Chatillon, Lhay, and Fontenay-aux-Roses are marked with the number of men who fell there; as are the plains of Bourget, Champigny, and Buzenval, where the forlorn hope of the besieged was finally wrecked. The general aspect of the plan is marvellously picturesque. The green powder representing plains and lawns; the dried moss which forms the forests; the glass river, and plaster of Paris houses and monuments, are all executed with much artistic taste, and not a little precision. In a few points Col. Liénard has been led into errors by following too literally the imperfect ordnance maps distributed by the Ministry of War. The entire mass of Paris buildings is unduly diminished in area. Several small villages are not indicated, and one hamlet appears on the plan which has no existence whatever in reality! But with the imperfect materials at his command Colonel Liénard has done all that could be expected.

The plan, completed and corrected, will be permanently established in a week or two in the ground of the old Ministry of Finance, in the Rue de Rivoli. It will then be surrounded by a panorama extending the plan to St. Germain, Versailles,—in a circuit of about thirty miles round Paris. The whole will be eventually transported to the Invalides, where a fine collection of raised plans already exists.

New Docks at Wemyss.—A spacious new dock, built by Mr. Wemyss, of Wemyss Castle, at a cost of about 10,000*l.*, has been opened at West Wemyss, a port in Fifeshire.

THE CASTLE OF EWIAS HAROLD.

THE "Castellaria Aluredi Ewias," of Domesday, was a tract, the particulars of which are not known, but which no doubt lay among those lines of hill and valley which converge like the fingers of a hand upon the Worm and the Monnow, between the Golden Valley and the Black Mountain, and form the south-western portion of the county of Hereford. The actual castle, "Castellum Ewias," stands about six miles within the border, and about three miles outside or west of the presumed line of Offas Dyke at this point. The country is hilly, but fertile, well worth the defence, for which it affords many natural advantages. The immediate position is chosen with great skill, though it required an immense application of human labour to make it an almost impregnable fortress against the fierce and active hordes of Welshmen whose alienated patrimony it was intended to grasp. While the Mound of Builth remains an evidence of English rule, that of Ewias can scarcely be regarded as the advanced post, the "Castle Dangerous," upon the British territory; but it must nevertheless at all times have been a post of very great danger, and have borne, with Kilpeck, the brunt of the ordinary and frequent attacks of the men of South and West Wales upon Hereford.

In selecting the position advantage was taken of a tongue of high land, broad towards the west and north, but which came rapidly to a narrow and almost abrupt termination in a point about 300 ft. above and within the junction of the two adjacent streams. Of these the larger flows along the northern front of the position, and the smaller down a deep valley along its southern front. The two meet a few score yards below the high ground; and upon the left or further bank of the larger stream, and a short distance above the junction, is the church, and attached to it the village, to which the castle and its English lord have given the distinguishing name.

It was decided to convert the point or eastern end of the high ground into the proposed strong place, and to form thus, in the northern fashion, an isolated mound. With this intent a broad and deep ditch was cut across the ridge, curved so as to embrace about one-half of the future elevation. At its north end the ditch was carried straight down the hill-side towards the brook. At its south end it came to rather a sharp conclusion, running out upon a natural bank and slope. Here, however, it was in some sort resumed at a lower level, and ended in a shallow ditch at the southern or principal entrance to the castle. The part thus isolated by the ditch formed the circular base of a mound of about 120 yards diameter and about 30 ft. high. This the addition of the soil from the ditch raised to about 70 ft., and thus gave it, in the military sense, a command over the adjacent part of the original ridge. On its opposite, or eastern side, the mound does not descend at once towards the junction of the waters, but at its foot is a broad semicircular platform, which covers its east, north-east, and south-east fronts, and from the outer or convex edge of which descends a steep slope towards the water, which is again succeeded by slopes of a far more gentle character, and which are not included in the military works.

A fair general idea of this stronghold may be given by supposing a circular platform of 200 yards diameter to be bordered on the east and adjacent sides by a steep natural slope falling from its edge, and on the west and adjacent sides by a steep artificial slope falling to its edge. Then on the western margin is placed a conical table mound, 60 ft. or 70 ft. high, and about 120 yards diameter at the base, which necessarily converts the western slope into the further side or counterscarp of a ditch, and reduces the eastern side to an open crescent-shaped platform. Such is the original plan of the Castle of Ewias, and such its present appearance after the complete removal of the masonry which for about 600 years adorned or encumbered its earthworks.

The top of the mound is oval, about 3¼ yards north and south by 40 yards east and west. Upon it has stood a shell keep, either circular or many-sided, about 30 yards diameter. Although no masonry remains, the outline of the keep is plainly indicated by the trench which has been dug while the foundations were being grubbed up. The keep seems from this to have stood, not in the centre, but nearer the eastern margin of the mound, probably to allow room for a couple of exterior towers, or perhaps a gate-house, which seems to have stood where now are some circular pits. Towers would be well placed on this the weakest side, so as to give a still greater command over the approach along the high ground. There is no trace of any regular ascent to the keep,—no mark of an original winding path up the mound, that now in use being evidently very modern. The side is so steep that no wheeled carriage could ascend it, and scarcely any heavily-laden horse. Probably the way up lay by a direct flight of steps, as at Hawarden and Carisbrook.

There is no trace of a well. The material of the keep was evidently a hard schistone bed of the old red sandstone, fragments of which are seen in the excavations.

The outer ward or crescent-shaped platform, below and west of the keep, runs out to a point towards the southern end, but to the north or north-west it is stopped at a breadth of about 12 yards by the prolongation of the keep ditch. The breadth of the ward at its greatest is about 60 yards. Along the north-west front it is strengthened by large earth-banks thrown up from the contiguous ditch, but elsewhere the natural slope of from 30 ft. to 40 ft., steeply scarped, needed neither ditch nor bank. This ward had a curtain wall along its outer edge, of which the foundation diggings remain open. The north-west end was continued up the mound, and probably the circuit on the opposite side was completed in a similar way, so as to make the mound and keep, as at Tamworth and Durham, a part of the general *enceinte*. A group of excavations shows that this ward contained a considerable number of domestic buildings placed in its north-eastern and eastern part, near to the curtain wall. At the foot of the mound to the north is a sort of notch in the line of bank, possibly indicating a postern. The main approach evidently rose gradually from the village bridge, and skirted the foot of the eastern slope of the outer ward nearly to its south end, where it turned inwards and entered that ward by a roadway or slight cutting.

There is no trace of masonry to be seen within or about the castle *enceinte*; the material seems to have been in request as building stone, and to have been everywhere collected and even grubbed up with most covetous care. There is a limekiln on the south side, near the line of the entrance, no doubt built of the materials of the castle, and a sort of house, now a shed, between it and the brook, but the material shows no mark of the tool and no old mortar.

There are some mounds between the castle and the brooks, possibly thrown up on the occasion of some attack by the enemy. On the other or high side there are no outworks nor any indications either of attack or defence.

There are no remains of the priory, which was evidently attached to the parish church? This is a good-sized building, recently repaired or restored, and in excellent order. It is composed of a tower, nave, south porch, and chancel. The nave has been so completely restored that little of old work is to be seen in its walls or roof. It is probably in substance of Decorated date, judging from the buttresses on the south side. The porch is new. The chancel has in the north wall a sepulchral recess, of Decorated pattern, covering the original recumbent figure of a female with her hands in prayer, holding what looks like a covered cup. In the south wall are two lancet windows of one light, under Pointed recesses, and between them a late Decorated window of two lights, trefoiled, with a plain four-sided opening in the head. The whole is in a round-headed recess. The arch into the nave is new.

The tower is the best part of the church. It is of large size, square, and short for its size, probably having had another story. It rests upon a bold plinth, about 5 ft. 6 in. high, at the top of which is a bold half-round cordon, with a band. The south-west angle is covered by the pilaster buttresses, of 8 ft. 6 in. breadth, and a foot projection, which die into the tower, near the present summit. In this angle is a well-stair. In the south side is an unusually large door, of 8 ft. opening, with high lancet arch. In the centre of the flat jamb on each side is a half column, 2 ft. diameter, with a water-bearing moulding, and a sort of bell-cap, with several bands of moulding above it. The arch is plainly chamfered, and the cordon of the tower is carried round it as a hood. Above this is a clumsy window of two lancet lights under a pointed head, very plain. Above this again is a small broad window, with a trefoiled head, and above all an Early English window of three lights,



The Ancient Castle of Ewias Harold.—Ground Plan.

with three-quarter shafts before each mullion, with bell-caps. In the nooks of each jamb are two similar shafts, seven in all. The head is a drop pointed arch, plainly chamfered. There is a window similar to this in the north wall. The church contains nothing earlier than this mixture of the Early English with the Decorated style. The masonry of the castle was, probably from its plan, of a late Norman, or transitional date. The earthworks are of the regular Herefordshire type; such are attributable to the English of the early part of the tenth century. They resemble generally, in the possession of a mound, those of Kilpeck and Builth, Caerleon and Cardiff, of Brecon, Abergavenny, and many places in this county or district. No doubt this and the similar works were thrown up when the early Saxon inroads were made into Wales, and were the strongholds of the invading chiefs.

Ewias Harold certainly does not bear the name of its founder, and that founder was probably as completely forgotten in the eleventh century as now.

There are two places called Ewias in Herefordshire, distinguished by the names of their eleventh-century owners, as Ewias Lacy and Ewias Harold. Both are mentioned in Domesday, and both as the seats of a castelry, a sort of honour or superior lordship attached to the castle. Under the lands of the church of Hereford, we are told that "in the manors of Dodelegie and Stane are ten hydes, all waste save one in Dodelegie. Of the nine, one part is 'in castellaria Aluredi Ewias,' and the other in the King's enclosed land."

Another entry explains that Alured was Alured de Merleberge or of Marleborough, a great tenant in chief, especially in Wiltshire. We read, "Alured de M. holds the Castle of Ewias of William the King. For that king conceded to him the lands which William the Earl [Fitzosbern of Hereford] had given to him. Who refortified [*refirmaverit*] this castle." Of it held seven knights, whose Christian names are given, besides other persons. The castle was then valued at 10*l*. Agnes, the daughter of Alured, married Turstan of Wigmore.

How or when Alured gave up the castle does not appear; but in 1100 it was held by a certain Harold, also a large tenant in Domesday, though not in Herefordshire. He is called "Heraldus filius comitis Radulphi," and as such held Sudeley, in Gloucestershire. Earl Ralph, called the Timid, was the Earl of Hereford who was beaten by the Welsh and English forces in 1055, when his son was a mere child. Ralph was a considerable man by descent, being great grandson of Æthelred and great nephew to the Confessor. Harold probably obtained some of his father's possessions when he came of age, and Ewias may have been part of them. He and his descendants were liberal donors to St. Peter's, Gloucester, in its behalf founding the Priory near the Castle of Ewias.

The names and order of Harold's sons are preserved in the Gloucester Cartulary, and they correct Dugdale and all other authorities. They were Robert, Roger, John (to whom his father gave Sudeley, and whose issue were barons), Alexander, and William. Robert de Ewias, the eldest, is described in the Gesta Stephani as "vir stemmatis ingenuissimi." According to the Liber Niger, he held *in capite* upwards of forty-seven fees, the mesne tenants of which were twenty knights. Dugdale mentions only twenty-two fees, and confounds him with a second Robert, his son, also Lord of Ewias. The elder Robert had by his wife Sybilla, Robert, and Richard de Ewias, who left a daughter and heiress, Sybilla, who married Philip Spenser, and left issue.

Robert de Ewias, the third owner of the castle, and the second baron, married Petronilla. He was living 1194–6. He also left a Sybilla, daughter and heiress of Ewias. She married, first, Robert de Tregoz; second, William de Newmarch, whom she married during her father's lifetime, in the reign of Richard I. He was living 11 John. Third, Roger de Clifford, probably the second brother of William de C. From this match spring the Earls of Cumberland. Newmarch had no children. Sybilla was dead 20 Hen. III., and was followed by her son, Robert de Tregoz, slain at Evesham 1265. He was father of John and Henry, father of a line of barons who ended about 1105.

John de Tregoz died 1300, leaving two coheirs, Clarice and Sybil. Clarice, who died 29 Ed. I., married Roger la Warre, and had John, aged 23, in 1300, and Sybil married Sir William de Grandison, ancestor in the female line of the St. John's, Viscounts Grandison. In the partition, John la Warre had the "body of the castle," of which, 4 Ed. III., he enfeoffed John de Cleydon. He died 21 Ed. III. John, his eldest son, died before him, and as early as 12 Ed. III. he had enfeoffed his grandson, Roger la Warre, and Elizabeth his wife, with Ewias Castle and Manor.

Roger la Warre died 44 Ed. III., seized of Ewias Harold, and was succeeded by John, his son. 13 Rich. II., Sir John de Montacute, sen., is seized of Ewias Harold, and three Wiltshire fees in the Honour of Ewias, and Teffont-Ewias, in Wilts, besides other Ewias lands in Herefordshire. 18 Rich. II. these same lands were held by Margaret, wife of Sir John Montacute, bart.; and 10 Hen. IV., by Thomas de Montacute, Earl of Salisbury.

The nature of this alienation is obscure; for, in the midst of it, 22 Rich. II., Sir John de la Warre and Elizabeth his wife are seized of the Castle of Ewias Harold. However, there seems to have been an actual and permanent alienation to the Montacutes; for, 7 Hen. VI., Thomas, Earl of Salisbury, has Ewias Harold. Thence it passed to the Beauchamps, of whom Joan, widow of Sir William Beauchamp, of Bergavenny, had the castle, vill, and lordship in 14 Hen. VI.; and finally the Beauchamp heir, Edward Nevile, Lord Abergavenny, died seized of the castle, &c., in Herefordshire, and of Teffont-Ewias, in Wiltshire.

G. T. C.

NEW BOSTON, UNITED STATES.

The great fire at Chicago two years ago so astonished the world with the vastness of the destruction occasioned by it that the catastrophe at Boston which followed shortly afterwards, although in itself almost as disastrous, seemed to be comparatively unnoticed, and to excite but little comment. The rebuilding of Chicago, to which we have drawn attention, has been carried on with such vigour and energy as to astonish the Americans themselves, so rapid has been the restoration of the city; and amid the wonder which the energy of the inhabitants of the "capital of the West" has drawn forth, the restoration of its Eastern rival has been carried on quietly but surely, almost unheeded, and without exciting even that curiosity which its destruction caused.

Less than twelve months ago a large portion of the city of Boston was reduced to ashes; at the present moment hardly a trace of the fire remains; the burnt district has been almost entirely restored. Help in money and materials poured in from all sides; Chicago herself, which but a short time previously had been the object of Boston's charity, returned her gift with interest; but the people of the stricken city did not sit down to count their losses and ask for help,—they at once set about repairing the damage their homes had suffered, and as soon as the flames were extinguished braced themselves to the task of restoring the ruins. Following the example of her younger sister, Boston was not long in removing the traces of the sudden catastrophe that had overtaken her; and next to the rapidity with which the flames wrought their work of destruction, nothing could exceed the vigour with which the new buildings were erected. Taking those that are already finished as a criterion of the whole, the new structures will be much handsomer, and of a better class than those that they replace. The walls are heavy and firm, the material is of good quality, and the architecture is, in American eyes, as nearly perfect as the wants of the business men who are to locate there will allow. As a rule, the buildings are not more than four or five stories high, and every possible protection that can be practically applied has been adopted against the recurrence of another conflagration. "In a very short time," says the *Boston Post*, "it will again be a matter of history that a person could stand at the head of Bromfield-street and look out upon the harbour, with its islands and its commerce, for the view is already nigh shut out. The whole area of the acres that were so terribly swept over by the fire now bristles with stagings, derricks, and hoisting gear, and with the network of guys and tackle the tangled state of affairs is almost bewildering, even to those who once thought they could successfully shape their course across this quarter of the city.

The scene is one of the busiest activity. Almost every lot in the district is in a state of improvement, and large piles of the worthless-looking material have disappeared. What remains is being rapidly sorted and saved for new structures, or carted away to fill the neighbouring flats. There are, indeed, large quantities of brick and stone that look formidable enough at first sight, but in many cases the trenches for the walls have been opened around them, and the basement full of bricks is looked upon as so much stock already paid for and ready on the spot.

Owing to the time when the street commissioners were able to give builders their lines upon other streets, the greatest progress has naturally been made upon the old portion of Pearl-street, High-street, and the southerly side of Summer, the greater part of which localities are now covered with buildings finished or well advanced. But the question of boundaries is now settled, and everything moves simultaneously from Washington-street down to Broad, and from Summer to Kilby. The army of workmen that throngs the streets leading out of the district at noon and in the evening is large enough to remind one of the crowds of labourers that fill the streets of our large manufacturing cities, and the result of their daily labour it is hard to approximate. The progress that is made is most encouraging, the changes being noticeable even to the daily passer-by."

The greater number of the burnt buildings have already been re-erected, most of them in a more solid and imposing manner than before, and building operations are being carried on so quickly that where a few months ago the ground was covered with blackened ashes to the extent of hundreds of acres, new and more commodious houses have sprung up.

As in Chicago, so in Boston, many of the larger edifices are faced with stone; this material is however used to a very limited extent, enough only being employed to give an appearance of richness to the front of the building, and there is a sameness of design about the buildings which gives a certain amount of monotony to the long avenues of houses with which Boston abounds. The fire, however, cannot be said to have been an unmixed evil; for, though the city was not the mixture of huts and palaces which could have been seen at Chicago before the fire at the latter place, yet it possessed many blocks of poor houses which will hardly be rebuilt now, and the work that is going on will certainly improve its appearance to a wonderful extent. The "new" part, indeed, already surpasses the other portions of the city.

FRANCIS PRICE, HIS PATRONS AND HIS BOOK.

THERE is a work well known to old building workmen and writers on constructive carpentry and joinery, called "The British Carpenter." The first edition of the book dates back to the year 1733, but the success that attended its first publication led to repeated editions up to 1759, when the fourth edition, considerably enlarged, was published, illustrated with sixty-two copperplates. Connected with this book there are one or two matters which are worth notice. As it was customary in the eighteenth century to cast about for noble patrons when an author was about printing his book, Francis Price did not form an exception. "The British Carpenter" is dedicated to the "Right Honourable Algernon, Earl of Hertford, Baron Percy," &c. As the dedication is short, and characteristic of the period, we quote it here:—"My lord, your natural inclination to encourage arts makes me presume to lay this treatise of carpentering at your lordship's feet, hoping it not unworthy your patronage, since it is part belonging to architecture. As this branch of building has never been usefully treated of, I have endeavoured to explain it so as to render it useful; therefore, nothing more is wanting to recommend it to the world, and secure it from malice and envy, but the protection of so noble a patron. I am, my lord, your lordship's most obedient and dutiful servant, Francis Price." The above patron was the Algernon who was created Earl of Northumberland in 1749. This Algernon was the son of Lady Elizabeth Percy, the daughter of the eleventh earl, who died at Turin in 1670, and in whom the chief male line became extinct. Before this Algernon succeeded to the title through his mother's blood, his father being Charles Seymour, Duke of Somerset, there was legal warfare carried on for a long time, several persons claiming to be of the blood of the Percies; among the rest, a Dublin trunk-maker. So much *en passant* about the patron of Price's "British Carpenter." Of more value and interest infinitely, however, is the fact that Price's treatise met the approbation of three other worthies, well known to fame. On the emblematical frontispiece to the work, in tablet form, the following commendation appears:—"June the 28th, 1733.—Having perused this Treatise of Carpentery, compiled by Mr. Francis Price, we think it a very useful and instructive piece, and as such recommend it to every one concerned in works of that kind.

N. HAWKSMOOR.
JNO. JAMES.
JA. GIBBS."

The first named was no other than Nicholas Hawksmoor, the pupil of Sir Christopher Wren; and the last, James Gibbs, the architect of St. Martin's and St. Mary-le-Strand. John James was the architect of the well-known church, St. George's, Hanover-square.

Among the plates of Price's work is a section of the timber work of the dome of St. Paul's, with part of its plan, showing the cone of brickwork within the dome and a section of the surmounting cupola. The drawing is marked as "taken in 1733." The whole of the plates in the book bear the names of "F. Price, delin.," and "Toms, sculp.," and are very well executed. In connexion with the plates and the descriptive letterpress, they are all marked alphabetically, and more singular still is the fact that the descriptive letterpress of each plate commences with an engraved initial letter from A to Z consecutively. No matter what letter marked the plate, the opening word of the descriptive letterpress of that plate began with the same letter. The only omission being the letter J. The letter I being repeated. Although the author includes X as the initial letter to the letterpress of the plates marked X., yet he was unable to find a word commencing with that letter that would answer his purpose, so he was driven to recommence with another letter of smaller dimensions inside the enlarged initial letter. Whether Francis Price carried out what he considered a system in this arrangement of his subject, or whether it may be put down as a whim, the reader may judge. There is a "Supplement to the British Carpenter" containing Palladio's Orders of Architecture, with ornaments of doors and windows, &c. The work of Francis Price, as a whole, is still a very useful one; but while Pain, Nicholson, and others have found a succession of new editors, bringing down their works and making them suitable to present wants, Price has not been so fortunate. "The British Carpenter" has, however, been used by many as a storehouse from 1733 to our day, and those who have been indebted to the work have rarely acknowledged their indebtedness.

The trammel used in builders' workshops for describing an ellipse is called in many parts of the kingdom, "Price's Trammel." Though described in his work, it was in use before his day, if not in form, at least in principle. On the title-page of his volume our author is described as "late surveyor of the Cathedral Church of Salisbury, and author of a series of observations on that admirable structure." Though we find the name of "Price's British Carpenter" mentioned in several directories, we have been unable to discover any but the most scant particulars of the life and practice of the author, who, from his constructive designs, deserves the title of architect as well as surveyor.

COLLEGE OF ST. PAUL, KNUTSFORD, CHESHIRE.

THIS building, which we illustrate by a general view, and plan of the ground-floor, and of which the Lord Bishop of Chester laid the foundation-stone on the 24th instant, is now in course of erection on a site well adapted to the purpose, and 40 acres in extent, about two miles from the quaint old town of Knutsford, and distant sixteen miles from Manchester. The college is intended to afford a first-class education in accordance with the principles of the Church of England, and on the models of the great schools at Winchester, Harrow, &c., and will accommodate 500 students and 24 resident masters. Reference to the engravings will show the accommodation afforded in the ground-story. The first floor is mainly devoted to seventy studies of various dimensions; the dormitories for the junior students, with a window between each pair of beds, and with lavatories at the ends; and the dining-hall, a noble room, 130 ft. long and 35 ft. wide, with an open-timbered and boarded roof. On the second and third floors sleeping accommodation is provided for the remainder of the students, each having a cubicle with a separate window. The arrangements for water-supply, ventilation, hot and cold baths, are understood to have been well considered. A cloister with traceried windows and buttresses runs round the quadrangle, and affords easy access to the various rooms on the ground-floor. The central tower is 24 ft. square at the base, and is upwards of 170 ft. high, and the lower story, being open on all sides, will form a handsome entrance to the building.

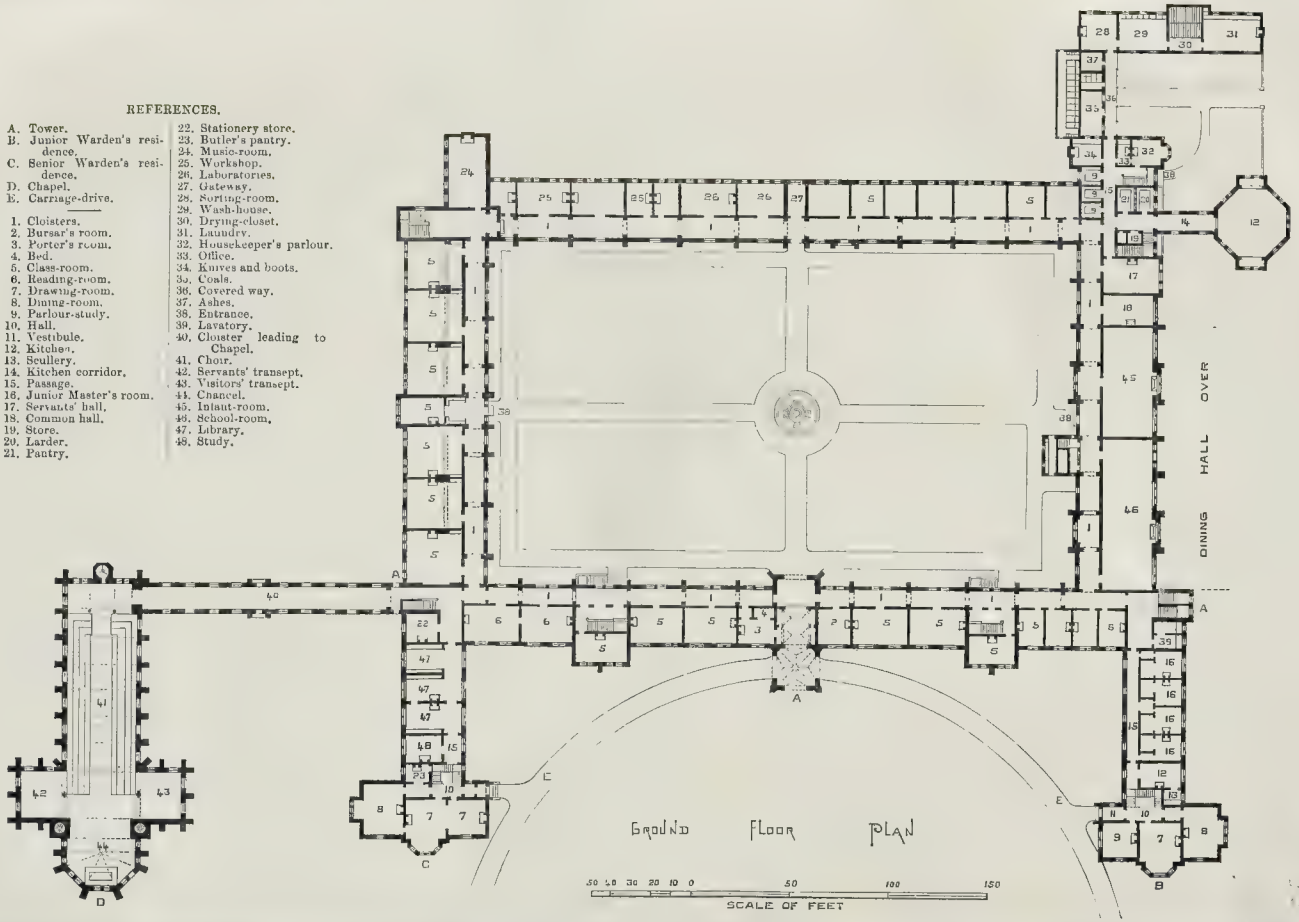
The materials employed are deep red bricks, tuck pointed with black mortar, for the external walls, and for the inside cloister, tower staircases, and the upper portion of internal walls of dining-hall; the staircases and landings being fireproof. The lavatories are lined with glazed tiles, as also the kitchen, larder, and other parts. The architectural features of the fronts, including the panelled parapets, are of red brick, together with the labels, strings, and devices. Very little stone is used, and that is of red colour; and the roofs are to be covered with dun-coloured tiles. The whole of this part of the work is from the designs, and is being carried out under the superintendence, of Messrs. Pennington & Bridgen, of Manchester, architects.

To Messrs. Goldie & Child has been entrusted the erection of the chapel, which is connected with the college by a cloister, 150 ft. long, and is on the plan of a Latin cross, the head of which forms the sacrarium, the transepts being for the use of visitors and servants. The belfry, of brick and stone, over the choir-arches, rises to a height of 120 ft.; the choir itself being vaulted. At the west end of the chapel, and over the ante-chapel, is a lofty triforium, forming an organ-chamber. The internal fittings are to be of the most ornate character, the seats being of richly-carved oak, the pavement tesselated, and granite shafts being freely used in the arcading and piers of the great arches. The materials, externally, will be red brick, to accord with the college buildings, with dressings of stone. We may be able to illustrate the chapel, on a future occasion. It is expected that the buildings will be completed by Christmas, 1874. Mr. William Southern, of Manchester, is contractor for all the works: the contract for the college being 36,000*l.*, and for the chapel, 14,000*l.*

REFERENCES.

A. Tower.
B. Junior Warden's residence.
C. Senior Warden's residence.
D. Chapel.
E. Carriage-drive.

1. Cloisters.
2. Bursar's room.
3. Porter's room.
4. Bed.
5. Class-room.
6. Reading-room.
7. Drawing-room.
8. Dining-room.
9. Parlour-study.
10. Hall.
11. Vestibule.
12. Kitchen.
13. Scullery.
14. Kitchen corridor.
15. Passage.
16. Junior Master's room.
17. Servants' hall.
18. Common hall.
19. Store.
20. Larder.
21. Pantry.
22. Stationery store.
23. Butler's pantry.
24. Music-room.
25. Workshop.
26. Laboratories.
27. Gateway.
28. Sorting-room.
29. Wash-house.
30. Drying-closet.
31. Laundry.
32. Housekeeper's parlour.
33. Office.
34. Knives and boots.
36. Covered way.
37. Ashes.
38. Entrance.
39. Lavatory.
40. Cloister leading to Chapel.
41. Choir.
42. Servants' transept.
43. Visitors' transept.
44. Chancel.
45. Infant-room.
46. School-room.
47. Library.
48. Study.



COLLEGE OF ST. PAUL, KNUTSFORD.



COLLEGE OF ST. PAUL, KNUTSFORD, CHESHIRE.—MESSRS. PENNINGTON & BRIDGEN, ARCHITECTS.

THE SWIMMING-BATH AT WARWICK.

THE operations connected with the construction of the bathing-place in St. Nicholas-meadow are completed. The dimensions of the bath are 240 ft. in length by 40 ft. in breadth; at the shallow end, the depth is 2 ft. 6 in., and at the deep end 7 ft. The bath is inclosed on either side by embankments, varying from 9 ft. to 20 ft. in height, and planted with evergreen shrubs. These effectually prevent bathers from being overlooked. The entrance to the bath is diagonal. On the river side the bath runs parallel; and on the land side it is also parallel for the greater portion of its extent, but the extremities are narrowed to the sluice-gate and to the exit into the river to prevent accumulations of mud and silt. Two flights of brick steps, built opposite to each other in the middle of the bath, where the depth is 4 ft. 6 in., serve at once for easy ingress and egress, and indicate to non-swimmers the greater and dangerous depth which lies beyond. There are also two smaller flights of steps on the land side at the shallow end; and it is proposed to place a flight of wooden steps at the deep end. The floor of the bath is lined with a thick bed of gravel, and for a considerable distance from the shallow end concrete grouting is added, so as to afford a non-yielding and agreeable foothold to bathers. The walls of the bath are concrete, and vary in thickness from 4 ft. to 5 ft. at their base to 18 in. at the top. Between 500 and 600 cubic yards of concrete have been used in the construction of the walls; and in the excavations for the work between 3,000 and 4,000 cubic yards of earth have been displaced. The labour account amounts to 330*l.*, out of the original estimate of 350*l.* Difficulties with the soil, drains, and wet weather occurred. For cleansing out the bath a sluice is provided at the upper end of the bath, and a well at the lower end, near the exit, which is 8 ft. in width, to allow swimmers to go out into the river at specified hours of the day. The whole of the work, from the preparation of drawings to the personal superintendence of the workmen, has been carried out by Mr. E. Pritchard, C.E., the borough surveyor. As to cost, it is expected that the original estimate will be exceeded by about 50*l.* Towards the 350*l.* required there is a legacy of 200*l.* left by the late Mr. Richard Greaves; 50*l.* added by his widow; and 100*l.* given by Mr. Alderman Dale.

THE SOIL OF ST. GILES'S.

DR. Ross, in his annual report of the vestry of St. Giles, Bloomsbury, says,—"The soil on which the district lies is a breadth of gravel, with occasional patches several feet deep of clay-loam resting upon it. The gravel commences at the north, near Tavistock-square, and on the west by an oblique line through Woburn-place to Brunswick-square, where the London clay crops to the surface. On the south it extends, getting deeper as it falls, to the Strand; and on the east it runs through Marylebone and Kensington, where it is mixed with clay, to the suburbs. Supposing such a site to be in its natural state, it would be difficult to conceive a better adapted to promote the health of persons living upon it. The stratum of gravel, acting all the surface drainage, polluted though it might be by animal excrement and decaying vegetation, would purify it as it percolated through; and, by giving it rapid passage to the lower stratum, would prevent the dampness of the air, which is caused by exhalations from earth soaked with moisture, and from stagnant pools. St. Giles's should thus have a dry, pure, and temperate atmosphere, as compared with those parts of London which rest upon a cold, wet, retentive clay soil. Unfortunately these advantages have been well-nigh destroyed. In order to make suitable roads and sewers, the level has been overlaid many feet in depth, with a 'made' soil consisting of old brick rubbish and black earth saturated with the leakage from gas-pipes, brick-sewers, and cesspools, through which the local surface drainage cannot readily penetrate. The sewers are usually buried to a great depth, and inasmuch as it has been the practice until the last year for the contractors to cart away the gravel dug out of the trenches, and to fill in with rubbish, the filtration through the gravel has been arrested, and our natural squares, surrounded on all sides by sewers and a made soil, are liable to become stop from retaining an undue quantity of water. The board, seeing this evil, has wisely ordered that the contractors shall fill in the trenches in future with gravel." And it is to be hoped that this order will be rigidly adhered to.

LIGHTNING AND LIGHTNING RODS.

A PAPER on this subject, read before the Meteorological section of the Franklin Institute of Pennsylvania, is being printed in the Journal of the Institute. We extract the following from a part of it already published:—

The closer rods are applied to the walls of a building the better; indeed, it is absolutely necessary to attach the rod directly to the object to be protected, to insure safety, for in no other way can we guard against the return stroke, which kills more people and destroys more property than the direct stroke.

The rod must not be placed at a distance from the object to be protected, nor pass over nor through rings of glass or other insulators. Insulators are not only useless but are positively dangerous before rain falls; after rain falls they acquire some degree of conducting power; at best, they are entirely useless as a means of safety, make an insecure fastening and allow the rod to rattle sufficiently to disturb sick or nervous people at all seasons of the year. Their use should be discontinued, and some method taken to induce parties, having rods upon their buildings which are insulated, to remove the glass. It is a physical impossibility for any object to be injured by lightning if the conditions of safety, known to be demanded, are fully complied with.

NEW REREDOS IN CARLISLE CATHEDRAL.

THERE is now being erected in Carlisle Cathedral a new reredos, from the designs of Mr. Street, R.A., in place of the blank wall and screen which formerly stood behind the communion-table. It is built on what appears to be the foundation of the old screen or reredos. This crossed the choir one bay west of the east wall of the choir, leaving a passage-way connecting the north and south aisles. The design of the reredos has been of necessity so made as to avoid as much as possible any interference with the east window, on which so much of the beauty and effect of the choir depends. It consists of an arcade of five divisions in the centre above the altar, and of a simpler arcade of three divisions on each side. The centre arcade has trefoiled arches, with gablets above, finished with figures of angels; the panels are to be filled up with mosaic. The arcades on each side of the centre have their panels filled with inlaid marble. The crossing of the arches is very much after the fashion of that in the early arcading in the choir aisles. It is the intention of the Dean and Chapter to erect screens of corresponding character on the north and south sides of the altar, and open traceried oak screens under the other arches between these and the choir stalls, and to lay down new pavement in the choir, as well as to erect a new bishop's throne. The reredos has been executed by Mr. Earp.

GLASS GROUND BY STORMS.

SIR,—At the fishing village of Balmer, on the Northumbrian coast, I have just seen an instance of the power of wind [sand] to obscure glass. My attention was drawn by the occupier of a house here to the severity of the climate, when he pointed to one of his windows, and showed me that some of the panes of glass in it were completely obscured or "ground" by the action of the wind and sand blown against them. The obscuration is so complete, that when a pane was broken, and a glazier came to replace it, he exclaimed, "I did not know you wanted ground glass, I have only brought it clear." "Never mind," said my informant, "the wind and sand will soon obscure the new pane." The window has a south-eastern aspect, and the house is placed at the edge of low cliffs, the basaltic rocky seashore being at their bases. The panes presented various degrees of obscuration, according to the period since which they had been inserted, some being new and clear, others partially "ground," and others totally so, by the action of the wind and sand.

I should note, that what little sand there is on this rocky shore is composed of porphyritic or basalt rocky particles, which may account for its power of obscuring glass. [The "sand process" accounts for it.]

Have any of your readers met with any similar instance of the power of wind to obscure glass?

F. R. WILSON.

THE NEW TOWNHALL FOR WELSHPOOL.

IN consequence of frequent complaints being made by her Majesty's judges of assize, of the very inefficient accommodation afforded by the courts erected at Welshpool, in 1835-6, and after many attempts to remedy the same, plans were drawn up by Mr. Benjamin Lay, of Welshpool, architect, and submitted to the county magistrates in 1869, asking their approval and co-operation, which was granted, but on being placed before the corporation for confirmation, they were rejected. In consequence of further complaints from the borough justices in 1873, amended plans were drawn by Mr. Lay, who was requested by the corporation to act as architect; these plans were submitted, by the mayor, to the county magistrates, and were approved of; they agreed to assist in the matter; the contract for the building was let to Mr. Richard Price, of Shrewsbury, builder, for the sum of 6,255*l.*; Mr. William Johnes, of Welshpool, was appointed clerk of the works, and the first stone has just been laid.

The new town-hall, into which a considerable portion of the old building, left undemolished, will be incorporated, is to be constructed in the Classic style of architecture. The principal entrance, which will be from Broad-street, the artery of the town, it is intended to surmount with a tower 90 ft. high, having a four-faced clock at an altitude of 70 ft., to be illuminated at night. Fronting upon Broad-street there will be a corn market, 38 ft. by 37 ft.; and on the Hall-street side a general market will extend the whole length of the building each way, occupying the old chapel site at the back of the corn market. The total market area will be 4,556 superficial feet, besides which are the County Prothonotary Offices, with ante-room attached, cells for the prisoners at assizes, with direct communication with the dock, and ample sanitary provision. To the second floor, which is given up to the court and townhall, the approach will be from the stone staircase erected a few years back, the upper portion only being altered to make a straight flight of stairs. The assize court is to be 40 ft. by 54 ft., the grand jury room, 25 ft. by 30 ft., with a chamber for the petty jury, and a judges' retiring-room, 18 ft. by 17 ft., and an assembly-room, 80 ft. by 36 ft., supplemented by a refreshment-room at one of its ends, measuring 29 ft. by 13 ft. In addition to the Broad-street entrance, admission will be obtained by other doors in Hall-street. In the basement there will be an area of 4,364 superficial feet as vaults, ingress to which will be given from Hall-street, and on the attic floor are to be provided a kitchen and scullery, having a lift from the ground-floor for convenience on the occasion of entertainments. The remainder of this floor is set apart for the hall-keeper's residence. The total cost, including everything, is estimated to be about 10,000*l.*

VITIATED AIR.

THIS subject is at present exciting special interest in France and Belgium. Gen. Morins has communicated a paper to the French Academy of Sciences on the cubic space necessary to secure the salubrity of inhabited places. Professor de Chaumont had, in 1867, published a pamphlet entitled "On Ventilation and Cubic Space;" and, some time before, M. F. Leblanc had made a series of experiments on the composition of confined air. From these two sources Gen. Morins endeavours to deduce some useful rules for improving the sanitary condition of civil and military buildings. M. de Chaumont remarks that the impression produced by foul air on the organ of smell appears to be in direct proportion to the carbonic acid contained in the former; and that this gas ought not to exist in a larger quantity than six ten-thousandth parts of a given volume of air, to render the latter fit for breathing, since in that proportion there is no perceptible smell. Now, chemists admit that, in its natural state, the atmosphere does not contain more of that acid than the above fraction, which may even be a third less. On the other hand, experience shows that an ordinary man exhales 88 gms. of carbonic acid per hour, which, by converting this weight into volume, answers to two hundredths of a cubic mètre. But besides

this gas, aqueous vapour is likewise evolved in the proportion of more than a hundredth; so that, at the lowest, the total quantity of gaseous matter evolved by a healthy man is three hundredths of a cubic mètre. Calculating on this basis, General Morins finds that, the larger a room, the less will be the air to be renewed, and conversely. A bedroom for one person ought to be five mètres long by four in breadth, and three in height; but if inhabited by more than one, the causes of infection increase, even when the air is often renewed. Hence the ventilation should be constant, and amount, for the size alluded to, to 540 c. m. per hour.

Some interesting experiments were tried the other day in the citadel of Namur, under the direction of a detachment of Belgian engineers, several mining and civil engineers being also present. The experimenters were furnished with reservoirs of air supplied from the outside by force pumps, and were engaged in work in galleries filled with smoke or noxious gases, and were enabled to work without inconvenience, while animals placed in the same galleries along with them died of asphyxia.

NEW YORK DOCKS *v.* LIVERPOOL DOCKS.

THE *New York Nautical Gazette* makes a comparison of British with American building-workmanship which it is worth while to quote. The editor says:—

"One of the largest steamers afloat once ran against the stonework of the Liverpool docks, and her bow was slewed hard-a-starboard for her pains. Another steamer tried the stone-work of those piers, and has never recovered the shock. The piers were unimpaired, which speaks volumes in favour of the character of the mason-work performed on these structures. Here in New York we have what is termed a Dock Commission, who have on hand the important task of repairing and rebuilding our piers, and improving them. They have for some three years been engaged in building a stone pier on the North River, near the Battery, which was promised, when completed, to be unequalled, and so far they have kept their word. There is nothing like it in the world, except, it may be, the adobe or mud houses in Mexico.

On Tuesday last a large Transatlantic steamer, with her anchor under-foot, and going at the rate of perhaps one mile an hour, took a shy at this impregnable mess of masonry, and the result was the ship was entirely unhurt, while the pier was sent flying in all directions. The large stones, having little or no cement between them, were tumbled over, and about 75 ft. of the face of the pier was canted in-board, necessitating an expenditure for repairs of 25,000 dolls., at least. Excepting some sand, there was nothing to back up the stone front, or resist a pressure, and a view of the wreck will convince any one at a glance of the miserable character of the mason-work performed by this Commission."

ANCIENT WALL-PAINTINGS, CIRENCESTER.

AT the recent meeting of the Wiltshire Archæological Association, mentioned elsewhere, Professor Church gave an account of discoveries recently made in Cirencester, and in the course of it said,—"During many recent excavations for building purposes in Cirencester, the interior decorations of walls have been found in great quantities,—in cartloads, I may say. The colours are still adherent to the plaster and concrete, but the designs are not greatly varied or of particular merit. A morone ground, with white lines and black border, commonly occurs; two excellent specimens of yellow leafage ornament upon a morone ground have been fortunately secured for the museum; one of these was found in Cricklade-street, the other in the Leauses. An imitation granite pattern is common. But the most interesting piece of coloured plaster-work bears upon it something more than an ordinary design, and I beg that this fragment may be carefully inspected in to-morrow's excursion. I am more particularly anxious that persons familiar with similar relics found in Pompeii and Rome should examine this specimen, since its genuineness has been called in question by one or two gentlemen, whose thorough acquaintance with such subjects I have reason to doubt. The object is an inscription in Roman capitals, forming a set of squared words, to which a much later origin than the fourth century had been assigned before the present discovery was made. The best archæological authorities who have seen the Cirencester example do not doubt its genuineness, while the circumstances of the find place its authenticity beyond suspicion: I beg to place these on record now. During the levelling of a garden in the New-road, Cirencester, many coins and Roman tiles were daily disinterred. Captain Abbott watched the operations narrowly; and one day had his attention called to a fragment of wall-plaster found in his presence by the ignorant workman employed there, who saw letters upon it. Captain Abbott washed it and showed it to me, and subsequently deposited it in the museum. It must be recollected that it was not sold by the labourer, and that no one had any interest in producing a forgery. The letters absolutely agree in form with those of the graffiti, or wall-scratchings of Rome and Pompeii, and run thus,—

ROTAS
OPERA
TENET
AREPO
SATOR

PROPOSED NEW METROPOLITAN CEMETERY.

PLANS have been prepared for laying out and converting into a public cemetery for the south and south-west districts of London a piece of land containing about 40 acres, formerly composing the Norbury-hill estate. The site is in the parish of Croydon, but it is close to Streatham, and adjoins the high road from London to Croydon and Brighton. The soil is loam, and water is found at a depth of 12 ft., but the land can be drained into the sewerage system of the Croydon district. Some opposition has been made to the proposal by residents of the district partly on the ground that the distance from the nearest dwelling-house is only 30 ft. from the boundary of the site, and a meeting is to be held next week at the Croydon townhall to hear objections.

THE DISCOVERIES ON THE PLAINS OF TROY.

THE correctness of the statements we published, doubted by a correspondent, is confirmed by the fact that Dr. Schliemann is charged with not sharing the results of his excavations with the Ottoman Government, as agreed on. The *Levant Herald* says:—"It is bad enough that the Ottoman Government should have been defrauded of its due, but it is far worse that that fraud should have been practised in the name of science; for not only will it render the Turkish Government excusably jealous and suspicious of archæologists, and thus close to these latter the very field in which they would most naturally desire to pursue their researches, but it casts a slur upon science itself, by making its name a cloak for deception, and degrading its pursuit to the level of a predatory traffic." We join in no condemnation of Dr. Schliemann, as the facts are not before us.

DEFENCE OF SHAMS.

SIR,—I am no purist, and I have faith in shams! The statement is, I am aware, a little shocking and abrupt. It would, no doubt, have been more politic to have allowed my heterodoxy to be gently evolved from the context, when perhaps the number of my dissentients might have been diminished by the cogency of my reasoning. But I have advisedly chosen this initial confidence because I desire to leave myself the fullest freedom of speech hereafter. "I know I am a villain, and I glory in it," is said to be the first exclamation of the hero of the melodramatic stage; and the fault is now yours, my reader, for continuing to read, not mine for writing, if what follows offends your orthodoxy.

The Vienna awards have been made, and the result shows that we have been miserably beaten in all matters of taste by France, Germany, and Austria; that, as a contemporary remarks, "in point of art manufactures, twenty-two years of teaching since the Exhibition of 1851 have not placed us in the position which we should occupy, and we must look to other schools for the culture we require." The truth is, the doctrine of the purists in decorative arts *years ago* led its disciples into a region so sterile, barren, and unattractive that they in despair and disgust broke loose from all restraint, and blindly rushed back into a quagmire which has engulphed them. The whole history is a see-saw played by children, and the highest purposes of art would seem to have been mistaken or overlooked by both parties.

Art is Nature's handmaid, and her mission is to beautify. In love and war, we are told, all means are fair. Can it be less so in art, since her highest object is to soften the asperities of every-day life, and to develope thence all possible beauties in the material, intellectual, social, and moral worlds.

Adam and Eve had for personal adornment neither "pannier," "chignon," nor paint; and their country residence, we have reason to believe, was innocent of "modern improvements." They were, says Carlyle, "two hairy, naked, or fig-leaved human figures; uncomfortable dummies, gasping and gesturing with painful pantomime and interjection;" and I unblushingly confess to the belief that our beaux and belles, their descendants of the nineteenth century, are more attractive, despite the cunning artifices of modern tailors, dressmakers, and milliners, in the gilded saloons and art conservatories, those shams of our luxurious civilisation, than our first parents, though innocently unadorned in their primeval garden of unsophisticated nature.

The objection to the chignon is not that it is "false" hair, but that it is a beautiful material wrought into forms ugly in themselves, and at variance with its natural growth. As an adjunct of dress, it is as legitimate as any other ornament, and certainly as appropriate for its position; nor is any greater violence done to nature in adding to her deficiencies than in pruning her exuberance. The objection to lily powder and rouge is not when they deceive (for that is the end and aim of all personal adornment), but when they *do not*; not when they add an illusive beauty to the human face, but when, in the unskilled hand of the novice, they destroy its natural charms, or bring out with the emphasis of strong contrast of colour and form the crude features they were intended to veil. The day may come when none of these aids to nature will any longer be necessary, when universal loveliness will prevail, and there will be no higher excellence to counterfeit. The writer does not expect to see that age, nor does he hope to outlive the day when indifference to personal defects or deformities shall be considered a virtue, or the desire to please a vice. The objection to "false" jewelry, which in these days is unsurpassed in richness and elegance of design by anything in the precious metals, is not that it is a "base imitation," without intrinsic value, but that, being cheap, it is worn with so much ostentation and so little taste. Labour can ennoble iron as well as debase gold, and the sin against art and good taste is not the imitation of superior in inferior materials, but the neglect to develop in each the greatest amount of beauty and utility of which it is susceptible. Those who, by deceiving the senses, give pleasure to the mind and elevate it, are true artists and benefactors to mankind. If, with a little paint and "Dutch metal," you can transform my humble dwelling into the likeness of a Mayfair mansion, I am as much your debtor. If my cement looks as well as your stone, lasts longer, and costs only half the money, I am that much in pocket and can bestow something in charity. If my paper looks as well as your paint, and being varnished lasts as long, I shall not quarrel with the difference of cost. If my chromolithographs are so perfect in execution that they rival your paintings in beauty of colour and drawing, I need not envy you your possessions, and I may reasonably rejoice in the knowledge that I am encouraging a "sham," which as a cheap substitute for paintings wholly outside the reach of thousands, who have nevertheless the knowledge and taste to appreciate and the desire to possess them, is destined to cover the grim, blank walls of many a home, that might else for ever remain the pictures of some depressing gloom, with the spirit-stirring sunshine of pleasant fancies, and to carry the refining influence of the highest art into the humblest dwellings. Since my bouquet of line flowers is so masterly an imitation of nature's her beauties and her *blemishes* that the closest observer will fail to detect the deception, I am scarcely disposed to barter their perennial freshness for the fleeting charms of those

…ur costly conservatory, and I shall continue to …ass the manufacture of these things amongst …e most beautiful of the fine arts.

It may not be very gratifying to your mil…naire to find that the tables of his butcher …d his baker "groan" as heavily under electro…ate as his ancestral "board" is wont to do …der massive gold and silver, but the greatest modern shams, the art of galvanic deposition, …to the masses not the less on that account a …at amelioration of domestic life. The fact is, …e glory of modern civilisation *is* its counterfeit …esentments. It is the more general distribu…n of God's gifts through the much-reviled …ams of art and science that *is* the humanising …fluence of the nineteenth century. We have …d in the past the arts of necessity, the arts of …ligion, and the arts of commerce; we have …w to deal with the social and domestic arts, …hich include them all, and offer a field for the …ercise of talents more vast and varied than which has gone before.

C. HENRY WHITAKER.

COVERING STEAM PIPES.

A NEW covering for steam pipes, which is …oidly coming into use in the Saarbrücken …ning district, has been patented by Herr …eiss, civil engineer. The following (according …the *D. Ind.-Zeit.*, from which we translate) …the method of applying it. A coat of …in loam wash is first given to the pipes, …ving to prepare them for a more perfect …hesion of the composition to be applied. …e mass used for covering consists of equal …rts of loam or clay, free from sand, and …ck dust, to which calves' hair is added. This, …er being well mixed, is applied to the pipes …a hot state. For better securing the coating, …od splints, 10 in. long, ½ in. broad, ⅛ thick, …e laid along the whole length of the pipes, …d secured by thin iron wire. After drying, …e loam wash is again applied till all the …oks have disappeared. The mass is then …in put on till the pipes feel quite cool, which …ll be the case after laying it on to the thick…ss of from 5 in. to 5½ in. A coat of linseed …and cement is finally given. The method …scribed answers at present all requirements, …covering being perfectly air-tight, free from …cks, and not hygroscopic, the latter quality …ing it especially for pipes in the open air. …e cost of the covering per foot of 8-in. pipe is …, while the expense of the old method …ounted to nearly 8d.

THE WILTSHIRE ARCHÆOLOGICAL SOCIETY'S MEETING.

THE twentieth annual meeting of the Wilts …hæological Society was held on Tuesday, in …e week, at the Town-hall, Swindon. Earlier …the day, a visit had been arranged to the …eat Western Works at New Swindon; and at …ven o'clock a small party were guided over …e factory by Mr. Carlton. At two o'clock in …e afternoon, the Society assembled at the …wn-hall, where a museum of antiquities had …n formed.

The president, Mr. A. L. Goddard, on taking the …ir, called upon the secretary, the Rev. A. C. …ith, who read the report for 1873; after …ch the president read an inaugural address. …l Richard Jeffries then read a paper on …ndon; its History and Antiquities; and the …v. A. C. Smith one on Certain Wiltshire Tra…ons, Charms, and Superstitions. The meeting …n adjourned to enable members to visit the …rches and quarries, after which the Society …ed at the Goddard Arms Hotel. The meet… then adjourned to the Town-hall, where an …ning conversazione was held at which the …. Mr. Pleaderheath read a paper on Parochial …isters, and Mr. Cunnington one on Ancient …esments. A paper on the Geology of Swin… was read by Mr. Moore, of Bath, and the …. A. C. Smith was called upon to read one on …tshire, Weather Proverbs, &c., but post…ed it.

…n the second day, a party of the Society …rted from the Goddard Arms Hotel about …9 o'clock, and visited places mentioned in the …sident's inaugural address. The route was …Blunsdon to Cricklade, Latton, Down Ampney, …Maisey Hampton, to Fairford. Here the …ous windows, respecting which so much has …n said, were described by the Rev. J. Gerald …ce, rector of Strathfieldsaye, and son-in-law of the Right Hon. and Rev. Lord Dynevor, vicar of Fairford. A picnic dinner took place in a tent erected in the paddock adjoining the churchyard. On their return, the party journeyed by way of Kempsford, Castle Eaton, Hannington (partaking of Mr. and Mrs. Hussey Freke's hospitality at Hannington Hall), and Stratton St. Margaret, to Swindon. The various objects of interest were fully described, and the excursion was much enjoyed.

In the evening, the Society assembled at the Town-hall, at eight o'clock, when the Rev. E. A. Fuller, vicar of St. Barnabas, Bristol, and late curate of Cirencester, read a paper on "The First Foundation of the Parish Church of Cirencester."

Professor Church then read a paper "On recent Roman Finds at Cirencester," of which we take separate notice; and after a brief interval spent in refreshment, the Rev. A. C. Smith read his paper "On Wiltshire Weather Proverbs and Weather Fallacies."

The members of the Society paid the ancient Roman city of Corinium a visit on Thursday. The day was fine, and a large party arrived by the 9·5 train, and Professor Church assumed the conductorship, after a passing glance at the museum. Afterwards luncheon was taken in the King's Head hotel, where a party of upwards of forty sat down, under the presidency of Mr. A. L. Goddard. On the conclusion of the repast, the president said that this was the last occasion on which the Society would meet together for the present year, and he said a few words before they parted. An adjournment was then made to the Corinium Museum, where, under Professor Church, a pleasant hour was spent, and the whole party returned to Swindon, having spent a very agreeable and instructive day at Cirencester.

DRURY-LANE THEATRE.

ON granting a new lease to Mr. Chatterton, the committee undertook repairs which had been the subject of much discussion, and the house has been overhauled and renovated. The sanitary appliances have received attention; all the lavatories, &c., have been taken up and refitted, and the drainage throughout has been cleared. Old vaults full of "properties" that had not seen daylight for many a long year have been cleaned out, and a good supply of lime and other disinfectants has been freely applied. The auditorium has been cleaned, the gilding touched up, the boxes have new crimson satin curtains, and are relined with a chintz. The works have been carried out by Messrs. Bracher & Son, builders, and Mr. Kershaw, decorator, under the direction of the architect to the committee, Mr. Marsh Nelson.

For Mr. Halliday's version of "Antony and Cleopatra," with which the house opened on Saturday last, some remarkable scenery and effects have been prepared by Mr. W. Beverly. *Cleopatra's* barge, founded on the description given by Shakspeare, is a lovely piece of colour, and nothing better of its kind than the naval fight has ever been done on the stage. Miss Wallis, the representative of the witching queen, although unable to realise the character in all its aspects, has taken at one step a good place in her profession.

THE LEICESTER FLOOD AND SEWERAGE SCHEME.

THE local highway and sewerage committee have reported that they have carefully considered the seven competitive schemes for improving the drainage and dealing with the floods and sewerage of the town, and are of opinion that the schemes submitted by Mr. J. B. Everard and Mr. Gant are the best considered, and the committee submitted the two schemes for the final decision of the council and award of premiums. They recommended the council to empower them to purchase (if the committee thought proper) one or more of the unsuccessful schemes.

Finally, the committee recommended the council to authorise them to retain the services, if desirable, of the successful competitor for the first premium, for the purpose of assisting the committee in perfecting a scheme and obtaining the necessary powers in the ensuing session of Parliament for dealing with the drainage, floods, and sewerage questions.

One of the town councillors (who were unanimously in favour of Mr. Everard's scheme) gave the following summary:—

"With regard to the two schemes before the Council, the one proposed by Mr. Everard, in his opinion, provided much more satisfactorily for the storm waters of the town than that of Mr. Gant. It also provided for an intercepting sewer, which would greatly relieve the present overcharged outfall. And one thing he deemed essential that Mr. Everard provided, and Mr. Gant did not, was the purification of the effluent water. If they did not accomplish that now, they would have to do it in the future. And seeing that Mr. Everard's plan was for 11,000*l.*, and Mr. Gant's 61,000*l.*, if they did the work proposed by Mr. Everard, they could then take into consideration the valuable suggestion of Mr. Gant to improve the river below the town, because they would then have 20,000*l.* they had not dealt with. Therefore he was a strong advocate of Mr. Everard's plan; the three important features in which were the storm-water sewer, the intercepting sewer, and the purification of the effluent water. These three were sufficient to give Mr. Everard's scheme the preference."

The Borough Surveyor, Mr. Stephens, said, with reference to Mr. Gant's plan, the Chairman of the Committee had not given it sufficient credit. The removal of the Birstall mill would improve the outfall 3 ft. 6 in., and that was a very important matter.

Alderman Ellis said Mr. Gant did not propose to carry out the Borough Surveyor's sewer. If it were the Borough Surveyor's scheme, he should go in for the removal of Birstall mill.

The Council unanimously decided in favour of Mr. Everard's scheme, and awarded the premium of 100*l.* in favour of Mr. Gant's, agreeing to the recommendations of the Committee, and referring the matter back to them to carry out to a successful issue as they may think desirable, and report to next meeting of Council.

THE TRADES MOVEMENT.

WHILE the ironmasters contemplate reducing the wages of the ironworkers, the nail-makers have put forth a claim for a 10 per cent. advance. In the event of the concession not being at once made the men of East Worcestershire, to the number of 25,000, will come out on strike. At a meeting of operative nail-makers already held at Bromsgrove it has been resolved to strike at once for an advance of 10 per cent. on present prices, the masters not having conceded the advance of which notice was given. A proposition to wait another week before striking was rejected by a large majority. It is expected a similar strike is about to take place in the Dudley district. There is also reason to fear that we shall witness serious disputes in the iron trade before many weeks are over. At the last meeting of the Wolverhampton ironmasters, a deputation from the Staffordshire ironmasters intimated that the conference had unanimously agreed that the wages of the ironworkers should be reduced after the 4th of October next. The proposed reduction was approved by the Wolverhampton ironmasters. A similar notification has been made to a meeting of ironmasters at Middlesbrough, who have also approved of it. So far from assenting to a reduction, the ironworkers are understood to be considering whether they ought not to demand a rise in their wages. ——A lock-out has taken place in all the shipbuilding yards in Bristol and the Bristol Channel, consequent on the refusal of the Shipwrights' Association to withdraw a rule which restricts the work to be done by each member to a given quantity.

SCHOOL BOARDS.

Newtown.—At the fortnightly meeting of the Newtown and Llanllwchaiarn United School Boards, the tenders for the erection of the new Board School, on the New-road, were opened and read. They were as follows:—

Williams	£2,070	0	0
Pryce	1,933	0	0
Burrel	1,745	10	0
Datou	1,728	0	0
Morgan	1,715	0	0
Morris	1,684	10	0
Anwyl	1,567	0	0

The estimated cost, according to the original plan of Mr. Lay, the architect, was 1,250*l.* That gentleman was requested by the Board to explain the difference between his estimate and the tenders now sent in. Mr. Lay said this could be accounted for on the grounds—first, that the designs, as originally sent in, had been altered and improved, and consequently involved a heavier outlay. It was, in the second place, to be attributed to the increase in the price of labour, and in the advance of material. His own estimate was that the lowest tender would be about 1,500*l.* With regard to the disparity

in the amount of the tenders, this was always the case, and arose from circumstances which were explainable. He produced instances from the *Builder*, in which the difference between the highest and lowest tender was double. After some explanations, the tender of Mr. Morris, was accepted, subject to the approval of the Education Department. The terms were 1,538*l.* 10s., if with a slate roof; if with a tile roof, the contract to be 1,604*l.* 10s.

Burton-upon-Trent.—It was unanimously resolved to accept the design of Messrs. Giles & Brookhouse, of Derby, for the Victoria-road schools, and to award the premium of twenty guineas for second best design to Mr. Assender, of Swansea. Mr. Matthews was appointed to act with Messrs. Lowe, Warham, and Yeomans as the Building and Sites Committee, who are to carry out the plan of the proposed schools, subject to such variation in details as may appear necessary, and with the approval of the Board. The estimates laid before the Finance Committee for building and furnishing new schools amounted to 9,160*l.*, viz., Victoria-road schools, 5,625*l.*; Bond-end school, 1,550*l.*; Branstone school, 975*l.*; and Wellington-street infants' school, 1,010*l.* The outlay for the respective schools, Mr. Allsopp said, would be about 5*l.* 10s. per head for the accommodation provided.

"ARCHITECTURAL COLOURING."

SIR, Will you kindly do me the justice to state that the drawings of Messrs. W. Perkin & Sons, of Leeds, and those of Mr. G. Hennell, of London, mentioned in terms of praise in your notice of the Roundhay Park competition, were coloured by me. I think you will acknowledge that an artist has a perfect right to claim whatever merit may be due to his share of the work—the terms, "sky washer," and "the fellow who colours our drawings," are, I hope, now passing away. I have done my best to combat them during a practice of some twenty years. I cannot help thinking a time will come when the architectural artist will take legitimate rank with the man who portrays the corner of a cornfield, or a few cows in a ditch. W. RICHARDSON.

RAILWAY CONTRACTORS COMMITTED FOR MANSLAUGHTER.

THE coroner for Bolton has held an inquest touching the death of John Sixsmith, of that town, who was killed by falling into a railway cutting in course of formation by Messrs Knight & Pilling, contractors for the London and North-Western Railway Company.

James Bradley, brickmaker, said he was going home shortly before eleven o'clock on Saturday night, and when near to the railway cutting in Rothwell-street, he saw the deceased ahead of him. Perceiving that he had missed the footbridge over the cutting, witness shouted to him, "Wrong way." Before, however, he had got the words out of his mouth, deceased fell down the cutting—a distance of 18 ft. or 20 ft. He had passed through an opening in the palings which enclosed the cutting, and thence over a quantity of bricks. It was a dark night, and there was only one lamp there. Deceased was badly hurt, and died in a few hours.

Thomas Sharples, of the Park Inn, said the deceased left his house at half-past ten, and he was then perfectly sober.

Police-constable James Farish said, the fence had been broken for several days together, and witness had nearly walked into the cutting himself. He had complained of it three or four times to the contractors' servants, and once he believed to Mr. Knight himself. It was a road where there ought to have been a fire and a watchman.

Mr. J. Knight, superintendent of the works, said he had given instructions to two men named Smith and M'Cann to look to the fencing. No complaint was ever made to him personally about the fence.

M'Cann said he made the fence good at half-past five on Friday night. Shortly afterwards he found that two boys had pulled both railings down. He put them up again, and chased the lads away. On getting to work again on Saturday morning the railings were again down, and having to see after the barrows, &c., he did not attend to the railings again that day.

The jury returned a verdict that the deceased lost his life through the gross neglect of the contractors, Messrs. Knight & Pilling, in not providing proper fencing and light for the safe protection of the public.

The Coroner: That is a verdict of manslaughter.

The Foreman: That is our verdict.

Mr. Pilling is an alderman of the borough of Bolton.

PROPOSED NEW LIVERPOOL WATERWORKS AT WINDERMERE LAKE.

AN important new project has just been broached for giving an increased supply of water to Liverpool from Windermere Lake. It is scarcely twenty years ago that extensive new works for the supply of water to the town were constructed at Rivington, about twenty miles from Liverpool, under the superintendence of Mr. Hawksley, C.E., who designed the works. The water at these works is supplied in large quantities from the surrounding Rivington hills, and impounded in immense reservoirs, which, from their large dimensions, have been styled the Rivington Lakes. At the time these works were constructed it was believed that, with the existing well supply, they would be sufficient to furnish the inhabitants with water for an almost indefinite period; but it now appears that in consequence of the great expansion of the district, and the increase of the population, they are inadequate to the required supply; and at a recent meeting of the water committee of the corporation (to whom the works belong) the chairman stated that, taking into consideration the constantly increasing population, it was calculated that an additional 4,000 000 gallons per day would shortly be required, which the existing works could not possibly supply, and that new sources must therefore be looked to. He added that Windermere Lake was looked upon as the best locality to which the corporation could go; and he described the proposal for constructing new works there.

The heaviest portion of the proposed works would be a tunnel, commencing at the edge of the lake on the south side. This tunnel would be three miles in length, and, although a heavy piece of work, would be the only engineering feature of any great consequence in the undertaking. From the lake to Lancaster, a distance of about twenty-five miles, the water would be conveyed by natural gravitation, the level at Windermere being much higher than the line of country between that point and Lancaster. Commencing at Lancaster, there would be several pumping stations between that town and Liverpool. The first pumping station would be at Lancaster, where the water would be pumped to Preston. At Preston there would be another pumping station, the water being again pumped from that town, and also from other pumping-stations, in the direction of Liverpool until it reached that locality. There would be several reservoirs on the route between Windermere and Liverpool. The cost of pumping the water from Windermere and along the several intermediate points to Liverpool is estimated at two pence per thousand gallons. The distance between Windermere Lake and Liverpool is about eighty miles.

The ultimate decision of the corporation as to the proposed undertaking is not yet known. What, however, seems to be admitted as a certainty is the fact that the existing works are unequal to the water supply required, and that new sources in some direction must be secured.

Miscellanea.

The Sanitary Condition of Brentford.—At the Brentford police-court on Saturday, Miss Sargeant, the owner of a row of cottages in Cannon-alley, was summoned for allowing them to remain in a dilapidated condition, with no water supply, and insufficient drainage, the said cottages being unfit for human dwellings. The inspector of nuisances stated that on an inspection of the alley, on the 25th of August, he found that there was no drainage but that afforded by an open gutter; that the houses were in a very dirty state; that there were large accumulations of dust and refuse in the yard; that the pump was broken and could not be used; and that the houses themselves were in such a state as to be wholly unfit for occupation. A cesspool was only about 6 ft. from the water supply, and was full. In the cottages there were seven different families, and in six of these houses there were several children. The defendant's father, in answer to the summons, said there was an open space to each cottage, and he considered they were very healthy. He had done all he could to improve them. The inspector said they were very dilapidated, and dangerous to both life and health. The Chairman:—We shall make an order for abatement of the nuisance in seven days, and if it is not done we shall impose a penalty of 10s. a day for the nuisance, and 1*l.* a day as long as they are occupied.——A summons was then heard against G. J. Jenkins, the keeper of the Fox and Hounds, for having on his premises 105 pigs, which were a nuisance and injurious to health. The inspector said the pigs were only 12 ft. from the dwelling-house and thirty yards from the public street. The bench ordered the removal of the pigs within three months. These cases, it appears, are only specimens of a state of things for which Brentford has become notorious, and it is full time a clearance were made, both in pigsties and cottages.

Memorial Tablet of Dr. Arne.—A memorial tablet is about to be placed in the house in King-street, Covent-garden in which Dr. Arne, the composer of "Rule Britannia," was born.

Consecration of a new Synagogue at Manchester.—The new synagogue in South Manchester has been consecrated by the Chief Rabbi, and the *Jewish Chronicle* reports the proceedings. The building is situated in Sidney-street, Oxford-road. In six weeks a building there was adapted to the purposes of a synagogue. Messrs. I. Holden & Sons, of Manchester, were the architects, under whose superintendence and from whose plans the conversion of the old buildings (together with new erections) has been carried out. It is not large, yet, owing to the manner in which the space at disposal has been economised, the synagogue will accommodate about 200 persons. The ladies' gallery extends round three sides of the building. The reading-desk is surmounted by ornamented lamps. In front of the steps leading to the ark is a pair of three-light candelabra of bronze. The roof above the ark is formed of coloured glass of florated design. As light could be obtained only on two sides of the main building (except ing above the ark), the windows have been made of such dimensions as to give light sufficient for the whole interior. The building is illuminated by a sunlight in the centre panel of the ceiling. The cost will amount to about 3,000*l.*; towards this sum 809*l.* have been subscribed. The contractors are Messrs. Clay & Son, and Mr. Mark Froggart, of Manchester.

Carlisle Public Hall.—At a meeting of the shareholders in the Carlisle Public Hall Company, held in the town-hall, Mr. Vynne (the hon. sec.) read the report, which stated that after carrying out the purchase of the site in Lowther-street, the committee procured plans from ten different architects, from which they at once selected two sets. One of the architects supplied estimates simply as such, the architect chosen (Messrs. Habershon & Brock) supplied estimates a trifle less in amount, but with an absolute guarantee that the work should be completed for a sum not exceeding the total given and taking upon themselves the responsibility of completion. The amount of capital at present subscribed for is something over 3,000*l.* The committee, in conclusion, applied for sanction to fix the nominal capital at 10,000*l.* Mr. A. Wheatley moved the adoption of the report and, in doing so, mentioned that the large hall was intended to accommodate 1,338 on the ground-floor, and 668 in the gallery. Tenders would be advertised for and thrown open to the trade. The estimate was 5,400*l.* The report was unanimously adopted, and the nominal capital of the company fixed at 10,000*l.*

The Southampton Surveyorship.—Much difference of opinion appears to prevail among the members of the town council of Southampton, as to whether their surveyor, Mr. Lemon, should be allowed to have a consulting practice, or have his salary increased by 100*l.* a-year. The matter was not finally settled at the last meeting of the council, but an increase of 30*l.* on the salary of the assistant surveyor, Mr. Morgan, was agreed to. The proposition of Mr. Lemon, and the recommendations of the committee to whom the matter was referred, were as follows:—

"Propositions: 1. The Surveyor to have consulting practice out of the borough, the necessary staff for official work only to be provided by the Board. 2. To go back to the same arrangement as with my predecessors, viz., 250*l.* per annum salary; to be paid extra for all new works and all matters in connexion therewith with private practice of all kinds without the borough. 3. Increase of salary on same conditions as to staff as in No. 1; three years' arrangement in every case.—The committee resolved unanimously that upon condition Mr. Lemon would agree to continue in his office as at present for three years at least from the present time, they recommended the Urban Sanitary Authority to increase his salary 100*l.* per annum. It was also resolved to recommend the increase of the salary of Mr. W. B. Morgan, the assistant-surveyor, 30*l.* per annum, and that Mr. Lemon be authorised to employ a clerk at a salary not exceeding 3*l.* per annum. Mr. Lemon stated that he accepted the condition relative to himself."

New Infirmary at Greenwich.—A new infirmary of large dimensions is about to be erected at Greenwich. The Local Government Board have just written to the Board of Guardians, forwarding the plans of the intended new building, which have been referred to a sub-committee of the Building Committee. It is stated that the cost, with furniture and fitting, will not be far short of 40,000*l.*

A Wilberforce Memorial.—A lady resident in Ryde has given the sum of 1,000*l.* towards building the chancel of St. Michael's Church, Ryde, as a memorial of Bishop Wilberforce. The foundations have been commenced, and the stone is to be laid on Michaelmas-day, in all probability by the Bishop of Winchester.

Fire at the Manchester Athenæum.—anchester has narrowly escaped the loss of two ie public buildings, works of the late Sir harles Barry. A fire was discovered in the .heneum, Bond-street, on Wednesday last, and was with difficulty extinguished. The Royal stitution, with its valuable art collection and hibition, is only separated from the Athenæum a very narrow street, but the flames were evented from spreading in that direction. The struction of the library of the Athenæum volves a serious public loss. It is asserted at the fire began at a gas sunlight illuminating the newsroom, though the precise mode of commencement is not known. An iron tube aveyed the heated air from the sunlight to the ter air by way of the space between the ceiling the newsroom and the floor above, and it is ggested that the joists or other combustible terial in this space may have caught fire rough over-heating of the iron pipe, or that an umulation of soot in the pipe became ignited.

Report on Asphalte Pavements. — A hort, in the form of a detailed table on the ious kinds and quantities of asphalte laid hin the city of London, has been prepared by . Haywood, engineer and surveyor to the Sewers Commissioners, and printed by their hority. There are now altogether 25 streets, portions of streets, in the City, of which the riage-ways have been paved with asphalte. e of the pavements has been down 3 years 9 months, 2 for 2 years and 2 months, 18 ler two years, 4 under 1 year, and 5 under months, at the time of inspection. The most merous portions have been laid by the Val de vers Company, but seven other kinds have n tried, and the tabular report, with its merous notes and remarks, is a valuable and portant one, and should be looked to by all o are interested in the subject of roads.

Restoration of Lambeth Palace.—During last three years the work of repairing and toring the buildiug of Lambeth Palace has n in progress, and will shortly be completed. has been carried out by Messrs. Jackson & aw, at the cost of the Ecclesiastical Commisners. The Lollards' Tower was found to be a very dilapidated condition. The old roof been removed, the flooring renewed, the old -walls refaced with new stone, every stone brick ascertained to be faulty taken out and placed with sound materials, and the whole ucture restored. The Gate Tower, erected Cardinal Morton, about 400 years ago, has n restored in accordance with the designs of founder. The library, the work of Sir ristopher Wren, has been attended to, the ls sounded and repaired, and the roof looked r. A stone on the building gives the date its erection as 1685; but a leaden pipe ched to the walls, running from the roof to ground, to carry off rainwater, bears the of 1663.

Street Improvements in Birmingham.—hin the last six months alterations and rovements in some of the leading thoroughs of Birmingham have been in course of pletion, of such a nature as almost entirely hange the appearance of well-known locas. The effect of the alterations will be greatly increase the somewhat scant architectural uty of the town. It is in the neighbourhood ie Birmingham Town-hall where the greatest rovements are visible. Some two acres of houldings, situated to the north of the Town- have been levelled with the ground, and suite of municipal buildings, which are to nearly 100,000*l.*, have been commenced. se will, with the projected new assize ts (to follow in a year or two), form a crescent to the right of the Town-hall lookfrom the head of New-street. A new postce has been erected immediately opposite the n-hall.

Illegal Employment of Children in Brickks. — At the Manchester County Police rt, Mark Whitehead, Walkden Moor, Worsley, been fined 1*l.* and costs for emp'oying a under eleven years of age on a brickfield. Whitehead, also of Walkden Moor, was fined nd costs for similarly employiug a girl r thirteen years of age, and a like penalty mploying a boy under ten years of age. rs. Benton & Woodiwiss, brickmakers, on, were ordered to pay a similar sum for oying a boy under thirteen years of age, ut having obtained a certificate of his dance at school.

Monumental.—The movement inaugurated some time ago, at Kidderminster, for a memorial to the eminent divine, Richard Baxter, appears to be progressing apace. An influential meeting, presided over by the Rev. G. D. Boyle, M.A., vicar, has been held in the Guildhall to finally decide on the sculptor for a statue to his memory. There were two sculptors competing, —Mr. Thomas Brock, of London, and Mr. F. J. Williamson, of Surrey,—and each supplied two designs for the guidance of the meeting. After a careful examination of the models, the model supplied by Mr. Brock was accepted. The figure will be 10 ft. high, and, with the pedestal, will stand 22 ft. from the ground. The pedestal will be made of granite, and the statue *per se* Sicilian marble.——A statue of the late Lord Dunkellin has been unveiled in Eyre-square, Galway.——An equestrian statue of "Stonewall" Jackson is to be erected in front of the Virginia Military Institute, at Lexington.

Gift of Messrs. Pease to Middlesbrough. At a meeting of the committee of the Middlesbrough High School, for the purpose of considering the desirableness of erecting suitable premises for the High School, Mr. J. W. Pease, M.P., produced plans by Mr. Waterhouse, of London, of a complete scheme for a large school in Middlesbrough, divided into two parts, the first consisting of buildings which would furnish the accommodation immediately required for a middle-class school. It was resolved that this portion should be proceeded with at once, and on behalf of the Middlesbrough owners Mr. Pease undertook to be responsible for the cost (at least 7,000*l.* or 8,000*l.*) of its erection. It was further decided that to make the institution thoroughly complete, and to furnish it, a subscription of at least 15,000*l.* should be raised, and towards this it was announced that Mr. Samuelson, M.P., and Mr. I. Lowthian Bell had each promised 1,000*l.*

The Town-hall, Brighouse.—This building has been closed for some weeks, for the purpose of being thoroughly cleaned, painted, and redecorated. The work has been done by Messrs. Hirst & Barraclough, painters and decorators. The ceiling and walls of the large hall are coloured in distemper, the panels in the ceiling being in neutral green, with margin and styles in cream, and a running border in lotus design in dark red to cut off the style from the panel the cornice running round the room being of a darkish stone colour, with the under edge of dark red. The panels on the wall are in light red, the styles being in stone colour. A Grecian key border in dark red is run around each panel. The seats have been stained and varnished, and the whole renumbered.

Working Men's College, Great Ormond-street.—The winter session of this College will commence on October 6th. The aim of this college differs considerably from most other evening educational institutions. It proposes to educate working men who desire culture for the sake of its influence upon their life and associations, and does not attempt to compete with the many valuable institutions which supply the technical instruction indispensable to intelligent artizans. The general meeting of council, teachers, and students, to which intending students and the public are invited, will be held on Thursday, October 2nd, at half-past eight. Canon Kingsley has promised to be present to address the meeting. The principal, Mr. Thomas Hughes, M.P., will preside.

Accident at St. John's Chapel, Pimlico.—At the fashionable chapel of St. John, in connexion with St. Barnabas's Church, Pimlico, a bricklayer in the employ of Mr. Haylock, builder, was on a forty-round ladder repairing the roof, when the ladder broke in the middle, and the unfortunate man was precipitated head downwards on to the flags in the chapel-yard. A fellow workman who was on another ladder beside him, close by, became so frightened that he fell off his ladder, but at a short distance from the ground, and was not much hurt. The other man was carried off to the hospital, apparently dead.

The Great Landslip in Peru.—According to the latest news from Matucama, the waters of the Rimac were flowing over the top of the dam, and also leaking from underneath. The excitement in Lima had abated, and it was supposed that the waters would gradually subside, and flow in their former channel after the lapse of a short time, as the river had opened itself a channel having a fall of 1 in 8.

Proposed Fruit Market, London.—At the Court of Common Council, a long and animated discussion took place with reference to the site of a new fruit and vegetable market. It was contended on the one hand that Farringdon Market, if rebuilt, with new approaches, would prove the best site; and, on the other hand, that the vacant land adjoining the new Meat Market was preferable. It was pointed out that the latter was close to the Metropolitan Railway, whilst the promoters of the scheme for utilising the present market attributed its failure to its inconvenience. Eventually the old site was chosen by a large majority.

Derby Memorial at Preston.—The ceremony of opening day and Sunday schools and a chapel of ease in connexion with St. Mary's, Preston, has taken place. The buildings (together with a contemplated church) have been erected as a memorial of the late Lord Derby, and the site for the whole has been given by the present earl, the value being nearly 4,000*l.* They are in the Gothic style of architecture, and have been built from designs by Mr. Hibberts, of Preston. The cost of the work, as far as at present completed, is 1,900*l.*

Rebuilding of St. Oswald's Hospital, Worcester.—The front part of this ancient hospital is in course of demolition, it having been decided to pull down the whole of the present dilapidated building, and erect a new structure, with increased convenience for the inmates. The work is under the superintendence of Mr. Rowe, architect, Worcester. The contractors are Messrs. Collins & Cullis, of Tewkesbury. It is contemplated to eventually rebuild the entire hospital.

German Sanitary Association.—A sanitary association for all Germany has just been formed at Frankfort-on-the-Maine, after two days' conference. Burgomaster Hobrecht, of Berlin, is chairman. Burgomaster Erhardt, of Munich; Dr. Lent, of Cologne; Privy Councillor, Varrentrapp, of Frankfort; Privy Councillor Wiebe, of Berlin; and Burgomaster Winter, of Dantzic, are members of the managing council. The Association has for its object the promotion of a sounder sanitary administration throughout the Empire.

Proposed New Church for Blandford.—A sum of money having been left in 1856 to endow a new church if erected before April, 1878, it has been resolved, at a recent meeting, to renew the attempt to carry out the purpose in view. A committee was appointed, and a site for the proposed church, or chapel of ease, has been suggested.

The Duplex Telegraph.—The American Institute of New York has awarded "the Great Medal of Honour" to Joseph B. Stearns for the invention of the duplex telegraph, which has made a revolution in telegraphy in the United States, and has been adopted by the Postal Telegraphs in this country.

Claridge's Asphalte.—We are bound by old acquaintanceship to mention that Claridge's Patent Asphalte of Seyssel Company, established in 1838, at Stangate, have removed from Parliament-street to the Institute of Surveyors, 12, Great George-street, Westminster.

Admiralty Director of Works.—Colonel Charles Pasley, R.E., was on Saturday appointed Director of Engineering and Architectural Works under the Admiralty, in the vacancy caused by the resignation of Colonel Sir Andrew Clarke, C.B.

The Projected Channel Tunnel.—The order for the opening of the *enquête* on the proposed submarine tunnel between Dover and Calais has been sent by the French Government to the *préfet* of the Department of the Pas de Calais, and the inquiry, which must be continued for forty days, will be opened almost immediately.

The New Reservoir, Margate. — The memorial stone of the new reservoir of the Margate and Broadstairs Waterworks Company has been laid. The reservoir is to meet the requirements of the increasing district of Cliftonville, and is calculated to hold some 300,000 gallons.

The Architect for the Louvre Library Reconstruction.—The internal reconstruction of the library at the Louvre, for which the National Assembly voted 700,000 francs, is confided to the superintendence of M. Lefuel, the architect.

The Houses of Parliament.—In consequence of the decay of the stone, scaffolding has been erected round the lesser spires, and repairs are being made. Where requisite new material will be introduced.

TENDERS

For rebuilding two warehouses, City (arranged so as to be divided into four if necessary). Mr. Herbert Ford, architect:—

Adamson & Sons	£7,829 0 0
Stimpson	7,697 0 0
Perry, Brothers	7,687 0 0
Crabb	7,595 0 0
Webber	7,558 0 0
Perry & Co.	7,425 0 0
Scrivener & White	7,420 0 0
Browne & Robinson	7,398 0 0
Killby	7,295 0 0
Brass	7,270 0 0
Axley	7,181 0 0
Downs & Co. (accepted)	7,095 0 0

For six shops, with residences and stables, for Baron E. de Gleichen Tettenborn, Clacton-on-Sea, Essex. Mr. G. Gard Pye, architect:—

Riches	£5,481 6 1
Shepherd	4,980 0 0
Clarke & Son	4,853 0 6
Hume (accepted)	4,223 11 10

For ale stores, &c., at the Cannon Brewery, Watford, for Messrs. L. G. Benskin & Co.:—

Chalk	£2,946 0 0
Foreman	2,550 0 0
Ford	2,339 0 0
Allen	2,023 0 0

For Newbury Cattle Market, Berks. Mr. James H. Money, architect. Quantities supplied:—

Whiter	£2,052 7 6
Groome	1,993 6 0
Simonds	1,973 0 0
Harrison (accepted)	1,841 12 0

For erecting a vicarage-house at Long Eaton, Derby. Mr. William Smith, architect:—

Wood, Brothers	£2,103 5 0
Bridgart	2,335 0 0
Thompson	2,277 0 0
Fast	2,150 0 0
Law & Sons (accepted)*	2,110 0 0

* Subject to sundry reductions.

For sundry works in restoring north and south porches, tower, &c., at Long Sutton Church, Lincolnshire. Mr. William Smith, architect:—

Warrick	£885 0 0
Bennett	880 0 0
Brown (accepted)	860 0 0

For villa residence, at Heath Park, Leighton Buzzard, for Mr. George Shrimpton. Mr. Frederick Gotto, architect:—

Smith & Fincher	£312 0 0
Whiting	700 0 0
Dawson	650 0 0
Horwood	649 0 0
Gibbs	640 0 0
Gibbons	625 0 0
Adams & Hoidstock	607 0 0
Cook (accepted)	523 10 0

For the erection of two shops and residence, Green-street, Bethnal-green, for Mr. T. F. Bradbrook. Mr. William Mundy, architect. Quantities supplied:—

Larke	£3,444 0 0
Robson	3,308 0 0
Wicks & Bangs	3,754 0 0
Bishop	2,594 0 0
Thomerson	2,547 19 6
Chapman	2,539 0 0
Craaker, Brothers	2,534 0 0
Blackmore & Morley	2,518 0 0
Beale	2,515 0 0
Sheffield	2,498 0 0
Forrest	2,447 0 0
Langmead	2,390 0 0
Brown (accepted)	2,280 0 0

For the erection of sundry works at Kenley, for the Kenley Gasworks Company:—

Downs & Co. (accepted).

For the erection of warehouse at Norwood, for Mr. W. Stanley. Mr. W. Stanley, architect:—

Wagner	£1,750 0 0
Downs & Co.	1,585 0 0
Holhage	1,660 0 0
Smith	1,489 0 0

For repairs to the Green Man Public-house, and two houses adjoining, Camberwell:—

	Green Man.	Two Houses adjoining.
Brindle & Co.	£109 0 0	£21 0 0
Sawyer	119 0 0	10 10 0
Hockley	107 0 0	14 10 0
Shurmur	105 0 0	15 0 0
Taylor (accepted)	98 0 0	15 0 0

For new savings-bank at Leicester. Mr. Edward Burgess, architect. Quantities supplied by Mr. L. C. Riddett:—

Lindley	£3,200 0 0
Major	3,152 0 0
Loveday	2,889 0 0
Osborne, Brothers	2,880 0 0
Butler & Marshall	2,875 0 0
Duxbury	2,803 0 0

For the erection of a house at Palace-gate, for Mr. H. F. Makins. Messrs. Stevenson & Robson, architects. Quantities by Mr. G. D. Teaffe:—

Cubitt & Co.	£8,615 0 0

For schools at Funtington, Sussex, for the School Board for Funtington. Mr. Lacy W. Ridge, architect. Quantities by Mr. L. C. Riddett:—

Poate	£1,243 0 0
Johnson	1,200 0 0
Bushby	1,185 0 0
Quick	1,147 0 0

For alterations and additions to 31, Stamford-street, Blackfriars, for Messrs. Evans & Wormull. Mr. Joseph Tanner, architect:—

Pitcher (accepted)	£690 0 0

For rebuilding the David's Harp Public-house, Fore-street, Limehouse. Mr. Williams, architect:—

Marr	£995 0 0
Anley (accepted)	988 0 0

For building workshops at 3, Gunpowder-alley, Shoe-lane. Mr. Parkinson, architect:—

Cook	£260 0 0
Anley (accepted)	244 0 0

For erecting schools for 200 children, and teacher's residence, for the School Board of South Tawton, Devon. Mr. Charles Pinn, architect:—

Parish	£1,933 0 0
Berry	1,880 0 0
Underhill & Ellis	1,797 0 0
Ellis	1,599 0 0
Gun & Stratford (accepted)	1,536 0 0

For erecting schools for 130 children, for the School Board of Drewsteignton, Devon. Mr. Charles Pinn, architect:—

Mardon & Sly	£1,350 0 0
Parker & Ball	1,326 0 0
Luscombe & Ellis	1,236 0 0
Aggett & Luscombe	1,225 0 0
Parker & Underhill	1,179 0 0
Stone	1,170 0 0
Underhill & Ellis	1,148 0 0
Berry	1,130 0 0
Parish (accepted)	999 0 0

For the erection of dwelling-house, stable buildings, &c., at Batch Wood, near St. Alban's, for Mr. E. B. Denison. Mr. E. H. Martineau, architect:—

Dove, Brothers	£21,000 0 0
Axford	20,975 0 0
Macey	20,720 0 0
Rider & Son	20,280 0 0
Ashby & Horne	20,170 0 0
Miskin	19,481 0 0
Jackson & Shaw	19,455 0 0
Hill & Sons	19,374 0 0
Longmire & Burge	19,190 0 0
Hailey	18,740 0 0

For villa residence, on the Crystal Palace Park Estate, Sydenham, for Mr. James Hendry. Mr. John Norton, architect. Quantities by Mr. J. S. Thacker:—

Steedingson	£5,498 0 0
Simpson	4,980 0 0
Harding	4,947 0 0
Jobling & Co.	4,943 0 0
Boyce	4,894 0 0
Keith	4,695 0 0
Garratt	4,675 0 0
Martin	4,298 0 0

For alterations at Bromley Palace, Kent, for the executors of the late Mr. Coles Child. Mr. Wm. C. Banks, architect:—

Arnaud	£744 0 0
Staines & Sons	718 0 0
Cooper	657 0 0

For villa residence, Carlton-hill, for Mr. G. Speedy. Mr. Jas. Miller, architect:—

Garrod & Smith	£2,968 0 0
Bridgman & Co.	2,879 0 0
Bird	2,750 0 0
Hunt & Son	2,650 0 0
Higgs	2,508 0 0
Gregory	2,298 0 0
Hyde	2,290 0 0
Ebbs & Sons (accepted)	2,273 0 0

For restoring Evershed's Candle Factory, Station-street, Brighton:—

Manwaring	£500 0 0
Nash	390 0 0
Colwell	330 0 0
Howick	310 0 0

TO CORRESPONDENTS.

Erratum.—The architect for the new bank buildings for Derby is Mr. *G. E. Isbarn*, not "G. Risborn." Similar mistakes will often occur if care be not taken in *writing* the name.

J. S., *Mason* (will have to look to the proper books).—T. C. (we cannot assist).—F. C. (we have mentioned on several occasions the statements that echoes in buildings have been lessened, if not cured, by stretching wires from side to side of the apartment. The information obtainable is not at present very precise, but experiments are, we believe, in progress).—H. M. C.—J. O. P.—W. G. S.—H. L.—J. D. C.—E. R.—J. S. P.—S. D. J. D.—H. J. N.—W. M.—D. B.—W. B. & Son.—W. K. J. G.—C. P.—S. & Co.—C. H. S.—T. B.—F. T. C.—J. M.—H. & Son.—F. C. (next week).—Technical Education (in type).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

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The Builder.

VOL. XXXI.—No. 1600.

Gains from the Forty-Third Meeting of the British Association for Science.

GREAT BRITAIN may well be congratulated on the Meeting of the British Association for the year 1873. We may recall former occasions on which the brilliancy of special addresses, or the interest of particular discoveries, has commanded the admiration of the world of science. But it would be difficult to name any year, since the origination of these scientific gatherings, in which there was manifest a more active and successful progress in so many distinct branches of investigation; or, in military phrase, a more marked victory along the whole line.

We have already given pickings from the addresses and from a few of the papers brought forward at the meeting. We now have to refer more particularly to some of those special discoveries and publications which echo, to a great extent, many an utterance of our own columns. We wish first to call attention to the fact that the studies of the anatomist, the physiologist, and the organic chemist, are closely and essentially connected with those of the engineer. The wonderful economy of nature, in such a matter as the effective application of the heat liberated by the consumption of a given weight of carbon, is immensely in advance of the results of our best steam-engines. We have thus a clear indication of the vast improvement which is conceivable in this direction. When we look at the development given to what is called the Kinetic theory of heat, and when we compare the results of definite measurements of the exertion and production of power in the organic structure with the results of human mechanisms, we may well believe that we are as yet only learning the very rudiments of the mechanical and engineering science of the future.

A striking exemplification as well of the wide range as of the minute investigation carried on in each section, with reference to the subjects brought before the Association, occurred in the proceedings of the Chemical section, on the 23rd of September. Mr. Norman Lockyer then read a paper on the physical elements of the sun, a subject of research which not only was entirely beyond the grasp of human intelligence before the invention of the spectroscope, but which ranks among those that one of the first philosophers of the present age pronounced to be absolutely unattainable by man, and which therefore it was a loss of time to pursue. From this lofty attempt to extend the boundaries of physical astronomy, the attention of the section was straightway called to the Report of the Committee on the Treatment of Sewage, re-appointed at Brighton.

The main outcome of this year's report appears to be an application for more funds, in order to prosecute further inquiries; the one other point brought forward being the ascertainment of a considerable increase in the amount of nitrogen and phosphoric acid found in the soil of the sewage-farm that was the subject of experiment. A special report on Breton's farm at Romford followed, and it was stated that not only was an enrichment of the soil in those elements which we have just mentioned ascertained to have taken place, but that the purity of the effluent water was rather increased than diminished. It was, however, also shown, that the statements of the Local Board as to the population contributing to the sewage were very incorrect, the actual number being only about 4,000, instead of between 7,000 and 8,000. The inference was stated that sewage of this town contained from 13 lb. to 14 lb. of nitrogen per head of the population per annum.

Professor Corfield recapitulated the various points on which the committee had from time to time reported as settled. Of these the first was the condemnation of any form of the permanent cesspool system. 2. The recommendation of the water-carriage system, including the two main conditions of the impermeable nature of the material to be used for sewer building, and of the careful ventilation of all sewers. 3. The committee report the inadequacy of all the processes of precipitation on which they have made experiment, including upward filtration and Weare's charcoal process. 4. They point out, as we have ourselves long since done, that the downward filtration process practised at Merthyr Tydvil, while available as a strictly sanitary measure, cannot be properly called a method of utilisation. Our own argument was economical, and drawn from a comparison of the quantity of sewage absorbed per acre with the amount of produce returned. The committee have approached the same subject analytically, and find that the affluent water contains all the nitrogen which the sewage itself contained, although it had assumed the form of nitric acid, instead of that of ammonia and organic nitrogen. 5. Precipitation or clarifying, by some means, is pointed out as desirable in all cases. On this, our readers will bear in mind, we have ourselves insisted. 6. The committee are further at one with us on the subject of agricultural subsoil drainage. They say, as we have often said, that it is essential that land should be so under-drained that any sewage applied should pass, not over, but through, the soil; and that saturation of the soil is indefensible, on either agricultural, chemical, or sanitary principles. It is of the utmost importance that this law should be kept before the eyes of all persons dealing with sanitary works, or with the disposal of sewage. The key to the recent controversy as to typhoid fever and sewage farms lies here, as we pointed out a few weeks ago. It is further urged by the committee that a special kind of culture is necessary for sewage farms; and that the feeding of cattle, and thus the production of food in the shape of meat and of milk, is the true object of this species of farming.

The Town Clerk of Bradford then read a paper, which appears to have been in every way worthy of the occasion, and of a public officer of the town which was the entertainer of the Association. The reports of the committee appointed by the Association dealt, as our readers will see, with the sanitary and the agricultural parts of the question. The paper of Mr. MacGowan called attention to the no less essential element of the political action necessary for our protection from the pestilential results of continued neglect. Mr. MacGowan gave an abstract of the course of legislative inquiry and action on the subject, and appeared as the advocate of those local authorities who are, on the one hand, laden with responsibility by the Government, and, on the other hand, refused scientific advice from the same sources, and occasionally refused by Parliament the powers which they seek to make experimental works of their own. Mr. MacGowan pointed out that the Act of 1872 contained summary provisions which were simply impossible as to execution, and that a saving clause had consequently to be introduced which tended to render the enactments inoperative. It was stated that five manufacturers of Bradford used between them no less than three million gallons of water daily, and that the question of pollution of rivers was thus one intimately connected with the commercial prosperity of towns; so that it is essential to the latter to give every facility in their power to the manufacturers. Mr. MacGowan pointed out the very limited area, compared with the surface of the country, to which it could be argued that sewage irrigation was in any way applicable; and insisted on the duty of the Government to promote amicable co-operation among the parties interested, in preference to legislating recklessly or harshly, or, he might have added, feebly and idly, "or thrusting down the throats of honest men dogmas which, after enormous expenditure and infinite discomfort, may prove to be erroneous." Nevertheless, we must not be regarded as giving any encouragement to the *laissez aller* system.

In the section on Economic Science and Statistics, Mr. E. C. T. Bartley read a paper on the Poor-law, and its effect on thrift, which was in complete harmony with views we have often found occasion to express, and which was very well received by the section. Mr. Bartley pointed out that the principle that the recipient of relief should be destitute before relief was afforded, is one that it is impossible thoroughly to carry out, and that its operation was practically to encourage the poor to keep as near the line of destitution as possible. He might have urged that if the express purpose of legislation had been to break down the spirit of independence among the poor, and to induce the tottering to fall, rather than to aid them to stand, it could not have been more effectually carried out. "Instead," the paper wisely urged, "of its being to a man's advantage to be thriftless and destitute, as is the case at present, it should be to his disadvantage." It is quite true that the last three years have witnessed a marked and happy decrease in the amount of pauperism. By a return of the Local Government Board, dated 20th of August, 1873, it appears that the number of paupers, at the end of the Midsummer quarter of the present year, was 777,725, against 833,424 in 1872, and 925,677 in 1871. Whatever be the cause of this decrease, which amounts to 6·7 per cent. compared with 1872, and to 16 per cent. compared with 1871, it is a feature of great promise. But, under the most favourable aspect, the acknowledged existence as a permanent part of the institutions of a free and prosperous country, of 800,000 absolutely helpless, destitute, and unproductive individuals, out of some twenty-three millions (the actual census return is 22,709,295), if we take the population of England and Wales alone, is not a fact calculated to prove the political wisdom of our poor-laws. Side by side with this return we cannot but quote the "Return of deaths from starvation, &c., in the year 1872," in the metropolitan district. The total is ninety-seven. This number is that certified by the coroners, and is furnished by a population of 3,253,379, out of which 106,742 were "in receipt of relief," in the first week of the month of May. The total relieved in that week, throughout England and Wales, was 805,780. No returns have been called for showing whether the proportion of deaths from absolute starvation to the number of paupers in receipt of relief, is the same in the metropolis and in the provinces. But the figures, as they stand, have a terrible significance. Mr. W. E. Forster, the president of the section, said that he believed society was responsible for the thriftlessnes of the working classes.

On the 22nd of September the attention of the Mechanical Section was directed to two inventions which are likely to exert considerable influence on one of the most urgent questions of the day, the price of coal. Our readers will remember that on more than one occasion on

which we have brought this subject under their notice we have pointed out the important part which mechanical appliances might hereafter be justly expected to fill in the functions of the coal-miner. We even ventured to suggest, from our acquaintance with the peculiar fertility of the American genius in mechanical combination, that the United States would before long, if not send coal to Newcastle, yet teach Newcastle colliers how to mine. It is from Massachusetts that the first illustration of our anticipation has been sent. It is the invention of Mr. Charles Burleigh, of that State, and is called the Burleigh rock-drill. The object of this invention is rather stone-cutting, or mining proper, than coal-cutting, but it is in its adaptability to the latter function, or in the light that its performance may throw on the proper construction of a machine specially adapted for the coal-miners, that the chief public interest attaches, at this moment, to the invention.

Appropriately associated with the exhibition of the Burleigh rock-drill, Mr. William Firth, of Leeds, read a paper "On Coal-cutting Machinery." The first question with reference to the application of mechanical power in coal-mines is that of the prime motor. The coal-mine itself supplies the stored-up heat by the liberation of which the power necessary for the drainage of the mine and for the extraction of the mineral is exerted. The coal-mine is at once the child and feeder of the steam-engine. Without the great invention of Watt it would have been impracticable to attempt the depths now pierced by our shafts, as neither water could have been pumped from the mine, nor coal itself drawn in quantities, by any conceivable application of human or animal power. But the steam-engine, invaluable at the mouth of the pit, is not available to supply power at the face of the miners' gallery. In 1761 an attempt was made to carry rods and chains down the pit, and by their aid to communicate motion to a mechanical contrivance below. Much ingenuity was called forth in this hopeless attempt. With the development that has been given to the steam-engine in the last five-and-twenty years, it has become easy to construct locomotive or movable engines applicable to the purposes of the builder; and it might have been thought that such would be advantageously introduced into certain mines. But independently of any difficulty as to the thickness of the seam to be wrought, the use of the steam-engine at the face of the work is incompatible either with the good ventilation of the mine or with its safety. The escaping steam would not only fill the mine with damp, but soften and bring down the roof.

It has long been evident to mechanics who have studied the subject that the true motive power for underground work is compressed air, —that is to say, compressed air is the true link by means of which the force generated in the boiler can alone be adequately applied to the face of the work. We have called attention to this subject in former articles, pointing out that the experience of the tunnel through the Alps was conclusive on this subject. Independently of the great facility with which compressed air may be conducted through a mine, in order to work a drill or other mechanical appliance at the face of the gallery, there is the rare and important advantage, in addition, that the escaping air at once ventilates the mine, and reduces the temperature within it.

Accordingly it is by compressed air that both Mr. Burleigh and Mr. Firth propose to drive their excavating machines. The former is described as looking like a large garden syringe supported by a slender tripod. It is worked at a pressure of 80 lb. on the inch. The cutting implement is a drill which is made to imitate in its movement the action of the drill of the miner. It gives 300 strokes in the minute, making a revolution in 18 strokes. It is readily set at any angle; and its action is to pierce a series of holes, which may either be used for powder, or otherwise so connected as to allow of the removal of large blocks of stone.

Mr. Firth's machine has the advantage of having already earned the character of a cheap and effective appliance; the decisive experiments having been made in West Ardsley, in 1862, and the apparatus now being in full and successful operation. The economical, as well as the mechanical, results were communicated to the section. The pressure of air employed is about three atmospheres. The engine for compressing the air is placed near the mouth of the pit, and the compressor feeds a receiver of 30 ft. long by 4 ft. in diameter. From this receiver iron pipes are led down the shaft and distributed through the workings, and finally an india-rubber hose, of 50 or 60 yards in length, is used to feed the engines at the face. These engines are at work at a distance of two miles from the compressor, without any sensible loss of power. The cutting engine in actual operation at West Ardsley weighs 15 cwt., and is 4 ft. long and 2 ft. 2 in high, running on wheels, which are coupled, like those of goods engines on a railway. A double-headed cutter, or pick, is set in motion by the compressed air, which cuts a groove of from 36 in. to 40 in. in the coal. The actual cutting point is keyed into the holder, so that it can be removed for grinding, and easily replaced. The action is reciprocating, and the speed attained is from sixty to ninety strokes per minute.

With regard to the economical performances of the engine it is stated that, on the "long wall" system, it can cut 20 yards per hour to a depth of 3 ft. Half this rate of progress, however, or 60 yards per shift, is very fair average work, and is equal to that performed by twelve average men in the usual mode of working. One man, one youth, and one boy are sufficient to tend the machine, lay the roads, and remove the material excavated. The equivalent in cost to the results of an average man's work obtained by this engine is stated to be 3½d. The economy effected by the use of the machine is calculated by Mr. Firth at 19d. per ton, but with the use of the double shift the advantage is greatly increased. Thin, hard seams of coal, that are too unmanageable to pay for hand labour, are economically workable by the machine. The safety of the mines and of the miners will be greatly increased by the adoption of mechanical excavators. The moral status of the men will be raised, by relieving them of that portion of their work which is of a painful and distressing character; the economy of the underground labour will be greatly improved, and placed on a firmer and less capricious basis by the change; and the practical outcome, and thus the economic value, of every shaft where mechanical coal-cutting is employed will be augmented, almost at will. On these considerations Mr. Firth has offered a reward of 500*l.* for the best coal-cutting machine that can be produced.

It must not be forgotten that all improvements of this nature which tend on the one hand to reduce the current price of coal, lead on the other hand to the more rapid exhaustion of the mines. On that subject we need not now enter. On the former every one of us has felt the shoe pinch, and pinch tightly during the past twelve months.

While the mainspring of our manufactures, coal, is thus regarded as the object of the application of mechanical ingenuity, another series of investigators have turned their attention to the more economic application of that heat which is liberated by the combustion of coal. The combination of heated air with steam is one of the methods adopted for this purpose. On this subject a description of the invention of Mr. George Warsop was read by Mr. R. Eaton. A stationary engine on the principle in question was exhibited at the International Exhibition of 1871, and we are now furnished with detailed results of the application of the same invention to the locomotive.

The mechanism of the plan consists in the addition to the ordinary machinery of the locomotive of a single acting air pump, which is driven from one of the cross heads, and which forces a constant stream of air, through a coil of pipes fixed in the smoke box, into the boiler. The air is said to enter the boiler at a temperature of about 650° Fahr.

The theoretic action of the air is that of dividing the molecules of water and of steam, retarding condensation, aiding ebullition, and, above all, preventing incrustation on the metallic surfaces. The latter action is marked by an unusual absence of leakage, in the engine supplied with the apparatus; the repairs of which have been extraordinarily few, as compared with those of others of a similar class. The tubes now at work in the locomotive described were inserted in January, 1868.

The economical result arrived at is a saving of 16·6 per cent. in the quantity of coal consumed, in addition to the increased densibility, and decreased cost of repairs of the engine. We have said enough to call attention to a very important subject.

Space, not matter, fails for further notice. A new and simple form of calculating-machine, called a mensurator, by Mr. W. Marsham Adams, which obtained a medal at the Vienna Exhibition, is an instance of a very different, but very useful, application of the inventive faculty. We have said enough to justify our remarks as to the bright promise of scientific progress which this meeting of the Association affords; and we congratulate the town of Bradford on the occasion with which its name is thus happily associated.

ST. GILES'S.

The names of two London parishes are continually used to express the two extremes of the social scale. As St. James's represents royalty and aristocracy, so St. Giles's represents the lowest of the "mobocracy": yet, curiously enough, three centuries ago the sites of these two parishes were both occupied by lazar-houses, and the names of the saints had long before been given to these hospitals, which were instituted for the same purpose of relieving persons suffering from one of the most loathsome of diseases. An old inhabitant of London, who wandered out of the City to the westward into the country beyond, might have seen at the same time, had he stood on some slightly-rising ground, two isolated buildings situated in the midst of damp, marshy land, and he would probably have felt great surprise had the future of the two been prophesied to him, and he had been told that St. James's would soon become the residence of a king, and gradually gather round it all the fashion of the town, but that St. Giles's would fall lower and lower in social consideration, and become at last a crowded resort of misery and crime, thus sinking from a pleasant village to one of the most wretched districts in London. This despised parish has, however, a history of the greatest interest,—in fact, it has a double history—first, one of respectability, and next, one of vagabondage.

The hospital was of great antiquity, and was founded by Matilda, daughter of Malcolm, king of Scotland, and queen of Henry I. of England, in the year 1117, for the reception of forty lepers, one chaplain, one clerk, and one messenger or servant. It was dedicated to a Grecian saint, known as "St. Giles of the Lepers," and was first called officially "the Hospital of St. Giles without London," but afterwards obtained the name of "St. Giles's in the Fields." Different kings granted various charters to the hospital, and in Henry III.'s reign Pope Alexander IV. confirmed its privileges by a Bull, in which he took it under his holy protection. As centuries passed, the hospital managed to draw to itself much landed property, and all went prosperously (with the exception of some dissension among the lepers themselves, caused by their too great prosperity) until the heavy hand of Henry VIII. fell upon it, in common with other ecclesiastical establishments. Henry kept the hospital and its precincts six years in his own possession, and in 1545 bestowed it upon Sir John Dudley, Viscount Lisle, K.G., together with Burton St. Lazar, in Leicestershire, a hospital to which the custody of St. Giles's had been granted, in the reign of Edward III. Lord Lisle forthwith fitted up the principal part of the building as a residence for himself, and leased out various subordinate parts of the structure to different tenants; but apparently he soon tired of his new acquisition, for two years afterwards he obtained the king's licence to convey the whole of the premises to John Wymonde Carewe, esq. The hospital was situated within walls, which enclosed a triangular space, bounded on the north-east by the High-street; on the south-east by Le Lane, afterwards Monmouth-street, and now Dudley-street; and on the west by Elde-strate, afterwards Hog-lane, and now Crown-street; the great gate being on the north, opposite the chapel, which afterwards became the parochial church of St. Giles. The "Capital Place or Mansion House" which Lord Lisle fitted up was situated a little to the west of the church. It was afterwards occupied by the celebrated Alice Duchess of Dudley, who died in 1669, aged 90, and later still by Lord Wharton. Strype describes it as follows:—"Lloyd's Court is divided from Denmark-street by Lord Wharton's house and gardens which fronts St. Giles's Church."

When this wet, marshy district was drained, and ditches were made about it, it became a more healthy place; and as early as the year 1213 a few cottages had been built outside the hospital walls. In Henry III.'s reign it had assumed the appearance of a scattered country

village, with a few shops and a stone cross, but it was still far from being what it afterwards became, "the very pleasant village of St. Giles," and early in the fourteenth century the number of inhabitants did not exceed 100. From the reign of Edward III. to that of Henry VIII., the inhabitants seem to have consisted of a few gentry and peasants, whose houses and cottages were scattered about, and some tradesmen, who dwelt for the most part in the main street. The names of some of these shopkeepers are preserved in the hospital grants, as "Gervase le Lyngedrap" (linendraper), and "Reginald le Tailleur." Among other names mentioned in these grants we find "Robert le Mower," "Robert le Crieur," "Roger le Fol," "Robert de Sco Egidio," and "Bartholomew, the crier of the Court of King's Bench." For some time previously to the dissolution of the hospital the population seems to have remained nearly stationary, but shortly afterwards it increased, and in Queen Elizabeth's reign, in spite of proclamations prohibiting the building of new houses under severe penalties, a great addition was made to its size. In 1547 the hospital was suppressed, but much of the wall that surrounded it remained in 1595; still at this date Holborn had extended so far west as almost to join St. Giles's-street, and shortly afterwards several streets were planned and many houses built. The rapid growth of London at this time attracted much attention, and in Thomas Freeman's Epigrams, published in 1614, and entitled "Rub and a Great Caste," are the following curious lines on "London's Progresse":—

"Why, how now, Babell, wilt thou build?
The old Holborne, Charing-cross, the Strand,
Are going to St. Giles's-in-the-Field;
St. Katerine, she takes Wapping by the hand,
And Hogsdon will to Hy gate ere't be long;
London has got a great way from the streame,
I think she means to go to Islington,
To eat a dish of strawberries and creame.
The city's sure in progresse, I surmise,
Or going to revell it in some disorder
Without the walls, without the liberties,
Where she needs feare nor Mayor nor Recorder:
Well, say she do, 'twere's pretty, yet 'tis pity,
A Middlesex bailiff should arrest the citty."

The parish of St. Giles was well supplied in old times with places of detention and punishment, for it had a pound, a cage, a round-house, a watch-house, a pest-house, stocks and whipping-post, and gallows. St. Giles's Pound has had a fame such as we may safely say no pound ever had before; it was a landmark, and miles were measured from it, as they were from the Standard in Cornhill, Hickes's Hall, and Hyde Park-corner, and its name found its way into songs,—not, however, much to the credit of the neighbourhood, as,—

"At Newgate steps Jack Chance was found,
And bred up near St. Giles's Pound."

There is no record of the first making of the pound, but it was probably of considerable antiquity, as the parish, while a village surrounded by pasture-lands, would naturally require such a convenience. It originally stood in the middle of High-street, but was removed in 1656 to make way for some almshouses, and was then placed on the broad space where St. Giles's, High-street, Tottenham-court-road, and Oxford-street meet. In 1765 it was finally cleared away when certain improvements were made in the neighbourhood. The Cage adjoined the Pound when it stood in the High-street, and was used as a prison. The poor people who were so unfortunate as to find themselves in this place do not appear to have been treated with much consideration, for there are entries in the parish books of several deaths that took place there. In the churchwardens' accounts we find that, in 1641, 2s. were given to a poor woman that was brought to bed in the Cage, and shortly after 2s. 6d. was paid for a shroud for a poor woman, probably the same. On July 9, 1s. 6d. was given to Ann Wyatt, then in the Cage, to relieve her and buy her a truss of straw; and three days afterwards 2s. 6d. was paid for a shroud for the same Ann Wyatt. The Round-house was probably situated near the west end of the church against the churchyard, as appears by the order in the year 1686 that a gate "be made out of the wall of the churchyard near the Round-house," and further "that care be taken to have a wall erected at the west part of the Round-house for the security thereof, in regard the old buildings adjoining are taken away," because these old buildings must have been the remains of the hospital. In 1690 it was proposed to do away with the Round-house, and four years afterwards it was succeeded by the Watch-house, which was built by Mr. Rathbone, from whom Rathbone-place takes its name. Although the place was abolished, the title of *Round-house keeper* was continued by the constable of the parish long into the present century. A Pest-house was built in St. Giles's at the time of the Great Plague of 1665, and it was afterwards pulled down and the materials sold. In the previous visitations of this fearful infection the parish had made use of a general hospital called the London Pest-house, which stood near Coldbath-fields. The stocks and whipping-post were covered by a shed, and are supposed to have stood in the broad part of the High-street. In 1683, 7*l.* 17s. 6d. were paid for a new whipping-post, and in 1703 Mr. Pollett received 2*l.* for painting stocks, whipping-post, and shed. The gallows stood at the north end of the parish outside the hospital inclosure, where the Pound was afterwards placed at the junction of the three roads. Here Sir John Oldcastle, Lord Cobham, the Lollard, was executed in the reign of Henry V., and Babington and his accomplices in the reign of Queen Elizabeth. It is frequently stated that on the removal of the gallows from the elms in Smithfield in 1413, it was set up in this place, and continued here till it was transferred to Tyburn; but this is not the case, for it is on record that Judge Tressilian and Sir Nicholas Brember were executed at Tyburn as early as the year 1388, and there is no reason to believe that one place of execution was considered sufficient for the whole of London. It was, moreover, a favourite practice in times gone by to carry out the legal sentence against the criminal in a place near which he committed his crime. For many years it was the custom of the hospital to provide a bowl of ale for the criminal as he passed the great gate on his way to Tyburn. This last refreshment was called the "St. Giles's Bowl," and was commemorated in the sign of the "Bowl" public-house, which formerly stood on the site of Bowl-yard. A similar custom was anciently practised at York, which gave rise to the proverb that the saddler of Bawtry was hanged for leaving his liquor, for had he stopped, as was usual, his reprieve, which was actually on the road, would have arrived in time to save him. The hospital chapel became, as we have before mentioned, the parochial church when the parish of St. Giles was formed, and the building remained until 1623, when it was demolished. In 1617 orders were given for building a steeple and buying new bells, but when the alterations were made it was found that some of the walls were so rotten and decayed as to be in danger of falling down, and extensive repairs were therefore projected. In the end it was found necessary to pull the whole building down, and subscriptions were requested from the parishioners and from other parishes for the purpose of building a new church. The sum of 1,065*l.* 9s. was subscribed by 415 householders, the first donation being 250*l.* from the Duchess Dudley and the last two pence by "Mother Parker." Parton, in his "Account of St. Giles-in-the-Fields," writes:—"The total number of souls in the parish at this period did not exceed, perhaps not reach, 2,000. The subscriptions, therefore, upon an average exceeded 10s. 6d. for each parishioner, old and young, when 10s. 6d. was equal to 40s. of our present money. An example of liberality and munificence rarely equalled." Upwards of 450*l.* were received from non-parishioners and nearly 240*l.* from various parishes in the diocese of London, in addition to that collected from the residents. The new church was consecrated on the 26th of January, 1630, by Dr. Laud, Bishop of London, with great pomp and ceremony. It was a handsome building, of rubbed brick with stone dressings, and had a square tower surmounted by a turret. It was richly decorated in the interior, but during the Commonwealth was much defaced by the Puritans, who gave 4s. 6d. to the painter who washed the twelve apostles off the organ-loft, and 1*l.* 9s. 6d. to the glazier who took out the stained glass and replaced it with plain glass, and sold for 40s. the beautifully-carved wood chancel-screen which the Duchess Dudley gave to the church. In addition the organ, "whose confused musick hinders devotion," was sold, and the organ-loft let as a seat. At the Restoration, the church was as much as possible brought back to its original state. It underwent extensive repairs, but in spite of these it was found in 1715 to be in such a total state of decay that a new church was necessary. A proposal was now made that this should be one of the fifty new churches ordered to be built by Queen Anne's Act, and Parliament was petitioned on the subject. Nothing was done for some years, but in 1729 the commissioners agreed to build a new church on condition that the churchwardens and vestry of St. Giles settled a yearly income of 350*l.* on the rector of the recently-erected parish of St. George, Bloomsbury. The petition of the parish was strenuously supported by the Duke of Newcastle, the Lord Chancellor, and other eminent parishioners who had seats in Parliament, and to whom the thanks of the parish were voted for "the extraordinary pains they had taken in getting the above favour." It was opposed by the Archbishop of York and five bishops, with eleven temporal peers, who protested on five grounds, the chief one being that it was a bad precedent to rebuild *old churches* out of a fund appropriated for building *new ones*.

In June, 1731, articles of agreement were entered into with Henry Flitcroft, the architect, who contracted to take down the old church and rebuild a new one on the same ground before the end of 1733. The building has been generally admired, and on its first erection was thought to be one of the handsomest churches in London. The steeple is described by Ralph as "light, airy, and genteel."

In 1686-7 the celebrated "Resurrection Gate" was erected. This was the principal gate into the churchyard, and was ornamented with a curious bas-relief of the Day of Judgment, partly designed from Michelangelo's study. In 1800 the vestry ordered this gate to be removed, "and a new entrance and gate to be erected at the north-west corner of the churchyard." The wood-carving, however, was afterwards cleaned and refixed, and it still remains, though its position was again altered, to attract the eye of the curious passer-by.

The list of rectors of St. Giles's parish is a goodly one from 1547 to the present time, but the only man in it of great fame was the learned and laborious Brian Walton, who placed students of all ages under obligations by the publication of his magnificent Polyglot Bible. Others were well known in their day, and obtained the prizes of their profession, as Dr. Roger Maynwaring, Bishop of St. David's, Dr. John Sharpe, Archbishop of York, Dr. William Baker, Bishop of Norwich, and Dr. Buckner, Bishop of Chichester. St. Giles's was originally cut off from the rest of the town by reason of the loathsomeness of the disease, for the amelioration of which the hospital was founded, but it continued to be separated on account of its moral disease. Soon after the dissolution of the hospital the parish became the rendezvous of rogues and beggars, and it has remained for many years the city of refuge for the ragamuffins of London and Westminster.

In Queen Elizabeth's reign the rapid growth of London forced upon the attention of the Government some of those social questions which are still agitating society, and are still unsolved, and the remedy it proposed was to forbid the further erection of new buildings, and to order "all persons within three miles of any of the gates of the City to forbear from letting, or setting, or suffering any more than one family only to be placed in any one house." In 1585 a proclamation was issued in which the common evils were recited—"that great multitudes were brought to inhabit in small rooms, whereof a great part were seen very poor, yea such as must live by begging or worse means, and they heaped together in one house or small tenement; wherefore for offences of this sort, namely of increase of many inhabitants or undersitters, which had been suffered within the last seven years, the proper officers were to see the same redrest." In another proclamation these vagrants are more fully described:—"that it was found in and about the City of London, and in parts in and about her Majesty's court, that there did haunt and repair a great multitude of wandering persons, many of whom were men from Ireland, with whom were also many other like vagrants and persons of that nation." St. Giles's and High Holborn were specially described as "great harbours for such misdemeaned persons." In the seventeenth century the Irish continued to arrive, and this parish is still their favoured home, so that from their settlement it obtained the cant appellation of the "Holy Land." It has been asserted that the colony of Irish in London equals in numbers the population of many a European capital. In 1710 the churchwardens stated "that a great number of the inhabitants of St. Giles's are French Protes-

tants;" and in 1720 Strype describes Sidwell-street and its neighbourhood as chiefly inhabited by French "and of the poorer sort," but now the foreign population is more confined to Soho, and does not extend to the east end of Crown-street.

The Vestry found out after a time that they could not leave the question of their poor to be settled by the rulers of the State, and in 1637 they ordered, "to prevent the great influx of poor people into this parish, that the bedles do present every fortnight, on the Sunday, the names of all new comers, undersitters, inmates, divided tenements, persons that have families in cellars, and other abuses." In 1639 six persons were appointed to assist the churchwardens "in discovering and avoiding inmates, sellar-mates, and new-comers." These are the earliest mentions of cellars as places of residence, which have since become so noted that the expression "a cellar in St. Giles's" is used to designate the lowest poverty. In the next century when Hogarth wished to paint the vices of the poor he went for inspiration to St. Giles's. His Idle Apprentice is taken up for robbery and murder in a night cellar in this parish; his Gin-street is in St. Giles's; and Tom Nero, in the "Four Stages of Cruelty," is a St. Giles's charity boy. Fielding, writing in 1751, refers to "great numbers of houses set apart for the reception of idle persons and vagabonds, who have their lodging there for twopence a night;" and adds that "in the execution of search warrants Mr. Welch rarely finds less than twenty of these houses open for the receipt of all comers at the latest hours; and that in one of these houses, and that not a large one, he hath numbered fifty-eight persons of both sexes, the stench of whom was so intolerable that it soon compelled him to quit the place." A Middlesex magistrate declared in 1815 that "in the early part of my life (I remember almost the time which Hogarth has pictured) every house in St. Giles's, whatever else they sold, sold gin; the situation of the people was dreadful. I lived with a relation of mine then, who employed a vast number of people, and observed the lower orders, then in a terrible state." Mr. Sampson Stevenson gave evidence before a committee of the House of Commons, in 1815, on the state of the beggars of St. Giles's, and described them as a society in which the young members are initiated in all kinds of extortion by the elder ones. He stated that they could make 3s. or 4s. a day each by selling in Monmouth-street the shoes that they had begged on their rounds. The evenings of these worthless creatures were spent in drunkenness and quarrelling.

Mr. Sydney Smirke, in his "Suggestions for the Architectural Improvement of the Western Part of London" (published in 1834), describes the condition of St. Giles's in much the same terms as Fielding used nearly a century before. He writes,—"The unutterable abominations of it can only be conceived by those who, in the exercise of charity or in quest of crime, have been forced to become familiar with its recesses. It is, indeed, the retreat of wretchedness, the nest of disease, and at once the nursery and sanctuary of vice. . . . . There is scarcely a single sewer in any part of it; so that here, where there is the greatest accumulation of filth, there is the least provision made for its removal." "The lodging-houses generally consist of six or eight small rooms, each of which often contains six beds; and it is no uncommon circumstance for sixty persons to be sleeping in one of these loathsome abodes. For the use of these wretched beds (if such they may be termed) fourpence or sixpence is required per night; and it is a fact familiar to the parish officers, that great properties have been, and still are, accumulated in this way." The worst part of the parish was the notorious Rookery, which may be described as the triangular space bounded by Bainbridge-street, George-street, and High-street, St. Giles's. The larger portion of this district was levelled previously to the building of New Oxford-street, which was opened in 1847. Unfortunately, the consequence was that the neighbouring dens were regorged with a still denser crowd, and in 1848 a committee of the council of the Statistical Society reported on the state of the inhabitants and their dwellings in Church-lane. They visited all the houses and found them in the most deplorable condition. The street was strewed from end to end with night-soil, sweepings of houses, decayed vegetables, &c., and the inhabitants were so closely packed that the average supply of air for each person was calculated at only 175 cubic feet, the largest being 605, and the smallest 52. Now 1,000 cubic feet of air are deemed necessary for a single prisoner in England, and 800 cubic feet for a soldier in a barrack in India. The committee classified the occupation and character of the inhabitants as follows:—1st shop-keepers, lodging-house keepers, publicans, and some of the under landlords of the houses, who make considerable profit by letting rooms furnished and unfurnished. 2nd. Street-dealers in fruit, vegetables, damaged provisions, and sundries; sweeps, knife-grinders, and door-mat makers. 3rd. Mendicants, crossing-sweepers, street-singers, persons who obtain a precarious subsistence, and country tramps. 4th. Persons calling themselves dealers, who are probably thieves, and the occupants of houses of ill-fame. 5th. Young men and lads of ages varying from eleven to thirty, known as pickpockets and thieves of various degrees. About one-half of the inhabitants were Irish, chiefly natives of Cork. Mr. Horace Mann showed that, during the six or seven years since the census of 1841, the population of Church-lane had increased at the rate of about 67 per cent., which must have principally been owing to the so-called "improvements" of the neighbourhood. Mr. Mann also pointed out that many other parts of St. Giles's were in as unsatisfactory a condition as Church-lane. Nor in this recapitulation need we omit reference to the particulars that have been given, from time to time, in these pages, and afterwards reproduced in compacter form.

Hear, too, what the medical officer of the district, Dr. Ross, says in his last report, just now issued:—

"Tramps, wife-deserters, beggars, pick-pockets, and women of bad repute occupy the common lodging-houses in St. Giles's (south). There are more than 2,000 of these persons, the large majority of whom are single, or at least live as celebates. They are nevertheless prolific. A considerable amount of the sickness and mortality of St. Giles's, and a large proportion of the cost for supporting its pauperism, are caused by the occupants of these houses. These lodging houses are moreover the seething hotbeds of depravity and crime, as being adjacent to the habitations of the lowest class of our labouring poor, the indecent and immoral habits of the population infect whole streets, and cast a gloomy shadow of squalor and vice over the entire locality. It would be a mercy to the labouring poor to scatter these people from their haunts."

Only a limited number of houses harbouring them should be allowed in each district. By massing these outcasts together, as they are in St. Giles's, they are effectually cut off from all humanising influences, and their moral corruption only becomes more aggravated.

We will now leave the consideration of the moral condition of the parish, and return to its topography. The names of many of the streets continue the fame of some of the early inhabitants, as Whetstone-park, from William Whetstone, a parishioner and vestrymen in the reign of Charles II.:—

> "Near Holborn lies a park of great renown,
> The place I do suppose is not unknown.
> For brevity's sake the name I shall not tell,
> Because most genteel readers know it well."

Wild-street takes its name from Wild or Weld House, Drury-lane, which was purchased from the builder (Sir Edward Stradling) in 1651, by Humphrey Weld, esq., a vestryman in 1669, and ancestor of the Welds of Lulworth Castle, Dorsetshire. Short's-gardens were built upon the gardens attached to the mansion of Dudley Short, an eminent parishioner and vestryman in the reign of Charles II., and Brownlow-street occupies the site of Sir John Brownlow's house and gardens, which were in part demolished about the year 1682. Lewknor's-lane (or Lutenor's-lane), now called Charles-street, took its old name from Sir Lewis Lewknor, who was a vestryman in 1618, and subscribed towards the building of the church in 1623. If this place ever had a respectable existence it must have been a very short one, for in Butler's time it was notorious for the profligacy of its inhabitants. Dyot-street, celebrated in the song of *Hudibras* ("Bombastes Furioso"),—

> "So happy to live and to die,
> In Dyot street, Bloomsbury-square,"

but now reduced to the insignificance of George-street, obtained its old name from Philip Dyot, who lived for many years at Dyot House.

Monmouth-street was long notorious as the abode of Jew dealers in left-off wearing apparel, and as the street in which the too well-known "St. Giles's Cellars" were chiefly situated. Monmouth-street no longer exists, for in the year 1845 its name was changed to Dudley-street in the belief that a new name would give it a new start. Its character, however, is but little altered, and although the cellars may not now be slept in, the second-hand clothes and boots are exposed to view.* The old name is generally supposed to have been given to the street in honour of the Duke of Monmouth, who lived in Soho-square; but Peter Cunningham suggested with much more probability that it was called after Carey, Earl of Monmouth, who died in 1661, as he and his father had both been distinguished parishioners of St. Giles's. The present name was given in honour of the Duchess Dudley, who died in the seventeenth century.

It would be impossible within any reasonable limits to mention all the celebrated persons who have been connected with the parish, and we can, therefore, merely give a few names,—as the Earls of Southampton, the Earls of Chesterfield, the Russell family, Lord Herbert of Cherbury, the Marquises of Winchester and Worcester, the Duke of Montagu, and a large number of other noblemen, Dr. Andrew Borde, Sir Kenelm Digby, Sir Godfrey Kneller, Drs. Mead and Radcliffe, Sir Hans Sloane, and Sir Richard Steele. Among the eminent persons buried in the church or churchyard of St. Giles's are the poet Chapman (d. 1634), to whose memory Inigo Jones erected an altar-tomb at his own expense; Lord Herbert of Cherbury (d. 1648); James Shirley, the dramatist (d. 1666); Richard, or "Boscobel," Penderell, commonly called "Trusty Richard" (d. 1671), Andrew Marvell (d. 1678); the infamous Countess of Shrewsbury (d. 1702); and Sir Roger Lestrange (d. 1704).

The parish of St. Giles has always been well supplied with inns and places of entertainment, and one of the earliest of these appears to have been the Croche Hose, or Crossed Stocking, which was kept by the hospital cook in 1300. The sign was a stocking crossed with red and white. The Swan on the Hop was another house of very old date, of the existence of which in the thirty-fourth year of Edward III.'s reign there is documentary evidence. The White Hart was in existence in the reign of Henry VIII., and is mentioned in Strype's edition of Stow (1720). Dick Turpin and his accomplices met at this house. The Rose is mentioned in a lease dated 1675, and was then more than 300 years old.

The Vine, which was taken down in 1817, is supposed to have marked the spot where the vineyard in Holborn mentioned in Domesday Book stood. The parish meetings were held at the Maidenhead in the reign of Charles II., but after a time it decayed into a resort of beggars and desperate characters. The Cock and Pye gave its name to the Cock and Pye-fields, upon which Seven Dials were built. The Tangier Tavern was a noted haunt of thieves and gamesters, and Claude Duval lay there in state before he was buried in Covent Garden Church in 1669. Other inns might be mentioned, but they do not merit much attention.

At the end of the seventeenth century, an attempt was made to raise a portion of St. Giles's into a fashionable neighbourhood, and the person to make this attempt was the same man who proposed building Clarges-street, Piccadilly. Thomas Neale, Groom Porter to the King, obtained a grant from the Crown of the Cock and Pye Fields, formerly the Marshlands, and commenced building the streets known as Seven Dials. On the 5th of October, 1694, Evelyn "went to see the building beginning neere St. Giles's, where seven streets make a star from a Doric pillar, placed in the middle of a circular area, said to be built by Mr. Neale, introducer of the late lotteries, in imitation of those at Venice." The name was given to the place from a column in the centre, on the summit of which were seven sun-dials, with a dial facing each of the streets. This column was removed in July, 1773, and transferred to the park of a country gentleman. Previously to the erection of this column, the name was the Seven Streets, as it is called in Hatton's "New View of London" (1708). Seven Dials has a literature of its own, and for many years the large supply of ballads and dying speeches, hawked about the streets, has issued from this spot. James Catnach, who lived in Monmouth-court, was the great producer of this literature. He was the first to use a better paper, and to print large editions of trials, and in consequence he managed to amass a considerable sum of money, a large portion of which was said to have been made during the trial of Queen Caroline. He made over 500*l.*, by Weare's murder and Thurtell's execution, and not liking to lose so profit-

* A charming essay by "Boz" touching these boots will be remembered.

able a subject, he brought out a broad sheet, headed, "We are alive again," which sold largely, but many did not like the trick put upon them, and called it a "catchpenny," a term which has stuck to the issues of the Seven Dials press. The sale of execution ballads and last dying speeches and confessions was formerly very large, but the penny newspapers have now reduced the circulation of these broadsides. Of the execution ballads of Rush's murder, and of that of the Mannings, 2,500,000 copies were sold respectively. Of Courvoisier and Greenacre, 1,600,000 each, and of Müller's only 100,000 copies were sold, other sources of information being open to the people in the latter case. Catnach had a great dislike to buying new type, and he was up to all manner of expedients to save himself, such as turning letters upside down, and making p, d, b, q, stand the one for the other. He made his own woodcuts, or bought such old ones as he could obtain. Most of Catnach's customers who were cadgers and hawkers, paid him pennies, and he made the journeymen and boys in his employ take their wages in coppers, so that on Saturday night they had to get their wives and mothers to help them home with their load. His neighbours, however, would not give him silver for his copper, as they feared contagion in his money on account of the filthy sources from which it had come to him. In consequence, he was obliged for a time to take his pennies in large bags to the Bank of England; but subsequently he washed and boiled them in a strong decoction of potash and vinegar, which caused them to look as bright as when they came from the Mint. Catnach retired from business in 1839, with a fortune of between three and four thousand pounds. The business of the Catnach press has been carried on by, first, Paul & Ryle; secondly, A. Ryle & Co.; and, thirdly, W. S. Fortey, who has on stock now half a million of ballads, or more than 900 reams. The authors of these edifying productions obtain but poor pay, for the uniform sum received is but one shilling. If the ballad have a great sale, the "poet" may be rewarded with a trifle additional, but he has no claim to such liberality.

The contrast is so great between the pleasant village of St. Giles, and the poor parish of St. Giles, that it of necessity points a moral which he that runs may read. It is sad to find a district given up for centuries to misery of the most debasing character. In Queen Elizabeth's reign, we find the same evils complained of that exist now, and the miserable condition of the place is seen to be the same when drawn by the pencil of Hogarth, and by the pen of Fielding, in the last century, and those of the Statistical Society and the *Builder* in the present century.

The history of St. Giles's exhibits much that is worthy of serious consideration; but it will not be necessary to mention here more than two points,—first, the impossibility of arresting by small efforts the natural decay of an ill-reputed district is exhibited in the failure of the attempted creation of a fashionable neighbourhood at Seven Dials; secondly, the so-called improvement of a bad neighbourhood by driving a new street through its worst parts, without further arrangements, is often an evil instead of a good. When at the building of New Oxford-street a portion of the Rookery was destroyed, it was supposed that the neighbourhood had been improved; but we have seen that the poor were only driven closer upon themselves. The clearings made for "improvements" cannot be considered satisfactory unless some place is prepared for the inhabitants who are turned out, and we have urged for years the necessity of doing this. Great improvements have been made in St. Giles's of late years by the Local Board of Works and other institutions, and the large death-rate has been reduced, but much more remains to be done. All that has been hitherto effected has been brought about by gradual improvement; but really to stamp out the great evils it is necessary for a large and combined effort to be made. A clean sweep is required, but not to make way for a better class of people. Healthful dwellings must be built on a large scale for the present inhabitants.

Salisbury Cathedral.—In the west front of this cathedral, two new statues, the gift of private munificence, have just been fixed. One of them bears the name of St. Remigius, Bishop of Rheims, in the sixth century, who baptized Clovis.

THE CLEANING AND PRESERVATION OF PICTURES.

The great master, Nature, creates and then erases his beautiful works. In the full consciousness of power he is not solicitous to preserve. What he has done he can do again. Beauty passes through its transient phases, blooms, fades, decays, and dies. The lesser artist, man, is more solicitous about the preservation of his works,—the works which have cost him so much study and labour,—and, fearing lest such heights of excellence shall never more be attained, takes every means to preserve his "little best," in order that it may be handed down to posterity. Whether the zeal with which he struggles against fate and oblivion be praiseworthy in the eyes of wisdom we shall not here stop to inquire. Society has decided that the preservation of fine pictures is a sacred duty. If it be, we can only say that some pictures have been fortunate in escaping its preserving, restoring, and tender mercies. We have been behind the scenes, and know full well what "picture cleaning and restoring," in its ordinary acceptation, means, or, rather, did mean.

A picture is a most delicate structure. Nothing can well be more easily injured. It is to the extreme veneration and care of an art-loving people that the preservation of the finest works of the old masters is due. Something of this freshness is perhaps attributable to the use of simple vehicles and colours, and to the unhesitating mode of execution, but far more, we believe, to careful custodianship. Modern pictures are knocked about from dealers to auction marts, from auction marts to dealers, from dealers to purchasers, and are kicked, cuffed, doctored, and varnished in a way not at all calculated to improve either their constitutions or their outward appearance.

The mere washing, with pure water, of a recently-painted picture, will, if it is not done with the greatest possible care, sensibly injure it. The final thin glazes and paintings are easily removed if sufficient time has not elapsed for them to become thoroughly dry and hard. Varnishing at this period is even more destructive, and we have seen the varnishing-brush clogged with the disturbed paint of pictures varnished at too early a stage of their existence. Modern pictures, however, are frequently submitted to this injurious process within a short time after their completion, to give them a glossy appearance, and to prepare them for sale and re-sale, as they come into and pass out of the market again and again. We would counsel the proprietors of modern works never to allow their pictures to be either cleaned or varnished, except under the advice and supervision of the painter himself; or, failing this, of some artist of experience and ability.

The works of Sir Joshua Reynolds would not have been the wrecks they, for the most part, are, had it not been for the reckless cleanings which they have undergone. There is scarcely one in ten of his pictures which has not been flayed by unskilful and unscrupulous hands. His pictures were the more susceptible of injury, the more vulnerable, from the fact that he was inconstant in his method of painting, and continually experimenting with pigments, vehicles, and varnishes.

All the pictures of the old masters are by no means equally redoubtable against the attacks of "cleaners and restorers," as many a cleaner has learned to his cost. We recollect one of the fraternity, and of very great repute, rest his soul, who had a very large share of the picture-daying of the country committed to his hands. This worthy man in every respect, save when let loose upon pictures, would rejoice when he had discovered the discarded sky of an ancient landscape-painter, by removing the final work and decision of the master. At last, however, he was rash enough to apply some of his strong solvents to the thinner painting of Velasquez, and the consequence was, that a large and well-known picture was half swept from the canvas. The injury was, however, repaired, by a skilful painter, and it is now in the list of our specimens of undoubted, original, genuine old masters. We would neither allow the picture of an old master nor of a modern painter to be touched, cleaned, or varnished, without grave deliberation,—without consulting with or engaging the supervision of a skilful painter. Picture-cleaning has advanced, and is better understood now than twenty or thirty years since. Restorers are better informed and more careful than they were; still, they frequently do too much, and are not sufficiently painters to dispense with artistic direction.

We doubtless set too great a store upon collecting ancient works of art, and are carrying our collecting mania to a ridiculous excess. *Quality* is of far greater importance than *quantity* in our national collections, which even now might be weeded with considerable advantage.

We should advise the contraction of all our National Art Exhibitions to reasonable and symmetrical proportions. We must get rid of our absurd tendency to copy foreign institutions, and take an independent course. We must no longer jump to the conclusion that it is right to have colossal exhibitions of works of art, because France, Belgium, Germany, Italy, or Spain has them. Italy may be truly said to be one gigantic gallery, and yet modern Italian art is not in advance of the less favoured nations. Canova's reproach that "we see with our ears rather than with our eyes," still holds. We are moved in art matters by "loud talk," instead of looking for ourselves and seeking the advice of quiet understanding. It is unfortunate that upon these matters, as upon most others, the ignoramuses more readily listen to or read the outpourings of a charlatan than the man who thoroughly understands what he is either talking or writing about. This human trait, this English trait, is perhaps more palpable in questions of taste than in those appertaining to other subjects. Painters and sculptors, more than any other class of professional men, are doomed to be lectured by the ignorant, without any qualms upon the part of the lecturer that he is offending against wisdom and good manners.

THE SOCIAL SCIENCE ASSOCIATION IN NORWICH.

The congress has been auspiciously opened, and promises in many respects to be especially useful. Lord Houghton, as president, gave the inaugural address on Wednesday evening, and travelled critically over many subjects. We must confine ourselves to a few passages, commencing with his too brief allusion to

Sanitary Matters.

No practical progress, he said, I fear has been made in the vexed question of sanitary reform. Day after day it comes before us illustrated with fresh disaster and moral difficulty. The conflict of powers can only be averted by some absolute authority, and even when that authority is established, it too often refuses to move. There could be no better evidence of the exigencies and embarrassments of the present state of things than the story of the Bill which Mr. Powell and Sir Charles Adderley introduced during the late session. It was evidently supported by the Government; but the new arrangement which prevents any fresh matter from being brought on after half-past twelve having delayed the second reading, when it had passed the next stage the session was too far advanced for any further procedure. The loss of this measure is much to be regretted; it would, among other useful enactments, have given to rural sanitary authorities the powers of making bye-laws and of compulsory purchase which are now only possessed by the urban authorities, and would have enabled the Local Government Board, by order, to supersede the sanitary authority in cases of nonperformance or neglect. It will, perhaps, be found necessary in future legislation on this pressing subject, to give to a much smaller proportion of the inhabitants than is now required the means of setting the Local Government Board in motion, and owners must have more power to act independently of their tenants.

Competitive Examination.

The opening of the public service to general competition has been hailed by a large portion of the public as a wise and generous concession on the part of the governing classes in the surrender of official and private patronage. Perhaps if it were more generally understood how great an incumbrance and trouble patronage is felt to be by public men, and how, with the rare exception of being able to satisfy private friendship and promote obscure merit, it brings with it neither pleasure nor gratitude, they would not be surprised to hear that it has been given up with so little resistance. As I see that the subject will form part of your sectional proceedings, in which I may have the opportunity of taking part, I will content myself with the

observation, that we may have too much regarded this innovation in its relation to education, without comprehending its political significance. Before its establishment the service in the public offices was performed by a very diversified body of men, nominated by heads of departments, peers, members of Parliament, and other persons who might chance to possess political influence. They were educated to their work in their separate offices, and performed it with creditable efficiency. One effect of this patronage was the dispersion of these appointments among all classes of society; but it was the poor and unfortunate who, by the interest their position excited, obtained the largest share. Another consequence was, that the public servants formed no cohesive body, with common interests and common claims. The Civil Service is the creature of Competition. How far it will add to the general content and happiness of British Society remains to be seen. It may possibly result in the existence of a class ill satisfied with their remuneration, chafing at their stationary or slowly-advancing position, conscious that they started in life with no obligations except to those who supplied the money for their tutorship (and education of this kind is, for the most part, a matter of money), and to their own faculties of memory and rapid apprehension. Whether they will be especially patriotic and public-spirited as becomes the servants of the State, is another question which I will not attempt to answer. Within the last few weeks the competition is extended to all the departments of the Home Office, to all clerkships in the offices of the Commissioner and Receiver of Police, the Inspector of Reformatory and Industrial Schools, and the Directors of Convict Prisons, as well as to the Junior Sub-Inspectorships of Factories,—services that hitherto have been thought, if not to demand, at any rate to be the better for, some special qualities which examinations cannot test, and some moral characteristics which are not the subjects of marks and figures. How long the Foreign Office will be allowed to retain its limited nomination I cannot tell, if we are to measure the appreciation of the value of those merits for which it is eminent by the disregard implied in the indiscriminate opening of other departments which might have been supposed equally to require perfect confidence and high discretion.

Co operation.

Speaking of the development of the principle of co-operation in rural industries which seems to have taken place in the Western States of America, of such extensive proportions as may affect to a great extent the social relations of vast numbers of those rapidly-increasing populations, Lord Houghton said:—They propose to supply the whole agricultural community of the far Western States with every article of food, machinery, furniture, and dress, without the intervention of any middle-men whatever; and, if they cannot acquire sufficient power over the present railway system to compel them to submit to any terms they choose to dictate, to establish an exclusive railway system of their own. As long as a combination of this nature is carried on solely by constructive and even repressive means, there is no ground on which they should not be allowed fair play; but if we find the tendency of all such schemes to be aggressive, then they require to be watched with all the care with which aristocratic or monarchical tyranny has been guarded against and put down in former times. The saying that the "despotism of the one is preferable to the despotism of the many" is so far true that the one, or even the few, can only assert and maintain their authority through the medium and with the assent of the many; whereas the many are, in the nature of things, absolute over the few. From the smallest strike to the vastest democracy, this is the dangerous principle which every lover of human liberty is bound to contend against and to modify, if he is unable to put down. It has to be adroitly managed, and to be treated with careful restriction as were the governing powers of old, and, in the process of events, it may come to be limited just as they have been. Only do not let it be excused, or encouraged, or even elevated into something sacred by a kind of surreptitious loyalty, which is just as unreasoning and as servile as the adulation of a bad king or a dissolute oligarchy. Do not palliate its violence, do not excuse its frauds; give it all the responsibility of power; bow to it when you can do nothing else, with the sense that it is the right of the strongest, but do not idolise it into a superior justice or transcendental benevolence. It is thus that a true Social Science will regard the thoughts and hopes of Socialism. If it can work its way by legitimate influence on the minds of men, if it can divorce them from old associations, if it can lay a new foundation of philanthropy, if it can open fresh channels to intelligence and new paths of virtue; it deserves neither repression nor contempt, nor should it be judged wholly by its excesses. The horrors of the Paris Commune are no worse than those of the St. Bartholomew or the Sicilian Vespers, and there have been plenty of mad resistances in history parallel with those now going on in Spain. The ultimate judgment will depend not on whether such things are done, but whether such things are vindicated. And yet the tendency to such outrages cannot be left wholly out of the consideration of the merits and virtues of the schemes themselves. A pretension to right society by destroying society is simply nonsense.

Land Laws.

There is evidently something about property in land which peculiarly affects the imagination of mankind; but there has never been in this country the hunger for the soil which has occasionally maddened foreign peoples; and there has been a general devolution from the feudal times which has made the mass of the people the friend and protector of settled estates. It is for better historians than I am to inform you how it came about that the land of England became the property of comparatively few owners, while on the other side of the water France has been divided into an immense number of peasant ownerships, not, as is commonly believed, by the violent confiscation of the Great Revolution, but for centuries before. The Revolution relieved the small owner from the imposts and forced labour which he was bound to give to the "seigneur," but otherwise made little proprietary change. Nor has the occupation of small portions of land been with us remarkably successful where it does exist, as, for instance, with the statesmen of our north-western counties, either in the improvement of the soil, or the social elevation of its possessors. Agricultural work for certain wages, and tenancies-at-will,—modified by the customs of different districts, or by contracts in the form of leases,—have hitherto well satisfied the wants and views of our population. But speculations altogether of another nature have been started by a small, though energetic, class of politicians, and have received some consideration from what may be called higher and more competent thinkers. It is not easy to attach any definite idea to the word "monopoly" in connexion with the possession of land, which is so frequently in the mouths and writings of these reformers. There is no compulsory restriction or legal impediment to the possession of land by any number of persons, provided there is somebody to sell and somebody to buy; and the fewness of the owners depends entirely on social and financial, not on political causes. The historical and local concentration of a large amount of land in the hands of certain members of the governing class has come about, at least for any period of time which can be seriously regarded as influencing the question, without violence to any other man's rights, and without injury to the feelings of any portion of the community. It is an investment of capital, like another, made necessarily by wealthy men, the returns being comparatively small and uncertain. Whatever limitations or peculiar conditions are attached to its possession, are purely voluntary, and affect, no doubt considerably, certain other persons who stand in family relations to the possessor, but no one else. Even these may and will be done away with, as soon as the parties interested are sufficiently eager for the change to form a distinctive public opinion on the matter. Year after year Mr. Locke King has brought forward his Bill for the assimilation of landed and personal property in cases of intestacy, a measure not only unobjectionable in itself, but eminently useful as the abrogation of the only statute which, though depending itself on voluntary action, somewhat favours the vulgar notion of a compulsory law of primogeniture; and it has not passed into law simply because enough persons have not died intestate to impress the public mind with any sense of injustice. The power,—a totally different thing from the obligation,—of settling land on a person yet unborn, and which, even in the case of a son, has no earlier origin than the forensic subtleties of the sixteenth century,—for the law of England abhors perpetuities,—will probably be soon subject to further limitations, quite as much in the personal interests of the private owner as for any projected national advantage. There is, however, no greater fallacy than to believe that improvements of the land are materially checked by our present system of settlement. The capital invested in them is attracted there quite as much by solicitude for descendants as by the hope of present gain. The material advantage is, in short, very distant and problematical, and if the professor thought of nothing but his own profit, his interest would often lie rather in exhausting the soil than in developing, at a present sacrifice, its future powers of production. This view is well stated in Lord Salisbury's able Report of the Committee on the Improvement of Land in cases of settled estates. The recommendations of that committee will probably result in a Bill for the extension of the power of trustees to spend trust-money upon the improvement of land on redeemable mortgage, and enable limited owners to levy a charge for improvements, redeemable within a certain period exceeding the average expectation of life, or, if in concert with the remainder-men, to substitute his or their expectations for his own.

THE DUST DIFFICULTY.

The St. Pancras Works Department has established a very effective mode of obviating the difficulty of getting dust removed from the houses in the parish. Whenever complaints are received at the office of the non-removal of dust from any house, the work of removing it is at once given to a contractor especially engaged for that purpose, and who is new to the work, and the cost of removing the dust (6s. each load) is deducted from the amount paid to the parish contractor.

THE RUINS OF BAÂLBEK AND THEIR PRESERVATION.

Some two or three years have elapsed since you allowed me to call the attention of your readers to the perilous condition of these grand remains. Almost unrivalled in the magnificence of their original plan, and still to be classed among the most impressive and picturesque groups of ruins in existence, these temples are rapidly being lost to the world. Of all that remains of the great Temple of Baäl (now, alas! but six splendid columns), we may safely predict that the next generation will see nothing but the fallen and broken fragments. I cannot assert that it is possible to avert this disaster for many years to come; but I am now able to give to others, more competent than myself, the opportunity of judging whether it is or is not possible so to do.

The committee of the Palestine Exploration Fund suggested to the officer commanding their surveying party, Lieut. Conder, R.E., that he should employ some of the time during which the excessive summer-heat compels a suspension of the out-door survey work, in preparing a careful report of the exact state of those portions of the Baâlbek ruins which seem most immediately in danger of destruction.

That report I have the pleasure of forwarding to you for publication, believing that it will thereby be brought to the notice of those best able to judge of the peril of a monument whose loss they would be the first to deplore.

J. D. Crace.

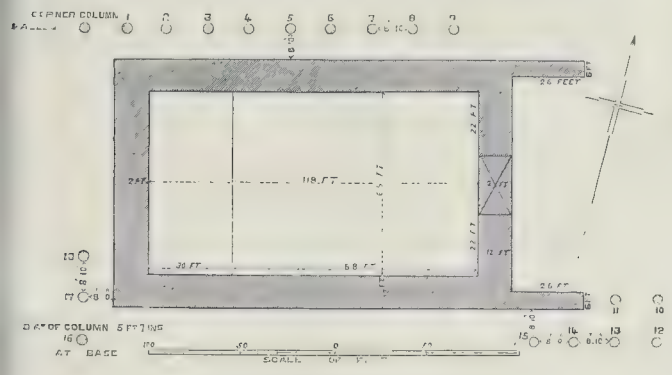
Report on the Condition of the Temple of Jupiter and the "Six Columns" at Baâlbek,
Bludan, 22nd August, 1873.

Sir,—Having, in accordance with the orders of the committee of the Palestine Exploration Fund, visited and examined the ruins of the Kalaäh, at Baâlbec, I forward the following report for their information, and for that of the Institute of British Architects:—

My attention was directed to three principal objects.

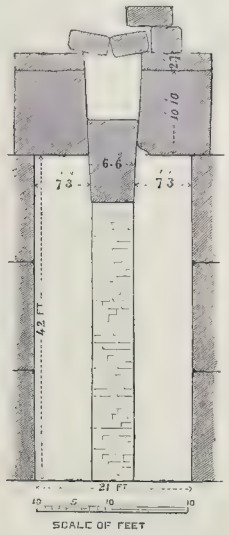
1. The condition of the keystone of the great lintel of the Temple of Jupiter.
2. The condition of the peristyle of the same.
3. The condition of the six remaining columns of the great Temple.

1. The eastern doorway of the Temple of Jupiter is 21 ft. wide and 42 ft. high in the clear. The jambs are huge pilasters, in three courses, containing interior staircases. The lintel consists of three stones, the central key-stone being slightly tapered, as in an arch, and apparently once held in place by metal clamps. The stone is a hard, compact, non-fossiliferous, white limestone. I have taken its specific gravity roughly at 2·5, in order to approximate the various weights, but send home a specimen



Plan of the Lesser Temple, or Temple of Jupiter.

to allow of their being more exactly determined. The keystone measures 10 ft. 10 in. in length, 2 ft. in thickness, and has an average breadth of 6 ft. 5 in. It must, therefore, contain approximately 838 cubic feet, which will give a weight of 13402·5 lb., or about 60 tons.



Section of the Great Portal, showing the slipped Keystone.

The above sketch will show the present condition of this stone. It has slipped down rather more than half its depth from its position, and on the south side only about one quarter of its side bears against the other block, which is broken away below. A wall of roughly-squared stones, about 1 ft. cube, in mortar, has been built under the keystone by the Turks, and appears to be a suitable and sufficient support. The only objection which can be made to it is that the soffit of the stone is thus covered, and the eagle invisible. Should it be proposed to raise the lintel to its former position, the superincumbent stones each weighing about twenty or thirty tons, must first be removed. I did not observe any indications of the present danger except from the jar which the fall of the smaller stones of the cornice might give. The other blocks of the lintel appear to be safe. The fall of the keystone is probably attributable to the removal of the metal cramps, and to subsequent shocks of earthquake.

2. *The Peristyle.*—On the north side nine columns remain with roofing; on the west, three, with only the entablature; on the south, four, and two of the fluted inner row, which ran from the antæ, and in front of the temple on the east.

Following the numbers on the attached plan, I proceed to describe the north side first.

Judging from a fallen column, the heights are as follow:—

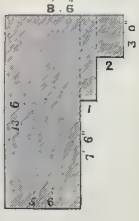
	ft.	in.	
First stone	22	5	} Shaft,
Second „	14	11	} 48 ft.
Third „	11	3	} 7 in.
Capital	5	11	
Base	3	4	
Total.....	57	10	

The diameter of the base is 5 ft. 7 in., and at the capital, 5 ft.

I may note that the dimensions given in "Murray" for both temple and pillars are too great.

The intercolumniation is 8 ft. 10 in., and the width of the peristyle, in the clear, the same.

The weight supported by each pillar is that of the portion of the entablature between two columns, a length of 14 ft. 5 in. from centre to centre, and half that of the roofing for the same length. These are easily calculated. The roof-slabs are 3 ft. thick, and allowing for the bearings, 12 ft. wide. This gives approximately 522 cubic feet, or 81562·5 lb. Thus the weight on the pillars is nearly 18¼ tons.



The section of the cornice may, for simplicity, be taken as giving an area of 86·25 square feet. For 14·5 ft. run, this gives 1,250·6 cubic feet, a weight of 19,540·6 lb., or about 87½ tons.

Thus each pillar bears a crushing weight of 105½ tons on an original section of 26·4 square feet, or 4 tons per square foot. The centre of gravity of this weight is easily calculated, and will be found to pass through the centre of the pillar.

Column No. 1 (see sketch), is leaning slightly out of the perpendicular towards the west. The first stone is slightly shattered, and the material is cut away on the north-east side to the centre and across, in such a manner as to leave only half the column to support the weight. The cubic contents of the part destroyed, which is of irregular shape, will be equal to about 44 cubic feet.

This column is therefore in a critical condition, liable to fall outwards, and bring down that part of the roof and cornice which it supports. The excavation has been made on that side on which the weight is greatest, and the pillar decaying from natural causes is weakest. I observed no injury to the higher stones of the shaft.



No. 2. At the bottom of the lowest stone a piece has been cut out, as shown, not extending quite to the centre, and having a cubic content of about 6¼ cubic feet. The remaining stones are safe, and the pillar is secure from toppling, but a portion equal to a half cylinder of radius, 2 ft. 3 in., must be subtracted from the bearing area of the shaft which resists the crushing weight above.

No. 3. On the east side a portion is cut out at the bottom of the first stone, extending inwards 3 ft., or past the centre of the column; mean height, 1 ft. 3 in.; mean breadth, 1 ft. 7 in.; cubic contents, nearly 6 cubic feet. It appears as if the weight above were too great for the column, which is cracked from the sides of the excavation nearly three-fourths of its circumference. This may be only a superficial injury; but does not seem due to weather action alone.

No. 4. The depth of the excavated portion at the bottom of the first stone is very great, 3 ft. 8 in. (with a diameter of 5 ft. 7 in. for the shaft); mean height, 1 ft. 1 in.; mean breadth, 2 ft.; cubic contents, nearly 8 cubic feet.

No. 5. Length of excavated part 3 ft., or greater than the radius; mean breadth, 2 ft.; mean height, 1 ft. 6 in. The first stone is also shattered slightly (app. 9 cubic feet).

No. 6. Length of excavation, 2 ft. 6 in., or not equal to radius; mean breadth, 1 ft. 9 in.; mean height, 1 ft. 8 in. (7½ cubic feet). These columns, Nos. 3, 4, 5, 6, all stand perpendicular, in good line, and their upper stones and capitals are in good preservation. The shape of the excavation is roughly that of a half cone in each case, being the least that was possible for the end intended, namely, the extraction of the central metal dowels.

No. 7. The excavation at the base is on the east side, and its cubic contents about equal to a quarter of a sphere 4 ft. diameter. Just above the excavation is a horizontal crack extending about half round the circumference, and no doubt due to unequal pressure (cubic contents of excavation, 1½ cubic foot).

No 9



Nos. 8 and 9. A portion of the bottom of the first stone on the north side is excavated; a large block from the roof has fallen just within the circumference of the ninth column, and the excavation thus closed appears full of rubbish. The pillar has cracked close to the excavation. In No. 9, on the north side, at the top of the first stone a large flake has been taken out; its area will be about a third of a cone of 2 ft. 2 in. radius, and of a height of 5 ft. The condition of this pillar, weighted only on the west side, appears to me to be critical.

The general conclusion arrived at is that the two outer columns, but especially No. 1, are in a dangerous condition; the next to them are cracked and overloaded; and the remainder, though at present safe, would suffer in the same manner from unequal loading on the fall of the outer columns.

The condition of the entablature is also unsafe; the architrave is cracked across between Nos. 3 and 4. The projecting cornice seems, as far as can be judged from below, not to be bonded into the remainder; and between Nos. 9 and 8 it has fallen and is replaced by small masonry in mortar; between 1 and 2 it has also fallen,

and portions are slipping between Nos. 3 and 4, and Nos. 5 and 6. This cornice consists of narrow blocks, but the frieze and architrave, of single blocks, from pillar to pillar.

The roof on this side is perfect throughout, except between Nos. 7 and 8.

On the west side of the temple three columns remain, supporting frieze and architrave, but roof and cornice fallen. Nos. 17 and 18 are chipped one-fourth of their diameter in depth on the outerside, at the top of the lowest stone. They may, however, be considered safe. On the south side also, though chipped and slightly shattered, the column appears in no immediate danger; the weight, however, of the tower above this portion is very considerable; nor do I understand how this subsequent addition, not entering into the original design, can be in any way beneficial. It has been said to "diminish the thrust," but the curve of the roof is so slight that any thrust to which the columns are subjected must be more than counter-balanced by the weight of the entablature.

It would, I think, be well to remove this turret, though a work of some difficulty.

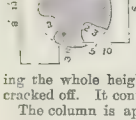
THE SIX COLUMNS.

The diameter of these columns is 7 ft. 6 in. at the base; the height, according to Murray,* who gives diameter and entablature correctly, is 75 ft., including base and capital. The entablature is exactly similar to that of the former temple, and its centre of gravity is at a distance of 3 ft. 3 in. from its north side; thus bringing the greatest weight on the south side of the columns. We give an outline sketch of the group.

The columns are exposed, from their position, to the full force of northern and westerly gales, and have suffered far more on these sides. They are shattered from top to bottom, and flaking off rapidly; they appear to have been subjected to the effects of frost as well as of rain and wind.

There appear to have been two small dowels instead of a large central one; and there seems good reason to suppose, from the extreme smoothness of the faces of the planes which were in contact, on the upper and lower surfaces of the shaft blocks, that greater security was sought by the adhesion which would result, and make the toppling of any block from the one beneath less possible.

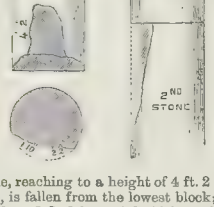
No. 1. Commencing from the west. — Two pieces excavated just above the base, being each equal in bulk to a quarter sphere of 1 ft. radius (app. 1-5th cubic foot), the greatest depth to which either penetrates is 2 ft. 3 in. A flake extending upwards from the base 10 ft. and giving in about 1 ft. also appears. A large portion of the base, extending the whole height on the north side, is also cracked off. It contains about 70 cubic feet.



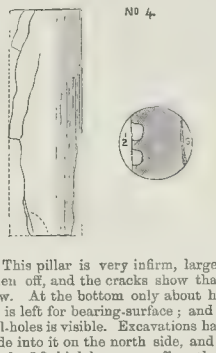
The column is apparently in an unsafe condition.

No. 2. An excavation has been made 2 ft. 6 in. high, 2 ft. deep, and with a mean width 3 ft. 2 in. It contains probably about 15 cubic feet. All three of the stones in the shaft are shattered and flaking off on the north side.

No. 3. The north-west corner of the base block is cracked off, apparently by weather action; the piece containing 56 cubic feet, 2 ft. by 4 ft., and 7 ft. high.



A flake, reaching to a height of 4 ft. 2 in. from the base, is fallen from the lowest block; a piece varying from 2 ft. 2 in. to 1 ft. 10 in. at base has been cut off across the pillar. On the north-east another flake, 10 ft. high, has come off. The second stone is much weathered on the north side; and a flake about 1 ft. thick, extending over one-third of the circumference, has been peeled off, its height being nearly three-quarters of that of the block on north-east side.



No. 4. This pillar is very infirm, large flakes have fallen off, and the cracks show that more will follow. At the bottom only about half the diameter is left for bearing-surface; and one of the dowel-holes is visible. Excavations have also been made into it on the north side, and a flake 6 in. deep by 6 ft. high has come off on the south. The outline is much as shown in the sketch.

No. 5 has a piece chipped off the corner of the base block, 3 ft. 10 in. high, 1 ft. 6 in. deep, along one side of the block. The highest stone of the shaft is cracked, and a slice of varying height, extending 3 ft. inwards, is taken out of the lowest block.



No. 6. No pillar among the six is so shaky as is the last; it is evidently giving way, and its fall is not unlikely to bring down No. 5. This fall may very possibly occur in the next great storm. Underneath the base a stone is abstracted, measuring 3 ft. 6 in. by 2 ft. 8 in. by 4 ft. 4 in., apparently 40½ cubic feet. Two square holes, one 1 ft. 6 in. cube, the other 2 ft. 4 in. by 2 ft. 4 in. by 2 ft. in height, are cut into the lowest block of the shaft.

The highest stone is cut away under the capital for about one-third of the diameter of the shaft on the west side, where the weight of the entablature presses. A chip 10 in. deep runs round the bottom of the lowest block for nearly two-thirds of its circumference, and a slice 2 ft. thick, and 7 ft. 4 in. by 5 ft. 6 in., is taken off the base on the east side.

More ominous still is an ugly crack in the capital, which is subjected to the crushing weight of the cornice without any support beneath.

The architrave is also in a perilous condition; between Nos. 1 and 2 it is cracked across, as also between 3 and 4 it has a long crack parallel to its length, and is only uninjured between 5 and 6.

There is nothing special to report as to the condition of the wall on which the columns stand.

Notes on Preservation.

The detailed account of the condition of the ruins will be by far more valuable than any suggestions I can offer as to their conservation; but a few notes may be of interest.

Materials.—It will be important as far as possible to use the materials existing on the spot.

Stone may be obtained, in any quantity, within the ruins or in the quarries.

Lime.—The surrounding country consists of a soft chalk, yielding a fair kind of lime. A large kiln exists near the town. The native mortar consists generally of pure lime.

Wood.—Baalbek is surrounded with gardens of poplar, in great abundance, growing from 30 ft. to 60 ft. in height, and varying from 6 in. to 10 in. diameter at the butt. The wood is of good quality, used for roofing, and resists well a crushing weight. Scaffolding of this material would be satisfactory. The wood is grown for sale, and gardens might be bought and felled some months before wanted for use. Should the local supply be insufficient, great quantities can be found in any direction within a few hours' march. Price from 2s. to 4s. per tree.

Iron.—Metal is precious in the eyes of the natives; but I see no reason why it should not be used at the great heights where it is required most. The clamps for the lintel might be painted stone-colour, and would thus be unnoticed by wandering depredators, who would want the means of attaining to the height at which they would be placed.*

Cranes.—Before attempting any thorough restoration, it would be well worth while to send out one of the small steam-cranes and travellers used in public buildings in England. Without such power very little would be done of permanent use. To send this plant by sea to Beyrout, and thence along the French road, and up the Bûkâa plain, on a strong-wheeled vehicle, to the very ruins, would be easy, and appears to me indispensable.

Labour.—The Fellahin might, under a negro overseer and European director, be very useful; their wages should be 10d. per diem. For excavation, the native donkeys, with baskets to hold earth, slung as panniers, would be the best means of removing the rubbish. Price of a donkey, 10d. per diem.

* * * * *

Lieut. Conder then goes into the question of how best to proceed with preservative work, if such should be undertaken. He then continues,—

In concluding my report, I may say a few words on the points of interest noticed in our visit.

The two great vaults, with semicircular arches, which support the platform (running parallel) have many Roman inscriptions on the keystones.

One of these, DIVISIO · MOOCHI, is noticed by M. Waddington, but we were fortunate enough to find in the other vault the same word, "Divisio," with an illegible name and an obscure date. This indicates that they lead to two separate divisions or quarters of the inclosure. We also copied three other inscriptions not found in Waddington, though, perhaps, of little importance.

The beautiful wall on the north side, where all the stones (with shallow draft and fine-picked faces, as in the best work at Jerusalem) appear *in situ*, shows numerous common Greek masons' marks.

The three great stones in the western outer wall rest on two courses of smaller, and on a foundation with a sloping set-back immediately intervening. This has (somewhat absurdly) been called "The Phœnician bevel," and the blocks supposed of Phœnician origin.

The tool work, and method used in transportation, are similar to the rest of the masonry; and I am unaware of any reason beyond the size for supposing them older. The builders who could poise the great shafts and entablature of the temple of Baal 75 ft. from the ground must have been fully able to place stones 64 ft. long at the lower level they occupy.

In searching together for masons' marks, my attention was directed by the Rev. W. Wright to a stone in the course below one of the huge blocks in question, the face of which was curved. On digging we found that it seemed undoubtedly a column shaft, flattened on two sides, and built in horizontally. It rests upon another stone beneath the surface. This discovery, whilst militating against the notion of Phœnician origin for the great stones, shows how highly desirable a thorough investigation of Baâlbek is to be considered. In the interior there must be from 8 ft. to 10 ft. of rubbish, which cannot fail to hide from us fine statues fallen from the countless niches of temple and court, coins, and perhaps sacred treasures, or inscriptions serving to unroll the cloud of mystery which hangs over the noblest ruins in Syria, perhaps I may say in the world.

CLAUDE R. CONDER, LT. R.E.,
In command Survey of Palestine.†

MANCHESTER WHOLESALE FISH MARKETS.

WE add to the illustrations and descriptive particulars of the new markets in Manchester, already published,* a transverse section looking towards the narrow end of the building. Besides showing the construction of the roof, this serves to make more clear the arrangement of the cellars and ice-houses, and the position of the upper offices provided for the larger salesmen.

* Murray's dimensions are taken from Wood & Dawkins.

* Lieut. Conder is too hopeful. The iron could not be *kept painted*, and the Arab depredators would blow up (or down) the whole structure to gain the value of a few gold coins.—J. D. C.

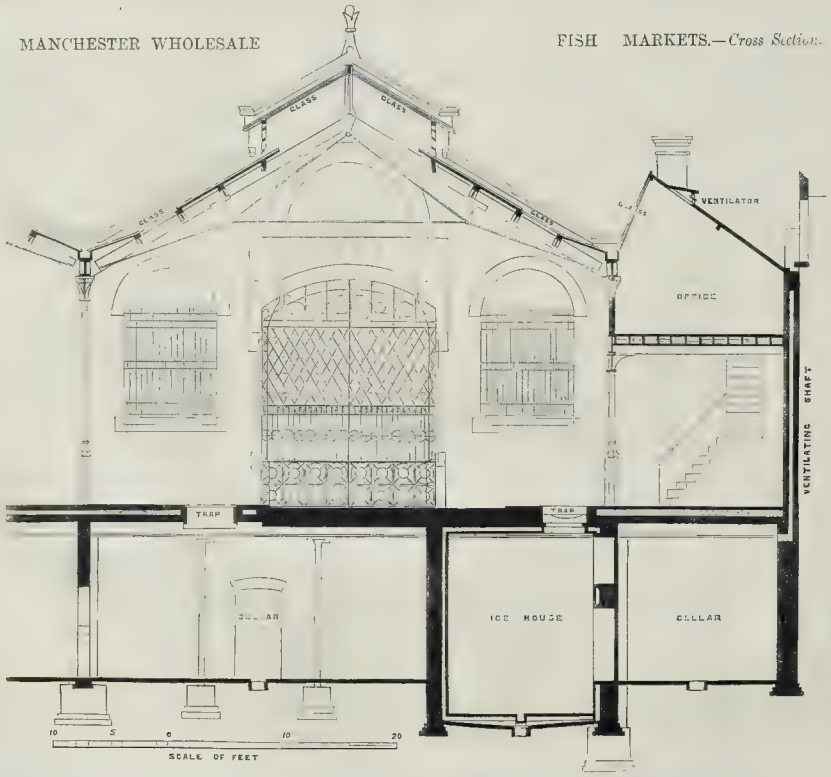
† The original report will be found at the office of the Palestine Exploration Fund, 9, Pall-mall East; and a copy has been sent to the Royal Institute of British Architects, 9, Conduit-street.

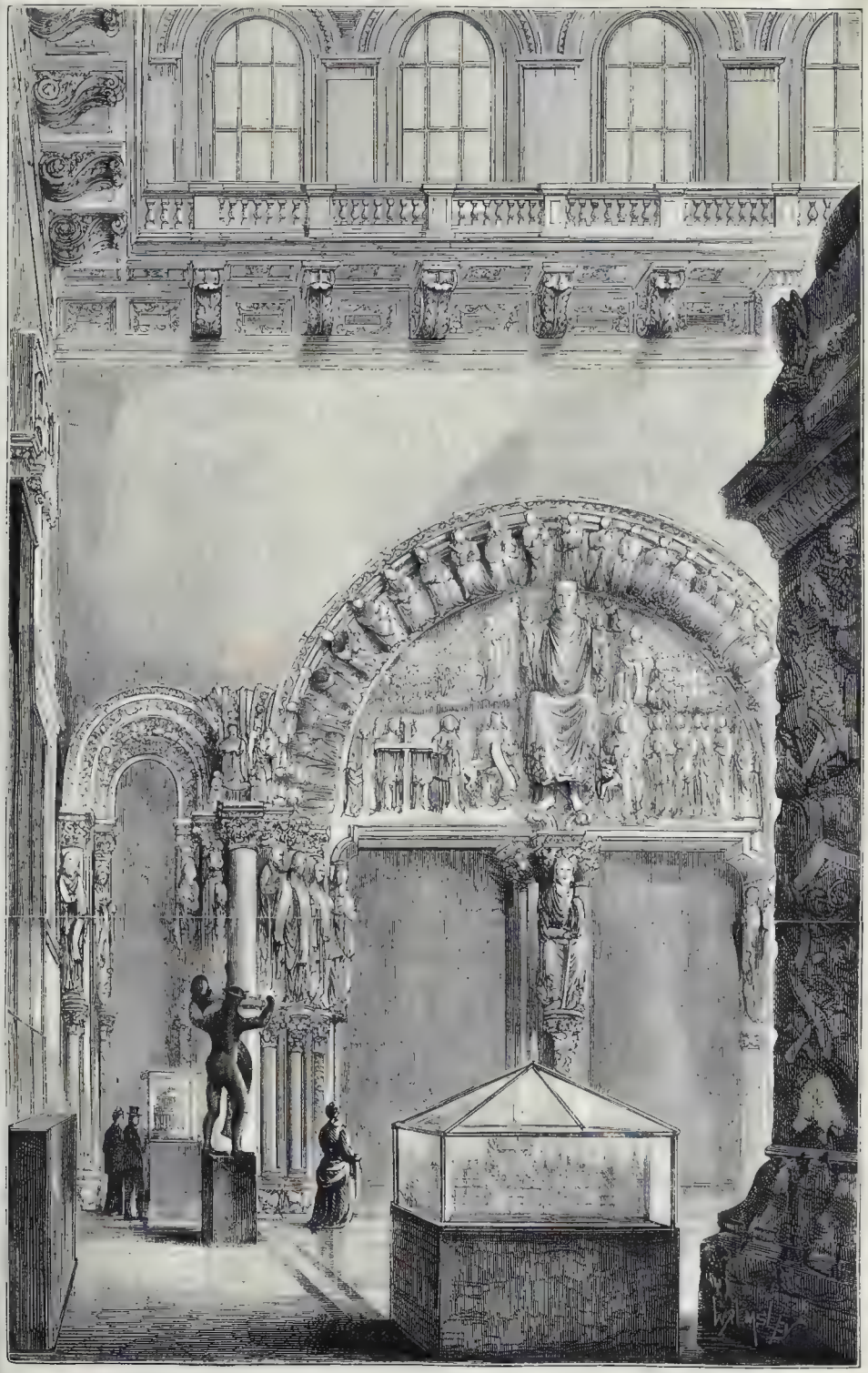
‡ See pp. 725, 726, and 727, *ante*.



BAALBEK: SKETCH OF THE SIX COLUMNS.

MANCHESTER WHOLESALE FISH MARKETS.—*Cross Section.*





IN THE ARCHITECTURAL COURTS, SOUTH KENSINGTON.

The Trajan Column, and the Portico de la Gloria, Santiago de Compostella.

THE ARCHITECTURAL COURTS, SOUTH KENSINGTON MUSEUM.

THE TRAJAN COLUMN AND THE PORTICO DE LA GLORIA, SANTIAGO DE COMPOSTELLA.

There are some impressions that can scarcely ever be effaced. Innumerable "things of beauty" may be seen in the course of a lifetime; but many of these crowd upon each other, and, competing for remembrance, obliterate recollection altogether, or only leave impressions that are hazy and indistinct. There are some experiences in life, however, in which the objects presenting themselves for observation or contemplation are so striking, it may be unique also, as to defy competition in the effect they produce upon the mind, and the impression they make is indelible. Such experiences, for instance, as the first sight of the Crystal Palace of 1851; the first entrance to Notre Dame, Paris; the first glimpse of Mont Blanc. Notwithstanding the immense distance between the objects we have named and the new Architectural Courts in the South Kensington Museum, we shall not be far wrong if we place the remembrance of the first visit to these new halls as amongst the impressions likely to remain. The boldness of the idea, the height of the apartments, the magnitude of many of the objects with which they are filled, and the beauty of others, all concur to produce a lasting effect. The two courts are each 135 ft. long by 60 ft. wide. The height to the spring of the ceiling is 72 ft. 6 in., and to the centre of the ceiling 83 ft. The width of the corridor is 17 ft. The style of the architecture has a general affinity with that of Rome, but is modified in certain details of bases, capitals, and mouldings. The ceiling is a framework of wood, the timbers being laminated. The galleries are supported on iron brackets, covered by plaster decorations. The balustrades are of terra-cotta. The principal lighting is from the roof, and very effective. Round the walls, under the galleries, are the names of architects of all periods, and on a border, near the eye, are the names of cities in which, collectively, examples of every style of architecture are to be seen. The architectural sculpture of the great Renaissance masters of France is illustrated by a few bas-reliefs, and there is one example of the illustrious Italian, Benvenuto Cellini. The courts were erected from the designs and under the superintendence of Major-General Scott, C.B., assisted by Mr. James Wyld.

One of the most remarkable and imposing of the casts is the full-sized reproduction of the Trajan column at Rome. The original dates from about the years 114—116. It was erected, and its sculptures ordered, by the Roman senate to illustrate the two Dacian wars, and to receive the ashes of the Emperor Trajan, to whom alone the Romans gave the title of *Optimus*. The bas-reliefs have been taken from a series reproduced in metal by direction of the late Emperor Napoleon III., and are built round brick cylinders. At the height of their position their careful study is difficult, but the galleries afford advantages not enjoyed in Rome. These sculptures not only illustrate the Dacian wars, but also incidentally the military system, warlike engines, ships, musical instruments, and sacrificial rites of the Romans. It is such a pictorial representation of manners and customs as may be seen on many tombs and temples of the ancient Egyptians.

The bas-reliefs for the columns are being reproduced in Paris from the casts made by order of Napoleon III., and only a certain number have been as yet affixed to the shaft; the pedestal, however, is almost complete. In anticipation of the completion of the column, and of the publication of the special memoir and description that is passing through the press, a few leading particulars concerning it may be interesting.

Trajan's column is the work of the architect Apollodorus, of whom, as well as of Trajan, it is a lasting memorial. It is composed of 34 blocks of white marble, 9 of which form the basement, 23 the shaft, and 2 the torus and capital. The column is eight diameters in height; from the foundation to the plinth, 18 ft.; the plinth, 3 ft.; the torus, highly ornamented, 3 ft. 3 in.; from the plinth to the capital, both inclusive, 98 ft.; the pedestal supporting the statue, 16 ft.; the whole structure, exclusive of the statue, 132 ft.; diameter at the base, 12 ft. 3 in.; and at the neck of the column, 10 ft. 9 in. There is a door on one side of the pedestal that admits to a spiral staircase of 185 steps, that receive light from 45 small windows. These steps are hewn out of the marble which forms the shaft. This staircase conducts to the summit of the column. The statue of Trajan, of bronze gilt, originally surmounted the column, the statue holding a golden sepulchral urn containing the ashes of Trajan. This statue was removed in 1589 by Pope Sixtus V., and a statue of St. Peter, of the same material, put in its place. The architecture of the column is mixed, the base and capital being Tuscan, the shaft Doric, and the mouldings of the pedestal Corinthian. The distinctive peculiarity of the column lies in the sculpture and carving of the pedestal, and especially in the *bassi relievi* that cover the shaft in a spiral band. As the figures rise and recede from the eye the width of the band is increased from 2 ft. high in the lower part to nearly 4 ft. at the summit. The pedestal is covered with bas-reliefs, representing warlike instruments, shields, helmets, &c., and over the door there is the following inscription, borne by two winged figures:—"Senatvs. Popvlvsqve. Romanvs—Imp. Cæsari. Divi Nervæ. F. Nervæ-Trajano. Avg. Germ. Dacico Pontifi—Maximo. Trib. Pot. XVII. Imp. VI. Cos. VI. P.P.—Ad Declarandvm Qvantæ. Altitvdinis—Mons et Locvs. Tantis operibvs. Sit. Egestvs." The sculptured history told by these wonderful examples of ancient art relates to the two Dacian wars of Trajan, the first in three campaigns. Amongst other scenes in the series are, the passage of the Danube by Trajan's cohorts by a bridge of boats; possession of *Vimina-cium*; march of the Roman army by land and water; council of war; the first sacrifice of the campaign; message des Bures; oration by Trajan; fortified camps of the Romans; Dacian spy conducted to the Emperor; pontoons constructed; advance on the enemy; *mêlée*; sacking a village; the army marching in a river bed; distribution of rewards; Dacian ambassadors to Trajan; pursuit of the Dacians; a princess taken captive; Roman camp; attack on a fortification. Second campaign, A.D. 102.—Voyage in the Adriatic; debarkation; march of the Romans into the interior; defeat of the Parthians by the Roman cavalry; grand battle; submission of the three Dacian princes; Dacian prisoners; ambulance; Roman army on the march; battle; march through the forest; oration by Trajan; imprisonment of the captive Dacians; distribution of rewards to the Roman soldiers. Third campaign.—Trajan's embarkation; passage of the river; pursuit of the enemy; sacrifice; oration or "allocution" by Trajan; the army *en route*; encampment of the legions; reception of a Dacian ambassador; construction of a fortified Roman camp; combat in the forest; assault on the camp; submission of Décébale; oration by Trajan; Victory, with wings, recording the triumphs of the conquerors, and war trophies. Second Dacian war, A.D. 106.—Embarkation of the troops from Ancona; Trajan's cordial reception by municipal authorities; further marches; reaches Cisalpine Gaul; sacrifice; disembarkation of the army at Istria; march into the interior; grand sacrifice; Trajan in a simple toga; movements in the forest; movements of the Dacian army; bridge over the Danube; town of Mœsie; the army crossing the bridge over the Danube; Trajan on horseback; new sacrifice; oration by Trajan; Roman camp; movement of the troops; camp scene; the army on the advance; camp; soldiers foraging; Dacian camp; combat on the mountain; Roman camp; another *mêlée*; strong fortification; battle; Dacians fight with heroism; ambassadors from Décébale; the Dacian princes poison themselves, and die in horrible convulsions; a large number of Dacians sue for grace and pardon; Roman camp; movement of troops; new camp; a bridge constructed; last entrenchment of the Dacians; assault on the Roman camp; Trajan, from a high tribune, addresses the army; council of native princes; Dacian ambassadors, with presents, arrive at Trajan's camp; death of Décébale; escorts of Dacian prisoners final subjugation and emigration of the Dacians.

Trajan, who was tribune for a seventeenth time, did not survive the Parthian war, or live to see the splendid monument erected to his honour by the Roman Senate and people. The bas-reliefs on the column embrace 2,500 figures, many of the parts being in an excellent state of preservation. Considering the vast extent of the work, the precision in the execution of the various parts, the successful care in grouping, and the minuteness of detail, as in horses and men in mail *cap-à-pie*, are perfectly marvellous. The shields of the warriors, apparently a species of *repoussé* work, the fascines and gabions, the armour of various kinds, even the features and hair, as well as the garments of the figures, are depicted with extreme minuteness. Many of the groups are, in form, execution, grouping, and the play of light and shade, very beautiful, and the whole furnishes a valuable means for the study of military antiquities.

Among the books on the subject that may be recommended to students is the excellent and compact work of M. Froehner, illustrated by M. Jules Duvaux.* In his introduction, M. Froehner gives interesting chapters on the history of the Dacians before the time of Trajan; a short account of Trajan before the wars with the Dacians; account of the wars with the Dacians; the social state of the Dacians; a chapter on the life of Trajan; a description, with plan, of Trajan's forum, which leads up to the body of the work; a description of the sculpture on the pedestal; and a description of the bas-reliefs on the shaft.

De Rossi's "La Colonna Trajana disegnata" is also well worth attention. The *magnum opus* on the subject is probably the great work, in course of publication, of MM. Froehner and Arosa.† This is certainly a superb work, and the illustrations are of the highest character, but they suffer from the necessarily fragmentary manner in which they are presented. The fine old work of Joannes Baptista Piranesius contains numerous plans, sections, and illustrations of the pedestal and other carvings on an enlarged scale. It has also the merit of continuity, in as high a degree as is possible, in the manner in which the bas-relief band and its subjects are illustrated.

The reproduced Trajan column at South Kensington is necessarily divided into two parts.

Contiguous to the Trajan column is a most commanding object, a full-sized cast of "El Portico de la Gloria," from the Cathedral of Santiago de Compostella, Spain, shown in our engraving. The observer of this assemblage of sculptured figures can scarcely fail to be impressed with a sense of its magnitude and magnificence, the imposing character of the assemblage of representations of prophets, apostles, and other saintly and sacred personages. The alto-relievo and undercut work, apart altogether from the design, in this fine example of twelfth-century art, cannot fail to command admiration. Master Mateo, it appears, was the architect, and finished the work in 1188. The complete doorway consists of three arches, divided by massive piers, composed of clustered columns, half disengaged from the body of the pier. The width of the central arch is 23 ft. One of the side arches is 7 ft. 10 in.; the other, 7 ft. 2 in. The central arch is semicircular, the side arches are also semicircular, and stilted. The central arch is filled by a solid tympanum, resting on two long blocks of stone, which are supported by a central pier. The column that fronts the central pier, and the inner shafts of the three arches, are carved with spiral bands of sculpture, consisting of foliage, animals, knights engaging dragons, &c.; the last-named are of marble. The fronts of the two main piers are faced by engaged columns, with shafts 14 in. in diameter; the inner carved shafts are 11 in., and the intermediate shafts 10 in. diameter respectively. The shafts rest on bases 12 in. deep, and are supported by crouching monsters, as is common in the churches of Northern Italy of the Lombard period. The monsters under the pier and side are open-mouthed, to give light to a crypt below. With a like object the mouths at the central shaft are open; these are held under the two arms of a man, life-size. The monsters forming this plinth are of various character; one has a vulture's beak, swine's ears, and lion's claws; it is bearded, and represents Pride. Another is devouring a boar's head, and another has asses' ears. These emblematic figures are intended to represent wilful ignorance, cruelty, gluttony, and other sins. The shafts above this base are 5 ft. 10 in. in height, and are tied to the piers by collars half-way up. They have caps 2 ft. in height, carved in the Romanesque manner, with bold stems, leaves, and animals, the lines and masses of the sculpture being well

* La Colonne Trajane décrite. Par W. Froehner. Paris, 1865.

† La Colonne Trajane, reproduite en Typographie d'après le Surmontage, exécuté à Rome, en 1861 et 1862. 220 planches en couleur. Texte orné de nombreuses vignettes. Planches by Gustave Arosa. Texte par W. Froehner, Conservateur du Louvre. Paris: J. Rothschild, Editeur.

brought out by the hollows round these parts. The abaci of the caps serve as pedestals for a series of images, 5 ft. 10 in. in height. The figures on the smaller arch to the right are supposed to represent Ezekiel, Baruch, Jeremiah, Daniel, Isaiah, and Moses. Scrolls, with legible characters thereon, are in the hands of, or otherwise associated with, the various prophets. On the left pier of the central and the two sides of the left-hand arch, are, in the place corresponding to that of Moses, the Apostle Peter; St. Paul; St. James the Greater, Apostle of Spain; St. John the Evangelist; St. Andrew; St. Matthew; St. Philip; and St. James the Less. The innermost marble shafts of each arch pier are carved with representations of combats of warriors with monsters, sins, &c. The one under the prophet Isaiah represents the sacrifice of Abraham. This subject, says Mr. Riano, "begins, according to the authors who have treated it, with the figure of Seth attacking idolatry, and ends with the capital representing the descendants of Abraham bound down by sin." The cap has an altar draped in the Mediæval manner, the kneeling figure of Isaac, his head bent back to receive the sacrificial stroke, angels arresting the hand of Abraham, all detailed with precision and effect. The central pier serves as a support to the two lintels, on which the tympanum of the arch rests. The shaft is of coloured marble. Eleven figures placed in this part, amongst branch and leaf work, represent the line of descent from David to the Blessed Virgin. These are David, Solomon, Josaphat, Joash, Hezekiah, Josiah, Salathiel, Zerobabel, Eleazer, St. Anne, and the Blessed Virgin. The capital is carved with a composition representing the Holy Trinity, with four angels offering incense. Above is a grand statue of St. James, or (as has been preferred) John the Baptist, sitting in a curule chair that rests upon two lions. Above this image are sculptured capitals, on the faces of which are represented the temptations of Christ; on the side caps of the pier are fiends looking on. On the right face of the central capital Satan is holding stones to be made into bread, our Lord is by his side; in the centre a winged figure of the tempter is pointing to the pinnacle of the temple; on the left is the temptation on the mountain. The inner face represents Christ comforted by attendant angels. The mouldings of the arches are richly decorated by acanthus-leaf work. Under the lintels that support the tympanum of the central arch are angle brackets, with crouching figures of angels on their fronts holding scrolls. The mouldings of the great central arch consist of three square steps or members, one recessed inside the other, with mouldings like those of the smaller arches. Twenty-four figures, small life size, representing the four-and-twenty elders in the Apocalypse, sit on the central member. Each, with the portions of moulding seen between, forms the front of a massive voussoir of the construction. They radiate from the centre of the arch, and sit on the central member of the mouldings. They sit round the subject represented in the tympanum as a council of sages round the walls of a circular chapter-hall. They are crowned and hold musical instruments, some playing, some tuning, some waiting to take their parts in the heavenly concert.

The great object in the centre tympanum is a colossal image of Christ. He is crowned with a crossed nimbus behind His head, and sits on a curule throne. The hands and feet are seen pierced; the hands spread in the attitude traditionary in such representations, indicating the damnation of the wicked and the salvation of the just. Seated around, also on curule chairs, are the four Evangelists writing. Their appropriate emblems,—the eagle, the ox, the angel, and the lion, are assigned to each respectively. On either side are four angels in the same scale. Above the Christ are forty small figures, representing the saints; some who accompany the final advent, some who are then saved. Adoring angels are in attendance. The sculpture of the side arches, and a series of figures on the spandrels between, on various scales, continue the subject. The spandrels contain figures of guardian angels with the souls under their care. The small arch to the right consists of two sets of mouldings similar to those of the centre, but smaller. In the upper set are ten small sitting figures. They hold scrolls, and acanthus-leaves in pairs are folded over between each, the points meeting in an arch shape between the figures. In the lower division are eleven figures. The one in the centre represents our Lord descending to limbo; on either side are Adam and Eve. At the springing of the arch to the right, is an angel blowing a trumpet, and on the opposite side archangels holding saved souls. The left-hand arch continues the same subject. From the springing on the right hand are souls carried to Heaven. One holds a small female figure, representing the soul of a daughter; both are carried by a guardian angel. The keystone is sculptured with a bearded head with crossed nimbus, and below it an angel's head. The small figures on the left half of the moulding represent the damned tormented by fiends, serpents, dragons, and monsters. The subject is continued on the shaft on the outside of the doorway. On the left hand of the arch, where it springs from the pier, is an angel blowing a trumpet, corresponding with the angel in the right-hand arch. The whole of the figures of this doorway, as well as the other sculptured ornamentation, were originally painted in brilliant colours, some traces of which are still remaining.

Notices of other fine examples of Spanish and Spanish moresque, and of Old English, Flemish, French, German, Indian, and Arab work, to be seen in the architectural courts, may be given on another occasion.

THE ROADS AT KING'S-CROSS.

Sir,—Referring to the letter under this heading in your issue of the 13th of September, I ask your permission to offer a few remarks.

Very few of your readers can have surmised that "the roads *at* King's-cross" or that "the subsidence of arch of the railway bridge *at* King's-cross" refers to a *new street* in course of formation about 1,100 ft. (nearly a quarter of a mile) north of King's-cross, and I will take this opportunity of directing the attention of the public to the fact that the Vestry of St. Pancras has succeeded by negotiations that have extended over a series of (seven or eight) years in acquiring for the use of the public a *new thoroughfare* that will be of great service to the public, and relieve to a very great extent the traffic at King's-cross, now one of the most dangerous crossings in the metropolis.

This new thoroughfare extends from Pancras-road, opposite the end of Phœnix-street, to York-road, opposite the end of Wharfdale-road, and will provide the only direct line of east and west communication for the districts,—now separated by the Great Northern Railway Stations,—lying north of the "New-road" between King's-cross and St. Paul's-road,—St. Paul's-road being just one mile from King's-cross. It crosses over the Great Northern Railway Station by means of a viaduct some 210 ft. in length and 40 ft. in width.

The works have been carried out at the cost of the Great Northern Railway Company, in compliance with the provisions of Acts of Parliament, wherein clauses were introduced at the instance of the Vestry of St. Pancras, and in the interests of the public at large.

Considerable difficulties have been encountered in carrying out these works to completion consequent upon the relative levels of the rails of the Great Northern Railway Station, of the roadway and footways of York-road, and of the floor-levels of the houses abutting upon York-road.

You will understand this when I tell you that the footway on the west side of York-road, at a distance of 53 ft. from the *nearest* rail of the station, was only 10 ft. 5 in. above the level of the rail, and that the door-cills of the houses on the east side of York-road, at a distance of 126 ft. from the *nearest* rail of the station, were only 12 ft. 8 in. above the level of this rail, which happens to be the highest rail in the station, and one which of course could not be lowered.

The surface of the roadway on the viaduct, when completed, will be only 16 ft. 6 in. above the level of this rail, so that even then the cill of the houses on the east side of York-road will be 3 ft. 10 in. below the surface of the roadway on the viaduct at a distance of 126 ft. The gradient of the roadway from the viaduct across York-road into Wharfdale-road is about 1 in 30, and the footways are so laid as to prevent rain running into the houses.

Your correspondent, Mr. John Eldridge, thinks "the gradients over this bridge must be very trying to cattle," but the gradient would have been much more trying (because it would have been steeper) if the expedient of "channels on the pavement" had not been adopted.

To obtain the gradient of 1 in 30 from the viaduct into Wharfdale-road, it was, of course, necessary to raise the level of York-road itself (the footway of which on the east side, you will have noticed, being only 10 ft. 4 in. above the station-rail, and 6 ft. 2 in. below the surface of the roadway on the viaduct), and the raising of the roadway has been gradually effected from King's-cross so as to make the ascent as easy as possible, the steepest gradient in the length of 1,100 ft. being 1 in 66.

The raising of the roadway has also been effected where practicable between Wharfdale-road and the Regent's Canal Bridge, the gradient of the bridge-approach being improved from 1 in 17 to 1 in 21. In fact, the road has been improved to the greatest practicable extent.

If, as your correspondent suggests, the thickness of the bridge could have been reduced to half the thickness by his "or any other plan" (as he says) the gradient from the viaduct to Wharfdale-road would *not* have been improved unless the "channels on the pavement" had been retained, and even then the gradient of York-road from Wharfdale-road to the Canal Bridge would have been made steeper.

But I am informed that the cross-girders of the bridge could *not* have been reduced in depth, and therefore the bridge could not be reduced in thickness. The engineers who designed the bridge have gone to the extreme limit justifiable for the very purpose of saving depth in the cross-girders.

The suggestion of dividing the bridge into a double thoroughfare, even if it could ever have been entertained, comes too late.

The railway company was to provide a thoroughfare (including footways) 40 ft. in width, and an agreement was entered into to that effect years ago.

That you may be in possession of the views of the Vestry on the subject, I beg to append to this an extract from the proceedings of the vestry of the 17th instant:—

"At a Vestry Meeting held on Wednesday, the 17th of September, 1873, the following report from the Highways, Sewers, and Public Works Committee was read, viz.:—

That in pursuance of reference by the Vestry of the 30th of July last your Committee have taken into consideration the questions comprised in the Vestry's resolution of that date on the subject of the levels of the bridges in Battle Bridge-road, and of the roadway of York-road, your Committee inspected the bridge and York-road (Maiden-lane), from King's-cross to the Regent's Canal Bridge, and it was observed that a considerable diminution in the gradient from the canal bridge had been effected in the execution of the paving works. Your Committee found that due provision had been made for surface drainage where the improved level of the road had rendered necessary certain alterations in the falls of the footways, and your Committee are led at the opinion that the works had been executed satisfactorily, and in the manner most likely to be beneficial to the public. Your Committee consulted the solicitor, as directed by the Vestry, and have the pleasure to submit the following report:—

'Solicitor's Office, 21st August, 1873.

Great Northern Railway Bridge

My dear Sir,—I have duly considered this reference, and have to report,—

1. That the mode of constructing the bridge is subject to the approval of the Board of Trade, but that the company must construct it in the direction and of the width, &c., laid down on the plans agreed to with the Vestry; and the Vestry have no control over the level, which is necessarily governed by the head-room required by the engines.

2. That the company must always maintain it at their expense.

3. That the parish will not incur any costs in reference to the repairs.

4. That Mr. Scott's view, as expressed in the memorandum supplied to the chairman, appears to me to be quite correct.

(Signed) Wm. Durrant Cooper.

Chas. Worrell, Esq.'

Resolved, that the report be approved."

Henry North,
Chairman of the Highways, Sewers, and Public Works Committee.

Archæological Discoveries at St. Bartholemew's Chapel, Rochester.—In clearing away the old houses adjoining St. Bartholomew's chapel in the High-street, the site of the ancient hospital for lepers, founded by Bishop Gundulph, has been discovered. The building was close to the southern side of the existing chapel. Close to the southern side are arched recesses, believed to be for the beds occupied by the lepers, whilst above are square openings in the chapel wall, conjectured to have been made to allow of the patients hearing the service in the chapel, in which they would not be permitted to take part. The arched recesses had been converted into fireplaces. A portion of the original plastering of the outer wall has been brought to light, with colours still to be traced on the plaster, showing the building to have been erected, as is known was the case, soon after the Norman conquest.

PROGRESS IN EDINBURGH.

Building operations have not been active in this city during the past season, still something has been done towards adding to the architecture of the city a few features which go to make up additional picturesque effects rather than anything remarkable for beauty of detail, far less grandeur of effect.

The elevations of St. Giles-street are now completed and form a marked feature in the outline of the old town as seen from Princes-street. The Scottish domestic style has in this instance been treated with more simplicity than in other recent examples here. The great height of the buildings, and the grouping of gables, dormers, and chimney-shafts produce an effective sky-line, and the elevations of the different blocks are sufficiently varied to avoid monotony without a too obvious effort at variety.

The site of the old city poorhouse is now fully occupied. The same style has been adopted as in St. Giles-street, but with varying results. The most conspicuous object in the group is the Odd Fellows' hall, and odd it undoubtedly is. It cannot be said to be of any particular style, but is a mixture of several; emblematical sculpture and heraldic devices are profusely scattered over the wall surfaces in such a manner as to make it a work *sui generis*, and far from being tame or commonplace—in short, it is odd, and so appropriate to its purpose.

The mason's work of the medical portion of the new infirmary is nearly completed—one of the pavilions wholly so. When the whole is finished, and the circular towers flanking the ends of the several pavilions, are crowned by their conical roofs, which will be seen overtopping the trees of the Meadow Park, a noteworthy group will be formed.

The City Improvement Trust proceed very slowly, the result probably of the officials being remunerated by salaries, which cease with the completion of the works. The Mechanics' Institute stands alone in Chambers-street; the roadway is still in a state of chaos, and no other building has been commenced. A commencement has been made at the southern extremity of Jeffrey-street; the same pencil is traceable in the designs as in St. Mary-street, but the detail is slightly varied.

In the new town we observe that the two westmost houses in Princes-street, have been partially demolished, and are being tinkered up in a rough manner, with the apparent object of cement decorations being used; the reconstructed building is to be used as a hotel.

Preparations are being made in Charlotte-square for the reception of the Albert memorial. The sculptor, in this instance, appears to be of somewhat the same character as his brother artist, to whom has been entrusted the Wellington monument in St. Paul's.

At the west end new streets and terraces are in progress; the only attempt to vary the prevailing monotony in that quarter which has come under our notice, is the introduction of semicircular-headed windows on the first floor.

Workmen are busy excavating for the foundations of the new cathedral. We understand that the estimates for the erection of the work considerably exceed those of the architect, and that it has been resolved not to proceed with the erection of the towers in the meantime. Within a stone's throw of the cathedral site preparations are in progress for the erection of a Presbyterian Church of considerable dimensions, which is to be Classical in style. The new Free Church at Morningside is being roofed in. It is a small Gothic edifice, and in its present aspect appears thin and ineffective. A spire is being added to the Libberton Free Church, which, from its elevated position, will be seen to a considerable distance.

At Cross Causeway a small church is to be built for the Evangelical Union.

On the Libberton-road an asylum for blind women is to be erected. It is not to be a mere barrack, but an ornamental effect is to be aimed at without incurring much expense.

The new barracks on the Castle Hill stand unaltered in all their hideous deformity; something is, however, to be done to make them more attractive; but really satisfactory they never can be.

New County Court for Halifax.—The new county court for Halifax, built at a cost of about 8,000*l.*, from the designs of Mr. Sorby, was opened last week. The style is Classical.

TECHNICAL EDUCATION.

BY A JOINER.

That passage of Macaulay's which tells us that "the traveller from New Zealand shall one day stand upon a broken arch of London Bridge to sketch the ruins of St. Paul's" is frequently quoted nowadays, both by foreigners who would like to see England humbled to the dust, and native alarmers of every shade of politics and every degree of education. The former perceive the beginning of her downfall in every Continental murmur that bears the smallest resemblance to a slight, and every Transatlantic blustering boast, which, after all, is but the "bark that's worse than the bite." Some of the latter see the approaches of her decay in the fal-dal fineries and startling head-dresses of her daughters, and others in the frequency of strikes and demonstrations of the democratic element, which is said to be growing so powerful. Until the New Zealander comes with his pencil and sketch-book we must remain in doubt concerning the prophecy quoted above; and, while we leave Continental and Transatlantic matters to diplomatic statesmen, let us smile in passing at those who cannot warm to a woman in any dress, and view as best we can the relation which the last remark bears to the present subject.

"A little learning is a dangerous thing," says Pope, and the calm impartial student of passing events cannot fail to see that in the half-digested ideas and crude arguments of many democratic leaders lies England's greatest danger. What is the remedy? Make the little learning more, and begin at the beginning. Since the application of steam as a motive power for the production of almost every commodity required by man, everything seems to be wanted in a hurry, and for smart, intelligent workmen of every craft a continual increasing demand is plainly observable. But in nearly every calling thoroughness has been hitherto sacrificed to the impatience of customers, and we seem to become the more pressing the quicker we are served. The consequence is, that the mechanical arts are cut up into branches, and the artizan who should know all about his business is made a mere expert at one particular part. Whatever a workman is quickest at, like a machine, that he is kept to; and as long as he earns a living by that one thing it is ten to one if he ever seeks to know any more. Were he compelled to turn his hand to other parts of his business, he would have to occupy his mind in a useful way, in order to qualify himself for the performance of the task by which he earned his daily bread. But this being secured to him without much brain-work, he is the more easily led into idle pastimes, in which he often indulges to excess. His comparative prosperity makes him consequential. The sentiments which he picks up at low music-halls and other kindred places of amusement, and the ideas gathered from cheap literature and newspaper-read companions, fire his imagination, feed his vanity, and make him the easy-persuaded tool of cunning knaves, who get a living by his duplicity. His knowledge is so scant he cannot see through the shallowness of the notions of those with whom, principally on account of his superficial attainments, he is forced to associate. Had this "one-branch hand,"—this mechanical expert at one particular part of his trade,—been brought up to thoroughness, he would have more to occupy his mind, and consequently less time to squander in taps and gaming-houses. If he were made to feel that on the completeness of his abilities depended the bread which he is in the habit of earning by the repetition of a mere mechanical performance, which through constant practice becomes of no trouble to him, his mind would receive a new stimulant with each different job, and study would be the result.

Being thus compelled to seek for information, his mind would be led into the paths of true knowledge in the search, and, once fairly started on that road, he would not be long until he could discern sound argument from bombast. There is much talk at present about technical education; but before the attainment of it will bear any fruit, the system of parcelling out must be changed. When a boy is apprenticed to the tailoring trade, if he prove any way smart at making a vest, he will never get the chance of making trousers; and if he be quick at the latter, he will never be asked to put a stitch in a coat. What is the use of teaching the theory of any trade in schools with such a practice in existence.

In the building trade, we have masons or stone-cutters who are not expected to set the stone they have wrought, wallers who turn no arches, bricklayers who dress or set no stones, and hundreds who could not read a drawing or get out a mould by which to work. Amongst those who are called joiners, we have men who make sashes they could not hang, and who never saw a "mouse" in their lives. We have "fixers" who, as a rule, make nothing they put up, and "framers" who would not be able to perceive the same angle in two different positions. We have "staircase hands" who affect to despise everything else connected with the construction of a building, and who, as a rule, look upon themselves as gods of wood, although they never made a circular-headed sash in the whole course of their existence. Well-planned houses suffer in their erection through this practice; for the "bench hand" who has been kept for a number of years at what he can do quickest is often necessitated to turn in with a crowd of "fixers" and scrape away as best he can.

Considering the present system, it would appear that with most builders profit alone is the alpha and omega of every undertaking. It looks as if they do not care whether a house stands or falls after it has been built, and their gains counted into the bank. Very few have any consideration for the welfare of those whom they employ, and consequently there is little or no reciprocation. The workshop, which ought to be conducted on the principle of a school where technical instruction is imparted, as well as for the fabrication of an article which brings a profit, is very often superintended by a man chosen more for his driving qualities than for his information. It is seldom that a man capable of imparting what he knows is met with in such positions, and the generality of men in charge are cross and intemperate in their language, instead of being kind and considerate. As to receiving instruction, men are left very much to themselves to pick up that which they would sooner and better understand if explained by a man competent to do so. The language used by the generality of foremen too is very often the most abusive and sometimes revolting, such as no man aspiring to a respectable position in society should be heard giving utterance to. The susceptible dull youth of one-and-twenty is sneered at if he chance to ask the foreman a question concerning his work, and mulcted out of money, or wheedled into paying for beer, for the information which he receives from his older fellow. Capitalists should look after these practices, and apply a remedy, for one or two hours' prefatory instruction or forethought often saves a great amount of labour. Those who cannot see before them lose much time groping their way, and obviously the loss is to the employer. I have often heard it said that the workers are not expected to be thinkers. In fact, I have many times heard the remark, "You are paid for working, sir, not for thinking," addressed as a reprimand to those who gave such a reason for being caught, as the man in charge might suppose, wasting his employer's time. This, too, without the least inquiry concerning the truth of the assertion. The result of this system is that men who would otherwise seek to become intelligent and useful in a general sense lay down their minds to become expert at one or two things, and in many cases sharp alone at what is called "shaping," that is by their bustling about and wielding their tools juggler fashion, make people believe they are qualified for anything. To be sure this kind of tact shows a knowledge of human nature on the part of the person who employs it, and the present system is the chief cause that leads many to resort to it; but it also shows the weakness, superficialness, perhaps vanity, of those who are the victims. For the truth of this I will ask if the reader ever met with one who could get on well by flattering those in power—often better by this means than real usefulness?

If it were the practice that the foreman were bound to call his apprentices and men together once or twice a week, say for an hour, or even half an hour at a time, and give them a lecture during working hours upon some technical subject, I am sure hundreds would be very thankful and willing to subscribe to the expense. After working hours very many men do not like attending lecture-halls for such a purpose, and they would be more at home in a class got up specially for themselves, and particularly when it would be taught where every practical appliance necessary for demonstration was close at hand. I will support this suggestion by calling attention

to the fact that in hundreds of instances men's intellects do not begin to develop properly until they are well into the cares of a family, so that such a practice would be to those of the greatest assistance. It would stir them up and awaken their curiosity, and besides if advancement were to be had by attending the class all would be ambitious to learn. It would, furthermore, have the effect of bringing to the surface many men of retiring manners, though still worthy and competent to fill a leading position. The great fault of the present system is employers do not trust their men enough. They do not go frequently amongst them with an encouraging word, and that friendly and paternal feeling which suits well the bearing of an extensive contractor. Recognition even in a small way goes far to encourage a humble man, and an expression of satisfaction from one's employer causes invariably much gratification. He who is in the habit of expressing himself satisfied, let his profits be ever so great, is hard to be found; and there are hundreds who could not speak civilly to their *employés* for a wager.

There is little or no friendly feeling existing between man and master on account of the present system of management, and trade-unions flourish in consequence. I have yet to say a few words on this subject from a national point of view, but knowing that long-winded compositions weary most readers I shall reserve them for a future paper.

TECHNICAL EDUCATION AND THE ARTIZAN.

Sir,—Your correspondent of September 20th, signing himself a "Carpenter," puts me in mind of a wayward child, who, because he cannot do as he would like, commences crying or abusing those that correct him. He also appears rather conceited, and one of those troublesome individuals I have sometimes met with in the workshop and elsewhere, who fancy there is no one as clever as themselves, and every one else is wrong.

He says he is a marked man because he is better educated than his fellow-workmen; but probably he is continually running about the shop expounding those theories upon which he seems to lay so much stress, at his master's expense, and getting up discussions on his pet theories instead of minding his work.

I do not find fault with him for endeavouring to improve his fellow-workmen; but there is a time for everything, and if "Carpenter" feels so anxious to instruct them I should think he might find time in the evenings to do so. And if the offer was made to them in a proper spirit, I feel certain they would not reject it.

He also states that he had once the courage to apply for a situation as clerk of works, but his services were rejected because he worked at the bench. Probably the architect to whom he applied had some experience of bench hands before; for "Carpenter" should know that a man competent to act as clerk of works should have a general knowledge of the building trade, and it is from the want of this general knowledge that we meet with so many incompetent clerks of works.

I may here state that I am a student under the Science and Art Department, and have obtained two first-class certificates and Queen's prizes, but I have endeavoured to apply the knowledge which I have gained to my own advancement, as well as for the benefit of my fellow-workmen. I have also found that that knowledge has gained for me the respect of my fellows.

I hope you will excuse the length of this letter, but I could not refrain from answering "Carpenter's" letter, as I think it might have a tendency to deter others from joining the Science classes, and thereby lose one thing most essential to an artizan, "a technical education."

I would urge upon my fellow-workmen the importance of a technical knowledge of their various trades, as it will make them superior as artizans and respected as men.

Frank Chessell, Joiner.

Society of Engineers.—The first meeting of this Society for the session 1873–4 will be held on Monday, the 6th of October, when a paper will be read on "Recent Improvements in Pumping Engines for Mines," by Mr. Henry Davey.

FROGMORE, NEAR ST. ALBAN'S.

The schools here were formally opened last week after being added to and generally remodelled. The infants'-room, 20 ft. by 19 ft., has a gallery for forty-four children, and benches for a few of the older infants. The general schoolroom is so arranged that by means of sliding doors a portion, 14 ft. by 19 ft., can be cut off for a couple of classes. New cloak-rooms, with washing spaces and porches for each sex, and the necessary closets, &c.,—on a modification of the earth system,—have been provided. The buildings are of brick, with tiled roofs and wood corbelled gables; the bell gable having parish and other monograms and date in sgraffito. Windows are introduced for cross ventilation: on the west side, opposite the children's desks, the space above the level of 9 ft. from the floor being almost all window for between 5 ft. and 6 ft. in height.

The warming is by ventilating stoves supplied by Messrs. Edwards & Son, of Great Marlborough-street. The total cost has been a little over 5*l.* per head for each additional scholar provided for.

Messrs. Clarkson, of London and St. Alban's, were the architects; and Mr. G. Boff, of Park-street, was the builder employed.

THE OLD "ANGEL" INN AT ST. GILES'S.

A memorial of ancient London is about to pass away—a memorial which is as illustrious as the "Tabard" Inn in Southwark, though that was famous for the grace of its poetical associations, and this notorious from the odium of its infamy. We allude to the hostelry which has long been known as the "half-way house" on the road to Tyburn—the house at which Jack Ketch and the criminal who was about to expiate his offences on the scaffold were wont to stop on their way to the gallows, for a "last glass." Here Jack Sheppard halted, as has been recorded by Harrison Ainsworth in his life of the celebrated scoundrel, and taking a sup of his parting wine cup "smiled," and cried, "Give the remainder to Jonathan Wild." Mr. William Thomas Purkiss, the present proprietor of the premises, has, at the request of several eminent archæologists, been prevailed upon to stay the work of demolition for a while, so that those who desire to see the veritable remains of the old "Angel" Inn as it stood when St. Giles was really in the fields—when old "Holbourne" was nothing but a country lane—and when the "fast coaches" of that time started from the "Angel" on their several days' journey to the north—may have an opportunity of looking upon, ere they are consigned to the rubbish-cart, the quaint old galleries at the back of the premises, and the remains of the ancient "tap" from which the most notable criminal of yore ordered his "parting cup," and drank perdition to all thief-catchers.

ST. MATTHEW'S CHURCH, LIGHTCLIFFE.

ACCIDENT AT STONE-LAYING.

The corner-stone of St. Matthew's Church, Lightcliffe, near Halifax, has been laid. A sad accident occurred at the ceremony, by which eight people were injured. The stone itself had been raised in order that the mortar might be spread, when a snapping of iron was heard. At the same moment the crane heeled over, and fell amongst the people. The weight of the stone had caused the cast iron to which the beam was fixed to snap. The iron was about ¾ in. thick. The crane was calculated to raise a ton and a half, whilst the corner-stone weighed only about three-quarters of a ton. It had raised the stone three or four times before. The falling of the beam caused great consternation, and three persons were unable to get from beneath it until it had been raised. It was found that eight persons had been hurt, some of them seriously. After the lapse of half an hour the stone was hurriedly laid by Mrs. Foster, and the proceedings were brought to a close as quickly as possible.

Major Foster, of Cliff-hill, generously made an offer to build the church at his own cost, leaving to his fellow-churchmen the duty and privilege of providing the organ, bells, &c. The site was at once chosen. It is in a corner of Major Foster's own park, and close to the Halifax and Wakefield turnpike-road, about a quarter of a mile from Lightcliffe Station, being considerably nearer to the bulk of the population of Lightcliffe and Hipperholme than the present church. Mr. W. S. Barber, of Halifax, is the architect. The church will be in the Perpendicular style, and the ground-plan will give the nave, aisles, chancel, with side-aisles and organ-chapel, and sacristies on the north, baptistery opening from the second bay on the south, and north-west tower. The nave, in five bays, is to be 71 ft. 3 in. long, and 23 ft. 9 in. wide; width of aisle, 9 ft. 9 in.; and depth of chancel, 23 ft. 6 in. The tower, which is 12 ft. square, rises to a height of 74 ft., and has an octagonal turret at its north-west corner. It is in four stages, the first having a two-light window facing the west, and the entrance-door (which has a richly-carved niche over it) on the north face. The belfry stage will have coupled two-light windows on each face. It is to hold a peal of eight heavy bells. The great west window is to be a four-light one, with tracery in harmony with the style. The south front will have a range of clearstory-lights (five coupled two-lights). The windows to the aisles are three-light and two-light ones. On the south side the baptistery is to be 12 ft. by 8 ft., and lighted by two-lights windows. The chancel, which is three steps higher than the nave, has choir-stalls and clergy-seats on either side. Three other steps finish the east end, and form the altar footpace. The east window is in five lights, with head tracery. All the floors will be laid in encaustic tile-work. The roofs are open-timbered, that to the chancel having a carved cornice. The shafts to the nave-arches are octagonal, with flowers carved on the capitals.

The contracts for the building were let some months ago, and considerable progress has already been made with the work. The masons are Messrs. L. & W. Crowther, of Rastrick; carpenter and joiner, Mr. J. Christy, of Huddersfield; plumber and glazier, Mr. R. P. Stafford, of Halifax; slaters and plasterers, Messrs. A. Bancroft & Son, Halifax. The carving will be executed by Mr. Charles Manver; and the whole work carried out under the supervision of Mr. Ridgway, of London, who acted as clerk of the works in the erection of St. Mary's Church, Luddenden Foot.

HEALTHY HOMES.

Sir,—I thank you for permitting the question of cheap ventilation to be discussed in your valuable and useful paper.

Cheap and dear are relative terms, and not easily settled by discussion in any paper. My object has been to press upon the notice of scientific and practical men the grave importance of affording to poor families, huddled together night and day in single apartments and continuously breathing a contaminated and poisoned atmosphere, some ready and cheap expedient by which their very existence might be ameliorated, and the present amount of sickness, expecially amongst women and children who are the greatest sufferers, diminished. For myself, I thank your correspondents who have been good enough to offer me suggestions and I beg now to inform them that, if any one will send me an estimate for thoroughly ventilating my two buildings at a moderate cost, I will gladly give them a fair trial.

Any communication to my agent, Mr. Dellow 1, Willow-terrace, White Horse-road, Croydon will be acknowledged. Amateur.

SCHOOLS OF SCIENCE AND OF ART.

A School of Art and Science at Brighton.—A meeting was held at Brighton on Saturday, to further the erection of a school of art and science there. The cost is to be about 5,000*l.* Many liberal donations have been made, and there is a fair prospect of success.

Maidstone Science Classes.—The annual distribution of prizes to members of the science classes in connexion with the Maidstone Working Men's Club, who have successfully passed the Government examinations in the subjects which they have been studying under Mr. Thornhill, took place in the Concert Hall of the Corn Exchange, when the chair was occupied by the Mayor, who, in his opening address, said he was glad to find the classes were in such a flourishing condition. They had been established three years, and the number of students had increased from eleven in the first year to thirty-five in the second, and to sixty in this year, and out of

e sixty, forty-three were examined, and forty ssed successfully. After referring to the nefit the classes were to the town, and to the portance of promoting their interests as much possible, he called on Mr. Thornhill, who ad the report. Sir John Lubbock distributed e Queen's prizes, local prizes, and certificates the successful students.

School of Science and Art, Keighley.—The tribution of prizes won at the recent examina- n by students attending the Science and Art d Trade Schools at Keighley, took place under usually auspicious circumstances. In one of e upper rooms of the building were exhibited e students' drawings done during the year. In dition to the prizes awarded by the South nsington Department, there were a host of al prizes, amounting in the aggregate to eral hundreds awarded, which made up a list the value of about 50*l*. The visit of so many tinguished visitors to Bradford in connexion h the British Association, had suggested the a of getting one or other of these celebrities present the prizes at this school, which, as ll as the Mechanics' Institute, in connexion h which the schools are conducted, has racted considerable attention amongst those o take an interest in higher education. Pro- sor A. W. Williamson, the president of the tish Association, presented the prizes. The l was crowded, and many were unable to ain admission. Mr. Isaac Holden occupied chair.

Liverpool School of Science.—The twelfth ual meeting of the Liverpool School of ence, in connexion with the Department of ence and Art, has been held in the small ncert-room, St. George's Hall, under the sidency of Mr. J. A. Picton. Dr. Williamson, fessor of chemistry, University College, ndon, and president of the British Associa- n, delivered an address and distributed the zes, so that more than usual interest was en in the proceedings by those present, but attendance was not nearly as large as might e been expected.

School of Art, Durham.—On Friday, Sept. h, the pupils of this school presented C. H. Newton with a silver tea service, in gnition of his services as head master for last twenty years. The testimonial was scribed to by about 150 pupils, who at various es have been so ably instructed by Mr. yton.

THE DRAINAGE OF MARGATE.

We observe with satisfaction that the Council the borough of Margate have at length ided upon making some serious progress in direction of draining their healthy and active town. Plans and estimates for this pose are called for, and premiums amount- to 300*l*. are to be offered to those competi- whose plans are approved. It has been ived to invite engineers of experience in particular department who are willing to it a limited competition to send in their ns to the town clerk, and from the list of ns submitted, the council propose to select competitors, to whom the above premiums be offered. We shall have further observa- s to make on the matter; meantime, those y to be interested are referred to our rtisement columns.

OPENING OF LONDON SCHOOL-BOARD SCHOOLS.

DEPTFORD.

YESTERDAY (Friday) afternoon, two new ols, the first built by the Board for the truction of the children of Deptford, were tly opened by an interesting ceremonial. se schools, concerning which some particulars given in the *Builder* a few weeks since, are ated, one in Creek-road, and the other in on-road, and are each designed to accom- ate about 800 young people, who are clas- d as boys, girls, infants, and babies. The mony yesterday consisted mainly of massing children that are to occupy the two new ildings, and marching them from Creek-road ol to Clifton-road, by way of High-street, ford, and New Cross-road. The children bered at the end of the procession about 0, these being made up of the three divisions ch of the two schools. They were not all however, to take part in the procession, the ngents of infants and babies being in some instances taken up in course of the route, and others joining at Clifton-road. The proceedings excited very lively interest in the locality. The grand gathering was in the Infant School-room of the Clifton-road-buildings, Mr. T. W. Marchant presiding. There was a large attendance of ladies and gentlemen interested in popular education, including the Greenwich members of the London School Board, the members of Divisional Committee, and other well-known although unofficial persons. The children sang a number of simple pieces with pleasing effect, and very well together, considering that combined rehearsal had been impossible.

The Creek-road Schools, the first built from the designs of Mr. E. R. Robson, the Board's architect, come out well now that they are finished. The principal schoolrooms are very commodious, the boys and girls having each principal rooms 56 ft. by 22 ft., and two class-rooms 24 ft. 6 in. by 22 ft., and 22 ft. by 18 ft. 6 in. The infants' school is 40 ft. by 26 ft. 6 in.; infants' class-room, 26 ft. 6 in. square; the babies' room is 30 ft. by 26 ft. 6 in. The playgrounds, covered and open, are admirably arranged, the infants and babies having a spacious square with as much of the area covered as open. The covering is by light iron roofs and corrugated galvanised iron. The playgrounds are floored with asphalte, and each of the divisions has abundant accommodation in lavatories, closets, &c. The passages and staircases of the principal building are coated with silicate paint. The dado in the schoolrooms is of Keene's cement, which furnishes an excellent smooth hard surface. The walls over the bold bead that surmounts the dado are coloured in distemper upon the unplastered brickwork. The fireplaces are fitted with effective stoves, designed by Mr. Robson, that are likely to prove very efficient for warming and ventilation.

The Clifton-road schools, although more imposing in external appearance, do not compare favourably with the buildings in the Creek-road. The principal school-rooms for boys and girls are each 38 ft. 5 in. by 21 ft. 6 in. Each division having also two class-rooms, 37 ft. 3 in. by 20 ft., and 27 ft. 3 in. by 20 ft. The infants have a very fine room with open-timbered roof and boarded ceiling, stained and varnished. This fine hall is 60 ft. by 38 ft., and has a fixed gallery across the end, the intended uses of which are not quite apparent. In addition to the large room the infants have a class-room, 28 ft. by 18 ft. The babies have also a room, 28 ft. by 18 ft., and in these buildings the anomaly comes out of floor-space of 365 square yards being devoted to infants and babies, and only 231 square yards to boys and girls respectively. The new building is not equal to the accommodation of the boys that are even now receiving instruction in the premises temporarily occupied by the School Board. The temporary premises will continue to be partially occupied by the Board until the new schools at Hatcham are completed, which will accommodate a number of the boys now attending the New-cross Board School. Notwithstanding this prospective relief, we think it is to be deplored that more liberal space was not taken for the accommodation of boys and girls in the new schools, and the more that the ground available for building purposes was practically unlimited.

The dado of the Clifton-road rooms is of deal, the upper portion of the internal walls being the brickwork in distemper. The rooms are fitted with Mr. Robson's heating-stoves. The under portions of the windows are fitted with frames filled with perforated zinc, and the upper portion with a hinged hopper arrangement, by which they may be opened without the possibility of down-draught. The work in all departments throughout is of the best character.

HOLLOWAY.

An addition has been made to the educational resources of the metropolis in the Finsbury division of the London School Board. The new schools are situated in the Cottenham-road, Holloway, and are adapted for the accommodation of 920 children, viz., 360 boys, 240 girls, and 320 infants. The site, which covers three-quarters of an acre, was purchased by the School Board at the moderate figure of 500*l*., and the total cost of the building, site included, has been 7,100*l*. There are two entrances, one for the boys and the other for the girls and infants, and the extensive space between the building and the road has been utilised as playgrounds for the children, being paved with asphalte, and that devoted to the infants being partially covered in, as a protection from the rain. The infant schools are situated at the base of the building, the boys' school being on the first-floor, and the girls at the top, and by an arrangement of sliding screens the classes are separated each from the other, so that the noise attendant on the instruction of one does not interfere with the conduct of those in its neighbourhood, while glass panels enable the head-teachers to supervise their assistants. The schools are fitted throughout with every convenience, but, at the same time, no unnecessary expenditure has been incurred. The building stands a little back from the road, the playgrounds being in front, which will prevent the studies of the children from being interrupted by the noise of the passing traffic. The style of architecture is modified Gothic. The architect was Mr. L. Ridge, and the builders were Messrs. Scrivener & White.

THE MAUSOLEUM AT SALTAIRE.

The sculptor, Mr. John Adams Acton, who has been working on the statue of Sir Titus Salt which is to stand in front of the new town-hall, Bradford, is now superintending the erection of three mural monuments in the family mausoleum at Saltaire. The principal monument is of large dimensions, and executed in the most costly marbles. The pediment, frieze, pilasters, and base are worked in the best quality of Sicilian. In the centre of the pediment is the emblem of the Spirit, in the form of a dove descending with the olive branch; this is produced in the whitest Carrara, and favourably contrasts with the bluish tint of the Sicilian. On the frieze are cut, in relief, from the solid marble, the words, "Blessed are the dead which die in the Lord." The pilasters are worked with the lily, the passion-flower, and the poppy, entwining together from the base to the capitals, which are enriched with foliage surrounding the flowers. The centre of the monument consists of a semi-colossal figure, in bold relief, representing the Angel of the Resurrection standing with the trumpet in the left hand, as awaiting the command to call forth the world to judgment. This figure is merely at present a representation in plaster of the model which is now being executed in the artist's studio in London, in the finest Carrara marble. The base for the future inscription is worked in Sicilian and Rosso Antico. The idea of the artist has been to illustrate Life, Death, and Immortality. The side tablets are in commemoration of the deceased members of the family. These tablets, like the large one, are of the finest Italian marbles. The arms of Sir Titus Salt are sculptured on each sarcophagus.

THE WARWICK WATER SUPPLY.

The Haseley water-supply scheme has at length passed through the stage of inquiry and discussion. It has been subjected to a protracted and laborious scrutiny. During this process all the material facts on which it is based have undergone a searching examination, both friendly and hostile. The information by Messrs. Rammell & Lister would seem to confirm the opinion arrived at, after much care and labour, by Mr. Pritchard, C.E., the borough surveyor, and endorsed by Messrs. Cawley & Newton. When the scheme was first propounded, opinions were confidently expressed that the supply of water obtainable from Haseley would not suffice for the requirements of the inhabitants. To determine this question Mr. Pritchard was instructed to institute a series of gaugings. The results, as reported to the town council, from time to time, during the last two years, appear to justify the council in adopting Mr. Pritchard's conclusion respecting the adequacy of the supply which the Haseley brook will be able to furnish. With a catchment area of 1,500 acres a minimum flow of 150,000 gallons per diem, and storage room for 23,000,000 gallons, there is every reason, it seems, to believe that the required 25 gallons per head for a population of 11,000 will be secured, even in the driest seasons.

The evidence which has been obtained respecting the quality of the Haseley water is equally satisfactory. Analyses have been made by Messrs. Rammell and Lister, and by Dr. Hill, of Birmingham, and these gentlemen agree in pronouncing it admirably suited for domestic purposes. Last year Dr. Hill reported that the unfiltered Haseley water submitted to his examination was about of the same quality

as the filtered water then supplied to the town of Birmingham, and considerably better than the filtered water of the Avon.

As regards the question of cost, there is room to hope that little if any additional yearly expenditure will have to be defrayed. In a report made to the council in March last by Mr. Pritchard, as engineer, the entire cost of the works, after allowing for the value of pipes and old materials to be dispensed with, but not including the Emscote works, was estimated at 15,000*l.*, or an entire annual cost (at 3½ per cent. for fifty years) of 770*l.*, including repayment of principal and interest, payment of rates, &c., and also the working expenses and repairs in connexion with the works.

MANCHESTER AND SALFORD BUILDING TRADES' INSTITUTE.

The annual meeting of the Manchester and Salford Building Trades' Institute for Technical Education has been held in the Free School, Jackson's-row, Deansgate. Mr. J. Murgatroyd, president, occupied the chair. There was a good attendance of members.

Mr. James Maclean read the fifth annual report, which congratulated the members and friends on the continued prosperity of the Institute, as evidenced not merely by the number of students who had attended the classes, but by the results of the examinations of the Government Science and Art Department, and by the competitions for the prizes presented by the Manchester Society of Architects. The number of students on the books for the year ending June, 1872, was ninety-eight, and the marks of distinction earned by them were twenty-three, while in the year ending June, 1873, the number of students was eighty-eight, and the marks earned by them forty-seven. The balance-sheet of the Institute showed that the income had been sufficient to meet the expenses. A considerable portion of the teacher's income, however, was derived from the Science and Art Department. The committee strongly represented to master builders the ultimate advantage that must result to the building trade by the mental training to the rising generation of workmen by the Institute, and requested them to follow the example set by some, who send their apprentices, and pay their fees. They also threw out the suggestion that some advantage in point of wages might beneficially attend the successful passing of the Government examinations, or securing one of the other prizes offered for competition. The report and balance-sheet were adopted.

FAILURE IN PORTLAND CEMENT.

Sir,—Can you or any of your readers inform me as to the cause of the failure in the Portland cement work that has been executed this year externally? Is it the fault of the manufacture or in the workmanship? If the latter, the remedy; if the former, who is responsible for the re-instatement of the work? Yours, obediently,

A Sufferer.

*** The failure, in numerous cases, is certain; and we shall be glad to have some explanation.

THE WALLACE MEMORIAL.

Sir,—I cannot sufficiently express my gratitude to you for the kindness with which, during many years, you have noticed my various works in glass-painting, as also the notice I find in the number of the *Builder* for Sept. 20 of the memorial window to Sir William Wallace, of Elderslee, executed by me for the Glasgow St. Andrew's Club, and placed in Paisley Abbey, in the immediate neighbourhood of the hero's birthplace. I feel sorry, however, to find that, in adverting to some verses recited by me on the occasion of the presentation of the memorial, you quoted as mine a modernised verse from Blind Harry ye Minstrel, who lived 100 years ago. You will see by a copy of the verses enclosed that the one is given within inverted commas, and the minstrel's name quoted at bottom. I trust, therefore, you will put me right with your readers, either by giving the poem entire, or stating the mistake that has unintentionally been made. My admiration for Wallace is as a hero who fought and died for his country's freedom. At Blind Harry's time the feuds and bitternesses between the North and South were endless, a state of matters now, thank Heaven, for ever changed. James Ballantini.

*** The mistake was not ours: in the report sent us (*Glasgow Herald*, Sept. 12th) there was no note, and no minstrel's name given besides Mr. Ballantine's own.

Clapham Junction.—Mr. F. D. Banister, the engineer to the Brighton Railway Company, has planned extensive works to be carried out almost immediately at Clapham Junction. Provision is made for new offices, waiting-rooms, gallery foot-bridge, and the contracts are about to be issued.

CHURCH-BUILDING NEWS.

Hoxton.—The new church, dedicated to St. Mary, in Britannia-street, Hoxton, has been consecrated by the Bishop of London. It stands in the midst of a poor and densely-populated neighbourhood, in which there has hitherto been a sad dearth of church accommodation. The total cost of the building has been between 7,000*l.* and 8,000*l.* The church was built by the Ecclesiastical Commissioners, the cost being defrayed out of the proceeds of the sale of one of the City churches. It is built principally of red brick, in a modification of the Italian style, and is capable of accommodating about 400 sitters. With the exception of the ceiling of the apse, on which a good deal of colouring and gilding has been lavished, the church is almost destitute of decoration, and the red brick walls of the interior do not present a very attractive appearance. It is, however, well lighted by means of large side windows, an east window, and eight windows in the apse, and can be heated in winter by means of hot-air apparatus. The architect was Mr. Ewan Christian, of Whitehall place; and the builders were Messrs. Manly & Rogers, of Regent's Park.

Sidford.—St. Peter's Church, Sidford, has been completed for opening. Sidford is a hamlet between Sidbury and Sidmouth. The edifice stands in the centre of the village, on the road to Lyme Regis. On the plan, the extreme length of the church is 108 ft., the width being 56 ft. It consists of nave, 70 ft. in the clear by 22 ft. wide; and north and south lean-to aisles of similar length, and 12 ft. wide respectively. On the east end of the aisle are the vestry and organ-chamber, 18 ft. by 10 ft.; and on the corresponding side is a small bell-chamber, 8 ft. by 6 ft. The chancel is 40 ft. by 21 ft. in the clear. The aisles are divided from the nave by an arcading of five bays. The church is entered by a north and south porch, and there is a priest's door at the south-east end, by which also the bell-chamber is entered. The height of the nave to the ridge is exactly 50 ft., and that of the chancel 42 ft. The bell-turret, standing immediately over the chancel arch, rises to an altitude of 72 ft. The style of the building may be termed Florid Early English, somewhat freely treated, perhaps. Externally, the walls are of brick, relieved by bands of Bath stone, and the dressings of the windows, of the doors, the copings, &c., are all of this latter material. The treatment of the walls, or faces, is of alternate brick and stone; the arcades, the chancel arch, &c., are of deeply-moulded Bath stone, and the dressings throughout are of Bath stone also. The roof is open, and springs from bold corbels in the nave, and from sculptured ones in the chancel. Those roofs are of pitch pine, stained and varnished. The side roofs are simpler than are those of the nave and chancel, and thereby increase not a little the majesty and importance of the central avenue. The seating throughout the nave and aisles is open. The windows lighting the body of the church have coloured glass freely introduced into them. They are the make of various firms, principally Messrs. Hardman, Wailes, and O'Connor. Religious emblems are worked into each. The east window, by Clayton & Bell, of London, has been erected by Mr. Bailey, of Cotford, in memory of two deceased sons. It represents the Ascension. The reredos is mainly composed of Beer stone, but Devonshire marble is largely introduced, all the panels, columns, &c., being of several varieties of that material. Except the stained glass and the tiles, the whole of the work has been carried out by local men. Mr. Stawbridge, of Sidford, has executed the mason-work; and Mr. Selway, of Ottery St. Mary, the soft stone-work. Mr. Daniels, of Sidford, did the carpentering, and the marbles are mostly from the neighbourhood of Torquay. The sculpture and the stone-carving were done by Mr. Harry Hems, of Exeter, and his assistants. The cost of the whole building has been about 5,000*l.*, due to the liberality of the Rev. G. T. Comyns.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Newcastle-upon-Tyne.—The church of the order of Dominicans, which has been built at the Red Barnes, Newcastle, has been opened for divine service. The church is situated near the North-Eastern Railway, and the building forms a conspicuous object in the view of Newcastle, especially as seen from the south side of the river. The foundation-stone was laid by Bishop Chadwick on the 14th September, 1869. The cost is about 9,000*l.*, irrespective of the site and adjoining grounds, which were obtained for about 4,000*l.* The edifice contains 1,000 sittings; and it is noteworthy that, before the building was commenced more than one-half of the cost had been subscribed in pence by the members of the St. Andrew's congregation, nearly all of whom are of the labouring classes. Many of them also worked during their leisure hours in digging the foundations, &c. The design of the church, which is by Mr. Archibald Dunn, of the firm of Dunn & Hansom of Newcastle, may be described as semi-Romanesque, and is an attempt to reproduce a style of Gothic architecture which is peculiar to the banks of the Rhine. There is absence of tracery, elaborate ornamentation, and moulding, but a solemn effect has been produced by massive construction and breadth of treatment. The church consists of nave, aisles, transepts, and chancel. The chapels of the Rosary and St. Joseph are in the transepts. The total interior length is 170 ft., and the width 67 ft. The nave and chancel are of the same width, 30 ft., and are separated by a lofty chancel-arch, 50 ft. in height. The light is obtained mainly from the clearstory windows, which are placed very high and form a continuous range round the nave and chancel. The internal height of the nave is 70 ft. The lower portion of the roof is panelled; the constructive timbers are allowed to show through the darkened space up to the ridge. The roof over the chancel is divided by arched ribs into panels. The sacristies are arranged as a large ambulatory round the semicircular apse of the church. The centre portion is projected beyond the rest, and contains the cope chest and the vesting-altar. At one end they are connected with the cloisters of the monastery, and at the other with the church. Another sacristy, joining is set apart for the use of the choristers and the whole, with the church and monastery forms a thoroughly connected range of building. In treating the interior of the church, the use of plaster has been avoided; the architectural features are carried out in stone, and the wall spaces are lined with a fine quality of white bricks, pointed with red joints. The effect produced is that of the decorations made use of in the thirteenth century. Only a limited amount of decoration has been introduced into the sanctuary, where the same simple treatment has been carried out, the ornamentation being stencilled on the bricks. The aisle and nave walls are lined with a dado of pitch-pine 5 ft. high. The benches are of the same material. The stalls in the chancel are of oak, with a small amount of carving. The seats of the choristers are placed in front of the altar. The altar is raised 10 ft. above the nave, is isolated, and stands in the chord of the apse. Built in at the back of the altar is a flight of steps to reach the expositorium, which (as unfinished) will be reared against the end of the apse, and will be an elaborate piece of stone carving, 25 ft. in height. From each end of the expositorium the reredos will encircle the whole circumference of the apse-wall, and consist of twenty-four niches, containing figures, nearly life-size, of the saints of the Dominican order. The nave and aisle floors are laid with polished York landings, with margins of red stone, and small squares of blue slates inserted. The north window of the west aisle is filled with stained glass, by Mr. Barnett, of Newcastle. The exterior of the church is of the stone of the district, built throughout in regular courses with large mortar joints. The roofs are covered with red Broseley tiles. A massive tower, situated at the north-west corner, and detached from the main building of the church, is carried at present to a height of 50 ft. The total height will be 175 ft., and it will be gabled on its faces, and finished with the low pyramidal roof peculiar to those towers. The most notable feature of the exterior is the composition of the west-end gable, which is 80 ft. in height. Placed high is a large rose-window, filled with four smaller circles, each supported on a shaft, with carved capitals. In the centre of the window is carved a dove,—the symbolical representation of the Holy Ghost,—descending on the heads of the twelve apostles, who are ranged in a series of niches immediately underneath. Below the figure of our Lord, in the act of benediction, stands prominently forward in the centre; while the chief apostles, St. Peter and St. Paul, occupy niches upon buttresses at each side. The general contractors have been Mr. Hudson for mason's work; and Mr. Wichello, for

penter's work. Mr. Moody, of Durham, has itted up the stalls and seats of the church. The painting has been done by Messrs. Henderson & Son, and the plumbing by Messrs. Russell & Davis. Schools, to accommodate 800 children, are planned on a site at the south side of the church. A house, at present standing on the east side, is to serve at present as a monastery. It is intended, however, to replace it with a suitably-designed building, connected by the cloisters with the church and schools. The buildings will then form an open quadrangle, the church and monastery forming the two sides, and the cloisters completing the remainder. The plan of the edifice (cruciform, and with transepts on each side of the nave) contemplates the addition of several chapels through arched openings on each side. Over the altar in the chapel of St. Joseph is a painting of the Immaculate Conception. It is an oil painting, by Alonzo Cano, formerly in a suppressed convent at Madrid, and the painting itself is a copy of the picture of Murillo which is in the Palais of the Louvre at Paris, and is valued at 10,000*l*. The picture in the new church of St. Dominic, at Newcastle, is valued at 2,000*l*. When the convents in Spain were closed, it became the property of the chaplain of the late King of Spain, Ferdinand VII., and it has been in the possession of his relatives until it was purchased by Mr. Pelegrin, a Spanish gentleman, who has for some time past been living in Newcastle, and by whom it has now been presented to the Church of St. Dominic. The church at present contains one organ, the choir-organ, which is placed in the gallery in the west transept. It is, however, intended to have a chapel-organ, to be placed in a gallery which will be erected for the purpose at the north end, and for which funds are being raised. The choir-organ has been built by Messrs. J. Nicholson & Son, Newcastle.

Books Received.

Lectures on Architecture. Translated from the French of E. Viollet-le-Duc by Benjamin Bucknall, Architect. Vol I., Lecture I. J. Clark, Stroud, Gloucestershire. 1873.

We are glad to find that we shall have an English version of M. Le Duc's lectures, and we offer Mr. Bucknall good wishes for the success of his undertaking. The work will consist of twenty lectures, in two volumes, largely illustrated. The first ten lectures treat of the nature and origin of art, and describe the early growth of architecture; and the last ten show the application which may be made of the ancient principles to meet modern requirements. The first lecture (printed in Paris) is very well got up, and has four page-illustrations. When the work is further advanced we shall look at it seriously.

VARIORUM.

Mr. Wyld has issued a map of the British possessions on the Gold Coast, and the territories of Ashantee and Fantee. There is reason to fear that it will be useful to have it by one presently.——Mr. Alfred Smee has printed, in a pamphlet form, his recent letters on "Milk, Typhoid Fever, and Sewage" (Collingridge, Aldersgate-street.)——The *Garden* says,—Dr. Toner, of Washington, advocates the establishment of "free parks and camping-grounds, or sanitariums for the sick and debilitated children of the poor of crowded cities during the summer months." "Such parks," says Dr. Toner, "should be free to all who have sick or debilitated children, and persons while there should be permitted to live in tents or cottages, and in such a style as their means and tastes justify, so long as they do not violate the laws of health or incommode their neighbours,—the main purpose of the institution being to secure by a healthy rural residence the restoration to health and the preservation of the lives of the children of the poor, suffering from, or threatened by, diseases incident to, and aggravated by, the excessive heat of summer in cities." The plan seems worthy of serious consideration, especially in America, where there are many healthy high grounds uncultivated.

New Pier at Ostend. — The Communal Council of Ostend has accepted the tender of Mr. Hendry, of London, for the construction of a new pier.

Miscellanea.

Opening of Wandsworth Bridge.—This new bridge has been formally opened for public traffic. The site on the Wandsworth side is immediately between the Old Wandsworth Pier and the Distillery, where there is a communication with York-road. On the opposite or Fulham side of the river the bridge stands between Hurlingham House and Chelsea Meadows, not far from the Imperial Gasworks, and leads out towards Walham-green. The bridge is constructed of iron, and consists in the first place of one continuous girder resting on cylinders filled with concrete, and buried deep in the river's bed. It is divided into five spans, one at each end of 113 ft. 6 in., and three in the stream of 133 ft. 4 in. each. The cylinders are of wrought iron, each 7½ ft. in diameter. Two of them form a pier. The abutment piers on either side of the river are of brickwork and masonry. The elevation of the structure affords a clear headway of 20 ft. above Trinity high-water level at the centre. The cylinders have been sunk to a depth of 14 ft. into the London clay, and have a thick bed of concrete laid under them. The main girders of the bridge are of the lattice pattern, 12 ft. deep. The bridge proper has been erected at the cost of between 11,000*l*. and 15,000*l*., but when the approaches, &c., are included the figures run up to from 35,000*l*. to 40,000*l*. The bridge has been erected from the designs of its engineer, Mr. J. H. Tolme, by Messrs. De Bergue & Co., as contractors, under the superintendence of their engineer, Mr. Mallalieu; the contractors for the approaches being Messrs. Bull & Sons, of Southampton.

Carpenters and their Pay.—On Thursday, Messrs. Jackson & Shaw, the contractors and builders of Earl-street, Westminster, were summoned to Westminster Police-court by Edward Butler, a carpenter, for not paying him at the rate of 9d. per hour for work done, he being a skilled operative.—Mr. Arnold gave judgment. He said the complainant entered the service on the 18th of August, and worked up to the next Saturday, claiming to be paid 9d. per hour, but the defendants paid him 6½d., and he sued for the difference. There was no contract, but he says, "I, as a skilled workmen, am entitled to 9d. per hour." The defendants did not dispute that skilled men were entitled to 9d., but alleged that complainant was not a skilled workmen, and only worth 6½d. per hour. The complainant relied for his case on the fact that he had duly served his time to a master in the country, and had worked for two London firms and received full pay, and he understood that unless there was a special contract he would be entitled to full money, and if he were incompetent they should at once have discharged him, and not have kept him till the end of the week, and put him to skilled labour. On the other hand, the defendant said that it was the custom in large firms to take a man without any stipulation, and at the end of the week pay him what he was entitled to; and in this instance, his work, on examination, was found to be worth 6½d. In this case the question was the value of the work, and how it was ascertained. The question was one of fact, and purely so. Had the complainant established that his work was worth the higher rate of wages? Under all the circumstances, he (Mr. Arnold), being of opinion that he had not done so, dismissed the summons.

Charge against a Sheffield Master Builder.—At the town-hall, on Wednesday, before the stipendiary magistrate, a charge of a serious character was preferred against Mr. John Helliwell, of Monmouth-street, master builder. Mr. Chambers appeared to prosecute; Mr. Clegg was present on behalf of the defendant. The information stated that the defendant had maliciously and unlawfully committed damage to certain real property, belonging to Mr. Henry Egginton, by pulling down several stoves and ten doors, in some houses erected by the defendant for him, and thereby doing injury to the extent of 20*l*. It appeared that Mr. Egginton made a written contract with the defendant to build certain houses in Mushroom-lane, for 315*l*. Of this, Mr. Egginton paid him 283*l*. on account.—Evidence was given in support of the charge, and eventually the stipendiary decided to adjourn the case for a few days, in order that the evidence might be completed; and he ordered the defendant to be bound over in 100*l*., and two bonds of 50*l*. each, to appear again to answer the charge.

How to Store Fruit.—Some of our readers will be glad to learn the instructions given by the *Gardener's Magazine* on this point:—An expensive structure is not required, for the fruit may be kept exceedingly well in a dark room in which it will not be exposed to sudden changes of temperature. A cellar is a capital place, provided it is perfectly dry and dark; but, as usually constructed, cellars are too damp and incapable of being properly ventilated. If a place is built expressly for fruit it should, in dry soils, be partly below the general level, with the soil banked up against the walls. On wet soils it may be built upon the level and a bank of soil made against the walls. The roof must be double, or covered with a good thickness of thatch, which will materially assist in maintaining an equable temperature. The fruit should be kept in perfect darkness; but, to facilitate the examination of the stores, windows provided with shutters should be fixed at intervals in the roof or elsewhere, according to the style of the house. The fruit-room should be in a shady position, for a very considerable number of soft fruits ripening in summer are materially improved by being placed in a cool room for a few days, and in some cases the season of a particular fruit may be prolonged considerably by a portion of the crop being gathered, and then placed in a cool dry place or a dry cellar. With regard to the internal fittings, it will suffice to say that shallow shelves or drawers of open lattice-work are preferable for laying the fruit upon.

Window in Westminster Abbey to George Herbert and William Cowper.—The Dean of Westminster proposes to place in the Abbey, in the chapel where is the monument to William Wordsworth, a memorial of the two poets, George Herbert and William Cowper, both educated at Westminster School. It was the intention of the Dean to include a third name, that of Charles Wesley, also an old Westminster boy, but this is now superseded by the erection of a statue, near that of Isaac Watts. The *Leisure Hour* says, before any public announcement, a circular was issued to a few friends likely to take interest in the proposal. One of these circulars having come into the hands of an American, Mr. G. W. Childs, the proprietor of the *Philadelphia Ledger*, Mr. Childs asked the privilege of bearing the whole cost of the proposed memorial. Dean Stanley responded to the generous offer in the same spirit in which it was made. It is a happy incident of international courtesy, in regard to names which are held in grateful remembrance in both countries. As an American, Francis Boott, of Boston, had the honour of placing the monument to Henry Kirke White at Cambridge, so the name of another American, George William Childs, of Philadelphia, will be associated with the Westminster memorial to Herbert and Cowper.

A New Hospital.—The business portion of the new premises of the Western General Dispensary has been opened for the treatment of patients. The new premises are situated at the corner of Marylebone-road and Stafford-street, close to the Edgware-road Station of the Metropolitan Railway. The building is in the Gothic style, Mr. Saville being the architect, and Messrs. Jackson & Shaw the contractors. There are about thirty rooms, two of which are waiting-rooms, three surgeons' rooms, and three physicians' rooms. The design of the charity, which was founded at the old premises in 1830, is to give medical and surgical aid to the sick poor, and to visit at their own homes such as are unable to attend at the dispensary, provided that they reside within one mile of the institution.

New Hoe Perfecting Machine. — The regular sale of *Lloyd's News* has reached nearly 600,000 copies every week, and Messrs. Hoe & Co. (who now carry on a very large engineering establishment in London) have invented a new machine that will print two entire copies of *Lloyd's News* on a sheet, and complete over 20,000 papers every hour. The paper is printed from a roll, each one being about 2½ ft. in breadth, and containing a length of over four miles and a half, equal to 10,000 papers. The machine occupies a space of about 20 ft. long, 6 ft. wide, and 7 ft. high. The great improvements that have been introduced into the process of stereotyping during recent years, enable the printers to cast any number of plates very rapidly, so that many machines can be started, and the editions printed in the shortest possible space of time.

The Maidstone Museum. — The public opening of the Brenchley gardens, together with the new wing of the Charles Museum, Maidstone, have taken place. The area of the garden is somewhat over five acres, and the ground has been laid out in lawns and terrace-walks by Mr. Mackenzie, landscape gardener to the Metropolitan Board of Works. At the entrance of the gardens is the head gardener's residence, while one end of the grounds is ornamented by the band-stand, and in the centre is placed some marble statuary (Acis and Galatea), the gift of Mr. H. A. Brassey, M.P. The new wing, which is red brick, on a stone foundation, consists of two halls, one considerably larger than the other. The larger hall contains Mr. Brenchley's collection of *virtu*, statuettes in bronze, terra-cotta ornaments, &c., and a marble bust of the donor. The smaller contains a valuable collection of birds from all parts of the world. These birds were obtained at great expense and trouble by Mr. Brenchley, in his lengthy wanderings over the face of the globe. This room also contains a few specimens of the smaller foreign animals, and a goodly number of butterflies, moths, &c.

New Church of St. Gabriel, Newington. The foundation-stone of the new church of St. Gabriel, Newington, has been laid by the rector, the Rev. W. D. M'Lagan. The church is built on a portion of the graveyard adjoining the parish church, which is shortly to be removed in order to widen the roadway at Newington-butts. St. Gabriel's is intended to be only a mission church, as the parish church will be replaced by a finer edifice, to be erected in Kennington Park-road. The mission church will be a plain structure in the Gothic style, and will be built almost entirely of red brick. The length from end to end is 119 ft., the nave being 76 ft. long and 25 ft. wide, and the width of the aisles 11 ft. each. The church will accommodate 600 people, and will cost 4,000*l.*, for which the rector has made himself responsible.

New Masonic Temple at Philadelphia.—A new Masonic Temple has been in course of erection for the past five years in Philadelphia. The building extends 250 ft. east and west, whilst its breadth is 150 ft. The cost of the ground was 156,793 dols. The building is now nearly completed. The total cost is 1,475,000 dols., including cost of ground, the money having been raised chiefly by a Masonic loan made under authority of an Act of the Legislature. The building is practically two stories in height, with a grand central tower 250 ft. high, and several smaller towers and turrets at prominent parts of the structure. The new temple was recently thrown open to the officers of the Knights Templar and Grand Lodges, and brilliantly illuminated.

A Substitute for Coal.—Among the anomalies of the fuel question, the most striking consists in the fact that the supply of petroleum from the Pennsylvania wells is now at a rate which has reduced its value to 1d. per gallon, and that yet no methods have been brought into general use to utilise this product, either for manufacturing or domestic purposes, so as to influence the price of coal. The present yield of the region is estimated at 30,000 barrels a day, and new discoveries are constantly made. An impression is becoming general that the existence of this fuel is as extensive as that of coal itself, and its utility is finding recognition in China and Japan, whither considerable shipments are now in progress.

Herne Bay and Canterbury.—A meeting has been held in Canterbury to promote a scheme for the formation of a railway from Canterbury to Herne Bay. It was stated that the line could be formed for 45,000*l.*, three-fourths of which a contractor had offered to take in shares, leaving only 10,000*l.* to be subscribed for by the public. A resolution was agreed to affirming that the railway in question would be of material benefit to Canterbury and Herne Bay, and pledging the meeting to use its utmost endeavours to carry out the project. The inhabitants and owners in both places should do their best to promote the undertaking.

Proposed Halls for School Board Schools. Amongst the subjects which on Wednesday came before the London School Board was a motion by Mr. Smithies, that in all schools to be erected in future there should be provided a central hall, or room sufficiently large for the assembling of all the scholars. On a division, however the previous question was carried by a considerable majority. It is said these halls would cost a quarter of a million sterling.

Welsh Workmen and the University College for Wales.—A Festiniog scholarship of 20*l.*, tenable for two years by an inhabitant of the district, and a Commercial Travellers' scholarship of the same amount, are to be competed for at the opening of the University College for Wales, at Aberystwyth, on October 8th. The Festiniog scholarship has been established by the inhabitants of the district, chiefly quarrymen, and is a remarkable illustration of the wide-spread belief in education which exists among all classes in the principality. The other scholarship is one of several which are being founded by the commercial travellers of North and South Wales.—*Cambrian News.*

Discovery at St. Margaret's Church, Lynn.—An interesting discovery has been made in clearing out the last few inches of earth from the nave, to lower it about 5 ft. A mass of stone was struck upon, and it proved to be a large part of the Early English spire, which, in the eighteenth century, fell from the south-west tower, demolishing great part of the nave; which led to its being wholly pulled down and rebuilt in its present debased style. The stone is lying where it fell,—towards the north-east, and it includes a large quantity of carved mouldings, gargoyles, and pinnacle work, from which a restoration of the tower and spire might easily be made. The "banqueting-hall" plaster-work ceiling of the nave has been pulled down.

Godalming.—There is no doubt that the erection of the Charterhouse schools has already been the cause of considerable good to the town and trade of Godalming, and there can also be no doubt that in the future it will have a very wide effect upon the vicinity. It is supposed that in the course, say of a quarter of a century, quite a little city of villas will have sprung up in the neighbourhood of the schools. This view seems to be a highly feasible one, for at the present moment, within 300 hundred yards of the schools four buildings are in progress which give employment to about 500 workmen; the respective contractors being Messrs. Bull & Son, Southampton; Mr. Harris, Woking; Mr. Putney, Dorking; and Mr. King, London.

Extension of the District Railway.—The operations under the "Hammersmith Extension Railway Act, 1873," if not actually begun, are about to begin with as little delay as possible. Messrs. Barlow, Wollaston, Pym, and Vignolles, are the originators and proprietors of the new undertaking, which is the construction of a line of railway 1 mile 7 chains and 10 links in length, commencing by a junction with the District Railway at West Brompton, in the parish of St. Mary Abbott, Kensington, and terminating at the Broadway, Hammersmith. The capital of the new company is fixed at 244,444*l.*, to be issued as stock, and the same, when issued and subscribed for, is to be paid up in full.

Opening of a Working Men's Club at Carlton.—A club of this description has been opened at Carlton, near Nottingham, by the Earl of Carnarvon, who, in his address, commented upon the advantages which the building afforded, stating that it contained a lecture-hall and rooms for reading, writing, refreshments, and smoking. There were some people who viewed the amusements provided with distrust, but he did not. He heartily concurred in them. Having descanted on the importance of sobriety, his lordship went on to say that he valued these clubs because they brought about a kindly and friendly co-operation of different classes with each other.

Association of Municipal and Sanitary Engineers and Surveyors.—A meeting of the district committee for the Midlands will be held at the town-hall, Leamington, on the 18th of October, when it is proposed to make an inspection of the sewage works and Sewage Irrigation at Leamington; after which to drive over to Warwick and inspect the sewage works and farm belonging to that town, returning to the town-hall, when, if time will permit, short papers may be read by members; selecting for such paper any of the "examples of subjects" suggested by the president in July of this year.

Death of Mr. Robert Edgar, Architect.—On the eve of going to press, we regret to have to announce the sudden and unexpected death of Mr. Robert Edgar, of the London School Board, from apoplexy.

Opening of Elswick-park, Newcastle-upon-Tyne.—This new west-end park for Newcastle has been opened. It is proposed, also, to have a park for the east-end. Newcastle is singularly deficient in open spaces and recreation-grounds. A charge of one penny for admittance is made at present; monthly tickets for 2s., or family tickets for 10s.

TENDERS

For rebuilding premises No. 43, Bow-lane, E.C., for Mr. William Vivian. Mr. Chamberlain, architect. Quantities by Mr. S. B. Wilson:—

Myers & Sons	£2,307 0 0
Hawtrey & Sons	2,096 0 0
Brass	2,025 0 0
Gammon & Sons	2,010 0 0
Fish	1,972 0 0
Morter	1,937 0 0
Hill & Sons	1,919 0 0
Patrick & Son (accepted)	1,839 0 0

For building four houses, with shops, in Sandy's-row, Spitalfields, for the Jews' Free Schools. Mr. Chamberlain, architect. Quantities by Mr. S. B. Wilson:—

Myers & Sons	£2,993 0 0
Patrick & Sons	2,686 0 0
Fish	2,657 0 0
Ashby & Sons	2,639 0 0
Morter	2,629 0 0
Brass	2,613 0 0
Kiddle & Son	2,601 0 0
Pritchard (accepted)	2,563 0 0

For shops and offices in Queen-street, E.C. for Messrs. M. & S. Hyam. Mr. Chamberlain, architect. Quantities by S. B. Wilson:—

Myers & Sons	£10,995 0 0
Patrick & Son	10,374 0 0
Holland & Hannen	10,195 0 0
Lucas, Brothers	10,080 0 0
Hill & Sons	9,949 0 0
Fish	9,800 0 0
Trollope & Sons	9,722 0 0
Pritchard	9,479 0 0
Morter	9,123 0 0
Brass	9,086 0 0

For rebuilding No. 35, Great Russell-street, for Mr. Cutter. Mr. Finch Hill, architect. Quantities by Mr. S. B. Wilson:—

Myers & Sons	£3,187 0 0
Newman & Mann	3,075 0 0
Pritchard	2,736 0 0
Howard	2,694 0 0
Williams & Son	2,682 0 0
Killby	2,656 0 0
Morter	2,636 0 0
Patrick & Son	2,496 0 0

For rebuilding the Duke of Clarence, St. Pancras, for the City of London Brewery Co.:—

Pain	£2,585 0 0
Outhwaite & Son	2,362 0 0
Carter	2,270 0 0
Taylor	2,227 0 0
Fox	1,989 0 0
Lascelles	1,897 0 0
Thompson (accepted)	1,840 0 0

For cottage, Rush-green-road, Romford, Essex, for Mr. A. Elves. Messrs. T. & W. Stone, architects:—

Langmead	£420 0 0
Orpin	390 0 0
Christopher, Brothers	374 0 0
Hinds (accepted)	349 0 0

For Newent sewerage. Mr. Curley, engineer. Quantities supplied:—

Welsh	£2,716 0 0
Mackay	2,438 0 0
Peters	2,298 0 0
King & Godwin	2,204 0 0
King	2,100 0 0
Spring	1,942 0 0
Griffiths	1,845 0 0
Meredith & Lee (accepted)	1,657 0 0

For schools for Wymondham School Board, Norfolk. Mr. John B. Pearce, architect:—

Spooner-row Schools.

Ketringham	£1,340 0 0
Clarke	1,271 18 0
Withers	1,184 0 0
Colman & Woodbine (accepted)	1,063 10 0
Nelson	1,028 19 0

Silfield Schools.

Clarke	£471 12 0
Withers	372 10 0
Colman & Woodbine (accepted)	426 5 0
Nelson	375 10 0

For a pair of labourer's cottages on the Stoke Park Estate, Guildford. Mr. Henry Peak, architect:—

Pearce & Clark	£339 0 0
Loe	269 0 0
Mason (accepted)	260 0 0

For two cottages on the Down-place estate, Guildford. Mr. Henry Peak, architect:—

Nye	£378 0 0
Goddard & Son	362 0 0
Mason	368 0 0
Strudwick (accepted)	362 15 0

For additions to the Duchess of York, Walworth. Messrs. Truman, Hanbury, & Buxton. Mr. W. Williams, architect:—

Ansley	£445 0 0
Marr (accepted)	442 0 0

For alterations at the City of London, City-road. W. E. Williams, architect —

Ennor	£510 0 0
Beeton	497 0 0
Ansley	470 0 0
Marr (accepted)	444 0 0

The Builder.

VOL. XXXI.—No. 1601.

"A National School of Art."

AN article in our pages* under the above title has elicited some discussion which we have been glad to receive. The subject is a large and important one; none more so, we believe, to the best interests of art in England at the present time, which cannot be readily exhausted or disposed of, and which would have admitted of a far ampler exposition than we were able to give it. Though we may, perhaps, claim with our correspondents to have somewhat "intently studied the subject," we feel that no such vantage-ground has yet been reached in art-matters in England as entitles any to speak with much sense of certainty or authority; and we are, therefore, quite conscious that all which can be advanced must be regarded as tentative and suggestive, and the expression of individual opinion only.

Certain objections have been urged against the conclusions arrived at in the article referred to, which it may be serviceable briefly to notice, though in the course of that and preceding articles to which it was the sequel on the recent controversies concerning the state of English Architecture which have appeared in some sections of the press, they have been more or less anticipated.

Referring our readers to these articles for the review and examination we gave to the whole question, it will be sufficient here to state that, while our reference throughout was primarily to architecture, yet our statement and application of principles was purposely made discursive enough to embrace the issues of all art, and it is apparently in this wider sense that our correspondents have accepted it. From this point of view our meaning, perhaps, would have been clearer had we adhered to the formula, "An Art University," which would have saved any misconception arising from the use of the more restricted words "National" and "School;" though it must be borne in mind that it was to the history and development of our Modern Architecture, its present status, and the conditions by which it has become surrounded, that our argument had the largest application.

It would only be needlessly to repeat ourselves to go over the ground in regard to the history of our modern art, and the adverse influences against which it has had to contend, which induced us to express the conviction that what was now really needed was a more *definite organisation* of art for all the purposes we set forth, not as anything new, but as accordant with felt needs which were increasingly finding expression in all quarters of the art-world. In adopting the University in relation to other learning, as the type of what we believed to be required for art, we distinctly meant a Seat of Art-learning; a Central Home of Art, where its study and pursuit could be carried on and sustained in continuous growth from age to age in a manner now unknown to us.

In saying that it would be an immense gain to English Art to endeavour thus to aggregate all the existent art-faculty of the country worth cultivating; *that in the combination of original, creative capacity with combined exhaustive study of all the technique of art and the subtle problems in which its successful expression was involved lay all the possibilities of the art at our command*; that to afford a tribunal of judgment which would give a ready recognition to merit alone, and before which genius could win its true status, honour, and reward, while mediocrity would wither,—we scarcely expected to meet with much dispute or argument; but objections *have* been urged which, however, seem very much confirmatory of the positions advanced by us.

The objection of "impossibility" to such a scheme as that so barely outlined by us, from "the sectarian conditions" of English education and culture, more especially in art circles, the hostile camps, the divisions, jealousies, &c., seems a strange one, inasmuch as the hope of such a scheme would be that by raising art to a higher level freed from the causes in which these influences have their rise, they would become healed and cease; art would be followed chiefly for its *own* sake and advancement, and not under the immediate pressure of "getting a living," "securing popularity," &c., which now necessarily beget the jealousy, the isolation, rivalry, and sheer individualism, in the sense of personal distinction, which form the atmosphere in which art, whether architectural or otherwise, now too much exists. And further the objection of "impossibility" would lie against all attempts at organising any system of study on a similar basis, and could only be tested by an actual attempt at realisation. Experience in all departments of learning and science invariably proves that at a certain stage of culture the means now advocated have always been found desirable and successful.

The objection that we have abundant agencies and existing machinery for the cultivation of art, which neither cure the evils complained of, nor compass the ends in view, is a pointless one, inasmuch as these differing very largely from the remedy contemplated, *their* comparative failure proves nothing against a scheme with which the analogy is so slight.

A further objection is that we want no "forcing-system" for art. Here we think the mistake is direct. Nothing could be further from all thought of "forcing" than the calm, measured, perfected cultivation of art, and the registry of its progress and best results which would be the outcome of the endeavour we suggest, in the place of the feverish competition and restless striving after novelty which are the inevitable characteristics of our art under present unhealthy influences and conditions.

The last objection we have to note is that the art which we have is scarcely worth cultivating at all, inasmuch as we have been "grafting where we should have been growing," and that it is in consequence "hybrid," and "unsatisfactory to an advanced culture." This may be very true, but as we are only just beginning to find it out, it is difficult to say what other course could have been pursued on the sudden awakening to the fact,—scarcely a century ago,—that we had no native art at all, than a resort to the first style of art which offered itself. We have continued in a course of "revivals" and imitations, not without much success, and original treatment, proclaiming no lack of native art-faculty, but the very reverse, yet it must be confessed, without much definite progress, or the discovery of such fixed principles in art as should be the *nuclei* of further advance and more original development. But when we are told that we are and have been all going wrong, that we must "grow our art from the right seed," must have a *tabula rasa*, in fact, and begin *ab origine*, we feel that we have reached an optimist point of view, and fail to grasp what is intended, and we anxiously ask "How is all this to be brought about?"

In the mean time we have to deal with the *actual* condition of things, with the art of the England of to-day, which has reached an extraordinary and exuberant growth, and which cannot be ignored or swept away, but which certainly needs checking, pruning, and carefully cultivating upon a very different system than has hitherto prevailed. This is a practical issue which will not conflict with any endeavours to "sow the right seed and grow a true national art"; on the contrary, looking at the fact that among the Modern English art is *not* a spontaneous growth,—not a felt need of our general national life,—that it has been and must be cultivated amongst us more or less as an exotic—that the taste for art must grow by that which it feeds upon;—it seems to us that the only "possibility" for true art is its cultivation in a recognised centre of influence from which a permeative effect would go forth gradually through the land, and that the hope of sowing broadcast the seeds of art, "to grow with the growth of the national intellect," &c., is a dream of very doubtful realisation, and opposed to all we know of art-development, ancient or modern, which we still contend was the product of distinct genius in harmony with the most scientific and technical cultivation imposed by laws in optics, &c., which *must* be discovered and observed if art is to be anything but the aimless, imperfect thing, scattered as to its principles and progress, which we now see. The very elements of artistic expression are still, as to their scientific definition, groped after by us almost in vain. The laws of form and proportion by which the eye is satisfied and rests in the sense of a realised beauty, what do we definitely know of them as fixed principles in architecture, ornamentation, &c., and, though happily now with less uncertainty, the same may be said of the harmonic relations of colour, of the perspective relationship, of the varying aspects of a building and the influences of light and shade, as the great factors in effect, whether of architecture or sculpture.

It may be also perfectly true that art was "a growth of centuries" in Ancient Greece and Mediæval Europe; but there is *no* analogy between the conditions of its cultivation and excellence in those epochs and our own. Among the Greeks it became an instinct of the national life, producing fruits which have ever been the wonder and envy of the cultured world, but by what methods we know not. In Italy exceptional conditions prevailed, and so on throughout other periods when art has culminated in surpassing efforts. We of to-day inherit some of these results, which overshadow and overawe our own weaker strivings; and whether to discard all the past—which it seems we can only distantly imitate, with no hope of rivalling—and strike out a course of our own, is just the problem with which we have hitherto been too timid to grapple.

But, after all the consideration we have been able to give to the subject, we retain the belief that living art in any nation only co-exists with that peculiar innate faculty we call genius, which finds in art its power of expression, and that in the combined operation of this as its source and directing cause alone lies the possibility of a National Art.

We might find endless practical illustrations of the advantages to be derived from making art its

* See p. 657, *ante*.

own judge and the master of its own honours and rewards, instead of offering itself, as now, to all the fortuitous influences of public appreciation, criticism, and patronage, which cannot, for very substantial reasons, be despised, but which are yet, too often, degrading influences; and we are still of the belief that under all the circumstances now affecting the status of art in England, and more especially in regard to architecture, that the causes we have indicated in former articles as at the bottom of past misdirected efforts, undeniable failures, and abnormal results, are practically true within their range, and would find effectual removal by the scheme we have suggested of such a National School of Art, or University, as should, by the extent and thoroughness of its cultivation, its examinations, degrees, scholarships, exhibitions, competitions, and every order of honour and reward, perfect, as far as possible, such art-products as the country was capable of. An ample foundation and generous endowment, with the determination not to start with "difficulties" and "impossibilities," but to sink all these in the high aim of advancing art to an hitherto unachieved dignity of position and success, seem to be the grand requisites for an experiment which we believe the history and development of modern English art show to be its one necessity, and which would be crowned with more satisfying and important results than we can now possibly anticipate.

A FEW WORDS TO NORWICH: APPLICABLE TO SOME OTHER PLACES.

At the workmen's meeting in Norwich, organised as usual during the congress of the Social Science Association,—a magnificent assemblage of some 2,000 persons, the sheriff presiding,—Mr. Godwin, whose name was the last on the list of appointed speakers,* said, we have heard something of various parts of the world from the different speakers who have eloquently addressed you, but I propose to confine myself to a few sentences concerning Norwich. At starting, however, I think it necessary to say, in no spirit of egotism, but because I want your confidence,—because I want you to believe that I am not dealing with a subject with which I am unacquainted,—that I have for many years made it my duty to examine seriously into the condition of our towns, and to set forth their shortcomings with the view of assisting in obtaining remedies for the sad state of things found to exist. I am not speaking for the sake of speaking, but in earnest hope that some good may come of it. An unpractised stranger entering your quaint and interesting city, and visiting its cathedral, the noble result of the piety and skill of your ancestors, which shows the handwriting of 800 years, and tells a story of great interest to those who have learnt the language in which it is written, might be excused if, noting the open spaces with which the place is dotted, and the appearance of the principal streets; and hearing of the large sums of money recently spent on sewers and other works, he came to the conclusion that little more was required to be done to protect the health of its inhabitants. If he stopped there, however, he would make a great mistake. Let him extend his walk; let him go to the courts in St. Stephen's Back-street (Pipe Burner's-yard, Unicorn yard, and others), and he would see there ruined tenements, broken paving, full of reeking offal, rooms scarcely high enough to stand upright in, without any openings at the back for ventilation, and filled with people existing without any of the conditions necessary for healthful, vigorous, and happy life. In the last-named yard he would find one "closet" doing duty for eight houses full of people. As to pavements, one word in parenthesis. Some will recollect how Coleridge describes Cologne, that "town of monks and bones," as having—

"—— Pavements *fanged* with murderous stones."

No milder words would properly describe the pavement in the worst parts of Norwich, and it should be remembered that this is more than a question of comfort. It is not merely that such pavements wear out shoes and tempers, but they retain filth dangerous in decomposition, and productive of most evil consequences. Then let the visitor go to the other side of the city,—to Cowgate-street and Pockthorpe,—let him go into Cook's-yard, Queen's-yard, Ship-yard, or Dial-yard,—I had almost said "*Die all yard*." The state of things there is abominable and terrible. These courts are full of filthy smells. In one of the yards, which it is unnecessary to specify, because I am unwilling to annoy owners or the corporation more than is necessary, the pump which supplies eight or ten families stands close to a wretched cesspool, called an "accommodation" for fourteen families,—a cesspool with a stick across the top of it. In another of the yards a woman told me that no one could drink of the water of the pump without being ill, and therefore no one did drink of it, and they were obliged to beg, borrow, or steal water as they could. I was not surprised to hear that, or to hear that when small-pox visited the city these yards were decimated. So they would be again should an epidemic at any time break out. In another court there is an open midden within 5 ft. of the door of a room occupied by a woman and four children. This woman said, "The children are sick, sir, every day." Little wonder; for I myself felt sick and depressed for the remainder of the morning, and went away with a sore throat. Fortunately, people are nowadays punished for adulterating food; they ought also to be punished for compelling their fellow-creatures to live in adulterated air, or to drink adulterated water. What we want are clean air, clean food, and clean water, which at present the inhabitants of none of these courts or yards can get. I repeat, it is not my desire to annoy the authorities, but they must not be allowed to suppose that health and life are not being sacrificed in this city. Life and health are worth money: they are worth all the money. Put life and money into opposite scales, and money must kick the beam. It is only because we trust to the chance that both may be retained that we hesitate to spend one to secure the other. The corporation has done a great deal, and I trust they will be in no way deterred by the failure of the sewerage works, which is simply a failure in construction, and a matter of money. It is to be hoped they will not give up the plan they have adopted, because I thoroughly believe the best plan for the disposal of sewage is by irrigation. It will all come right in the end. Several other important points for comment press upon me, but the limit of time prevents me from going on. The infant mortality of the district, for example, is terribly great. I have not returns from Norwich itself, but a Blue book issued by the Lords of the Privy Council, and which, like most Blue books, remains unopened, shows that in seven districts round the Wash, taking in part of Norfolk, about 23 infants in every 100 die, Norfolk being the highest in the list. I should like to say a word or two, also, as to the cultivation of the Beautiful, in respect of health, the value of scientific and artistic knowledge: not merely a money value, although that is considerable, but as opening the mind, affording means of delight, and contributing to make existence happy. Innocent recreation is no small thing. The cry of the Roman people was Bread and the Circus, and this has been the cry of human nature ever since, and everywhere wise statesmen will aid in providing recreation of an innocent and elevating character.

There is a higher life than the mere bread-and-cheese life: let us all strive for it with *Excelsior* for a war-cry. Only one word more. Do not expect to have things done for you: try to do them for yourselves: and when you are called upon to elect municipal officers, do not vote for those who merely promise to save your money by opposing all improvements and ameliorations: rather help those who have shown by their previous acts that they will strive, under Providence, to protect your health, advance your happiness, and save your lives.

* Lord Houghton, Lord Napier, Mr. Dudley Field (New York), Mr. G. W. Hastings, Mr. T. Brassey, M.P.; Mr. D. C. Heron, M.P.; Professor Hodgson; and Mr. Godwin.

Permanent Art Gallery for Warrington.

A local paper states that "a permanent art gallery for Warrington is a matter of something more than speculation. It has been some time known that Colonel Wilson-Patten, with his accustomed liberality, has offered land for an extension of the Museum buildings, which extension would afford room for the growing wants of that Institution, and an opportunity for the display of pictures already given, or hereafter to be given for the purpose. With the rapid growth of the town it is evident that the present Museum buildings will soon be inadequate to the wants of the Museum itself, and certainly inadequate for those extensions of its scope and purposes the times are calling for."

SANITARY AND EDUCATIONAL EXHIBITION AT NORWICH.

The new feature of the Social Science Congress, an exhibition of sanitary and educational appliances, first adopted at Leeds, two years ago, is considerably developed at Norwich, and bids fair to become of importance. The collection, in the Drill Hall, at Norwich, comprises 120 exhibits, including ventilation arrangements, improved stoves and ranges, filters, school fittings, drainage appliances, models of schools, and prisons, and other cognate matters. It was opened by the Sheriff, Dr. Bateman, with an excellent address, as a free exhibition, but the attendance soon became so large that it was found necessary to make a small charge during certain hours of the day, in order to lessen the pressure for those who really desired to examine the articles carefully, and with a purpose. A certain number of adjudicators have been appointed by the council, whose duty is to report on the various objects exhibited and advise as to the bestowal of certificates of approval in certain cases. Of the wisdom of this we are not quite certain.

Prominent in the Exhibition are Messrs. Doulton & Co., who have a goodly show of drain-pipes, traps, sinks, closets, and such like, for sanitary purposes, both in stoneware and earthenware. Their system of irrigation is worthy the attention of those interested in such things. They provide a main carrier of either the ordinary drain-pipe or as an open channel, the capacity of the latter being increased at pleasure by the addition of copings of the same material on each side. These communicate with the distributors by means of a sluice-valve, which may be regulated at pleasure. The Sgraffitto jugs first introduced about three years ago deserve especial praise for their variety and beauty both of shape and decoration. The painted tiles show considerable merit, and a great improvement is effected by the use of a particular body of clay, which avoids the harsh and crude appearance often given to works of this kind, however meritorious, when executed on purely white glazed tiles. This is especially noticeable in a design for mural decoration exhibited. Nor will we omit to draw attention to some bosses or discs in salt-glazed stoneware, the colours of which are very effective. The introduction of such a material and in such a form, which is absolutely impervious to the action of any atmosphere, or even to acids, and which admits of varied treatment, cannot but prove an acquisition to architects desirous of using colour in external decoration.

Messrs. J. L. Bacon & Co. stand well amongst those who send heating arrangements. They show a method, by hot-water apparatus at work, of warming schools, churches, and houses. In their system small pipes are used so as to require but little room, behind skirtings for example, and means are adopted to obviate the objections that have been made to the use of the close boiler. The cost of the plant and arrangements for heating an average house is put at 120*l.*, and the annual expenditure at about 5*l.* 10*s.* for the winter.

Messrs. Rosser & Russell are large exhibitors of warming apparatus and improved ranges and stoves, including a *reversible* fire-grate, by means of which the fresh coal is placed at the bottom of the incandescent mass, so that the smoke is consumed. Their diagrams include illustrations of the mode they adopted in warming and ventilating Guy's Hospital.

Mr. Pritchett, architect, sends three lengths of Doulton's 21-inch tubular drain-pipes, put together with *compressed* cement so strongly as to admit of their being connected before they are lowered into the trenches, and to withstand pressure so as to substitute them for iron pipes and save money.

Various other applications of the use of stoneware are shown: Blackmore's glazed earthenware cisterns; Kemp's improved chimney-pot, for preventing down-draught (worth trying); and others.

The indefatigable George Jennings is, of course, represented, sending his valve closet and trap in one piece of earthenware, fitted with automatic disinfector for the purification of the air, to disinfect all fœcal matters on the instant, the neutralisation of all sewer gases, and the disinfection of house-drains and sewers by the liberation of the waters used. We were glad to be able to notice the right appreciation shown at Vienna of what Mr. Jennings has done, and is doing.

Amongst the various traps exhibited we notice

the "Redcliffe Sanitary and Ventilating Trap," patented by Mr. McNeil Greig, the inventor, which is of stoneware, glazed inside and out, well arranged to check the entry of sewer gas to the building, and not expensive. There are many other interesting and useful matters, to which we would refer, but space fails us. Let us hope that the various inventions which are really good will be not merely looked at, but made use of.

ON SOME CRITICAL VIEWS OF ST. PAUL'S CATHEDRAL.

A few weeks since we noticed at some length the historic information in regard to the present St. Paul's Cathedral and its Gothic predecessors, conveyed in a compact and readable form in Mr. Longman's work recently published. The author of the "Three Cathedrals dedicated to St. Paul in London," supplemented the historical details given in his book by some comments on the architectural merits of the building, as well as by the reprint, wholly or in part, of several critical judgments on Wren's design, from various quarters. These, while they illustrate the diversity of opinions and tastes which have been exercised upon the architectural design of St. Paul's Cathedral, serve also to indicate how strong an interest the building has possessed for the different classes of critics, who have taken so much trouble in attacking or defending the weak points of the design.

Popular opinion, for the most part so favourable, even to the extent of enthusiasm, to St. Paul's, has had its fluctuations on this head, nevertheless. The earlier days of the Mediæval revival, for instance, brought obloquy to the hitherto venerated dome, which was branded as "Pagan;" and there were not wanting sterner (or more crazed) fanatics who openly averred that they would rejoice to see it burnt. These were, however, exceptional extravagances; and at the present moment we find even some of the most uncompromising adherents of Gothic architecture speak with respect and admiration of Wren's work, as regards its general design, at all events; the vials of their wrath being reserved for the details. That Wren was a gifted architect, working in a bad and artificial style; that the general grouping and outline are very noble, but some of the details commonplace, and that these faults were those of his day rather than of the architect himself;—this is, just now, about the sum of the professional verdict even of those who are most opposed to the Renaissance style; and this qualified judgment has largely permeated the non-professional mind. Previously, however, to the rude disturbance of their faith by Mediævalisers, the British public regarded St. Paul's as the central and culminating point of our native architecture, the perfection of which no right-minded or properly educated man would think of questioning. Mr. Longman, in his own comments on the cathedral, exhibits a revival of this old-fashioned worship, in all its fervour and simplicity. He thus commences his descriptive chapter of the cathedral:—"The knowledge of the most accomplished architect, combined with the descriptive powers of the most eloquent writer, would be required to do justice to the grandeur and magnificence of St. Paul's. I cannot pretend to even any approach to the first, and without it, had I the graphic pen of a Macaulay, it would be hardly practicable to paint in words a building the vast extent and noble proportions of which stand in the way of its appreciation by uninstructed minds" (p. 163). The author goes on to say that he has availed himself of the writings of "accomplished scholars" in his description, while he appends in a separate chapter all that has been said in the way of fault-finding by architectural critics of any standing.

The first page of the description touches on a point of difference between critics, viz., as to the introduction of the north and south chapels and their effect on the exterior design. Mr. Longman quotes from Mr. Wightwick's paper on "the genius and architecture of Sir Christopher Wren" (read at the Institute of Architects, May 30, 1859) some remarks entirely in condemnation of these "excrescences," as they are there termed, especially in regard to the longitudinal faces of the design. Without entering into the question how far their existence is entirely owing, as is stated, to the interference of the then Duke of York and his desire for a building prepared for the re-establishment of the Catholic ritual, it may be questioned whether, on the whole, this additional mass of building in connexion with the west end of the structure is not an advantage when seen in perspective, though when drawn in flank elevation, it bears out Mr. Wightwick's remarks, in so far as "destroying the vertical emphasis of the towers." A Gothic architect could have dealt very well with such an addition, and have made it a manifest improvement. The difficulty in Wren's case was that his principle of design compelled him to carry up these subordinate chapels to the full height of the main structure and carry all the architectural "scenery" of the upper portion round them, so that they became unduly magnified in importance. But it may be a question whether the towers, if left free to the ground on three sides, would not have been rather wanting in mass, for their height; and "vertical emphasis," after all, is not what we most look for in a Classical design. Internally, the gain in architectural effect from the chapels will scarcely be questioned by any one.

The dome, according to Mr. Longman, "is by far the most magnificent and elegant feature in the building, and rises from the body of the church in great majesty." Without questioning the sentiment conveyed (though the manner of it be rather like a sentence from a young lady's school essay), it may be observed that one becomes more impressed with the merits of the existing dome on comparing it with the design which Wren originally made as the final one for this central feature, and which is reproduced at p. 113, with the facsimile of the signature of Charles II., authorising it as "very artificial" (*i.e.*, artistic), "proper, and useful," which at all events is more than could be said for his most sacred majesty himself. Nothing could be more significant of the utter carelessness of the king as to the architectural development of the building than the fact that Wren carried out the dome as it stands, apparently without opposition, though he had pledged himself to a design utterly different, and from which he had been formally forbidden to deviate, except in matters of detail. Architecturally considered, it is somewhat difficult to credit the two designs to the same person, so exceedingly inferior is the signed one to that executed. Wren seems to have been haunted with the idea that something in the shape of a spire would be expected, and must be provided, to replace the spire of the old cathedral. Accordingly, he shows a segment of a rather flat dome rising from the crossing, upon which is placed a lofty cupola, with its own domical covering (of rather elevated pitch), nearly three-fourths the width of the crossing; which, though it certainly could have been safely constructed by treating the intrados of the lower dome as a cone, or something near it, looks painfully insecure externally, standing upon the flat curve of the lower dome. The upper dome terminates in a tall spire arranged in stages, diminishing telescope fashion, and with a railing round at each stage; on the whole, looking a good deal like a Chinese pagoda. This drawing lends some colour, it must be admitted, to doubts which have sometimes been raised as to how far the design of the existing dome really is Wren's original idea, or what proof we have that it is; the last authentic drawing being so greatly inferior. Perhaps the resemblance in type between the "Kensington model" dome and the present one may be a sufficient set off against this; at all events, it is little short of a national boon that the design approved by the Royal signature was so signally deviated from. In one respect the dome of the "Kensington model" is superior to the present one, in that the buttresses at the base of the dome are openly shown and treated as buttresses, instead of being masked, and form, with their curved outline, a very happy instance of an essentially Gothic feature being adapted to a Classic design. As an instance of the correct architectural expression of construction, this is superior to anything in the existing cathedral. And as to the plan of the Kensington model, it must be regarded, on the other hand, as a national loss that this plan was *not* carried out. Its capabilities in regard to internal effect would have been splendid, and it would have afforded a unique instance of a congregational cathedral with a congregational plan.*

In external effect we cannot regard the Kensington model, considered as a whole, as equal to the present cathedral; but the defect lies chiefly in the weak and somewhat pointless treatment and composition of the *projecting* portion. The main part of the edifice would have been susceptible of a grander effect than the present cathedral presents, with some modifications in detail; the use of the four great horizontal curves on plan, forming abutments to the dome, is a grand instance of the combination of structural and architectural design. But it would have required a broader and bolder treatment in regard to the lesser architectural features, and we may concur partially in Mr. Fergusson's judgment (quoted at p. 112 of Mr. Longman's book) that this design is materially injured by the "clumsy attic, and by the arbitrary and purposeless variety in the size, position, and number of the windows and openings." If an opportunity should ever occur, however, it would be worth while to have this plan worked out by an architect of ability and good taste, who could make the most of the idea left to us by Wren.

The battles of the critics have been fought over two other points in connexion with the dome—the plan below and the roofing above. The springing of the drum from an octagon instead of a square has been variously represented as a merit and as a defect; the principal adverse critic urging that in such a treatment the arches on the cardinal faces must necessarily appear too small in proportion to the height and area included in the dome, especially when viewed from the further side, across the intermediate central space. We have not felt this in the case of St. Paul's, and incline rather to the opinion that in building on a large scale the immense void left on each face by the four great arches when the square plan is adopted, is rather an architectural disadvantage, destroying scale, and giving a sense of insecurity. Wren's octagon plan affords evident and ample basis for the dome, besides getting rid of the immense overhanging mass of the pendentive, which has been a structural and architectural bugbear in the buildings of all nations by whom the dome has been largely employed. The octagon arrangement of the piers, too, when well treated, gives scope for more variety of perspective effect than the four angle piers afford. That the intermediate faces of the octagon were not happily treated by Wren is a point on which there is at the present day no difference of opinion; and, though suggestions have been made, we doubt whether it would be possible now to improve the effect without structural alterations at the angles of the crossing, which it would not be advisable to attempt. The covering of the dome has elicited even more admiration and criticism than the planning; admiration, of the most unanimous description, in regard to the constructive treatment, and criticisms and replies in regard to the alleged architectural falsity involved in the two roofs. The quotation from the "Parentalia," cited by Mr. Longman on page 196, shows how Wren was supposed by his grandson to have regarded this, and that he considered the leaden dome in the same light as the leaden roof over the lower vaulting; an outer covering for preservation; which is the argument used by its modern defenders. The "Parentalia" hints also, however, at the influence of the popular feeling in favour of something lofty, to remind them of the old spire; the same feeling which prompted the spire in the signed design before alluded to. If this be the case, Mr. Longman is right in the view he seems to take (p. 199) in regarding the inner dome as the primary object in the mind of the architect, and the other as a finish put upon it for external effect. That the outer dome is very beautiful in regard to composition of lines is unquestionable; but whatever arguments may be used in defence of the treatment adopted, whenever we begin to look at the external dome as a mere covering, and remember that it is not the real dome, it is impossible (begging pardon of Mr. Longman and his authorities) not to feel a certain dissatisfaction natural in contemplating a thing which is not quite what it professes to be, and is not in keeping with the monumental character of the lower part of the structure. The arrangement may be ingenious and elegant, but we feel that it is not the best possible,—it is an expedient only.

The conflicting opinions on other parts of the structure, included in Mr. Longman's chapter (xiii.) of criticisms, form a somewhat edifying *mélange*. Strype thought that any one surveying St. Paul's from the neighbouring hills would

* A "Protestant" plan, it has been sometimes called; but the epithet we use is more to the purpose, and sufficiently opposed to the other ideal of a *spectacular* ritual; and to speak of one method of architectural design as more "Protestant" than another, involves some absurdity, or, at least, incongruity, besides opening the door to the *odium theologicum*.

immediately discern that the design was defective, in having no eastern turrets to match the west ones, and in not having the dome placed exactly in the centre. His remark about the want of projection of the columns of the portico is somewhat more to the purpose. In the main, however, the "doctors differ" less about the west front than about any other part. It has received general admiration; though Mr. Fergusson's carefully-worded approval is apparently by no means exuberant enough to satisfy the optimist critic of Paternoster-row. The fact that the front stands obliquely to Ludgate-hill (though it was Wren's wish to have had it directly fronting the street) is in some respects an advantage. We get a far more picturesque grouping of the dome and the west turrets than if the building had faced the approach centrally and symmetrically. The two orders, one over the other, on the exterior, form a fine field for the critics. One objects that the building shows externally no suggestion of two stories, or two aisles of different heights; another complains that two stories are suggested which do not exist. Wren's original intention had been to use one large order and an attic, as seen in the Kensington model. This would have been more logically defensible, no doubt; but, as a matter of fact, it would have diminished the apparent scale, and given a less picturesque appearance to the whole. The one-order scheme was abandoned, from the difficulty of finding stone large enough for the great pilasters. Perhaps the most whimsical objection which critical pedantry has directed against the building is that which sees an unpardonable sin in the coupled columns in the west front, a point on which the purists agree with almost the proverbial unanimity of critics. It might have been supposed that any one with the slightest eye for architectural effect must see how vastly superior is the result of these doubled columns in such a situation, to the comparatively lean and meagre appearance which single columns would have presented; yet all this attack is made on it, merely because the Romans did not employ columns in this way.

In regard to another fault laid against Wren, however, judgment must go forth. We do not see (again begging pardon of Mr. Longman and his witnesses) that anything can possibly justify or excuse, on grounds of architectural art or of common sense, the fact that nearly the whole of the upper external story of the cathedral is one gigantic sham,—a screen-wall to hide the real construction. Of the non-professional spectators of St. Paul's, probably not one in fifty reflects what is the connexion between the external and internal design. But if the said spectators were once made to understand that nearly half of what they see of the height of the exterior is merely so much walling, standing up by itself, quite independent of the real building, a kind of empty box of masonry, probably there is not one in fifty who would not exclaim, "How absurd!" The expense of this "scenery," as it may be termed, must have been very great, and it remains a standing monument and warning of the absurdities into which a gifted architect may be betrayed when he follows fashion instead of truth in the form of his structures. We recommend amateur readers, while drinking in our author's eloquent exposition of this "sublime structure," not to omit attention to the small diagram given from Gwilt (on page 186), showing the section of the cathedral, and if they do not understand its significance, to get an architect to explain it to them. It may give them a new idea of the distinction between real and sham architecture.

Of the interior many of the details are, judged by modern lights, open to much criticism; and the impression of the whole rather than of parts must be looked to for satisfaction. The springing of the transverse arches of the vaulting from an attic is a total contradiction of the motive and origin of the attic; and the carrying of the crown of the nave-arches above the line of the architrave which is superimposed on the main pilasters, has a very weak and clumsy effect. There are difficulties, it may be said, forced upon the architect by his working in the trammels of an artificial style; still, if that artificial architecture is carried out at all, it should be done in accordance with logical rules and principles, or confusion worse confounded is the result. Mr. Fergusson's strictures (quoted, page 94) against the domical vaulting, are somewhat overdrawn, except as regards the heavy and commonplace wreath ornament which surrounds the main compartments, which is a matter of detail; the domical arrangement of the ceiling generally is effective and suitable enough, and we cannot see ground for so condemnatory a verdict upon it.

The history of "the adornment of St. Paul's," or rather of the ideas and notions which have been afloat as to its adornment, forms, of course, a chapter in Mr. Longman's book, and he is to be congratulated on having perceived that the word "adornment" is the right one to use here, and not "completion," of which we heard at first,—an expression which at once assumed the very point at issue. The most noteworthy item in the history of the schemes for adornment is the proposal of Sir Joshua Reynolds, greeted warmly by the then dean and chapter, that certain of the Royal Academicians should undertake the painting of pictures in the cathedral; but in what medium, whether fresco or oil, there is nothing to show. If mural paintings were intended, we may well share the "shudder" of Dean Milman at the idea of the walls being adorned with the works of Cipriani, West, Dance, and Angelica Kaufmann, who, with Reynolds and Barry, were the artists selected. Even Barry, with a certain power, showed an inherent vulgarity of manner in his work. "Newton on the Prophecies" was the dean under whom this attack on the edifice was threatened; but the Archbishop of Canterbury and the Bishop of London, trustees of the cathedral, put a stop to it from motives as wise as those with which it was to have been carried out. The history of the recent movement in favour of a grand scheme of decoration need not be recapitulated; but we may call attention to the moderate and sensible ideas on the subject put forth by Dean Milman, who wished for "such decorations as might give some splendour while they would not disturb the solemnity or the harmonious simplicity of the edifice." More recent talk on the subject has gone far beyond this, and has threatened an almost theatrical splendour which would inevitably detract from the effect of the whole. We are glad to observe that Mr. Longman, as a member of the committee, is opposed to any further employment of Munich stained glass, to which we were willing originally to give a chance. The suggestion of a light and delicate diaper treatment for the windows has already been made in our own columns, and elsewhere, and in the event of figure subjects in mosaic forming part of the decoration, is the only way of treating the windows, chromatically, which will not injure the effect of the other decorations. In the short concluding chapter on "The future of St. Paul's," are some further remarks in regard to the contemplated decoration, which may be wise or not according to the meaning attached to them, for they are somewhat vague. The general argument is in favour of coloured decoration by means of material; but if this is to mean a complete system of structural polychromy, we can only say that this would lead to a degree of expense and of cutting to pieces of the interior, quite unwarrantable, and for which the public will certainly not subscribe money if they once clearly understand what such a scheme means. Structural polychromy in a large building must be carried out from the first, and can only be achieved afterwards at an expense quite disproportionate to the result, and after a series of operations which practically amount to making a new building of the interior. Gilding and mosaic may be so treated as to furnish all that is desirable, combined perhaps with a new marble pavement. After making his protest in favour of coloured material, Mr. Longman adds,—

"The terrifying spectre of 'sprawling saints' and emblematic figures thus entirely vanishes, for it is obvious that, as a general rule, it is only in mosaics that figures can be introduced. It is true that the designs for mosaics, whether in the dome, cupolas, or spandrels, will require artistic skill of the highest excellence for their production, but it is equally clear that they will not easily give room for extravagances representing peculiar ideas as to worship or doctrine."

If Mr. Longman penned this sentence in good faith, we can only say that he knows less than we do of the nature of the propositions that have been put forth, or fails to appreciate their significance. We have no dread of "sprawling saints," certainly, for we never knew any modern Mediæval saints do anything so life-like as "sprawling" would indicate; but it is a fact that a scheme was laid before the committee, including the execution in imperishable mosaic of a whole hierarchy of saints, of many of whom the very names are scarcely known, all with their proper symbols (raked up by a search among monkish archives), and "with their names written under them." To ask for national aid to such a scheme of decoration would be absurd, as it represents only the fancies of a small school of decorators and amateurs, which the majority of educated men and women would still, we hope, regard as childish and utterly unsuitable. The portrayal of saints in the Middle-age windows, and other decorative designs, has its interest, because it was the offspring of a genuine feeling; but there is nothing in the modern arts connected with architecture more offensive and contemptible than the species of "saint-manufacture" which has been developed as a part of modern ecclesiastical decoration, and the kind of *dilettante* ritualism which revives things, once held sacred, but now regarded merely as so much decorator's furniture. Our great Renaissance cathedral, the architectural type of an intellectual revival, must at any rate be preserved from this taint of intruded sham Mediævalism, not only as regards mere style of treatment, but as to the nature of the subjects selected to form part of the decoration. If it is to be a national work, let the pictorial portions of the decoration of St. Paul's deal with subjects that appeal to the higher feelings of humanity at large, instead of forming a mere development of the shibboleth of a clique in ecclesiasticism and so-called ecclesiological art. Otherwise, the work proposed, whatever the money expended, will neither be a credit to this, nor a satisfaction to future, generations.

ON DEFECTS IN THE METROPOLITAN BUILDING ACT.

In the Health Department (Social Science Association), Mr. H. H. Collins, architect, read a paper relating to the question, entitled "A few suggestions relative to some of the defects in the Metropolitan Building Act (18 & 19 Vict., cap. 122) as applied to dwelling-houses." He said (adopting our statements and calculations) that in the ten years, from 1861 to 1871, more than 220,000,000*l.* had been expended in the erection of nearly a million dwellings. Assuming that the population would increase in the same proportion in the current ten years, it had been calculated that nearly 1,500,000 houses would have to be erected at a cost of 261,692,000*l.*, requiring an expenditure of 26,000,000*l.* per annum. A large portion of this stupendous expenditure would undoubtedly fall to the lot of the metropolis, and how prolific of good or fruitful of evil it might become! In considering the restrictive conditions under which this work should be permitted to be executed in the metropolis, he directed attention to some omissions in and the defective provisions of the Metropolitan Building Act, occasionally referring to the 8th & 9th Vict., cap. 84, which he said certainly possessed a far higher appreciation of sanitary requirements than the one by which it was repealed. Sanitary legislation, from its commencement to the present time, had been but a series of spasmodic measures; consequently its administration was difficult, its clauses were confused and ambiguous, and its objects often ill-defined. Its authorities were disjointed, and acting without co-operation or harmony, the decisions of judges or magistrates conflicting or antithetical, and its legal proceedings cumbersome and expensive. A digest only of the statutes relating to public health occupied 260 octavo pages. There were also about twenty fundamental Acts. The remedy for this confused state of things lay in the codification and consolidation of the laws as relating to public health. Mr. Collins divided sanitary legislation into two heads, which he named extra mural and intra mural. By the former, he meant all the enactments applying exteriorly to dwelling-houses, and under the jurisdiction of the local highway authorities. By the latter, he meant all enactments applying to a dwelling-house *per se*, the line of demarcation being drawn at the limits or confines of the public highway. Confining his attention to intramural conditions, which should be clearly provided for in a Metropolitan Building Act, he dealt with those inconsistencies which were designated exemptions, and which permitted of immunities prejudicial to public welfare. After showing the necessity for special supervision for exempted places, Mr. Collins said intramural legislation must divide itself into the following considerations,—stability of construction, hygienic construction, and aphlogistic construction,—all happily dependent on and incorporated with each other. As regarded stability of construction, a clear and

unambiguous definition should be insisted on for the word foundation. All damp, loose, or made ground should be removed, and the excavation continued until a firm, solid bottom on the virgin ground could be obtained. On this a layer of concrete of certain specified thicknesses should be insisted on where essential land-drains should be required to be laid in. As to walling, the present Act demanded footings for their support, and few members of the profession but disregarded this regulation, and put them in as they thought necessary. It should be enacted that all walls and footings should be erected of certain specified dimensions, varying according to the purposes for which the building was intended. They should be composed of good bricks, or stone or other material, which should be new, and combined with a proper defined mortar or cement. The use of old material was to be deprecated. Between footing of walls thus built there should be imbedded an impervious damp-course; and no floors, whether of wood or stone, should be permitted to be laid which did not allow of at least 12 in. between themselves and the highest part of such footing. The walls should, as far as fire was concerned, be homogeneous in their nature—if of stone, built of stone; and if of brick, of brick. The walls should be covered at their termination with a material impervious to wet. There was a defect in the present Act as regarded thickness of certain walls of buildings of the dwelling-house class, which allowed of the upper story being erected of brickwork of 9 in. thick. In this variable climate it was impossible to keep out humidity and cold with such a thickness, more particularly with the absorbent nature of the materials at command; and the upper stories, mostly inhabited by children, were especially most subject to driving rains. Walls should not be of a less thickness than 14 in. Under the second head of sanitary construction, the internal sewerage of a house was the first consideration. The closet apparatus, sinks, and water supply should be under supervision; and each house, according to its purposes and number of inmates, should be provided with a certain number of conveniences, and with a certain cisternage, all to be defined. It should be compulsory to carry all soil pipes up to roofs, discharging away from windows and chimney stacks; not to permit rain water pipes to become waste-pipes, and that each waste-pipe from sinks should turn out into open areas with open ends, so as to admit of being easily cleaned out. No works should be permitted to proceed unless a perfect system of drainage was arranged. Mr. Collins also suggested improvements in ventilation, such as a garden area at the backs of houses, fireplaces in each room, and the prevention of over-crowding. Light and ventilation could not be too well considered and provided for. The subject of ingress to and egress from buildings also required attention, with a view to affording escape in the event of fire. Stone was not a fire-proof material. There should be more outlets from public buildings. It should be made compulsory to construct such exits in accordance with well-defined principles, and of certain areas made proportionate to the dimensions and exigencies of the special class of buildings to which they might be attached. All corridors, stairs, and approaches should have fire-mains continually on. Every individual was supposed to know the laws of his country, and none should be permitted to plead ignorance thereof.

A NEW CLUB HOUSE IN LIVERPOOL.

A large mansion in Mount Pleasant, Liverpool, belonging to Mr. William Rathbone, M.P., which that gentleman has placed at the disposal of a committee for the purposes of a club for clerks and others, has just been undergoing extensive internal alterations, in order to adapt it to its intended purpose; and in addition to these alterations, a large billiard-room to hold six billiard-tables has been erected. This room is altogether lighted from windows above. The alterations in the interior of the building include the re-construction of the whole of the apartments. A large room to the left, on entering the building, which has been connected with the newly erected billiard-room, will be used as a smoking-room. A room on the same floor, and overlooking a fine garden to the rear of the house, has been fitted up as the dining and luncheon room. On the first floor a large room, also overlooking the garden, has been fitted up as a reading-room, whilst an adjoining room on the same floor will be devoted to chess, draughts, and other games. The committee have decided that beer and spirits shall be provided for the members in order to prevent them frequenting the ordinary public-house, and for this purpose a bar at the left of the building has been fitted up with beer-engines, and other necessary apparatus for carrying on the work of the bar. Commodious kitchens with modern ranges, have also been fitted up at the rear of the bar. The walls of all the rooms in the building have been handsomely decorated, and painted in pea green, whilst the hall, lobbies, and staircases have been painted a stone colour. A large garden to the rear of the house is to be converted into a bowling-green, for the use of the members. There are already upwards of 400 members enrolled, and the inauguration of the club is to take place during the present month, with considerable ceremony.

ARRANGEMENT AND CONSTRUCTION OF LABOURERS' COTTAGES.

In the Economic Department (Social Science), Sir W. Jones read a paper "On the best Plan of Constructing and Arranging an Agricultural Labourer's Cottage." He said, labourers' cottages in the rural districts ought to face the south, and they should be built in pairs. The walls ought to be 14 in. thick, and have two windows, large to the south, and small on the north side. The large windows, to let in the sun, need be no additional expense, as wood and glass are as cheap as wall. The small windows on the north side keep out the cold. The walls ought to go up to the ceiling of the upper-floor rooms; and no lucarne-windows, or any break in the roof, involving gutters, and thereby expense of construction and repairs, ought to be allowed. The chimney-shafts should all be in the partition-wall, so that any fire burning will tend to warm both houses. The cottages should have each three bedrooms, one sitting-room, and one kitchen and wash-house. If the third bedroom is got by subdividing the space over one of the ground-floor rooms, the two bedrooms so obtained are always too small for health and comfort, the smaller of the two being generally not more than 6 ft. in its narrowest measurement. In looking over sixty plans sent in for Mr. Pratt's prize, at the last show of the Norfolk Agricultural Society, three-quarters of those sent in had this defective arrangement, and were at once disqualified in consequence. The third bedroom must therefore be external to the shell of the house, and the question is where it can best be put. Two plans suggest themselves,—first, to build an external shed or wash-house, and carry it up to the first-floor, with a bedroom over; or, secondly, to put the bedroom on the ground-floor. The plan selected for the prize had the bedroom on the ground-floor. At the end of each cottage a lean-to was constructed, divided by a partition-wall into two portions. Of this, the half facing south was the bedroom, the other half the shed for fuel, tools, and other articles, a necessary adjunct to every cottage. The advantages of this plan are great. The bedroom, which has a large south window and a boarded floor, is a comfortable little apartment, opening into the sitting-room. It is manifestly valuable in case of illness, or of a woman lying in, the fire in the sitting-room warming it, and the person sitting up at the fireside being in immediate communication with the bedroom, without having to carry things up and down stairs. When not wanted by an invalid, the ground-floor bedroom is convenient for the boys of the family; and, lastly, when not wanted by the family, the ground-floor bedroom enables a lodger to be taken without injury to the privacy of the house. This last consideration is very important. Out of consideration for the morality and decency of families, lodgers are prohibited in many cottages. This results in young men being compelled, when they leave their family home, either to marry at once, or else to lodge at a public-house. The wretched discomfort of this last alternative drives decent young men into matrimony when hardly out of their teens, and before they have saved any money to begin life with. If they could as lodgers help the family expenses of some respectable small family, and at the same time not be a nuisance and injury to their hosts, the benefit in every way would be great; and this, the third bedroom on the ground-floor makes practicable. The staircase in such cottages should be alongside of the fireplace in the front sitting-room, hence the only access to the back bedroom, where the daughters of the family are supposed to sleep, would be through the bedroom of the master and mistress of the house. Under these circumstances, any evil result from taking a lodger seems to be effectually provided against. I have long felt the great value of the ground-floor bedrooms, and several pairs of cottages on the plan exhibited have been built in years past on the Cranmer Estate. Experience has justified the high opinion I have formed of the plan. If the third bedroom be obtained by building an external shed, and carrying up the walls to the top of the cottage, the advantages I have shown to belong to the ground-floor bedroom are lost; while the expenses of construction, owing to the extra joists for the floor and the increased cost of a high-pitched roof, is considerably greater. The increased expenditure of such an arrangement was calculated by Mr. Boardman, the able and experienced architect who assisted Lord Walsingham and myself in deciding upon the best among the many plans sent in to compete for Mr. Pratt's prize, as at least 20*l.* The cost of these prize cottages we could not exactly state in the present unsettled cost of labour and materials; but the plan being simple and cheap, they ought not to exceed from 230*l.* to 250*l.* the pair, thoroughly well built with brick or concrete, or claylump faced with brick walls. The two latter description of walls are warmer and dryer than brick, owing to the porous nature of Norfolk brick, which even in a 14-in. wall lets through a good deal of damp on the east and west gable ends. The object of this paper is to lay before the section what seemed to me to be a convenient, economical, and simple solution of the problem, *How to construct a labourer's cottage with three bedrooms.*

THE ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

On Saturday last the second meeting of the Lancashire and Cheshire district committee was held at the Town-hall, Manchester, under the presidency of Mr. Lynde, C.E., city surveyor. The meeting was attended by the surveyors of all the principal towns in the neighbourhood, including Manchester, Salford, Bolton, Blackburn, Birkenhead, Barrow-in-Furness, Stockport, Warrington, &c.

The unanimous thanks of the meeting was voted to the Mayor of Manchester for his kindness in placing a room at the Town-hall at the disposal of the meeting.

After a short discussion on matters of professional interest, the members drove to the works of the Salford new intercepting sewer, now being constructed from the designs of Mr. Fowler, C.E., Salford, by whom the plans and details were explained. Afterwards, under the guidance of Mr. Lynde, they visited the Manchester abattoir, and wholesale meat markets; the sanitary depôt; and stables, where upwards of 250 horses employed by the various departments of the corporation are kept.

The new townhall was then visited, and finally the central fire station and police courts. It is almost unnecessary to say that the members present were highly pleased with their visit, no pains had been spared by Messrs. Lynde & Fowler, to ensure the pleasure and convenience of their visitors; and in addition the visit to the central fire station, opportunely occurred at a moment when an alarm of fire was raised, and the visitors had the satisfaction of seeing two engines turn out with a full complement of firemen, and with two horses to each, all ready for duty, within one minute and a half after the alarm signal: of course Mr. Tozer, and his well-trained assistants, were complimented on their promptitude.

In the evening the members of the Association dined together at the Queen's Hotel, when a vote of thanks was passed to Messrs. Lynde and Fowler, for their exertions during the day.

The Association of Municipal Surveyors is comparatively a new institution, and is gaining a good position amongst sister societies. Our readers have often heard of it through the medium of our columns. Attempts have previously been made to establish such a society, but, until the present year without success, when, thanks to the example of the town-clerks and medical officers of health, this association has been formed.

It has been found convenient to form through-

out the country committees of local surveyors within a convenient distance of each other, and with this intention the counties of Lancaster and Chester have been grouped together; upwards of thirty surveyors of the chief towns in both counties are members of the association of whom upwards of twenty were present at the meeting in Manchester.

We understand from Mr. R. Vawser, C.E., Warrington, who acts as hon. sec. to the committee, that the next meeting will be held early in January, in Liverpool, when papers relating to sanitary and engineering science will be read.

THE LATE MR. ROBERT EDGAR, ARCHITECT.

Mr. Edgar, whose sudden and quite unexpected death we mentioned in our last, was, after years of struggling toil, just upon the moment of turning the corner on the road to professional advancement. He was on the eve of starting for the United States, upon an engagement containing every promise of professional success.

Mr. Edgar leaves a wife and seven children,—the eldest, a girl, only thirteen years of age,—to mourn their loss. This large infant family is entirely unprovided for.

To aid him in the competition which elected him one of the architects of the London School Board, Sir G. Gilbert Scott thus spoke of him:—"Mr. Edgar was for twelve years with me, and had previously been thoroughly trained as an architect, and held, when I first knew him, a very responsible position. He is a man of very great taste and artistic skill, with a thoroughly practical and artistic knowledge both of Classic, Renaissance, and Mediæval, with very considerable skill in designing in either of these styles. He has a thoroughly practical knowledge of building, and the various practical arts and trades connected with it, as I have reason to know, from his having taken a very leading position in the direction of the works at the new Foreign Office, and of the external portions of the India Office, under me."

For the Wedgwood Memorial Institute, Mr. Edgar obtained the first premium in the competition of designs, and subsequently carried out the work.

The deceased gentleman was a native of the Lowlands of Scotland, and it was an expression of pride with him that his family had been tenants on the same estate for the long period of 600 years, and were tenants still. As far as can be at present ascertained, he was in the 36th year of his age.

THE PROPOSED NEW VEGETABLE MARKET.

At the last meeting of the court of Common Council of the City of London, the Markets Committee brought up a report recommending that the committee should be authorised to advertise for plans and estimates for the construction of a new fruit and vegetable market, pursuant to the order of the court of the 18th of September last.

Mr. Rudkin moved the adoption of this recommendation.

Mr. Deputy H. L. Taylor suggested that the committee should advertise for designs, giving premiums of 300*l.*, 200*l.*, and 100*l.* for the first, second, and third designs respectively, as in the case of the construction of the New Meat Market at Smithfield.

Mr. Rudkin adopted the suggestion, and the report was adopted, the court not pledging itself to entrust the work to the author of any design sent in.

ARCHITECTURE AT LONDON UNIVERSITY.

The first of a course of lectures on "Architecture as an Art" was delivered by Professor Hayter Lewis at the University College, Gower-street, on Tuesday last. After giving the students some practical suggestions as to the best method of taking notes of his lectures, the Professor said that architecture could be distinguished by its mouldings, carvings, and masonry, by which the approximate date of its construction, and the people by whom it was constructed, could be ascertained, just as geologists are enabled to tell the age of the various strata of the earth by certain distinctive appearances in them. Greek, Roman, Norman, and other styles of architecture are as distinguishable as are the fossils of the earth. There were no complete chains of progress in architecture. Each country had a style, with a feeling and expression peculiarly its own. Wherever the people of a country went, they constructed their buildings after their own fashion; and although they might borrow some of the ideas from another nation, they were always altered. Though there is no complete gradual change, there is a succession of steps, as it were, one form succeeding another, and to a certain extent these steps may be traced. It will be found, as political power advanced, so also did architecture, and in reading the changes of architectural forms one is partially reading the history of the world. The progress of architecture, like civilisation, has been from south and east to west and north. A writer, in describing the rise of architecture and civilisation, says that men originally met together in huts, and by their fires, lighted by the rubbing of dried branches, they conversed together, and gave each other ideas; and from the copying of the nests of birds and the caves of beasts, they gradually became builders, and constructed harbours, &c. As there are differences in opinion in the rise of civilisation, so also are there in the rise of architecture.

Referring to the pre-historic remains of architecture, the lecturer said that their traces might be seen in all lands, and from their variety they were classified. One class was called *menhirs*; they were long stones, erect and isolated, like obelisks, one of the largest of which is in Karnak, Brittany, 63 ft. by 14 ft. diameter. Cleopatra's Needle is also an example, 67 ft. by only 8 ft. diameter. Another class was called *cromlechs* by the English, and *dolmens* by the French. They consist of two or more upright stones, supporting a cross one at the top: there is a specimen at Kits Cotty House, near Maidstone, the largest stone of which is 12 ft. by 9 ft. 3 in., and 2 ft. thick; at Lockmariaker, Brittany, with a stone 18 ft. by 12 ft. by 4 ft.; at Bagnieux, with a stone 24 ft. by 14 in. by 2 ft. 9 in.; and one at L'Angresse, Guernsey, in which was a sepulchral urn, &c. In India and the east side of Jordan, many were also to be found. The third class are circles of stone, which are to be seen in Brittany, the Orkney Islands, and Stonehenge. The greatest of all is at Stonehenge, which consists of four circles. Palsgrave, who travelled into the interior of Arabia, where but few European travellers have been, says that he came to a circle, formed of trilithons, which was precisely the same as at Stonehenge. He (Mr. Palsgrave), to give an idea of the height of the stones, stood up in the stirrups of the horse he was riding, and was just able to reach the cross stone. He was told that there were two other similar circles to the one he described. Others have been recently discovered near Mount Sinai. Pre-historic traces may be seen in Phœnix Park, Dublin, Guernsey, Etruria, the Holy Land, Algiers, Brittany, and other places.

What, then, was the object of their construction? There are an enormous number of them, and they are to be found in places where their existence would not be thought probable. The *dolmens* have been considered the remains of altars, and their form suggests that idea. Another view is taken by some persons, who say that they are simply the entrances to houses, that they form a doorway, and that the houses were made by loose stones and wood, which having been destroyed, the skeletons, the doors, remain. It might have been so in some cases; but in other instances it would be absurd to say it was so, for there is no way through them. Respecting circles, one idea is that they were made to surround the tumuli; another is that they were built for places of assembly; another for temples, which idea is supported by Inigo Jones; a more recent suggestion, however, is that of Mr. Fergusson, that they were the spots marking the position of conquering armies in the time of King Alfred. He believes that many of these stone monuments are of comparatively recent date, and in this view is supported by Mr. Knight. In support of this idea it is said that no mention is made by Cæsar of the existence of these edifices; that support is, however, soon cut away by the fact that they are not mentioned by Bede. There are only a few marks upon them, and no inscription, so it is impossible to fix the date of their construction. The lecturer said he would sum up in the elegant words of Palsgrave, who, speaking of the great circles found in Arabia, said wherever they were found they were grand old monuments, and all record of "their speechless past is gone for ever."

HEALTH AND LEGISLATION.

In the address to the Social Science Association, made by the president of the Health Section, Capt. Douglas Galton, F.R.S., the speaker said, a brief allusion to some of our sanitary shortcomings at home forms an almost necessary prelude to the question of the sanitary provisions required in the General Building Acts. Mr. Simon, the head of the medical department of the Local Government Board, stated recently that the deaths which occur in Great Britain are fully one-third more numerous than they would be if our existing knowledge of the chief causes of disease were reasonably well applied throughout the country. We learn that there is a yearly average of 120,000 deaths from causes which may be termed preventable; and when we consider that the larger proportion of individuals attacked by these preventable diseases recover, and that a small proportion only die, it is oppressive to think of the enormous amount of human suffering and waste of human life which these figures represent. The deteriorating effect of residence in towns has been frequently brought before the public by this Association. The Registrar-General has shown that an urban population of 8,250,000 persons living on 2,150,000 acres showed an average death-rate of 25 per 1,000; whilst a rural population of 9,750,000 living on 350,000,000 acres showed an average death-rate of only 17 per 1,000. The number of the population which inhabits towns is largely increasing. At the beginning of the century the population of the metropolis was 958,863; no other town contained more than 100,000 inhabitants, and only five of the principal towns exceeded 50,000 in population; but such has been the increase in the town populations that in 1871 the population of London had reached 3,266,987, and there were above 40 towns with a population exceeding 50,000 inhabitants, of which 17 exceeded 100,000 inhabitants. Dr. Morgan, in his able paper on the deterioration of races in great cities, shows that of the adult population of London 53 per cent., of that of Birmingham 49 per cent., of that of Manchester 50 per cent., and of that of Liverpool 62 per cent. were immigrants from the country settled in the town, and that the majority of the incomers were men and women in the prime of life. The mortality in these four towns averaged 26 per 1,000 against 19 per 1,000 in the country districts; the mortality of persons under the age of 15 being 40·7 per 1,000 in these towns, against 22 per 1,000 in the country districts. The marriages in the city population were four times as numerous as in the agricultural counties, but the births in the town population only exceeded those in the agricultural population by one-sixth. In an inquiry not connected with sanitary questions, Mr. Francis Galton made a careful statistical analysis of the details of 1,000 town families and 1,000 country families selected from the town of Coventry and the adjacent agricultural population. The result shows that a town population supplies to the next generation only three-quarters of the number of adults supplied by an equally numerous country population, and that in two generations the adult grandchildren of artizan townsfolk are little more than half as numerous as those of labouring people who live in healthy country districts. In large closely-built centres of population the ratio would probably be considerably increased against the town population. For purposes of comparison, the health of the country population may be quoted as superior to that of towns, but the standard of health in the county districts is far lower than it should be. Much, no doubt, has been done; for instance, ague, which was so common near London that James I. and Cromwell both died of that disease in London, is now almost unknown in that locality, and is of much rarer occurrence throughout England generally in consequence of improved drainage and agriculture. Vast sums have been spent in the water supply of towns, and great efforts are being made to deal with the sewage. But the fact still remains that with a large expenditure in these directions, there is scarcely a town which does not contain numerous foci of disease. There is scarcely a village which is not overdowing with sanitary defects. The Report of the Royal Commission on Agricultural Employ-

ment observes:—"The majority of cottages which exist in rural parishes are deficient in almost every requisite that should constitute a home for a Christian family in a civilised community." We must raise the standard of health in our rural communities, and endeavour to approximate the health of our towns to that improved standard. But were all measures of healthy construction and healthy conservancy adopted in houses and workshops in towns, there would yet remain atmospheric impurity as an important source of deterioration to the health of inmates of towns; and from this cause a town population must be less healthy than a rural population enjoying equally perfect sanitary arrangements. Unfortunately, whilst we are ready to admit the desirableness of sanitary improvements, we are very averse to pay for them. The municipalities of most towns possess sufficient powers for levying rates for sanitary improvements; but in many towns the local authorities neglect either to put existing powers into operation, or to obtain necessary new powers. Many private proprietors leave the sanitary defects of their houses and cottages comparatively uncared for. The principal requirements are:—First, the immediate removal of organic matter from places where, by putrefaction, it can contaminate the air, the water or the food; secondly, the supply of pure water; thirdly, the sufficiency of breathing-space allowed to each individual. In places where many dwellings are congregated together, these requirements may be classed under two heads,—viz., first, those that are common to the community, such as the supply of good water, the removal of foul water, and the removal of refuse-matter; and, secondly those which immediately concern the individual householder. Every step in sanitary improvement means the expenditure of money. Each town or village is subject to local conditions which influence the choice of the process to be adopted. I would only observe that where the conditions admit of sewage irrigation, its application forms the most effectual means of purifying sewage and of obtaining from it all its fertilising properties; but sewage should be applied to land rapidly after its formation, and never allowed to stagnate on or in the land. Legislation cannot fix a precise mode of clarifying sewage for universal adoption. But there is now no want of knowledge of how to dispose of sewage. The law lays down the principle that the proceedings of one individual shall not become a nuisance to his neighbour; and if in the case of pollution of streams the courts of law invariably inflicted severe penalties, the pollution of streams by sewage would soon cease to exist. Pure water is an essential element in the prevention of disease. Each town or village is subject to its own special conditions, and no absolute standard of purity for water can be laid down. Well-water, fit for drinking, contains more or less of mineral or other matters derived from the soil. All river-water should be filtered before being used for domestic purposes, and it should be kept covered after filtration. But if pure water is not otherwise procurable by the individual inhabitants of a town or village, it should be the duty of the local authorities to provide it. After referring at length to the Building Acts, and the necessity of submitting all plans of new houses to the local surveyor, the speaker continued:—It will be seen how very little the law can directly do to remove or prevent practical sanitary defects. The most effectual methods of inducing the people of this country to appreciate the value of sanitary knowledge would be, to select as medical officers of union districts and boards of health men of sound sanitary education, not given to theories, to whom should be intrusted the prevention as well as the cure of disease. They should consequently be sufficiently well paid to make the service attractive to good men, and to be enabled to commit a large portion of the mere drudgery of the office to duly-qualified assistants. To insure the necessary knowledge, a special education is required. This might be afforded by the establishment in universities or hospitals of chairs or professorships of practical hygiene; and their certificates of practical skill should entitle the possessor, when acting as a medical officer of a sanitary area, to receive a defined sum from the Local Government Board out of Parliamentary votes, of such an amount as materially to improve the emoluments of medical officers who had thus qualified themselves. The conclusions which I would desire to impress upon you are—1. That so long as so much preventable disease exists in this country we must not delude ourselves with the idea that we have done more than touch the borders of sanitary improvement. 2. That the first step in further progress is to imbue the owners and occupiers of houses and cottages with a knowledge of the laws of health. 3. That to assist in disseminating this knowledge the position and emoluments of the medical officers of unions should be improved, so as to enable them more usefully to watch over the prevention of disease. 4. That in every town and village, or congregation of houses, rates levied on the owners or occupiers should be employed to provide—1. A supply of pure drinking-water within the reach of all the inhabitants. 2. Drainage, so as to insure that all fouled water would be removed rapidly, and not allowed to stagnate on the surface, or to pass into streams until it had been clarified. 3. The immediate removal of all refuse from the immediate vicinity of dwellings. 4. That the plans of all new habitable houses and important alterations of existing houses over the whole country should be subject to a general Building Act, containing provisions such as I have enumerated above, enforced by the local authorities. 5. That whenever the local medical officer has reason to suspect that a cause of disease exists in any house in a town or village, there should be a power to enter and inspect the premises, and to require the removal, at the expense of the owner or occupier, of any cause of disease found to exist. Government and Parliament cannot of themselves do what is required. Legislative measures are no doubt necessary to assist sanitary progress and to enforce sanitary discipline; but for real practical progress we must look to our own exertions. Laws can do but little unless aided by the earnest, the strenuous co-operation of every individual member of the community.

THE WORKS AT THE HOLBORN VIADUCT EXTENSION RAILWAY. — OPENING OF THE NEW CITY TERMINUS STATION.

A FEW weeks will suffice to see the opening of another large and important metropolitan railway terminus, situated in one of the busiest City thoroughfares, and equal in extent to those at Charing-cross, Cannon-street, and other portions of the metropolis. The extensive works between the Holborn Viaduct and the Ludgate Hill Station which have for more than two years been in progress by the London, Chatham, and Dover Railway Company, with the view of having a first-class City terminus on the Viaduct, are now very rapidly approaching completion, and are so far advanced that the opening of the extension line to Holborn has been definitely fixed for the 1st of December at the latest, although it is not improbable that it will be opened about the middle of November. Every effort is now being made to accomplish this object, and we understand the contractors have confidence in being able to have the works ready for traffic by the earlier-named period.

The extension line commences near Messrs. Cassell & Co.'s printing works, where the junction with the existing line is effected, and is there carried forward in the direction of Holborn, on the high level, by a series of brick arches and massive iron girders. The brick arches are built both upon the east and west sides of the present line, which descends by a rapid gradient from Ludgate until it arrives at a low level under Holborn, and the iron girders are carried over and across the old low-level line, the girders being arched between each other, the large new station area being formed of the space above the brick arches and that over the railway below covered in by the iron girders and arches just described. Close to the point of junction near Ludgate six lines of rails radiate right and left from the existing line, and are carried forward into the new station at Holborn. There are thus three double lines of rails within the station, between which there are four spacious platforms, 445 ft. in length. The central platforms are 20 ft. in width each, and the east and west platforms 14 ft. In addition to the six lines of rails already named, there is also another line on the extreme east side in connexion with an engine-shed, and a large tank, which has just been erected, and also another line on the west side for the shunting of trains, making eight lines altogether. A new signal-house, considerably above the level of the new line, has just been erected near the point of junction, midway between Ludgate and Holborn, commanding a view of the two stations. It is a substantial structure, standing upon six iron columns, 15 ft. in height, with iron cross-girders. The several platforms within the station, which are faced with asphalte, have been laid down, and the ballasting of the line, and the laying down of the metals between Ludgate and Holborn is now in progress.

The roof of the station is also nearly completed. This structure, which is 325 ft. in length, and 140 ft. in width, consists of three bays. It is supported on the east side by resting on the eastern boundary wall of the station, and also by twelve iron columns, running along each of the central platforms, with an equal number of iron columns on the west side of the station. Light iron segmental arches and cross girders rest upon the capitals of the iron columns, and the roof is covered in partly by glass, and partly by wood. The iron columns supporting the roof are 22 ft. in height to the capitals, and the extreme height of the roof is 35 ft. The whole of the interior is now in process of decoration. The columns are painted in cream colour, whilst the capitals, as well as the girders, are in pale blue and red, the wood-work of the roof being in white, and the rafters in a delicate yellow or primrose colour.

Large and commodious parcel-offices have been erected on the west side of the station, upon arches or pillars carried up to the railway level. These offices, which have a frontage of 150 ft. in length, are three stories in height, and contain a large number of apartments and conveniences for carrying on this department of the company's business. There is a spacious area in front of the entrance to the parcel-offices, the whole of which, together with the space running the entire length of the western platform, will be set apart as a cab-rank. There are three large entrances into the parcel-offices inside the station, immediately on the west side of the cab-rank, and the approach to both the latter and the offices will be in Farringdon-street, and thence through Bear-alley, along a circuitous incline forming a portion of the works which have been erected, and by which the railway level leading to the parcel-offices, and also to the cab-rank, is arrived at. The outlet for the cabs, when leaving the station either with or without passengers, will be under an archway on to the Viaduct. This archway will be erected at the west side of the station buildings and offices having their frontage to the Viaduct.

In addition to the four platforms running north and south, to which we have already alluded, there will also be a main cross platform at the north end of the station similar to that at the Charing-cross station, and reached through the booking-offices from the Holborn Viaduct frontage, which architecturally will be the main feature in the works. The elevation of this frontage, which includes a fine hotel, will be 235 ft. in length from the east to the west, and 70 ft. in depth to the main cross platform. The whole of the ground-floor is intended to be exclusively set apart for the booking-offices, waiting-rooms, and other apartments for the purposes of the company, together with a spacious restaurant and refreshment-rooms at the east end of the building, which will be conducted by Messrs. Spiers & Pond. The booking-offices and hotel will extend to the entire width of the station, and the west end of the structure will be built on strong and massive iron girders carried over the present old low-level line. The restaurant and refreshment-rooms will occupy a width of 53 ft. at the east end of the elevation, the rest of the ground-floor of the building forming the booking-offices, waiting-rooms, and the rest of the company's offices. The works at this point are of an unusually heavy character, deep excavations for the foundations and basement having occupied a considerable amount of time and labour. In that portion at the east end which is intended for the restaurant and refreshment-rooms there is both a basement and a sub-basement. The basement, which is 22 ft. in depth, is arched over, and the ground-floor of the booking-offices immediately above is supported by girders and columns. There is a deep basement in the whole of the building to the point on the west side where it will be carried up on girders over the present low-level line. The booking-offices, which will be approached by two entrances in the centre of the elevation, will be 55 ft. in width and 35 ft. in depth, and the ground-floor of the building will contain, in addition, on either side, one first-class gentlemen's waiting-room, 25 ft. by 20 ft., and a ladies' first-class waiting-room of the same dimensions, besides several second-class waiting-rooms, and

other apartments, including a large cloak-room, station-master's office, booking-clerks' rooms, telegraph-office, lavatories, &c. The ground-floor portion of the elevation, forming, as we have already stated, the company's offices and the restaurant, with the exception of the western portion, has been carried up almost to its intended height. The material used in this part of the intended building is Portland stone, rusticated. The windows are 5 ft. in width, and 9 ft. in height. They are circular-headed, and ornamented with sculptured figure-heads for key-stones. The entrances are bold. On each side there are piers of large size, and the extreme width to the outside of the piers is 9 ft., whilst the width of the doorways is 5 ft. There are fluted pilasters with elaborately-carved capitals on each side of the entrances. Immediately above the ground-floor, running the entire length of the elevation, is a balustrade.

The hotel, which is intended to be erected in continuation of the ground-floor of the Viaduct elevation, has not yet been commenced, but is shortly to be proceeded with. In the meantime it may be stated that the building is not to be erected at the expense of the railway company, but is the undertaking of a distinct body of proprietors. Mr. Isaacs, of Verulam-buildings, Gray's-inn, is the architect, and a sketch of the intended structure may be interesting. The building will be of large proportions. The style of architecture partakes of the Italian. It will extend the entire length of the ground-floor elevation,—235 ft.,—and will be 87 ft. in height from the street level to the apex of the dormers, whilst at the east and west angles there will be towers or turrets, harmonising with the general architectural character of the structure, and rising to a height of 100 ft. above the Viaduct. The building will have four lofty floors above the railway company's offices, in addition to dormers, whilst above these again in the roof of the building is a floor consisting of servants' dormitories, with circular windows. The balustrade above the company's offices is immediately at the foot of the first-floor windows of the hotel. The windows of the several stories at each end of the elevation are segment- and pediment-headed. There are fluted pilaster and capitals between each window. There are also similar pilasters, with carved capitals, carried up from the first floor to the top of the third-floor windows, and there surmounted by a bold projecting cornice. Immediately above the first-floor windows a band, in ornamental terra-cotta work, is carried across the building, whilst in front of the foot of the second-story windows there is an iron balcony. The dormers above the fourth story are uniform with the windows in several other portions of the elevation, being pediment-headed, and in the centre there is a large triplet window, surmounted by a large sculptured figure. Between each of the dormers there is a balustrade. The entrance to the hotel will be at the west end of the building.

The works in progress, in addition to those already described, include the erection of another new station on the north side of the Viaduct, opposite to the intended station and hotel. It is to be called the Snow-hill Station, and is intended to give increased accommodation to the inhabitants of that immediate district travelling between Ludgate, Farringdon, King's-cross, and also for the accommodation generally of the Metropolitan, the Midland, and the Great Northern Companies, whose trains run in connexion with the London, Chatham, and Dover Company. The station will be erected on a level with the Viaduct, standing upon four strong iron girders thrown across the low-level line between Holborn and Farringdon. There will be four entrances to it from the Viaduct, and also from the Snow-hill side, the new railway platform below being reached by a staircase from the offices of the new station above. It will also be connected with the high-level station on the opposite side of the Viaduct by a second staircase communicating with the latter. The line has been widened to the extent of 150 ft. in length on the north-west side of the Viaduct, so as to admit of the construction of the new platform in connexion with the station. The four girders upon which the new station will stand are expected to be in their places next week, when the erection of the superstructure will be proceeded with.

The whole of these extensive works (the hotel excepted) have been designed by Mr. Mills, the chief engineer to the Chatham and Dover Company, and are being carried out under the personal superintendence of Mr. Jones, the company's assistant engineer, and Mr. Rowell, the general manager in charge. Mr. Webster is the contractor for the whole of the works.

ST. PAUL'S CATHEDRAL WEST AREA IMPROVEMENTS.

After a considerable number of preliminary communications had passed between the Corporation of London and the Dean and Chapter of St. Paul's at various times relative to throwing back the railings for the purpose of improving the roadway in front of the cathedral and at the top of Ludgate-hill, a definite proposal was made by the City in 1867, and the surveyor to the fabric was desired to report upon it to the Dean and Chapter and the trustees of the fabric fund. After due deliberation, and with the concurrence of several artistic and professional friends, he reported that simply to throw back the railings would, in his opinion, so much confine the space as to be inadmissible; but if the whole area to the west of the cathedral could be thrown open, a great improvement would be effected.

This recommendation took the form that if the City would pay a suitable price for such land as they threw into the roadway, the Dean and Chapter should undertake the works required upon the rest of the area, which it was obvious would involve a very serious outlay. This report was favourably received by Dean Milman and the Chapter, and by the trustees of the fabric fund; and the question then turned upon the amount of land to be given up to the roadway, and the amount also of the compensation to be paid by the Corporation. The proposal, however, seemed to lie dormant for about two years, when it was re-opened by a letter from Mr. Hayward (who had never lost sight of it) addressed to Mr. Penrose, which ultimately led to the matter being settled, and the works which are shown in our engravings being carried out.

The land given up to the roadway is over 7,000 superficial feet; the amount to be paid by the Corporation to the Dean and Chapter is 15,000*l.*; but the latter will have to expend about 6,000*l.* on the improvement, including the renewal of the steps, which becomes necessary from their being made the chief access to the cathedral.

The remainder of the purchase-money, moreover, will be expended in various ways on the cathedral, and brings no private advantage to the Dean and Chapter. It should be stated that the Dean and Chapter invited a committee of the Royal Institute of British Architects to consider the matter, which met and recommended the retention for the cathedral of a somewhat larger area than had been intended.

The Dean and Chapter, whose only object was to make a great public improvement, and who were quite willing to forego the larger amount of compensation, agreed with the recommendation of the architects' committee, and for about a year the negotiation was delayed by an endeavour on the part of the Chapter to obtain the adhesion of the Corporation to this view. But when it appeared plain that no progress was to be made, and the question only being whether the open space should be within the Dean and Chapter's boundary or outside it, it was thought undesirable to delay a great public improvement on a subordinate question, and a plan was finally prepared by the surveyor of the fabric, and agreed to by the Dean and Chapter and the Corporation. This plan, which is now being carried out, is shown in the corresponding engraving.

After thus increasing the roadway by about 7,000 ft., as already stated, a space is laid out westward of the cathedral, of the form of a semi-ellipse, accurately worked from calculated ordinates; the major semi-diameter of the curve lies westward, and extends to 114 ft. in front of the cathedral, and the smaller diameter, 168 ft., extends from the northern to the southern tower. The area thus inclosed is upwards of 15,000 ft., and will remain the property of the Dean and Chapter, but the public, *i.e.*, pedestrians, will have access to it at all times, excepting only that on the occasions of important services in the cathedral it will be inclosed temporarily by barriers fixed to the granite posts which mark the boundary, to diminish the pressure of the crowd from the doors, and at night the upper part of the staircase and the portico will be protected by an iron fence of a suitable pattern, which is so contrived that by machinery concealed in the vaults it can be raised or lowered at pleasure, two workmen, one above and the other below, being sufficient for this operation. The groove through which the rail passes is covered by a narrow bronze flap.

The reserved area before mentioned extends to about 9 ft. westward of the railing of the Queen Anne statue, and the Corporation have moreover agreed to form round and outside of the entire boundary a paved footway, 6 ft. wide, which will be elevated by the usual curb above the roadway. The whole area within the curb will be flat, the sills on which the posts stand being flush with the footway just mentioned and this flat surface (it is not absolutely level) will extend throughout up to the steps leading to the cathedral.

The sill supporting the posts is of Aberdeen granite, 2 ft. 4 in. wide. The posts, which are of the dark red granite from the Shap Quarries in Westmoreland, are polished, and are ornamented by a deeply-sunk neck moulding for the purpose of attachment of the temporary barriers already described. The posts are generally 1 ft. 5 in. in diameter at the base, tapering in the shaft (3 ft. 6 in. high exposed to view, and about 1 ft. 6 in. sunk in the solid concrete and granite curb), and are 7 ft. 3 in. from centre to centre, or about four diameters apart, excepting that two larger openings, which are defended by larger posts, are formed to give carriage access to the west front for the royal, civic, and other dignitaries on the occasions of great festivals. These may be seen by reference to the engravings. The paving in front of the great steps is formed with panels by means of granite bands, 11 in. wide, the intersections being marked by octagons, and the filling-in where the carriage access is intended is of strong granite blocks, and the remainder for the most part is formed out of the old Purbeck pitching, a large portion of which was found to be sound and hard, and has been carefully reworked and gauged for the purpose.

The statue of Queen Anne, the care of which presumedly rests with a Government department, will have to be very considerably restored, as will also the fence round it, unless, as is more likely to be done, the fence is removed entirely, and as we have shown in our engraving.

The plan shows a circular pathway round it, to be formed with radiating slabs of granite circumscribed by a margin of the 11 in. granite, similar to the divisions of the panels.

The steps forming the great flights in front of the portico are formed of black Guernsey granite, which the surveyor has been at much pains to procure in the proper scantlings, having personally visited the quarries in the island for that purpose. These take the place of the old black marble, now much disintegrated. The material is very durable. They were worked in lengths at the quarries, and afterwards rubbed on risers by the cathedral masons.

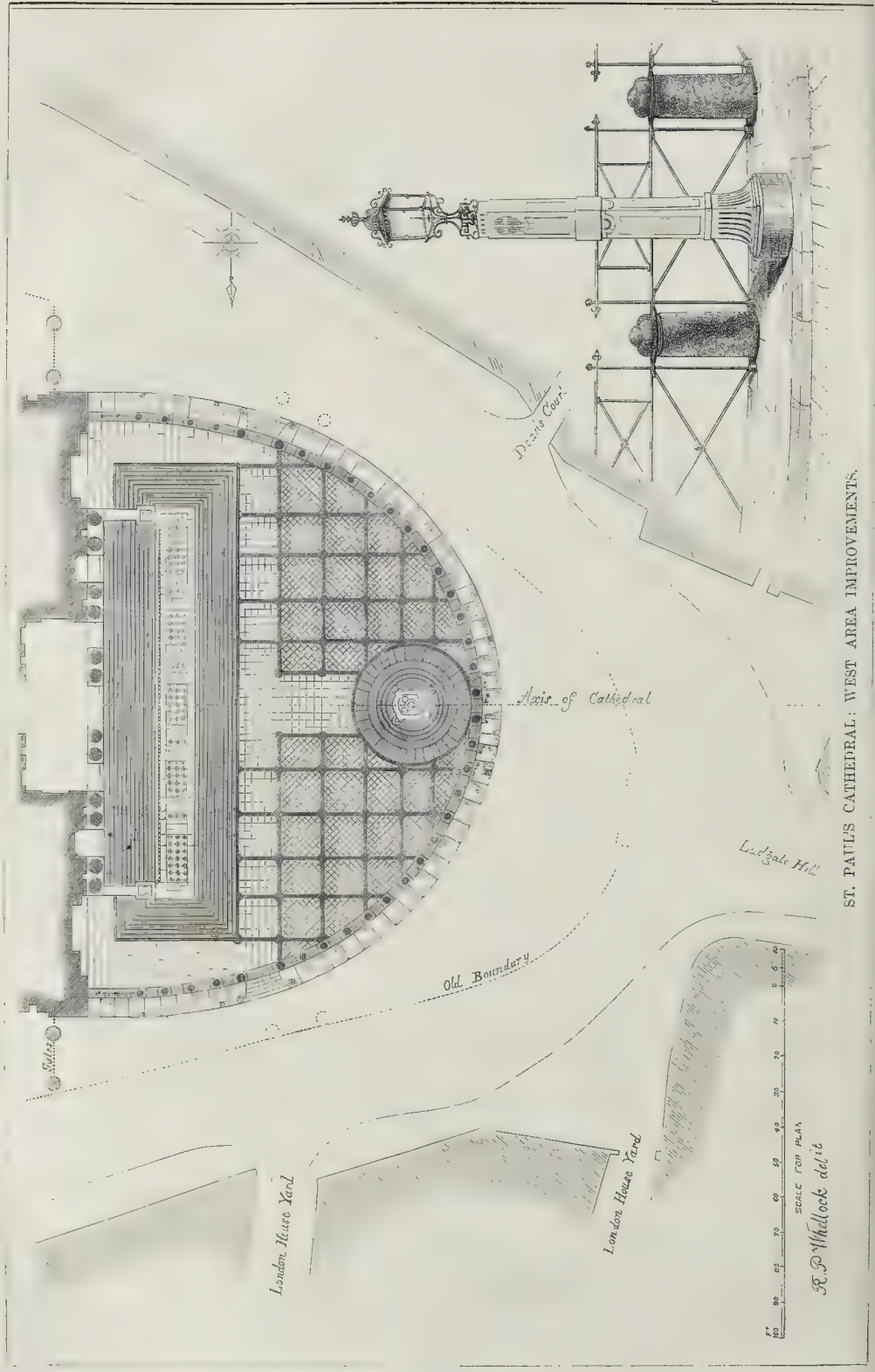
Mr. Penrose has designed the lower flights with returned ends, as shown on a plan by Sir C. Wren himself, in the possession of the chapter. The landing will be paved with marbles of different kinds, consisting of a margin of Sicilian, enclosing panels of squares, arranged lozenge-wise, of black and red, the latter being from the revived Rosso Antico quarries.

The lamp-posts are ten in number, two for the pedestals, for which open iron or bronze scroll-work designs are contemplated, and eight for the area, for which granite posts have been proposed, and a study at large for one of them is introduced in the plate; but none of them have as yet been finally settled.

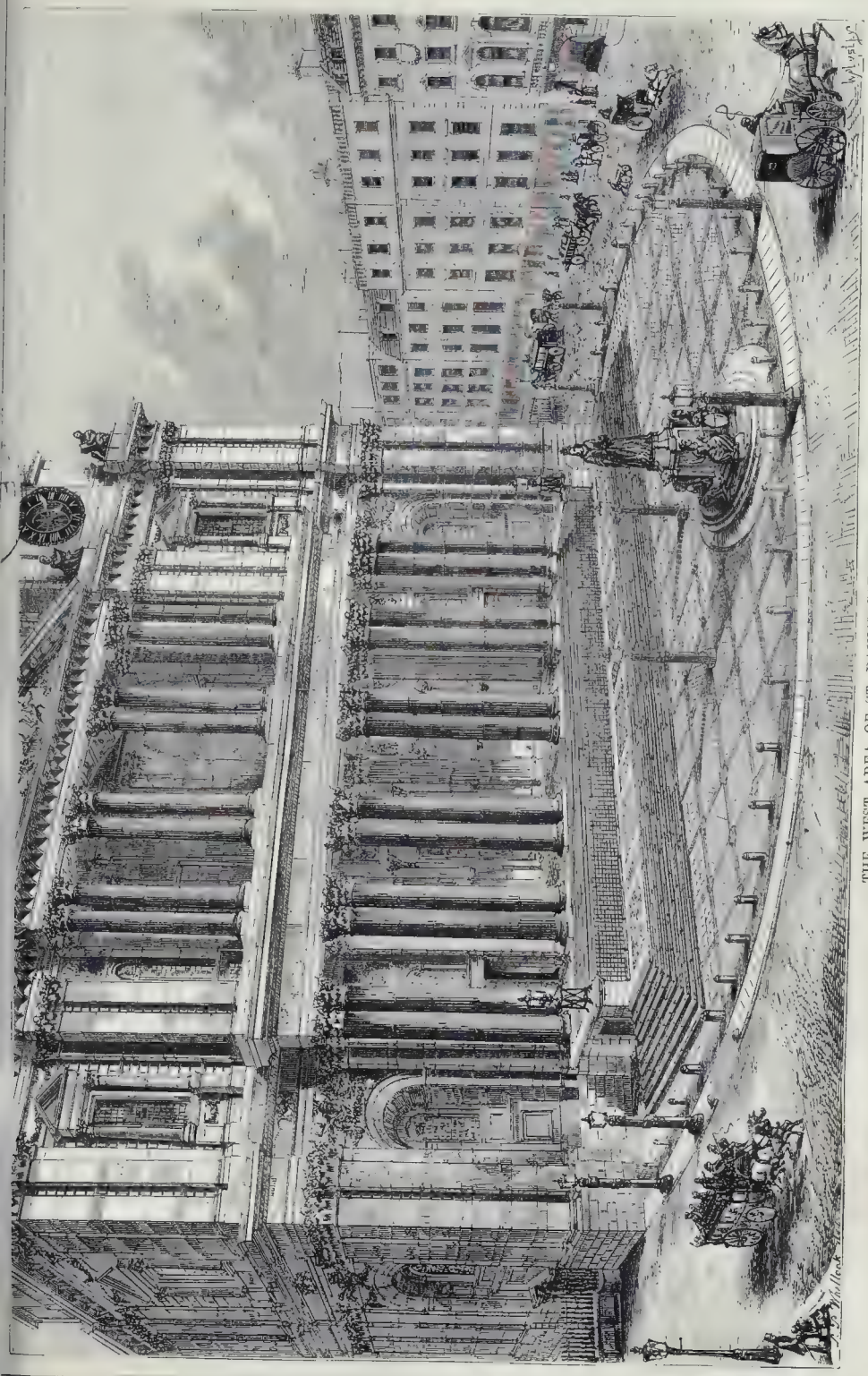
The works have all been designed by the cathedral surveyor, and carried out under his superintendence by Mr. Wilkinson, the cathedral clerk of works, and the regular staff of workmen, with such temporary assistance as the occasion has required.

The contractors for the materials supplied are as follow, viz.:—Messrs. Duguenin & Hamley, of Guernsey, for the granite steps; Messrs. Manuelle, of Seething-lane, London, being the agents, and who also supply the Aberdeen granite curb; Messrs. Freeman, of Westminster, for the slabs of carriage-way and the intersecting bands, &c.; Messrs. Fenning, of Cornhill, for the Shap granite posts; Messrs. Field, Poole, & Sons, for the marbles of landing; and Messrs. Cubitt & Co., of Gray's-inn-road, for the moveable iron railings.

The progress which has been made in the whole makes it probable that, before the year draws to a close, the outer railing will be removed, and a great improvement, and one which Sir C. Wren would have desired (for the railing, as executed, was not after his ideal), will be offered to the public eye.



ST. PAUL'S CATHEDRAL: WEST AREA IMPROVEMENTS.



THE WEST AREA OF ST. PAUL'S CATHEDRAL.

A PILGRIMAGE TO WREXHAM AND ITS VICINITY, NORTH WALES.*

An architectural pilgrimage a century ago to the grand old church in the "trim Wricksam towne, a pearle in Denbighshire," now recognised as the town of Wrexham, would have afforded an intellectual treat of no small value; however, when the substance cannot be obtained the shadow must suffice.

The history of a Mediæval church is always more or less romantic or poetical, a peculiarity appertaining to Roman Catholic times, when superstitions were preferred to the holy Scriptures; but the architecture of the old churches, based upon scientific knowledge, always affords a truthful history, open to reason, and not requiring the aid of fancy.

The local guide-book informs tourists that Wrexham "has no history, relative or individual, and that its origin is involved in obscurity," and it was anciently famous for its buckler-makers, and to-day it is famous for its good ale. The good ale appears to have been of no mental benefit to the town in former times, as the maltsters ejected a popular Welsh curate for preaching against intemperance. The guide-book must not be unkindly criticised, as its writer, a solicitor, modestly undertakes "to concentrate only that which floats upon the surface of the current literature."

The three finest Perpendicular churches in North Wales are St. Giles's, Wrexham; All Saints', Gresford; and St. Mary's, Mold. These churches contain superior work; the first is very gorgeous externally, with a tower of the Somersetshire kind, and is confessed to be the glory of North Wales. This church consists of a tower, nave and aisles, north porch, and a polygonal apse at the east end, all being finely proportioned. The nave is separated from the aisles by octagonal columns, with moulded capitals and bases; the arches are plain and cambered. The nave has a clearstory, with windows in two-lights cinquefoiled. The timber roof is open, of low span, with rafters and moulded tie-beams, and knees supported by stone corbels, with angels bearing shields; there is a lower range of corbels, which, perhaps, originally carried vaulting shafts. The spaces between the rafters are subdivided into squares, with smaller squares and narrow intersecting ribs, with bosses at the intersections. The pulpit stands on the north side of the nave, by the east end; it is modern, and of an octagonal form, having niches filled with the figures of our Lord and the Evangelists, and enriched with marble shafts and much carving. It cost 200*l*. The pulpit formerly stood two compartments westward of its present position, against one of the columns on the north side. The font is ancient, octagonal, with water-drain, and of good proportion; it has been rechiselled, and placed at the west end of the nave. For many years it was in the garden at Acton House, misused as an ornamental basin. The arch between the nave and tower is lofty, and supported by generous attached clustered columns, with gilded capitals and bases.

The western window has five cinquefoil lights, with trefoil-headed mullions in the arch. A large painting of King David, said to be by Evans, hangs on the south wall, near the tower. It was brought from Rome by Elihu Yale. There was formerly a painting of the royal arms. The organ is at the west end, under the tower. It was reconstructed in 1853. The pipes are placed on each side, so as to expose to view the west window. In front of the organ-gallery are the arms of Queen Elizabeth, carved in wood. The organ, at one time, the only one in the diocese, except St. Asaph, was built by Green, of London, in 1779, and cost 300*l*., which was raised by subscription. At the west end of the nave is an elaborate Gothic mural monument, in white stone, to Sir Foster Cunliffe, bart.,—date, 1776. The lectern, at the east end of the nave, is of brass, in the form of an eagle, with wings expanded. It has an inscription, stating that it was the gift of Sir Roger ap Gryffyd, of Plas-y-Stewart, bequeathed by will in the year 1524. An old MS. says that it cost 6*l*. A carved oak reading-desk stands at the west end of the south side.

The nave and aisles are paved with encaustic tiles. The huge galleries which were placed in the aisles in 1820 were, with all the high pews and the ground-floor, removed in 1867. The present oak seats were then put in their stead, and the church was "thoroughly cleaned, and warmed by an apparatus running along the floor. Until then, in recent times, it was heated by four large stoves, one at each corner of the church. This event of 1867 is called the Restoration. At this time the walls were chiselled, and the process disclosed some dauby paintings." If the editor of the guide-book had referred to the *Builder*, vol. xxv., p. 824, he would have found that during the process of cleaning the walls from the successive coats of whitewash some very interesting remains of mural painting were brought to light, the most important being portions of the representation of the Last Judgment, over the chancel arch, the colours remaining in good preservation.

"At the Restoration," says the "Guide-book," "the faces of the lowest range of the corbels on the south of the nave were found to be composed of plaster of Paris, or some other cement. They were removed, and the present figures cut in the stone in their stead. It is to be regretted that these latter, whilst they are not 'restorations,' have no local pertinency; and though some of them are cleverly done, they have no other origin than the fancy of the artist." If this be correct, it would have been better not to have re-sculptured them.

The mural monuments are placed on the walls of the aisles, some having been removed from the chancel. On the east wall of the north aisle are three brass plates,—to the wife of Thomas Davies, 1736; Vincent Bradley, 1743; and John Wynn, 1796. There is a marble monument to the widow of John Fryn, 1817, by Richard Westmacott, of London. In the centre of the north wall of aisle is an elaborate monument to Mrs. Mary Myddelton, daughter of Sir Richard Myddelton, of Chirk Castle, date 1747. It is the work of Roubiliac, executed in white marble, and represents the resurrection of the deceased, obedient to the summons of a *Cupid!* A neat brass plate recording the lady's death would have been more appropriate and less offensive. There are also tablets in memory of Ursula Lloyd, date 1730; Edward Wettnall, timber merchant and carpenter, date 1766; Edward Smith, collector of Excise, 1757; Philip Paleston, 1776; Mary Davies, 1802; Frances Paleston, 1804; also William Johnson Ellenson, 1829. Four mural brass plates complete the memorials in the north aisle,—John Williams, 1746; Christian Jones, 1747; Maria Ellis, 1786; and Elizabeth Moore, date 1797.

On the south wall of the south aisle are mural brasses to Jonathan and Mary Price, 1729; John Jones, of Llwynoun, 1740 and 1799; Evans, 1751; Ann Wilkinson, 1756; Penelope Jones, 1821; and Thomas Parry, of Llwynoun, 1845. There are also marble tablets to Edward James, 1749; Martha Foulkes, 1806; and John Foulkes, 1815. A stone slab let into the wall to the wife of William Poynton, 1746. At the east end of this aisle is a curious monument to Sir Richard Lloyd, of Esclusham, 1676, a judge and friend of Charles I.; and a classic monument to Owen Bold, 1703. An elaborate Gothic tablet to Alexander Murray, 1835, completes the monuments in the south aisle.

The windows in both aisles, excepting at each end, have obtuse arches. They are in four lights, with trefoiled heads and trefoil-headed lights in arches. In the south-east angle of the north aisle is a large bracket, moulded and carved. In the south aisle, in the south wall, at the east end, is a small cinquefoiled-headed recess. In the angle of the aisle at this end is a rich canopied niche.

In 1820, the date being on the outside, the south aisle was lengthened westward, enclosing the south window of the tower and one of the buttresses. This has shortened the external appearance of the tower on this side, and forms a clumsy addition. There is a settlement between the old and new work and the corbels to the external label of the new window have never been sculptured. It was proposed, in 1867, to erect a "north chancel aisle," to receive the organ. This would have destroyed the symmetry of the apse. At this end of the aisle, on a framed board, are the arms emblazoned of John Trevor, 1682.

The roofs of the aisles are lean-tos, principals and knees moulded, the latter supported by stone corbels, spaces panelled. The two tattered banners in the aisles are the old colours of the 42nd regiment, and bear, amongst others, the names of Alma and Inkermann.

The chancel floor is two steps above the nave, and the altar pavement is raised two steps. The chancel is polygonal, and forms an enlargement of the original church, not a modern but Mediæval addition. The east ends of the body and aisles were originally in a line. The present chancel arch was formerly the east window, which has been opened to the floor level. The tracery in head is left in a broken state. On each side is a canopied niche. At the east ends of the north and south aisles, were formerly chantry chapels, enclosed by screens; the entire wall surfaces on the north side were originally powdered with *fleur-de-lis* and other devices. The former chancel was limited to two bays or compartments of the body of the church, which accounts for the windows at the east ends of the aisles having more acute arches, with four lights, the central mullion at the springing, diverging, and forming two inner arches. The east window of the chancel is pointed, and in five cinquefoiled lights, transomed, and contains a pictorial history of the "Life of our Saviour," in painted and stained glass. A painting, said by Brown Willis to be a Titian, formerly hid the east window, and was sold for 9*l*. The side windows are in four lights, with cinquefoiled heads. The windows in the two angles, are in three trefoiled-headed lights, filled with painted stained glass, St. Peter in one window and St. Paul in the other, date 1867. On the south side are three sedilia, with canopied heads, cinquefoiled. Beneath the window is a recumbent stone effigy of Hugh Bellot, in his canonical robes, Bishop of Bangor and Chester, date 1596. He was employed by Queen Elizabeth in translating the Bible, and would not have a female servant in his house. On the same side of the chancel is a white marble monument to William Lloyd, of Plas Power, date 1793. On the north side is a marble monument to Fitzhugh, date 1784, also a mural marble monument to the Rev. Thomas Myddelton, by Roubiliac; and a monument to the wife of Archibald Peel.

The reredos, or altar-screen is in five canopied compartments, cinque-foiled. There is a small doorway under the east window. The floors of the chancel and altar are paved with encaustic tiles, and stalled with oak seating on each side.

Of the exterior of the church, the tower, clearstory, aisles, and chancel are embattled; these, with two pinnacles of the tower, have been rebuilt; the cornices are ornamented with sculptured figures and pateræ. The tower is a study of itself; it is mostly panelled; the buttresses and the bands or strings are also panelled. Between the angle buttresses on each side are three projecting square shafts, commencing from a string just above the west window, and terminating with crocketed pinnacles above the embattlements. On each shaft are three sculptured statues of saints, about thirty in number, in canopied niches. Amongst them is that of St. Giles, to whom the church is dedicated. The guide-book says that "two of the niches are deserted of their saints, who, one day walking from their pedestals to take the air, fell down, and were broken." The buttresses are in six stages, with gablets surmounted by pinnacles. Rising from each angle of the tower is a hexagonal canopied turret. The belfry windows are canopied, in three lights, transomed and foiled. The windows of the two lower stages are canopied, in two lights, transomed and foiled. The ground-story windows are pointed and labelled, in three lights, cinque-foiled, with trefoil-headed tracery. The west doorway has a pointed door, with square hood moulding, and is otherwise plain. The tower forms a noble feature, a study of itself, and it would be well if the Institute of Architects were to offer its silver medal for the best measured drawings of it,—a far superior subject than poor "Temple Bar." The stone staircase is in the north-west turret of the tower, and leads to the belfry, which contains ten bells, cast by Rudhall, in 1726. They were conveyed up the Severn to Shrewsbury, and thence transported by hand. The total cost of founding, carriage, hanging, &c., was 450*l*. 17*s*. 8*d*. The weight of the largest bell is 28 cwt. The little bell (the parson's bell) is one of the old peal, and was cast in 1678. Amongst the former peal was a large bell from St. Asaph Cathedral inscribed Dicas Boddlewiddan.

The exterior of the chancel is more ornamental than the body of the church, there are canopies to the windows, and the buttresses have crowns in full relief on the set-offs. All the pinnacles, including nave and aisles, are panelled, crocketed, and placed diagonally on the buttresses. There is a settlement in the east wall of the chancel. The basement mouldings around the church are nearly obliterated.

* See vol. xxii., p. 719; vol. xxiv., p. 609; vol. xxvi., p. 29; and vol. xxix., p. 829.

In front of the north porch over the doorway, is a canopied niche containing mutilated figures of the Virgin and Child.

In 1331 the spire of the former church was blown down, and the church itself was burnt in about 1457. The present edifice is in the Perpendicular style of architecture; the nave was built in 1472, then the north aisle, the south aisle next, and lastly the tower, in 1506, as indicated on the inside. The windows are glazed with glass from Normandy; they were reglazed in 1810 and 1811. The height of the tower is said to be 135 feet.

In 1645, Cromwell converted the church into a stable for his horses. In about 1815 the churchyard was enclosed by an iron railing, at the cost of 380*l*. There was formerly a lych-gate on the site of the iron gates next the street on the north side of the churchyard, incorrectly called a porch in the guide-book. When excavating for the standards of the iron gates, a stone effigy of an armed knight was discovered, with a couchant dog or lion at his feet. The shield is charged with a lion rampant, and has "*Hic jacet ap Howell*" inscribed on it. This figure is now placed in the north porch of the church in an upright position. There are several curious and interesting memorials in the churchyard; but as they are not of an architectural character, the guide-book is more suitable for them. The pinnacles and cornices of the south side of the church have been much disfigured by the smoke emitted from the numerous maltsters' chimneys on this side of the town, which lie at a lower level.

The town is reputed healthy, which is to be attributed to its situation. Its sanitary condition is imperfect.

Wrexham contains two churches and twelve chapels, a town-hall of the time of Henry VIII., an infirmary, savings-bank, provincial insurance company, grammar school, and others, and as these have been noticed, and some of them engraved in the *Builder*, from time to time, they do not require further notice. In the vicinity of Wrexham are several interesting mansions,—Brymbo Hall, a design of Inigo Jones; Eiddig Hall, containing heraldic bearings of the Royal tribes of Wales, and a valuable collection of Welsh manuscripts; Trevalyn Hall, date 1576; Pen-y-bryn, the residence of Beech in Boswell's "Life of Dr. Johnson"; an old house called Bryn-y-ffynnon, formerly a convent, recently altered; Plas-Grono, the birthplace of "Nimrod," of *Fraser's Magazine*; and many other places full of literary interest.

Of churches, there is Gresford Church, "restored" in 1867, with eight Knights Templars on the top, and Henry VII. in a niche on one side. In Holt Church, recently "restored," the floors of the pews were recently strewed with, not rushes, but straw. In the churchyard is a yew-tree 1,400 years old, and 26 ft. in circumference. Samuel Warren, author of "Ten Thousand a Year," was born in the parish.

A local or district guide-book, concisely prepared in chronological order, the early authorities culled, and recent knowledge added from personal visits, would be very useful and instructive to tourists. It would be well in compiling the manual to omit all funny epitaphs, small talk, and poetical effusions, however creditable to their authors, and satisfy the reason and not the feelings; dry matter of fact is all that is required; and the more urgently so, as at the present time it is the fashion to destroy all that is old, clear away or remove monuments out of sight, and to call the act a "restoration." For the future it would be all that is necessary to limit the internal memorials to brass plates let into the wall or floor; all churches, including St. Paul's and Westminster Abbey, having been much mutilated and disfigured by nonsensical marble monuments.

W. Pettit Griffith, F.S.A.

Society of Engineers.—The first meeting of the Society of Engineers for the session 1873-4 was held on Monday evening last, the chair being occupied by the vice-president, Mr. W. Macgeorge. On that occasion a paper was read on recent improvements in pumping-engines for mines by Mr. Henry Davey, of Leeds. The author prefaced his subject with some observations upon the main objects which should be kept in view in designing steam machinery. These were economy of construction, of maintenance, and of fuel, upon each of which questions he offered some practical remarks.

INDIAN ENGINEERING.

Under the title "India and Indian Engineering," three lectures delivered at the Royal Engineer Institute, Chatham, in July, 1872, by Julius George Medley, Lieut.-Colonel Royal Engineers, Assoc. Inst. C.E., and Principal of the Thomason Civil Engineering College, Roorkee, &c., have been published by Messrs. Spon, of Charing-cross.

In these able and interesting lectures some idea is given of the physical features of India, its climate, its people, and of the peculiarities of Anglo-Indian life. The author then proceeds to say something of the Government, and the great Department of State by which public works are executed, and of the special duties and probable career of the Royal Engineer officers who are there employed; and passes on to the materials and modes of construction with which the engineer is called upon to deal, and those specialities which distinguish his work from English practice.

Of the state of the arts and manufactures in India some judgment may, as the author remarks, be formed by an inspection of the beautiful specimens collected in the Indian annexe of the International Exhibition.

Some of the once famous Indian manufactures, he states, have almost disappeared in modern times, such as the Dacca muslin, of which it was said that a full-sized dress-piece could be drawn through a finger-ring. Native architecture, too, of the present day is tawdry and meretricious. But Cashmere is still famous for its wonderful shawls, in which we know not which to admire most, the beauty of the fabric, or the exquisite patterns and harmonious contrast of colours; Agra still executes that beautiful inlaid stonework, which is yet only one of the wonders of the Taj Mehal; Delhi and Benares send gorgeous embroideries, heavy with gold and rich in colouring; Cuttack furnishes its exquisite silver filagree-work; Sealkote, its steel inlaid with gold in arabesque patterns; Bombay, its massive and curiously-carved ebony furniture. But art can never attain to its highest development in the absence of a healthy national life, and it is to former ages we must turn for tructures like some of the Hindoo temples, or the great mosque at Delhi, or "the Dream in Marble" at Agra (the Taj Mehal), and even the artistic manufactures named are legacies from the past, that are apt to degenerate at the present day into a grotesque copying of European designs.

Yet there is an indwelling spirit of artistic grace in the East that will not easily die, which is seen in the instinctive choice of colours in the clothes of the very poorest on a holiday festival, —in the shape of the commonest earthenware utensils,—in the very salutation of the poorest peasant in the fields.

The work of an engineer officer in India, as in England, is of a very miscellaneous description. Every work is estimated for previously to sanction by the executive engineer, and the estimate, after being checked by the superintending engineer, is forwarded to his chief for sanction, who, if he approve the design and estimate, recommends it for sanction by the local government, or, in case of a large work, forwards it on to the supreme government with his own remarks. If not satisfied with it, he may return it for revision or explanation.

When a work is sanctioned and ordered to be commenced, the money being also forthcoming for it in the Budget, the executive engineer goes to work. In the large presidency towns, and a few of the more important stations, he may get the work executed by contract; but, as a general rule, he will have to be content with procuring his materials by contract, and perhaps getting his earthwork done in this manner. For the rest, he will have to employ daily paid labourers, and occasionally may have to import labourers from other districts, to organise them into gangs, provide them with tools, and arrange for their food, water, and temporary shelter. For this he has the assistance of his European overseers, native sub-overseers, and *mistrees* or head-artificers.

The European overseers are nearly all non-commissioned officers or privates who have volunteered from the various regiments in India for the Public Works Department, and have been trained at the Roorkee College. They are allowed to wear plain clothes, and are of course struck off all military duty. As a rule, they are hard-working, intelligent men, and many of them are most valuable subordinates, but they are generally deficient in practical knowledge, are not very conversant with the language, and are but too often given to drink.

The native sub-overseers have also been trained at Roorkee, and are generally good draughtsmen, surveyors, and estimators, but they are drawn from the trading instead of the working classes, have no practical experience, and lack physical stamina.

The *mistrees*, or native head masons and carpenters, are generally intelligent and good men, quick to learn and easily managed, but few have any theoretical knowledge.

The native labourer is patient, docile, and lazy, never drinks, and is easily managed by any one who understands him.

There are many varieties of stone in different parts of India, and it is employed in the various forms of ashlar, rubble, &c., very much as it is in Europe. Granites, limestones, and sandstones are extensively used in the localities where they occur, but the cost of carriage over bad roads to distant places necessarily restricts the employment of this material. In Southern India laterite, a clay-stone, is extensively used, being easily worked, and becoming hard by exposure to the air. In Upper India, Delhi and Agra are famous for their red sandstone, and Jyepore for its white marble, of which the Taj and other famous buildings are constructed. Bombay has also many varieties of stone, notably the Poreer bunder limestone. Allahabad has some fine quarries of sandstone, of which the new Government Buildings have been constructed, and Colonel Medley recommends to notice the account of the working of the Purtarpore Quarries, in the professional papers on Indian engineering, as giving much practical information. Slate is generally scarce and inferior, but some fine quarries have lately been opened out at Dalhousie, and in the Khuttuck Hills, in the Punjab.

There is a kind of soft stone called moorum found in Central and Western India, which though almost useless as a building material, is extensively employed for road metalling. Kunkur, too, is quite an Indian speciality, though it is almost entirely confined to the north-western provinces. It is a peculiar kind of oolitic limestone, found in beds just below the surface, and of two kinds: one adapted for building purposes in which it strongly resembles artificial concrete; the other answering admirably for road-metalling, for which purpose it is broken into lumps about the size of an egg, drenched with water, and then rammed until perfectly smooth after which it is allowed to dry before the traffic comes on it.

The manufacture of artificial stone by Ransome's process has been tried at Bombay on a small scale, but not with success in an economical point of view.

In the greater part of Upper India, and over much of the rest of India as well, *brick* is the chief building material, and there are few engineers in India who will not have much to do with brick-making. The lecturer therefore strongly recommended his hearers to make themselves well acquainted with the latest improvements in the art, at the same time bearing in mind certain Indian specialities which will limit the use of many of the methods. These are the cost of carriage, the general absence of coal fuel, the dearness of other fuel, the absence of skilled subordinates, and the disinclination of natives to be driven out of their own customs, and to try experiments.

There is plenty of good brick-earth to be found, but the cost of carriage prevents the same care being taken as at home in the selection and admixture of clays. The clay is often tempered by hand, and then taken straight to the moulding-table; but pug-mills are now pretty common, worked by bullock power. The bricks are usually sand-moulded, and are made of the English size, and stacked in temporary sheds to dry. Brick-making machines have occasionally been tried; but their expense, the difficulty of repair, and the cheapness of hand labour, have always driven them out of the field. Hollow bricks, too, are never seen; and as the author thinks they would be found to be much cooler in the walls of buildings than solid bricks, he would recommend any one to acquire information of their manufacture and cost.

Coloured bricks are nowhere used in India, and their absence is much to be regretted, as they would be most useful both for architectural ornamentation and for floors and similar purposes. The proper clays, on which the colour depend, are found in some parts of India; but careful search would doubtless bring to l

others; but here again we are met by the fact that their manufacture requires skill and capital, which are not found on the spot, and would have to be imported. The same remark applies to terra-cotta and encaustic tiles, which would be admirably adapted for Indian use.

Good ordinary bricks are generally procurable in India, if only proper care be exercised, and a fair price paid for them. The bricklayers require close watching, and often systematic instruction in the all-important subject of bond; for the common native brick is very small, and laid in quantities of mortar with little care about bond; so that native walls are really masses of concrete.

Tiles are extensively used in India for roofing purposes, and they are often very badly made.

The subject of limes and cements is a very important one in India. Lime is obtained from the limestone boulders found in hill torrents, from kunkur, from beds of marl, or rather calcareous tufa, and from limestone *in situ*. It is burnt with wood fuel, sometimes in the open, generally in conical kilns, and is mixed with sand, burnt clay, or brick-dust, and sometimes other ingredients, to form mortar in the usual way. The best lime is that procured from boulders, which when mixed in the proportion of one part lime to two parts of *soorkee*, or pounded brick, forms an excellent mortar for hydraulic works. Kunkur lime, as a rule, is simply mixed with sand. When lime is burnt with *oopla*, care must be used in sifting and separating it from the ashes of the burnt fuel, otherwise, of course, its strength will be greatly impaired. Artificial cements have scarcely hitherto been made or used in India.

Concrete is not very much employed, though it has attracted a good deal of attention lately; and some of the works on the new Sirhind Canal were designed to be built almost entirely of it, such as arches of 40 ft. span. Indeed, with an abundance of excellent lime, and a great scarcity of fuel, it seems curious that it has not been more extensively used. Concrete blocks were recommended for the great weir over the Ganges, by the Ganges Canal Committee, to be composed of shingle, sand, and lime; and if proper apparatus be used for testing the quality of the lime, there seems every reason to anticipate economy and good work from such a mode of construction.

Lime is also used in stuccoes and plasters much as in England. Madras is noted for this work, where the very beautiful *chunam* plaster for interiors of rooms, is as smooth, hard, and polished as marble. Coarse sugar and pounded egg-shells are mixed with these more expensive plasters.

Of timbers there is an immense number in India occasionally used; but practically engineers are restricted to a very few varieties, which are the only ones procurable in any quantity. In the Punjab, for instance, the deodar (*Cedrus Deodara*) is the principal wood employed, being nearly identical with the famous cedar of Lebanon. It is found in the Himalayan forests. In Burmah and Western India, teak is the principal wood; its many excellent qualities are well known. Other common timbers are the mangoe, used only for planking or furniture, and readily attacked by insects; the sissoo or sheesham, a hard, strong, but crooked wood, in general request for many purposes, especially furniture, as it takes a beautiful polish; the babkur or babool, an acacia, a very hard, tough wood, much used for carts; the famous Bombay teak-wood, of which some beautiful specimens of carved furniture are to be seen in the Indian Court of the International Exhibition; the toon, an inferior mahogany; the sandal-wood, which has a strong perfume; and many others.

Timber in India is generally seasoned by the air or water process, and is occasionally kyanised or Burnettised. Well-seasoned timber stands in climate well if carefully protected from white ants, those pests of the East. For this purpose, the ends of beams fitting into walls are generally charred and tarred, or the timber is soaked in a solution of sulphate of copper; but the best preservative is carefully to prevent any wet or mud from coming in contact with it. Wooden posts buried in the earth will very soon become useless.

The Indian carpenters are generally very fair, and sometimes very clever workmen, though they do squat on the ground, and hold a piece of wood with their toes while they work the drill by means of a bow and string with their hands. Wages, of course, vary more or less; but the pay of a common labourer all over India may be fairly set down at 2 annas, or 3d. a day, and of an ordinary mechanic at 6d. to 7½d., with which he finds himself in everything. A *beldar*, or navvy, will get 4½d., and a skilled carpenter or mason from 9d. to 1s. These wages seem very low compared with English prices; but the men all do far less work than an Englishman; thus, the lowest estimated rate of common earthwork is now about 5s. per 1,000 cubic feet, which is at the rate of 50 cubic feet only per day for each man of the gang employed.

Good ordinary brickwork will cost about 40s. per 100 cubic feet; ashlar, about 2s. per cubic foot; timber-work, 7s. per foot, "wrought and put up."

Taking into consideration the price of food, and other things, Colonel Medley reckons the difference in the value of money employed in constructing public works in India and in England as 1 to 4, *i.e.*, that a work costing 10,000*l.* in India would cost 40,000*l.* in England.

We had been led by the accounts of some recent works to a different opinion.

THE MARGATE DRAINAGE COMPETITION.

The town council of the borough of Margate have had a lively time of it lately in their frequent discussions upon the subject of the borough drainage; meeting after meeting, now of the corporation, again of the committees, then of the burgesses in common hall, has been held, and the whole subject has been debated *pro* and *con.*, with the result that might have been expected, viz., the determination to do nothing until compelled. Nearly three years ago the resolution was put and carried in the council-chamber,—"That the time has now arrived when the borough ought to be drained," and immediately afterwards another resolution to stop the progress of the question, even after a leading engineer (Mr. Bazalgette) had been consulted thereon, was carried by a small majority, and nothing has been done beyond mere effortless talking, and a few excursions at the public expense, by a "Drainage Inspection" Committee, until, awakened by a most damaging report forwarded by the medical men practising in the town to the Local Government Board, the corporation were goaded into action by the appearance of Dr. Gwynne Harries, the Government medical inspector, in their midst.

Dr. Harries met the corporation at the town-hall on the 3rd of April last, and quietly told the council that the cesspool system in the town was totally inadequate to absorb the deleterious emanations of the sullage, and that some machinery must be organised very promptly for the purpose of effecting the drainage of the entire town, and the prompt abolition of the cesspools. The corporation rated roundly the medical men who had stirred up the subject, grumbled at the medical inspector, and finding remonstrance and even statistics of no avail to ward off any longer the *per force* interference of the Government, they reluctantly, and in a very half-hearted manner, determined,—not on draining,—but on taking professional advice. Within a month,—so hotly made they haste,—they had had three or four meetings upon the subject, when it was at length discovered that the contours of the 10-ft. Ordnance plan, obtained several years since, did not extend into the newly-built districts. Here was a chance to put off the matter. If an engineer were employed to design works of drainage he would have to take the levels of these districts himself,—a work of some weeks,—and the expense would be formidable; but if competitive plans were called for, each competitor would have to do this for himself, and the expense would be enormous. In vain was it elicited from the borough surveyor that he could in six weeks run and check all the necessary levels, and place 300 copies of the town map upon the Board-room table at an expense of under 50*l.*; and in vain did Mr. Councillor Sear, himself an architect, indorse the borough surveyor's opinion that it might be done easily within the specified time, for the corporation apparently did not want to go on,—the work was distasteful—the cesspools were good—the medical staff were wrong—the Government inspector was prejudiced—the town did not require draining—the corporation did not like Government interference,—and, therefore, a motion "That nothing further be done until the Ordnance Survey of the borough be completed, and their plans supplied," brought forward by Mr. Alderman Reeve, who had previously been thwarted in his special scheme for getting a sewage irrigation farm just near the borough boundary, found nine ready supporters in a meeting of twelve, and the nine went their way considering that they had effectually shelved the question for an indefinite time to come. But the Ordnance Office at once sent men and obtained the necessary levels, and called in photography to their aid, and, probably two years earlier than if they had had to wait for the work of the *burin* of the engraver, photographed plans were produced, and early in July last a photographed plan of the town, with every level, and the most minute detail, was forwarded in twelve small sheets from the Ordnance Survey Office, accompanied by an intimation that copies might be had at 14s. 9d. each. The corporation were taken aback. Here was the very plan placed before them which was not expected to appear until some conveniently remote period, and a motion "That the necessary steps for forwarding the drainage of the borough be now proceeded with," met only with a feeble opposition. Debates warm and prolonged have followed,—one professional adviser—a limited competition—an open competition—all in turns have been advocated, and the discussions have resulted in a sort of compromise—a general invitation to submit to a selection of ten (*vide* our advertisement columns), and the conditions of the competition are now before us. A motion to invite six of our leading engineers to forward plans, and to give each of the six the sum of 50*l.* for his labour, fell through, and it was eventually decided to offer the sum of 300*l.*, in two premiums, among ten competitors, whom the corporation propose to select from the list of names which will be submitted by engineers, who are willing to go into this limited competition, and who have had more or less previous experience in sewerage and drainage works. Seeing that the number of tenements in the borough is stated as being under 2,500, the amount of premiums to be awarded seems to have been conceived in a liberal spirit, and we believe in the sincere desire of the corporation, who are greatly agitated by two opposing parties in their midst, viz., the sewage farm and the anti-sewage farm advocates, to adopt that scheme which may appear most likely to lead to a satisfactory result. Margate is as poor as she is popular, and any error in judgment among her rulers, in hastily venturing on the expense of a scheme that might in the long run prove inefficient, and necessitate the double expense of having the work done over again, would ruin the townspeople most effectually. They can well afford to pay for a success in this particular, but they cannot afford to pay for experiments, and would be crushed by a failure. Brighton, we are told, spent 85,000*l.* on a system supposed to be perfect, but which failed, and then a further expenditure was incurred of 80,000*l.* to amend the works. Dover and Worthing, too, and Hastings are instances of the same error. Let the corporation of Margate take heed lest they also follow these unfortunate precedents. Meanwhile Merthyr seems to have succeeded in the direction of a profitable and innocuous sewage farm (Dr. Alfred Smee's letters to the *Times*, notwithstanding), and the Margate Sewage Inspection Committee, whose instructions direct them to "visit towns which have the reputation of being effectually drained," cannot consider their labours as completed until they shall have visited this last example, and made their report upon the applicability of the system to the peculiar requirements of Margate. None can accuse the local authorities of precipitancy in this important matter, seeing that it has been for at least ten or fifteen years under discussion: act now they must.

DEATH OF SIR EDWIN LANDSEER, R.A.

This great artist died on Wednesday of last week in London. Deceased was the youngest son of the late John Landseer, A.R.A., the well-known engraver, and was born in London in 1802. He excelled in the painting of animals even while a boy, and became a student of the Academy in 1816. He began to exhibit when little more than fourteen years of age, and his earliest productions attracted attention, and gave great promise of future excellence. His "Chevy Chase," at the age of twenty-three, made him an Associate of the Academy. Among the best known of his numerous pictures are the following:—"Dignity and Impudence"; "Jack

in Office"; "The Old Shepherd's Chief Mourner"; "A Distinguished Member of the Humane Society"; "Saved"; "Alexander and Diogenes"; "A Highland Breakfast"; "The Drover's Departure"; "The Dog and the Shadow"; "A Fireside Party"; "There's no Place like Home"; "The Twa Dogs"; "Tethered Rams"; "Sancho Panza and Dapple"; "The Angler's Guard"; "Suspense"; "Comical Dogs"; "Young Roebuck and Rough Hounds"; "The Eagle's Nest"; "War" and "Peace"; "Bolton Abbey in the Olden Times;" "Titania"; "Laying down the Law"; "The late Duke of Wellington, accompanied by his Daughter-in-law, visiting the Field of Waterloo." In 1858 he exhibited "Deer-stalking," the first of his large drawings in chalk, which have since become so popular; in 1859 his picture of "Doubtful Crumbs," and "A Kind Star"; in 1860 his "Floods in the Highlands"; and in 1861 "The Shrew Tamed"; with three large drawings in chalk; and more recently "Windsor Park," "Squirrels Cracking Nuts," and "Man Proposes, but God Disposes,"—a scene in the Arctic Regions. The majority of his compositions have become popular as engravings. His grand bronze figure of the "Stag at Bay" was in the Royal Academy Exhibition of 1866; and the four lions in bronze for the base of the Nelson Column, Trafalgar-square, for which he received the commission from the Government in 1859, were placed on the pedestals and uncovered January 31, 1867. At the death of Sir Charles Eastlake, 1866, Sir Edwin was elected President of the Royal Academy. He refused, however, to accept the honour, and an adjournment for a week took place, in order to give him time for consideration. As Sir Edwin could not be induced to alter his determination, the presidency was offered to Mr. Maclise, who also positively declined it, whereupon Sir Francis Grant was elected.

Sir Edwin was knighted by her Majesty in 1850. Latterly his health, both of body and mind, was very much impaired. He lived and died unmarried.

DISPUTED OWNERSHIP OF BUILDING LAND.

The Mile End Old Town guardians are at present engaged in a question involving an unusually knotty point as to the ownership of certain lands within their district. It appears that many years ago a certain property near the corner of White Horse-lane was purchased with the view to the establishment of a "North-East Metropolitan Asylum for Vagrants." The property was purchased by a committee composed of representatives of the various parishes and unions in this district of the metropolis, with money borrowed for the purpose. Mr. Kelday, one of the present churchwardens of the parish of Hackney, was appointed clerk to the committee of management; but, ultimately, owing to some unexplained cause, the scheme for the building of the asylum collapsed. The statement now is that Mr. Kelday claims ownership of the land under the plea of undispnted possession for twenty years; and what renders the case of greater interest to those concerned is the fact that Mr. Kelday has let portions of the land upon lease to persons who have erected extensive buildings upon it. In the meantime it appears that for a long period the Mile End guardians have challenged Mr. Kelday's legal claim to the property, and have been endeavouring to influence the higher authorities in favour of its sale, and a division of the proceeds amongst the parishes interested. The Local Government Board, as the direct medium of communication with the executive, are the parties to whom application has been made in the matter, and it is a communication in reply received by the Mile End Board from the first mentioned body, which is of grave and seriously important moment to those builders and others who have up to the present time taken leases and erected buildings on the property. The letter from the Local Government Board states that the solicitor for the Treasury has the matter still in hand, and it also further intimates that if persons have taken leases of portions of the land in question from Mr. Kelday, without first taking steps to ascertain as to whether he has a legal title to it, they will have to abide by the result of the inquiry now pending. There is, therefore, the chance of serious consequences to those who have built upon the land should there eventually be an adverse decision as to Mr. Kelday's legal claim. On the other hand, however, he may be able to establish it. At present the question remains in this position, that the Mile End guardians are still in communication with the Treasury on the subject.

EXHIBITION OF APPLIANCES FOR THE ECONOMICAL CONSUMPTION OF FUEL.

The Society for the Promotion of Scientific Industry, Manchester, looking to the enormous waste there is in the consumption of coal, have resolved that an exhibition shall be held in Manchester, of all appliances and apparatus that tend to the economic use and saving of fuel, for the purpose of inducing attention to, and eliciting opinions of practical men on the matter, and of giving all consumers of coal an opportunity of comparing the various appliances, with a view to their adoption of that which will best serve their purposes. Exhibitors will be given every opportunity of explaining the speciality of their apparatus. Mr. W. G. Larkins, the secretary, will give any information desired.

WHAT SHALL WE BUILD WITH?

Sir,—I think those architects who are anxious for the credit of the profession should take an opportunity of visiting Westminster Bridge, and look at what is going on within range of vision. At three important national buildings,—Lambeth Palace, the Houses of Parliament, and the Abbey,—scaffolding is up for repairing the stonework. At the Palace it may be ancient work that is being restored, but at the other buildings it is modern work of about twenty years' standing, or less.

Would it not be well for our architects in future to follow the example of their brethren at St. Petersburg, Aberdeen, and other places, and build with everlasting granite? Of course, greater simplicity of treatment would be necessary; but this would be an advantage rather than otherwise, considering the smoky atmosphere of London. H. T.

NATIONAL MUSEUMS.

A standing committee has been appointed by the Society of Arts for the purpose of bringing under Parliamentary responsibility the national museums and galleries, so as to extend their benefits to local museums, and to make them bear on public education. It is desired to cause all national museums and galleries to be placed under the authority of a Minister of the Crown, being a member of the Cabinet, with direct responsibility to Parliament; thereby abolishing all unpaid and irresponsible trustees, except those who are trustees under bequests or deeds, who should continue to have the full powers of their trusts, but should not be charged with the expenditure of Parliamentary votes. Also to cause the Public Libraries and Museums Act (18 & 19 Vict., cap. lxx.) to be enlarged, in order to give local authorities increased powers of acting.

BELGIAN RESTORATIONS.

Sir,—I have no intention of joining the crusade against restoration which is just now so fashionable, but I must call your attention to certain wholesale works of destruction which are being perpetrated under the plea of restoration in the Netherlands.

The Belgians have taken the "Gothic fever" from ourselves, and, although they have caught the complaint late in the day, they seem determined to make up for lost time, as nearly every important church in the land is undergoing a more or less extensive restoration. Now as these "restorations" generally consist in the destruction of everything in the church which is not Gothic, you may easily imagine the havoc that is being created.

No one can have a greater admiration for Gothic architecture than I have, but it is undeniable that the Belgian churches owe quite as much of their interest and picturesqueness to their costly and magnificent Renaissance fittings as they do to their original structural excellence.

Surely, sir, it is barbarous to destroy or remove such works as the rood-screen at Boisle-Duc; the *whole of the fittings* of the great church at Courtrai; the statues of the Apostles and magnificent candelabra of the cathedral at Bruges; the marble screens of the cathedral at Ghent; and yet these and many other works of destruction are either actually accomplished or are being carried out.

I trust that you may consider this subject worthy of the attention of your valuable journal.

H. W. Brewer.

THE WARMING OF SCHOOL-HOUSES.

Sir,—Your excellent notice of the opening of Creek-road School, Deptford, does me undeserved honour in naming me the inventor of one of the grates. These are all by Mr. Boyd, of Conduit-street, my share in the particular kind alluded to being limited to an endeavour to adapt and improve it for school purposes.

With the enormous price to which coal has risen, the warming of a school-room has attained the dimensions of a problem most difficult of solution. The open fireplace is the favourite method, partly from English habit and partly from its assistance to ventilation. It is attended to most irregularly. Under one kind of teacher it speedily goes out; under another, it is kept up to roasting-point. In the class-room, it can have but one possible position, viz., the corner. In the school-room, it is hard to place well for equal diffusion of heat without being in the way.

Yet, for small school, say up to 600, it is the best method, provided the consumption of coal be economised, and the greater part of the heat be got into the room, instead of being, as is commonly the case, allowed to escape up the chimney. Several kinds of grates are being used in London schools, and the coming winter will afford some test of their relative and actual value.

It is doubtful at what point, as to numbers, it becomes more economical in first cost and annual maintenance to adopt what is called "artificial" warming. A school of 750 children is, perhaps, debatable land. When the number rise to 1,000 doubt is at an end, and the open fi has become the most troublesome as well as the most costly. E. R. Robson.

THE CONTRACTS FOR GRANITE IN HACKNEY: SERIOUS CHARGE.

A grave charge was made against the contractors broken granite at the meeting of the Hackney Distr Board of Works last week. The committee reported the Board that, having considered the tenders receiv at the previous meeting for the supply of 3,500 tons broken granite, they had decided to recommend that no of the tenders be accepted, and that the committee empowered to make arrangements for a tempora supply. In the course of a discussion which follow Mr. Eve, one of the members of the Board, stated th there was a general impression with regard to tender for granite that, no matter how fair might be the of made, it would stand no chance of acceptance; and th there was also an idea prevalent amongst the public of doors that the price of granite was kept up by unfa combination amongst the contractors, and that it was duty of the Board to take the first opportunity to bre up such a clique. Mr. Green, another member of Board, said he could confirm the statement that a feeli prevailed that it was useless for persons who did belong to a certain coterie tendering for granite. If it should be found to be correct, it would form the grou for a very serious charge against the officers of the Boa Mr. Clark and another member added, that the sta ments made respecting combination on the part of contractors for the purpose of keeping up the price granite was founded on truth. The recommendation the committee was adopted, and it was also decided endeavour to defeat the so-called clique for keeping the prices of granite.

BUILDER'S CLAIM FOR MAKING PLA AND ESTIMATE.

Maher v. Lipsom.—In this case, at Shoreditch Cou Court, reported in *Daily Chronicle*, before J. B. Dasc Esq., Judge, the plaintiff, Mr. Denis Maher, of W street, Hackney, builder, represented by Mr. Fear solicitor, of Worship-street, sued the defendant, Lipsom, of the Clarendon Arms Tavern, Church-stre South Hackney, for the sum of 5*l.* 5*s* for remewing p tition in the bar of the tavern, measuring up for propo work at the same house, inside and out, giving pro sional advice, getting up specifications for the work, valuing the same.

The evidence for the plaintiff was to the effect that had been sent for by the defendant, to look over the ho and bar, both exterior and inside, with a view to the re vating of the same, and then he was asked to prep specifications, and furnish an estimate of the work, wh he did, and employed another man to make the drawi upon which an agreement was entered into that he sho do the work at the price he had tendered; but the fendant departed from the agreement, and employ another person to do the work, on which plaintiff sen the bill for what he had done, and now sought to reco the amount.

Mr. Willis, solicitor, of Charles-square, Hoxton, represented the defendant, elicited, upon cross-exami tion of the plaintiff, that he was accustomed to sent estimates for building works he took in hand, when quested to do so, without expense, when the work

ven him to do, but he denied that the defendant had ld him that he would invite tenders to be sent in for ing the work, though he knew that tenders had been ught for, and that several builders were making appli- tion to be employed in doing the work; and when Mr. illis produced a letter sent by the plaintiff along with e estimate and specifications, the plaintiff admitted that prepared the specification and plans in order to make tender, and was told that his tender had been accepted, though he had never been asked by the defendant to gn a contract, and had never seen the defendant since ast Saturday, when the defendant altogether repu- ated the demand.

The evidence of the plaintiff being deemed defective, e judge directed a nonsuit, on which Mr. Willis made pplication for costs, which the court granted.

BUILDERS' ACTIONS.

WILLMORE *v.* LORD FAVERSHAM.

This was virtually an undefended action (Brompton unty Court), but is one too common with builders and uilding tradesmen crediting persons of good position in fe, who allow their bills to run for years, and when essed for payment, dispute the charge.

Mr. Newman, solicitor, stated that his client was a ass and lead merchant carrying on business in the rompton-road, and the defendant, Lord Faversham, sided in Knightsbridge, and the sum claimed was , 4s. 11d., for goods supplied and work done. He called ohn A. Farmer, who stated that he called on Lord aversham, and spoke to him respecting a portion of the bt, *i.e.*, 5*l.* 3s. 2d. This was for two large plates of ass, which were ordered from witness, and supplied in e usual way. Lord Faversham then admitted the debt r the glass; but as he (witness) did not then know more as owing at the time, he did not bring it under his notice.

Mr. Newman had to call several men, who had left eir work to attend the court, to prove that they fixed a mber of sash-lines, and did other work of a similar ture, which was moderate at 1*l.* 1s. 9d.

Lord Faversham's name was called, and as he did not nswer, the Judge (Mr. Serjeant Wheeler) gave judgment r the full claim, with costs of attorney and witnesses.

CLIFTON ROAD SCHOOLS, DEPTFORD.

SIR,—In your notice of the opening of the Clifton-road hools, on Friday [3rd inst.], by the London School Board, hich reached our office an hour after the event, you say at an anomaly comes out of the floor space for 365 square rds being devoted to infants and babies, as against 1 square yards to boys and girls. We wish to explain at the original purpose was to build for 220 boys, 220 rls, and 300 infants, but before commencing work, the oard determined that it would be most advisable to have central hall for the district where 400 or 500 children uld be assembled on occasion, and the Clifton-road site ing most central, instructions were issued to adapt the an for that purpose. Hence the anomaly of the extra rge infant school. The gallery across the end is for sitors. Only two rooms are to be heated by Mr. obson's stoves. All the class-rooms have ordinary fire- ick back stoves, with air chambers constructed in the tting of them. The large hall will be warmed by Gill oves. There is teaching area for 940 children in these hools.

ELLIOTT & WARREN,
Architects of Clifton-road Schools.

METROPOLITAN SCHOOL BOARD.

At the last meeting of the members of the School Board r London, the following recommendations of the Works mmittee were adopted:—That the tender of Mr. J. rk, of Warren-lane Wharf, Woolwich, amounting to 279*l.*, for the erection of a school to provide accommo- tion for 787 children, on the Cayley-street, Limehouse, e, be accepted. That the tender of Mr. J. Kirk, of arren-lane Wharf, Woolwich, amounting to 6,977*l.*, for e erection of a school to provide accommodation for 974 children, on the site in Belvedere-place, Borough- ad, be accepted. That the tender of Mr. J. Grover, of okington-street, N., amounting to 4,690*l.*, for the erec- n of a school to provide accommodation for 578 children, the Penton-grove, Pentonville, site, be accepted.

HE LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.

A SOIRÉE, to commemorate the twenty-fifth niversary of the establishment of this ciety, has been held at the Royal Institu- n, Colquitt-street. There was a large assem- age of visitors of both sexes. The museum- oms were open from half-past six o'clock, d numerous objects of architectural and storical interest were exhibited. There as a great variety of architectural drawings d models, autotype photographs, and speci- ens of mechanical printing, exhibited by essrs. Spencer, Sawyer, and Bird, of ndon. Japanese and Chinese works of t were displayed, and a stained-glass win- w, having upon it figures of Commerce, dustry, Peace, and Plenty, was exhibited by essrs. J. A. Forrest & Co., of Lime-street. At lf-past seven o'clock the company assembled the large lecture-hall, when a short intro- ctory address was delivered by the president, . T. D. Barry. He referred to the origin the Society, twenty-five years ago, when a eeting of architects was held at Claughton all, under the presidency of Sir William ckson. From the date of the establishment the society up to the present time it had con- ued to increase in numbers, usefulness, and prosperity. The architects of the town had been brought together in one common bond of brotherhood, and the result had been mutual counsel and information, which had been of great benefit to the members. Amongst other advantages which had resulted from the establishment of the society were the settling of a uniform scale of fees and great benefit to student members.

Mr. Edmund Sharpe, F.S.A., of Lancaster, then delivered a lecture "On the Cathedrals and Monasteries of England," illustrating his subject by the aid of the oxyhydrogen light. The subjects were arranged in chronological order, and included his six periods of English architecture from the Conquest to the Reformation, namely, the Norman, the Transitional, the Lancet, the Geometrical, the Curvilinear, and the Rectilinear.

At the close of the lecture the company adjourned to the exhibition and refreshment rooms. At a subsequent period of the evening they again assembled in the lecture-hall, when a short musical entertainment was given by some of the members and their friends.

ST. BARTHOLOMEW'S, CHATHAM.

SIR,—Permit me to remark that,—1. Lepers invariably worshipped inside their own hospital chapel; 2. The lepers had their house, and therefore their beds, at Chatham, at a considerable distance from the chapel; and 3. That the "square openings" in the wall are simply the base and jambs of the south windows of the nave, which are not earlier than the twelfth century, and are high up.

These facts can be substantiated by documentary evidence. In hospitals or *maisons dieu* for the aged or sick, as at Chichester, the arrangement of a nave with aisles containing beds and a chancel on one plane, screened off at its upper or east end, was very different necessarily from that of a lazar house. What use the outer building at Chatham served is another question.

MACKENZIE E. C. WALCOTT.

THE FAILURE OF PORTLAND CEMENT.

SIR,—In answer to your correspondent, "A Sufferer," allow me to say that, in an article in the *Builder*, about four years ago, in answer to a correspondent as to the behaviour of Portland cement, I there laid the fault to the manufacturers, and not *one* at that time contradicted it, stating that they ground it and sifted it too coarse, and in a busy time sent it out too fresh. The precaution I take is to have the cement in three weeks before using. Shoot it out of the sacks into a bin, under cover, and expose it to the air, and sift *all* for fining and finishing coats through a sieve, whose mesh is twenty holes to the lineal inch. Finishing all weatherings, and, where practicable, in *one* coat, and if done in the *hot* weather, *be up in the morning and give the work a good wetting* with a watering-pot or syringe, as the rays of the sun extract the moisture before it has time to harden.

The sand should be well washed, and free from all organic matter, and the *best* cement only used: *good* cement should weigh over 1 cwt. to the strike bushel.

WILLIAM PULHAM.

*** Several letters on this subject were received too late for consideration this week.

THE BLUNDELL-STREET SCHOOLS, CALEDONIAN-ROAD.

THE new Board schools for Finsbury, in Blundell-street, Caledonian-road, have been opened. We gave a view and plans of these schools on the 15th of February last (pp. 126-127). It may here be mentioned that the building is designed for upwards of 800 children, but the exact number which it can accommodate amounts to 830—viz., 340 infants, 245 boys, and 245 girls. The building contains three stories, with a basement under part of the ground floor; it is commodious, and thoroughly well lighted and ventilated. The whole of the building is warmed by a heating apparatus supplied by Mr. D. O. Boyd, and every part is lighted in the evening with gas. Mr. Roger Smith was the architect, and the builders were Messrs. Roberts Brothers, of Islington. About 7,000*l.* was the cost of the building.

ACCIDENTS.

Fall of a Warehouse in Bristol.—A serious accident has occurred at the Bull Wharf, Redcliff-street, Bristol, caused by the giving way of the flooring of an upper room, in which was an immense quantity of property, the weight of the falling mass carrying away the second floor in its fall. The premises in question were three stories high. The top room contained several hundred bags of oilcake, and the weight proved too much for the old timbers, which gave way, and the enormous weight broke through the flooring of the room underneath, which also contained large stores of oilcake and seed cotton, all of which fell into the basement among about 100 casks of tar. The lofts were supported by stout beams, but there had been indications that they were yielding to the pressure bearing upon them, and this, together with the fact that the building is very old, led Messrs. Danks & Sanders to have the beams running over the principal part of their premises strengthened with iron girders, and in one place, where the loft passes over their counting-house, they had an iron pillar erected.

Fatal Fall from a Scaffolding at Macclesfield.—Mr. Dunstan held an inquest at the town-hall on the body of Edward Turner, brick-setter. Mrs. Turner said that her husband had complained of a pain in the heart, but he went to his work as usual. Charles Tyrrell said that he was at work with deceased on a chimney at the end of a shed at Mr. Wilbraham's brickyard. They stood on a scaffolding 9 ft. high. About noon deceased stumbled; in falling he caught witness, and they both fell to the ground. Deceased did not appear to be much hurt, but witness was severely hurt on the shoulder. Deceased continued at his work, but complained of being badly shaken. Next morning he was found dead in bed. The jury returned a verdict to the effect that deceased had died suddenly from natural causes, death being accelerated by the fall on the previous day.

Light in Gas Escapes.—As search was being made *with a light* (!) for the whereabouts of an escape of gas in a back room of the Great Northern Dispensary, Marylebone-road, an explosion occurred, causing a painter named Mason to be blown off a wall on to the metals of the Metropolitan Railway,—a distance of some 30 ft. Mr. Bathe, the resident dispenser and assistant, had his head cut open and was severely shaken. They were taken to St. Mary's Hospital, at Paddington. Two women in the room escaped almost unhurt.

SANITARY MATTERS IN ISLINGTON.

A VALUABLE report on the sanitary condition of the parish of St. Mary, Islington, during the year 1872, by Charles Meymott Tidy, M.B., the medical officer of health and food analyst for the parish, to the vestry, has been printed. The reporter is justly severe on the private slaughter-house system, as a curse to the poor and a premium to dishonourable butchers, since they afford such opportunity for the slaughtering of diseased animals. Public abattoirs, as he remarks, would remedy this. In food investigations, as analyst, Dr. Tidy, found only four cases in which bread contained alum in twenty samples. Milk, he found, was improving; and tea in two cases both pure. The number of houses building in Islington in 1871 was 492; inhabited, 27,079; uninhabited, 2,414. In 1861 the number building was 551; inhabited, 20,074; uninhabited, 831. The population in 1871 was 97,745 males and 116,033 females. Of the houses building in 1871 there were 150 in West Islington and 342 in East Islington.

CHURCH-BUILDING NEWS.

Guildford.—The work in connexion with the enlargement of Christ Church, Stoke, is approaching completion. On the north side a tower, aisle, and chancel, are being built, the contractors being Messrs. Swayne & Sons; the architect, Mr. Ewan Christian; and the cost 2,300*l.* The enlargement takes the form of a lean-to, and till the funds are raised to make the corresponding enlargement on the south side, the building will be greatly out of proportion. It is supposed, however, that in the course of the ensuing summer the requisite money will be forthcoming. The old side wall will not be removed till the outer walls and windows are finished. When finished there will be an additional accom-

modation for 250 persons. The tower and spire when finished will be 120 ft. high, but at present it is only proposed to carry it up to within 6 ft. of the ridge. The remainder of the tower will probably be erected when the enlargements of the south side are in course of completion. The inner sides of the walls show a pointed red brick, devoid of any plaster.

Chesterton.—The walls of St. Luke's Church are already many feet above the ground. Messrs. Thoday began work immediately the contract was signed. The chancel, three bays of the nave, the south transept and aisle, are to be built for 2,800*l.* At a meeting of the sub-committee it was decided to accept the tender of Messrs. Thoday to add three bays of the north aisle, at a cost of 340*l.* This will at once save the expense of a temporary wall, and add considerably to the accommodation. The north transept and vestry are still needed to complete this side of the church. It is hoped that friends will allow these additions to be made before the consecration, so that the church may be finished as far as it goes; two bays of the nave and aisle will still remain before the whole design is complete. Estimating the architect's fee and the clerk of the works at 10 per cent., the sum required above the first contract is about 900*l.* The estimate for the whole church is 5,500*l.*

Halesowen.—Some of the features of the old parish church were disclosed last year by the removal of plaster and whitewash from the walls, which had hidden for centuries some choice specimens of red sandstone of various shades. A groined roof under the tower showed in this process of cleaning, and has been brought into sight by the removal of the organ to a more convenient place. A further stage of the work of restoration is about to be commenced under the direction of Sir Gilbert Scott, and is described in a circular which has just been issued by the committee. It is intended to remove the north gallery and the partitions which now divide the church into two separate parts, and to restore the floor to its ancient level, furnished with open seats for 800 persons, whereas at present only twenty-four of the sittings are not subject to appropriation. The plans for the present year will include a new roof for the nave. The chancel will also be restored, and will be adorned with the window presented by friends as a memorial of the late Mrs. Hone. The outlay is expected to reach 1,500*l.*

Halifax.—During the last few weeks considerable improvement has been wrought upon the interior of Holy Trinity Church in the way of mural decoration. Mr. Binns, of Kingcross, has been the decorator. Instead of colouring the walls with whitewash, colours (mostly neutral tints) have been employed, and the result is that some specimens of ornamental plaster-work that have never shown before are now thrown prominently forward for the first time. The flat ceiling, 84 ft. by 54 ft., the largest in Halifax, has been traced out in panels, upon a warm grey ground, the dividing bands being relieved by scroll-work, and the large central ornament relieved in gold and blue. Fifteen large circles, with background of dark blue, are charged with various sacred emblems, worked in gold and colours. All the walls are coloured a bright drab, and a narrow band of dark chocolate running beneath the cornice and impost-mould serves to throw them out more prominently. The ceiling beneath the galleries is also broken into panels. The wall in the recess for the Communion has been decorated, the prevailing colours being dark chocolate and other lighter shades, relieved by diaper-work in gold.

Holt.—The parish church at Holt has been re-opened for divine service. The repairs and restorations have been carried out at a cost of upwards of 4,000*l.* Mr. John Douglas, of Chester, was the architect for the restoration. The works were commenced in 1871, the first portion undertaken being the roof and ceiling of the nave. The latter is carried out with moulded beams, each end being supported on carved corbels. The spaces between the beams are divided into panels by moulded ribs, having at the intersections spaces for patterns to be carved hereafter. The cornice is moulded, the carving having been omitted for the present. The ceiling of the chancel is elaborate. Some portions of the old ceiling were found used up in the nave roof; these were collected together, and used again. The whole of the carving in the ceiling has been completed. The aisles have also been re-roofed, and have plain ceilings executed in oak; the old corbels serving to carry the new brackets. The old panelled seats have been removed, the small portion of the floor remaining taken up, and re-laid with boards under the seats, and 4-in. Staffordshire tiles in the passages. The nave only is seated with oak benches, the elbows being of quaint designs. The aisles are for the present seated with chairs. The colour of whitewash has been removed from the walls, and the church has been heated by the Derwent Foundry Company. The stone groining of the tower, of which only the springers were in existence, has been completed. The whole of the windows have been re-paned and re-glazed with iron stanchions and tie-rods. The restoration of the chancel has cost about 1,000*l.*, the expense being defrayed by the Ecclesiastical Commissioners, and has been carried out under the direction of their architect, Mr. Ewan Christian, of London. The cost of the works carried out in the nave, aisles, and tower has been about 3,000*l.* The works were begun by the late Mr. J. Harrison, of Chester, but since his death they have been undertaken by Mr. J. Lewis, of Farndon. Mr. Lewis also did a portion of the work in the chancel (stalls, &c.)

Bath.—St. Andrew's Church, Bath, which has been built in the wealthy and populous district known as West Walcot, at a cost of 17,000*l.* (of which about 2,000*l.* remain to be raised) has been consecrated by the Bishop of Bath and Wells. The tower and spire are not included in the present contracts, but there is little doubt that they will be commenced as soon as the debt on the body of the building has been removed. The architect was Sir Gilbert Scott. The style is Early Decorated. The nave is upwards of 90 ft. long, and nearly 30 ft. broad, and will eventually terminate in a tower and spire, 220 ft. high. The chancel is 40 ft. by 25 ft., and the nave aisles, with porches, 70 ft. by 17 ft.; the latter are separated from the nave by four arches alternately clustered and octagonal, and, like the chancel aisles, are lighted by windows with three lancet lights, moulded, grouped, and shafted. The east window is one of three lights, with shafted mullions, and the exterior order is ornamented with foliage in its mouldings. The west window is of two lights, over which is a niche for the statue of St. Andrew. The stone used is Bath, Ham-hill, blue Corsham-down, and red Bishop's Lydeard, and the different colours give a relief to the work. The church is seated throughout with open seats, and is capable of accommodating upwards of a thousand persons. The builder was Mr. Bladwell, and the clerk of the works Mr. Irvine, who fills the same position at the Abbey Church and at Wells Cathedral. The total expenditure up to this time has been about 17,000*l.*

Blundellsands (Liverpool). — The memorial stone of a new church at Blundellsands has been laid in the presence of a large number of spectators. The new edifice will accommodate 600, and, when completed, will have cost about 6,000*l.*; but at present it is not intended to carry out the plans so far as the tower is concerned. The church, which is to be Early Decorated in style, will consist of chancel, 35 ft. by 25 ft.; nave, 79 ft. by 27 ft.; north and south aisles, 79 ft. by 15 ft.; south porch, 9 ft. by 8 ft.; tower at the north-west, 18 ft. square and 65 ft. high, and spire, 67 ft. high; organ-chamber at the north-east angle, 19 ft. by 13 ft. 6 in.; vestry at the south-east, 19 ft. by 13 ft. 6 in., with warming-chamber under. The nave will have an arcade of six arches on each side, supported by polished granite shafts, with moulded bases and carved caps; the responds at the east and west ends will be supported by carved brackets in the walls. Above the nave arcade is a clearstory, pierced with circular windows, traceried. The windows at the north and south of the aisles will be of two lights, filled with tracery. The west windows of the aisles will be of three lights, traceried. The west window of the nave will be of large size, containing six lights, with tracery. The chancel, which is apsidal at the east end, has seven traceried three-light windows. The floor is raised three steps above that of the nave. The organ-chamber will open into the chancel and aisle by means of stone arches. The roofs will be of pitch pine, partly open-timbered, with a ventilating chamber at the apex of nave and chancel-roofs. The heating will be effected by warm air on Haden & Son's principle. The roof of the chancel is a continuation of the plane of the nave roof, the principal timbers being carried by stone shafts rising from the ground. An ornamental cusped rib will take the place of the usual chancel-arch to separate the chancel from the nave. The walls will be of brick, with a cavity to secure the building from damp in a situation so exposed. The external facing is of Yorkshire Parpoints coursed; the dressings are of a yellow Storeton and Grinshill stone externally, the internal stone-work being of Bath stone. The gangways between the seats will be floored with pattern tiles, those in the chancel being of a richer character. The whole of the benches and fittings will be of pitch pine varnished. The windows will be glazed with toned cathedral glass, and it is hoped that funds may be forthcoming to provide suitable stained glass for the chancel-windows at least. The contract has been taken by Mr. Hugh Yates, of Liverpool, for the sum of 3,85*l.* exclusive of the tower, and the works are being carried out from the designs and under the superintendence of Messrs. Thomas D. Barry & Sons, architects, Liverpool.

Great Berkhamstead.—The foundation-stone of a new church, to be called St. John the Evangelist, has been laid in this hamlet, which is situated midway between Berkhamstead and Chesham. Miss Darrien, of Clifton, generously builds and endows the church. The edifice, it is estimated, will cost 2,200*l.*, and its site is on the green. The land is given by the lord of the manor, Lord Chesham. The church is intended for the accommodation of 235 persons, and its style is to be in Early English, the architect being Mr. G. Street, London, and the builder Mr. Cooper, of Aylesbury.

Sheffield.—The chief stone of a new church has been laid at Abbeydale, a suburb of Sheffield. The church, which will be of the Early English style of architecture, will accommodate about 200 persons. Mr. Flockton, of Sheffield, is the architect; and Mr. Camm, of Norton, the contractor.

DISSENTING CHURCH-BUILDING NEWS.

Millbrook, Cornwall.—Memorial stones of the Wesleyan Chapel here were laid on Sept. 3rd. Internally, the chapel will be 50 ft. long by 35 ft. wide, with the addition of a semicircular apse at the communion end of the chapel, intended for the choir and harmonium. There will be two vestries, and separate vestibules and entrances to ground-floor, and stairs to the gallery facing the reading-desk. The accommodation provided is for 400, the seating being 2 feet 8 inches from centre to centre, with aisles, &c. of considerable width. The contract (exclusive of the provision of stone) has been taken by Mr. S. Clarke, of Plymouth, at the sum of 883*l.* Messrs. Moorshead & Ching are the architects.

Swansea.—The foundation stone of a new place of worship intended for the use of the Calvinistic Methodist congregations of Bethania and Vincent-street, has been laid by Mrs. H. Hussey Vivian, of Parkwern. The new chapel is to be situated at the angle formed by Argyll-street and St. Helen's-road, almost opposite the lower end of Brunswick-street. It appears from the plan that it is to be in the Italian style. The entrance front, which will face St. Helen's-road, is approached by a broad flight of steps, and consists of a lofty portico formed by columns and pilasters of the Corinthian order supporting a pediment of the full width of the building, the whole front being of Bath stone. There will be easy access provided to the chapel by three doors, and to the galleries by two. The chapel will have galleries on three sides, and will provide accommodation for about 900 sitters. At the further end behind the minister's platform a spacious organ gallery will be erected with an arched ceiling. Below the chapel there will be a large school-room (which can also be utilised for meetings), three class-rooms, and vestry, &c.; access will be obtained to these from side entrances. The building is to measure 76 ft. by 50 ft., and will cost from 4,000*l.* to 5,000*l.* complete. The architect is Mr. Alfred Bucknall, of Sketty.

Leicester.—The foundation stone of a new Wesleyan Chapel has been laid. This chapel, which is meant to seat from 300 to 350 persons, is intended to serve the purpose of a chapel and Sunday school, to a large new Wesleyan chapel proposed to be built at some future period, at the corner of Saxe Coburg-street and Sparkenhoe-street. It is to consist of a large room 60 ft. long by 27 ft. wide, with two class-rooms each 15 ft. by 13 ft., at one end, and at the other end of the room is to be provided a gallery for a small organ and choir, if thought necessary. The roof is to be an open-timbered one. The

ont next Saxe Coburg-street, is to be built of annock Chase bricks, with Bath and red Mansfield stone dressings, and the style adopted hroughout is that prevalent in the early part f the fourteenth century. The building is eing erected by Messrs. Neale & Son, from esigns by Mr. Thomas Barnard, architect, eicester.

Books Received.

Workshop Receipts for the Use of Manufacturers, Mechanics, and Scientific Amateurs. By Ernest Spon. London: Spon, Charing-cross. 1873.

Many processes in the arts, trades, and manufactures are here recorded for behoof of a ariety of persons, either engaged in trades, anufactures, and arts, or amateurs and desiring carry out some practical experiment, as in eing, glass-working, varnishing or painting, ngraving and etching, firework-making, bronzg, &c. No doubt among the great number of ceipts and processes given some will be obsote; and there will be new processes not given. aus, for example, we can find no trace of the w sand process of etching on glass, &c.; and nid much matter about dyeing there is very tle said as to the splendid new aniline colours; it the volume contains a vast store of useful atter, and it can never contain all that is wly discovered, or long known either.

VARIORUM.

"The Royal Guide to the London Charities, r 1873-4. By Herbert Fry." (R. Hardwicke.) his is the eleventh annual edition of a list of e titles and addresses of the London charities, nsisting of upwards of 200 pages, with from n or twelve to twenty on each page. It eaks volumes for the charitable feeling of the vers, but not so much, perhaps, for the self-pendence of the receivers. A Guide to narities not of value might, perhaps, be invious, but would be useful.——"Transactions the Manchester Statistical Society, Session 72-73. Roberts, printer, Salford." There are re papers on Co-operation, by Dr. John Watts; on uxury, by Professor A. S. Wilkins; on our Medical narities and their Abuses, by Mr. William O'Hana; and on Commercial Bank Diffusion in Provinal England, by Mr. Henry Baker. The notable atement is made in Mr. O'Hanlan's paper, that 1872 one in every four persons and a half in anchester and Salford was in receipt of chaable medical relief in 1872! The number, it added, has been almost doubled within the st thirty-six years; that is, the relative number is only one in every eight and a half of e population thirty-six years ago. The author the paper gives suggestions for the reform of is state of the Manchester medical charities. s proposes the formation of a Charity Organiation Society, somewhat similar to the London e, by means of which many of the free dis-nsaries have been changed to provident ones.

Miscellanea.

The Sheffield Street Improvements.—An journed meeting of the Sheffield town council s been held, for the purpose of discussing the maining portions of the Improvement Comittee's scheme of street improvements. The ayor moved the adoption of the minutes of e Improvement Committee, and then moved e making of "a new street from the end of rrey-street into Fargate, opposite Orchard-reet, and from Fargate across Orchard-place the bottom of Bow-street, and the widening Townhead-street, Tenter-street, and Westbar-een to Westbar." Mr. Sharman said they were oposing to spend something like two millions money, and the surveyor's commission of per cent. upon that sum would amount to ,000*l.*; and if the law clerk took his commis-n of 1½ per cent.,—which would not be con-dered too much,—it would come to 30,000*l.*, aking a total of 50,000*l.* The town trustees ly proposed to give 40,000*l.* The mayor proed the appointment of a committee to con-der that question, and report to the council. e borough surveyor (Mr. Holmes) then exained the scheme in detail, and said he did t think the expense would be great in comrison to the improvement. After a discussion, e scheme was agreed to.

Liverpool Royal Infirmary School of Medicine. — The new buildings which have recently been added to the School of Medicine, in Dover-street, Liverpool, have been formally opened by Mr. John Torr, M.P. The principal additions and alterations are — a pathological and anatomical museum; a chemical laboratory with a private laboratory and class-room attached; and a physiological laboratory. The old building has, to a great extent, been remodelled; the dissecting-room has been considerably enlarged, and adjoining it a room has been fitted up with osteological preparations, skeletons, plates, and preparations illustrative of elementary anatomy. A demonstrators' room opens into the dissecting-room, and every convenience in the way of lavatory and dressing-rooms is provided. The old museum has been converted into a library and reading-room for the use of the students. These extensions and improvements, including the amount of existing contracts for work not completed, have involved an expenditure of 5,326*l.*, a sum which, in consequence of the advance in the cost of labour, and of almost everything used by builders, is largely in excess of the amount which the lecturers, at the commencement of their undertaking, were led to believe would be required. The committee have entered into a contract for fitting up the parts of the museum required immediately; but the fitting-up of the gallery has been postponed.

Sanitary Report on Northamptonshire, &c.—A sanitary report has been read before the central committee of the combined delegates, the sixteen sanitary authorities of Northamptonshire, Leicestershire, Rutlandshire, and Buckinghamshire, at a meeting held in the county hall, Northampton, on Saturday, 27th September, 1873, Mr. J. L. Stratton, of Turweston Hall, Brackley, in the chair. The report was signed Alfred Haviland, Medical Officer of Health of the combined sanitary authorities of Northamptonshire and other counties. The subject of the report was "The Sanitary Inspectors' work during the last six months." The number of parishes, places, &c. visited by the sanitary inspectors, amounted to 336, out of 352, so that only sixteen parishes in this extensive area remained unreported. In a great many instances these parishes had been visited on foot, and entailed a large amount of physical labour. Of nuisances detrimental to the public health, there were hunted out 3,745, or one nuisance to every 13·2 houses of the 49,609 inhabited houses within the combined area of the sanitary authorities. These nuisances consisted of 932 foul and offensive privies overrunning with filth, and polluting water-courses, wells, and the atmosphere with their sewage ooze and foul mephitic gases. Nearly all these have been remedied. Of cesspools 291 were complained of, but only 159 either removed or remedied.

Prizes for Cabs.—The committee of judges appointed by the Society of Arts came to the unanimous conclusion that, although there were some of the carriages which exhibited considerable merit, there were none of sufficient merit to warrant the judges recommending any for reward, and a notification to this effect was communicated to all the competitors. The judges were, however, of opinion, that there were six which were worthy of further consideration if certain objections could be satisfactorily obviated and suggestions for further improvement carried out; and, accordingly, to these six competitors a statement to the foregoing effect was made, with an intimation that if they were willing to send in further improved carriages, the judges would take them into consideration. With reference to the further improved cabs sent in by the six selected competitors, they have recommended that the total amount offered,—viz., 120*l.*,—should be divided equally between these four, as follows:—Two-wheelers—C. Thorn, Norwich, 30*l.*; Forder & Company, Wolverhampton, 30*l.* Four-wheelers—Lambert, 66, Great Queen-street, 30*l.*; Quick & Norminton, 8, Netherwood-street, Kilburn, 30*l.*

The Proposed Fine Art Gallery for Liverpool. — The subscriptions originated by Mr. Picton, architect, with 1,000*l.*, having reached more than one-fourth part of the requisite sum, a public meeting has been held, at which it has been resolved to be desirable to erect a permanent art-gallery, and, for that purpose, to obtain subscriptions to the extent of 20,000*l.* A committee has been appointed, and further subscriptions received: in all, 5,870*l.* have now been subscribed.

Working Men's College, Great Ormond-street.—The twentieth annual meeting of the members of the Working Men's College, in Great Ormond-street, has been held; Mr. Hughes, M.P., in the chair. The room was crowded. Among those present were the Rev. Canon Kingsley, Lord E. Fitzmaurice, M.P., and Rev. Llewellyn Davies. The chairman, in opening the proceedings, said that they started that night under a new constitution. For eighteen years they had been under the guidance of a great and good man. Since that time they had endeavoured to establish, and they had been successful in establishing, the reconstruction of the college. They were taking "a new departure" that night. The great change made was that they were able to take a great number of students into the council, and they hoped that that would very much strengthen their hands, and help them to carry on the work in the spirit in which it had been carried on from the beginning. The Rev. Canon Kingsley and other gentlemen then addressed the meeting.

The Last of another Old City Church.—St. Antholin's (or St. Anthony's), Watling-street, is about to be disposed of. The Ecclesiastical Commissioners propose to partially demolish the church, and totally abolish it as a place of worship. The benefice, says the *Daily News*, is to be united with that of St. Mary, Aldermanbury-cum-Saint Thomas Apostle, and henceforward, the five accustomed worshippers in the church at the corner of Sise-lane will have to cross the road and swell the throng of eight who, Sunday after Sunday, meet in the church of St. Mary, the beautiful tower whereof peeps out from amid the cluster of modern shops and offices with which a utilitarian Board of Works have ruthlessly surrounded it. With a portion of the money accruing from the sale of the valuable site, a church is to be built at Nunhead. The tower and spire are to be left standing, and a considerable sum is to be expended in repairing the former, and adapting it to the reception of the human remains, which lie thickly in the church vaults.

The Erection of Back-to-Back Houses.—An important question to owners of property in Leeds is now under consideration. The case has been brought before Mr. Bruce at the Leeds Town-hall. The town clerk (Mr. C. A. Curwood) applied to him for an order to demolish a building which had been erected, as he alleged, contrary to the terms of the Act of Parliament relating to the space to be kept open in connexion with back-to-back houses, for the purpose of ventilation. In opening his case, Mr. Curwood said this case was intended to be a test one, and it was deemed of so much importance by the corporation that if the law was not found to be sufficient to enforce the observance of the requirements, further legislation must be obtained. After being argued *pro* and *con.*, Mr. Bruce intimated that he should reserve his decision.

Memorial of the late Bishop Wilberforce. A numerously-attended meeting was held in the Sheldonian Theatre, Oxford, to receive the report of the Diocesan Committee as to the form the proposed memorial to the deceased prelate should take. The report stated that several schemes had been suggested in committee, including the erection of a new cathedral, the erection of a new chapel and additions to Cuddesdon College, and other minor suggestions. The meeting was presided over by the Bishop of the diocese. A long discussion took place whether there should not be a memorial in Oxford in the shape of a college for the training of students for missionary work, but eventually it was decided that the form of memorial should be in the erection of the proposed chapel, and a committee was appointed to carry out the work.

Africa and Life Assurance.—In some recent remarks upon the hardship inflicted upon officers ordered to the West Coast of Africa, at the risk of death, it was suggested that even those who possessed life assurance policies were compelled to forfeit them upon being detailed for this dangerous service. We are informed that this impression is erroneous with regard to the policies issued by one old-established office, "The Mutual," of King-street, Cheapside. Since 1868, "The Mutual" has guaranteed its policyholders against all risks of foreign travel, and every other contingency, without extra premium, in every case where the policy is five years old, and the life is thirty,

New National Schools, Amersham, Bucks.—On the 30th ult. the above block of buildings was formally opened by Dr. Bickersteth, the Archdeacon of Bucks. The rooms comprise boys' and girls' schoolrooms, each 46 ft. by 18 ft., with class-rooms, each 14 ft. by 15 ft., infants' room, 32 ft. by 18 ft., hat and cloak lobbies, porches, &c. The site is 3 roods. The materials are of red brick and freestone; the roofs are tiled, and surmounted by a lofty bell-turret. The accommodation provided is for 284, and the total cost of the works will be about 1,650*l.*, including all fittings, fencing, and a small detached school for thirty infants at Woodrow, an outlying part of the same parish. The works have been executed by Mr. George Reavell, of Windsor, from the designs of Mr. Arthur Vernon, architect, High Wycombe.

What British Ironmasters are Doing.—Under this title a contemporary says:—A number of British ironmasters have just acquired nearly twenty square miles of property in the Wharekawa district, in the province of Auckland, New Zealand. The property embraces 8,700 acres of coal and iron-stone. The chief seam of coal is found in some parts within a few yards of the surface, as thick as 20 ft., and it is computed to be capable of yielding an average thickness of 10 ft. throughout the whole 8,700 acres. This represents no less than 126,000,000 tons of good coal. The ironstone is of the brown hematite class, and contains as high a per-centage as 62 of fine iron, and is believed to yield an average of 50 per cent.

Sanitary Progress.—An anonymous donor has placed a large sum in the hands of the committee of the Birmingham and Midland Institute for the foundation of a Lectureship on the Laws of Health, and also for a prize fund in connexion with the class. According to *Nature*, Dr. Corfield has been offered the post for this year, has accepted it, and was to deliver an inaugural lecture in the Town-hall, Birmingham, on Thursday, October 9th, at 8 p.m., on "Sanitary Progress." The course will begin on Tuesday, October 14th, at 8 p.m., and be continued on succeeding Tuesdays until some time in April. It is intended more especially for the working classes, and both men and women will be admitted.

Workmen employed in Private Houses. At the Guildhall Police-court, London, a workman has been convicted of committing a robbery at the place where he was employed by a builder in the execution of some repairs. Sir R. Carden asked whether a character was given by the prisoner before he was engaged, and the reply being in the negative, because "it was not the custom to require workmen to produce characters," the Alderman spoke strongly upon such a state of things, and said that respectable builders ought to be more careful of the property of gentlemen who engaged them, than to allow men without characters to enter their premises.

A Public Library for Worcester.—A conference has been held in the Guildhall, Worcester, under the presidency of Mr. A. C. Sherriff, M.P., for the purpose of considering the steps to be taken in Worcester for the adoption of the Public Libraries Act, when it was resolved that an effort be made to secure the adoption of the Act for the city of Worcester, and that a subscription be set on foot towards defraying the cost of buildings, fittings, and books. A committee was appointed and empowered to carry these resolutions into effect.

A New Pick.—Mr. J. Reidy, of Kennington, has produced an improved pick-axe for excavating and other purposes. By the introduction of a socket-head on the end of the shaft of the pick, a taper hole passes through the head and handle, through which a cast-steel blade or tool can be put and taken out at pleasure, at a saving of time and expense, as a number of cast-steel blades can be taken with the pick. The blade will resist the hardest substance, and the head or body will always remain fit for use.

The Jersey Banking Company's New Premises.—The street architecture of St. Helier's will be improved by the new bank premises in progress. The materials are grey and pink granite, with Portland stone dressings. All the capitals are carved. A cornice extends the whole length of two sides of the building. The carving has been done by Mr. Harry Hems, of Exeter, and assistants. The builders are Messrs. Tostevin & Fallaize.

Sewage Farming in Germany.—An enterprising Scotsman, named Aird, has lately undertaken to introduce the sewage farm system into North Germany, and has leased for thirty years, at 1,200*l.* a-year, 2,000 acres of sandy waste which lies between the Baltic and the port of Dantsic. On this hitherto barren spot he is now carrying on operations vigorously: 200 acres have been levelled off, supplied with sewage in the liquid form, and put into root and garden crops, which are visited daily by curious crowds.

Builders' Hand-power Machinery.—At the recent meeting of the Manchester and Liverpool Agricultural Society at Chester, a silver medal was awarded to Messrs. F. W. Reynolds & Co., of Southwark-street, for hand-power machinery. Messrs. F. W. Reynolds & Co. have issued a catalogue containing numerous illustrations of their various labour-saving hand-power machines, and they show their confidence in these numerous inventions by offering to send the machines for a month's trial before purchase.

Dunfermline.—New Works.—Building operations are being carried on in Dunfermline at present on an extensive scale. Among other buildings in course of erection there are a damask manufactory (which is to be fitted out with 300 power-looms) for Messrs. R. E. Walker & Co., at Gardener's Land; a foundry at Whitemire, a brewery at Grantsbank, and an office for the National Security Savings Bank in Viewfield-place. The erection of a large factory near Grieve-street is also contemplated.

Gift to Warrington.—The local *Guardian* states that an addition is about to be made to the recent gifts to this town of 9,000*l.* by Mr. George Crosfield, and 3,000*l.* by Colonel Wilson-Patten. Mr. Hatton, of Hatton, to whom Warrington is already indebted for the gift that laid the foundation of a hospital for the town, has expressed his intention of giving another 5,000*l.* for the support of the hospital.

Coal-cutting Machines.—By the patent of Messrs. J. H. Stubbs and G. H. Cottam, of Hunslet, near Leeds, the cutting-tool has a simultaneously reciprocating and rotary motion imparted to it, and cuts preferably spirally; the framework mounted on a tram, and the tool moved forward by self-acting or other means. Motion is imparted by any suitable motive-power.

Durham Cathedral.—In addition to the several stained-glass windows which have already been inserted in the nine altars and south transept of this cathedral, it is understood the Freemasons of the city are about to place a window in the nine altars, in memory of Mr. John Pawcett. Major Joicey and the dean are also about to add stained windows to the south aisle, whilst other probable gifts are mentioned.

"Self-Help" in Japanese.—A Japanese translation of Mr. S. Smiles's "Self-Help" has been made. The English work forms an octavo of moderate size. In Japanese it has expanded into a book of 1,500 or 2,000 pages. It is not bound after the modern European fashion, but divided into eleven parts, each of which is neatly, but loosely, stitched with one silk thread.

The Slums of Drury-lane.—We hear, with more regret than surprise, that typhus fever is prevalent in Lincoln-court, Little Wild-street, and Great Wild-street. Readers may recollect our description of these and surrounding places some years ago, and the warning given.

Reports on Vienna Exhibition.—The volume of Artizans' Reports upon the Vienna Exhibition, published by the Society for the Promotion of Scientific Industry, Manchester, will be issued about the 20th of this month. There are thirty-six reports.

Bridgwater.—Mr. Hippisley, surveyor, of Wells, has been appointed by the town council for the purpose of surveying and preparing an estimate of the relative cost of establishing the proposed new cattle-market at Blacklands, and in the corporation field in North-street.

Proposed New Gaol, Bristol.—The Bristol town council, at their meeting last week, purchased, on the recommendation of the gaol and bridewell committee, the site of a new prison to be erected on the Horfield-gardens for the sum of 3,875*l.*

TENDERS

For the erection of infant nursery and mission-room Wellclose-square, Whitechapel. Messrs. Greatorex & Co architects. Quantities supplied:—

Ennor	£1,919	0	0
Outhwaite & Son	1,768	0	0
Clark & Boyce	1,752	0	0
Botting	1,751	0	0

For villa residence in Church-fields, Salisbury, for M T. Goodwin. Mr. Fred. Bath, architect. Quantities the architect:—

Plowman	£703	0	0
Tryhorn & Harris	690	0	0
Aldridge	685	10	0
Bridle & Co. (accepted)	612	10	0
Young	600	0	0

For additions to residence, the Ridgeway Oaks, E field, for Mr. F. S. Foley. Mr. T. J. Hill, architect:—

Bentley	£325	0	0
Patman	311	0	0

For new schools, Monte Video-place, Marylebone. M E. R. Robson, architect. Quantities by Mr. W. Measkin:—

Perry & Co.	£6,300	0	0
Kirk	6,218	0	0
High	6,200	0	0
Merritt & Ashby	6,160	0	0
Sheffield	6,127	0	0
Scrivener & White	6,078	0	0
Staines & Son	5,988	0	0
Mann	5,943	0	0

For new shops and premises, King-street, Maidstor for Mr. J. Marchant. Mr. G. Friend, architect. Qua tities by Messrs. Curtis & Son:—

Anscomb	£1,597	0	0
Grensted	1,595	0	0
Vaughan	1,593	0	0
Ward	1,515	0	0
Elmore	1,489	0	0
Clement & Wallis	1,464	0	0
Bridge & Cox	1,460	0	0
Abnett (accepted)	1,445	0	0

For schools in Borough-road, Southwark, for t London School Board. Mr. E. R. Robson, architect:—

Staines & Son	£8,576	0	0
Higgs	7,987	0	0
Stevenson	7,952	0	0
Newman & Mann	7,950	0	0
Tarrant	7,727	0	0
Nightingale	7,687	0	0
Downs & Co.	7,330	0	0
Kirk	6,977	0	0

For schools, Brunswick-road, Poplar, for the Lond School Board. Mr. E. R. Robson, architect:—

Hearle	£3,350	0	0
Sarjant	3,186	0	0
Thompson	3,140	0	0
Downs & Co.	3,035	0	0
Newman & Mann	2,998	0	0
Sheffield	2,987	0	0
Nightingale	2,978	0	0
Sewell & Son	2,953	0	0
Ennor	2,883	0	0
Kilby	2,840	0	0

For asylum at Banstead. Mr. F. W. Pownall, arc tect. Quantities by Mr. Charles Poland:—

Niblett & Son	£181,000	0	0
Wright Brothers & Goodchild	180,000	0	0
Crockett & Dickenson	173,000	0	0
Bull & Son	172,000	0	0
Downs & Co.	161,190	0	0
Chappell	159,130	0	0
Booth	154,500	0	0

For addition to Messrs. Flower & Son's Brewery, Str ford-on-Avon. Mr. Joseph Lattimer, architect:—

	If blue brick floor.	If Val de Travers paving.
King & Godwin	£4,197	£4,466
Green & Son	4,120	4,455
Parker & Son	3,997	—
Foster	3,823	3,988
Holmes	3,737	3,988
Greenway & Price	3,413	—
Calaway	3,400	3,655
Claridge	3,293	3,540
Davis (accepted)	3,250	3,500
Chinnock	3,100	—

For rebuilding workshops at the rear of No. 155, Upp street, Islington, for Mr. John Nobbs. Mr. H. Wilso architect. Quantities not supplied:—

Bamford	£600	0	0
Chinney	545	0	0
Lewis	516	0	0
Evans (accepted)	420	0	0

For painting, &c., Congregational Church, Str ford, E.:—

Waller	£280	0	0
Gore	240	0	0
Charlton & Martin	197	0	0
Wayman	184	0	0
Sarjeant	143	0	0

Accepted for the erection of boys', girls', and infan schools, with out-offices, caretaker's cottage, fenc walling, &c., at Berry-brow, for the Huddersfield Sch Board. Mr. Edward Low, architect. Quantities suppli by Mr. F. Johnstone:—

Excavators', Bricklayers', and Masons' Work.

Graham & Sons	£2,749	0	0

Carpenters' and Joiners' Work.

Kirby & Scholes	£797	0	0

Tiling and Slating Work.

Goodwin & Sons	£377	0	0

Plumbing, &c., Work.

Garton	£173	10	8

Plastering Work.

Jessop	£140	19	4

Ironmongers' Work.

James Brooke	£115	0	0

Painters' Work.

Moxon	£99	0	0

The Builder.

VOL. XXXI.—No. 1602.

The Money Spent on Buildings.

BY no means the least interesting portion of the returns of the last census is that which has reference to the places of abode of our population. By help of the facts thus ascertained, we have been enabled to arrive at a more accurate knowledge of the extent and value of house property in this country than it would have been possible otherwise to obtain. It is not every one, however, who lives in a dwelling-house. As a matter of fact, very little short of half a million Englishmen appear habitually to reside elsewhere than in ordinary dwellings. They are mostly found in what may be called the public institutions of the country. A considerable number have their places of abode on board ships, or in barges and boats; others, who may be called the houseless class, appear to pass their lives with no better shelter than a tent, a caravan, a shed, or barn; and some have not even this amount of protection from the inclemencies of seasons, but sleep more or less frequently "under the open canopy of heaven."

As a pendant or supplement to what we said on former occasions respecting the dwelling-houses of England and Wales, we purpose here to summarise the leading facts with regard to the public institutions of the country and their inmates, and further to add what is known of that class of the community which may be called the vagrant or houseless class. At first sight the houseless class would appear to be the worst class of customers which builders have; but if we consider that it is from vagrants and vagabonds that the inmates of our prisons, reformatories, casual wards, &c. are largely recruited, it will be seen that, outcasts as they are, they are not without a certain amount of interest for the building trades.

Out of 22,712,266 persons enumerated in England and Wales, on the 3rd of April, 1871, the number who did not pass the preceding night in ordinary dwelling-houses, was not less than 491,671; the number returned as sleeping in ordinary dwellings being 22,220,595. Of the 491,671 persons just mentioned, 404,125 were living in the various classes of the public institutions of the country, 243,537 of the number being males and 160,588 females. The remaining 87,546 persons include all those who passed the night in ships, in boats, in sheds or barns, in carts or caravans, in booths and tents, or in the open air.

The number of public institutions in this country is returned at 2,383, and the total number of their inmates, as just stated, was 404,125. The largest class of public institutions is that which shelters our pauper population. The workhouses and workhouse industrial schools were found to be 740 in number, and the total number of their inmates was 154,967, of whom 82,539 were males and 72,428 females. The officers of this class of institutions number 6,903, leaving 148,064 as the actual number of pauper inmates. Next to the workhouses in number come the hospitals, or charitable medical institutions of various classes. Of these there were 407 in all, and the aggregate number of their inmates was 26,566, of whom 6,708 were officers, and 19,858 patients, 11,789 being males and 8,069 females. Another class of public establishments fewer in number than the hospitals, but with a far larger number of inmates, is that which includes the barracks, forts, and military depôts. The total number of these was 254, and their occupants numbered no less than 94,404. The actual number of soldiers, however, was not more than 68,548, the residue (25,856) comprising the wives and families, and civil servants of the private soldiers, or of the commissioned and non-commissioned officers. Less numerous than the military establishments, but with more inmates than the hospitals, are the lunatic and idiot asylums of the country. The total number of these was found to be 166, and their inmates, including 6,514 officers, numbered 45,731. The total number of lunatics and idiots was 39,217, of whom 18,524 were males and 20,693 females. The next class of institutions to which we come consists of the prisons. Excluding mere police stations, the prisons of England and Wales were found to number 149. The aggregate number of their inmates was 32,174. Of these, 2,988 were prison officers, leaving 29,186 as the actual number of prisoners, 23,519 of whom were males and 5,667 females. The reformatory and industrial schools for the reception of youthful offenders numbered 118, in which the charitable and workhouse industrial schools, not being of a penal character, are not included. The inmates of these 118 institutions numbered in the aggregate 11,748, of whom 1,150 were officers, and 10,598 juvenile offenders, 8,209 being boys and 2,389 girls. We have now accounted for all the public institutions except 599, which form a miscellaneous class, comprising principally orphan asylums, and asylums or schools for the blind and for the deaf and dumb. In this miscellaneous class of establishments there were 38,535 inmates in all, of whom 5,115 were officers, and 33,420 special inmates,—that is, 14,750 males, and 18,670 females. Besides the 2,383 public institutions thus far described, we find that there were ninety-six ships of the Royal Navy occupied on the census night by 13,454 persons, of whom 13,404 were naval officers, seamen, or marines. It appears somewhat to strain the ordinary meaning of terms to classify her Majesty's ships, as the census authorities have done, as "public institutions"; but, if we accept this mode of classification, we get a grand total of 2,479 public institutions, with a grand aggregate of 417,579 inmates, most of whom are maintained out of the local or national taxation, the remainder being supported by private charitable subscriptions and endowments. The average number of persons in each of the public institutions of the country is 168, or about thirty-three times as many as live in an ordinary dwelling-house.

Many of these public institutions are costly and palatial structures, and almost all of them are more solidly and substantially built than ordinary dwelling-houses, except those of the very best class. We shall hardly be thought extravagant if we estimate that it costs twice as much per head on the average to house the inmates of our public institutions as it costs to house the population generally in ordinary dwelling-houses. The average number of persons residing in each house in England and Wales is five, and, as the average cost of a dwelling-house has been estimated at 250*l.*, we get 50*l.* as the average cost per head of housing the population in dwelling houses. Granting that it requires double as much per head to build for the inmates of our public institutions, it follows that the 404,125 persons of this class,—we exclude the Royal Navy from the number in this calculation,—have cost the country, according to the present value of money, upwards of 40,000,000*l.* sterling to provide them with the edifices they occupy. If our builders had to erect dwelling-houses for the same number of our ordinary population, the work would be done for half the sum, or 20,000,000*l.*,—an inference which we may leave to speak for itself.

We now pass on to the figures which have reference to that portion of our population which passed the night before the census neither in ordinary dwelling-houses nor in public institutions. By far the greater proportion of these persons were afloat. We have already spoken of the Royal Navy, in which 13,454 persons passed the night. Besides these there were 63,709 persons who slept on board other vessels or boats on the night preceding the census. Of this number 33,547 slept on board British sea-going vessels; 12,545 on board foreign and colonial vessels, and 6,641 on board fishing smacks and vessels engaged chiefly in river navigation. In addition to these there were 10,976 persons on board barges and boats on canals and inland waters. Our total floating population, including the Royal Navy, numbered, therefore, 77,163. So much, then, for the population afloat on our waters.

With regard to that portion of our population which may be called literally houseless, it is gratifying to observe that their numbers are not only small in themselves, but they show a constant and gradual diminution as compared with previous censuses. In 1851 they numbered in the aggregate 15,764; in 1861 they fell to 11,444; and in 1871 to 10,383. In 1851 the number sleeping in barns and sheds were 8,105; in 1861 they fell to 4,314; and in 1871, to 2,358. In 1851 those who passed the night in caravans or tents, or in the open air, numbered 7,659; in 1861, they were slightly reduced, viz., to 7,130; but, in 1871, the numbers rose to 8,025. As these latter two classes include not only the gipsies and travelling hawkers, but persons attending fairs, races, &c., in addition to common tramps and vagrants who had not time to reach a casual-ward or common lodging-house on the night of the census, their number, with our population of about 22¾ millions, can hardly be thought excessive.

Our population afloat, on the other hand, has considerably increased of late years. In 1851 the aggregate number of persons sleeping on vessels of all kinds was only 57,857; in 1861 the number rose to 74,345; and in 1871 to 77,163. Between 1851 and 1871 the number on board fishing-smacks and river-vessels, so far from increasing, fell from 12,562 to 10,976. At the same time those on barges and boats decreased from 12,562 in 1851, to 10,976 in 1871. On the other hand, the numbers on board the merchant-vessels and ships of the Royal Navy rose from 38,146 in 1851, to 59,546 in 1871, the increase being almost entirely in vessels belonging to the merchant service. This increase in our floating population, concomitant with a decrease in the houseless population on land, is a fact upon which this country may congratulate itself; and the large increase in the floating population on sea-going vessels is only what might be expected from the vast development of our foreign commerce within the last twenty years.

The late Sir William Tite.—The Bulletin of the Société Centrale des Architectes (Nos. 5, 6, 7, and 8), for 1873, contains an appreciative notice of our lamented countryman, from the pen of M. Chas. Lucas, avowedly condensed from the memoir given in our pages.

SOCIAL SCIENCE AND ITS DIFFICULTIES.

Surely the Social Science Association is doing good? We do not believe that even the writers who seem to feel a pleasure in throwing a stone at it think otherwise. Its effect on public opinion is very considerable, and always in a good direction.

The judicial impartiality with which Lord Houghton spoke of so many of the most hotly-debated subjects of the day, in his inaugural address, some extracts from which appeared in our pages, was an example of the application of the true philosophic tone of the historian to contemporary events such as it is rare to meet. But the very charm of the address leads to the reflection, how vast is the field which it is attempted to survey. In science, although the various provinces are as yet undefined by any such central authority as might assign the proper extent and relative importance to each, there is yet that positive reality attending each distinct pursuit that constitutes it, so to speak, as a species. The animal and the vegetable kingdoms each presents an enormous field of research. Classification, on some principle or other, is a necessary step in the acquisition of knowledge by mankind. Until facts are arranged on some theory, good or bad,—pigeon-holed in the mind, —they form mere loose materials for future knowledge. The best naturalists are the most fully aware of the immense difficulties that lie in the way of ultimate philosophic classification.

The units which have to be shaken into form by a purely scientific tribunal, such as that of the British Association, are, like the species of the organic kingdoms, tangible and definite. But when we come to the mere vague, if more lofty, subject of sociology, there is a far greater uncertainty as to the elements with which we deal. The more reason, then, for examination and discussion.

While jurisprudence, in its elements and history, is a very well-defined and important branch of higher education, and as such, comes naturally within the purview of the Association, the kindred question of the amendment of our laws, is one in itself so vast, demanding so much special knowledge of history, of human nature, of jurisprudence in general, of English law in particular, of what is possible in the actual state of public opinion, and finally of what is practically desirable, that any sound recommendation on the subject must be the outcome of the best thought and widest experience of a picked number of specially cultured men. To suppose, then, say opponents of the Association, that the course of legislative change, whether in our own country or in the civilised world in general, can be annually passed under review by a section of a committee that meets for a few days in a year, and can thus be relegated to its proper place in a general estimate of social progress, is to give a generality to the object of the Association hardly compatible with that vigorous grasp of detail from which alone real progress is attainable. They omit to remember, or possibly do not know that the work of the Association (which holds within it a society established purposely for the amendment of laws), is not confined to the week in the country, but goes on by means of departments and committees of men specially informed during at least nine months of the year.

The expression "Social Science" has in it so much that is admirable to the friends of humanity, that it is no matter of surprise that the bounds of the survey attempted by the Congress should be regarded as somewhat undefined. But we think the more this tendency to generalize is checked, the more tangible are the results that may be expected. For the Social Science Association to take that position, with relation to the British Association, at which its supporters may be considered to aim, it must draw a clear line between the subjects of its research, and those proper to physical and chemical science.

One illustration of our meaning may be taken from the quoted remarks of Lord Houghton, desponding as they were, on the subject of sanitary science:—"No practical progress, I fear, has been made in the vexed question of sanitary reform. Day after day it comes before us illustrated with fresh disaster and moral difficulty." No doubt this is, to a great extent, true. But why is this the case? It is mainly because those steps which must precede any thoroughly efficient legislative action have not as yet been taken. It is legislative action which is contemplated in the address, and the mode in which the influence of the Association is most useful will be by diffusion of such a sound knowledge of the subject as shall put a moral pressure on the Legislature. So far, so good; but before this knowledge can be diffused, it has to be attained. The chemist and the engineer has yet very much to say before we are ready to call upon the Legislature for final action. Of course we are not hinting that the latter must be silent until the former are absolutely agreed. Things of this nature must proceed step by step. The great thing is, to see that each step thereto be firmly planted, so that it need never be retraced. It is of far more importance that this should be the case than that the step taken year after year should be at the extreme limit of the stride. But the broad fact remains, that many of both the scientific and the economical questions are still unsolved. Our accounts of what took place in the Chemical Section of the British Association show that very material points are yet in debate. As to the pollution of rivers, the demands of the trade of Bradford show how complicated is the question. Men of science have not yet agreed what, regardless of expense, are the best means of preventing any danger of infection from sewage. They have arrived at certain *data*, they are as yet undetermined as to others. Men of agricultural experience are far more widely divided in their opinions as to the commercial results of the various methods of utilising sewage. At these points we are now at work. We believe that our progress is materially hindered by the supineness of the legislature, and the administration, which has endeavoured to throw on ignorant country boards a responsibility from which the special advisers paid by the nation to help them in the matter have steadily shrunk. In such a matter as that the pressure of public opinion might be very advantageously called into play, by such a meeting as that at Norwich. But the necessity of drawing the line between the scientific and the political questions is here very obvious. Science says,—"I have not got to the bottom of this question!" Medical science says,—"It is a question of life and death to us all." What can social science say? Only this,—"Let us—people and Government,—see that every aid is given to the men of science to get to the bottom of the question!" That aid will best be given, not by advising every one to go to work in his own way—ten or a hundred men pursuing an inquiry which could satisfactorily be carried out by one man, with a knowledge of what was done elsewhere, while perhaps twice the number are engaged in experiments which have been made over and over again with definite results. The object of the committee of the British Association is to register and to advance this positive knowledge. The Local Government Board could have done, and we think ought to have done, far more than lies within the power of the committee. We think that this pursuit of positive knowledge, and communication to the country of such positive knowledge as is from time to time ascertained, became one of the first duties of the Local Government Board from the moment that they attempted to touch the sanitary question at all. And we think that in this respect the action of the Social Science Association may be advantageously, because specially, directed.

We think that these views are in full accordance with the opening paragraphs of the noble chairman of the Congress at Norwich. In his glance at the gradual transformation of modern society, and the history of crime, Lord Houghton spoke of the want of certainty of the philosopher, whose "factors are living men, creatures of appetites, passions, hopes, fears, and all other incidents of temperament and will." That this is the case has been the confessed difficulty of the philosopher, from the time of Aristotle. But a light has been thrown on the subject which does not fall on the pages of the ethics or politics of that wonderful man. Human knowledge, in his day, had not so far outgrown individual grasp that that light was absolutely necessary then. But considering the enormous bulk to which the modern Cyclopædia has swelled, the only hope of positive advance, except in detail, is derived from the principle of the subordination of the sciences. By a steady progress from the universal, absolute, and positive,—as logic and mathematics,—to the mastery of physical, and then of chemical science, we attack the great biological problem from sure ground, however laborious be the parallels by which we approach the fortress. It is because we attempt to jump at the higher and more complicated truth, before we have exhaustively mastered the more simple and general, that we dispute so much as to the main laws of the latter. The establishment of the new Railway Board was next mentioned as the only novelty in public administration. The only point of view from which this great national subject was approached in the address was that of the proposed absorption of the railway property by the State. As to this, we exposed what appeared to us to be the decisive elements in our number for April 26th last. It should seem, however, that if it be the object of the Social Science Association to indicate those points to which it is most urgent that the attention of either the scientific or the practical intelligence of the day should be directed, it is to the explanation and the prevention of that terrible series of railway calamities and offences which, since we last had occasion to refer to the important subject (see p. 697, *ante*), has come upon us like a swarm of hornets. The mechanical means of preventing these accidents we do not hold to form any portion of the subjects into which the Association has to inquire. But the higher question of how the responsible managers and directors are to be bound over to avail themselves of the services of science, and of how far judicial penalty or public indignation should come into play when that over-driving of the *personnel* of a line to which so large a proportion of these fearful and disgraceful occurrences is to be traced is detected might well form the subject of inquiry.

Under the head of the Licensing Act of last session another of those contributions which Science progress is ever offering to political science was appropriately mentioned. We refer to the remarks as to the medical character of drunkenness. All that can be imagined as to the moral and material part of the story has been said, we should conceive, over and over again, in every imaginable form. A mild fanaticism has been called into play; and under the name of temperance, and in despair of the attainment of that mother-virtue of all virtues, enthusiastic men, shocked at the terrible evils that stare them in the face, have endeavoured to enforce abstinence on moral grounds and even by compulsory legislation. It is a philosophical remark that "a national love for strong drinks is a characteristic of the nobler and more energetic populations of the world." We hesitate to quote the remainder of the sentence; and we think it well to indicate the opinion that it is not an "instinct" in these races, although it may spring, to a great extent, from the same source as their "public and private enterprise." Observation of the habits of the English workmen in different parts of the world, not only in every province in England, but in Ireland, France, and Italy, leads to the conclusion that the habit, and thus the love, of strong liquor is in its origin a matter of climate. Take an English navvy to a southern climate, and he either becomes sober or is carried off in a very short time by *delirium tremens* or some other form of alcoholic death. We are not speaking at random, but from a personal experience which will be confirmed by any English physician familiar with the subject. The Italian is not, one may well believe, a naturally more temperate man than the Englishman or the Scotchman. In self-control, as far as the passion of anger goes, he is far their inferior. But he is habitually temperate, because if he takes what in some parts of our island would be thought a contemptible quantity of alcoholic drink he entirely loses his reason. He runs a risk of fever,—which when treated by an Italian doctor usually means death,—on the one hand, and of incarceration for some frantic folly on the other. Result,—he does not drink. Thus the suggestion of Lord Houghton as to the possible advantage of the medical study and treatment of intoxication is one to which we are disposed from experience to attach much weight. It is, moreover, an admirable illustration of that which we venture to suggest to be the most remunerative line of inquiry that can be adopted by the supporters of the Social Science Association,—that of the discovery of the points to which the attention of men of special science can be most advantageously directed.

From this subject the transition was easy to that of prisons and prison discipline, and to the not remote danger that it may some day become plain to the agricultural workman, if not to the operatives in the great manufacturing towns, how greatly they would improve their diet, shelter, and physical comfort in general by the easy process of becoming criminals; a danger which Lord Houghton intimates has been very

sensibly felt with regard to the young. But in speaking of the legislation of 1851, and of the Juvenile Offenders Act as the commencement of legislative reform in this direction, Lord Houghton has omitted an earlier and a more important change. This century was very young when the late venerated Dr. Lushington, the late Josiah Conder, William Allen, and a few of the early heads of the great anti-slavery party formed the Prison Discipline Society. In those days human life was weighed against the life of a sheep, and was thought nothing of in comparison to the safe-keeping of a horse. It was the fact of the frequent execution of children of so tender an age that it was necessary for them to be double-ironed in order to allow the gallows to do its fatal work, and even then the executioner was often called on to come in aid, that moved the warm hearts of these disinterested men, and thus led to the first hand-to-hand fight in Parliament with the advocates of red-handed justice (as judicial murder was called). This victory left a comparatively easy task for the subsequent reformers of juvenile offenders and their treatment to accomplish.

From the prison, by an easy transition, the speaker approaches the workhouse. It is a matter of very great satisfaction to find a man in the position of Lord Houghton,—an elevated position which enables him to see so much further than men who are too fully occupied with the demands of daily business, and a man who has strong reasons to speak well of "the bold Act of the Whig Government some fifty years ago," in its effort to check the spread of pauperism, — admitting that a "well-founded apprehension exists in the minds of intelligent men" that "the primary virtues of the working classes are discouraged, and even turned into disqualifications by our Poor Laws. Thrift, cleanliness, and "honesty," said Lord Houghton, "are not only no claims to poor-relief, but they are impediments to the receipt of it." A law that has this result is one that relies for its support, not on the best, but on the worst tendencies of human nature. The result of relying on such a basis is ultimate destruction; and the question may even arise whether it will be the destruction of the law itself, or of the society which enforces that law.

As to competitive examination, we cited the remarks of Lord Houghton, and only have to say that, while he regarded the question of patronage, it should not be lost sight of that there is an opposite, and perhaps a greater, danger,—that of *cram*. Austria is called, on the Continent, the *pays à l'examen*; and the competitive system there is combined with the lowest degree of general culture found anywhere in Europe, except in this country, and in the States of the Church. Such, at all events, is the testimony of our blue books.

As to co-operation, and the land laws, we have already quoted the address. We cannot, however, lay down the pen without observing the evidence of a deep conviction, rather implied than expressed, which tinged the whole of this portion of the remarks, and which is especially worthy of notice, as showing the presentment of the speaker. It is a conviction that has long been forcing itself on the minds of thoughtful men; though it has perhaps never been so distinctly or so appropriately brought before the world as on the present occasion. We refer to the danger of the destruction of liberty, by the extension of freedom. We do not wish to be unnecessarily antithetical, but we can hardly put the matter in fewer words. We have been busy for years in removing certain barriers that were thought to interfere with freedom of individual action, especially among the working classes. We cannot avoid recognising and regretting a coincident spread of the spirit of despotism, —the kind of despotism that subordinates individual energy and talent to rules prescribed, not in the interest of society, or of the best members of society. We need not enter now on a subject which must waken an uncomfortable sort of echo in the bosom of many a thoughtful man, but we regard it as the great danger to which the development of the social life of the remainder of the present century is most obviously exposed; and as thus one worthy of the most serious consideration of all students of social science.

Architectural Association.—The *conversazione* to open the new session will be held on Friday evening, the 24th of October.

A FRENCH TREATISE ON HEATING, VENTILATION, AND WATER-SUPPLY.*

About four years ago we noticed the publication of a French treatise on heating, ventilation, and distribution of water in private houses. The author of this work, M. Joly, has since revised and added to his stores of information relating to these subjects, and the result of his industry and research is now before us in a second edition. A hundred and fifty diagrams served to explain the text of the first edition, but this number is now increased to 375 illustrations. The letter-press has been augmented in the same proportion. It is not the general public, we learn, that has encouraged M. Joly to launch out again on this enlarged scale, but the approbation of a few friends of progress. As a matter of fact, French society has need of many preachers and teachers of sanitary knowledge, but has few ears or eyes for them at present. The holiness of cleanliness is not generally understood across the Channel, nor even familiarly acknowledged. It is quite true that a perception of its virtue is gaining ground among *les amis du progrès*; but it is equally certain that M. Joly has a wide uncultivated field before him, in which his labours may be of great value. As on this side of the Straits of Dover, there are builders at work who have but one object in view,—to wit, profit,—and who fail to combine that very reasonable aim with a desire to promote the health and general well-being of their fellow-creatures. The number of beams among ourselves prevents us from closely observing Continental motes; but, with due search, they are to be seen in every possible variety of indifference to sanitary appliances, as M. Joly assures us. But it is not only with what is, and what should be, that the author deals. He shows us what has been in different sanitary departments, and thus gives antiquity to a science generally considered new. There is nothing new but that which has been forgotten, he urges.

Heating comes under observation first. Heat is a different thing to different people. The physician, chemist, or physiologist and machinist take opposite views of it. To the one, heat is the result and not the cause of movement, and of the chemical reactions produced by respiration and nutrition; and to the other heat is the cause of action and not the result. M. Joly's view of it differs again, if, indeed, he does not dispute its existence altogether. "For us," he says, "heat shall be the state of bodies relatively to our organs. To make myself better understood, let us suppose three vases, A, B, C, placed side by side; the first, A, containing ice; the second, B, water at ordinary temperature, *soit* + 12° à 15°; and the third, C, of water at + 40°. If any one placed his right hand in the vase A, and the left hand in the vase C, he would have a simultaneous sensation of heat and cold; if he afterwards placed both hands at the same time in vase B, in the ordinary temperature, the rôles would be reversed, the right hand would experience a sensation of heat, and the left a sensation of cold. However, in the second case, it is the same water in the same state which produces the two different sensations, following the preparation which we have made our hands undergo." From this fact, he argues, that heat does not exist for us, and that all we need do is to study its effects upon material bodies. And then he proceeds to discuss rays, reflection, and transmission; the dilatation of bodies; the equilibrium of temperatures; the conductibility of bodies; the necessity of artificial heat; combustion; combustibles; smoke; the *allumage* of fire; and every other department of the question. Air and water next occupy his attention, with all their intricacies. "As the air, so the blood," however, is the pith of all that can be said of the first. The importance of a good supply of water, under the various headings of baths, reservoirs, cisterns, filters, *glacières*, *marmites*, *norwegiennes*, and other details, is not so easily condensed into a few words. We pass by the sufficiently full accounts of all these contrivances to look more especially into M. Joly's chapter on the *chauffage des appartements*, or, as we might put it, on the rival modes and materials for heating the interiors of buildings. He has put all his strength into this section of his work. To understand our present position the better, the early modes of heating are reviewed, beginning with the armful of faggots lighted in the centre of the floor of the huts of our remote predecessors, past the hypocausts of the Romans, the open fireplaces and chimneys of the Middle Ages, down to the stoves of the moderns in their perplexing variety. These different contrivances are all illustrated from actual examples. The grand mantel-pieces and admirable chimneys of some of the old châteaux and abbeys are extremely pictorial. They all lead up, ingeniously, to a *cheminée perfectionnée, système V. Ch. Joly*, or to a perfected chimney designed by the author. This is framed upon the conditions announced by Franklin, in 1744, as constituting a model fireplace. These, it will be remembered, were to combine the advantages of an open fire with those of different kinds of stoves, to obtain the evacuation of vitiated air, the introduction of fresh air at a moderate temperature, and economy in the consumption of the chosen combustible. M. Joly believes he has made considerable progress towards combining all these requisites with others, such as facility in cleaning, the utilisation of every ray of heat, with a range of choice incumbustibles, wood, coke, and coal being equally suitable for it. He makes his smoke pass into pipes, which diverge in different directions immediately above the fire, instead of allowing it to surround and lick the surfaces of the fireplace. Behind the back of his fireplace, which is fluted, so as to make as many reflecting surfaces as possible, and which he calls a *coquille*, he leaves a space all round, which he terms a chamber of heat. On the hearth he has a vent.

The *coquille* is formed so as to receive bars or a grille conveniently, and it narrows at the top, into a neck, in which are situated the pipes that carry away the smoke. There are other details given, but as these would be scarcely understood without the accompanying illustrations, we must refer our readers to the work for more minute particulars of the improvements M. Joly dictates. The *installation* he proposes, he declares, is not intended for persons of short-sighted policy, who, to avoid a preliminary expense of 30 or 40 francs, would burn, in the course of the winter, combustibles costing a more considerable sum, and which are altogether wasted under the form of smoke. On the principle, we presume, that none but the brave deserve the fair, only the friends of progress are invited to investigate this *cheminée perfectionnée*. "Let us blame, energetically, the architects, and they are still of a great number who prepare their plans without occupying themselves with heating, ventilation, or water supply," says the inventor, who then goes on to depone that when such ill-considered plans are executed, and these necessaries are all found wanting, then the *fumiste* and the plumber are called in, who pierce the thick walls and perch upon the chimneys horrible funnels of hideous design, to the degradation of the buildings in question, as may be seen by any one who looks upon Paris from the heights of the towers of Notre Dame.

Alluding to Captain Galton's method of heating barracks, M. Joly says the principle was indicated in France as early as 1832 by Captain Belmas, and gives sketches of the original drawings of it, exclaiming, "Heaven knows how often the same idea has been copied, modified, and registered since."

Writing of the causes of smoke, the author reminds his readers that the ancient Romans suffered from this ancient misery:—

> "Sunt tria damna domûs:
> Imber, mala femina, fumus."

That is to say, he continues, there are three domestic plagues: damp, a peevish woman, and smoke. "The second plague is incurable, but nothing is easier than to remedy the two others." When we are dwelling upon the sufferings of our ancestors from smoke, we forget they used a remedy which we only know by name,—the paravent. Not only have we forgotten this contrivance, but in making our windows and doors more air-tight than they managed to do, we too often fail to provide sufficient air to replace that which has been carried up the flues. Then, from this starting-point, M. Joly enters into the questions of the proper dimensions of the openings into flues, heights of chimneys, the too close neighbourhood of other flues, causing what we call "borrowed smoke," the action of the sun's rays causing a disagreeable smell of soot in apartments, *mitres* with their various forms, traps, air-holes, and every other detail that can be associated with the subject. He gives a list of

* Traité Pratique du Chauffage, de la Ventilation, et de la Distribution des Eaux dans les Habitations particulières. Par V. Ch. Joly. Deuxième édition. Paris: J. Baudry. 1873.

117 works that he has consulted, so that we are not surprised that he has looked at it from every point of view distinguishable from another.

A new feature in this edition is the space devoted to the heating of green-houses and winter-gardens, or the best mode of maintaining the equable temperature, or heat, required by some varieties of vegetable life. During by-gone centuries gardeners could only obtain increased heat for their plants from manure in a state of fermentation, owing to the absence of one indispensable element in the construction of green-houses,—glass. The present small cost of the production of this article has revolutionised the gardener's trade. It was not till the end of the seventeenth century that forced culture was possible, and then it was only confined to the estates of the wealthy; but now, M. Joly rejoices, the most modest *bourgeois* can give himself the luxury of an artificial climate. But there are difficulties of construction in the way, owing to the different degrees of heat required by different plants, which can only be met by dividing green-houses into compartments. Several systems of heating are explained and illustrated, beginning with that of Robertson, published in London in 1798, and followed by that of the Chinese; that of Todd, another English authority; the Marquis de Chabannes; and others. Heating by gas, as adopted in the green-houses of the city of Paris, is also described.

M. Joly gives several designs for conservatories attached to houses. In two instances he places these glass-covered gardens on the roofs of the houses. To one he gives a modified Mansard outline; to the other a curved form, surmounted by an ornamental ridge. Both are very pleasing in appearance. He suggests that they could be used where the narrowness of a street, or its insufficient ventilation, would be a bar to the construction of others in the more usual positions. If we could dismiss the ideas of damp, and weight, and difficulties from weather they convey, we should be disposed to admire them as enthusiastically as he could wish.

A novelty in connexion with a work on heating is a chapter devoted to ambulances. After condemning some of the modes of warming hospital-tents, the author describes the best and most rational way. Before laying down the planks of the tent, a trench of a gentle declivity should be dug along the centre of its whole length. At the low end of it, outside the tent, there should be made a square hole. In this hole should be placed a stove, whereof the chimney-pipe should proceed along the trench and pass out at a vertical chimney at the other end. When possible, this pipe should be cased in a double sheath, *gaine*, which, when once the little stove was lighted, would assist in the ventilation of the tent by openings placed in the ground. The subterranean part of the stove-pipe should be surmounted by a grating, or by stones or bricks with orifices at intervals for the issue of warm air into the different compartments of the tent. The stove should be protected by a non-conducting envelop or covering, and sheltered from the rain. Thus all the service is rendered outside the tent; all the heat from the stove and from the smoke is utilised; the heat can be regulated; the temperature of the ground is at least equal to that of the ceiling, regular, wholesome, and exempt from humidity: and the ventilation perfect.

The warming of schools, colleges, shops, and warehouses follows that of the *ambulances volantes*, and then comes the modern difficulty of heating railway-carriages. But whether this is to be surmounted by the use of the steam lent by the locomotive, or of a *thermosiphon* to keep up a circulation of hot water under the feet of the passengers, or by a special *chaudière* placed in the luggage-van, or by *chaufferettes*, as in Germany, in which is placed a combustible specially composed of materials to burn slowly, or by stoves as in the United States, or by gas, is not yet satisfactorily settled. M. Joly hopes that as we have followed the Americans in the employment of the telegraph, we shall haste to imitate them in their attention to the comfort of the passengers whom they transport to great distances. Kitchen stoves, pots, and furnaces next appear upon the page.

The section devoted to ventilation also contains several novelties. If we were only shown the impurities there are in the air, as we are sometimes shown the impurities and organisms in the water we drink, we should realise the truth of the English proverb,—"Our own breath is our greatest enemy," exclaims M. Joly. What with the burning of gas; the emanations from *des fosses d'aisances*, some 50,000 or 60,000 in number; the fermentations from vegetable matters in markets, the gutters, the joints of the pavements; the hospitals with their fevers and other miseries; the barracks scarcely less pernicious; the two hundred thousand fires lighted in the sixty-eight thousand houses in Paris; the manufactories and depôts of all kinds, it is clear that the Parisians should be alive to the importance of ventilation, if they wish to maintain the health of the vast population. The plague, the yellow fever, the cholera, and typhus are all enemies of man induced by bad conditions of the atmosphere under the influence of heat and damp; and the *peste bovine* among beasts must be assigned to the same cause; and the best treatment for them all is a proper ventilation. It is calculated that a hundred million *spores* or germs of different kinds are in the air which passes in the course of a day through our lungs. "*Qu'on juge de l'influence d'un air impur sur la santé!*" cries M. Joly, with real horror. The ventilation of hospitals comes first on his list, and here he details both the Parisian and American systems. Then we inspect in his company *des tentes-baraques*, or stationary ambulances, with their twin contrivances for summer and winter ventilation; barracks; schools; *des crèches*; asylums for infants; private houses, chiefly English, however, or American; concert-halls; saloons; *des salles d'assemblée*; amphitheatres; prisons; ships; kitchens; stables; theatres, in which every difficulty associated with the subject is associated under one roof, or in one establishment; workshops; chambers in working-men's houses; servants' rooms; and, finally, ponder over all the known means of making their occupation salubrious to their inmates. After all is said and seen, we must agree with Boileau:—

"*La critique est aisée, et l'art est difficile.*"

As indicative of every phase of the subjects treated, we commend M. Joly's labours as exceedingly useful.

THE BRADFORD INDUSTRIAL PROCESSION AND THE ELGIN MARBLES.

We have often enough thought it not a little singular in these days of universal writing and reading that no profound and elaborated book,—not even a German one,—on "What is civilisation to culminate in?" has been produced. A very tremendous question, indeed, if we but pause to think about it for a quiet moment or two. Where the philosophic thinker is perhaps compelled to stay his hand, there it may seem to many but too bold to venture. But for all this, a thought or two about it may not come amiss. First, then, will mankind, in the future,—the highly-civilised future,—be lighter hearted and more joyous than those of the past or the present; or will they be more *serious?* Will business, or "amusement," to adopt the mildest word, be the main thing in life? Will fine art be,—to come to details,—a prime necessity of mundane existence; or only, as it now is, a kind of accident, here and there? Will art come to be *manufactured* more perfectly than it now is, or will it of necessity come to be restricted to individuality of artistic expression? and, not to swell the list, which might be done with so much ease, will such things as "*Processions*" of any sort come to be regarded as beneath the dignity and seriousness of advanced and civilised human existence; or will they increase and multiply, and get to be more and more expressive and artistic? The forces of the world at the present hour are a good deal divided as to them: by some, and not a few, a procession of any sort, or on any occasion, is looked on as a thing of the past, as a kind of trifling away of time, and as a mere piece of old-fashioned foolishness; the sooner got rid of the better,—as a dead thing, and waiting only for burial! While by others, and not a few, a procession is regarded as a thing needful. How is all this? Somebody must be right. There is, indeed, more in this trifling array of energy, as it may appear to some than would at first sight seem possible, if only artistically.

It must be borne in mind that man is by his very nature an executive artist, and will and must in some way or other express himself and his doings through material forms, more or less artistically. In the morning of his life to express himself he could and did but copy in some more or less enduring material the things and occurrences of his daily and hourly existence, and in this existence, such as it was, *processions* and *shows*, it may be added, formed not a little important items. Art was in truth realistic, not imaginative, and this perhaps constitutes in the main the essential difference between the old and the new in art. Artists and artist-workmen were content in the old days to copy the goings-on and the doings of every-day existence, processions included. In these times, as all know, it is out of the imaginative faculty to look thus at them. Art is thought to most naturally and truly and artistically spring from the imagination.

At Bradford, on the occasion of the opening of the new Town-hall, our North countrymen would seem to have gone to work in right good earnest, and in the spirit of their bygone forefathers, and with true Northern energy. A great place of public meeting was built, the new Bradford Townhall, and then, to make the very most of the occasion of the first opening of its doors, a huge procession was organised,—a procession of old-world thoughts, and of the very newest of materials.

It is indeed curious and instructive to contrast the part of ancient fine art with the present, and to anticipate it may be the *future*. Contrast, for a moment, the decorative art and the illustrative art of old Greece with that of the modern Bradford. In the Parthenon, the national temple of Greece, we see the whole of it that was open to the illustrative sculptor given over to what in these days would be called almost pure delusions. The two pediments of the east and west fronts, filled with "illustrations,"—to use a modern and, we hope, an intelligible phrase,—of mythological dreams,—of Neptune and Minerva. The magnificent series of *metopes* give representations of a quarrel at a public feast; and the celebrated *frieze* a "procession" from one spot to another, with no other excuse for it than the making the most of the bringing into the temple a veil, or hanging for a statue: indeed, so great was the importance attached to this procession that all Greece seemed to flock to it, and it was commemorated in all-enduring marble, on the walls of the greatest and most finished structure of which the Grecian people could boast. Thanks to this, we may yet see what the procession was like, what the people were who formed it, and, indeed, the whole of the beautiful show may be realised to the modern sight-seer as plainly as the Bradford procession of trade-guilds, and rough and manufactured goods, and attempts at fine art. It is to be hoped that some illustrative detailed record, if only on paper, has been preserved of this Bradford industrial modern show. What would be thought of it if preserved like that of the Greek display in enduring marble? A lesson, and no slight one, to be got out of such old-world ways in modern times as the Bradford Industrial Show is in the fact,—a somewhat strange one, perhaps,—of the persistency with which common human nature sticks to its old ways. Processions, in spite of so much that can be said against them, still march on, and not only are those to be found in any numbers to form them, and take part in them, but *spectators*, as in old Greece, in any number, and of all possible grades, and phases of education and age, are to be found. These do not come to see the trifling show by any kind of compulsion, but they flock in crowds willingly to see and to admire, and not a few of the higher sort to pay heavily for a good and secure place from which to gaze. What an art-lesson is here. Does it evidence an advanced civilisation or not? Is it a good sign for art in the future or not? Important and vital questions these, and perhaps a little hard to answer. We cannot please all, and cannot have everything. A sacrifice always seems necessary, and to get at one sovereign good, a something or other must be given up, and abandoned, greater or less. It is wonderful to think of what the old world did with its amusements, and "shows," and trifles, and theatricalities. It was not content to see them, and then to let them pass away. It memorialised them, and perpetuated them in almost everlasting material forms. It was not the Greek alone, either, in the world's history, who did all this. The Assyrian and the Persian, the Egyptian and the Hindoo, and not a few others of the old world's habitants, were alike smitten with this world mania for pomp, and processions, and glittering show!

The main outlines and some details of this great Bradford show of industrial art have been already described in our pages, so that it will be needless to particularise, but to

make real and good use of it. Artistically, it should be compared with the old-world displays of the like kind as the Greek or Egyptian or Assyrian. It is true that these were not, in the modern sense of the word, *industrial* shows or processions of men with goods, raw and manufactured, passing along the streets of the antique cities for the mere purpose of displaying them; but in substance they were, after all, pretty much the same. In the old Egyptian work, much of which may be seen here and there in the British museum, were long lines of men and things, trophies of war, all sorts of objects taken from the conquered cities, and from the camps of the enemy. In the glass cases in the museum may be seen the very objects themselves of fine art and painstaking industry—a wonderful sight if duly reflected on; and the good people of the great and prosperous Yorkshire town might well, some of them, come to London for a day to look at what the now so long dead men did in their day, and then contrast their doings with their own. No steam engines then, or telegraphs, or wonderful systems of mechanism, which the workman has but to set going, and which then may be left safely to do all the rest of the work by itself. The same materials, but how differently manipulated! No schools of design then, nor "art principles," but how well the antique workman understood his work, and how skilfully he did it! What a lesson to the Bradford men!

Let us think but for a moment how far from the present all these old-world ways are. It has been thought wonderful, as indeed it is, to see into the daily life and the "life furniture" of a St. Edmondsbury monk "seven whole centuries ago;" but here, in these strange things and ways, even now visible to us, we actually see into the life and ways and real furniture of 4,000 years back, into a state of things at which we can only look poetically, as in an antique dream. Four thousand years of progress and advanced knowledge, and inventive mechanical science have passed away, and "barbarism" has, we are told on all hands, given way to "civilisation." Then, may we not ask, how is it that we must need go back, as it were, and follow the procession stretching from so far to now? Processions have, be it remembered, never ceased, in some form or other, to be. But then there is this difference between the antique show and the Bradford show of the other day: the old show was an artistic one in every sense; the modern one lacked in no small measure, if not wholly, the true artistic element. Civilisation has a good deal to learn yet, may be, from the barbaric past; Bradford has a good deal to pick up; but, to our minds, it was a good and healthy sign what she did the other day, or tried to do. It is a true instinct in human nature to thus express itself in material forms, and even to march along by the side of them, and to look at them, and at those who do the work. But the modern Bradford men have a good way to go before they overtake the pomp and fine art of the old Assyrian, and Egyptian, and Greek "processions."

LANDSEER.

The body of Edwin Landseer, the greatest animal painter the world has yet known (notwithstanding the power of Rubens within certain ranges of the art) was deposited in the south aisle of the chancel crypt of St. Paul's Cathedral on Saturday last, a very large number of his friends and the public attending to show honour to his memory. With very few exceptions, the whole of the 1,400 or 1,500 persons present wore black in some shape or other. Around where Landseer lies are buried Sir Christopher Wren, Sir Joshua Reynolds, Sir Thomas Lawrence, Opie, Jas. Barry, Mylne, the engineer, Fuseli, J. M. W. Turner, and some other artists. In our volume for 1852* will be found a view, and particulars of this part of the crypt, which we then termed Artist's Corner, as contrasting with Poet's Corner, of Westminster Abbey, and which term still seems to us more appropriate than Painter's Corner, made use of in various quarters on the present occasion. Landseer has been fortunate in having always had attached friends. The late Mr. Jacob Bell for many years forwarded his interests in a remarkable manner, and since the death of Mr. Bell another gentleman has devoted himself to his service in an equally constant manner. The amount of money received by Landseer for his copyrights must have been very large. We remember an instance in proof. The picture representing the apocryphal visit of the Duke of Wellington and his daughter-in-law, the Marchioness of Douro, to the field of Waterloo, was painted in reply to a commission to the extent of 700*l.* from Mr. Vernon, and that sum was, we believe, received by the artist for the painting. For the right of engraving this same picture, Mr. Graves, as he once told us, paid Landseer 3,000*l.* The same sum,—3,000*l.*,—was paid for the copyright of "Peace and War." A complete collection of the engraved works of Landseer, now made for the first time, is set forth in Mr. Graves's Galleries, in Pall-mall. They are 305 in number. We understand that the value of the property left by the artist is estimated to amount to 200,000*l.*

* Vol. x., pp. 690 and 691.

NEW YORK HARBOUR.

Writing upon this subject, our consul at New York states that the harbour there, in point of capaciousness and shelter, as well as of the beauty of the surrounding shores, is not surpassed by any in the world. The main entrance at the Narrows is not more than a quarter of a mile in width. At the mouth of the outer bay, near Sandy Hook, distant eighteen miles from the city, is the bar, on which the depth at low water is about 23 ft. Operations on an extensive scale are being carried on at the Hell-gate entrance to the port for deepening the passage into it from Long Island Sound. The rock forming the bed of the stream is being undermined by a system of excavations, which will not be completed before the lapse of eighteen months, when this rock will be blasted and removed. The bad condition of the public piers and wharfs of New York, and the absence of dock warehouses, are serious drawbacks to the landing and shipping of cargoes, subjecting goods to injury from exposure to the weather and the chances of theft or fire. But a commencement to remedy this state of things has been made by the construction of a system of quays, to be extended along the whole water front of the city, on the East as well as North river. The cost involved in this work will necessarily be very heavy, and several years must elapse before the system is completed; but it is anticipated that it will provide all the accommodation for shipping and commerce in this respect which could be desired.

THE LATE MR. JOHN CUNNINGHAM, ARCHITECT.

Mr. John Cunningham, whose death at his residence in Edinburgh, on the 2nd inst., is announced, was a man of considerable ability, and erected several important buildings in Liverpool at a time when architects were less plentiful than they are now. Mr. Cunningham was born in 1799, at Leitholm, Berwickshire, and served his apprenticeship with his father, who was a builder there. He afterwards removed to Edinburgh, where he studied and practised as an architectural draughtsman during ten years. In 1833 he married and went to New York, intending to settle there; but the climate did not agree with him, and he returned to Liverpool in 1834, where he got into extensive practice as an architect, and remained till last summer, when he retired and went to reside in Scotland, where some members of his family and a number of his friends were resident. His works in Liverpool and in the neighbourhood are numerous and important. Among others, the Sailors' Home, the Commercial Bank, the Union Bank, and the Orphans' Asylum may be mentioned as being carefully studied specimens of the various styles in which they are designed. The building which obtained for him the most reputation is the Philharmonic Hall in that town, the music-room in which, 135 ft. by 100 ft., was for some time the largest there, and has received high praise from musicians. We are not prepared to record it as a perfect concert-room. It is remarkably free from echo; but, on the other hand, it is not a resonant room, owing to the extensive use of plaster, and the great amount of upholstery, which rather damps the sound than assists it. It was undoubtedly the best room of the time it was built, but there are new experiences since in these matters, and Mr. Cunningham's hall must not be finally ranked as the *ne plus ultra* in music-rooms. In one respect, in regard to accommodation for the audience in the way of cloak-rooms and entrance and exit, it is a remarkably well-planned establishment. The architect himself had agood opinion of it. An acquaintance of the writer was complimenting him one day about it, and Cunningham interrupted him by saying, "Well, the fact is that *for* a concert-hall, it is *joost* perfect!"

The success of this building led to the appointment of Mr. Cunningham as consulting architect along with Mr. Campbell Douglas in the new Assembly Hall now being erected there.

Mr. Cunningham was also architect of many churches, mansion-houses, and public buildings throughout Lancashire, including Ripley Hospital, near Lancaster, and Upton Church, near Birkenhead, and was engineer for several waterworks.

HUMILITY AND USEFULNESS.

At the Mansfield Town-hall, on Tuesday last, the Duke of St. Albans, on the occasion of presenting prizes to the successful students of the night art-class, read a communication from Mr. Ruskin, a portion of which we print:—

"I fear that the tendency of modern thought is to reject the idea of that essential difference in rank between one intellect and another, of which increasing reverence is the wise acknowledgment. You may, at least in early years, test accurately your power of doing anything in the least rightly, by your increasing conviction that you never will be able to do it as well as it has been done by others. That is a lesson, I repeat, which differs much, I fear, from the one you are commonly taught. The vulgar and incomparably false saying of Macaulay's, that the intellectual giants of one age become the intellectual pigmies of the next, has been the text of too many sermons lately preached to you. You think you are going to do better things,—each of you,—than Titan and Phidias; write better than Virgil; think more wisely than Solomon. My good young people, this is the foolishest, quite pre-eminently,—perhaps almost the harmfullest,—notion that could possibly be put into your empty little eggshells of heads. There is not one in a million of you who can ever be great in anything. To be greater than the greatest that have been is permitted, perhaps, to no man in Europe in the course of two or three centuries. But because you cannot be Handel and Mozart, is it any reason why you should not learn to sing 'God Save the Queen' properly, when you have a mind to? Because a girl cannot be *prima donna* in the Italian Opera, is it any reason that she should not learn to play a jig for her brothers and sisters in good time, or a soft little tune for her tired mother, or that she should not sing to please herself, among the dew, on a May morning? Believe me, joy, humility, and usefulness, always go together; as insolence with misery, and these both with destructiveness. You may learn with proud teachers how to throw down the Vendôme Column, and burn the Louvre, but never how to lay so much as one touch of safe colour, or one layer of steady stone; and if, indeed, there be among you a youth of true genius, be assured that he will distinguish himself first, not by petulance or by disdain, but by discerning firmly what to admire, and whom to obey. It will, I hope, be the result of the interest lately awakened in art through our provinces, to enable each town of importance to obtain, in permanent possession, a few,—and it is desirable there should be no more than a few,—examples of consummate and masterful art, an engraving or two by Dürer, a single portrait by Reynolds, a fifteenth-century Florentine drawing, a thirteenth-century French piece of painted glass, and the like; and that, in every town occupied in a given manufacture, examples of unquestionable excellence in that manufacture should be made easily accessible in its civic museum. I must ask you, however, to observe very carefully that I use the word manufacture in its literal and proper sense. It means the making of them by the hand. It does not mean the making of them by machinery. And, while I plead with you for a true humility in rivalship with the works of others, I plead with you also for a just pride in what you really can honestly do yourself. You must neither think your work the best ever done by man, nor, on the other hand, think that the tongs and poker can do better, and that, although you are wiser than Solomon, all this wisdom of yours can be outshone by a shovelful of coke. Let me take, for instance, the manufacture of lace, for which, I

believe, your neighbouring town of Nottingham enjoys renown. There is still some distinction between machine-made and hand-made lace. I will suppose that distinction so far done away with,—that a pattern once invented, you can spin lace as fast as you now do thread. Everybody then might wear, not only lace collars, but lace gowns. Do you think they would be more comfortable in them than they are now in plain stuff; or that, when everybody could wear them, anybody would be proud of wearing them? A spider may, perhaps, be rationally proud of his own cobweb, even though all the fields in the morning are covered with the like, for he made it himself; but suppose a machine spun it for him? Suppose all the gossamer were Nottingham-made, would a sensible spider be either prouder or happier, think you? A sensible spider! You cannot, perhaps, imagine such a creature. Yet, surely, a spider is clever enough for his own ends? You think him an insensible spider, only because he cannot understand yours, and is apt to impede yours. Well, be assured of this, sense in human creatures is shown also, not by cleverness in promoting their own ends and interests, but by quickness in understanding other people's ends and interests, and by putting our own work and keeping our own wishes in harmony with theirs."

Mr. Henry Cole made an excellent practical address, urging Mansfield to bestir itself.

THE TURNERS' COMPANY'S PRIZES.

The Lord Mayor presided in the Egyptian Hall of the Mansion House, at the fourth annual distribution of these prizes. Their origin was explained by Professor Tennant, the Master of the Company, and the general results of the present competition for excellence of turning in ivory and stone by Mr. Thomas Forshaw and Dr. William Pole, two of the judges in either department. The Lord Mayor, before presenting the chief prizes, congratulated the Company upon the success which had attended its efforts to promote technical education in the trade with which it was more immediately connected, and referred to similar inducements held out by other City Guilds, mentioning in particular the Coachmakers' and Paperstainers' Companies. He thought, however, more was to be accomplished in the matter of technical education by the united action of all the guilds than by individual efforts, and hoped at the forthcoming aggregate meeting on the subject to be held in that hall, the Turners' Company would bring their experience to bear upon the proposed combination.

The prizes were then distributed, the recipients being as follow. The money prizes were given by the Baroness Burdett Coutts.

Mr. William Davis, 22, Hughes-road, Anerley, first prize for ivory-work. A silver medal and the freedom of the Company and the City.

Mr. R. W. Cotton, 202, Commercial-road, Peckham,—Second prize, for turning two flower-stands. A bronze medal and 5*l*.

Mr. Greenbury, Haggersgate, Whitby,—First prize for stonework. Silver medal and freedom of the Company and City.

Mr. W. Atkins, Poltesco, Cornwall,—Second prize. Bronze medal and 5*l*.

Mr. Stone, for merit, 5*l*.

Mr. Jonathan Gibbon, Whitby, for merit, 5*l*.

An apprentice, named Stevens, not yet sixteen years of age, took a certificate for turning three bowls, connected, from one piece of stone.

Robert Lewis Packer, 5, Park-road, Camberwell, received 5*l*. for a "photo-octant," intended to show a picture on each side, and arranged to turn on a pivot.

At the conclusion of the distribution Mr. John Jones moved a vote of thanks to the judges, Mr. Joseph Hall, of Derby; Dr. W. Pole, F.R.S., of Westminster; Professor Tennant, Mr. John Jaques, Mr. T. Forshaw, Mr. B. Windser, and Mr. H. Weeks, R.A.

Mr. Mark Fothergill seconded the motion, which was carried unanimously, and acknowledged by Mr. Windser.

Having on more than one occasion specially noticed in our journal the works of the Whitby Jet Turners, we are glad to see that they have shown their ability and taste on this occasion. At Whitby the following gentlemen, Messrs. Chas. Bagnall, J.P. (Sneaton Castle), John Corner, Chas. Noel, Armfield (diocesan surveyor), J. M. Bottomley (architect), and Messrs. Readman, Lockey, Horne, & Gaskin, formed themselves into a committee to urge the competing for these prizes, and succeeded in inducing two or three of the turners to send in specimens of their artistic workmanship. Professor Tennant informed them that Whitby had carried off the prize against all the turners of hard material in England, and had also obtained the first honorary certificate. The following extract from Professor Tennant's letter shows the reasons which governed the judges in making their award:—"1st. To E. H. Greenbury, the silver medal and freedom of the company for an ornament in jet, which combines beauty of original design with excellence of workmanship and skill in the manipulation of a difficult material; also the honorary certificate to J. G. Short for an inkstand in jet, which is very meritorious, both in design and workmanship."

INAUGURATION OF THE JEWISH CEMETERY AT WILLESDEN.

On a pleasant site at Willesden-lane, and plentifully planted with evergreens, the United Synagogue of Metropolitan Jews have formed a cemetery, which they have inaugurated.

The whole of the ground has not been enclosed, but five acres are surrounded by a wall, in which there are suitable but not very ornate gates. Outside the wall is a cottage for the guardian of the ground, which separates the access to the cemetery. At some little distance within the gates are three buildings, a central one, intended for the reception of the coffin, with the mourners, during the recital of the preliminary prayers, being, in fact, what in other communions is designated a chapel, but which, perhaps, we may call an oratory. It has broad windows. On the left side of this structure is a building for the Cohanim, who are not permitted to enter in close proximity to a grave. This is a single room. Opposite it is a third building, consisting internally of two portions, a "tahara" room, or room for the performance of the rites of ablution of the dead, and a lavatory, with necessary retiring-rooms.

The central building is 40 ft. high and 25 ft. in breadth (internal measurement). There is a porch at each end. There are dormer and other windows. At the end fronting the ground the finial is surmounted by the ornament known as the shield of David (interlaced triangles). At the opposite end is a sort of turret, which is really a chimney-stack, thus hidden by the architectural ornament. The house is well lighted, and it has doors at both ends. The two side buildings are roofed with green and purple slates and red tile crestings. The three buildings are in the Gothic style of the Geometric period. The materials are Kentish rag, with Bath stone dressings, and the shafts of the porch columns are of Mansfield stone. The ceiling or inner roof of the main hall is of deal, stained the colour of oak. The windows are not yet fitted in. They are to be composed of tinted cathedral glass, set in narrow lead frames.

The works have all been carried out from the designs and under the superintendence of Mr. N. S. Joseph, of London, the architect of the building committee of the United Synagogue. Messrs. Newman & Mann are the contractors.

PRACTICAL MATTERS DISCUSSED AT THE SOCIAL SCIENCE CONGRESS.

We have already reported some of the statements and addresses delivered in Norwich. The field is so large, the number of papers read so considerable, that no useful general report is possible. We confine ourselves to a few of the subjects likely to interest the largest number of our readers.*

Hindrances to Sanitary Work.

Mr. Lewis Angell, C.E., President of the Association of Municipal and Sanitary Engineers and Surveyors, read a paper, in which he reviewed some of the chief causes which hindered sanitary work, and offered a few suggestions for efficient local administration. The greatest difficulty was a want of appreciation of sanitary principles by the public at large. He said that the object of future legislation should be to promote greater simplicity, completeness, and certainty in the operation of sanitary laws, and to secure greater efficiency in their administration, by affording protection to local officers. Concurrently with the above, we required the moral influence of a higher tone of intelligence in the constitution of local authorities, and a better appreciation of sanitary principles by the public, without which, as the Royal Commissioners said, no legislation in this class could be applied with success. There were indications that the elements of natural science would before long form part of the curriculum of school education, and especially should the principles of sanitary science be taught from the lowest grade Board school to the College, because it affected alike the welfare of the prince and the peasant. It was not to the local authority or the Government that we must look for reform. Reform seldom arose from within; it was by the power of public opinion, guided by such information as Social Science Associations afforded, that we hoped for sanitary progress. The efforts of boards of health, medical officers, and sanitary engineers, however well directed, would fall short of their mark unless there were also an intelligent appreciation of sanitary principles by the public at large.

Dr. Carpenter read a paper which stated that the design of the Public Health Act of 1872, was to stamp out preventible disease before it could spread amongst the people. This design could not be carried into effect from the inability of the health officers to get information of the appearance of certain diseases immediately they presented themselves. The present machinery did not work with certainty to the end. The design could only be accomplished with certainty by its being incumbent upon medical men to give the requisite information. This entailed the necessity of making all the district medical officers under the Local Government Board to a certain extent medical officers of health by which the unit of disease, whilst remaining a unit, would be with greater certainty reached. It was the opinion of leading statesmen that the health of the country was not to be secured by grand drainage operations, but by a close supervision of every dwelling, and that the individual house was the unit of sanitary work. Unless the importance of this point was fully considered, the best means of administering sanitary law would not be reached. The union medical officer, said Dr. Carpenter, became of necessity a health officer. But would the area supervised by him be a convenient area? It would be at once shown that it would not. To appoint the union medical officer as the officer of health would entail many evils, and not produce much good. The rich as well as the poor would require protection, and that could not be afforded by the Poor-law medical officers in populous places where epidemics were likely to prove most fatal; and as union medical officers were generally the youngest men in the profession, or new comers into a district, they were not generally the men who should guide their medical brethren in resisting the attacks of a hidden enemy. Every medical officer of health ought, however, to have practical acquaintance with the union medical officers' work. As the district was not a convenient area, the union would be more so, but even the union would not be so advantageous as the county. The writer insisted upon the necessity of the health officer personally inspecting every place in which disease appeared immediately he had notice of the same, and of making a general inspection of his district at least twice in the year, and reporting fully after each visitation.

Mr. G. W. Hastings (who on another occasion made an excellent presidential address) entirely agreed with Dr. Carpenter that no area less in size than the county would secure the object it was the purpose of the Public Health Act to serve. Mr. Angell, with whom he also concurred, spoke of the necessity that those charged with the administration of the Public Health Act should be persons of some intelligence and of some standing and knowledge. Mr. Angell also deprecated what may be termed the supremacy of the vestry. It was all very well to say that gentlemen of intelligence and position ought to come forward and serve upon the Sanitary Board, but the real answer to that suggestion was that if they wanted them to do so they must make the Sanitary Board such that gentlemen of position and intelligence would like to serve upon it. With small sanitary areas, there would be small sanitary governing bodies, and we could only expect to have men of the vestry class appointed upon the Board. Mr. Hastings then strongly complained of the action of the Government and Mr. Stansfeld in making the

* Dr. C. W. Ryalls may be congratulated on the success of the first Congress under his management; and Mr. James Robinson, assistant secretary, deserves thanks for his unflagging devotion to the business of the week.

Board of Guardians the Sanitary Authority instead of a committee of magistrates, with the county for the area. But after making Boards of Guardians the Sanitary Authority, Mr. Stansfeld appointed a number of inspectors, mostly young barristers, who had never studied sanitary science, to go to those Boards and urge them to combine together for the purpose of having a joint medical officer of health. If Mr. Stansfeld was anxious that the Boards should join in this way, why did he not make it incumbent upon them to do so?

Mr. Windham Portal hoped the meeting would not press the question further than that areas for counties should be optional. The work of the present union districts had not been found to be unfruitful of results, and that at a reasonable cost. The object of sanitary measures was to stamp out disease, wherever it was found, in the shortest possible way; and he contended that this could better be done by local officers, who were constantly passing through their district, than by a county officer who only received reports. He spoke, too, of the cost of appointing proper medical officers of health.

Mr. Godwin said that the only argument that had been used against proper organisation was the question of expense. A county was frightened at the idea of spending money on sanitary matters. That was unfortunately the root of the evil. Unless the county organisation was arranged, and the election of officers of health and inspectors of nuisances taken from the vestries and guardians, nothing could be done. Those officers were thoroughly afraid of their masters, while many of them were not properly qualified for the post. They were "heaven-born sanitarians." From the state of Norwich, he deduced the necessity there was even there for the independence of the medical officer of the local body. He had, with some local assistance, taken the opportunity of walking through various parts of the city, and found places where health was perfectly impossible, while decency and morality were entirely out of the question. Although Norwich people might be delighted in observing that the death-rate there was not higher than elsewhere, yet it should be remembered that these figures were deduced from the whole of the city, while there were parts of it where the death-rate must be much higher than in others. Some places he had visited would be decimated if an epidemic broke out, because they were already prepared for it.

Mr. Baldwin Latham, C.E., of London, speaking upon the question from the sanitary engineer's point of view, said that if sanitary science was to receive its full development, those who carried out the law should be protected. As to the areas for sanitary districts, he thought regard should be had to the work necessary to be carried out in them. They must look not only to the natural drainage area with regard to the disposition of sewage, but also to the procuring of that pure water supply which was absolutely necessary in every district, if life and health were to be maintained. What was also required was to make the public health laws compulsory instead of permissive. No doubt the question of £. s. d. was also a hindrance to sanitary progress. In a municipal election there was sure to be opposition. There was the dirty party and the clean party. The dirty party went to the ratepayers seeking their suffrages with the avowal that they did not intend to tax them. To remedy this state of things, it must be shown that sanitary measures were in the end economical. But in many districts where sanitary works had been carried out, those works had not been judicially executed, because those appointed to carry them out had been incompetent for the work. A man wanted political influence rather than a character as a sanitarian, to secure him a berth under a municipal authority. This state of things would exist so long as we had the present imperfect system of administering our sanitary laws. The only hope of remedying this was by imparting to all, rich and poor, a knowledge of sanitary laws.

The Norwich Sewerage Works.

Dr. Eade read a paper on the history of the Norwich Sewerage Works, with a brief notice of the health of the city. He said that before 1865, from which year the history of the works dated, attention had been called to the increasing foulness of the river, in consequence of the discharge into it of the sewage of some 3,000 water-closets, besides refuse from manufactories and dye-works. The scour of the river was very small, and totally inadequate to carry the sewage far away, and the result was that the first two or three miles became practically a foul and reeking sewer. This contamination increased, and the river became a nuisance to the boundaries of the city and to Thorpe. An injunction was obtained from the Court of Chancery by the inhabitants of Thorpe, to stop the discharge of the sewage. The Town Council sought the advice of Mr. Bazalgette, who drew up a scheme for the removal of the sewage, which comprised (1) the formation of two ranges of sewers; (2) a reservoir to receive it; (3) a pumping-station adjoining; and (4) the hiring of 1,100 acres of land two or three miles from the city, up to which the sewage liquid was to be forced for the purpose of irrigation. The cost was estimated at 80,000*l.* Much opposition was raised to the scheme on account of the expense. But an Act was obtained, land hired at 3*l.* 5s. an acre, and the works commenced; but as difficulties arose with the contractor, the Council carried on the works themselves under the superintendence of Mr. Morant, in whose hands, in spite of great and unforeseen difficulties, the sewers progressed, and by the end of 1871 seemed to be completed. For some weeks the sewage was pumped on to the land, but it was soon found that instead of two-and-a-half million gallons a day, as estimated, double that quantity had to be dealt with in consequence of the leaks in the sewers. After some partial stoppage of the leaks, Messrs. Hawksley advised iron tubing and wooden struts to strengthen the weak portion of the sewers. But in spite of this, the leakage had continued, while at one time the channel threatened to become almost choked by silt and solid material. In consequence of all this delay and difficulty, the expenditure had run up to 113,000*l.* Although three millions of gallons of sewage-liquid had been for some weeks daily pumped on to the land, yet twice as much more still passed into the river at Trowse. The problem of sewage-farming they had no proper opportunity of testing with the various questions of the proper quantity of land in proportion to population, of the best method of applying sewage, of surface irrigation *versus* downward intermittent filtration, &c. About 123 acres had been prepared by channelling for surface flooding, and by the help of these the sewage-liquid had been satisfactorily applied with remarkable advantage to the growing crops. No ill results had been observed from the use of the sewage-grown grass or in any way as a result of sewage-farming. As to the health of the city, taking the city mortality as a whole, the returns of the Registrar-General showed that for 1872 this was at the rate of 26·3 per thousand living, against an average of 24·3 for twenty large cities and towns of England, whilst for the past five years the average death-rate had been 25·2. As to zymotic diseases, for the past three years the average percentage of deaths to total deaths had from this cause been 24·9, while from typhoid fever the average number of deaths for the past three years had been 55, and for 1872 only the same number, whilst Wolverhampton, Leicester, and Nottingham averaged 71 each. In 1870 and 1871, Norwich suffered much from scarlet fever, and in 1871 and 1873 from small-pox; but no special local or other features were then observable, nor did the foul river appear to be responsible for their outbreak or continuance.

Constant Water Supply.

On this subject Mr. Baldwin Latham, C.E., who contributed during the week the results of much valuable experience, read a paper. The author pointed out that for the distribution of any water supply, if the sanitary well-being of the district is to be observed, the following things must be insisted upon:—1st. Water to a water-closet should only be supplied through the intervention of a regulating cistern, the outlet pipe to the closet being large enough to give a good flush. 2nd. No overflow from any cistern should communicate directly with any drain or sewer, but such overflow should only act as a warning-pipe. 3rd. Every bib-cock or stop-cock should be of the screw variety, and all cocks, whether ball-cocks, bib-cocks, or stop-cocks, should be fitted with loose valves, arranged so that when they were relieved from the pressure of the lever or screw, the internal pressure of water would raise the valve, and the flow of water would take place. But should the water from any accidental or other cause, become intermittent, the loose valve would prevent the entrance of a back current (often of foul air) into the pipes. 4th. The service-pipes for conducting the water from the mains to the house should be of lead or block tin—the former, if not injuriously affected by the quality of the water supplied to the district. In some cases thickly-enamelled wrought-iron pipes might be used, especially if laid in terra-cotta protecting casings. A series of such regulations would tend to remove all the difficulties attending a constant supply, and greatly improve the sanitary status of the population of many towns at present but imperfectly supplied with water. The description of pipes recommended would not be permeable, if passing through bad soil.

In the discussion which followed, Mr. Godwin urged the necessity of keeping the waste-pipe out of the drain, and spoke of the necessity for simplifying the regulations, so that the constant supply might be universally adopted. Dr. Carpenter said that by no possible chance should there be the reverse action by which foul matters or foul air could be drawn into the pipe in the upper part of the works. Mr. Jobson, of Derby, said that the waste of water was often the excuse for the intermittent supply; but what had been done in Norwich, where the supply per head had been reduced from forty-four to twenty gallons a day, showed that this waste could be prevented. Mr. J. G. J. Bateman added that Norwich had a constant water supply, free from injurious exhalations, and as pure as that supplied to any town in the kingdom. A Member said that an intermittent supply must be objectionable, as gases were thus admitted into the pipes. Dr. Hardwicke mentioned an instance in which gas escaping from its pipes had entered the water-pipes laid side by side with them. Drainage would also be a drawback unless there was a water supply sufficient to flush the drains. It would also be desirable to have one quality of water brought into towns for flushing and another quality for drinking. Mr. Latham, in reply, thought a continual dripping of water through house-drains with their present construction was useless. Some of the best sewers in London were badly constructed; they were of all sizes and all calibres, and no system of flushing can keep them in order, and free of fœcal matter. Water if applied to drains, should go with a complete rush, that would carry away all matter. A continual dripping, while being a waste of water, would not effect this. Escaped gas contained in the earth could only enter water-pipes when the water supply was intermittent. There was no town that had such an experience in this matter as Norwich, and he congratulated the company and Mr. Ayris upon the efficient measures they had adopted for preventing the waste of water. When the water supply was forty-four gallons a day per head it was intermittent; but by the Norwich Company adopting such fittings as he proposed, the waste was prevented, and the people had a constant supply.

The Labour Movement.

Mr. T. Brassey, M.P., in the course of his address, as president of the "Economy and Trade" department, said, amid the many difficulties of the present time, the English employers may perhaps take comfort by looking abroad, where they will generally find that the same problems with which they have to deal are presenting themselves, and often in a still more aggravated form. Passing from shipbuilding to engineering, I have ascertained that in an establishment on the largest scale, the most liberal application of capital, the most ingenious machinery, and skilful administration had failed to compensate for the great advance in the rate of wages. In modern marine engines the cost of materials and labour is about equal. An engine which might have been built in 1871 at 40*l.* per horse-power would have cost in 1872 46*l.* In the present year the price has advanced from 55*l.* to 60*l.* per horse-power. It is sometimes difficult to overcome a feeling of depression as to the future of our mechanical industry. But, when we look at the progress made in the past, there is no ground for discouragement. The value of our exports of steam-engines in 1866 was 1,760,000*l.*; in 1872, 2,995,000*l.* The value of our exports of machinery of other sorts was, in 1866, 2,998,000*l.*; in 1872, 5,606,000*l.* The past has been prosperous; the future mainly depends upon the conduct of our artizans. In England we are happily doing away with the great evil of employing young children in our factories. All the chambers of commerce in Belgium unite in deploring the increasing moral and physical degeneracy of the working classes, which they attribute to the premature employment of chil-

dren. In the English factories a larger number of women are employed than in factories abroad, and the association of employers, though differing on almost every other subject from Messrs. Bridges and Holmes, suggest that women should be excluded from factories for three months after their confinement. Great evils have been found, by experience, to ensue from the too early return of the mothers to factory labour. Let us venture to hope that another session of Parliament will not be allowed to pass by without placing on the Statute-book a legal prohibition against a practice which is universally condemned by those most competent to form an opinion. Mr. Lothian Bell, one of our highest authorities, has recently pointed out that in ores of the finer descriptions the resources of the United States are unlimited, while in coal our own wealth is, in comparison, poverty. There is but one bar to the boundless production of minerals in the New World,—viz., the want of hands to manufacture them. Moreover, the United States, not content with their natural advantages, impose an almost prohibitory tariff on our exportations. There is a party in America opposed to protection, but hitherto the superior organisation and greater determination of the manufacturers interested in the maintenance of tariffs has overpowered all opposition. Our artizans may believe that the profits of former days were so large that employers can afford to pay the present rate of wages without raising their charges to the consumers. There is but one means by which this fallacy can be exposed. The workmen must become to a certain extent their own employers. In a co-operative establishment, created in part by his own hardly-earned savings, the handicraftsman will find himself called upon to apportion equitably the earnings of his business between labour and capital. In this double relation he will learn how great are the difficulties which beset the employment of capital in productive industry in a country in which competition is so keen as it is in England. English workmen are less easily deluded by tall talk and sophistry than the more excitable populations of the Latin race, and I would earnestly invite them to apply their practical sagacity to the difficult yet hopeful experiment of co-operative industry. The first thing to be done is, to save something from their present high wages. Forethought is an especial duty in a period of prosperity. At no distant time the progress of our commerce may sustain at least a temporary check. It will be sad indeed if the receding tide leaves behind it multitudes of our highly-paid workmen without any provision to meet a time of adversity. It is unnecessary to dwell on the evils which must ensue from a disproportionate increase in the non-productive classes of the community. Lord Bacon has truly said that a population is not to be reckoned only by numbers, for a smaller number that spend more and earn less do wear out a greater number that live lower and get more. My father's advice was often sought by parents anxious for the future of their sons. His counsel always was, that a young man whose destiny it must be to make his way unaided through the world should begin by learning a trade. It is a laudable ambition in a parent to endeavour to raise his family to a better station in life. He cannot bestow on his children too good an education. But the wise man will be on his guard, lest the enjoyment of such advantages should render occupations distasteful which afford the most secure and ample livelihood to those whose lot it is to labour.

Utilisation of Waste Lands.

Mr. Francis Fuller read a paper, entitled "The Problem of High Prices and Wages Solved, and the Impediments Removed, by the further Development of the Resources of the Soil." In it he spoke of the amount of waste land that existed in the country, the deficient crops that were reaped upon the land which was cultivated, and argued that the whole should be cultivated to the highest pitch of perfection and skill, but that in order to effect this, Government aid should be forthcoming. The principal portion of the paper was occupied with the question of the manufacture of peat coal. There was, he said, an inexhaustible supply of peat in the country. The peat beds of Norfolk, Suffolk, and Cambridgeshire were continuous, and he expected that Norfolk would be the first county to send peat coal to London. Peat coal could be so prepared as to be both economical and highly useful for manufacturing as well as domestic purposes, and could be used as a substitute for coal. This peat could be manufactured at 4s. 6d. per ton on the spot, and Sir E. Watkin had offered to convey it over the railways of which he was chairman at ½d. per ton per mile. If other railway directors would but follow the example, a large trade would soon spring up in the manufacture of peat coal. At Lakenheath, a company had selected 1,000 acres of peat land, and the manufacture would soon be commenced there. The peat in Norfolk was eminently pure, and the quantity was sufficient to supply the whole of London for 100 years. Unskilled labour was all that was required; and by this aid a value of 800,000,000*l.* could be produced from this source alone. Added to this immense value, must be taken into account the employment given to a vast number of workmen in a new industry. In addition to all this, it must be borne in mind that the land when divested of peat would be rendered suitable for pasture or arable land. For all these reasons, he urged that the attention of the public generally should be directed to the question.

CAPITAL AND LABOUR.

During a discussion at the Norwich Congress recently, Mr. Thos. Brassey said it would, no doubt, be better that capital should be accumulated in many hands rather than in those of a few, but it was only by the gradual accumulation of capital in this country that our British industry, notwithstanding the comparative exhaustion of our national resources, and notwithstanding the high rate of wages which prevailed, had hitherto been able to compete successfully with cheaper-paid labour of foreign countries. In that sense the accumulation of capital had been a great boon and blessing to working men. It was almost unnecessary to urge that the accumulation of capital in this country was certainly not owing to the excessive rates of profit which were realised in England. In no other country did capital command so low a rate of interest; and only yesterday he had before him an illustration of the tendency which prevailed to diminish gradually the already low rate of interest. In Captain Tyler's analysis of the working of the railway system, he pointed out that the average rate of interest on debentures had been year by year diminishing, and that at the present time it amounted to 4 and a fraction per cent. Now he (Mr. Brassey) knew, as an investor, that he should obtain an equally good security in America at 6 per cent.; therefore it would be an error to assume that the large accumulations of capital which have taken place in this country were due to the excessive rates of profit which prevailed. He would rather say it was due to the fact that, as a body, the employers of labour in this country were superior to those in other countries by their frugality, their commercial sagacity, and their continued devotion to business. What he wished to establish was an appreciation of these views in the minds of the great masses of the employed. No one could watch a strike without the very deepest pain and regret, and if they could discover any means by which workmen could be deterred from going out on strike, with a view of enforcing their own claim on the employer, it would be a most invaluable discovery. The only remedy he could see would be to impart to the working men interested in the cessation of these disputes a perfect knowledge of the commercial position of the business in which they were engaged. If they could prove to the working man that the concession of his demand must make the business of his employer unprofitable to that employer, the working man, as a man of sense, would not go out on strike. But how was that knowledge to be imparted to the working men? That was the great question. Of course, the opening of the employer's profit and loss account, a thorough knowledge of the net cost of production in the trade, would be conclusive; but there were great difficulties in submitting such accounts to the inspection of the public. If the position of the employer was at all insecure, it would have a serious effect upon his credit to expose the nature of his business, and show how unable he was to submit to further demands on the part of his workpeople. He held that, if they could make co-operative productive industry successful, it would be a great relief to the employer, who would refer to the rate of wages paid in the co-operative establishment as the standard or gauge by which the wages of the employed should be tested. Therefore, from an abstract point of view, it was desirable, if it were possible, to establish co-operative industries. They had to consider what were the practical difficulties in the way, and he was sorry to acknowledge they were very serious. * * *

In considering questions affecting capital and labour, it was impossible to ignore trade-unions. It was only fair to say that many persons, fully competent to judge, said that trade-unions were rendering service, not only to the working men, but to the masters. Trade-unions had, no doubt, done harm, by encouraging demands that were unreasonable. The leaders of trade-unions very often possessed immense influence over the men, and unfortunately did not possess any proportionate degree of knowledge of the business in which they were concerned; they had sufficient influence to urge the men to make a demand, but not sufficient knowledge of the business to know if the masters were in a position to concede it. Then some of the trade-unions had done great harm in endeavouring to equalise the rate of wages as between individual and individual. Nothing could be more pernicious than that. It was the foundation of his father's successful system of carrying out large contracts for public works in all parts of the world, that the principle of payment by piece should be adopted, and it was a most desirable thing in every point of view that men should be encouraged to work diligently and well by the system of payment by the piece. In an engineering concern in which he was a principal proprietor, on the banks of the Mersey, the workmen were not only paid by the piece, but they also received a per-centage on the profits. He recommended this plan for general adoption. On the other hand, he admitted that trade-unions had done good in one way. The governing authorities of trade-unions were wiser men than their clients, and in many cases workmen had been persuaded to accept machinery, and to adopt a system of working more readily through the influence of the heads of trade-unions.

SAINT PANCRAS MISSION HOUSE, SANDWICH STREET, BURTON CRESCENT.

This mission building is erected on the western end of an oblong site of which the eastern end is occupied by the new national schools for nearly 600 children, illustrated in the *Builder* of last year, page 267. The entire site runs through from Thanet-street to Sandwich-street.

The building consists of two stories with a basement. The upper story, built as a memorial by a private individual, consists of a small vestry-room, and a mission-chapel capable of containing 200 persons, and is already ornamented with a stained-glass window executed by Messrs. Ward & Hughes. The ground-floor building connected with the chapel by a flight of stone steps, consists of two rooms of unequal size, ordinarily separated by a sliding wooden partition, but capable of being thrown into one large room for a meeting or tea-party. These rooms are fitted up with commodious wardrobes, and will be the centre of the very considerable parochial organization of the mother parish of St. Pancras.

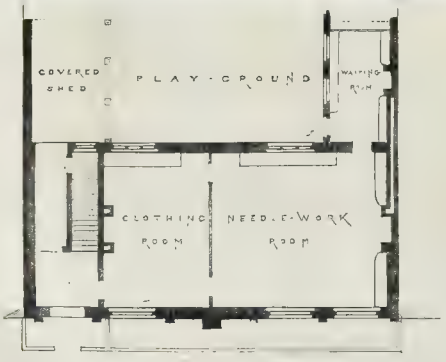
Behind is a small play-ground, part of which is under cover; and through this play-ground, by the entrance into the mission building, the girls and infants have access to their own schools, entirely independent of the boys' entrance from Thanet-street. Underneath, in the basement story, is one long and commodious room capable of being hereafter fitted up as a working men's club, or youths' institute; also two smaller ones.

The total cost of the mission buildings amount to about 2,650*l.*, which, when added to the cost of the schools previously erected, and the price of the site, represents a total outlay of 9,300*l.*, almost the whole of which, with the exception of a grant of 600*l.* from the Bishop of London's Fund, has been raised by private contributions, and in a space of time very slightly exceeding two years.

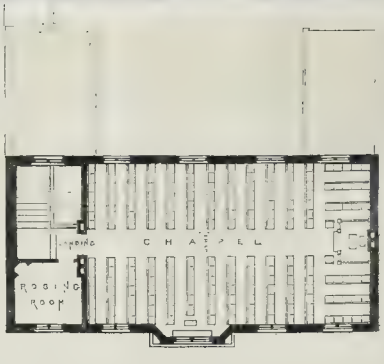
The Rev. Prebendary Thorold, M.A., Vicar of St. Pancras, is chairman of the committee, under whose direction the building has been raised. Messrs. W. Milford Teulon & Cronk are the architects; Messrs. Sewell & Son, the builders.

The materials are washed stock bricks, with bands, arches, moulded labels, cornices, &c., of red bricks, and windows of Box-ground Bath stone, with oak doors and slated roof. The window glazing is in ornamental lead quarries.





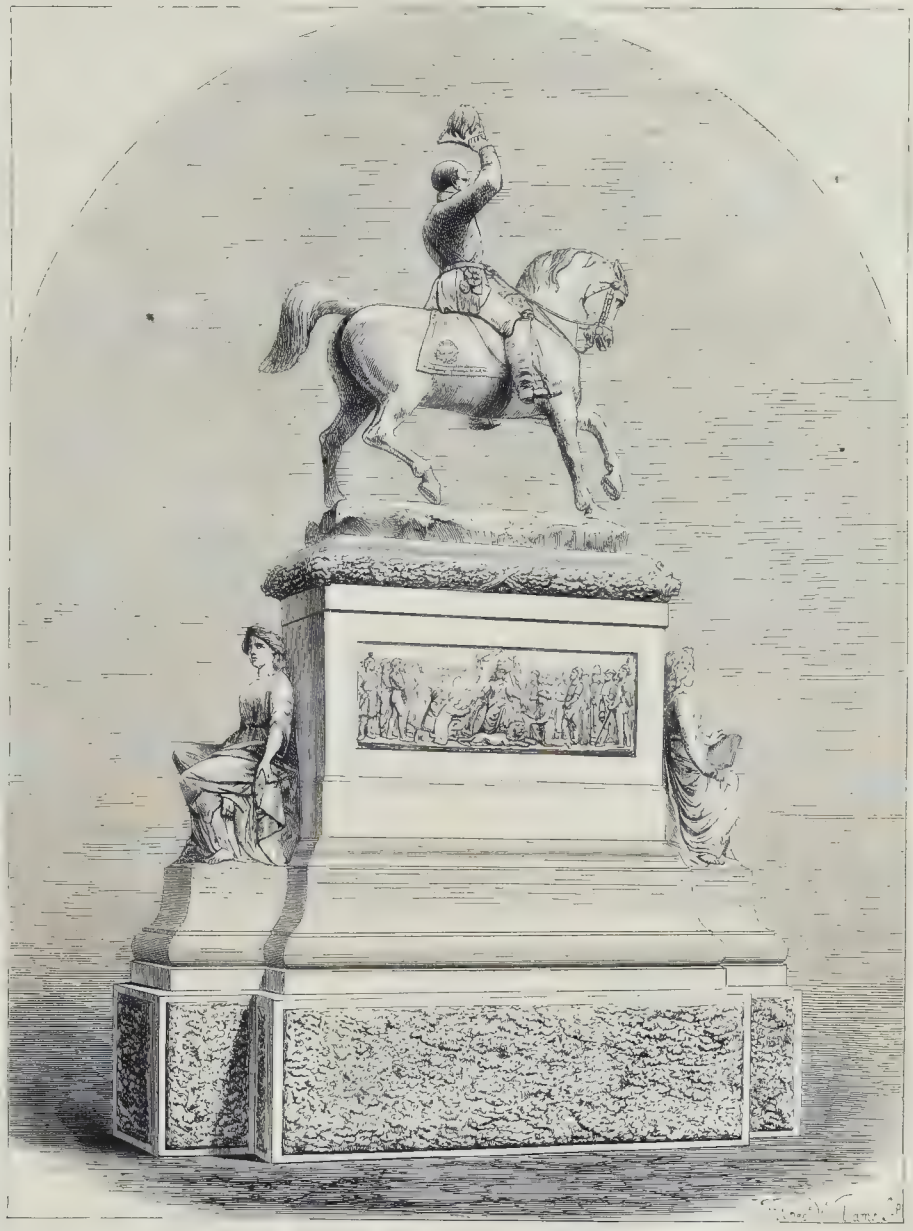
GROUND PLAN



PLAN OF CHAPEL

SCALE OF 10 0 10 20 30 40 50 FEET.

ST. PANCRAS MISSION-HOUSE, SANDWICH ST., BURTON CRESCENT.—Messrs. Milford Teulon & Cronk, Architects.



THE PRINCE CONSORT MEMORIAL, ON THE HOLBORN VIADUCT.

Mr. Bacon, Sculptor.

THE PRINCE CONSORT MEMORIAL ON THE HOLBORN VIADUCT.

Some time ago the Corporation of London ccepted from a gentleman who desires to emain unknown an equestrian statue of the amented Prince Consort, executed by Mr. Bacon. pedestal, the joint design of Mr. William Hayood and the sculptor, was erected in the Holorn-circus, at the western end of the Viaduct, nd several weeks ago the statue was placed in osition, and carefully wrapped up, to hide it rom sight, preparatory to a formal uncovering. Difficulties in the arrangements for this have revented the Corporation from taking off its raps, and as some of the public are now asking o know what the statue is like, and the Corporation cannot yet show them, we will. The rince, it will be seen, is represented as respondng to a salute. The pedestal, which includes wo sitting figures, emblematical of History and eace, and bas-reliefs illustrating important vents of his life, is composed of stones eighing from 2 to 10 tons each, and prepared by Messrs. G. & F. Fenning, at their ranite works, Westmoreland, and fixed by Messrs. R. Field, Poole, & Son, of Westminster. he statue, sitting figures, bas-reliefs, and the and of oak-leaves around the pedestal, are all f bronze, and were executed by Messrs. Young Co., of Pimlico.

In consequence of the largeness of the area in hich the memorial stands it is to be feared hat it will look small, and less important than ight be desired.

THE NEW WORKS AND EXPENDITURE ON THE SCOTTISH RAILWAYS.

A few weeks ago we gave, in the columns of he *Builder*, some detailed particulars of the rge intended expenditure in new works on ome of the leading English railways, as disosed at the half-yearly meetings of the several ompanies. The statutory half-yearly meetings f the Scottish railways, which are somewhat ater than those of the English companies, have ust been held, and from the proceedings of the aledonian, the North British, and the Glasgow nd South-Western Companies, which may be egarded as the three great Scottish railway orporations, we find that, like many of the nglish companies, they also are about to expend ery large sums in new and extended works, and hat the Caledonian Company intend to incur an xpenditure, during the current half-year, of pwards of 300,000*l.* in new rolling-stock alone.

At the recent meeting of the Caledonian ompany, held at Glasgow, the chairman made everal interesting statements as to the operaons of the company during the past year, and lso in reference to prospective outlay, the imortant subject of the great increase in wages, nd the rise in the price of fuel, being promiently brought forward. Amongst other statenents, he observed, that the bills which they btained last session would involve a considerable xpenditure of capital in extension lines and tations; and also, that in order to complete heir arrangement with the North British, by onnecting with their line at Dalry, near Edinurgh, it would be necessary for them to apply ext session for Parliamentary sanction to the unction at that point. Adverting to the intended eavy outlay for new rolling-stock, he remarked hat traffic was being passed upon them to such n extent that, to enable them to meet its equirements, very large additions to rolling-tock were absolutely necessary. He added, that 22,000*l.*, the estimated half-year's expenditure or additional plant, was a large sum; but, in lace of grudging it, they should only be too lad in having it to pay, affording, as it ould do, the means of immediately greatly ugmenting the revenue. Referring to steel ails as against iron, he said that for some years hey had been making trial of the former, in elaying the line at junctions and at other places ost fitted to test their quality, and so completely had their superiority over iron been scertained, that the directors proposed to relay ith steel in future to a much greater extent. uring the last four years about 4,300 tons of teel had been laid down, and of these 945 tons ere put in last year. His following observaions on the enormous increase of wages, and he cost of coal, with its effect on the cost of lant, have a significant importance. He said hat, compared with 1868, engines, carriages, nd wagons were respectively 15, 47, and 55 per cent. dearer than they were then, and the wages in the workshops averaged fully 13 per cent. higher. Taking in all the branches of the service, wages formed a very large item of increase, the excess for the six months to July being nearly 41,000*l.* He next adverted to the price of coal, stating that the expenditure for coal had been fully 40,000*l.* in excess of the corresponding six months, and they had paid for the half-year's consumption 4*s.* 2*d.* per ton above the average of the corresponding period. On these facts he remarked, "But discussion here will not settle the wages question any more than it can the coal question. Each will find its true level by and by."

At the meeting of the North British Company, held in Edinburgh, the expenditure of 150,000*l.* in respect of a new large station in College-street, Glasgow, was sanctioned; also 50,000*l.* on account of the works at the Burntisland harbour and docks, now in progress. The sum of 50,000*l.* was also voted for new rolling-stock. The chairman stated that they were expending a considerable sum in the enlargement of the station at Linlithgow; and that a large outlay was also being incurred in carrying out the block telegraph system along the line. Referring to the stupendous Tay Bridge now in course of construction, and also to the Forth Bridge, of still greater magnitude, he observed that he had no hesitation in saying that until they got the Tay Bridge and the Forth Bridge finished they worked at great disadvantage and great additional cost. During the last six months they had paid additional toll to the Caledonian of about 1,000*l.* for sending traffic round by Perth, which they could not take across at Tayport. With the hope of bridging over the Tay and the Forth, and thus having a further line of through communication from north to south, the North British would be in a splendid position. Referring to the guarantee which the company have given to the promoters of the great Tay Bridge, he observed that until that bridge was finished, and passed by the Board of Trade as ready for working, they did not incur any liability. After the bridge was completed, and suffered the tests common to all works of this character, they should be prepared to step in and work it. On the question of wages and the price of coal he re-echoed the remarks of the chairman at the Caledonian meeting, observing that during the year the rise in materials, coals, and wages has been such that it had upset all their calculations, and thrown them back some eighteen months. During the last six months there was an increase of 26,000*l.* in coal for the locomotive department alone, and their expenses had run up from 49 to 55 per cent.

At the meeting of the Glasgow and South-Western Company it transpired that the sum of 369,650*l.* was required for new and extension works now in course of construction.

PROPOSED PUBLIC BATHS AND WASH-HOUSES IN CLERKENWELL.

A project has been started for the erection of public baths and wash-houses in Clerkenwell, and the proposal was so favourably received at a special meeting of the Clerkenwell vestry on the subject, held last week, that there is every promise of the object being carried out. Mr. Brighty, one of the members of the vestry, in moving that public baths and wash-houses be established in the district, referred to their great success in St. Pancras, where they yielded a clear profit. Their baths, he stated, cost 23,000*l.*, but they would not require to expend so much in Clerkenwell in erecting the buildings, as the parish was not nearly so large as St. Pancras. Mr. Thompson, another member of the vestry expressed an opinion to the effect that if proper baths were provided for the parish, which was in the centre of the metropolis, they would, if properly managed, give a large profit; and he added that if there were one duty more than another, it was the facing of this question, and securing for the poor women a proper place where they could wash their clothing. Another member warmly supported the proposal, believing that the baths and wash-houses would prove a great boon to the poorer classes. Such an establishment, he said, should have been erected in the parish long since. Several other members of the Board endorsed the opinions which had been already expressed in favour of the erection of the baths; and the desirability of establishing them having been affirmed, a committee, consisting of two members of the vestry from each ward in the parish was appointed to consider the question of cost, and report to a future meeting.

THE PROPERTY OF THE CITY OFFICES COMPANY.

At a meeting of the shareholders in the City Offices Company, held last week, a favourable report was submitted as to the annual value of the several properties in the City which the Company have purchased and built, the rentals being stated to be highly satisfactory, and showing a net balance for the half-year of 5,144*l.*, applicable to dividend. The receipts from the Lombard rooms alone were very large, giving 4,200*l.* for the half-year. As showing the rapidly increasing annual rentals of the Company, it may be stated that whereas in 1870 they amounted to 35,300*l.*, they were now 39,000*l.*, notwithstanding that, owing to the falling in of a lease in Cornhill, the Company lost 6,500*l.* rental. The annual value of the present unlet property held by the Company is estimated at between 3,000*l.* and 4,000*l.* a year. With the view of securing tenants for the upper floors of the property, the Company have just erected lifts, which have been found to be a great advantage in doing away with the necessity of constantly going up and down long flights of staircases.

CONTAMINATION OF THE WATER AT THE NEW CAMBERWELL INFIRMARY.

The new infirmary at Camberwell, a large and costly building, which has been erected at an outlay of 25,000*l.*, has only just been completed, and was opened not longer than a few weeks since. The construction of a well to supply the establishment was a portion of the work in connexion with the building, and it has already been unfortunately discovered that, owing to some unknown cause, the water is unfit for consumption and contaminated by sewage. In compliance with instructions from the guardians, Dr. Bernays has analysed the water, and as the result of his analysis he condemns the quality of the water in the following strong terms:—"The water is about as bad as water can be. It gives every sign of sewage contamination, as well by the test of slow evaporation as by the quantity of free ammonia and of albumenoid ammonia. One gallon of water contains 0·00827 grains of ammonia and 0·00785 of albumenoid ammonia. It is a very hard water; but that, apart from the waste of soap in the washing, I should not object to. The total residue of solids per gallon amounts to 21·81 grains, after removal of organic matter and by calcination. Permanent hardness only 4°, total hardness, 20·6°. Nitrates very distinctly present. The microscope fully confirms the badness of the water. It is only fit for cleansing purposes, and is even then only fairly applicable for swilling." At the meeting of the guardians last week the report of the analyst was discussed, when Mr. Thornhill suggested that the sewage might find its way from a disused cesspool, and he proposed that a trench be dug so as to discover the source of contamination. He expressed his belief that it found its way down at the back of the brickwork; but Mr. Lyon (a builder) said that could not be so, as iron cylinders were used, and not brickwork, and it is therefore reasonable to suppose that the water is contaminated before it reaches the well. It is feared that there will be considerable difficulty in remedying the evil, as the source of the contamination is at present a mystery. It was ultimately decided that pumping should be continued for a week, and at the expiration of that period another analysis made.

ROMAN ANTIQUITIES.

On opening the new wing of the Maidstone Museum, Mr. C. Roach Smith delivered a lecture on Roman antiquities. The lecturer thought the study of archæology would before long become general in schools, and that it would be necessary to found a chair of archæology in the Universities. Coming to the subject itself, he would take the Roman antiquities in England. Romish inscriptions were only to be found in the north of this country. When the Romans were in possession of the country it is supposed that the southern tribes were more peaceable than those in the north, and in consequence the remains of a number of great garri-

sons may still be seen in the latter part. There were, however, the ruins of three or four military stations in the south, such as Richborough, Reculver, &c. These, however, are of late date, they having been built in the time of the Saxons. Some time after the Romans conquered the country, the northern tribes began to be very troublesome, and the conquerors, in order to keep them back, built a wall across the north of Britain. It was 70 miles in length, 30 ft. high, and 13 ft. wide, and it was garrisoned by some 15,000 men. In the southern part of England are found residences of great extent, which were occupied by people of importance, or persons who were stationed to collect tributes, or superintend the working of manufactories; none of these, however, are to be found in Kent. The sewerage of the Romans was superior to that of modern times, and a specimen of their work may still be seen in Lincoln. They were also in advance of us in economising heat. The walls of their houses were lined with red tiles, by means of which heat was carried all over the house. In the Roman period it is believed that Kent was very densely populated. At Hartlip, in that county, there is a building, supposed to have been built by the Romans, which, it is thought, was a depository for provisions, &c., for exportation. At Lockham Wood are the ruins of a sepulchre of a distinguished family.

KENSINGTON GARDENS.

The sad condition of the trees in this invaluable extra-urban forest has been alluded to in the *Builder* more than once, but is becoming worse every recurring season; so that we are induced to ask, is there no arborist or woodreeve to stop the waste and decay which are now a disgrace to the authorities in control of this royal domain? Originally planted too close, the noble foresters now interlace their branches, and, having expended their force in shooting upwards, have become stalky and dead at the top. In some of the outer boundaries there are certainly many beautiful trees standing in the open sward, fully grown and expanded; and along the admirable and much-frequented flower-walk many stately foresters have attained a graceful expansion, with free branchage; but the great central masses of wood exhibit only bare poles, with a few straggling branches and withering top-shoots,—several being broken down and decaying from too close propinquity. Surely many of these deformed poles ought to be cleared away, to leave room for the more healthy standards to vegetate freely, and feather out in more graceful foliage. Forest trees cannot assume graceful proportions when their branches are intermixed,—standing at, say, 10 ft. apart,—some of them being only 6 ft., 5 ft., and even 4 ft.!

The clearance of some hundreds of these stems would yield a considerable profit, whilst it would open a way to the healthy growth and expansion of the survivors.

In this vastly extended and still growing metropolis the value of such public parks, gardens, and liberties cannot be over-estimated; and if a small share of the outlay upon rangers, keepers, and servitors were dedicated to the improvement and embellishment of these long-neglected woodlands, as also to the tasteful laying out of a skew pathway, to extend a mile from Notting-hill entrance-gate, nearly to the Ride of Hyde Park, and to the Exhibition-road gate, it would confer a great boon upon the public, and conduce to the healthy enjoyment of extensive woodlands, which cannot be traversed in winter, and, in their present state, are neither healthy nor attractive. Q.

COTTAGE HOSPITALS.

Watlington.—A proposal to establish a cottage hospital for the district has been fully discussed at a public meeting, and a resolution was unanimously passed, "That it is desirable to establish a cottage hospital in Watlington for the benefit of the sick poor in the town and neighbourhood; that the house known as 'Lady Macclesfield's Training School' be rented for the purpose; and that a committee be appointed managing committee for the hospital." The Earl of Macclesfield and most of the gentlemen present promised liberal subscriptions. It is intended that the hospital shall be used principally for accidents, and that no patient suffering from contagious disease shall be admitted.

Wisbeach.—The North Cambs cottage hospital at Wisbeach has been opened by Miss Margaret Elizabeth Trafford Southwell, of Honington Hall, Grantham, and Hyde-park, London. The hospital surgeon's residence and mortuary porter's lodge, and other buildings, with the grounds in which they are situated, are the gift of Miss Southwell to the town, for the benefit of the sick and poor. The value of this gift is nearly 10,000*l.*, and, in addition, the foundress has given 8,000*l.* to the permanent endowment fund, besides an annual subscription of 21*l.* Mr. W. Peckover, of Wisbeach, has given 2,000*l.*, Mr. A. Peckover, 1,000*l.*, and the Duke of Bedford, 100*l.* The hospital has nineteen beds, and overlooks the public park.

Ross.—A statement prepared by the assistant secretary, Mr. F. Cooper, shows the amount received during the past nine months from patients, and in casual sums, and the amounts which had been promised and would be likely to be received if the institution were free. It was proposed at a recent meeting by Colonel Jackson, "That the cottage hospital be made free on and after the 1st October." Mr. Blake moved, as an amendment, "That rule 26 of the institution be altered by leaving out the words, 'But such weekly contribution shall in no case be less than 3s. 6d.'" The amendment was carried by a majority of five votes. The cottage hospital will consequently be free to those who cannot afford to pay.

FROM MELBOURNE.

The Custom-house additions and alterations have been commenced. The new foundations are composed of huge blocks of blue stone, resting upon 2 ft. 6 in. of concrete, and embedded in cement, the whole being 11 ft. in depth and about 5 ft. in width. The alterations are not confined to any particular portions of the building, but will be of so general a character as to completely change its external appearance and internal arrangements. The centre of the building will be brought forward to within about 10 ft. of the footpath, from which a flight of seven granite steps, 56 ft. in length, terminating in a landing 8 ft. in depth, will lead to the level of the basement floor. From this landing three doors will communicate with the south entrance-hall, whence wide staircases will lead to the long room on the first floor and other parts of the building. From the level of the first floor four plain Ionic columns, with corresponding pilasters, will spring, reaching the base of an entablature, 6 ft. high, running along the entire front, and surmounted in the centre by panels 8 ft. in height. 14 ft. back from the main building, which will be 74 ft. in length, the two wings will run each 51 ft. to William and Market streets respectively, giving a total frontage of 176 ft. The basement will be constructed of sawn blue stone, rusticated, and the superstructure of brick, the whole being cemented. Each of the wings will have a depth of 100 ft., that facing William-street being entirely new, but a portion of that now abutting on Market-street will be worked into the general design. The total extension of the present building will be in length 50 ft., and in depth 30 ft., adding eighteen rooms, and increasing the dimensions for the long-room nearly one-half. In length, 88 ft., it will not be extended, but its depth will be increased to 54 ft., and the ceiling will be carried up fully 8 ft. higher, enabling the contractor to avail himself of the skylights at present in existence, but concealed by the false ceiling. The estimated cost of the alterations is close upon 27,000*l.*

Fitzroy, once a district of Melbourne, but erected into a distinct town in 1870, is to have a new town-hall, the memorial stones of which have been laid. Mr. W. J. Ellis, of Elizabeth-street, is the architect. The buildings will stand at the corner of Napier and Moor streets, and will be adjacent to and in conjunction with the present Fitzroy court-house. The main feature of the design is the connexion of all the buildings in one block. The new buildings will consist of a large public hall, 102 ft. long, 47 ft. wide, and 33 ft. in height, which will be erected on the side abutting on Moor-street; and the intervening space between the hall and the court-house will be occupied by the present offices of the council, together with a new council-chamber, a library, and several other apartments now in course of construction. The principal façade will face Napier-street, and will comprise a very lengthy verandah or loggia, and a high tower with clock. The portico terminating the east end of the hall will have six columns, each 28 ft. in height, with capitals, cornice, and entablature of the Corinthian order. The total length of the Napier-street façade will be 175 ft., and that to Moor-street 136 ft. The elevation of the latter will be in the same style, as that of the former, with the exception that pilasters will be used in place of columns. The tower, which will be quadranglar (17 ft. 6 in. to Napier-street and 13 ft. 6 in. to Moor-street), will consist of four stories, terminated by a mansard roof, with inclosed ornamented iron-work and a gilt grating. The total height of the tower will be 104 ft., and the greater portion of it will be distinctly seen from almost every portion of the municipality. The principal floor of all the new buildings will be 7 ft. above the level of Napier-street, and will be reached by two broad flights of cut and polished Malmsbury blue stone, with winged walls of the same material. The new council-chamber will be 40 ft. long, 24 ft. wide, and 16 ft. in height, with coved ceiling and dado framing, as in the public hall, but not quite so high. The library, which will be close to the council-chamber, will be 40 ft. by 20 ft., and of the same height as the last-named apartment. The erection of the works has been placed in the hands of the well-known builders, Messrs. James Nation & Co., who have contracted to complete them by next November for 8,205*l.* 7s. 10d., exclusive of the cementing and some other external items.

Sandhurst.—The foundation stone of the new Masonic hall, View-place, Sandhurst, was laid on the 24th of June, in the presence of a concourse of about 4,000 people. The new hall will not only be the largest out of Melbourne, but in architectural pretensions it will have no superior, it is said, in the Australian colonies. The site has a frontage of 100 ft. to View-street. The dimensions of the structure are 130 ft. in depth by 97 ft. in breadth, and 60 ft. in height, and it will be carried out in the Corinthian order of architecture. The foundations are of blue-stone, and the building will be of brick, with face of cement. The front has a portico, with a flight of blue-stone steps, 55 ft. in length by 20 ft. in depth, on the table of which rest six Corinthian columns, supporting an entablature, the centre of which forms a triangular pediment, the base line resting on the columns, while on each side is a parapet of balusters. Four vases are placed at intervals on the top of the parapet, and on the apex of the pediment is an acroteria representing a human face encircled in a shell border. There are two doors as entrances by the front. One leads into a hall, on one side of which are the reading-room, the secretary's room, the library, members' room, refreshment-room; and, at the end of the hall, the lodge-room. This is an apartment 50 ft. square, and without windows at the sides, but light is admitted by skylight windows. The other entrance also leads into the hall, and on one side are the sitting-room, two parlours, three bedrooms, and a billiard-room. On each side of the portico is a door leading by stone staircases to a large hall. The main entrance to this hall is by a grand staircase at the inner end of the lobby hall. At the top of the staircase are doors opening into ladies' and gentlemen's cloak-rooms. The large hall will be 92 ft. long by 45 ft. wide, and 30 ft. high, the length being parallel with View-street. At one end will be a gallery, and at the other a stage. This hall will be used on grand occasions by the brotherhood, and when not used by them will be open for use to the public for concerts, balls, &c. The interior decorations will be of a rich character; there will be two rows of windows, and between the windows Corinthian pilasters, crowned by ornamental arches. The lodge-room, having walls 18 ft. high, will also be decorated in a similar style of ornamentation. The roof will be of slate. The cost of the building will be 9,000*l.*, and it is to be finished in twelve months.

Statue of the late King of Denmark.—After the opening of the Danish Rigsdag, at Copenhagen, on the 6th instant, the city was the scene of a thoroughly national *fête*, held for the purpose of inaugurating the statue of the late King Frederick VII., erected in the great square in front of the Castle of Christiansborg. It is an equestrian statue, in bronze, executed by the late sculptor, Bissen, the most noted of the pupils of Thorwaldsen. The statue was unveiled at a signal from the King, amid the cheers of the assembled thousands.

OPENING OF OWEN'S NEW COLLEGE, MANCHESTER.

The ceremony of opening the Owen's New College, Oxford-road, Manchester, has been performed by the president of the college, the Duke of Devonshire, in presence of a full gathering of the students, and a large assemblage of people. The design, which we illustrated with a view and plan, on pp. 86 and 87 of our volume for 1871, was prepared by Mr. Alfred Waterhouse, architect, and the building has been carried out substantially in accordance with the design. It stands about 100 yards from the line of Oxford-road, and is bounded on the north by Copeland-street, on the south by Burlington-street, and at its east, or Oxford-road end, it is about 150 yards in width. The Oxford-road front is divided into three blocks, joined by two receding lines of elevation, and forms three sides of a square. The style of the buildings is Gothic, of a collegiate and early type. The walls are faced throughout with York stone, and the roofs covered with flat tiling. The old houses are now undergoing demolition on the site which will partly be devoted to the quadrangle. In the main block are the various lecture-rooms, class-rooms, &c. Wherever possible the class-rooms are arranged with their backs upon Oxford-road, so as to avoid the noise arising from the traffic without; and a wide corridor of communication runs along the building on that side, with windows, some of which are of stained glass, looking into Oxford-road. On the basement-floor this corridor is unbroken. On the upper floor it is cut in two, in the middle, by the library, on the first-floor, and by a large arts class-room on the ground-floor. The division of the corridors has been devised, amongst other reasons, to prevent their being used too freely for general traffic. On special occasions, however, or when required, the whole of each floor can be thrown *en suite*. From the corridor on the ground-floor open most of the rooms, which vary in size. On the western side the floor is above the level of the ground, and on the eastern side the rooms look into areas 26 ft. wide, so that the story is practically above ground. On this floor are placed the engineering workshops and museums, the students' temporary dining-room and common-room, the natural philosophy workshops, rooms for students' boxes, lavatories, cloak-rooms, &c.

The southern extremity of the building is devoted, on the basement and ground floors to the chemical theatre, a room about 60 ft. by 40 ft., which will be used both as a lecture-theatre and as the public hall of the college. The professor's table is at the western end, on the level of the basement-floor. The floor of the theatre rises eastward, until it reaches the level of Oxford-road. Tiers of seats are arranged for the use of the students, and there is a small gallery for the use of ladies and visitors on public occasions. The room is lighted by windows on the south and west sides, all of which are fitted with iron shutters, so as to admit of the room being darkened at pleasure. The room can be lighted with a sun-burner. The walls are ornamented with medallion portraits of eminent chemists in terra-cotta, and at the back of the lecturer's table is a small laboratory, in which experiments illustrative of lectures to the students can be made. Upwards of 600 persons can be seated in this room. On the ground-floor is the geometrical drawing-room, which will accommodate about fifty students. This room adjoins the engineering lecture-room.

The natural philosophy lecture-room, with class-rooms, occupies the whole of the ground-floor of the central projection of the building. There is accommodation for about 200 students in this room, which is fitted up so as to be able to be used both by day and evening students. A large arts class-room, with rising floors, is also on this level. Seats have been provided for about 200 students. Several rooms for the professors, for the secretary of the institution and his clerks, and the board-room complete this part of the building. Passing to the first floor there are three large arts class-rooms, professors' rooms, and various small arts class-rooms. Nearly all these rooms have roofs formed of arched beams. Principal Greenwood's Greek class-room will accommodate about 150 students, and a similar room adjoins for Professor Wilkins and his students. The library occupies nearly the whole of the first floor-space of the central part of the building. There is considerable accommodation in the roof, which will be devoted to the natural history and geological museums, but this arrangement will only be temporary. At the rear of the main block on the Burlington-street side are the chemical laboratories, which are erected of brick. This department is joined to the main building by a passage. There are two laboratories within this department, one of which is sufficiently large to admit of 60 students carrying on their experiments in it, and the other will afford opportunity to forty other students. The former will be devoted to qualitative and the other to quantitative analysis. Several small laboratories adjoin the two large ones, where students may carry on private experiments. The laboratories are 70 ft. by 30 ft. in extent, and 22 ft. in height. Professor Roscoe's private laboratory is so placed as to command both the laboratories. There are in the building about 90 rooms in all, of which the chemical department takes 28; the natural philosophy department, 9; arts' class-rooms, 9; and engineering, 8. Care has been bestowed on the arrangements for warming and ventilating the buildings. In the sub-basement there are hot-water boilers and a steam-engine, the latter to drive a fan for forcing fresh air (warmed in winter) into the corridors and lecture-theatre. The whole of the rooms are to be warmed by hot-water pipes. The vitiated air in the rooms is to be carried off by means of large shafts in the roofs leading to ventilating turrets, in which steam cones accelerate the draught.

The opening ceremony took place in the principal theatre of the college, which was filled from floor to roof.

SCHOOLS OF SCIENCE AND ART.

Islington Schools of Science and Art.—The Queen's prizes gained by students at these schools, at the late May examination of the Science and Art Department, South Kensington, have been distributed by Dr. C. Meymott Tidy, in the lecture-room of the schools, Windsor-street, Essex-road, in the presence of a large number of the students and their friends. A report, read by Mr. H. J. Wheatley, secretary to the schools, showed that the institution, which now enters on its thirteenth session, has,—thanks greatly to the energy of its head-master, Mr. J. Howard,—been making steady progress in its work since the last annual meeting, and has fully kept up its already recognised position as one of the first institutions of its kind in the metropolis. The premises have recently been much improved, and now include a laboratory for practical instruction in chemistry. Among the most recent successes achieved by students of the classes are the Gold Medal, for chemistry, to Mr. Isaac Scarf; and a Royal Exhibition of 50*l.* per annum, tenable for three years, at the College of Chemistry, South Kensington, gained by Mr. Henry Lewis, who also takes off many minor distinctions. Dr. Tidy delivered an interesting address on education generally, but particularly as bearing on the objects the Science and Art Department has in view.

The Worcester School of Art.—A public meeting of the subscribers to this institution has been held in the Guildhall, Worcester. The Rev. Canon Barry, D.D., presided. The committee's report stated that,—

"The institution is doing valuable and important work in the city, and the attendance of the pupils and the advancement in their studies are satisfactory.

147 students have been under art instruction during the past year 39 in the day classes, and 108 in the evening classes averaging in the winter months about 90, and in the summer months 70; the present number being 91. The work on which these students have been employed embraces the usual course of freehand, geometrical, perspective, model, mechanical, and architectural drawing, painting in oil and water colours, and modelling.

The resignation of Mr. Yeats having compelled your committee to seek for a new master, they have been enabled to secure the services of Mr. Dewer Campbell, late master of the Dorchester School of Art, whose testimonials were found to be most satisfactory, and whose proved ability will, they trust, be of much advantage to the institution.

The prizes distributed on the present occasion are those of the Science and Art Department only, the committee not having the means at their disposal to award any special prizes. At the last examination at South Kensington 16 pupils passed, 3 were awarded prizes, and 5 works were selected for the national competition.

The committee regret that the financial position of the school is very unsatisfactory."

The accounts for the past year showed that the receipts from subscriptions were 111*l.* 18s.; students' fees, 46*l.* 15s. 5d.; Government grant, 60*l.*; dividend on Consols, 1*l.* 9s. 9d.; total, 221*l.* 3s. 2d. Consols sold, 92*l.* 17s; due to treasurer, 56*l.* 19s. 4d.—369*l.* 19s. 6d. The expenditure was as follows:—Balance due to treasurer on the 29th of September, 1872, 21*l.* 2s. 2d.; Masters' salaries, 201*l.* 18s. 8d.; rates and taxes, 10*l.* 8s. 11d.; rent, 50*l.*; coals and gas, 36*l.* 1s. 2d.; incidental expenses, 58*l.* 8s. 7d.; total, 369*l.* 19s. 6d.

Proposed School of Art and Science for Brighton.—A meeting (convened by circular) has been held at the Royal Pavilion, for the purpose of considering the proposal to raise a fund for building a School of Art and Science for the town and neighbourhood. It was presided over by the Mayor (Ald. James Ireland), and was attended by several gentlemen who take a deep interest in the matter. At the request of his worship, Mr. Frederick Merrifield (chairman of the committee who conduct the present school of art) addressed the meeting upon the importance of the school having a building erected specially for its own purposes, and attached to a school of science. After pointing out that the present school could not accommodate all who applied to be admitted as pupils, and that towns of far less importance than Brighton had their own buildings, he said about 1,900*l.* had been promised, but it was requisite to raise something like 4,000*l.* The estimated cost of the building was 5,000*l.*, but Government would grant 1,000*l.* —that was 500*l.* for the school of art, and 500*l.* for the school of Science—if the building was erected free from loan. He further stated that, when erected, the school would be self-supporting. The Mayor explained that the Corporation had no funds from which they could give, but they had power to grant land, and an application for a site opposite the New Free Library and Museum, in Church-street, had been most favourably entertained by the committees before whom it had been brought. It was unanimously resolved "That it is expedient to provide a suitable School of Art and Science in connexion with the Science and Art Department, South Kensington, for Brighton, Hove, and the vicinity." A large committee was appointed to raise the requisite funds.

Guildford Science and Art Classes.—The annual distribution of prizes to the successful competitors in these classes, awarded by the Government Department of Science and Art, took place at the Townhall, Guildford. In addition to the Guildford prizes, those won by the students of St. John's, Woking, were also distributed, as well as the night art class of the Guildford Working Men's Institute. In addition to the South Kensington prizes several local awards were given. The distribution was made by Mr. R. A. G. Godwin-Austen, F.G.S., who presided. There was a large attendance of visitors. Captain Campbell, honorary secretary, read the reports of the operations of the classes, from which we make a short abstract:—"The number of students has continued steadily to increase upon former years, 62 having attended the classes during the last winter session. Of these, 35 came up for examination in May, and 23 passed. The total number of successful candidates in the seven subjects taught amounts this year to 49, an increase of 13 from last year. Mr. Ethelbert Dowlen has been awarded the Queen's silver medal in botany (being the first medal awarded to the Guildford science classes), and besides numerous other prizes and certificates, he won the Queen's gold medal for geology at St. John's College, Woking, and would have received these medals to-night, but for the prospect he has of obtaining a third medal, in chemistry, which is still under consideration. Mr. James J. Phillips has obtained the gold medal for chemistry at Charing-cross Hospital, where he has been appointed to a post of high honour. The committee desire to express their sense of the valuable services of the teachers, Mr. R. G. H. Goffin and Mr. G. Longbottom. The lady students give additional interest to this meeting by taking two Queen's prizes and fifteen certificates of their success."

HOBBIES AND THE ORGANISATION OF AMATEURS.

Sir,—Every learned professor unfortunately insists that every one shall be crammed, *nolens volens*, with his own particular subject. If such notions were rigorously carried out, education would be an infliction on the rising generation, and lead to nothing less than a demented posterity. But if the learned enthusiasts would take the more moderate and wiser course, and simply ask that the instruction of those who make these special studies hobbies should be provided for, we believe every science would be properly studied, and its wants supplied.

None but *essential* studies should be forced

upon the entire population. The central and most rigorous science is that of the mathematics, which deals with the principles underlying all, and should, therefore, be one of the important essentials of general education. Astronomy mechanics, chemistry, &c., are only specialties requiring the self-same mental qualifications for their successful prosecution,—viz., correct observation, retentive memory, and rigorous reason. It is sufficient if a man adopt one of these specialties as his life-work.

In the dispensation of work, however, a man is not always put to what he would have chosen, and sometimes he finds, too late, that he is chained to work for which he was not the best fitted. This leads to the pursuit of some more congenial occupation,—he seeks solace in a *hobby*.

The effective organisation of amateurs, in all branches of study, is something yet to be considered and worked out. If rightly effected, it would secure an extended co-operation, the perfecting of any special study, and the material welfare of the institutions and professors devoted to it. W. Cave Thomas.

THE SALINE BATHS, DROITWICH.

The new saline baths at Droitwich will shortly be opened for the use of the public. The curative properties of the saline springs have long been celebrated, and, especially during the last thirty years, the bathing establishment has been largely patronised by residents in the midland counties. For many years the bathing establishment has been in private hands, and although the accommodation has been of an extremely limited and inferior description, consisting simply of three hot baths, a considerable annual revenue has been derived from them. A company has recently been formed for the purpose of purchasing and improving the property—chairman, the Right Hon. Sir John Pakington, bart., M.P. The plans of the directors have been matured, and the most important part of the work,—namely, the erection of the baths,—will be completed in the course of the present month. Arrangements will be made for providing the inmates with amusements and suitable exercise, the grounds occupying a space of several acres. At present there are hot baths, fitted up for first, second, and third class bathers; also douches, plunge-bath, hot and cold brine sprays, and the Turkish bath, with spacious compartments, embracing modern improvements. Adjoining this will be a swimming-bath, 70 ft. by 30 ft.

LLANUWCHLLYN, NEAR BALA.

The parish church of Llanuwchllyn has recently been reopened, after rebuilding, with additional accommodation, the south aisle being lengthened out westward. The old church was in a thoroughly dilapidated condition, and possessed no architectural or archæological interest whatever, except the effigy of a fine old warrior, which has been carefully preserved and reinstated. It has been the endeavour of the architect, however, to keep up the characteristics of the Welsh village church, as far as was consistent. A western gabled bell-turret has accordingly been designed, of massive construction, and the nave and chancel are of the same width and height, the ridges of the roofs carried straight through. Internally, a chancel-arch, corbelled out, marks the division of the chancel; while outside the window-cills are higher and the general treatment more decorative. It had been the architect's intention to put ornamental ridge crestings to the chancel roof, and a red-pottery cross over the chancel-arch; but it has been found necessary to abandon this treatment. Formerly there was no vestry, but one has now been built at the west end of the south aisle. In the materials mainly used the local rough limestone is predominant. Wrexham freestone has been adopted for the dressings, &c. The roofs are covered with Portmadoc slates, the ridges formed of tiles. Internally, the roofs to the nave and aisle, also the chancel-aisle, have open fir timbers, but the chancel a panelled arched ceiling. The nave is seated with open deal benches, with shaped ends. Those to the chancel are of a more decorative character. Encaustic tiles have been used for the paving, in patterns arranged by the architect. The pulpit is of Wrexham stone, with square ornamental cusped panels. The glazing is of cathedral glass, of different tints, arranged in various patterns. The altar-rail and locks were made, in wrought iron, by Mr. Leaven, of Maidenhead, and the weather-cocks by Messrs. Hart, of London. The church is heated by one of Porritt's underground stoves. The contract was taken by Mr. J. Morris Jones, of Carnarvon, for 1,400*l.*; but the total cost will probably amount to 1,500*l.* Sir Watkin Wynn and Lady Williams Wynn have contributed a very considerable portion towards the expenditure, but a large amount was raised also in the parish itself. The architect was Mr. Edmund B. Ferrey.

SCHOOL BOARDS.

Northampton.—The School Sites and Building Committee made no written report. The contracts for both schools have been executed. Mr. Bland, one of the architects, appointed Tuesday next for setting out the Vernon-terrace ground, and Mr. Walker, the other architect, has seen Mr. Redshaw, who is now excavating for the foundations of the Spring-lane school. Mr. Wright proposed "That the architects be requested to make immediate arrangements for laying the foundation stones of their respective schools; that the chairman of the Board perform the ceremony; and that the attendance of the Corporation and other public bodies in the borough be invited for the occasion." He said they had now arrived at a stage when a great deal of work had been done, although it might not be seen. The contracts had been entered into for the erection of the two schools, and, as the time of the Board would expire in three months, he thought opportunity should be taken of investing the laying of the foundation stone with some ceremony to show the public that they had not been working in vain. The resolution was ultimately passed in this shape —"That the chairman should lay one of the stones, the vice-chairman the other, and that the Board should dine together afterwards."

NEW SCHOOL-BOARD SCHOOLS IN SHEFFIELD.

Two new schools in Sheffield were opened on the 13th. The one at Netherthorpe is planned so as to arrange the scholars in three departments, boys, girls, and infants; and so that each department is complete in itself for school work. The boys' department comprises a school-room L shape, and 20 ft. wide, accommodating 136 scholars at desks, three class-rooms respectively for eighty, forty-five, and thirty-four scholars; cloak-room, manager's - room, and teachers' retiring-room; spacious covered play - shed, play-ground, and conveniences. The girls' department is the same as for boys, but is entered by an entirely separate entrance. The infants' department, all on the ground floor, contains school-room for 256 scholars, two class-rooms each for fifty-six scholars. The entrance to infants' department is the same as that for girls, because they use the same play-ground, and because they often come with the girls; but there is also a lobby by which they can be dismissed through the boys' doorway, if needful. The accommodation in the whole building is for 956 scholars. The school-rooms are warmed by water on the high-pressure system, known as Perkin's patent, applied by Mr. R. R. Gibbs, of Liverpool; and the class-rooms have open fireplaces. Provision is made in every room for the admission of fresh air, and the extraction of vitiated air, and both can be easily regulated at the pleasure of the teacher, the ventilation being carefully arranged by the architects upon their own plan, which is pronounced to be perfect in the schools already occupied. The windows give both front light and side light to all desks and side light to galleries. The scholars sit in pairs to the desks, patented by Mr. Moss, the clerk to the Board, with standards designed by Messrs. Innocent & Brown. The cost of the building, including boundary walling, water supply asphalting yards, &c., is 5,665*l.*, being a little under 6*l.* per head. Messrs. Thomas Sharp & Son, Mulberry-street, are the contractors. Mr. W. Dickenson is the clerk of works, and Messrs. Innocent & Brown, St. James's-row, are the architects. The contract for the school was signed October 10th, 1872, so that the erection of the premises occupied just twelve months. The school at Philadelphia differs from Netherthorpe in the design and arrangement being suitable to a different kind of site and degree of accommodation. The total number of scholars in the three departments is 750; the cost of the building, 4,530*l.*, being a little over 6*l.* per head, including water-supply, boundary walling and palisading, asphalting of yards, &c. The architects are Messrs. Innocent & Brown. The builder is Mr. Rawson.

THE EXETER SCHOOL-BOARD SCHOOLS.

The chief stones of four new schools have been laid at Exeter. The Exe Island school, the stone of which was the first one laid, will provide accommodation for 200 infants, and 150 boys and girls between the ages of seven and ten. The cost of the site, which is rather a cramped one for the purpose to which it is put, is 960*l.*, and the buildings will cost about 2,000*l.* The style of the structure will be Domestic-Gothic, and it will be built of red brick, with Bath stone window-heads, and string courses. The architect is Mr. J. Johnson, of London, and the builders are Messrs. Stephens & Sons, of Exeter. The St. Mary Arches-street school will accommodate 200 infants and 200 girls. The building is from the design of Mr. J. Toner, of London. The walls will be of brick, with Portland stone sparingly introduced. The cost of the site is 800*l.*, and the buildings will cost 2,700*l.* Mr. J. Kenshole, jun., of Heavitree, is the builder. The St. James's-road school, which is intended for infants alone, is also from the design of Mr. J. Toner. It will be almost a counterpart in character of the St. Mary Arches-street school. The site cost 355*l.*, and the contract for the building amounts to 1,320*l.* Mr. W. R. Commings, Exeter, is the builder. The school in Newtown, just at the entrance to the Clifton-road, will accommodate 200 girls and 200 infants. The site cost 445*l.*, and the building will cost close upon 2,600*l.* The style of the building will be Domestic-Gothic. The walls, from the plinth to the floor, will be of Heavitree stone, with a battered face, and the rest of the structure will be of red brick, the window-heads being of Ham-hill stone, and bands of black brick will give relief to the appearance. The gable will be surmounted by a bell-turret. This school is from a design furnished by Mr. Pearson B. Hayward, the architect to the School Board. The builders are Messrs. Stephens & Son. Ventilation and warming have been especially attended to. The buildings will be warmed in winter by the Manchester grate, and Mr. Wippell will fit the interiors with the Exon desks. The total expenditure on the four schools, exclusive of fittings, will be 11,180*l.*

SCALES.

Messrs. Benrose & Sons, of Derby, have issued, in a neat and compact case, a dozen scales, meeting the wants equally of architects, engineers, and land surveyors. The space below the scale and at the back is utilised by a number of well-selected calculations for ready reference. As the material is cardboard, an application of copal varnish, to render the scales to some extent washable, would be useful.

TERRA COTTA.

When there is so much controversy respecting the revival of art in our day, and the artistic decoration of our public buildings and dwelling-houses, it appears strange that more attention is not paid to a material adapted to such a wide expression of the architect's power of design. I refer to the material known as "Terra Cotta." If we look to its durability, it is equal to any stone which has been discovered, and its adaptability to architectural purposes is so superior as to be beyond all comparison with any known material, from the fact that the most elaborate designs can be executed at a much less expense, and also that a series of beautiful colours can be produced so as to blend harmoniously together, thereby producing an effect pleasing to the eye, and engendering a spirit of artistic desire even in the most uncultivated. I have been studying this subject for many years, and am convinced if this material were developed in all its resources it would prove a mine of inexhaustible wealth to the architect and builder. My object in penning these few lines is not merely to urge the adoption of terra cotta in its plain form

ut I should like to see it used (and I have no esitation in saying it is quite practicable) with a enamelled surface in various colours, which ould be obtained at one burning, thereby aducing the expense which would otherwise be ccurred. Much more could be said on this abject, in the way of economy, cleanliness, and ncreased facility of design, both in internal and xternal decoration. ALPHA.

COMPETITION.

AT a recent competition for the Odd-Fellows all, Devizes, the drawings of Messrs. Willson, Willcox, & Wilson, London and Bath, were the ut selected; and those of Mr. E. Bays, illiers-street, Strand, and Cambridge, were the cond selected. There were nineteen com-etitors.

COMPLETION OF QUEEN VICTORIA STREET, CITY.

AT the last meeting of the Metropolitan Board, e Works Committee presented a report, stating at the committee had directed that applica-on be made to the First Commissioner of her ajesty's Works, &c., for his certificate of the mpletion of Queen Victoria-street, and recom-ending that upon the receipt of such certificate e street be handed over to the charge of the mmissioners of Sewers of the city of London, required by the 11th section of the Act. r. Newton said this street was one of the most portant works carried out by the Board. hen he stated that the estimated amount of e recoupment to the Board of the cost was 500,000*l.*, they would see that it was a work some magnitude. The street was so far com-ted that it was in a position to be handed er to the City authorities. He might state at nearly the whole of the surplus land had en let, and from the Mansion House to Ben-t's-hill the most valuable portion had all en let. Altogether there was only one-twelfth rt of the whole unlet, and that was in the st valuable portion, between Bennett's-hill d Blackfriars Bridge. The motion was carried.

ACCIDENTS.

Subsidence of a Quay at Newcastle.—The New-stle Quay from a length of from fifty to sixty rds, and a width of 12 ft., has suddenly given y, and subsided to a depth of about 12 ft. e River Commissioners have been dredging Tyne for several years past in order to deepen and the result, it is believed, is that the ndations of the quay are weakened, and it is red that the subsidence will be extended by action of the tides. The loss will not be ious, as the Newcastle Corporation intended ling the quay down and rebuilding it at a cost from 300,000*l.* to 400,000*l.*

Fall of a Wall at Douglas.—A mason was gaged, along with several others, in taking wn the boundary-wall between Marathon, the idence of Mr. Samuel Harris, chief magistrate Douglas, I-le of Man, and Castle Mona unds, when the wall fell, burying him in the ris; and the others had a very narrow escape. e injuries were so severe that the man died ut two hours afterwards. Mr. Harris, prior eaving home, enjoined the men to take down wall from the top; instead of which they mmenced undermining the foundation, and, the ll being insecure, it fell almost immediately.

PLYMOUTH.

THE Lord Bishop of Exeter, on the 8th inst., the foundation stone of All Saints', the first our churches about to be erected under the pices of the Three Towns Church Extension iety. The design, by Mr. Hine, architect, Plymouth, is Early Geometrical in style, and building will include a nave, 80 ft. by 28 ft., th and south aisles, tower, with baptistery, the south-west angle; chancel at the east , with organ-chamber on the north side and ry on the south. Between the nave and h aisle will be an arcade of five arches spring-from circular stone pillars, and above will a lofty clearstory. The first contract is taken for the chancel, organ-chamber, and ry.

he sacrarium will be apsidal in form, and have five pillared and traceried windows. roofs are to be open, and of pitch pine: the walls of wrought dark and light limestone, with dressings of Box-ground and Portland stone. Mr. Pethick, of Plymouth, is the contractor.

BAD AIR IN NORWICH.

SIR,—Your very excellent remarks at the Working Men's Meeting in Norwich I fully endorse, as regards that persons should be punished for adulterating the air. It so happens I live, or my house is immediately opposite, the junction of the high and low level sewers of this city,—in fact, the whole sewage is brought to this point. The stench is often very offensive. May I ask you if you do not consider the air equally adulterated as in the yards mentioned in your address? W. M.

INTERNATIONAL EXHIBITION: ALL THINGS TO ALL MEN.

SIR,—In the south-east arcade, used for the display of carriages, may be found set out in best official handwriting,—the following

"NOTICE.
Carrage attendance, &c.
Cabwashers are to be carefull not to throw no more water on the grownd that what is wanted.
by Order."

S. F.

SUSSEX ARCHÆOLOGICAL SOCIETY.

A PLEASANT autumn gathering of the members and friends of the Sussex Archæological Society was held at Isfield and Little Horsted, where the ancient churches were inspected, their architectural features explained by gentlemen more or less conversant therewith, and visits were paid to the hospitable mansions of Major King and Mr. Francis Barchard. The weather was as fine as could have been expected. Isfield Station was the rendezvous, and the majority of the company arrived by the midday train from Lewes and Brighton, though many of the residents of the district came by road. At Isfield Place, the property of Major King, commanding the East Sussex Battalion of Rifle Volunteers, the Major extended a cordial welcome to all. Refreshments were served in the oak-panelled dining-room; and a brief description of the place was given by the Major himself. Isfield was once the property of Godwin, the famous Earl of Kent, and after the Conquest it appears to have been given to the De La Warr family. In the fifteenth or beginning of the sixteenth century it was in possession of John Shurley, clerk of the kitchen to Henry VII., and afterwards cofferer to Bluff King Hal. The property remained with the Shurleys for four or five generations. One of the family, who was born at Isfield in 1569, was Lord Chief Justice of the pleas in Ireland, and died in 1647. He left two daughters as co-heiresses, and he (Major King) held the share which fell to the eldest daughter. At Isfield the features of the church of St. Margaret were explained by Major King and the incumbent, the Rev. Mr. Russell. Little Horsted Church was described by Mr. Francis Barchard, who provided luncheon at his residence, where a pleasant half-hour was spent in inspecting the pictures.

THE LEAD TRADES.

THE disputes in the lead-mines, and at the various lead works in the North of England, is spreading southward, and is likely to become a serious question to London plumbers and builders this busy season.

The whole of the hands in the Weardale lead-mines belonging to Mr. Beaumont, M.P., employed as separators, and at Allen Smelt Mill and Rookhope Mill, have come out on strike, in consequence of a refusal to increase their wages. Hitherto the men have received 4s. 3d. for seven hours' shift. They now demand 5s. for the same hours and the same work.

The extensive lead works of Messrs. Walker, Parker, Walker, & Co., of Elswick, and several other parts of England, are also stopped by strikes, and in connexion with this large firm, the dispute has assumed the likelihood of a long struggle.

A short time ago the men asked for an increase of wages to the average amount of 1s. 9d. per week per man. The men met in the large Elswick workshop to hear Mr. Walker's decision, and that gentleman spoke his mind to them. In the course of his observations he said,—Just let us consider how you have sent in your demand, and the steps you have taken to enforce it. You waited patiently for months until you saw that I had not a single pig of lead in the place; you knew I was expecting a very valuable cargo, worth many tens of thousands of pounds, and you knew that a very severe pecuniary loss would be entailed upon me if you were idle; and, more than that, you knew that if your department remained idle the whole of the works would be at a standstill. I do not think that is fair British fighting; to use an expression which you will understand, "It was a blow below the belt." This is not the second time that you have made a claim in a similar sort of way. The last time you made the demand on the very eve or my departure for a four months' journey, and you thought I could not help myself, and that I could be compelled to accede to your demand upon that occasion. There is a point on which I do not like to speak, but your conduct calls for it; you do not seem to appreciate your advantages, and I must lay a few of them before you. I tell you—and I will appeal to your foreman to bear me out—that I have many times bought lead to keep you at work, when it would have been greatly to my advantage not to have done so. I have done this on many occasions, when I have had large stocks of market lead on my hands, and I have done it because I did not like to see your pots empty and cold, though it brought loss to myself. I did not want to mention this, and I regret having to lay it before you. I do not suppose you knew such was the case, and now you know it I do not suppose you will take much interest in my loss for your good. It has been a rule of our firm that when a man has worked with us for many years, and has broken down and become infirm, never to turn him adrift even if incapable of continuing his work. We always endeavour to find a job to suit him, and I hope the practice will never be given up. You are, I may say, unskilled men; that is, you have not served a five or seven years' apprenticeship, like mechanics in general. It is true you must all be able-bodied men, but you all know perfectly well what wages you could earn as mechanics, and what wages you can make here. In working at an average of nine hours a day, you earn 1*l.* 13s. 9d. a week, and half of Saturday to yourselves. The great battle between capital and labour is going to be fought out. If I may use a military expression, the battle has commenced, and has to be fought out at long ranges; it is now getting to close quarters, and before this time next year I fancy the battle will be over. Either labour will have conquered over capital, or capital will have conquered over labour; but whichever side wins, it will take generations to repair the damage that will have been done to this country in the struggle.

The men answered their employer by an immediate cessation of work.

HOUSES IN DEAN'S YARD.

THE Westminster District Board of Works have adopted their surveyor's (Mr. Arntz's) report with reference to the Rev. Mr. Harford's house in Dean's-yard, stating that he has examined the premises which are no doubt unsatisfactory in regard to ventilation and sanitary arrangements generally; but as this is by far the more recently erected house, if removal be in question it will be Mr. Harford's house that must be pulled down rather than the houses in Great Smith-street, as suggested by the medical officer (Mr. Holt), unless he certifies that the premises are unfit for human habitation; but that he (Mr. Arntz) does not think the Dean and Chapter will allow one of its official residences to continue subject to grave insalubrious from the Board's medical officer. Copies of the reports of the medical officer and surveyor will be sent to the Dean and Chapter of Westminster.

IRON ROOFS.

SIR,—In the last number of the *Builder*, I notice an article on "The Works at the Holborn Viaduct Extension Railway," wherein you say, "Mr. Webster is contractor for the whole of the works." Permit me to add that the whole of the iron roofs are being executed by Messrs. F. Braby & Co., engineers, under Mr. Webster's contract. C. F. F.

HOUSE LETTING AND PER-CENTAGES.

IN the Shoreditch County Court, a case—Mitchell & Vulliamy *v.* Gabriel,—as to house letting, has been decided.

The plaintiffs, Messrs. Mitchell & Vulliamy, are auctioneers and valuers in the City-road, and the defendant, Mr. Gabriel, is a member of the firm of Messrs. Gabriel & Troke, wholesale chemists, in City-road. The action was to recover 16*l.* 10s. for services alleged to have been rendered in the letting of premises belonging to the defendant in the City-road. One of the witnesses for the plaintiff affirmed that it was part of his duty to go about town looking at notice-boards placed against premises to be let, and then call upon the owner or person to whom reference was directed to be made, and solicit an order to advertise the same in the periodic catalogue which the plaintiffs published, and that orders to view were given to such parties as might call at the establishment of the auctioneers to make inquiries, by which means it was contended that substantial services had been rendered, and that the commission of 5 per cent. on the rental of the first year, and 2½ per cent. on the second year, was the usual charge made as fair and reasonable remuneration.

Mr. Gabriel, in defence, stated positively that he never gave any instructions to the plaintiffs as to the letting of his premises, giving orders to view, or taking any other action in the matter; for that he had caused two large painted boards to be placed on conspicuous parts of the building, referring applicants to himself; and that a person, who said his name was Sibley, called upon him, and asked for permission to look over the premises, which was readily granted, and that person took down various dimensions, the interview being throughout treated by him as a matter of business, and when they had gone over the building and were standing in the yard, this person asked him to publish an advertisement in the catalogue circulated by the plaintiffs, but he positively refused to do so. Mr. Devas came and inspected the premises, and knowing that gentleman to be a member of a respectable firm in a large way of business, negotiations were entered into, and ultimately a part of the premises was let to that firm, and when Mr. Sibley called afterwards he refused to give him any information as to the premises having been let or the rental agreed to be paid. The evidence of Mr. Gabriel was not in the least shaken on cross-examination; and the Judge expressed himself in very strong terms condemnatory of the conduct stated to be pursued by the plaintiffs or any other respectable firm of auctioneers and house agents in sending clerks about the City and different parts of town seeking out notices of premises to be let, and then soliciting the parties to advertise in a catalogue to be given away at sales, or circulated in another manner in the way of business to

induce persons to make application to them. He was of opinion that no substantial service had been rendered in this case, and he gave a verdict for the defendant.

Application was made by defendant for costs, which was opposed, but the court without hesitation granted costs.

WARWICK WATER-SUPPLY.

On Tuesday last, at a meeting of the Warwick town council, the following recommendation in reference to the above scheme, was unanimously adopted, having especial reference to the position of Mr. E. Pritchard, C.E., the borough surveyor of Warwick, and engineer to the water scheme.

"Your committee received the following propositions on the subject, from Mr. Pritchard, viz.:

1st. To be employed as engineer for the works, and to retire from the office of borough surveyor, and to receive the usual commission of 5*l.* per cent. on the outlay, estimated at 15,0 0*l.*

2nd. In addition to acting as engineer with the above commission, to continue to hold the office of surveyor, and to find and pay a thoroughly qualified assistant to the approval of your committee.

Your committee consider that the works are much more likely to be carried out properly under the supervision of Mr. Pritchard, who has already bestowed much time and trouble on the scheme, and who is thoroughly acquainted with all its details, and who would be on the spot, and be prepared to give his time and attention to the works, than if the management was entrusted to a stranger; and they therefore recommend that he be appointed engineer for the works, and that he be paid the sum of 6 0*l.* for his services, in lieu of the commission, he paying an assistant to perform the duties of borough surveyor (such assistant to be appointed subject to the approval of the council). Mr. Pritchard to be paid by instalments, from time to time, as the works progress, the above remuneration not to include the expenses of the consulting engineers."

THE FAILURE OF PORTLAND CEMENT.

Sir,—With some surprise and with much concern, I read in your valuable journal, an inquiry as to the cause of failure in Portland cement. I had been for some time hoping that we had gone past the period of such failures, and believed that the knowledge of the article and the cause of failure were too well understood to permit of cement being used without its being known beforehand whether or not it would fail.

From what I read in your journal, it seems clear that such is not the case, and beyond doubt it is a matter that should at once be examined by the *Builder*, in order that its readers, who look to it as their text-book, may know whether it is or is not such a material as can be used from time to time, without the suspicion and anxiety consequent upon the apparent uncertainty as to whether it will or will not ultimately fail, and thereby occasion disappointment and loss.

I presume the failures alluded to are to be found amongst what may for this purpose be termed every-day matters, and not in special or extraordinary cases; and that the cement was used by persons fairly entitled to be considered competent, and that the article was made by respectable cement-makers, and does not in any way belong to the cheap and nasty order of things.

I mention these points because I do not know of any works of considerable importance, conducted under the superintendence of first-class engineers, and by qualified clerks of works, that have exhibited for a considerable time any cases of failure, if my impression on this matter is correct. I am of opinion that it goes to show that these persons do know how, and do take care to protect themselves, and refuse to make use of any cement that is not proved by themselves to be above suspicion.

Unless my notion of the matter is entirely wrong, this is an answer to the question as to the cause of failure, and shows that the cause must be looked for in the material, and cannot under ordinary circumstances be traced to the workman.

Twenty years' practical acquaintance has brought me to the conclusion that if good cement be supplied to the workman he will not spoil it; and that if faulty cement be supplied to the workman, his desire to prevent its failing is useless.

Good cement requires more care and more money to make than faulty cement; and my advice to all concerned would be, pay a fair price, and see that you get good material.

So far as such a fact can be known to one individual, all cement-makers make three kinds or qualities, viz., good, bad, and deliberately not wilfully, or by any means intentionally, but because in some measure it is beyond their control.

And in most cases the good is sold to those who will have no other; the remainder to ——. I cannot fill up that, and must leave it blank. Coal is very dear, and may have something to do with it.

Zeta.

CHURCH-BUILDING NEWS.

Folkestone.—The new church of St. Michael has been opened, although it is yet far from completed. The style of building is Flamboyant, being after the pattern of the fourteenth century Lowland Dutch churches. The contractor is Mr. Bowley, builder, Folkestone. The interior of the church is at present simply a plain room, the sittings not having been put up. The floor is paved with tiles, made by Mr. Bowley, and the altar (a temporary wooden structure) is approached by three tiers of steps, and is surmounted by a panoply.

Cromwell.—The parish church recently re-opened had been allowed to fall into great decay, and it was much disfigured. The place had the usual amount of boxes called pews, though on the north side a few old oak seats existed, yet these had decayed, and were propped here and there by stones. The chancel arch had been completely destroyed,—not a vestige remained. A large and inconvenient pulpit and desk blocked up the space where anciently the north pillar of the chancel arch stood; the chancel was ceiled and whitewashed; the east window-head entirely destroyed and walled up; the chancel aisle had been pulled down, and the arches belonging to it walled up, so that it was not even known that they existed; the font was a small stone basin; a huge gallery blocked up the tower arch; and a brick porch effectually concealed the fine south door. Matters looked rather hopeless as far as restoration was concerned, but the parish and rector felt it was a disgrace, and Mr. Parr, of Muskham, architect, was called in. Mr. Clipsham, of Norwell, contracted to do the work. The gallery, the boxes, the ceiling, the whitewash disappeared; chancel aisle arches were found; the aisle rebuilt; a new east window was put in; a new font, "In Memoriam," replaced the old basin; the church was seated with varnished pitch pine; and a new organ, by Cuthbert, of Hull, erected.

South Shields.—The foundation-stone of a church for the parish of St. Mark's, at South Shields, has been laid by Sir Hedworth Williamson, Bart., M.P., Deputy Provincial Grand Master of Masons, with full Masonic ceremony. The total cost of the new church is estimated at 4,500*l.*, of which 3,000*l.* have already been promised. The site, worth 500*l.*, together with a subscription of 100*l.*, was given by the Rev. R. Green, vicar of Longhorsley; and the Ecclesiastical Commissioners voted an acre of ground and 1,500*l.* towards a vicarage for the new parish. The contract for the building has been undertaken by Mr. Edmund Suddards, builder.

Monmouth.—The foundation-stone of a new church has been laid by the Duchess of Beaufort. The church will be built in the Early English style, and will accommodate a large number of persons. The architect is Mr. Luddon, of Westminster, and the contractor Mr. David Roberts, of Monmouth.

Much Cowarne. — The church here, after restoration, has been reopened for Divine service. In the restoration (at a cost of 1,025*l.*) Mr. T. Nicholson, of Hereford, has been the architect employed, and the contractor was Mr. Henry Welsh. The church has undergone a restoration so far as regards the nave, aisle, and chancel. The whole of the low plastered ceiling has been removed, and replaced by a pitch pine roof, with V pointed, tongued, pitch-pine boarding, covered on top with felt and green Whitland Abbey slates, the whole having moulded and battlemented cornices of the same material running all round the walls at the springing of the roof inside. The whole of the walls and gables have been raised, to match the new roof, and new gablet windows inserted, the gables being covered with stone coping, and having foliated crosses at the summit. The windows have all been restored inside and out, and re-glazed with coloured Cathedral glass, having new stanchion bars, with ornamental head. The arcade and tower arches and clustered columns have been cleansed of whitewash and restored and pointed. The walls have been replastered on the inside with a sanded surface, and on the outside they have been cleaned and re-pointed. The dilapidated old entrance porch has been replaced by a timber porch, of the same material as the roof, resting upon a plinth of stone. The floors are all new, the space for seating being boarded, and the alleys laid with tooled paving. The whole of the sittings (which are free) are made of pitch-pine timber. A carved circular stone pulpit has also been fixed, and we understand that a carved font is in progress in the hands of the contractor. It is intended to restore the tower at no distant date, and to erect a new spire upon it, the old spire having been completely destroyed by lightning some thirty-four years ago, when two of the old peal of bells were melted.

Farnsworth-with-Kearsley.—The parish church of Farnworth-with-Kearsley, to which extensive additions and alterations have been made, has been re-opened. The additions to the church consist of two new porches which have been erected on either side of the western entrance, the steps occupied by the old gallery porches being added to the ground-floor in order to give more sitting accommodation. The pewing has been remodelled, and constructed of pitch pine, and the gallery-front has been altered and decorated with stencil-work devices. The walls have been dressed down with oil paints. A new and commodious chancel has been added. The altar has not yet been placed in position. By the present alterations about 350 sittings have been added. The cost of the work amounts to 4,000*l.*, of which 3,000*l.* have already been raised. The architect was Mr. R. K. Freeman, of Bolton.

Faversham.—At the recent meeting of the committee appointed in November last for re-seating and re-arranging the parish church under the direction of Sir Gilbert Scott, tenders for carrying out the work were received, and that of Mr. Wilson, Canterbury, at 2,138*l.*, was conditionally accepted. This amount includes the re-seating of the church with English oak seats, floors, &c. The warming apparatus will of necessity have to be altered, the estimated cost of which is 208*l.*; it is also proposed to remove the organ from its present position into the west end gallery to one of the chancel aisles which will cost another 50*l.*; and in addition there will be the architect's and sundry charges, estimated at 200*l.*, making the total cost of the work, 2,596*l.*

Bristol.—A new church, to be called St. Andrew's-the-Less, situated at the Hotwells, has been consecrated by the Bishop of Gloucester and Bristol. The edifice occupies the site of what was known as Dowry Chapel, which has to be pulled down because the dry rot had got into the structure. The new building is from designs by Mr. J. Neale, of Bristol, architect, and will accommodate about 450 people. The church is in the style generally known as Early Thirteenth-century Decorated. It consists of nave, three bays, with side aisles, and chancel with bays opening into a quasi-transept on the north, and organ and choir chapel with vestry on the south. The east wall has, in the way of enrichment, a screen the whole width of the chancel, consisting of an arcade of moulded arches, resting on columns with carved caps, &c. The west wall has been reserved for the old monuments. All the columns throughout the church are of polished Pennant or red Mansfield stone. The reading-desk is of pitch pine. The seats throughout the church are of pitch pine. The roof is open-timbered; and the chancel is coved, with moulded ribs. The building is well provided with windows in the aisles, and along the clearstory of the nave, the latter being three-lighted, with detached columns, with foliated caps and jack arches. The entrance to the building is a porch below a campanile, with bell-chamber; and at the east end there is a gable enclosing the vestry. The material used is local stone, with freestone dressings; and the cost of the work has been about 2,500*l.* The builder was Mr. R. J. Crocker, of Bedminster; the stone carving was done by Mr. Margetson, and the wood carving by Mr. Houghton.

Brandon. — The parish church has been restored, and re-opened for divine service. Not only had the timbers of the roof become rotten with age, but the foundations themselves were so far decayed as to render the building positively unsafe. But now all has been put in safe and decent state. The west gallery, upon which stood a long disused barrel-organ, has been taken down, which has opened out and exposed fully to view the tower arch. The rotted and unsafe belfry floor, which was on a level with this gallery, has been removed, and a new one erected upon carved stone rests, at a more elevated position, and above the top of the tower arch. The galleries over the south aisle and Lady Chapel have also been swept away, and the walls of the church throughout have been relieved of their coating of whitewash. The windows have been filled with light and dark grey cathedral glass. A stained-glass memorial window in the tower, immediately over the west entrance, has been inserted by Messrs. John and William Wood. It consists of two lights, and the subjects illustrated are our Lord Washing the Feet of His Disciples, and St. Peter baptising the Household of Cornelius. The east window over the altar consists of five lights, and the subjects illustrated are, The Crucifixion, the Baptism of our Lord, the Adoration of the Shepherds, the Resurrection, and the Appearance at the Sea of Galilee. Both these windows are by Ward & Hughes, of London. The chancel is fitted with open benches for the choir; and the chancel floor, the aisles and passages are all laid with coloured tiles. The old chancel arch, which was not in the centre of the roof, has been pulled down and rebuilt in its proper position, made larger, and about 2½ higher than before. This opens out a view of the whole chancel from every part of the nave, and the east window is seen to better effect. The

seats throughout the church, most of which had become decayed with age, have been replaced with new ones of deal, with variously carved poppy-heads, and stained a dark oak colour. The work of the restoration has been carried out by and under the personal superintendence of the contractor, Mr. Edwards, of Millenhall. The architect was Mr. J. Drayton.

DISSENTING CHURCH-BUILDING NEWS.

Bramford.—The memorial stone of a new chapel for the Wesleyan body has been laid at Bramford, a manufacturing village, with a growing population. The new chapel is being erected on a plot of ground at the north end of the village, opposite the gates of Bramford Hall Park. It will be in the Italian style of architecture, and will be built of red brick, with white stone dressings and projecting gables. The front will consist of a gable with a three-light window, and in the side elevation will be three single-light windows. The chapel is 47 ft. by 27 ft., and will seat about 230. Access will be obtained by two porches, one on each side the building, and inside it will be benched out with varnished benches; provision will also be made for warming the chapel with hot air. At the back will be a school-room and vestry, divided by folding doors, and capable of being thrown into one if necessary. The school will accommodate about 100 scholars. The building is being erected from plans by, and under the superintendence of, Messrs. Cattermole & Eade, architects, Ipswich, by Mr. J. Fosdike, builder, Woodbridge. The contract price was 637*l.*, and the total cost, including the purchase of the site, will probably be about 900*l.*, towards which about 600*l.* has been already received and promised.

Sowerby.—The chief stones of a building, to include a chapel and school, for the Baptists, has been laid in Steep-lane. The first part built will be the school, which will be used also for divine service. The school will consist of a large schoolroom on the ground floor, 50 ft. by 35 ft., with seven class-rooms and a secretary's room above, and kitchen, scullery, and room for heating apparatus underneath. Arrangements are to be made in order that there may be direct communication between the schools and the chapel. The situation of the school is in the rear of the intended chapel, which has to have a frontage to Steep-lane, instead of, as at present, eastward. The contractors are, for the masons' work, Mr. J. Wild, Sowerby; joiners' work, Mr. J. Greenwood, Soyland; plasterers' work, Mr. J. Robinson, Sowerby Bridge; and plumbing and glaziers' work, Mr. Stafford, of the same locality.

Wavertree (*Liverpool*).—The foundation stone of a new Wesleyan Methodist chapel (in connexion with Pitt-street Circuit) has been laid in Victoria Park, Wavertree. The style of the new building, which will accommodate 600, will be Decorated Gothic. There will be a tower and spire, rising to a height of about 130 ft., at the north-east corner, and one transept at the north-east angle. A minister's vestry and two large vestries, each 20 ft. by 14 ft., are intended to be used for class purposes. There will be three main entrances to the chapel, and separate entrances to the vestries. The organ will be placed over the main entrance, in a small gallery, entrance to which will be obtained through the tower, by a flight of stone steps. The body of the chapel will be 61 ft. long, and 44 ft. wide, and the chancel end will be 15 ft. 6 in. wide, and 13 ft. 6 in. in depth. The height to the spring of the roof will be 22 ft., and to the ceiling level 40 ft. The material for the main wall will be Yorkshire shoddies, with red stone for dressing. The beams of the roof and chancel arch will be supported by Limerick green marble columns, with carved caps and bases. The chapel will be heated by means of hot-water pipes. The architect is Mr. John E. Greeve; and the builder, Mr. David Readdie, North of Liverpool.

Bury (*Lancashire*).—Radcliffe Chapel, near Bury, has been opened for divine service. The chapel is built upon a plot of land in Blackburn-street, adjoining the schools in which the services of the congregation have hitherto been carried on. Its extreme inside dimensions are 50 ft. 6 in. by 40 ft. 6 in., and 28 ft. 6 in. high. It is galleried round three sides for the congregation, with an organ and singing gallery formed in a deep recess behind the pulpit. The total number of seats provided is close upon 800. The cost of the building complete, including the architect's commission and laying out the grounds, but exclusive of furnishing and upholstering, is a little over 3,000*l.* The architects were Messrs. Maxwell & Tuke, of Bury. The walls are of brick, faced with stocks all round, those to the front being from Wolstenholme Hall, from whence also come the moulded and enriched bricks in the strings, arches, corbels, and panels. The dressings are of polished Yorkshire stone, and carving has been sparingly introduced in the caps of the columns. The boundary-walls are of Holcombe parpoints, coped with Yorkshire stone, and surmounted with a plain rail. The ground floor is seated with open seats. In the arrangement of the pulpit and Communion, a strong moulded rail across the front only of a raised dais is surmounted by the table, which is supported by ornamental iron brackets from the rail. Behind this are chairs for the minister and deacons, and the pulpit, which stands upon a strong square base, with dwarf columns at each angle. At the back of the pulpit is a screen, dividing the vestries from the chapel, and above this is the gallery for the singers and organ, the top panels of the front of which is filled with inlaid parqueterie panels by Mr. Oppenheim, of Manchester. The front of the principal gallery has been treated in a somewhat different manner from that usually adopted. From the moulded ends of the tie-beams of the gallery,—which, in common with the rest of the gallery timbers, are visible,—there arise quaintly designed iron brackets, by M'Farlane, of Glasgow. These support a low gallery front, and above this a moulded pitchpine rod, between which and the moulded top of the front is strained cane-netting, to act as a bookboard. The panels are picked out with coloured lines on the natural wood. The decoration at present undertaken is only of a temporary character. The internal woodwork is of pitch pine, simply varnished. The contractors for the building were Messrs. Openshaw & Buckley, stonework; Mr. Charles Smith, brickwork; Mrs. Colley, plumbing; Mr. John Allen, woodwork; Mr. John Smith, slating; and Mr. Joseph Brooks, plastering and painting. The carving has been done by Mr. Gregg, of Darwen; and the heating apparatus, rails, and grates by Mr. Downham, of Bury.

SCHOOL-BUILDING NEWS.

Wroxall. The Board schools at Wroxall have been opened. The buildings are situated on a healthy site, at the corner of the roads leading to Newport (Isle of Wight) and through Appuldurcombe Park. Stone has been the chief material used in the construction of the fabric, dressings of white and red bricks being introduced. There is a boys' and girls' school-room, attached to which are class-rooms, offices, &c., all the rooms being lofty, well lighted, and ventilated. Between the boys' and girls' schools is the master's house, and to which is attached a large yard. There are separate playgrounds for the boys and girls, and there is a large garden for the use of the master. The site was presented by Mr. George Young. Mr. L. B. Trimen was the architect. The builders were Messrs. Moses & Walner, the former of whom resides at Wroxall.

Pendleton (*Manchester*). -New British schools have been opened at Charlestown, Pendleton. The buildings cover the entire plot of land reserved at the back of the Charlestown Chapel, with frontages to Halton-street, Sligo-street, and Trentham-street. The ground-floor consists of a school-room, 71 ft. 6 in. by 37 ft. 6 in., with two class-rooms and a raised platform at the end; also an infants' room, 25 ft. by 20 ft. The upper floor contains a school-room, 49 ft. by 37 ft. 6in., with fourteen class-rooms, averaging 15 ft. by 10 ft. The basement-story, the ceiling of which is about 4 ft. above the level of the ground, is arranged for a covered playground, except the small portion reserved for kitchen and lavatories, &c., and is laid with Val de Travers asphalte. The large school-rooms have each two fireplaces, and the infants' room one, in addition to which a hot-water heating apparatus, provided by Messrs. Haden & Son, is fitted up, capable of warming the whole of the schools and class-rooms. All the rooms are lofty, well lighted and ventilated, the principal school-rooms having spacious windows on three sides. Allowing an area of 9 superficial feet, the infants' room will accommodate 70 children, the ground-floor room upwards of 200, and the first floor about 250, in addition to which an area of 1,658 superficial feet is provided in the classrooms to accommodate nearly 200 children. The buildings are of brick, with stone dressings, in the Gothic style, and have been erected by Mr. Mark Foggett, builder, Cheetham, from the designs, and under the superintendence, of Messrs. Clegg & Knowles, architects, Manchester.

Fairford.—A new infant schoolroom, at Fairford, which has been erected from designs by Mr. Maberly, of Gloucester, architect, has been opened. It is a small structure, standing in a spacious playground. The site was given by the vicar, the Rev. Lord Dynevor.

Worksop.—The foundation-stone of a school for boys has been laid at Worksop, on ground to the right of Dock-road. Mr. Foljambe is building the present school for 200 boys, mainly at his own expense. The ground-plan of the school is in the form of a letter T, one room measuring, inside, 52 ft. 6 in. by 18 ft.; another, 34 ft. 6 in. by 18 ft.; with a classroom, 18 ft. by 12 ft. 6 in., and a second-classroom, 17 ft. by 12 ft. 6 in. The whole is built of Steetley stone, lined inside with dressed bricks.

Crewe.—New Primitive Methodist Sunday schools are to be built at the rear of the chapel, taking in a large room at present used as a class-room. The new building will contain about 440 square yards of room, with accommodation for about 300 children. The old class-room will be divided into two compartments, to be used either for the purposes of the schools or as vestries. Mr. Ford, of Burslem, is the architect of the building; Mr. A. P. Cotterill, of Crewe, has taken the contract for the general work; and Mr. W. Mossford has contracted for the stonework.

Books Received.

Illustrated Catalogue of Chimney-pieces, Pedestals, and Wall Decorations. Issued by the Marezzo Marble Company, 64, Regent-street.

THE manufacture of what is known as Marezzo marble has passed into the hands of a limited company, who have appointed Mr. Walter Emden their architect, and issued a book of designs, showing its use in the shape of chimney-pieces and for wall decorations. As no prices accompany the designs, we are not able to compare its cost with that of Scagliola. In other respects it seems to compare favourably with that material.

VARIORUM.

MR. R. GRANTHAM'S Report to the Government on the Floods in Somersetshire, 1872 and 1873, has been published (Stanford), and includes observations on the Report by the Inclosure Commissioners. Mr. Grantham advises that the laws of sewers, having become for agricultural purposes inefficient for the ends now required, should be consolidated and replaced by an Act framed upon the basis of Part II. of the Land Drainage Act, 1861.——"A Monograph of Cormac's Chapel, Cashel. By Mr. Arthur Hill, B.E., containing twelve geometrical drawings and three photographs," is nearly ready for publication. This work is a reproduction by the photo-lithographic process, of a carefully-measured set of drawings, to which were awarded a silver medal by the Royal Institute of British Architects.

Miscellanea.

Opening of St. James's Hall, Lichfield.—St. James's Hall, which now stands on the site of the old theatre in Bore-street, Lichfield, has been opened. It was built by a limited liability company, having a nominal capital of 2,000*l.* Mr. Griffiths, county surveyor, prepared the plans. Mr. Thornelce, of Lichfield, was selected as the builder. The assembly-room is 80 ft. in length by 30 ft. wide. It is lighted by sun-lights for night. A balcony runs round the sides and the north end of the hall, the other end being occupied by the proscenium, behind which is a stage and the requisite scenery for adapting the room to theatrical purposes. To the front of the hall is a large room suitable for a refreshment or small meeting room, and beneath these are two cloak-rooms, with necessary requisites. Under the stage are four dressing-rooms, and beneath the floor of the hall is a range of storing-rooms. There are three front entrances to the hall. The actual cost will be upwards of 2,200*l.*

Archæological Discovery. — The *Levant Herald* states that the Imperial Museum at St. Irene has just been enriched by the discovery at Salonica of three finely-sculptured bas-reliefs in a very fair state of preservation. Originally forming part of Constantine's Portico, which faces the east entrance of the modern Bazar at Salonica, and stands close to the ancient *Via Ignatia*, these sculptures were, it appears, detached from the monument which they adorned by order of the Porte, and simply as a measure of precaution, to prevent them from being smuggled out of the country, as has been the case with so many other relics of Greek and Roman art. Recently several pieces of sculpture of considerable archæological value were torn down by night from the same portico, and conveyed, in spite of the opposition of the local police, on board of a foreign vessel, which sailed immediately she had shipped her precious cargo. This unqualified act of vandalism, combined with the spoliation by foreigners of such ancient sites as Ephesus, Cyprus, and the Troad, have, we are told, made the Government extremely reluctant to grant firmans to European explorers, and have induced it to collect, as speedily as possible, in its own museum at Stamboul, all such relics of early art as are more or less exposed to be similarly wrested out of its possession. The sculptures which have just been added to the Turkish collection are of so large dimensions, and the interior of the Ottoman Museum is already crowded to such an extent, that the bas-reliefs have been temporarily set up in the courtyard of St. Irene. The sculptured figures upon them are taken to represent the characters in the celebrated fable of the Calydonian Hunt. As an *ensemble* the bas-reliefs form an interesting specimen of the "composite" style of sculpture, peculiar to the age of the first Constantine.

Removal of Night-soil at Leek.—The Improvement Commissioners of Leek have an active sanitary inspector, whose report has set them a-thinking how best to put their houses in order. Their medical officer had recommended to the "careful consideration of the Board the excellent report of the sanitary inspector on the question of the removal of ashes, garbage, night-soil, &c." The inspector (Mr. Farrow), in his report, says:—"Water-closets and well-constructed sewers and drains, with the freest possible ventilation at the *head* of every sewer, drain, and soil-pipe, combined with properly-conducted irrigation, is a solution of the question of sewage utilisation; and for the removal of solid and other refuse where water carriage cannot be adopted, I recommend the 'Rochdale system.' In Leek 325 water-closets are provided for the use of 4,500 of the population, and 650 privies for the use of a population of 7,000. It has sometimes been urged that water-closets do not answer in connexion with cottage-houses. The experience of Leek is that they answer admirably where a separate closet is provided for each house. Whatever the description of the closet may be, there ought, for many reasons, to be at least one to every two cottages." The Commissioners are discussing Mr. Farrow's recommendations, and it is to be hoped this discussion will lead to some improvement of the present state of things.

Balconies of London Houses.—Dr. Lankester has held an inquest at Paddington, on the body of a plasterer, in the employ of Mr. Foxley, a builder, of Leinster-terrace, Lancaster-gate. Deceased was at work at 17, Cleveland-square, Tyburnia, being engaged in filling up cracks in the compo of the balcony of one of the second-floor back rooms, when it gave way, and he was precipitated into the area, a depth of 33 ft. He was picked up insensible, and conveyed to St. Mary's Hospital, where he died of the frightful injuries he had received. It having been represented that the balconies of the mansions in Cleveland-square were merely constructed of tiles and compo, an investigation into that part of the subject took place. A verdict of accidental death was given, with a strong expression of opinion that the attention of the district surveyor ought to be called to the character of the balconies in Cleveland-square, and steps be taken to make them secure.

The late Mr. Herbert Williams, Architect.—We are sorry to hear of the death, on the 5th instant, at his residence, Heath Bank, Blackheath, of Mr. Herbert Williams, of 52, Old Broad-street, surveyor to the Drapers' Company. He was 60 years of age.

High Wycombe.—The foundation-stone of new schools for the borough school board was laid on Monday last, the 13th inst., by the Right Hon. Lord Carington. The corporation in their robes of office assembled at the Municipal Buildings at two o'clock, and proceeded in order with Lord Carington, the vicar, parish school board, and other invited guests, to the site, where the stone (a large block of Portland some 2¼ tons weight) was formally lowered into place. The new schools will eventually accommodate 1,000 children, with large covered playgrounds, offices, and teacher's residence. They are of red brick, with stone dressings, with a lofty bell-tower, in the Early Gothic style. The first part of the contract, for 600 children, with residence, &c., is for 4,250*l*. The site is three roods, and is on a steep hill. The builder is Mr. W. R. Loosley, and the architect Mr. Arthur Vernon, both of High Wycombe.

A Novelty in Naval Architecture. — Messrs. Richardson, Duck, & Co., of South Stockton, are now building to the order of the Tees Conservancy Commissioners a barge which is, in some respects, unlike anything of the kind hitherto constructed. Designed by Mr. Fowler, engineer to the C mmission, and Major Beaumont, M.P. for South Durham, the new barge is intended to enable the Diamond Rock Boring Company to blast the Eighth Buoy Scarp, a huge projecting boulder which has greatly obstructed the navigation of the Tees, and which is situated a little way below Middlesbrough. The barge has the appearance of a huge floating platform, supported on iron pillars. It is now almost completed, and a few weeks more will probably see it at work. The company have undertaken to remove the scarp within two years, at a cost of 17,000*l*.

Ecclesiastical Art Exhibition at Bath.—Many objects of interest to the antiquary, the churchman, and the artist, have been exhibited at the Riding School, Julian-road, in connexion with the Church Congress. There are numerous collections of church valuables, in gold and silver, brass, silk embroidery, &c. The centre of the room contains a large collection of architectural drawings, several photographs of ancient buildings by Wornold, of Leeds, lent by Mr. W. White; finely-executed photographs of sculpture by Mr. Harry Hems, of Exeter; and a set of sculptures by Porter, of Newark-street, illustrating the stations of the Cross. There is also a collection of rubbings from monumental brasses, lent by Mr. Parnell.

The Late Mr. Henry Murray.—All who have been intimately connected with the fine arts during the last thirty years, will regret to learn that the widow of the late Mr. Henry Murray is in destitute circumstances. Mr. Murray was a well known art critic, and for several years the esteemed hon. sec. of the Graphic Society. Mr. Murray's long declining health required the unremitting and devoted attention of his wife. This was nobly given, and everything gradually sacrificed to pressing need. An attempt is now being made to raise a fund for Mrs. Murray; and Mr John Foley, R.A., 10, Osnaburgh-street, Regent's Park, has consented to receive subscriptions.

Oil Paints.—Mr. J. Argall, mining engineer, of Adderbury, proposes to give body or opacity to the paint by using as a basis the natural mineral carbonate of baryta and zinc, or native zinc ore, to which carbonate of baryta is afterwards added. The zinc ore or the baryta and zinc mineral is subjected to a roasting process. The required colour or shade of colour is given to the paint by the addition of calcined ores of lead, tin, zinc, copper, iron, or manganese to the compound or mixture. By the use of baryta a peculiar glossy surface is given to the paint, and the said baryta also effects such rapid drying of the paint that the use of ordinary dryers is rendered unnecessary.

Mr. Spurgeon's New College. — Mr. Spurgeon has laid the foundation-stone of a new college, at the rear of the Tabernacle, St. Mary's, Newington. The new building is to supplement the existing inefficient accommodation for students at the Tabernacle. The college will be of considerable dimensions, containing six class-rooms, the largest of which will be 20 ft. by 30 ft., while the "common-room" will be of the dimensions of 44 ft. by 29 ft. A library and lecture-room will also be included in the building, which it is intended, if possible, to open in the early part of the year.

The Criterion Hotel, Piccadilly.—Messrs Spiers & Pond applied for a licence for music and dancing for the Criterion, to the Middlesex magistrates. Mr. Poland stated, that up to the present time 80,000*l*. had been expended upon the building, and only a few decorations, to be completed in a month or six weeks, were required. The licence was refused, on the ground that the building was not finished, and an application of Mr. Poland for a licence for music alone the magistrates refused to entertain as the application had been made for music and dancing.

The Seats on the Thames Embankment.—The new seats on the Victoria Embankment have been painted in their places, and, as a matter of course, have been exposed to shower during the operation, and to the premature occupation by passengers who left a memorandum of their presence in the shape of "Witness my *mark*." If they had been painted under cover at the maker's, and brought to the Embankment when dry, a better job might have been made of them.

Free Public Library at Coventry.—The late mayor of Coventry, Mr. John Gulson, has presented to the City Council of Coventry a new free public library. The building is on the site of the old county gaol, and its cost, borne by Aldermen Gulson, and Samuel Carter, formerly member of Parliament for the city, has been upwards of 4,000*l*., excluding internal fittings which have been paid for from a fund raised among the inhabitants generally.

Inauguration of the Northern Congregational College.—The Congregational College at Silcoates, near Wakefield, has been formally opened. The building, with the estate, will cost 20,000*l*., of which 6,000*l*. are required. The structure, from designs by Mr. J. Shaw, of Leeds, is Continental in style, quadrangular in form, and of red brick. It will accommodate 200 pupils. It is intended for ministers' sons and the general public.

Memorial Church in Sheffield.—It has been determined to honour the memory of the late vicar of Sheffield by building a church,—to be called the Sale Memorial Church,—in the district of Dyer's-hill. The work was one which Dr. Sale had deeply at heart and which he was endeavouring to promote just before his very sudden death. A considerable sum has already been subscribed.

St. Thomas's Church, Blackburn. — The reredos, with altar-table, is being erected in St. Thomas's Church, Blackburn, from the design of Mr. H. H. Bridgman, London. It occupies three sides of the apse, a length of 27 ft. The reredos consists of nine panels, in Caen stone, of fourteenth-century Gothic. Mr. James L. Luscombe is the builder.

Mirfield Local Board.—At a meeting of the Mirfield Local Board, held on Thursday evening, the 9th inst., it was unanimously resolved that as the Board was about to carry out works for the water supply and drainage, a survey of the township should be made, and that Mr. M. Paterson, C.E., of Dewsbury, be appointed to do the work.

New Market Hall and Police Station at Morriston.—The Swansea town council, at their meeting last week, decided to erect a new market hall and police station at Morriston, at a cost of 739*l*. for the former, and 2,750*l*. for the latter. Mr. T. White is the contractor.

Dungarvon New Fever Hospital.—At a meeting of the Board of Guardians in this town on the 9th inst. it was unanimously resolved to erect a fever hospital within the workhouse inclosure, at the cost of 1,000*l*.

New Bank, Sevenoaks.—The plans for a new London and County Bank in this town have been prepared by Mr. Chancellor. The designs show that the new building will be in the Early English style.

Asphalte. — The London Commissioners of Sewers have decided to pave the remainder of King William-street with Val de Travers asphalte.

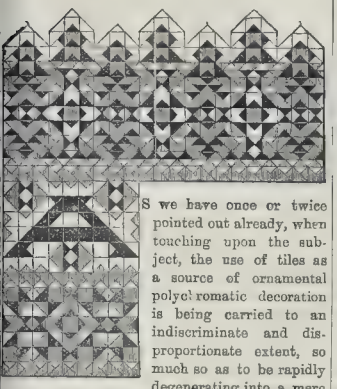
The Accident at Northfleet.—We have received several communications on this subject; but defer consideration until after the close of the inquest, adjourned to Monday next.

The Free Library at South Shields has been publicly opened.

The Builder.

VOL. XXXI.—No. 1603.

The Use of Ornamental Tiles.



As we have once or twice pointed out already, when touching upon the subject, the use of tiles as a source of ornamental polychromatic decoration is being carried to an indiscriminate and disproportionate extent, so much so as to be rapidly degenerating into a mere piece of commonplace. The employment of tiles as a mural decoration having come into fashion in architecture, has been introduced also into furniture; and in recent exhibitions of furniture-design the difficulty is, often, to find anything that has not a tile in it. This extravagance in the employment of any newly-suggested or revived form of embellishment is one of the tendencies of the present day, or, at least, is more developed at present than it has ever been before, owing to the restless craving for novelty on the part of both artists and the public,—that portion of the public, at least, which employs architectural art. But nearly all sources of decorative treatment have their proper limitations, and inevitably lose in effect by being overworked or misapplied.

The most general and practical use of encaustic tiles is for flooring. Besides forming one of the most indestructible of floors, in resistance to wear (when the material is really good), tiles form almost the only means of introducing ornament of at all an elaborate nature and of a permanent character into floor surfaces. The simpler Geometric designs to be obtained by variously-coloured slabs of material have been realised in marble as often as in tiling, and with much better effect. But the elaboration resulting from the employment of slabs with each its own ornamental design could only be obtained in marble by the costly process of inlay. Tile designs are, in fact, an inlay worked with the materials in a soft state, and capable of easy manipulation and mechanical repetition. Such a resource for producing an effect of richness was sure to be largely made use of, when the mechanical means for its manufacture were perfected, and almost as certain to be to a considerable extent abused.

We have got rid now, certainly, of the notable propensity to blue and buff developments which distinguished the tile designs of the earlier period of the "revival." Combinations in which these two particular tints were supposed to furnish all that the eye could desire would be scouted in most quarters at present as crude and commonplace,—at least, when used in any large quantities. Combinations in which a strong chocolate red is the prevailing element are more popular now, and the value of quiet gray tones has been, to a certain extent, recognised. But we have still foundation for complaint in regard to the raw, crude, and more or less garish effect of a large proportion of our tiled floors. We see this most forcibly illustrated when a church has been restored, and a large portion of the floor has been laid by our Mintons or Maws. The repose which previously characterised the old edifice is gone,—broken into by nothing more than by the new-tiled floor, with its "spick-and-span" look, and its trade-developed patterns. It is to the existence of the "pattern-book" that this de-sanctifying effect is partly to be traced. Designs which have to be mechanically multiplied are made the most of, tabulated and advertised, and pass into decorators' commonplaces. We soon learn to know the most popular ones, and recognise them, not agreeably, in places where we would gladly meet with an individual and special design, suitable to the building,—perhaps designed in relation to the ornamental details of other parts. Admitting the pattern-book, however, as a trade necessity, it is quite possible to get better results than are ordinarily obtained. The average of tile designs run too much in a groove; they are arranged upon certain main types, which seem to recur again and again; and they fail as often from attempting too much in colour as from attempting too little in regard to originality of form. In the matter of colour, some of the German tile-manufacturers show better taste and a better perception of what is suitable for tile-flooring than those of our country. They have largely adopted, for some time past, very quiet neutral tints in working out the majority of their floor-patterns, and thus escape much of the gew-gaw effect which we have to complain of in modern English tiled floors. We do not, as a rule, want strong or bright colour for that which is under our feet; only a certain well-considered design, and a sufficient variety of tone; and the bright and strong chromatic treatment, tends to injure the effect of objects of more importance to us than the floor pattern. Above all the "shiny" tiles (glazed), in old restored buildings especially, often destroy all tone and repose, and vulgarise an interior in almost all cases. Such tiles should only be employed in very small quantities, where some peculiar richness and glitter may seem to be called for, practically, as where light is deficient, or architecturally, as perhaps in a vestibule to a lady's boudoir. The most important distinction in the method of working out tile-designs is that between designs in which the division of the tiling into rectangular slabs is emphasized, and that in which it is ignored, and a continuous design formed independently of the jointing. In regard to the latter principle, a large design, occupying a whole floor, has seldom so good an effect as a smaller diaper pattern, and it tends to dwarf the extent of the area in most cases. In general, designs in which the square form of the separate tiles is brought out, are the most suitable to the material, and the manner of putting it together, and have the most truly architectural effect. An arrangement in which two tiles of distinct tone and pattern, or one plain and the other ornamented, are regularly alternated, almost always has a good effect when the combination is suitable in point of colour. An arrangement based on the employment of large square tiles, with smaller ones lozenge-wise at the intersecting angles, is strictly in accordance with practical demands, getting rid as it does of the weak point in tile flooring, the joinings of the sharp angles, which are always the first places to show defects in the laying; it therefore recommends itself to the judgment as well as to the eye. In the designing of more flowing and elaborated patterns, a much larger use might be made than has yet been done of the conventionalised forms of natural leafage, which would be a relief from the constant changes rung upon quatrefoils, circles, and intersecting geometric figures, which have been used, perhaps, in almost every possible combination, so far as form is concerned. But all combinations conveying to the eye the idea of inequality or relief of surface should be studiously avoided; and even the effect of an interlacing design, as of two superimposed patterns, is open to objection, or is very liable to become so in some forms.

One of the causes of the hard, "bran new" appearance imparted to an interior by tiling arises from the absolute smoothness and hard finish of the tile surface, and the consequent want of any of that tone which a rougher texture would impart. In respect to this nothing makes so satisfactory and rich an effect in the way of tile-flooring as the Roman tesselated style, formed by the junction of numerous small self-coloured tesseræ. In this method the innumerable jointings over a large surface give a roughness of texture very satisfactory to the eye, and harmonising much better with architecture (and with furniture or paintings) than the smooth encaustic tile patterns. Even in the actual tile-patterns of the Middle Ages, so far as they exist, we mostly find the component pieces much smaller than the average tiles in use at the present day. The final effect, in the modern system, is sacrificed to ease and economy in laying the tiles. The merits of Rust's "artificial mosaic," in supplying a material with more texture and tone in its surface, have been before touched upon in our columns. In diaper patterns, arranged in real or apparent tesseræ, it is desirable so to arrange the pattern as to mask the fact of its repetition,—in other words, not to show where it begins and ends; this has perhaps never been so well and ingeniously done as in that well-known Roman pattern composed of segments of circles, which has been reproduced in the floor of the Bethnal-green Museum.

The use of wall tiles is, or might be often, as much a matter of sanitary advantage as of architectural embellishment. The ease with which such a work can be kept clean renders it most suitable for the lower portions of walls in staircases and halls, and places where people continually pass and repass. The only distinction between the principles of design for wall-tiles and flooring-tiles is that the former admit, and even seem to demand, a one-sided treatment (so as to form an upright pattern), a treatment which can never satisfactorily be applied to floor-tiles, which ought to show alike in every direction. It is matter for surprise, however, that this principle is so little heeded in the manufacturer's pattern-book designs; where in most instances the patterns specified as wall-tiles might just as well be floor-tiles.

The practice of employing tiles for the attainment of external polychromy has been carried to a certain extent among us, but not always with very happy effect. The same cause—meagreness of texture—comes into operation here, and gives a building much decorated in this manner somewhat of a painted tea-caddy effect. Tiles so introduced should, at all events, be kept in subordinate and not in main surfaces of masonry; in panels under windows, occasionally perhaps in the apex of a gable. But a very little of this class of decoration goes a long way; carrying it at all too far at once weakens the expression of a building. Tiles, however, might be used externally, more often than they are, in combination with cement, with which they would fall in, both practically and architecturally, much better than with brick or stone. Tiles and cement work to much the same thickness, and the two surfaces, both smooth in texture, and both partaking (in such positions) of the nature of a veneer, harmonise well together.

In regard to the application of tiles in furniture, the most proper place for this is in a chimney-piece and grate, in which position tiles are, on every consideration, quite in their right

place. The free introduction of tiles in wooden furniture (sideboards, &c.) must be deprecated; the materials do not harmonise at all; the hard shining brittle tile, and the softer fibrous wood, are materials of so opposite a nature that blending them together satisfactorily is almost out of the question. An exception may be made, perhaps, in regard to ebony, which in its hardness, and the brilliant polish it takes, approaches more to the character of the tile texture; but oak furniture, for instance, is almost invariably spoilt by tile decorations. The class of productions which have been rather absurdly called "art tiles," ought in many of its developments to be rigorously repressed. It has been the excuse for all kinds of vulgarities, absurdities, and primitive and untutored delineations of figures, scenes, and animals of most uncouth shapes, and most unmeaning *motifs*. The very stiff treatment necessary, however, in the use of figure subjects on tiles is not an objection when these are placed at some distance from the eye, and the right use of such tiles would seem to be in panels in external decoration, where they could not be inspected too much in detail, and where their weather-resisting qualities furnish a valid reason for their employment. It is possible, by the use of simple lines and of one or two broad tints only, to produce figure subjects for friezes, &c., of a considerable size, in tiles: this has been done, for instance, in a building in Piccadilly, formerly noticed by us, but the effect in this case (which is not very satisfactory) would have been better if two colours only had been employed for the ground and figures; if the latter, in other words, had been in monochrome. Tile decoration, in whatever way introduced, especially needs to be used with moderation, and so as not to become glaring and over-conspicuous, to the detriment of repose and artistic decorum.

ARCHITECTURAL DISCOVERIES IN PALESTINE.

The most extensive contribution which has been made, at one time, to our knowledge of the archæology and ancient architecture of Palestine, since the publication of the Comte de Vogüé's work on the churches of the Holy Land, is published in the recent quarterly report of the Palestine Exploration Fund. We speak of archæology *and* of ancient architecture. For we think, as we have before now had occasion to remark, that the former word has of late received so steady an extension of application as to encroach on other more distinct provinces of ancient art. Archæology, according to the plain sense of the word, is the knowledge or doctrine of the Archaic, or of the beginnings of things. It deals properly with the pre-historic; and under that term we include not the history that is written in books alone. Nor do we even limit the term to written monuments; to the deeply incised hieroglyphics of Egypt, or to the equally durable, though humbler, legends of the Assyrian *terra-cottas*. We refer to the visible history of architectural sequence and development. We decline to term such a work as Stuart's Athens an archæological book. When we can trace the development of an order or of a style from its first rude origin to the period of its transition, or of its final disappearance, we have a chapter in the history of architecture. The whole theory of that art, whenever the time arrives for its fit presentation to the world, will consist of, or rather will be a deduction from, a series of such chapters. Whenever, therefore, an architectural detail, before unknown, is measured, drawn, published, and added to our general stock of professional information, we have a contribution to the general history of architecture; the value of which, it may be, far exceeds the estimate of the discoverer. And when by any such discovery, or group or series of such discoveries, we can remove an individual building from the position of an archæological to that of an architectural relic, we throw a new light on either the chronological, or the local, development of architectural principles.

The publication to which, in the first instance, we have referred, is that of a small but accurate plan of the rock contours of the site of Jerusalem. These have been ascertained from more than 200 distinct excavations made for the foundations of buildings, combined with observations of rock where it exists in bold scarps, or where it otherwise comes to the surface, and with other information not previously given to the public. Before giving our readers some brief account of a plan which must do much to remove many questions from the shadowy region of opinion and controversy to the surer ground of illustrated history, we have, however, to speak of those discoveries made within the last few months by Lieutenant Conder, R.E., and his little command, which are also discussed in the report, and which are of a directly architectural character.

The first of these is to be found in the remains of a large town, situated on a hill about ten or twelve miles west of Nablus, which, though in a fine and commanding position, has hitherto been entirely unknown. It is not, of course, laid down on any map. The name, as translated from the Arabic of the inhabitants, is Dayr Asruhr. The ruins cover a square mile of area, and appear to have been surrounded by a wall. The remains of a large building, facing the cardinal points, are found at the north-west corner of the town. In the north wall is yet *in situ* a fine solid semicircular arch, consisting of thirteen voussoirs, with a span of 14 ft. The height of the courses of masonry is irregular, and many stones are of great length in proportion to their height; the former dimension varying from 18 in. to 63 in., and the latter from 23 in. to 41 in. All have been worked with a well-finished marginal draft, of from 2 in. to 3¼ in. broad, the face of the stone being left perfectly plain, and the draft so shallow as in many places to have become indistinguishable from the crumbling of the stone with age. Together with the semicircular arch, and the fine finish of the work, the flat lintels and Classic mouldings of the doors, and the unusual proportions of the building, have led Lieutenant Conder to attribute to it a Herodian date. The work differs materially from the coarser rustic work of the Crusaders, as it is to be identified at Athlit and Cæsarea. We shall look with interest for the publication of the plans and drawings of Dayr Asruhr, and entertain the hope that positive information as to the structural and decorative art of a specified period in Palestine may thus be added to our knowledge.

We refer our readers to the report of Lieut. Conder, in the publication we have cited, for further details of this town, and of the eleven other sites, only two of which were previously known, of Crusading, Greek, and Jewish churches, tombs, temples, and other buildings, which he has surveyed in detail. But keeping to the question of distinct architectural style, illustrated by evidence of date, and thus regarding the light that it sheds on the architectural history of Palestine, we must say a few words as to the monastery of Dayr Kaláab, another of the points recently surveyed.

This important ruin is shown on Vandevelde's map, although no descriptive notice of it is to be found. It stands on the summit of a precipitous hill, being protected on three sides by deep and rugged ravines; while on the east, quarries are excavated so as to form a kind of moat behind the building. A narrow path leads up to it from a little plain on the west, where the lands cultivated by the monks were probably situated. This path is commanded by a turret built on projecting brackets, so as to form a kind of machicouli. A square projection, with its floor some 12 ft. above the level of the main part of the monastery, forms an outwork on the less protected side.

We pass over the details of the plan,—the central hall of 80 ft. in length, the chapel on the north, the dormitories on the other side, the cloisters, the refectory, the general resemblance to the arrangement of conventual building so well known in Europe,—to mention the architectural feature which is of such novel and important interest with regard to date. This is the cornice of the inside of the east chapel wall, which remains almost intact, although much worn by weather. The special peculiarity is the deflection of this cornice to follow the semicircular arch of a window or a door, a feature which is shown in the illustrations of Sir Gardner Wilkinson's "Dalmatia," to exist in the peristyle of the *atrium* of Diocletian's palace at Spalatro, and in the "Golden Gateway" at the same spot. The same feature occurs in the "Golden Gateway" in the great fortress-wall of the "Noble Sanctuary" at Jerusalem; and, in a slightly modified form (combined with a spandrel decoration) in the double "Huldah" gate of the same inclosure. From this circumstance an argument has been drawn as to the early date of the Jerusalem Golden Gateway. The details of workmanship and ornamentation in this structure are similar to those of the Dayr Kaláah in all respects but one, namely, the Cross appears as an ornament in every possible place in the latter. The semicircular arches are built with keystones, as are some of those at Spalatro; but the doors are all surmounted by flat lintels, on which the Cross is cut in low relief. Generally this symbol is placed on a tablet, but in one case it stands on three hemispheres—the old conventional mode of representing "Mount Calvary." The ashlar work of the whole building is finely proportioned, and the joints are beautifully laid. The stones are drafted, on the exterior walls, but flush, on the interior. The character of the drafted work differs from any hitherto described in Palestine; the sunk part being from 2 in. to 3 in. in depth by 10 in. in breadth. The draft, however, is not always regular, and the boss, or central raised surface, is often very roughly finished. A number of masons' marks ,said to be of unusual type exist on the stones in the interior.

The architectural world will look with no small interest for the detailed drawings of a work hitherto unknown, although existing within a day's journey of Jerusalem, and bearing so close a resemblance to the much-disputed features and ornamentation of the famous Golden Gate. Lieut. Conder compares the details to those of the Church of Kalb Louseh, described by M. de Vogüé as belonging to the sixth century. The conventual character of the plan and arrangements of the monastery points to a not earlier date. As to this, however, we do not profess to speak *ex cathedrâ*. The discovery and delineation of the monastery form an entirely new contribution to our knowledge of a very interesting period; one of which the remains are rare and difficult of access, and as to which the professional interest is very great. Whatever be the theory advocated by any writer on the subject hitherto, the one great object is truth. We have now before us, in the ruined monastery, a witness who comes before the tribunal of Art unexpectedly. He has to be examined and cross-examined. Though dumb, he is yet eloquent. One thing is certain as to his testimony. However long a time it may take us fully to understand it, it is at all events absolutely true. It is given with no bias, with no *arrière pensée*. Whether it supports the theory of those who attribute the Golden Gateway to the time of Constantine, to that of Julian, or to that of Justinian, is a conclusion that remains to be distinctly ascertained. But of the architectural and historic value of the discovery there can be but one opinion.

The same quarterly periodical that contains the reports on the rock contours of Jerusalem and on the previously unexplored country between that city and the northern frontier of Palestine, includes also some particulars of interest as to the Dome of the Rock; the beautiful building in the midst of the Noble Sanctuary, which has not escaped the fate of being the subject of contention almost as fierce with regard to its character and history, as that which has raged as to the Holy Sepulchre. The roof of the Dome of the Rock has been under repair, and Cufic writing has been found upon the rafters. The writing refers to the repairs of the dome. The date is illegible; but a general restoration of the mosques and masjids of the Caliphate is known to have taken place in the year 301 of the Hejira, A.D. 913, and it is very probable that this was the occasion, as the contemporary name of the Caliph El Muktader Billah occurs on the rafters. The date, being only that of a restoration, is not of any conclusive value. But the discovery of a very old carved wooden cornice still running round the building, in the space between the ceiling and roof of the outer corridor, on the inner wall of the latter, just above the ceiling, is significant. This discovery has been communicated by Dr. Chaplin, of Jerusalem; a gentleman to whose professional skill and unwearied kindness all the officers who have been engaged on the Ordnance Survey of Palestine bear the highest testimony. Dr. Chaplin is also a Hebrew scholar, and well versed in the local archæology of Jerusalem: so that his opinions are, *a priori*, deserving of respect. His inference from the discovery of the cornice confirms the opinion which he has formed from the perusal of the Arabian historians, to the effect that the outer corridor which now surrounds the Dome of the Rock is a comparatively late addition, and forms no part of the original building.

A further contribution to our definite knowledge of this most interesting structure is contained in Lieutenant Conder's report. In "The

Holy Sepulchre and the Temple at Jerusalem," p. 21, occurs the paragraph, in speaking of the architectural details of the Dome of the Rock,—

"The first thing to be observed is, that the pillars are mounted on stools or sub-bases, as in the octagon building at Spalatro, and as we find them in the buildings of the next century at Salonica and Constantinople, but as they ceased to be in Justinian's time, and afterwards. The capitals are of a simple Corinthian order of Diocletian's day, which had disappeared long before Justinian's reign."

In the repairs now going on in the Dome, however, it has become evident that the details a question at the base of the columns are not stools or sub-bases, but merely slabs of marble built round each column, so as to conceal its real base. These have now been removed from two of the pillars in the octagon, and prove to have concealed a base, apparently not originally belonging to the shafts, as a couple of bands of lead, giving a thickness of 1¼ in., are introduced between, no doubt with a view of equalising the heights of columns of different sizes. To this may be added the remark that the twelve columns in the inner circle of the Kubbet es Sakhrah (Dome of the Rock) are crowned by capitals of no less than eleven distinct patterns, varying not only in design and elevation, in height, and in diameter, but, what is more important than all, in proportion. Thus in one instance we have a squat capital, with volutes, in which the height from the top of the shaft to that of the capital is little more than half the diameter of the latter, measured on the square. In another instance, where an ornament something like the fruit of a passion-flower is introduced, the height of the capital is very nearly equal to its diameter. In a third instance, the block of the capital is only equal to seven-eighths the diameter of the column on which it stands, and from which it is separated by a projecting moulding. Thus it is more than likely that the materials of this building have been taken from the remains of preceding structures, probably of varying dates.

Thus much as to architecture proper. We are pronouncing no judgment. We are arguing no case. But we think it proper to call the attention of the architectural world to the fact that entirely new information is now being collected on a subject which has been debated with the keenest interest; and that any future theory as to the nature and origin of the beautiful building, which the Moslems treat with so much reverence, must comprehend and explain these facts. It is possible,—it is even probable,—that they are far from being the last that will come to light. The Ordnance survey of Palestine now extends over 1,800 square miles, or three-sevenths of the whole area of the country. Any or every portion of the unexplored ground may be as full of interest as that which has now been added to our knowledge.

The question of the rock contours is one that relates rather to engineering than to architecture. Still it is one of primary and controlling importance as to the possible topography of ancient Jerusalem. When we say the possible topography, we do not mean what any one may imagine to be possible, but what is or is not rigidly excluded from being intelligently supposed ever to have existed. It requires the mind to be fully impressed with two facts in order to see the full difficulty of the question. The rock on which Jerusalem was built is now covered with from 25 ft. to 120 ft. of *débris*. Thus the contours of the present surface, which are shown in the Ordnance map of the city on the scale of 5ft., which was completed by Major Wilson in 1865, give no definite information as to the original conformation of the ground. And it is recorded in history that Jerusalem was so utterly obliterated by the Roman governor Turnus Rufus, who actually drove the plough over its site, that no one could have imagined that it had ever been covered by a city. The first point, ascertained by the first instance by Captain Warren, enables us fully to believe the second assertion.

The editors of the Quarterly Statement pay a high compliment to the "energetic enthusiasm" of Lieutenant Conder in sending home, as a "vacation task," the report on the great temple of Baalbec, which we published in a recent number. We by no means quarrel with them in that score. But we think it is much more noteworthy that this officer, while executing with his too limited party his official duty of the survey of the country at the rate and with the accuracy that are stated in the report, has found means to present the Committee and the public, without the cost of a single shilling, with a map of the site of the city, of such considerable value. Nearly the whole efforts of the committee, from the commencement of 1867 to the close of 1870, were devoted to the mining and subterranean investigation of Jerusalem. A certain number of rock levels were thus obtained. But very little tangible information on this important point has hitherto been available to the public. Lieutenant Conder has availed himself of the results of the experience of Mr. Schick, the imperial German architect at Jerusalem, a gentleman who has always shown a disinterested willingness to give to the public the valuable information that he has collected in the pursuit of his profession. Mr. Schick has furnished some 200 observations of the depth at which rock was arrived at in digging for foundations beneath the present surface of the city. From these, combined with the previous observations of Captain Warren, Lieutenant Conder has constructed a contour plan of the rock surface of the entire area of the city, a reduced copy of which, on the scale of 10,000 to one, accompanies his report on the subject. The comparison of this plan, with the contoured plan of the surface of the earth and rubbish visible to the eye, which forms the apparent site of the city, is instructive in no ordinary degree.

If this little plan be looked at as a key to the account of the city given by Josephus, it will become at once apparent how much of theory and of contest will be now remitted to the *limbo* of Dante. We should warn our readers, however, against the misleading character of Whiston's translation. Only the Greek Josephus is trustworthy. A little explanatory word is often glided in by the translator which entirely reverses the meaning of the historian. Clearly defined by the rock contours, we see the two hills on which the city stood,—the area of the southern and larger one being divided by the present city wall, but the former extent of the fortifications being indicated by a rocky scarp. There is the deep ravine between the two hills, known by the puzzling name of the Tyropeon valley. There is the broader and shallower depression, running in a north-westerly direction, between the Temple Hill and the northern "gibbous" Hill called AKRA, the summit of which was lowered by the Asamonean princes after the capture of the Greek fortification on the top, and the expulsion of the foreign garrison. We cannot now find space to tell the history of this hill, which we possess in very considerable detail, from the time when Solomon built on its summit the stronghold called Mello (which a comparison of the Septuagint with the original of the Books of Samuel and of Kings, identifies with the Akra of the Seleucidæ and the Maccabees), to that when Constantine mistook an ancient sepulchre, possibly that of the great high priest Hyrcanus, but more probably of earlier date than the capture of the city by David, for that of a more illustrious Entombment. Later we may hope to find occasion to read the lesson that is writ in such plain text on these unveiled rocks. All we can now say is that a cloud of mystery is lifted and lifting from the site, and express our regret that any other interest should be allowed to interfere with that modest addition to the number of the little party of Royal Engineers that would enable the officer in command to double the actual rate of progress, and to complete the survey of Palestine in the course of the year 1875.

THE PRESERVATION AND RESTORATION OF PAINTINGS IN OIL.

A recent number of the "Proceedings of the Industrial Society of Mulhouse," contains an interesting report by Professor Dr. Göppelsrœder, on the method of restoring paintings in oil discovered by Professor Von Pettenkofer, of Munich, and described in a work entitled, "*Ueber Oelfarbe und Conservirung der Gemaldegalerien durch das Regenerationsverfahren, &c.,*" a second edition of which appeared in the course of last year. The microscopic researches of Herr Radlkofer have shown that the deterioration of the paintings in the new Pinakothek (Picture Gallery), at Munich, and in the galleries at the château of Schliessheim were not, as very generally supposed, the direct or indirect effects of *organic* agency. It remained for Professor Von Pettenkofer to detect the true causes of the evil, and to devise suitable remedies. This he has accomplished by the adoption of certain simple but efficacious methods of restoring, from time to time, the *normal optical* condition of the varnishes and oils used in the pictures. His views, which have been carried out with marked success in the art-galleries, at Munich, are stated to have been confirmed by the experience of all those who, like Dr. Göppelsrœder, have devoted the requisite time and study to the art of picture-restoration. They are summarised as follows:—

It is obvious that oil-colours, permanent as they may be, chemically speaking, can only preserve their exact original tints, and their pristine brilliancy, so long as the drying oil, with which they are intermixed, and in which their particles are, so to speak, suspended, retains its *optical* properties unchanged. This will always depend, more or less, upon the chemical constitution of the oil.

The most important constituent in the oils used by artists is *linolein*. Unfortunately, this substance cannot be obtained pure. Painters are obliged to have recourse to linseed-oil, which contains about 80 per cent. of *linolein*, or to poppy-oil, which contains 75 per cent. only. The *linolein*, when the oil is sufficiently pure, solidifies under the oxidising influence of the atmosphere, without loss of bulk, but with an increment of about 10 per cent. in weight. The hard transparent substance thus formed, having a texture something like that of caoutchouc, encloses the particles of pigment, and the other substances contained in the oil. And it is because *linolein* acquires a certain uniform consistency under all ordinary variations of atmospheric temperature that the patches of colour, after drying, are not displaced either by moderate pressure or by the application of fat or ethereal oils or varnishes.

But, as molecular and atomic movements are unceasingly occurring in the world of matter, it follows that paintings are constantly subject to certain chemical and physical changes. These changes are of more frequent occurrence in the oil than in the colouring matters incorporated therewith, so that the proportion of oil to be used in the preparation of a good colour from any given pigment, is a consideration of no small importance. The experiments made by Herr Würm, at Munich, have shown that the specific gravity of a pigment affords no clue to its powers of absorbing oil. As a rule, it may be laid down that pigments that take up least oil are those that change and crack most.

The oxidised *linolein*, or *linoxyn*, as it is called, becomes harder and more brittle in proportion as the fatty and non-drying constituents of the oil are removed by the application of ether or ethereal oils. Paintings absorb moisture from the atmosphere, and part with it again by evaporation. In course of time, after these alternate processes of absorption or evaporation have been repeated sufficiently often, a coat of any colour laid on by the artist loses its original appearance, and no longer produces the same *optical* effects.

Respecting the methods in use up to the time of Herr Von Pettenkofer's discovery, it should be remembered that it has been customary for the artist himself to varnish the picture when finished, so that the minute pores in its surface, which were filled with oil whilst the paint was wet, and afterwards contained air only, might be stopped with varnish. For this purpose, resinous varnishes, *i.e.*, solutions of resins or turpentine in fat or drying oils, were employed. The last, more especially, are very hazardous to use. After a time, the varnish perishes, gets mouldy, and no longer admits of the free passage of the rays of light. It has been customary then to add fresh varnish; and to repeat the process from time to time until the distinctness of the picture is more or less completely destroyed. To repair the latter evil, the only method has been to remove the old varnish; to retouch more or less freely with colour; and then to varnish afresh. There is no thoroughly effectual mode of removing the old coats of varnish; and the fresh application of oil impairs the brilliancy of the picture, imparting to it a deeper and yellower tone. But, it may be asked, what are we to do? If we wet the resinous varnish and permit the water to evaporate, the varnish cracks and dulls. We may restore the transparency temporarily by soaking the picture, so that the pores of the canvas become filled with water. The water, which thus penetrates into the pores, refracts and reflects the light more powerfully than the air, and withal has a certain action on the varnish. But the restorative effects only last until the moisture has evaporated. Moreover, by evaporating even distilled water on varnish we produce a stain; and, if the experiment be

repeated sufficiently often, these stains assume a white appearance resembling chalk.

At the château of Schleissheim, Professor von Pettenkofer made a series of very interesting observations on the condition of the paintings according as they were hung on walls cased with wood or not so cased, or in the vicinity or otherwise of a window. The pictures resting on wood were in a good state of preservation, and the same was observable of the wood on which their canvas was stretched, and of the paper labels affixed to them. The Professor observed that the repeated deposition and evaporation of atmospheric moisture on the surfaces of the pictures destroyed the cohesiveness of the varnish. He succeeded in restoring molecular cohesion in the latter by exposing it to the fumes of proof-spirit intermingled with the atmospheric air, at first in small, and afterwards in larger quantities. In the course of forty-eight hours, the varnish thus treated absorbs about 80 per cent. of its weight of alcohol, which is speedily evaporated again. The resinous matter in the varnish is moistened thereby, and becomes absorbed into the canvas, re-establishing the cohesion between the colouring matters and itself. This softening of the varnish is much less injurious to the pictures than fresh varnish laid on with a brush, by which particles of colour may sometimes be displaced.

Professor von Pettenkofer's mode of operation is extremely simple. He makes a preliminary essay on the picture, with the aid of a small cylindrical paper box. This is well glued at the joints, so as to be air-tight. The bottom of the box inside is covered with a piece of flannel steeped in proof-spirit. The box is turned upside down with its mouth resting on the face of the picture, which is previously wetted. The portion thus restored becomes a standard for the rest of the picture. For the restoration of the whole surface a wooden chest is used, the bottom of which is covered inside with alcoholized flannel. The picture is fastened to the inside of the lid, so as to rest horizontally, face downwards, when the box is shut.

The Professor records some extraordinary instances of colour-renovation; notably in the case of a green, which, by the action of the atmosphere and time, had become a greyish blue, as if it had been compounded of blue and yellow and the latter had disappeared.

He has not, however, stopped short at this point. He has shown us also how to treat pictures in which the resinous matter is insufficient in quantity to fill the cracks when moistened; how to treat pictures when the resin is present in excess; how to deal with pictures covered with alternate coats of resinous varnish and oil varnish, which are differently affected by exposure to an admixture of atmospheric air and alcoholic vapour; lastly, how we may retard the re-appearance of molecular disintegration in pictures thus renovated.

He also describes another method of restoration, to be used alone or in conjunction with the above, viz., the treatment of the picture with the drug known as *balsam of copaiba*, which dries very slowly, and in composition resembles certain resinous varnishes, such as the solutions of gum-mastich, or dammara resin, in spirits of turpentine.

Balsam of copaiba fulfils very well the *optical* conditions of ordinary varnishes, and it may be applied to particular portions, only, of a picture without rendering them unduly conspicuous. It fills the pores in the coloured surface, and the desired effect may frequently be obtained by merely rubbing it on at the back. In the case of either mode of treatment, it is often necessary to repeat the operation more than once, and the process will sometimes render apparent cracks heretofore unperceived. In these cases it will generally be sufficient to lay on a small quantity of copaiba, and to expose to the vapour of alcohol.

If the resinous matter be present in excess, and particularly if the picture be very yellow in tone, there is unfortunately no way of removing the surplus varnish entirely, as it is not only superposed but incorporated with the colour. The picture should first be restored as above described, so as to bring out the colour, and give a more homogeneous consistency to the varnish. Some of the excess may then be removed by rubbing with the finger dipped in powdered colophane, or dissolved away with spirits of turpentine. To fill the resinous matter well into the pores, wash first with water, then with spirits of turpentine, and lastly expose the parts to the vapour of alcohol.

If the picture is covered with oil as well as resinous varnish, the latter only will absorb the alcohol, and so become moistened, and soak in; the oil remains on the surface, rendering the latter harsh and furrowed. In such cases, the picture should be treated with balsam of copaiba, and subjected to a heavy pressure to facilitate absorption.

A picture renovated with balsam of copaiba will much longer withstand the effects of atmospheric humidity, than otherwise it would. Our space will not permit us to follow out the very interesting observations made by Professor Von Pettinkofer in the new Pinakothek at Munich, where molecular disintegration was found to have made its appearance in 52 per cent. of the pictures hung in rooms with a north aspect, and in 10 per cent. only of those in rooms facing south.

We may, however, observe, in conclusion, that in every art-gallery it is indispensable to avoid the deposition of moisture on the surface of the pictures, and that those most valued on account of age should be further protected by *glazing*. With all pictures on canvas it would be desirable to coat the backs with balsam of copaiba. With this precaution the cracks which form in course of time would close themselves. With the assistance of M. Stückleberg, a distinguished artist at Bâle, and M. Falkeen, curator of the museum in the same city, Dr. Göppelsrœder tried these methods, it is stated, with perfect success.

The mode of operation adopted by these gentlemen was as follows:—A china bowl, containing proof spirit, was placed in an iron or copper brazier. The latter was heated, so that the fumes of the alcohol passed off rapidly. The pictures, having been previously treated with copaiba, where it was deemed necessary, were suspended horizontally over the month of the bowl, and as close to it as possible; every portion of their surfaces, in turn, being brought into contact with the rising fumes. The results are described as eminently satisfactory. The way in which the original colours were brought out on oil sketches that had never been varnished and were much faded with age, is stated to have been most remarkable.

MUSEUMS OF ART.

At the Hanley School of Art, on Monday evening last, Mr. Henry Cole, C.B., who presided, made an address, in which he traced the origin and progress of the Science and Art Department, the work of the late Prince Consort. In the course of it, Mr. Cole said people were still apt to look at museums as mere collections of "things rare and curious—things for learned people only, for rich people only, for *dilettanti* only. The Prince Consort and his followers looked at them from a different point of view—the point of view of science and art applied to productive industry. What did the architect do who wanted to learn his profession? He looked at buildings. What did Flaxman do when he applied himself to pottery? He studied Greek pottery. What did Herbert Minton do to enable his manufactory to compete successfully with Sèvres? He collected and studied the masterpieces of Sèvres. Why was Mr. Phillips, the jeweller, trusted to set jewels with good taste? Because he studied the ancient and Mediæval models. What gave Pugin his reputation for Gothic metal work but his study of Mediæval models? What had created a trade in majolica in this country but the Soulages collection? What had given the Craces, and Jackson & Grahams, and Gillows, and Hollands their reputation for furniture, but their knowledge of ancient examples? It was simple, savage ignorance and priggish pedantry not to recognise the absolute necessity for examples of art easily consultable by the public, who were consumers, by the manufacturers, who were producers, and by artists and artizans, who were students. Where were they to consult them if not in public museums? Why was the Frenchman more apt at industrial art than the Englishman? Because for a century he had had his free museums in Paris and every other large town. And public museums were necessary for science as well as art. Collections of diagrams, of educational apparatus, and of specimens of natural history were indispensable to the managers of schools and teachers. Where was there any collection except in the South Kensington Museum? Why did the Admiralty have a museum of the models of ships? Would mechanical science be in its present state if our engineers could not consult the example of their predecessors. The fact was, that if museums were not educational they were of very limited value.

Mr. Cole afterwards uttered an indignant protest against the threatened abandonment of the South Kensington Museum to the irresponsible trustees of the British Museum, and discussed—as we have already done—the different spirit which at present actuates the management of the two institutions.

The Hanley school, under Mr. A. A. Bradbury, is said to be in a flourishing condition.

THE NEW HAMPSHIRE ASSIZE COURTS

The new assize courts in Winchester, erected from the designs of Mr. T. H. Wyatt, have been opened. The old hall is preserved. The corridor of the new building is 36 ft. long, 20 ft. wide, and 20 ft. high. On either side, at its western end, are stone staircases leading to the basement. Both these apartments will be paved with Forest of Dean stone, interspersed with Portland stone and Dumfries stone, giving a pattern with three tints. Entering the court on the right, we find the Nisi Prius chamber to be 55 ft. long, 30 ft. wide, and 31 ft. high, whilst the Crown Court (on the left of the corridor) is of a similar measurement, with the exception of a greater length by 2 ft. Both chambers will be illuminated with sunlight burners during evening sittings, and during the day four three-light windows in their outer walls, and a four-light one in their eastern walls, provide all the will be required in the matter of light. The judicial bench, at the east end, is in the form of a canopied dais, with the Royal arms carved in woodwork overhead. The Crown Court, on its northern side, is provided with a gallery for the accommodation of the grand jury, and this is approached by a staircase leading from their own room in the basement. The judges' consulting room is a suitable apartment occupying the centre of the building. The Grand Jury Chamber has a measurement of 31 ft. 3 in., by a width of 18 ft., and is, with most of the other rooms in this story, 14 ft. high. The hot-water heating apparatus was supplied by Mr. Haden, of Trowbridge.

Outwardly, the building, which is composed of flints, with Bath stone dressings, presents three stories to view, relieved by Tudor windows. The measurement of the whole is 92 ft. from north to south, 60 ft. from east to west, and about 60 ft high. On the north side of the building there is a small turret annexe, measuring 13 ft. by 35 ft. 6 in. The clerk of the peace and his staff are located, as before, in the basement; and the county surveyor is relegated to the garret.

Mr. Tookey is the clerk of works, and Mr. Houghton the chief foreman.

The cost is estimated at about 30,000*l*. The carving work, both in wood and stone, has been executed by Messrs. Broad, of Kennington. The gasfittings are by Mr. Strode, of London. The plastering has been done by Mr. Sealey, of Fulflood. The whole works were undertaken by Messrs. Hill & Sons, of London, contractors.

ARCHITECTURE, CONSTRUCTION, AND SANITARY ARRANGEMENTS AT THE COMING INTERNATIONAL EXHIBITION

We have already mentioned that one of the classes in the next Exhibition will be civil engineering and architecture. But the matter so immediately interests a large number of our readers that we return to it, and hope the information will not be disregarded. The class will be divided into the following sections:—

a. Civil engineering, architectural and building contrivances.

b. Sanitary apparatus and constructions.

c. Cement and plaster work.

Exhibitors who may wish to show new methods of construction in actual operation during the Exhibition, will (with the committee's approval) be allotted space in the Western Annexe, whereon to build or arrange, in view of visitors. In the same annexe will be shown specimens of dwellings for the industrial classes, which her Majesty's Commissioners are desirous of obtaining, if possible, from all parts of the world. It is also in contemplation to obtain a collection of diagrams of ancient and modern buildings of all countries, and the co-operation and assistance of all interested is invited. Another class of the 1874 Exhibition will be,—"Heating by all methods and all kinds of fuel"; and in con-

exion with this class the Society of Arts have lready announced offers of prizes. Intending xhibitors should apply for special particulars at nce. This class ought to be the great feature f the year.

TESTIMONIAL TO MR. P. CUNLIFFE OWEN.

We have already mentioned and applauded he preparation of a testimonial by English xhibitors at Vienna intended for Mr. P. C.)wen, the secretary of her Majesty's Commisioners. The presentation took place at a inner given on Tuesday evening last, whereat Ir. Colin Minton Campbell presided. Mr. John Head, of the Orwell Works, Ipswich, has acted s secretary of the fund. The testimonial consists of a silver dessert service by Elkington nd a purse of 1,300 guineas. The dessert ervice bore the following inscription :—"To 'hilip Cunliffe Owen, Esq., this silver dessert ervice and a purse of 1,300 guineas are preented by 275 British Exhibitors at the Vienna Universal Exhibition, as a small token of their steem and regard, and in remembrance of his nwearied exertions in their behalf while Secreary of Her Majesty's Royal Commission. October, 1873." At the same time, a set of ery artistic Danish jewelry, in pearls and wrought gold work after Runic models, was resented to Mrs. Owen, "by a large number of xhibitors and friends at the Vienna Universal xhibition of 1873, as a small token of their steem and regard, and in remembrance of her nany acts of disinterested kindness."

THE MARGATE DRAINAGE COMPETITION.

The applications from gentlemen who are nxious to have their names placed on the select ist of ten competitors for the above-mentioned works were opened at the meeting of the Corporation on Tuesday last. Altogether there were fifty-three applications, of which a large proportion of course came from the metropolis; but the provinces were also well represented: ngineers residing at Liverpool, Hereford, Bradford, Warwick, Doncaster, Gateshead, Wigan, Clifton, Eastbourne, Dorking, Sheffield, and many other towns were among the applicants, nd one hailed from Cork.

The list comprised many men of mark in the rofession, and its perusal elicited the observation hatalthough engineers of repute hesitate to trust themselves to the broken waters of an unlimited competition, yet the system of limited and elect competition seems not in disfavour among he profession generally. The reading of the arious applications occupied the town clerk two ours, and upon his resuming his seat the council djourned without debate until this Friday (October 24th), when the applications will be urther considered, and the work of selection vill commence.

WISBEACH COTTAGE HOSPITAL.

The North Cambridgeshire cottage hospital, he opening of which by its benevolent foundress, Miss M. E. Trafford-Southwell, of Honington Hall, Grantham, was announced by us last week, as its main entrance through an archway, 27 ft. igh, with stone dressings and carved capitals. The gates are of pitch-pine, with gilt iron worked. The porter's lodge is on the west ide of this gateway. The main building is about 36 ft. high, and there is a tower and spirelet on the north-east side, 60 ft. in height. This serves as an entrance-hall. The buildings have somewhat of a Gothic character; they are of white brick and stone, relieved by ornamental red brick bindings and fret-work. Within the hospital accommodation is provided for sixteen beds. The entrance-hall and passages are laid with Maw's encaustic tiles. The committee room stands on the left side of the hall, and is 16 ft. by 15 ft. The matron's room is 15 ft. by 14 ft. Adjoining it is a store-room 10 ft. by 8 ft. 6 in. The operating-room is 16 ft. by 14 ft. 9 in. There is a sick ward upon the ground floor; it measures 37 ft. by 18 ft. and contains six beds. Between each bed a moveable folding-screen is placed, decorated with a variety of pictures. Moule's portable earth-closets are provided. The ward is lighted with five windows, which have glass louvre ventilators, and contain two large stores. Adjoining is a bath-room, 10 ft. 3 in. by 7 ft., which is provided with hot and cold water. There is a special ward 13 ft. 3 in. by 13 ft., which it is intended to reserve for special cases. There is a kitchen 20 ft. square, and a scullery, 14 ft. by 11 ft., well provided with water. A dispensary, at the rear of the special ward, is fitted up with pitch-pine fittings. On the upper floor stand the nurses' rooms and a sick-ward, corresponding to the one on the ground-floor, two occasional wards (for isolated cases), two special wards (for persons able to pay for their maintenance), a bath-room, and a day-room. The whole of the rooms throughout the buildings are of the uniform height of 13 ft., and the staircases are of stone. The surgeon's residence is situated on the south side of the ground. Around the buildings the grounds are laid out with grass-plots and flower-beds. The whole of the buildings of the hospital are lighted by gas. A good supply of rain and Marham water is carried to all parts of the building. Everything has been done to render the sanitary state of the hospital complete, though the sewerage arrangements are as yet of a temporary nature (pending the contemplated sewage works). The ventilation is on the same system as is adopted in St. Thomas's Hospital, London. Messrs. Adams & Son, of Wisbeach and Lynn, were the architects; and Messrs. J. & M. Challan, of Grantham, the builders. The contract price for the building was 3,264*l*.

THE BRIGHTON SCHOOL BOARD SCHOOLS.

These schools stand on a plot of ground 492 ft. long by 51 ft. broad; one end of which faces Sussex-street, where the boys' school stands; the other faces Richmond-street, which is devoted to the girls' and infants' schools. In the centre are the playgrounds. The fall in the ground in each street is so great (being some 9 ft. or 10 ft.) that a play-shed 73 ft. by 20 ft. has been provided under each school, having open archways along the whole length of one side of the building. These, besides being an important addition to the play-grounds, have the advantage of being especially suitable for wet weather. The boys' school is L shaped, and is 93 ft. long by 20 ft. wide by 19 ft. 6 in. high to the ceiling, and gives about 13 ft. superficial area and 156 ft. cube of air to each child. Three class-rooms, each 20 ft. by 17 ft., and 17 ft. 6 in. high, open into the school-room. There are five classes in the school-room,—two for forty children each, two for twenty-four children each, and one for thirty-two children. Each class-room has accommodation for thirty-two children, giving a total of 250 in each school. Great attention has been paid to the choice and arrangements of the desks, both in the school-rooms and class-rooms. The desks are those known as "Moss's Patent." They are arranged in pairs, with a gangway between each pair, so that the master can have direct communication with any child, and any child can leave his place without disturbing the others. The girls' school is the same in all particulars as the boys. The infants' school is 40 ft. by 40 ft. 9 in., and 26 ft. high, and has a class-room and nursery opening into it, each 20 ft. square. The galleries in the school-room and nursery are adapted for infants of different ages, and the class-room will be fitted up with low desks. A room is provided in each department for the masters and mistresses. The schools were designed for 250 boys, 250 girls, and 250 infants; but the accommodation is slightly in excess of these numbers. The school-rooms and class-rooms are heated by open fireplaces, with air-chambers at the bottom and back of each grate, supplied with air from the outside, through air-tight ducts, of sizes calculated to the cubical contents of the different rooms. The warmed fresh air is admitted into the different rooms through covered ventilators. For the escape of foul-air ample openings are provided in the ceilings communicating by iron ventilating pipes with foul-air shafts in chimney stacks. The windows have been arranged with regard to ventilation. They all open, and the upper sashes inwardly like hospital windows. Round shoulders, defective sight, and other evils, are attributed to the bad arrangement and improper construction of desks and seats in schools. There is no doubt that one of the most important elements is that a school should be properly arranged, lighted, warmed, and ventilated: in fact, no teachers can perform their work thoroughly unless this be the case.

The buildings are Gothic, and are necessarily simple and plain; an endeavour has been made, however, to give them a character suitable to their object and requirements, bearing in mind the neighbourhood, site, and the strictest economy, and relying on the simplest and cheapest means to obtain common-sense buildings. The outside is of stock brickwork, with a few red bands and patterns constructively used. The stonework used is Horsham stone. The roofs are slated. Inside the school-rooms have a cement dado 5 ft. from the floor, and the walls above the roof are painted, the only effect aimed at being in the colouring.

The work has been carried out by Messrs. Bridgman, Nuthall, & Co., of London, the contract being 6,522*l*. Mr. Hampton, of Brighton, has been clerk of the works. The design was chosen in competition, Mr. B. Fletcher and Mr. John S. Nightingale, of London, being the joint architects.

SCHOOL-BOARD SCHOOLS.

Higham Ferrers.—Mr. E. Sharman, of Wellingborough, has been employed as architect to prepare plans, the one selected being Gothic in style, of a new school on an elevated site near the market-place. The building contract was let to Mr. John Piggott, of Rushden; the carpentering to Mr. George Smith, of Higham Ferrers; and the slating to Mr. Albert Laughton; who have worked out the plans, and the schools are now complete and opened. The exterior is red brick, with white stone dressings, and the schools are in the shape of the letter H, with the house for the master attached, almost like a T, so making the black plan something resembling HT, with large playgrounds in front, surrounded by a brick wall, with iron palisades on the top. The girls' playground is divided from the boys' by a brick wall. The interior consists of infant school-room of a rectangular shape, with class-room annexed; while the mixed school-room is in shape like an L, being originally like a T, but having a class-room taken off one end of the top of the T, it leaves it more in the shape of an L. The schools are large enough to accommodate 350 children. They are lighted with gas, the contract for the fitting of which was executed by Mr. J. Lewis. There are lavatories both for boys and girls, and the other usual offices.

Llandyrog.—The Llandwrog School Board was formed in February, 1871, and has worked indefatigably in supplying the deficiency of school accommodation that existed in the parish. Two schools have been built, one at Nantlle (which will be opened a few weeks hence), to accommodate 150 children; and the other at Penffordd Elen, situated between two villages. This school, which has been formally opened, has a mixed and an infant department—the one to accommodate 190 and the other 110. The plans (drawn by Mr. W. C. Williams, Plas Isaf, chairman of the Board) are in the newest style; there are sufficient means of light and ventilation, and the whole building is warmed by hot-water apparatus.

THE TWELVE-HUNDREDTH ANNIVERSARY OF THE FOUNDATION OF ELY CATHEDRAL.

The bisexcentenary festival in memory of the foundation, by Queen Etheldreda, of Ely Cathedral has been held with great *éclat* by a numerous assemblage of visitors. The proceedings began on Friday in last week with a series of services which continued till, and included, Tuesday.

On Monday, the proceedings became secular rather than religious; comprising chiefly a lecture in the Cathedral, a tour of the building, a luncheon in the Corn Exchange, and a reception at the Bishop's Palace. The lecture was to have been delivered by Sir Gilbert Scott, under whose supervision the alterations which have been taking place in the Cathedral during the last quarter of a century have been carried out. Sir Gilbert, however, was not well enough to fulfil his appointment, and delegated to his son the reading of the lecture he had prepared. This proved to be an elaborate *résumé* of the history of the Cathedral, and a description of the various improvements which have been effected since the modern restoration was commenced. The lecture finished, Mr. Edmund Sharpe, who acted as cicerone to the members of the Archæological Institute of Great Britain and Ireland when they visited the Cathedral, led

the way in a turn round the building, explaining as he went the various peculiarities and the varied history of the principal sections of the building. The journey proved a rather exciting one, owing to the frequency and suddenness of the strategic movements made by the ladies and gentlemen on the outskirts of the crowd. As there were eleven stations, the amount of chasing round pillars, scudding down aisles, and clambering over forms and chairs was considerable; but the result was, that the sections of the congregation had by turns a good place of hearing.

The principal portions of the cathedral have been classed under six heads,—the Norman period, A.D. 1066–A.D. 1145, illustrated principally by portions of the eastern transept and the nave; the Transitional period, A.D. 1145–A.D. 1190, shown in the western transept of the refectory; the Lancet period, A.D. 1190–A.D. 1245, to be traced in the presbytery and galilee porch; the Geometrical period, A.D. 1245–A.D. 1315, which has left its mark in the eastern transept, the cloisters, and the lady chapel; and the Rectilinear period, A.D. 1360 A.D. 1550, illustrated in the upper part of the western tower and elsewhere. The distinctive peculiarities of these styles, and how Ely Cathedral completely illustrates the history of church architecture in England, from the Conquest to the Reformation, Mr. Sharpe made clear in an interesting conversation, which lasted over an hour, and was followed throughout by the visitors, from point to point, in the earnest manner indicated.

THE LATE MR. STEPHEN SALTER.

We are sorry to hear of the death of Mr. Stephen Salter, who was for many years an architectural and engineering modeller, well known in both professions. He received medals at the 1851 Exhibition for his model of the cathedral at Hamburg, as designed by Sir G. Scott; and at the Exhibition of 1862 for his model (a remarkable work) of the passage of the Tudela and Bilboa Railway, across the Cantabrian Pyrenees, of which Mr. Vignolles was engineer; and in 1855 a medal at the French Exhibition for models of Lighthouses erected by the Trinity Corporation, most of which were designed by the late engineer, Mr. James Walker.

THE SHEFFIELD TRAMWAYS.

The tramways which have recently been opened in Sheffield are laid down upon a novel principle. It appears that after the Act was passed, the corporation, under the provisions of a clause in the Act, gave notice that they themselves would construct the tramways, and a contract was entered into for the construction of lines exceeding about ten miles, the cost being nearly 40,000*l*. The gauge of the tramways is the ordinary railway gauge of 4 ft. 8 in., and after the first six months the company have to maintain the surface of the road between the rails and 18 in. on each side, making a width of 8 ft. for each single line. The system of construction adopted is somewhat peculiar. The ordinary method involves the laying down of iron rails upon longitudinal sleepers. In the Sheffield tramways, however, there is no wood, but the rails are laid upon a system of cast-iron supports. These supports are embedded in concrete, and the rails spiked into a wooden plug previously inserted in the support. The company already have in Sheffield twelve tramway cars, all of which are elegantly fitted up.

THE MANNERS AND CUSTOMS OF THE MIDDLE AGES IN FRANCE.

It is only at intervals that the lover of books is gratified with such a handsome and altogether goodly addition to the objects of his admiration as is presented in the new work by M. Lacroix, entitled "Manners, Customs, and Dress during the Middle Ages and during the Renaissance Period."* It is in many respects a companion to the same author's volume on "The Arts of the Middle Ages and during the Renaissance Period," which we noticed at the date of its appearance in its English form. But, if we may say so, it is addressed to a still larger circle of thinkers and workers. The history of the arts was, indeed, calculated to interest all artificers who worked with artistic taste and skill in any material, as well as all archæologists and antiquaries; but the history of manners, customs, and dress must have its charm for everybody. All trades come within its scope, all conditions of people; as do all fairs and markets, all food, all fashions, guilds, games, pastimes, punishments, tribunals, and ceremonials. This mass of information is illustrated with fifteen chromolithographic prints by Kellerhoven, and about 400 wood engravings. Most of the coloured illustrations are fac-similes of miniatures from fourteenth and fifteenth century manuscripts; and many of the engravings are reproductions from rare and early works. M. Lacroix, we should explain, is the curator of the Imperial Library of the Arsenal, Paris, and has thus unusual facilities of reference within his reach, as well as a professional acquaintance with the contents of all the chief libraries of Europe. Hence the quality of his work. He has a third volume in contemplation, he informs us prefatorially, which is to relate to the various aspects of religious and military life in the same periods of time. Meanwhile we will examine that which is before us.

To begin with, M. Lacroix gives a sketch of the general condition of persons and lands at the beginning of the Middle Ages. He reminds his readers that the dissolution of the empire of the Cæsars left the populations of Europe not free, but in various stages of servitude. There were the Goths, Burgundians, Vandals, Germans, Franks, Saxons, and Lombards, all accustomed to rough warfare on one side, and the Romans, with those nations whom they had conquered, on the other; and a long time elapsed before the general confusion and tyranny settled down into anything like order or security. "There were on both sides," he remarks, "freemen, freedmen, colons, and slaves; different ranks and degrees being, however, observable both in freedom and servitude. This hierarchical principle applied itself even to the land, which was divided into freeholds, tributary lands, lands of the nobility, and servile lands, thus constituting the freeholds, the benefices, the fiefs, and the tenures." A spirit of servitude pervaded all ranks. A varlet waited at table on a vassal, a vassal on a noble, nobles on the sovereign, and all looked upon this service not as a compulsory indignity, but as a privilege and honour. M. Lacroix thinks the first political principle that was evolved from the general abasement was to bow to a superior. The greater the rank of an individual the more he was favoured by the law. Everybody belonged to somebody else. From this basis arose feudalism. Some historians represent the Germans as the regenerators of society in these old times, but our author accredits Pagan antiquity and Christianity with the gradual improvement. Many manners and customs pertaining to the one survived; and the other modified them and engrafted upon them the spirit of human equality, which slowly though certainly loosened the bonds of slaves, and made all men subject to the same laws. M. Lacroix, however, allows that it was Charlemagne who first modelled a powerful and peaceful empire out of the general anarchy. He established public administrations, founded towns, united small and scattered peoples, assigned a place for all, and, after his reign of forty-five years, left his dominions in full working order. Unfortunately his successors were not equal to their inheritance, and personal war, sometimes between individual nobles and sometimes between the nobles and sovereign, soon reduced affairs to their former level. Under the Carlovingian dynasty a change was made which rendered territorial what was up till then only personal. The Merovingian kings styled themselves kings of the Franks, not kings of France, because incessant alterations were made to the boundaries of their dominions by the incessant changes and chances of war. But now the possession of land formed the basis of social position, and everybody tried to become the holder of land. Out of the desire to hold grew the determination to keep. Castles were built. The laws relating to wandering tribes fell into disuse, and many distinctions of race and caste disappeared. The nobles, however, ensconced in their fortresses, were always indifferent subjects, preying on their neighbours and travellers, and defying the sovereign; and when the descendants of Hugh Capet wished to consolidate their power, they were obliged to attack all their strongholds before they could induce them to acknowledge their sovereignty. Arrayed thus against the nobles, the kings found the corporations and citizens of great service to them. These bodies had their towns protected by ramparts, and possessed a town-hall, a seal, treasury, and a watch tower, and they could arm a certain number of men to protect themselves or assist the neighbouring lord upon whose estate in the first instance, perhaps, their predecessors were born, and who had made conditions with them to that effect. The more the kings enlarged the privileges of the citizens, the more independent they became of their natural lords, whose power, consequently, dwindled before that of the sovereign. Hence, it was expedient on the part of the kings to treat them with generosity. It was under Louis le Gros that the title of *bourgeois* was first applied to them. This designation, continues M. Lacroix, was not applied exclusively to inhabitants of cities. "It often happened that the nobles, with the intention of improving and enriching their domains, opened a kind of asylum under the attractive title of *Free Towns* or *New Towns*, where they offered to all wishing to establish themselves, lands, houses, and a more or less extended share of privileges, rights, and liberties. These congregations, though agriculturists, took the name of bourgeois." In the general amelioration in the conditions of men, slaves became serfs at a very early stage, thanks to Christianity; and serfs eventually developed into farmers paying, first tithes and fees, and finally regular taxes. These were the ancestors of "the people." Those who continued to till the soil were the ancestors of the peasantry; those who chose to devote themselves to trade and commerce in the towns were the ancestry of the middle classes. Many curious details are given in connexion with these changes in society, which our readers should see for themselves.

Bourgeois and peasants were at first blended together, as having one origin, but the former soon acquired a degree of prosperity and affluence that enabled them to adopt habits that left the agriculturists a long way behind them. A troubadour, writing of the bourgeois of the thirteenth century, declared they had divers sorts of merits. "Some distinguish themselves by deeds of honour," continues this Arnaud de Marveil, "others are by nature noble, and behave accordingly. There are others thoroughly brave, courteous, frank, and jovial, who, although poor, find means to please by graceful speech, frequenting courts, and making themselves agreeable there; these, well versed in courtesy and politeness, appear in noble attire, and figure conspicuously at the tournaments and military games, proving themselves good judges and good company." Their taste for "noble attire," indeed, was frequently repressed by edicts. Their wives and daughters, especially, were fined if they presumed to use the ornaments and stuffs reserved for the nobility; but in proportion as their husbands and fathers were honoured by their monarchs and enlarged their immense fortunes, they disregarded fines and penalties, and wore the costliest furs and richest stuffs they could procure. Another early writer, Christine de Pisan, in the second half of the fourteenth century, relates that he went to visit the wife of a merchant, and found the walls of her house hung with precious tapestry, from Cyprus, on which were embroidered her initials and motto, the floor spread with a carpet like gold, her bed furnished with sheets that cost more than 300*l*., a quilt made of a new invention of silk and silver tissue, and pillows ornamented with buttons of Oriental pearls. A third writer, in the fifteenth century, a bourgeois, compiling directions for the guidance of a household, for the use of his young wife, gives us us many more particulars of the manner of life of the middle classes. Among his advice, he tells his wife to consider the rank of her parents and his in the choice of her apparel. "Be respectably dressed, without devoting too much study to it, without too much plunging into new fashions. Before leaving your room, see that the collar of your gown be well adjusted, and is not put on crooked." He relates an anecdote illustrative of the proverbial wilfulness of woman, which reads like a companion piece of experience to that which befell Gunhild and Gunhelda in the Norwegian story, or the owner of the gray mare and basket of eggs in this country at a later date:—

"I have heard the bailiff of Tournay relate, that he had found himself several times at table with men long married, and that he had wagered with them the price of a dinner under the following conditions:—The company was to visit the abode of each of the husbands successively, and

* Manners, Customs, and Dress during the Middle Ages, and during the Renaissance Period. By Paul Lacroix. London: Chapman & Hall, 1874.

any one who had a wife obedient enough immediately, without contradicting or making any remark, to consent to count up to four, would win the bet; but, on the other hand, those whose wives showed temper, laughed, or refused to obey, would lose. Under these conditions the company gaily adjourned to the abode of Robin, whose wife, called Marie, had a high opinion of herself. The husband said, before all, 'Marie, repeat after me what I shall say.' 'Willingly, sire.' 'Marie, say one, two, three!' But by this time Marie was out of patience, and said, 'And seven, and twelve, and fourteen! Why, you are making a fool of me!' So that husband lost his wager. The company next went to the house of Maitre Jean, whose wife, Agnescat, well knew how to play the lady. Jean said, 'Repeat after me, one!' 'And two!' answered Agnescat disdainfully; so he lost his wager. Tassin then tried, and said to Dame Tassin, 'Count one!' 'Go upstairs!' she answered, 'if you want to teach counting, I am not a child.' Another said, 'Go away with you; you must have lost your senses,' or similar words, which made the husbands lose their wagers. Those, on the contrary, who had well-behaved wives gained their wager and went away joyful."

This same fifteenth-century writer tells us there was in Paris a kind of registry office for servants, by means of which servant-maids from the country could find situations. He cautions his wife, on account of her extreme youth (girls were married at fifteen in those days), to take the opinion of Dame Agnes concerning them. This was a nun whom he had placed with her as a companion, or governess. "Before engaging them," he continues, "know whence they come, in what houses they have been, if they have acquaintances in town, and if they are steady. . . . . If they come from another country, try to find out why they left it, for generally it is not without some serious reason that a woman decides upon change of abode. . . . . Superintend the work to be done, and choose among your servants those qualified for each department." With the exception of this recommendation of personal superintendence of each task, we might be culling from the pages of any modern model housewife's manual, so far advanced towards our own stage of progress were the bourgeois matrons of four centuries ago. Not so, however, with the descendants of the serfs who remained on the soil, with only the choice of bad roads, by which they could ever leave it for relaxation of any sort. In the thirteenth century a poem was written, entitled "De l'Oustillement au Vilain," furnishing us with a picture of a peasant's home and occupation, which though very removed from the pomp and comfort enjoyed by merchants or other citizens, does not contrast unfavourably with the condition of those who labour on farms at the present day. In France, M. Lacroix affirms, the exact type described in this poem was maintained in country districts, far away from the capital and large towns, at the date of the revolution of 1789. The thirteenth-century dwelling for the *vilain*, consisted of three buildings; one for his corn, another for his hay, and the third for himself and family:—

"In this rustic abode a fire of vine branches and faggots sparkled in a large chimney furnished with an iron pot-hanger, a tripod, a shovel, large firetons, a cauldron, and a meat-hook. Next to the fireplace was an oven, and in close proximity to this an enormous bedstead, on which the vilain, his wife, his children, and even the stranger who asked for hospitality, could all be easily accommodated; a kneading-trough, a table, a bench, a cheese cupboard, a jug, and a few baskets made up the rest of the furniture. The vilain also possessed other utensils, such as a ladder, a mortar, a handmill,—for every one then was obliged to grind his own corn; a mallet, some nails, some gimlets, fishing lines, hooks and baskets, &c. His working implements were a plough, a scythe, a spade, a hoe, large shears, a knife, and a sharpening stone; he had also a wagon, with harness for several horses, so as to be able to accomplish the different tasks required of him under feudal rights, either by his proper lord, or by the sovereign; for the vilain was liable to be called upon to undertake every kind of work of this sort."

His dress was a cloth or skin blouse, fastened round the waist by a belt, to which he could add an overcoat or mantle of thick woollen stuff. He also wore boots or shoes, and short trousers; and in some weathers a hat made of the same stuff as his blouse, or of felt. He worked bare-headed ordinarily. From his belt depended a wallet and sheaf for his knife. He owned a watch-dog, who guarded his small kitchen garden, and a few cows, which were kept in a shed close by. Rats and wild cats formed further items in his surroundings. He had his holidays in connexion with church festivals, and frequent "wakes," or evening parties, where he drank, talked, laughed, and sang to his heart's content. It was at the wakes that fairy tales were told and where matrons, presuming on their experience, pretended they knew wonderful secrets, such as could cause happiness, cure sickness, and help to ascertain the course of future events. It is not, when we think of these festive occasions, so much a matter of wonder, that as years passed by, and the state of things improved in various particulars, the old looked back to their young days as better than their last, just as our seniors of to-day would have the present generation believe that we are deteriorating from their superiority.

The nobility, during the reigns of Charles VIII., Louis XII., and Francis I., continued to send their sons and daughters to court to attend on the king or queen. They called this service their "apprenticeship of honour or virtue"; and there is no doubt it must have had its refining influences. The queen of these first two monarchs, Anne of Brittany, created a great court of ladies. She used to inquire of the gentlemen of the court if they had any daughters, and was always ready to receive them. She also formed a company of 100 Breton gentlemen, who escorted her wherever she went to mass or took a walk. She maintained the strictest integrity and discipline in her court, which was renowned for its purity, refinement, and politeness. Every noble, no matter how powerful, availed himself of this opportunity of securing the chivalric education and elegant intercourse for his sons and daughters that this custom afforded. Like the *bourgeois* and peasants, the nobles had a representative writer, in the fourteenth century, who has depicted many of their habits. This was Geoffroy de Latour-Landry, who composed for the use of his three daughters a code of admonitions in which are set forth various current social customs. "My pretty daughters," this wise parent advised, "be courteous and meek, for nothing is more beautiful, nothing so secures the favour of God and the love of others. Be then courteous to great and small; speak gently with them. . . . . I have seen a great lady take off her cap and bow to a simple ironmonger. One of her followers seemed astonished. 'I prefer,' she said, 'to have been too courteous towards that man, than to have been guilty of the least incivility to a knight.'"

M. Lacroix devotes, as we have indicated, a chapter to food and cookery. This is exceedingly interesting. He gives the history of bread, and then runs through the Mediæval materials for meals, including vegetables and plants used in cooking, fruits, meat, poultry, game, milk, butter, cheese, eggs, fish, and shell-fish, beer, cider, wine, and comes to the modes of cookery employed for soups, pies, stews, roasts, grills, the manner of seasoning, and rules of serving at table. We are thus brought in contact with the baker, the butcher, the poulterer, the fisherman, the brewer, the coppersmith, pastry-cooks, grocers and druggists, and cooks. Miniatures from fifteenth-century manuscripts, or *fac-similes* from early woodcuts, or representations of trade banners, afford illustrations of nearly all of them. Concerning bread, the staff of life in all countries, it would seem, M. Lacroix thinks it likely that the veneration in which the Gauls held the oak had for its origin the fact that acorns were largely used as food by them. "This primitive food," he says, "continued in use, at least in times of famine, up to the eighth century, and we find in the regulations of St. Chrodegand that if, in consequence of a bad year, the acorn or beechnut became scarce, it was the bishop's duty to provide something to make up for it. Eight centuries later, when René du Bellay, Bishop of Mans, came to report to Francis I. the fearful poverty of his diocese, he informed the king that the inhabitants in many places were reduced to subsisting on acorn bread." At first, bread was baked under the embers. It is true that the Romans introduced the use of ovens in Europe, from Egypt, but as late as the tenth century the old plan was pursued in some places, or upon some occasions, for at that date the abbot of the monastery of St. Thierry, near Rheims, ordered in his will that bread should be cooked for his monks under the embers,—*panes subcinericios*. A flat thin cake was, perhaps, more serviceable as a plate than any other form of bread; and as we know that they were used as such, we may thus account for the permanence of their manufacture. Froissart speaks of *tailloirs*. These were small crusty loaves, also called *tranchoirs*. In 1336, the Dauphin of Vienna, Humbert II., had four small loaves, to serve as *tranchoirs* at table besides white bread. Charlemagne fixed the number of bakers in each city according to the population. At first the baker was also the miller, but later public bakers established themselves, who baked bread brought to them ready kneaded, as well as made bread for sale. St. Louis allowed bakers and millers to be exempt from the duty of watching their towns, so that they need not neglect their work, which he considered of paramount utility. And here, again, we would refer our readers to M. Lacroix's pages for much curious information. Concerning butcher's meat, too, and the French preference for pork, leading up to ham fairs, and butchers' privileges, yielding only to the King of France on his accession to the throne, the right to create a master butcher, there is much interesting reading.

After describing the luxurious banquets of the French Court, and a wedding dinner of a *bourgeois*, and showing M. Viollet le Duc's drawing of a ceremonial entertainment, with its peacocks, whole deer, enormous pies, silvered and gilt on the top, kids, pigs, herons, sturgeons, wild boars, goslings, chickens covered with yolks of eggs and sprinkled with spice, jellies, creams covered with fennel-seeds preserved in sugar, plums stewed in rose-water, and many other items, not including a final course entirely composed of prepared wines, fruits, and various pastries, some of which represented stags and swans, M. Lacroix consoles us by reminding us that from the establishment of the Franks in Gaul down to the fifteenth century, inclusive, the French partook but of two meals a day,—dinner at ten in the morning, and supper at four in the afternoon. When, in the sixteenth century, dinner was postponed till eleven, and supper till seven, the old hours were backed in a proverb:—

"To rise at six, dine at ten,
Sup at six, to bed at ten,
Makes man live ten times ten."

The chapter on guilds and trade corporations is illustrated by *fac-similes* of a set of twenty drawings, showing various craftsmen at work, designed and engraved by J. Amman, in the sixteenth century. A fragment of a wood-cut after a drawing by Wohlgemüth for the "Chronique de Nuremberg" shows us a companion carpenter. A *fac-simile* of a miniature in the "Chroniques de Hainaut," a fifteenth-century MS. in the Burgundy Library, Brussels, illustrates a group of carpenters putting together the timber framework of a small house. When apprentices or companions wished to become masters, they were subjected to successive examinations and trials. The cut, which we reproduce from the stalls in Rouen Cathedral, shows a carpenter's apprentice at work on a trial-piece.*

The view of the staircase of the Office of the Rouen Goldsmiths (which we give*) is inscribed in the book "15th century," but looks not so ancient. The shield, at any rate, is more modern: in fact, below it, on the top of the newel, good eyes may see the date 1653.

The Basle Library has been also looked through to furnish other examples. But we will pass on to the chapter on taxes, money, and finance, to allude to a view of the house of the celebrated merchant and financier, Jacques Cœur, at Bourges, which is now converted into the Hôtel de Ville, and which we are enabled to reproduce.* This merchant shares with Joan of Arc the honour of saving the freedom of the French kingdom; for he restored the finances of Charles VII., and managed to keep him supplied with the sinews of war,—money,—till he was able to prevail against our predecessors; but, nevertheless, Jacques fell out of the good graces of the king, and was compelled to make an *amende honorable* to his majesty, which ceremony is shown in the *fac-simile* of a miniature of the Chroniques of Monstrelet, a manuscript of the fifteenth century, in the National Library of Paris. His house is a charming memorial of his taste, as all the architectural world knows, and the view given of it is equally pleasing. We must pass over the chapters on law and the administration of justice, and on secret tribunals, with the condemnations, tortures, and executions, though full of particulars, some of which are new; as well as those devoted to the fearful punishments in vogue in the Middle Ages, and the tramps, gipsies, beggars, and impostors of the streets; to one in which our readers are likely, perhaps, to be more interested,—the grand ceremonials of the days of yore. There is, however, an intervening chapter on the Jews of which we must give some outline.

After alluding to the day when the Romans seized upon Jerusalem, and the descendants of the old patriarchs had to wander forth over the face of the earth in search of new homes, M. Depping is quoted to show their condition after they were scattered over Europe. He says, feelingly:—"A Jewish community in a European town during the Middle Ages resembled a colony on an island or on a distant coast. Isolated from the rest of the population, it generally occupied a district or street which was

* See p. 846.

separated from the town or borough. The Jews, like a troop of lepers, were thrust away and huddled together into the most uncomfortable and most unhealthy quarter of the city, as miserable as it was disgusting. There, in ill-constructed houses, this poor and numerous population was amassed; in some cases high walls enclosed the small and dark narrow streets of the quarter occupied by this branded race, which prevented its extension, though, at the same time, it often protected the inhabitants from the fury of the populace." The Ghetto in Rome approaches very nearly to a realisation of this account; but the Jews' quarter in Prague retains a more exact resemblance to it. There is the large inclosure, divided into small irregular streets. Down the principal thoroughfare are stalls covered with clothes, furniture, and utensils for sale, some old and some new. The synagogue is a square building, dark and strong like a prison, covered with dirt and moss. The windows are narrow loopholes, and the door so low that those who pass through it into the dark passage within must stoop. The interior is lighted by a few lamps, and fires are used to moderate the icy temperature. The roof is supported on pillars, and along the side-walls are dark recesses in which women assist at the celebration of worship. Nothing has been repaired or changed for many centuries, and the book of the law is as venerably old. Paris has never had its Jewry proper. The Israelites who established themselves there settled down in the neighbourhood of the markets, but were not otherwise kept isolated from the general population except in the matter of a burying-place. But most of the French provincial towns had their *Juiverie*. In the southern towns, as in Spain, Portugal, and Venice, they enjoyed the protection of the nobles, traded with foreign ports, and bought and sold with the same facilities as were permitted to Christians; but in the northern districts they were not so favoured. The Christian populations in the north of Europe knew no sympathy with the ancient people. They not only forgot Joseph, like the chief butler of old, but they forgot Jacob, Isaac, Abraham, and their grand old story. They heard and saw, on all hands, details of the Passion, and felt that resentment to the descendants of the Jews who brought it about was a meritorious state of mind. In Holy Week especially, when their horror was intensified by all the eloquence of the pulpit, they were easily moved to deeds of extreme violence towards the Jewish communities. This was so well understood that, even where the authorities made no regulation compelling them to do so, the Jews shut themselves up in their own quarter till the exciting week was over. All sorts of accusations were fabricated against them time out of mind, some of which, perhaps, served as a pretext for fresh extortions from them. The case of the supposed murder of the child in Lincolnshire, in 1255, resulting in the death of nineteen Jews and imprisonment of seventy-one more, is detailed as a case in point. There was a similar accusation brought against the Orleans Jews in 1171, and another against the the Jews at Trent in 1475. Facsimiles of the early woodcuts by Wohlgemüth, showing some of the murders, are given. An account, too, is printed of the public humiliations, such as having to run races for the amusement of the public, having the ears of a representative boxed in Toulouse cathedral on every Good Friday, wear badges, pay extra tolls, &c.; and a statement is made of their gift for commercial enterprises, their taste for all matters of finance, their skill, in fine, of creating capital that solaced them for all the indignities they endured, and made them brave all their social inequalities. Occasionally, a few individuals or families were induced to detach themselves from their fathers; but this was rarely of benefit to them, for they were eyed with suspicion and closely watched. So late as 1611 an appeal was made against them, entitled a "Remonstrance to the King and the Parliament of Provence on Account of the great Family Alliances of the new Converts." Altogether this is a curious chapter in the history of the Middle Ages.

Of a very different aspect were the grand ceremonials of the clergy, nobility, and *tiers-état*. For some centuries nothing in this department of things rested on any settled basis. As M. Lacroix observes, "The trifling rules which made etiquette a science and a law were introduced by degrees, and have only very recently been firmly established. When Charles VI. was about to marry Isabel of Bavaria, then fourteen years of age, he wished to arrange a magnificent entry into Paris for her, and begged Queen Blanche, the widow of Philip de Valois, to preside over the ceremony, and see that it was conducted according to the custom of olden times, who, in the absence of any fixed rules, was obliged to consult the *Chronique de Saint-Denis*. In the fifteenth century the first embodiment of rules relating to such matters appeared under the title of "Honneurs de la Cour." This was the work of the celebrated Aliénor de Poitiers, but it was not generally accepted by the nobility, for in 1548 King Henry III. commissioned Jean du Tillet, the civil registrar of the Parliament of Paris, to search among the royal archives for documents to throw light on disputed points and serve as precedents. It was this monarch who created the office of grand master of the ceremonies of France. Pope Julian II., in 1504, instructed his master of the ceremonies to publish a decree determining the rank of the various sovereigns of Europe, or their representatives, but it was not accepted or sanctioned by those concerned. During the whole of the Middle Ages, in fine, the question of precedence was a source of constant litigation and bloodshed. The chief ceremonial has always been the consecration and coronation of kings. This always took place on a Sunday. Pépin le Bref was the first king who was anointed, and he approved of the ceremony so much as to go through it again in the following year, with his two sons, Charlemagne and Carloman, in the Abbey of St. Denis, at the hands of Pope Stephen III. Charlemagne was also twice anointed, first as King of Lombardy, and then as Emperor. His successor, Louis le Débonnaire was anointed at Rheims, which cathedral enjoyed the privilege of the ceremony so frequently that its clergy looked upon a consecration as their right, and finally were justified in doing so by a decree made by King Louis le Jeune. Down to the end of the reign of the Bourbons of the elder line, this ancient church saw every consecration with the exception of that of Henri IV., who was crowned at Chartres, because the gates of Rheims were closed against him. The ceremony began over-night, for at the conclusion of the evening prayers the monarch went to the church, and passed part of the night in prayer there. A large platform was erected between the chancel and nave, and upon it, at the appointed hour, the king, his officers of State, twelve ecclesiastical peers, six lay peers, and any others whom the king might invite, assembled upon it. A deputation of barons was sent to the Abbey of St. Remi for the holy vial, containing the *ampulla*, that a dove brought from heaven on the occasion of the coronation of Clovis, four of whom remained as hostages, whilst the abbot and his monks went in procession, and placed it on the altar. The Abbot of St. Denis, with similar solemnity brought the crown, the sword, the golden spurs, the gilt sceptre, the rod, the sandals, the chasuble and mantle, that were kept in the treasury of his monastery since the reign of Charlemagne, and placed them by the side of the vial. In the course of the ceremony the king walked to the foot of the altar, bared his head, and took off part of his dress, and his tunic was furnished with openings on the chest, shoulders, elbows, and in the middle of the back, which were kept temporarily closed with silver aiguelets. After the Archbishop of Rheims drew the sword from its scabbard, and handed it to the king, who passed it on to an officer, he took a single drop of the miraculous oil out of the holy vial with a gold needle, and having mixed it with some oil from his own church, proceeded to anoint the king on the forehead, breast, back, shoulders, and elbow joints. The monarch then rose, and with the assistance of his officers, put on his robes, and received from the archbishop the ring, the sceptre, the rod of justice, and, lastly, the crown.

Juvenal des Ursins has left an account of the entry of the Isabel of Bavaria into Paris, to which we have alluded. Great crowds went out to meet her, and at the cross-roads there were groups representing historical scenes, or *tableaux vivants*, and fountains of water, milk, and wine. The bridge by which she crossed the Seine was covered with blue taffeta, embroidered with gold fleurs-de-lys, and at the moment of her passing a man was let down from one of the towers of Notre Dame, through an opening in the taffeta sky, who placed a crown upon her head, and was then drawn up again by the same means arranged for his descent. Another surprise awaited her at the Grand Chastelet, where there was a court hung with azure tapestry, intended to represent a *lit-de-justice*. In the centre of it was a large white stag, artificially constructed to conceal a man within, who caused it to move its eyes, horns, mouth, and limbs. Near it was a large bright sword, unsheathed, which it lifted with its right fore-foot as the Queen passed, and brandished it. Juvenal des Ursins adds that the king was so very anxious to see how this entry passed off, that he persuaded Savoisy to accompany him into the crowds of spectators. The two, mounted on a strong horse, and disguised, went through the town, and came up to the stag just as the queen was passing. The crowd was very dense at this point, and the sergeants entrusted with keeping the road clear for the queen's litter and attendants, had to apply their birch wands pretty sharply to people's shoulders, to keep them from blocking the way. Savoisy struggled to get near enough to the stag to see what was passing, and both he and the king, who was behind him, were well beaten on the shoulders. In the evening, when the matter was discussed before the ladies, great fun was made of it, and the king laughed heartily at the price he paid for his curiosity.

Dame Aliénor de Poitiers, who had the subject of etiquette deeply at heart, went so far as to say that she feared the possessions of the great houses of the nobility were getting so large as to encourage chicanery or concealment of birth, "so as to make away with too many children." When there was any very special ceremonial to record she was in her element. Thus she details every act of respect paid by the Duchess of Burgundy to Mary of Anjou at Châlons, in 1445. When the duchess arrived, with her retinue on horses and in carriages, in the courtyard of the mansion, where the king and queen were, she alighted, and her first maid of honour carried her train. M. de Bourbon gave her his right hand, and the gentlemen went on in front. In this manner she was conducted to the hall, which served as the ante-chamber to the queen's apartment. There she stopped, and sent in M. de Crequi to ask the queen if it was her pleasure that she should enter. . . . . When the duchess came to the door she took the train of her dress from the lady who bore it, and let it trail on the ground; and as she entered she knelt, and then advanced to the middle of the room. There she made the same obeisance, and moved straight towards the queen, who was standing close to the foot of her throne. When the duchess had performed a further act of homage, the queen advanced two or three steps, and the duchess fell on her knees; the queen then put her hand on her shoulder, embraced her, kissed her, and commanded her to rise." Can we not picture the whole scene, the painted ceiling of the chamber, the hangings of the wall, the vases, and other ornaments, and the group of court ladies? When a duke and duchess were in their own court, everything upon their table was covered. The modern phrase, *mettre le couvert* (lay the cloth), is a resonance from this custom of covering everything in *cadenas*, or cases, including the basins in which the fingers were dipped. But when their sovereign was present, all these marks of respect were removed, and placed before him.

One more sample, and we will conclude our notice. For mourning, the kings of France wore scarlet or violet, never black. The queens wore white, and kept their apartments for a whole year. Hence the frequent *château, hôtel*, or *tour de la reine Blanche* to be found in the buildings of the Middle Ages, the same containing the apartments in which a year of queenly widowhood has been passed in some old time. A duchess, and the wife of a banneret, on going into mourning remained in their apartments, which were hung with black, for six weeks. The duchess remained lying down all day on a bed covered with a white sheet for the whole of the six weeks; but the wife of the knight banneret could get up at the end of nine days, and remain sitting at the foot of the bed on a black sheet. For the ceremonials of the *tiers-état*, or middle classes, and lower orders, their *fêtes* and feasts, we must refer inquirers to the volume we have attempted to describe. Looking to the last chapter, which is on costumes, and noting how exactly it covers the same ground gone over by M. Viollet-le-Duc in his "Dictionnaire raisonné," we think of Cowper's line, "Who loves a garden loves a greenhouse too," and feel that we shall not be misleading our readers if we assure them that those who enjoy M. Le Duc's work will also appreciate that of M. Lacroix; especially as the latter presents the great advantage over the former of being in the English language.

THE MANNERS AND CUSTOMS OF THE MIDDLE AGES IN FRANCE.*



Carpenter's Apprentice working at a Trial Piece.
From one of the Stalls called Miséricordes, in Rouen Cathedral.
Fifteenth Century.



The House of Jacques Cœur at Bourges, now converted into the Hôtel de Ville.

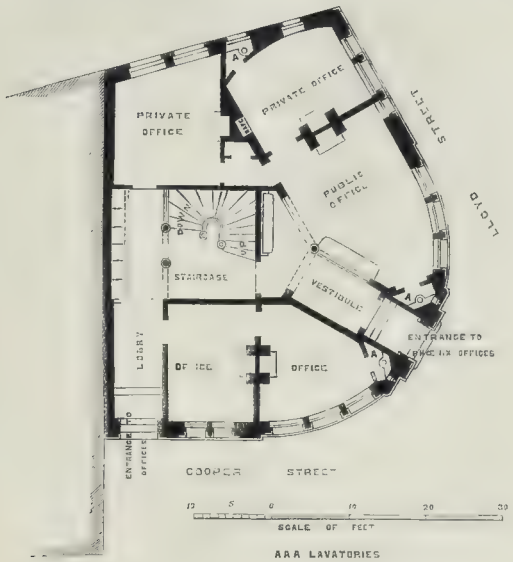


Staircase of the Office of the Goldsmiths of Rouen. The Shield which the Lion holds shows the Arms of the Goldsmiths of Rouen. (Present condition.)

* See p. 842, *ante*.



THE PHŒNIX FIRE INSURANCE COMPANY'S OFFICES, MANCHESTER.—Mr. John Lowe, Architect.



The Phœnix Fire Insurance Company's Offices, Manchester.—Plan.

NEW BUILDINGS FOR THE PHŒNIX FIRE INSURANCE COMPANY, MANCHESTER.

The building shown in the accompanying plate is now in course of erection. It stands on the site of the old premises of the company at the corner of Cooper and Lloyd streets, immediately opposite to the south side of the new town-hall. In consequence, however, of the corporation deciding to widen Cooper-street at this point, in order to show off that part of the town-hall to better advantage, the Phœnix building has had to be set back about 15 ft., and the corner rounded, as shown on the plan. The fronts are of Darley Dale stone, with bands of red Mansfield, while the side elevation next Chapel-street is faced with red stocks. The rest of the walls are of common bricks. The main entrance is for the use of the company's offices, which are in that part of the ground-floor facing Lloyd-street. They consist of a large public office and two private ones, with accommodation for safe and lavatories. The remaining portion of the building, both on the ground floor and on the other floors, is intended to be let off for offices, and for these an entrance is provided in Cooper-street. The staircase is of wood, and well lighted. Conveniences for the offices are placed so as to be entered from off the staircase about midway in each flight. The lobbies are to be laid with ornamental tiles, and the arcading in the staircase-hall has red Mansfield shafts, with Bath-stone caps and tympanum, and Darley Dale bases; the parapet there being also of Darley Dale. The whole of the work is contracted for by Messrs. T. Clay & Sons, of Manchester, with Messrs. Ellis & Hinchliffe as sub-contractors for the mason's work. The contract amounts to about 7,000*l.* Mr. John Lowe, Manchester, is the architect.

BAS-RELIEF AT DEPTFORD.

When reading a paragraph referring to the "Resurrection Gate in your article on "St. Giles's," it occurred to me that it might interest many of your readers to know that a very curious bas-relief of the Judgment Day exists in the churchyard of St. Nicholas, Deptford. It is beautifully executed in lead, and is in excellent preservation; it is in a very appropriate position, being over the door of the dead-house.

Deptfordodian.

A HEALTH POET OF THE EIGHTEENTH CENTURY: HENRY BAKER.

There are no names more worthy of remembrance, or works more fit to be rescued from obscurity, than those associated with social reform. The modern history of human and public health is, in fact, the history of our civilisation. The growth of unchecked disease,—of disease that is both preventible as well as curable,—is nothing short of the growth of barbarism and criminal ignorance. Health and disease have formed the themes for both the prophet's and poet's pen in the early ages of the world, but in a limited way. Man's worst passions and frailties have met with rebuke and exposure in inspired writings; but man's home and surroundings, which have had even more to do with the influencing of his character than aught else, have been scarcely deemed worthy of serious attention from a moral or social point of view. Homes, to be sure, from the earliest period, according to the position of the owners, have been rendered luxurious more or less; but their degree of comfort or healthiness, despite their barbaric grandeur, must have been small indeed. The mind of their age probably thought them perfect as well as the mind of a generation in our memory thought theirs so; but the well-authenticated plagues that have devastated this planet of ours have afforded us unerring proofs of what unhealthy life and living brought upon the world and perpetuated. To apostrophise health and paint dire disease is a commendable work, whether performed by a poet, painter, or philosopher. Sculptors may embody, and some of them have embodied, unutterable pain, sorrow, and madness in the attitude and features of their subjects, and in every way that the lesson of health and its opposite, disease, can be portrayed to man for observance and avoidance, a benefit is conferred upon the living and the unborn human race by following it.

One Henry Baker, in the year 1725 or 1726, published a volume of poems, and among his verses there is one, at least, that deserves to be rescued back to a wider popularity, not only for the sake of the author, but of the subject. The poem is entitled "An Invocation to Health." At the date of the publication of the volume the author could not have been more than twenty-three years of age, and his subsequent success or celebrity could not be anticipated. Henry Baker, however, before the close of the eighteenth century, was well known as a naturalist and a member of the Royal Society and the Society of Antiquaries. Beginning life as a bookseller, he relinquished trade to commence the tuition of the deaf and dumb, and in the pursuit of that noble vocation he acquired a large fortune. In devoting his energies to instruct the deaf and dumb, he became naturally one of our social reformers, as in depicting health and disease by the aid of poetry he acted as an auxiliary in a sanitary direction. In addition to what we have mentioned, the life of Henry Baker may be summed up thus:—He married a daughter of Daniel Defoe, by whom he had two sons. In 1740 he obtained from the Royal Society a gold medal for his microscopical experiments on saline particles. In 1742 he published his "Microscope Made Easy," and in 1764 his "Employment for the Microscope." He died in 1774, leaving 100*l.* to the Royal Society for an anatomical or chemical lecture, called the Bakerian lecture. His eldest son, who had been adopted by an uncle, a silk-throwster in Spitalfields, to whom he succeeded in the business, was devoted to theatrical entertainments; but David Erskine Baker became improvident, and squandered his property, finally joining some strolling players. Very few particulars are known of the closing years of his life, but he is supposed to have died three or four years previously to the death of his father. Connected with his life there is, however, one matter worthy of notice. As the author of "A Companion to the Playhouse," published in 1764, he laid the basis of a work now known by the title of the "Biographia Dramatica."

WARMING AND VENTILATING A HOUSE IN CANADA.

Sir,—I have been not a little surprised at the asserted ignorance of even your architects on the subject of house ventilation, and as I see a good deal of interest has been awakened in the subject recently, I venture to address you. Without stopping for demonstration, I will lay down two axioms which may be safely accepted as true.

1st. If the fresh air be introduced cold it should come in near the ceiling and through numerous very small openings to avoid draught, and the effete air should be taken off at the top also.

2nd. If, on the other hand, warm fresh air is to be introduced, it should be brought in along the skirting, and the effete air be taken off also near the floor, as otherwise the freshest air would be first drawn off.

The latter is the proper plan, and no better exhaust is needed than a common open fire.

To convince you that my theory is correct, I will relate my own experience.

For nearly twenty years I have warmed my house by my cooking-range, and, as I burn coal in winter and wood in summer (because the fires can be let down and started as required with wood), my fuel costs less in midwinter than in midsummer, notwithstanding the mercury often falls 20° to 30° below zero.

My house is a detached one, two stories, with basements and attics, all in use, and a wing, 13 ft. square, the main building being 30 ft. by 40 ft. The range is in a basement kitchen, and has a fire-box 2 ft. square, and 18 in. from grate-bars to top of range, which fire-box is completely lined by a coil of 1 in. pipe, and the coal is poured in from the top. At the back of the range, and under the central hall, is a brick vault, 6 ft. or 7 ft. square, in which are some 500 ft. of inch pipe in coils, all connected with the fire coil. I have also a smaller circulation, having one turn at the bottom, inside the larger coil, and forming with the grate, which it surmounts, the bottom of the fire-chamber, and passing up, makes another twist around the top of the fire-chamber, then leads off through a knife and boot room in the wing basement, up through a wall coil in the pantry, to the bath-room, along one side to the expansion pipe, back again, and down, and along the ceiling of a small store-room, then into the back hall, along the stairway down to a large coil under an open iron tube opposite the dining-room door, and back to the range, all the apartments being warmed by the radiated heat from the pipes placed in them. The outside hall doors being constantly in use, afford ample ventilation for these rooms, and the enemy is met at the door. The living-rooms, say drawing-room, dining-room, and library, on the ground floor,

and a small boudoir on the first floor, have flues and registers, bringing a constant stream of fresh warm air from the vault, into which a stream of cold air is admitted day and night, even with the thermometer, 30° below zero. Every bedroom, as well as other rooms, has an exhaust flue near the floor, always open, and the staircase being an open one, in the centre of the house, the only trouble is to keep the heat down.

By this means I have a temperature of 65° to 70° in the living-rooms, and 60° to 65° in the bedrooms without ever having to speak or even to think of the state of the fire, for the reason that the water so completely absorbs the heat that the cook must supply the house before any heat can be got in the ovens, of which, by the way, there are two; and a third coil, which supplies a copper boiler of hot water for the bath and other purposes, while the smoke-pipe runs the whole length of the basement hall, keeping that entire flat warm. Both coils are hermetically sealed, and the same body of water has circulated in the main coil for eleven years without diminution. I may mention that some 4 ft. of the large radiating pipe lies in a shallow pan of water, provided with a ball cock, and runs from that directly into the fire-coil. This pan is on the bottom of my air-vault, and the amount of steam given off is exactly proportioned to the rate at which the fire is forced, the water in very cold weather being hot when returning to the fire-chamber.

Half of my smaller circulation being at the bottom of the larger one, I have a square frame of 6 in. by ½ in. iron, which rests on the inner coil at the bottom, and carries a smaller grate, 12 in. by 12 in., the space between the frame and coil being filled with cinders and ashes. By this means the fire-chamber is reduced by 6 in. in depth, and even then the combustion is chiefly in the centre, so that only about one-half the fire-coils are exposed to the fire. This false grate is put in about the middle of March, and left till near Christmas, after which time the full force is required, and the fire does not go out all winter.

I burn about ten tons of Welsh anthracite coal, during, say six months and a half to seven months.

I have extra ventilators near the ceilings in my living-rooms, which are only used when the rooms are filled, and more gas than usual is burning. I may mention that I have openings for hot air at the ceilings, but have long since given up using them, being satisfied that the other plan is best.

In addition to this, I have a small conservatory, 10 ft. by 20 ft., which I warm from an open fire in the dining-room, which I always keep going for its cheerfulness, and also for ventilation. This conservatory is heated by hot-water pipes, the boiler having twenty-four tubes, 2 ft. long, and 1 in. diameter, placed four deep and six high, in the chimney immediately above and behind the fire in an ordinary low English grate, and during four years' use I have never lost a plant from frost.

From my experience, I am certain that there is enough coal burnt in the kitchen of English houses to thoroughly warm and ventilate the whole house, and that without the slightest extra trouble, when once the apparatus is put in.

Being only an *amateur*, I subscribe a *nom de plume*, over which I sometimes write in the local press, but I enclose my card.

Montreal. JACOB KALLEPER.

IMPROVEMENTS IN OXFORD.

NUMEROUS alterations and improvements have been going on in Oxford during the last twelve months, and the local *Journal* and *Herald* give their usual lengthened reports on the various works in the city and the university. The *Journal* states, however, that the only important works which have been commenced this year are the Cowley St. John National Hospital for Incurables (the foundation-stone of which was laid by Prince Leopold in May last), the new chapel at Keble College, a new Roman Catholic Church in St. Giles's, and an observatory for Professor Pritchard in the Parks. The city improvements, according to the *Herald*, have been more than usually numerous, the most important being the new street leading out of High-street and the widening of the approach from Queen-street to New-road, and the numerous schools which have been erected in several parts of the city. Many of the colleges having had improvements carried out very recently, nothing has been required to be done.

The work of alteration and restoration in the cathedral is still proceeding. Since our last report, says the *Journal*,—

"A new entrance to the cathedral has been effected by cutting through the residence formerly occupied by the Regius Professor of Divinity on the east side of the principal quadrangle, thus, in our opinion, completely destroying its beautiful façade. Looked at from the opposite side of the quadrangle, it appears like the entrance to a railway tunnel, and we cannot help expressing our deep regret that it was ever made. The work in the porch is certainly beautifully executed, but that does not compensate for spoiling the appearance of the quadrangle. The roof of the porch is of carved oak, and on the sides of the walls there are stone recesses, which serve as seats. The steps leading to the cathedral are of Mansfield stone, but the floor is composed of Haseley and Leicestershire slabs. Underneath the floor of the porch there is a vault, in which will be placed the new heating apparatus. The doors inside the porch are made of carved oak. Two new stained-glass windows have been placed in the cathedral,—one in the south transept, to the memory of the late Mr. F. Grantham Vyner, who was killed by Greek brigands in 1870; and another in the south aisle to the memory of Mr. Geo. W. M. Dasent, who was drowned at Sandford Lasher in 1872. The statue of Dean Jackson has been removed from the north transept to the library. In the gallery in the south transept, Mr. T. Leigh, clerk of the works, has placed a collection of architectural fragments which have been found during the restoration. They comprise portions of work of the periods from Saxon to Late Perpendicular. Some pieces are of special interest, and are believed to be portions of the shrine of St. Frideswide, to whom the cathedral was originally dedicated. These interesting fragments have been carefully catalogued, and have attracted the attention of several antiquarians. We had hoped that by this time the new bell-tower would have been finished, but nothing further has been done since our last notice, and there the temporary erection stands in all its ugliness. This temporary erection, the cutting away of a portion of the parapet beneath it, and the construction of the western entrance to the cathedral, have given rise to their being called 'The Tea Chest,' 'The Trench,' and 'The Tunnel,' and a clever little *brochure* on the subject was published by Messrs. Parker some months ago. Its title is 'The Vision of the Three T's,' and towards the close of it, in describing the vision, the author says:—'Stand here with me and gaze. From this thrice-favoured spot, in one rapturous glance gather in and brand for ever on the tablets of the memory, the Vision of the Three T's! To your left frowns the abysmal blackness of the tenebrous Tunnel. To your right yawns the terrible Trench. While far above, away from the sordid aims of Earth, and the petty criticisms of Art, soars, tetrasonal and tremendous, the tintinabulatory Tea-chest! Scholar, the Vision is complete!'"

St. Edward's School is now completed, and will be shortly formally opened by the lord bishop of the diocese. Mr. Wilkinson, of Oxford, was the architect, and Messrs. Orchard, of Banbury, were the builders. The building, which is of brick and stone, and covered with Broseley tiles, consists, on the ground-floor, of a master's residence, forming the south-west wing of the building, containing vestibule entrance, hall and staircase, drawing-room, study, and breakfast-room, with private cellars beneath the hall. The main portion of the building, being the school proper, is approached by a boys' entrance hall upon the west side, opening into a long corridor extending the entire length, from which are approached a refectory 60 ft. by 24 ft.; library, 17 ft. by 24 ft.; two master's sitting-rooms, 10 ft. by 13 ft. 6 in.; school-room, 60 ft. by 24 ft.; two class-rooms, about 17 ft. by 15 ft.; lavatory, 17 ft. by 15 ft.; coat and boot room, 16 ft. by 17 ft. 6 in.; a boot-cleaning room, 13 ft. by 17 ft. 6 in., in which also is the heating vault. Access to this portion of the building is also obtained by a master's entrance under an arcade upon the south side, and by a boys' entrance, also under an arcade, upon the east side. Separate studies for six prefects are also provided in a semi-circular annexe adjoining the master's entrance. A spacious lobby, 24 ft. by 12 ft. adjoins the schoolroom, and the upper stories are approached by a stone staircase, 5 ft. wide. In the western wing, which is devoted to the culinary and service department, is a butler's room, 13 ft. by 14 ft.; a servants' hall of similar dimensions; kitchen, 25 ft. 6 in. by 20 ft.; scullery, 16 ft. by 20 ft.; larder, 14 ft. by 14 ft.; cellar, 20 ft. by 9 ft., with coal store, servants' closet, &c., upon the north side of the courtyard. The playground, about 112 ft. by 90 ft., is enclosed with brick and stone walls, and a range of earth closets and urinals is situated on the east side. Gas has been laid to all parts of the building. The principal rooms on the ground-floor will be heated by coils of hot-water pipes, and a hot and cold water service is provided to baths, lavatories, &c. The area of the site is about five acres. It has been enclosed with post and rail fence upon the east, south, and west sides, and by stone wall upon the north. The ground has been levelled, and a margin of young trees planted on the east, south, and west sides of a gravel path, which forms the boundary of the intended cricket-field.

THE CONSTANT WATER SUPPLY.

THE Water Examiner, in his latest remarks, says:—

The Kent Company have completed the arrangements for, and are now giving, constant supply to about 1,500 houses in their district.

The New River Company have now the power of affording effective constant service in their district. They have also commenced a new high service covered reservoir to contain 1,000,000 gallons at Southgate, in anticipation of the requirements of the water supply to Edmonton parish.

The East London Company are extending the constant system of supply in their district.

The Southwark and Vauxhall Company are constructing covered service reservoirs at Nunhead, to contain 18,000,000 gallons.

The West Middlesex Company are giving constant supply to a number of houses on the application of the owners, who have provided fittings according to the Board of Trade regulations of the 10th of August, 1872, and are fully prepared to extend the constant supply when called upon. This company is also constructing extensive works and additional engine power at Hammersmith and at Hampton to insure effective constant supply.

The Grand Junction Company have completed a high service reservoir near Kilburn to contain 6,000,000 gallons for constant supply.

The Lambeth Company are carrying on extensions and improvements in their works. At Molesey, the construction of reservoirs is being proceeded with to contain 110,000,000 to 120,000,000 gallons of water, with pumping engines to fill them to a level of 12 ft. above the river. The company are also giving constant supply by means of stand-pipes in a number of courts and alleys, and arrangements have been made to supply upwards of 5,000 houses of this class. The alterations in fittings under the new Board of Trade rules and regulations are being gradually effected as occasion offers, and are carried out in all new buildings.

MORETON HALL.

SIR,—I have visited recently this interesting old edifice, four miles south of Congleton, in Cheshire. The house is now used as a farm-house, and accessible. There are two engravings of it in Lysons's "Magna Britannia,"—A.D. 1810,—vol. ii., pt. 2, p. 457, namely, a south-east view, which includes the bridge over the moat with the gateway,—and a view of the south side of the court as seen from the south. The east side also is seen partially in this latter view with the entrance to the hall and the window of the hall,—a very fine view, altogether. Over the bow window of the hall are these inscriptions, carved in woodwork, together with the arms and crest of Moreton,—"God is al in a thing." "This windows whire, made by William Moreton in the year of our Lord, M.DLIX." Rychard Dale, Carpēder, made this window by the grace of God." The timber work of the house, painted in black and white colours alternately, and the glazing of the windows merit special notice. The house is surrounded by a moat, and occupies three sides of a court. On the north side is the hall, with its large bow window; on the east side was the old chapel, on the wall of which inscriptions were painted, in text-hand, and ornaments. The west side is open. The entrance is on the south side, over a stone bridge across the moat. The upper part of this side of the building, 68 ft. long, was occupied by a gallery, with a continual range of windows on each side of it, seen in the engraving No. 1. On the road to this house from Congleton, Astbury Church is seen, on the left, and it should be inspected. In the churchyard are several ancient tombs, with figures recumbent.

CHR. COOKE.

Roofing.—Mr. J. L. Nancarrow, of Grampound, Cornwall, has patented some improvements in roofing, and in tiles for the same. This invention consists in the construction and in the employment of roofing tiles with ridges and grooves, in combination with locking-pieces or tiles made to fit over the parts where two tiles meet, whereby roofs that are constructed with tiles and locking-pieces are rendered very durable and perfectly waterproof, while at the same time the cross-laths now used may be dispensed with; a nail, with cup-shaped head and leather-washer, is described.

SCHOOL BOARDS.

London.—The tender of Mr. R. Mann (5,943*l.*) being the lowest on the list already given by us, for the erection of a school for 807 children in Monte Video-place, Marylebone, has been accepted by the Board; and a further expenditure of 614*l.* 9s. 1d. has been sanctioned for extra foundations to the Orange-street School, Southwark.

Croydon. — The finance committee's report recommended a list of instructions to be given to the architects who were invited to send in their plans for a group of schools to be erected at South Norwood, and to accommodate 585 children. The report having been read, Dr. Lanchester expressed his opinion on the estimated number of children that these schools were about to provide for, by saying that he thought the Board were providing for a considerable number more than was really required; and the chairman explained that the committee had gone carefully into the matter, and had come to the conclusion that that would be about the number that would require accommodation. It also recommended that the Board should erect a residence for the head teacher, at a cost not exceeding 400*l.* The report was ultimately adopted.

THE OPEN SPACES IN HACKNEY.

There is a possibility of the several open spaces in Hackney being shortly laid out for recreation purposes. Mr. Runtz stated at the meeting of the Hackney Board of Works last week, that there were still considerable difficulties to contend with in the matter, as the lord of the manor claimed 40,000*l.* in consideration of his rights over Hackney Downs. He then added that it was provided by a clause in the East London Railway Bill that the Company should give up a foot of ground contiguous to the common for every foot of ground they took from the common in constructing their line, and the conveyances for the carrying out of this arrangement were all ready for signature. It was therefore to be expected that something would shortly be done for the improvement of the several open spaces in the district, dealt with in the Act of last session, although it was probable that before proceeding to lay them out as recreation grounds for the public it might be deemed necessary to apply to Parliament for greater powers than the Board at present possessed.

SHAMS.

Sir, Will you kindly allow me space to make a few observations on the "Defence of Shams" in your issue of the 27th ult. I fail to see the application of the paragraph about the Vienna awards, and the inferiority of our art manufactures to those of the Continent (except we are meant to infer that theirs are all shams), and with the vague statement about "years ago," I leave it for your readers to analyze for themselves.

Your correspondent then states a truism, and proceeds to try and pervert it by by-play about Adam and Eve and chignons. "Art," he says, "is nature's handmaid, and her mission is to beautify," which I think few would care to dispute; but beautify what? surely not Nature,—paint the rose or the lily!

No, the mission of art is to beautify those things which man has found necessary to his altered wants since the time when "innocently unadorned," and which are not provided by nature, viz., houses, clothing, &c.

To do this with any degree of success, art must sit humbly at the feet of her great mistress, and study her handiworks.

But I should inflict a long letter upon you if I treated your correspondent's arguments *in extenso* (especially those about the adornments of the fair sex); and as in my opinion they are not worthy of it,—I do not mean the fair sex, but the arguments,—I will confine myself to general remarks. He speaks in the course of his letter about high art; but I venture to opine that under the system he proposes there would be but little left. High art is worthy to be, though it is not necessarily, executed in the noblest and most permanent materials; its glory is to be not for a day, but for all time; it can never become popular.

Cheap jewelry, stamped all from one die, may be very pretty, but is not to be named in the same day as the works at which the old masters so lovingly and patiently wrought. No; let your correspondent cover himself and all his belongings, if he chooses, with cheap jewelry, paint, Dutch metal, and shams, as he calls them, generally, but let him not take credit to himself that by so doing he is forwarding the best interests of art.

In conclusion, let us, by all means, as your correspondent desires, have "a more general distribution of God's gifts," and develop the social and domestic arts to the uttermost.

God intended His gifts for all; we shall be doing His will by placing them, or in default the best representations of them that we can produce, within the reach of all, that all may praise *Him*, and glory in *His* works.

But let us in so doing provide things honest in the sight of all men, and avoid *shams*, nor call *them* God's gifts; for they are of the devil, who was a liar from the beginning, and the father of all lies—no "humanizing influence" can come from him. T. Fred. Proud.

ARCHITECTURAL STUDENTSHIPS AT L'ÉCOLE DES BEAUX ARTS, PARIS.

Pupils who have worked through a preparatory course under professors in the *ateliers* of recognised architects are, after a stringent competitive examination, in which drawing and design, mathematics, and history are the chief subjects, admitted to a further two years' course of instruction carried on at L'École by a staff of professors under the direction of the Minister of Fine Arts. Last autumn, the number of pupils who presented themselves for the preliminary examination was 106. Of these, thirty-three were declared admissible for the further examination, and ultimately twenty-two were received. This autumn, ninety-five presented themselves, forty-nine were declared admissible, and thirty-five passed the final ordeals, the eleventh in order of merit being Mr. Alfred Frampton, of Winchester, a pupil of M. Laisné.

ST. GEORGE'S BURIAL GROUND.

In the most valuable position of the West End, this shut-up cemetery covers over five acres of ground, bounded by St. George's-terrace on the south, Upper Berkeley-street on the north, Connaught-square on the east, and Albion-street on the west.

An old brick mortuary-house, with sepulchral vaults beneath, and two or three *living-chambers* for the custodian on the ground-floor, covers a width of over 100 ft., with frontage to Hyde Park. The building is closed and its offices are defunct; and save that there are a few trees vegetating at intervals, nothing can be more lugubrious than the aspect of this large space, which is thickly planted with tombstones, bristling in varied forms and slantendiculars throughout the whole enceinte.

A double range of wall, with a footway interval of 4 ft., surrounds the whole, in the form of a parallelogram. The path is reserved as a policeman's beat, giving employment to two of the force, as a dead march, for the protection of this *Campo Santo*.

Nothing can be more revolting to good residential houses than the sombre view of a shut-up cemetery; and there are between eighty and ninety valuable residences built close to and overlooking this otherwise concealed aceldama.

Is there any reason wherefore this valuable space should not be utilised, the tombs laid flat, the grounds beautified (say after the fashion of Hyde Park borders), and the costly frontages for four large houses, facing Hyde Park, turned to profitable account? The old mortuary-house, too, should be cleared away, and the coffins in its vaults transferred to a simple mausoleum in the centre of the grounds.

A front entrance should be reserved on the Hyde Park side, there being already an opening next Albion-street, on the west; and there might be one for traverse-way, out of Lower Berkeley-street. This would conduce much to public convenience, and reanimate the present slumbering waste.

Many ancient churches in the City have lately been secularised, and burial-grounds thrown open, giving space for the erection of utilitarian structures. In fact, as the civic population only occupy houses as offices, residing without the walls, congregations became so scant on the Sabbath, that the vicars might have commenced service after Swift's fashion, addressing "Dearly beloved Roger."

The disposal or adoption of this "*terra clausa*" is altogether at the discretion of the Vestry Board of St. George's, Hanover-square; and if they see that a profit can be made, more than adequate to repay outlay and management, whilst it would confer upon vicinal property and the public of that locality an inestimable boon, surely they will not hesitate to carry out so palpable an improvement.

It is right to observe that, so far as relates to the condition of the ground, under the management of one sole custodian, as much has been done as one individual could effect unaided: he has planted several trees, and formed some small flower-beds near his desolate abode.

Quondam.

GAS AS FUEL.

Twenty years since, when a cheaper fuel than coal was really not much needed, attempts were nevertheless made to obtain something more cleanly, if not more economical, than the old and wasteful domestic arrangements; and we remember, about that time, or at least many years ago, of going to see an ingenious gas-fire (described in the *Builder*), and invented by Mr. Bachhoffner, then of the Polytechnic, if we rightly recollect, or of the Coliseum in the Regent's Park, after he left the Polytechnic. This fire was exhibited by Mr. Defries, in Regent-street. It was a brilliant imitation of a lighted domestic fire, made with gas, and studded with some incombustible mineral substance,—talc or mica, if we mistake not. Nothing much better than this is done now. Surely the time has now come for repeating some such experiments, and of really obtaining, in one way or another, an economical application of gas, on an extensive scale, to domestic uses. The public will now be forced to give more heed to such improvements in house firing than heretofore; and if such fires can now be used with more economy than coal, there will be the additional advantages of cleanliness and readiness in their use. Indeed, the readiness and convenience of lighting up, raising, lowering, and extinguishing such fires, must be taken into consideration in an economical view no less than as a convenience and an improvement. As a hint, we may remind inventors that clay lumps acted on by gas may store the heat and give a useful glow, and that some use might be made of lime in this way for heat as it has been for light.

FAILURE IN PORTLAND CEMENT.

Sir,—In answer to your correspondent of last week, "W. P.," I beg to differ in many points. His theory is right, but the practice is not, for the want of time being allowed, as we sometimes receive an order one day, and have to execute it the next. How is it possible to have cement three weeks in a bin under those circumstances? I quite agree with "W. P." respecting finishing in one coat; also the sifting of the cement, which ought to be done by the manufacturer; ditto the sand; and as regards the best cement only being used, no bad should be made.

This is my remedy,—That the manufacturer should provide places large enough to expose the cement for a fortnight before being sent out, similar to brewers keeping their beer a certain time before sending it for use. I contend the manufacturer is responsible to the merchant, and the merchant to the purchaser in the event of a failure. A Previous Sufferer.

ACCIDENTS.

Destruction of Ardvererikie Castle by Fire.—News from Fort William states that the Castle of Ardvererikie, formerly the residence of the Marquis of Abercorn, and in which the Queen and the Prince Consort passed the autumn of 1847, has been almost wholly destroyed by fire. The castle is now the property of Sir John Ramsden, M.P. Sir John and Lady Ramsden, Mr. Fraser M'Intosh, and Mr. Rhind, architect, Edinburgh, were staying at the castle. The only portion saved is that part containing the rooms which were occupied by her Majesty, but all the furniture and valuable paintings, including some of Landseer's, were totally destroyed, For three years past extensive additions have been made to the building, and these have been but recently finished. The paintings by Landseer which are destroyed included a number of life-size wall etchings which were painted by the deceased artist when a guest at the castle.

They were all subjects connected with the chase, and were regarded as of inestimable value.

Serious Scaffold Accident in Glasgow.—For the purpose of repairing the roof of a house in West George-street, Glasgow, a large wooden scaffold was erected, supported by beams projecting from the roof, and five masons were working on it when the supports at one of the ends gave way, precipitating the men to the ground, 20 ft. below. Two of them were severely injured, but it is not expected any of the cases will prove fatal.

Two Men Buried Alive near West Hartlepool. At Mr. J. Lisle's brickyard, Cowpen Bewley, near West Hartlepool, two young men were engaged in digging out clay for the manufacture of bricks, when, after they had attained a depth of more than 12 ft., the earth above them suddenly gave way, and before any effectual warning could be conveyed to them the two poor fellows were completely buried beneath the falling mass, which weighed some tons. An alarm was raised, and a number of their fellow-workmen set to work vigorously to dig them out, but before they were extricated life was extinct.

THE NEW PATENT AUTOMATIC TILE MAKER.

Messrs. Maw, of Broseley, have just perfected and patented an automatic apparatus for working screw-presses by steam or other mechanical power. The invention is for the purpose of making tiles from powdered clay, by the method known as the "dry process," and the contrivance seems to combine the force, elasticity, and other advantages which manual labour alone has hitherto been supposed to give. The peculiar nature of the process for which the machine has been invented requires the delivery of blows of unequal length; and for striking the hardest blow the press runs down from its highest elevation, rebounds a short distance, as though to survey the effect, and then, as if finding that a more gentle blow is required to complete the work, it again descends and gives the final pressure to the clay. It is stated by practical authorities that the machine is applicable to other purposes in which screw-presses are employed.

THE IMPROVEMENTS AT THE LAMBETH VESTRY-HALL.

The alterations and improvements at the Lambeth Vestry-hall, which have been for some months in progress, are now completed. They comprise the re-arrangement of several of the offices and apartments, together with the construction of rooms for the keeper. The Board-room has also been ventilated on a new principle, which is regarded as a very material improvement. It is, however, confidently believed that in consequence of the rapidly-increasing population of the parish, which covers an unusually large area, an entirely new building will shortly have to be erected in a more central position than the present hall in Kennington-road. The parish extends to Norwood, and several members have to come from that district.

THE FALL OF CHIMNEY-SHAFT NEAR GRAVESEND.

On Monday last the coroner for the district resumed the inquiry relative to the death of the men who died from injuries received by the partial fall of a shaft at the unfinished cement works of Messrs. J. C. Gostling & Co., Northfleet, near Gravesend.

Mr. John Cubitt Gostling, one of the firm, said, Mr. Blagburn, the contractor, was a professed shaft-builder, and was recommended to them by a firm in London, for whom he had built shafts. Their first notion was to build a shaft of about 120 ft., but in consequence of opposition by persons in the neighbourhood, they were compelled either to build the shaft much higher, or to submit to claims for compensation. They then entered into an arrangement with Mr Blagburn for labour only, at 5*l.*, they finding the materials. The shaft was to be 220 ft. high; diameter at the base, 22 ft., from a base of 30 ft. square; the outside measurement at the top being 11 ft. The thickness of wall at the base was 3 ft. 9 in.: at 36 ft. 3 in. the thickness was 3 ft. 4½ in.; at 52 ft. 6 in. it was 3 ft.; at 78 ft. 9 in., 2 ft. 7½ in.; at 105 ft. 2 ft. 3 in.; at 131 ft. 3 in., 1 ft. 10½ in.; at 157 ft. 6 in., 1 ft. 6 in.; at 183 ft. 9 in., 14 in., and it was carried on to the top at 14 in.

Mr. Gostling gave statistics of several high chimneys, showing that the thickness of the walls of their shaft was upon an average not less than one-third greater than the chimneys named. The principal part of the bricks consisted of Rutter's paviors, or the best picked stocks. The best Dorking greystone lime was used with the best Thames sand, every few courses being grouted in with new Portland cement. Mr. Blagburn exercised his discretion as to the rate at which the work should proceed. It was commenced in the early part of June, and finished in fair weather in about sixteen weeks. Witness examined the work daily, and never discovered any defect. The contract was not put up to competition.

Mr. James Cubitt, architect, said he made the drawings and superintended the building. He did not think the rate of progress excessive considering the fine weather. He saw it plumbed the night before the accident, but discovered no defect. The materials employed were excellent. He could give no opinion as to the cause of the accident. He had formed a slight conjecture, which was that the working of the derrick at the top might have interfered with the setting of the cement in the cap. The weight of the shaft was 1,67*l* tons, and the cap weighed 19 tons 3 cwt.

Mr. William F. Meakin, architect, said he had examined the remains of the shaft. The proportions of the shaft were correct, and there was an excess of thickness in the walls, and consequent strength over other shafts of the same nature. The materials were perfect, and the workmanship of the very best. There had been no filling in with bats or rubble.

Jonathan Ward, foreman to Messrs. Gostling, gave evidence as to the excellence of the material and the work.

Mr. Blagburn, the contractor, was present, but being still weak, and suffering from the injuries he received, he was not formally examined. He, however, answered a few questions as to the shafts he had built in and near London. He could not account for the accident.

His son was next called, and said he had worked on the shaft from its commencement, and plumbed it about half an hour before the accident. He was about to ascend when the accident occurred, and he was knocked down insensible. They had first-rate materials to work with.

Two bricklayers, brothers of the deceased man Bruce, were examined at their own request, and stated that they considered the head or cap was too heavy, and that this "swagged" the shaft over.

Mr. Meakin, recalled, said he considered this quite erroneous. If it swayed it must swing round. The effect of the cap being too heavy would be, if possible, to crush the brickwork beneath.

Mr. Cubitt said the cap having remained all the previous night, its weakest time, would not be likely to collapse when the parapet was put on, for this would have the effect of strengthening it.

The Coroner having summed up, the jury retired to consider their verdict, and after consulting for about twenty minutes, they found that the men were accidentally killed, the Coroner remarking that he agreed with the verdict. The jury also expressed their sympathy with Messrs. Gostling and with the relatives of the deceased."

A correspondent inquires if the cement used had anything to do with the failure.

PLUMBERS' JOINTS.

In view of the damage done by plumbers and their fires, Messrs. Merryweather & Sons have perfected a lead-burning machine, an apparatus that joins lead edge to edge by means of a gas jet, produced from sulphuric acid and zinc. There is no fire-pot used, neither is there any solder. In addition to the security against fire, they claim that a great saving is effected, for while solder is at least 112*s.* per cwt., lead is only 25*s.* per cwt.; and of the latter there is not one-third used to make a joint as of solder. The comparative cost, according to Messrs. Merryweather, stands thus:—

By lead-burning process.

	s.	d.
One man and one boy will joint 90 ft. of lead on a roof in one day, say, wages	9	0
Strip lead, including waste, 30 lb.	7	0
Use of Machine	1	0
	17	0

By soldering process.

	£.	s.	d.
Two men will joint 90 ft. of lead on a roof in three days, say wages	1	16	0
Solder, 67 lb. at 1*s.*	3	7	0
Firing (on the roof) three days, for heating irons, melting solder, lamp black, &c., 1*s.* 6*d.*	0	4	6
	5	7	6

The cost of the machine is 26*l.*

LIGHTNING AND LIGHTNING-RODS.

The report of the paper by Mr. John M. Mott on this subject, read before the Meteorological Section of the Franklin Institute, has been concluded in the *Journal* of the Institute. The summary is as follows:—

"1st. Lightning-rods, as usually erected, do not afford much protection.

2nd. Insulators, glasses, at the points of support, are of no use in any case; they destroy the most valuable influence of the rod, and may, under certain circumstances, be the cause of most terrific and destructive return strokes.

3rd. The conducting power of lightning-rods is proportional to their solid contents, or sectional area, with similar metals of equal lengths, and not to their surfaces.

4th. A lightning-rod should have the conducting power of a copper rod, one-half inch square, and perfect metallic union of all its parts. A rod made exclusively from copper wires, if of sufficient size, constitutes one which is perfect in theory.

5th. Sharp points for the upper termination of rods are necessary. Rods are of but little value without them. Points should be plated to prevent oxidation. They are also of value when used at the lower terminus of the rod.

6th. It is necessary to place a point at each gable, chimney and ventilator; to connect all together; to connect the rod with metallic roofs, gutters, valleys, steam-pipes, gas-pipes, water-pipes, speaking-tubes, and other permanent metallic bodies about buildings, and the more numerous the connexions with the earth the better.

7th. The rod must be attached directly to the building, the closer the better. It must not be insulated by being passed through or over rings of glass, horn, or other non-conducting substances, nor be placed at a distance from the object to be protected.

8th. Ground rods must have two or more branches penetrating the earth to permanent moisture; must extend below the foundation walls, or the bottom of the cellar. In some instances, where it is difficult to reach moist earth, they must be imbedded in charcoal.

9th. Lightning-rods, constructed and erected in accordance with the foregoing principles, will afford full protection in the hour of danger, and their use is strongly urged as a necessary means of safety.

THE BEHAVIOUR OF CONCRETE IN WALLS.

Sir,—Your issue of December 28th, 1872, contained an advertisement of "information wanted of concrete houses built prior to or say in 1865." If correspondents would furnish information as to how such houses have stood the test of eight or ten years, it would be well. I am a believer in concrete, but so much carelessness is at times permitted, that it would be interesting to hear some experiences in the matter. A. B.

TERRA COTTA.

Sir,—We were glad to see the letter of your correspondent, "Alpha," on this subject, in your last week's issue. The praise that he accords is well merited, and, as manufacturers of terra cotta, we may observe that his statements are perfectly correct as to the varied forms and combinations into which this material may be worked: the limits to its use are, in fact, boundless, and its small cost, as compared with stone, overcomes many of the difficulties that arise where stone is to be employed.

We hope that "Alpha's" letter will call forth other expressions of opinion on the subject. It is for architects, by new designs, to assist in introducing so valuable, because economical, a material, "both for internal and external decoration" as "terra cotta."

Henry Sharp & Jones.

A BUILDER'S DISPUTE.

In the Wandsworth County Court, an action, Hall *v.* Effer, was brought to recover 15*l.* 3*s.* 9*d.* for work done and use of scaffolding. A set-off was pleaded.

The Judge ruled that in this case the set-off could not be heard, and suggested that it should be withdrawn.

Mr. Jones, for defendant, said the settlement between the parties had better be referred to two surveyors to be agreed upon.

Plaintiff would not agree to the adoption of such a course, stating that he could prove his claim. He stated that he was engaged by defendant to construct certain brickwork at St. Joseph's College, Clapham. He received 85*l.* for the work he did, leaving 9*l.* 2*s.* 10*d.* unpaid; he had a verbal contract with defendant to do certain work in Southcott-road, Clapham, for 35*l.*; there was a balance of 3*l.* 10*s.* unpaid upon that. He left some scaffolding upon the work, which the defendant refused to give up; he had taken proceedings in the police-court to recover it, but was not successful; he now charged 2*l.* 10*s.* 7*d.* for the use of it, making the whole of the amount claimed. He had had the work measured by an experienced man in order to arrive at the conclusions he had come to; he admitted that his part of the work ought to have been completed at the expiration of six or seven weeks' time. It was not his fault that the work was delayed, but the defendant's, who had not got the ground out for him.

Mr. Effer stated that he was a builder; he employed Hall to do certain brickwork for him; the time allowed was six or seven weeks, but it was not done in nine weeks. It was necessary that it should be done in a shorter time, as he was allowed only thirteen weeks to do the whole of the work in. He complained to the plaintiff of the delay he was causing several times; each time he promised to put on more men, but he did not do so; there were only plaintiff and another at the job. At last he had to employ men to do the pointing. Plaintiff sent some men to take the scaffolding down; they did it in such a clumsy way as to do injury to the work, and threatened if he interfered both jobs would be left unfinished.

Mr. Hansom, the architect of the building, was called, and stated that he had repeatedly to complain of the manner in which the plaintiff was doing his work, both to Hall and the defendant; at last he threatened to have it done himself. There was always a want of sufficient men to do it quickly.

After hearing evidence upon the measurement of the work done, a verdict was given for the plaintiff for 5*l.* 5*s.*, —about half the amount claimed for work done.

ANCIENT CITIES IN INDIA.

Coins and other antiquities have been found in the ruins of Vinjrote. Government has ordered that they be submitted for examination to the Royal Asiatic Society,—the Bombay branch it is presumed. A note on the ruins at Vinjrote has been made by Mr. F. Robertson, officiating executive engineer, Rehti division, Indus Valley State Railway, in which he says:

"The ruins of Vinjrote are marked on the Revenue Survey Map of Scinde. They are about half a mile from the Rem Nullah, and two from the boundary of Baawulpoor; the sand-hills commence immediately beyond them. There is a little cultivation near there after a good flood; but the soil reeks with saltpetre in most places, particularly among the ruins. The general aspect of the place is a number of hillocks of various sizes strewn over with pieces of brick, for the most part vitrified. The boundaries are not well enough defined to give any particular

size, but mounds containing bricks are found over a width of quite one mile and a half.

Up to the present time the excavations have been of a desultory character, the work being paid for by the quantity of bricks collected. The men confined themselves to collecting the bricks from the surface of the ground, and digging up outlying walls, so that the real interiors of the mounds remain to be explored. It is to be hoped that these will contain the bulk of the remains, and that what has already turned up is accidental. There are only two mounds in which any signs of a building of importance have been laid bare. One is the largest mound in the place. The other is of much greater interest, and I think was a temple of some importance."

Among the objects of interest found at Vinjrote is "a brick on which the following inscription was scratched rudely. . . [Omitted.] The purport of which appears to be that 'Sultan Alexander and Shah Alum were great men, and that Senesi was also. Kaligur Aboura Mistry made this.' Date unintelligible."

There are other ruins of interest on the Indus Valley line.

VALUE OF LAND IN MANCHESTER.

An inquiry has taken place before the sheriff's assessor (Mr. J. J. Aston) and a special jury, at the Sheriff's Court, in the Assize Courts, Strangeways, as to the value of a plot of land in Great Mount-street, required for the purposes of the new railway station fronting to Windmill-street, being constructed by the Cheshire Lines Committee. Mr. John Edwards (instructed by Messrs. Lingards & Newby) appeared on behalf of the committee, and Mr. Higgin, Q.C., instructed by Messrs. Makinson & Son, on behalf of the owners. The property in question is situated between Great Mount-street and Rainforth-street, and contains about 320 yards of net land. Four witnesses, including Mr. Thomas Acton, the auctioneer, were called on behalf of the owners, and stated that in their opinion the property was worth over 5,000*l.*, Mr. Acton putting down its value at 5,644*l.*, and expressing an opinion that land in the neighbourhood of Great Mount-street was worth, for warehouse sites, 12*l.* a yard to day. On behalf of the committee three witnesses were called, who stated that in their opinion that part of the land fronting to Rainforth-street was worth 6*l.* a yard, while that fronting to Great Mount-street was worth 8*l.* a yard. The valuations of these three gentlemen averaged 2,750*l.* After the counsel on each side had addressed the assessor, and that gentleman had summed up the case to the jury, they, after some little consideration, returned a verdict for 2,857*l.*, which, after deducting 20 per cent. on account of the property being taken compulsorily, shows that, in the opinion of the jury, the land was worth rather more than 7*l.* a square yard throughout.

THE SHAFTESBURY PARK ESTATE.

This estate, which is the property of the Artizans', Labourers', and General Dwellings Company, comprises about 40 acres, and is now laid out in a series of oblong blocks or terraces, for the erection of 1,200 houses, of which about 350 have been built since the first stone was laid, last year. The roads or streets diverge at right angles, and are 40 ft. wide, with pavements of asphalte, both roads and pavements being finished as the building goes on. The design of the houses partakes somewhat of the domestic Gothic or Tudor, though no particular style has been strictly followed by the architect. The houses are built in four grades, containing five, six, seven, and eight rooms respectively. The rents range from 5s. 6d. to 9s. 6d. per week, including rates and taxes; or, if the houses are purchased by the occupiers, the prices are from 150*l.* to 300*l.* each house. When the houses are purchased, the purchasers usually pay down a certain sum, the remainder of the purchase money being paid weekly or quarterly in advance. The streets throughout the estate are to be planted with trees (one street is already so planted), forming miniature boulevards. About three acres have been reserved in the centre of the estate for recreative purposes, and a gymnasium. The estate will have its own schools, library, and baths. A site has also been reserved for a co-operative store. When completed there will be entrance gates at the approaches from Battersea Bridge-road at one end, and Elcho-road at the other, and also at the centre of the estate, Greyshall-road. A distinctive feature is that there are to be no public houses on the estate, and this feature, it is said, is highly approved by the working men themselves.

CHURCH-BUILDING NEWS.

Eye.—The re-opening of Eye Church, after complete restoration, has taken place. Mr. Chick, of Hereford, surveyed the fabric, and stated the tower to be in a most dangerous condition, and advised that immediate steps should be taken with a view to rebuilding it. Mr. Rodney then instructed Mr. Chick to make plans and specifications for rebuilding the tower and restoring the church. When operations were commenced the church was in a wretched condition. The walls and foundations were in a literally crumbling state, cracked in all directions. The floor had been raised 2 ft. 6 in. above the original level to hide the defective foundations. The tie-beams of the roofs had been cut away, and the lateral thrust was pushing the arcades and walls apart. The clearstory windows had been destroyed, and the building was a sad sight. All this dilapidation has been amended. The execution of the work was carried out by Mr. John Thompson, contractor, Peterborough. The large box-pews with which the church was filled were removed, and the floors reduced to their original levels. The bases of the arcade columns had been crushed by the great weight placed upon them. These have all been underpinned, renewed, or repaired. The south arcade has been rebuilt, and the old oak roofs restored. A new tower has been built, as nearly as possible after the original design. This made necessary the removal of the temporary western end of the church and gallery, and thus the area of the tower is added to the nave, giving much extra room for seats. A new arcade has been erected between the chancel and mortuary chapel, and oak parclose screens fixed therein. The church has been re-seated with oak seats. The old altar-tombs in the mortuary chapel are being restored at the sole expense of Sir George Cornewall, bart., of Moccas. The total cost of the work, exclusive of a new east window, is about 2,750*l.*

Kirkby Wiske.—The parish church has been reopened, after a restoration under the superintendence of Mr. G. E. Street, R.A. Before the restoration the roof was low and underdrawn; the east window had been despoiled of its tracery; the arch of the tower was filled with a lath-and-plaster screen and the floor covered with high pews of various shapes. Fortunately one of the seat-ends of former days was discovered amongst the framework of the pews, and this has been reproduced in the new seats. The work of restoration has lasted for sixteen months. The north and south aisle walls and the north-east buttresses of the chancel have been rebuilt, the pillars of the nave underpinned, and the roof raised to its original pitch. The chancel-arch has been raised some 6 ft. The seats of the chancel, the communion-table, pulpit, and side screen are of oak, the nave-seats being of pitch pine, and the roof of red deal. The floor is laid with Godwin's tiles. The work has been done by Messrs. J. & H. Thorp & Sons, of Leeds. Besides the general subscriptions, which amount to upwards of 2,500*l.*, there have been many special gifts.

Bingham.—The church of St. Mary and All Saints has been reopened after restoration. The present restoration follows one that took place twenty-five years ago under the superintendence of Sir Gilbert Scott; but it still had an old low roof, to remove which, and to give a lofty appearance to the exterior, has been the chief feature of the present restoration. Several of the windows have been painted by Mrs. Miles, whilst the carving of the stone corbels lining the nave and transepts is the work of Miss Miles. The architect of the present restoration is Mr. F. Miles, son of the rector. The roof of the nave and transepts has been raised 15 ft., making the present height 40 ft.

Weymouth.—The chief stone of Christ Church has been laid. Nearly 5,000*l.* have been collected, but there are still 1,800*l.* required. The purchase of freehold, and the expense of laying a foundation, have cost 1,700*l.*, whilst the tender for the construction of the building was for 4,100*l.* At present it is proposed only to erect a section of the church,—about two-thirds,—carrying out the remainder at some future time. The structure will, however, look complete, for when an addition is made to it a wall only will have to be pulled down. The new church faces the railway station, and abuts on two streets, King-street and Park-street, the centre of a large and industrial class of the population. It will be a Gothic structure from the designs of Mr. E. Christian, of London; Mr. Thomas Dodson, of Weymouth, being the builder. The church will be built of Portland stone in random courses, with dressings of Doulting stone from the quarries of Mr. C. Trask. The interior will be lined with red bricks, having courses of grey bands running round the walls and arches, which will be further relieved by projecting bands of grey bricks, the whole of which were made in the contractor's own yards. This church will be materially different in one respect from the others in the town; for it is intended to have a tower, which will be prepared for a peal of bells,—an adornment in which the existing churches of Weymouth are deficient,—each possessing but a solitary bell. It has been alleged as the reason for this that the sanitary nature of the soil would not allow of a peal being hung in a tower; but in the new church this has been provided for, as a foundation of concrete over the whole area of the church has been laid 6 ft. deep, and the tower will be strengthened by 3,600 poles, 8 ft. in length, driven under the concrete. The main arches will be supported by Portland stone pillars, the shafts being of Pennant stone, in one piece, 7 ft. in length and 2 ft. in diameter, from the quarries of Mr. F. Greenway, Down-end, Bristol. The Devon marble columns for the chancel-arch are from the quarries of Messrs. Goad, Stonehouse, Plymouth. The erection of the church was commenced in May last, so that now a great portion of the walls is nearly completed.

Harleston.—Pulham Church is undergoing restoration. It was commenced last April, and, it is expected, will be completed, so far as it is proposed at present to go, by the beginning of November. At the cost of 370*l.*, the rector is himself restoring the chancel, the east window of which has been promised to be supplied by one of the landowners, Mr. Cole. The bay above the chancel is also being redecorated. Besides repainting the walls, an addition is being made by the building of an organ-chamber and vestry with flint facings and stone dressings. A vault beneath the chamber is being fitted with a hot-air heating apparatus. The roofs of the nave and south aisle are undergoing repair, and new doors and windows will be put in. The cost of this work will be 1,260*l.* Of this amount the sum of 1,050*l.* have already been contributed. When all this work is done, there will still remain the reseating, at a cost of about 600*l.* Messrs. Vine & Grimwood have the contract; the architect is Mr. R. M. Phipson.

Kirk Ireton.—The church of the Holy Trinity, at Kirk Ireton, has, during the last six months, been re-opened, after undergoing a restoration, internally and externally. The fabric is supposed to be upwards of 700 years old, the nave and side aisles being of Norman architecture. The chancel is of more recent date, having been erected not more than 300 years, and is of Gothic style. The architect engaged for the restoration was Mr. Wm. Jolley, of the firm of Evans & Jolley, architects, Derby, and the building-work was undertaken by two masons in the village, Messrs. Wm. and Benjamin Doxey; the contract for the floors and sittings being let to Mr. Edwin Thompson, of Derby.

Woolstone, near Cheltenham.—The parish church of this village has been re-opened for divine service. Amongst the most prominent of the restorations are the new roofing of the nave, —the restoration of the rude, yet highly-interesting niches in the wall,—the entire repewing of the church,—the new reading-desk, pulpit, and seats for the choir,—all of which were done under the direction of Mr. Middleton, of Cheltenham, the architect. The woodwork and carving were executed by Mr. R. L. Boulton, of Cheltenham. In respect to the niches referred to, the Rev. Canon Lysons says:—

"The most singular circumstance connected with this discovery is the fact that the larger of the two niches – that on the right-hand side, for they are of very unequal size – stands upon the capital of an inverted Roman pilar of the Corinthian or Composite order; evidently a portion of a Roman temple, and very similar to those in the rural temple of Clitumnus in Italy. The sequestered position of Woolstone, placed just under the range of the Cotswolds, and in the immediate vicinity of the Camps on Dixon hill and Nottingham-hill, would render it quite the locality for a rural temple to Pan, which may have stood on this spot. Venerable Bede tells us that 'it was a principle with Gregory the Great that the idol temples were not to be destroyed, but converted into churches.' In his epistle to Melitus on his mission to Britain he says, 'Idol temples are not to be destroyed, but only the idols which are in them. If these edifices be well built, it is desirable that they should be converted from the worship of demons to the use of the true God; for the people, seeing that

their temples are not destroyed, will more easily overcome their prejudices, and acknowledge and adore the Almighty in the places where they have been wont to worship.' St. Paul's Cathedral, in London, says Bishop Andrews, was built on the site of the temple of Diana, to which the British name Llan Dian (London) refers. Westminster Abbey was built on the site of the temple of Apollo; St. Alban's on that of Apollo and Mercury; St. Mary-at-Bow, Bishopsgate Church, St. Martin's-in-the-Fields, St. Mary Woolnoth, were all built on sites of Roman temples. The Abbey Church at Bath was built on the site of the temple of Minerva. York and Lincoln Cathedrals were built on the sites of Roman temples, and a Roman pavement was discovered in the area of Gloucester Cathedral in 1867."

Nun Monkton (near York).—The church of Nun Monkton, after having been neglected for three centuries, has at length been restored and re-opened. The church has been restored by Messrs. Weatherley & Rymer, masons and builders, of York, the sole contractors, under the direction of Mr. J. W. Walton, architect, London. The old flooring was taken up, and then laid down in concrete. The passage or aisle up the central part of the nave is of coloured tiles,—black, blue, red, and buff. The seats on each side are open, of oak, with square-headed ends, pierced below with trefoils within a circle. The east window is of three lancet lights, that in the centre being much loftier than those at the sides. They are filled in with stained glass, by Messrs. Morris & Son, of London. The subjects treated of are illustrative of the life of the Virgin Mary. On the south side of the chancel is a memorial window to Captain W. Crawhall. The subject is Christ walking on the Sea, with the Scriptural passage, "It is I, be not afraid." On the north side is another window of a similar character. It illustrates the Raising of Jairus's Daughter. This window is by Wailes, of Newcastle. The entire amount expended in connexion with the restoration has been upwards of 4,000*l.*

South Malling (Lewes).—The parish church of South Malling has been restored and reopened. The plans were furnished by Mr. Philip Currey, and Messrs. Thorpe & Son, builders, carried them out. The old tall-backed pews have been removed throughout the church, and in their stead appear open benches of stained deal. The gallery between the nave and the tower has been abolished, bringing to light the arch, and throwing the lower part of the tower into the church. The ceiling has been repaired, and ribbed with stained timber, and the nave is lighted with new windows, with green cathedral glass. On the north side of the church has been erected a new organ-chamber and vestry, and also a vault for heating apparatus.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Birkenhead.—The present church dedicated to St. Laurence, and situated in Park-street, Birkenhead, is about to be devoted to the purpose of a school, there being a great want of school accommodation in the district, and an effort has been made to raise funds for the erection of a new church to take its place in the parish. A considerable sum has already been subscribed, and a commencement made to the work, the foundation-stone being laid by Bishop O'Reilly, of Liverpool, in the presence of 5,000 or 6,000 spectators. The site of the new church is on a piece of land purchased for the purpose some years ago, adjoining the inclosure in which the present edifice stands. The building will be in the Early English style. At present only the nave is intended to be erected, and its dimensions will be 101 ft. 6 in. long, by 60 ft. broad. The archways, to lead into the future chancel and chapels, will be built now and filled up with walls, to be pulled down hereafter. The chancel is intended to be 45 ft. long by 30 ft. wide. On the Gospel side will stand a roomy organ-chamber, 30 ft. by 22 ft. The church is to be built of Flaybrick-hill stone, with Runcorn red sandstone quoins and dressings. On each side of the nave will be windows, each containing a triplet. At the western entrance will be three large porches and baptistery. Over the roof of the porches, &c., will rise nine long lancet windows, following the angle of the roof, the highest one in the centre being 39 ft. long. There are to be no arches in the interior, but the whole space will be spanned by one single roof of wood and iron. A tower will be added hereafter. The object in view has been to provide as much space as possible at the lowest cost. Hence there is no carved work on the plans, but everything is designed for massive effect. It is expected the building will not cost more than 2,000*l.* The architect is Mr. James O'Bryne, of Liverpool.

Oldham.—The Church of Our Lady and St. Patrick, Oldham, has been re-opened for divine service by Archbishop Manning. In addition to a cleaning which it has undergone, there has been erected a high altar and reredos, which occupy all the fine bays of the sanctuary. The centre bay contains the altar-table, of Sicilian marble, supported by four octagonal columns of dark Devonshire marble, between which, and standing a little backward, are three panels, sculptured to represent the Annunciation, the Coronation of the Blessed Virgin Mary, and the Adoration of the Wise Men. Above the altar-table rises the tabernacle, with a gilded door, and surmounted by a canopy, having, as the terminal of the apex of its front, a carved cross, bearing the sacred monogram. From the centre of the canopy rises a carved pinnacle to the height of 25 ft. Each of the four angles between the bays of the sanctuary contains a clustered shaft with a carved capital, on which stands a life-sized statue of an evangelist. The canopies above the figures terminate in clusters of pinnacles, also 25 ft. high. The five bays of the reredos are divided into fourteen blank tracery panels, each containing the figures of angels bearing symbols, the spandrels being filled with carved foliage. The bays are surmounted by a cornice, with carved and perforated cresting. In the two outer bays are placed oak sedilia benches, also decorated with carving. The whole of the work has been carried out by Messrs. Evan Williams & Millson, sculptors, Manchester, from the designs of Messrs. Goldie & Child, architects, London.

Pendleton. — The foundation stone of St. James's Church, Church-street, Pendleton, has been laid by Dr. Vaughan. The church will be built in the Early English style, and will cost from 5,000*l.* to 6,000*l.* It is estimated to seat about 700 people, and will be 114 ft. long by 52 ft. wide, and its height 60 ft. from the floor to the ridge of the roof. The buildings will include a residence for the clergy, sacristy, choristers' vestry, &c. The architect is Mr. H. E. Tijou, of Manchester, and the church is to be finished by the 1st of October next.

SCHOOL-BUILDING NEWS.

Millwall.—Lord Enfield, M.P., recently presided at the opening of new denominational schools in connexion with St. Luke's, Millwall,—a spot better known as the Isle of Dogs. The schools are unpretending, and they cannot compare with the Board schools of London in completeness of fitting; but they are a great advance upon the buildings which, up to very lately, were thought sufficient for school purposes. They stand a little way from the bank of the river, and possess good separate rooms for boys, girls, and infants, there being space for 192 boys, 192 girls, and 184 infants. Adjoining are good playgrounds and a gymnasium. The schools are from the design of Messrs. Hooper & Lewis. The cost is about 3,000*l.*, of which the Bishop of London's Fund gave 900*l.*; the Committee of Council on Education, 693*l.* 10s.; the National Society, 250*l.*; and the Christian Knowledge Society, 152*l.* 10s.; on the condition that the deficit was raised. The Earl of Strafford gave the site and 50*l.* About 500*l.* have still to be raised. It is proposed to open rooms for a reading-room for the sailors and working men in the neighbourhood and for social gatherings.

Sutton St. Nicholas (Hereford).—A new school and master's residence have been publicly opened at Sutton. The buildings have been erected by Mr. Charles Evans, builder, Talgarth, for the sum of 415*l.*, including the cost of school-desks, and exclusive of the contract for building garden-wall, from the designs and under the supervision of Mr. J. H. Evins, architect, Hereford. The site, though a pleasant rural spot, is not a commanding one, consequently the buildings are seen but on a near approach. The buildings comprise a school-room, 35 ft. by 18 ft.; with lavatory, porch, and necessary offices, and a master's residence. The style is Gothic, adapted to the present period. The walls are built with brick, with dressings of Box-ground Bath stone. The school-room, which is fitted with Colman & Glendenning's desks, is 15 ft. high, ceiled to the collar-joists and rafters, leaving the framing of the principal rafters visible; being stop-chamfered and varnished.

Stourpaine.—New schoolrooms, costing about 600*l.* have been built here without any Government grant. By Lord Rivers a site was granted for the new school, in the centre of the village; his lordship also contributing to the building fund. The school-house and outbuildings are of concrete, finished externally with Portland cement and shingle. The chimney-shafts are of stone, circular, and springing from a square base. The roofs are covered with dark-coloured tiles with ornamental cresting. The entrance-porch, which faces the street, has a half-timbered gable, and the other gables, excepting the class-room, are fitted above the windows with ornamental tiles. The rooms are well lighted and ventilated, the principal apartment being 44 ft. 6 in. long by 18 ft., and the other 20 ft. by 16 ft.; boys and girls having separate lobbies and out-buildings. The windows are of wood, square-headed, except that in the class-room, which is pointed. Several of them have cusped-headed lights. The spirelet over the centre of the main roof serves the purpose of a ventilating shaft. A bell-cote springs from a flying buttress at the angle of the class-room. The design is of the Early Perpendicular type. The interior of the rooms is fitted up with stained-wood desks and forms, and a master's desk in the centre. The cost of the buildings is about 600*l.* The school-rooms and playground are inclosed by a concrete wall, with pillars at intervals of Portland cement. The architect was Mr. James Baker Green, and the builder, Mr. Augustine Green, of Blandford.

Queen Camel.—New schools in this parish have been opened. They are provided for 180 children, and contain three rooms, each 24 ft. by 20 ft. The boys' and girls' schools are separated only by an arch. The rooms have all open timber roofs, with arched principals springing from carved stone corbels, each school being designated by a characteristic head. The exterior is in the Early English style, the windows and the other decorative features being of a simple character. In the centre of the front there is a gable, with a bell-turret on the top, below which is a large three-light window. There is a similar window in the back gable, these two windows lighting the girls' school. The boys' school has a triple lancet window in the west gable, and the infant school has two double-light windows, with circle in the head, and a rose-window in the gable end. The schools are built with white lias stone, with blue lias band courses and Doulting stone dressings, from Messrs. Whitcombe's quarries. The roof is covered with dark-coloured tiles. The schools are set back from the road, from which they are separated by a low wall and an ornamental iron fence on the top, the space between the wall and the building being laid out with shrubs. The playgrounds are in the rear of the schools. The schools are entered from the front by two porches,—one for the girls and infants, and the other for the boys. The walls of each room are lined about 4 ft. high with deal. The desks and benches were supplied by Messrs. Whippell, of Exeter. The rooms are warmed by Gill stoves. The work has been carried out by local tradesmen: the mason's work by Mr. Thomas, the carpenters' and joiners' work by Messrs. Raymond & Son, the ironwork by Mr. Perrott, and the glazing by Mr. Pitman, all of Queen Camel. The schools were designed by Mr. Henry Hall, of London, architect. The total cost (about 1,000*l.*) has been defrayed by Capt. Hervey St. John Mildmay.

Shaddon (near Wakefield).—The foundation-stone of a Congregational school-chapel was laid on Tuesday, the 14th inst. The buildings consist of schoolroom, vestry, and out-offices. The school will be in the Gothic style, of red bricks, with Ackworth stone dressings to the buttresses and gables. There will be accommodation for about 300 persons, the room being 57 ft. by 28 ft., and 23 ft. high to the ceiling, which will be over the collar-beams. The roof-timbers are exposed, and the stop chamfering and quatrefoils on collar-beams will be painted, the rest of the woodwork, including boarding round the school, to be varnished. No staining will be used. By fixing a movable partition the room can be divided into boys' and girls' schools, the principal doors being in the centre, so that either department can be entered through the lobby separately. It was originally planned to have a porch, with two distinct inner doors, but as this arrangement proved too costly it was abandoned. The room will be warmed by two open fireplaces, and ventilated by iron pipes walled in the flues, on a new principle, to draw out the foul air. Mr. A. Hamerton, of Wakefield, is the architect; and Mr. Allan Mason, of Parston, near Pontefract, is the contractor for the whole of the works, which will be under

600*l*. Messrs. Ellison & Broadbent, colliery proprietors, generously gave 100*l*., in addition to the land, which cost 50*l*.; and the director of Messrs. Briggs, Son, & Co.'s celebrated Whitwood Collieries gave 100*l*., on condition that the building was used as a day-school, and that it was adequate to the wants of the district.

FROM SCOTLAND.

Edinburgh.—The question of carrying out the proposed improvement of the North Bridge has been before the Lord Provost's committee and a committee of the road trust, in connexion with the estimates which have been received from various contractors for the execution of the work. Of these estimates the lowest was that of Mr. Waddell, of Bathgate.

Bathgate.—For a process of converting peat into fuel, extensive works are being commenced on the grounds of Seafield, near Bathgate. The works are as yet scarcely in full operation, but some excellent fuel, says our authority, the *Weekly Scotsman*, has already been manufactured. The floors of the building are all of iron, in order to insure safety from fire. The machinery has been manufactured by Messrs. Alexander & Turner, Edinburgh. When in full operation, it is expected that at least 200 tons of fuel will be manufactured every working day. The fuel is composed of peat and coal chiefly, with tar, and made into bricks.

Biggar.—The new bridge at the west end of Biggar, over Biggar burn, is now completed, and has been opened for traffic. The roadway, which is 42 ft., exactly double the width of the old bridge, is laid on ten cast-iron girders, bolted together by iron stanchions. The sides are protected by a strong iron railing running into stone pillars at each end. The bridge is on a level with the pavement in front of the adjoining shops, and the approach from the railway station is much easier, the road having been lowered about 4 ft., and the hollow between the old bridge and the town has been so raised as to make a gentle ascent, where a quick rise formerly existed. The work has improved the approach to the town.

Stow.—Messrs. Herbertson, of Galashiels, have commenced operations for the erection of a new church for the parish of Stow, which, when finished, it is said, will be one of the finest in the south of Scotland. The site selected by Mrs. Mitchell, and the late Mr. Mitchell, of Stow, is on a sloping bank above the public road leading to Galashiels, a little south of the village. The building is ornate in character, and the style of the architecture Early Decorated Gothic. Eight hundred and fifty commodious sittings have been provided in the building, which measures internally above 20 ft. in width by about 126 ft. in length, with apsidal end towards the south-east. On the north side of the main body of the church are a transept and small gallery, also a side aisle divided from the nave by stone columns and arched openings. A tower and spire upwards of 140 ft. in height, under which is the principal entrance, rises from the north-west end, and forms the principal feature in the design. The windows will be filled with stained glass. The time for executing the contracts extends over 1874, and the cost of the building will be about 8,000*l*.

Greenock.—The town council have discussed the propriety of erecting a monument to the memory of James Watt. The special committee reported against the monumental pile of stones from all parts of the world in the cemetery, which would cost from 12,000*l*. to 15,000*l*., being continued, but recommended that a bronze statue be erected in Cathcart-square, with these stones as a pedestal, at a cost of from 3,000*l*. to 4,000*l*. Bailie Campbell thought an engineering school should be erected as a memorial, but ultimately the matter was deferred for a month, that the general public may express their opinion as to the best plan.

Dunfermline.—Mr. Andrew Carnegie, of New York, has intimated his willingness to give the sum of 5,000*l*. for the erection of public baths in Dunfermline, of which city he is a native.

Inverness.—A great improvement in this prosperous town is the erection of a number of houses by Mr. Matheson, M.P. (Mr. Ross, architect), extending along Ness-walk from a little above the Suspension Bridge to the Cathedral. These are bolder, but similar in style to those already erected from Mr. Ross's designs opposite the Cathedral, and will prove an addition to the river side. The largest new works at the present time are the station offices. These will occupy the opposite side of the square from the Station Hotel, and will extend from the site occupied by Mr. Pattillo's shop to the Academy gate, and from the front of the station to the line of Academy-street. They will consist of board-room, committee-rooms, offices, &c., on the principal floor, offices and office-stores in the upper floors, and first-class shops on the ground-floor. The buildings will be in the Italian style. The contractors are Mr. Hendry, mason; Messrs. Robertson & Golan, carpenters; Mr. M'Kenzie, plumber; Mr. Falconer, plasterer; Mr. Russel, slater; Mr. Goodwillie, Elgin, sculptor; Messrs. Falconer, iron workers. The cost will be about 10,000*l*. The excavations are already nearly completed. There are also various smaller jobs going on, alterations and improvements. In the country a good deal of work is progressing. Mr. Andrew Fraser, Inverness, has contracted to build a bank at Lochcarron, with banker's house, &c. A sign of the prosperity brought to the town by tourists is the fact that the Station Hotel has already been enlarged three several times, and although now one of the largest, if not the largest hotel north of Aberdeen, the proprietor would willingly add other fifty bedrooms were it not that the railway company require all their ground for their own increasing accommodation. The proprietor of the Cale Hotel has just added several bedrooms to his already large establishment; while the Royal Hotel has been embellished with a new front facing the station, improving that portion of Academy-street between Union-street and the new market. Amongst other new buildings recently erected in the town may be mentioned the new house built by Chief Constable Murray further down Academy-street, and that built by Dr. Fraser in the High-street, opposite the entrance to Lombard-street. Both of these were erected from designs of Messrs. Matthews & Lawrie.

Aberdeen.—A special meeting of the heritors of Old Machar has been held to consider their former decision as to borrowing money to defray the expenses of "stamping out" the dry-rot in the woodwork of the cathedral. After a long and acrimonious discussion, the former resolution to borrow the money was confirmed by 26 to 20 votes. The minority dissented and protested against the decision as being illegal, and those who were members of committee, with one exception, resigned. The meeting broke up in confusion, without coming to any decision as to when the work was to be commenced. Meanwhile, the dry-rot is making rapid progress.

Books Received.

Notes on National Education in Continental Europe. By John F. Moss, Clerk to the Sheffield School Board. London: Simpkin, Marshall, & Co. 1873.

In accordance with instructions from the Sheffield School Board, Mr. Moss visited a large number of public schools in various states on the Continent, and he here gives some account of the information gathered relating to the work in which the School Boards are so deeply interested.

Although his principal object was to ascertain as far as practicable, what points of excellence in the Continental school system could be with advantage introduced in the elementary schools established and controlled under the English Elementary Education Act of 1870, he found it not only useful, but absolutely essential, to see schools of all grades.

In Prussia, Saxony, Bavaria, Austria, and Switzerland, excellent opportunities were afforded of visiting what may be termed typical schools of every class. In Holland and Belgium the author has also seen schools of various grades. His time in France was too limited to admit of the visitation of schools.

He says it would be impossible to visit, however hurriedly, the schools of central Europe, without being impressed with the manifest thoroughness of the work done and with the evident aptitude of the teachers engaged.

Amongst the best elementary school buildings visited was that of the Gemeinde schools in Friedgens Strasse, Berlin. An examination of the building itself amply repaid the visit. The imposing appearance of the exterior, he remarks, scarcely prepared one for the announcement that this was a free school, and he knew of expensive middle-class schools in England not nearly so well fitted up. Accommodation is provided for 2,000 scholars, boys and girls, of equal numbers, in separate departments. There are two spacious entrance-halls, and the corridors dividing the ranges of class-rooms run down the centre of the building. The turnhalle stands apart from the school-building, on one side of the playground, and is exceedingly well supplied with all the most approved gymnastic appliances, in the use of which the scholars displayed an aptitude which amply evidenced the smart training they had undergone. The director's house and teachers' residences are placed at the further end of the playground, and lodging-rooms for the care-taker are provided in the main building. The sanitary arrangements seemed in advance of those in many of the schools he saw, for in this respect he says, "I certainly cannot commend the German schools as models."

The Gewerbeschule of Cologne is of itself a good example of the manner in which education is made to bear directly on the material progress and prosperity of a community. The building, designed by Herr Raschdorff, when Stadt baumeister, is well calculated to convey an impression of the liberality with which the institution is supported. On the façade, a very successful effort in German Renaissance, are tasteful emblematic decorations; whilst the interior is adorned in a style which well becomes a place in which the development of artistic taste and skill is sought to be induced. It would not be difficult to point to an English town of much greater size than Cologne without a single public building of any kind (excepting churches) equal, from an architectural point of view, to this school building. All the rooms are carefully arranged, with the distinct object of making them thoroughly useful for their respective purposes. The drawing galleries are well lighted and profusely supplied with all the necessary appliances, and in the rooms for modelling in clay there is a capital collection of suitable casts. At the further side of the playground is a spacious turnhalle, admirably fitted up, and replete with all the most modern gymnastic appliances. There are about 300 scholars in attendance, though the building would apparently accommodate many more.

The Real Schule in Cologne has a fine pile of buildings and an ample staff of teachers.

The secondary school buildings, like the primary school buildings, are divided into class-rooms, but they have each, in addition, a large assembly-room, which is used on special occasions, as when the periodical examinations are held and certificates distributed, or on the Emperor's birthday. Most of these are beautifully decorated, some of them with fresco paintings. The *aula*, or assembly-room, of the Real Schule in Cologne is embellished with a tablet recording the names of "boys" from the school who have fallen while fighting in the battles of their country. There are attending this school 600 pupils.

In Saxony, on several occasions, Mr. Moss asked to be shown inferior school-buildings; but in every such case he found something being done towards the provision of new premises. Some of these buildings were, indeed, such as would be made to do duty for years to come in England, though the spirit of rivalry would scarcely admit of their continued existence in the face of such imposing piles as have of late years been erected for school purposes in Saxony and Prussia.

Of the manifold methods of warming and ventilation adopted in the various schools visited few appeared to work thoroughly well. If the warming apparatus appeared tolerably satisfactory, the means of ventilation were usually either imperfect or ill-managed. In the Victoria School, for girls, in Berlin, the sanitary arrangements seemed remarkably good, and the ventilation was very well attended to; but there are apparently few of the Prussian schools of which it could be said, as in this case, that the temperature is so carefully regulated that the thermometers placed in each class-room scarcely vary more than two degrees during the whole day.

The school system of Austria is, in many respects, analogous to the methods of Prussia and Saxony. It may safely be affirmed that some of its special schools are excelled by none in the world. In Vienna, the primary and secondary schools appeared to be exceedingly well conducted, and some of the buildings are superior to many of those of the same class visited in Germany. The Commune has, during

the present year, voted 7,000,000 florins for school-building purposes alone.

A Protestant Communal school in Vienna, for which the Emperor of Austria gave the land, and the Commune bore the expense of the erection of the building, deserved special mention, not only as presenting a fine example of the elementary schools of the city, but also on account of the peculiarity of arrangement. The building is placed in the form of a hollow square, with a covered area in the centre. There is accommodation provided for 1,100 children, and both boys and girls use the same playground. Each story has a balcony or gallery extending on all sides of and overlooking the covered area, the basement of which is used as a playground. The class-rooms are lighted from the outer side, and the entrances to them are from the galleries, which are protected by a stone balustrade. All the rooms are well fitted up, and the school furniture is very tastefully designed. Drinking-fountains are placed on every floor, and the ventilation seems very effective.

The Imperial Gymnasium is remarkable for the beauty of its external architecture, as well as for the profusion of the decorations introduced in the interior. The design is Gothic, very carefully treated throughout, and the corridors and staircases have groined ceilings. A gorgeously-decorated *aula* is used for a chapel, as well as for the ordinary purposes of an assembly-room. There are between 600 and 700 students, but the building seems large enough for a much greater number. The class-rooms are of various sizes. Some of them will accommodate 100 students, whilst others serve only for forty. A well-arranged room, with circular gallery, is set apart for chemistry and for other scientific lectures. There is an open playground in the centre of the buildings, and a well-appointed turnhalle in the basement. The total cost of providing this school was 500,000 florins; of this sum 25,000 florins were expended in furnishing. Mr. Moss evidently employed his time well.

Results of an Experimental Inquiry into the Mechanical Properties of Steel. By David Kirkaldy. London: Testing and Experimenting Works, Southwark-street. 1873.

The mechanical properties of steel of different degrees of hardness, and under various conditions, manufactured by Mr. Christian Aspelin, of the Westanfers and Fagersta Works, Sweden, were tested by Mr. Kirkaldy, under his own suggestions and conditions, for the purpose of exhibition at Vienna, where an extensive series of them was sent; and the results are here tabulated with illustrative diagrams. These results were obtained as the most likely to interest and to be of most general use to civil, mechanical, mining, and military engineers, and to be of importance to manufacturers of steel and iron. One series were prepared for, and sent first to, the Paris Exhibition of 1857. Another series are entirely new, and exhibited for the first time. None of those tested have been withheld.

VARIORUM.

The current number of the *Quarterly* includes a very interesting article on "Holland House, Kensington," founded on a work with that title, by Princess Marie Liechtenstein, recently issued for private circulation only.——A second edition of the "Romance of Peasant Life," by F. G. Heath (Cassell & Co.), just now published, includes a fresh chapter on the Elevation of the Peasant. Chapter III., under an unwise, because exaggerated heading, tells the instructive story of the life of George Mitchell, the marble mason. The book can scarcely fail to excite sympathy for the down-trodden class in whose interest it is written.

Proposed New Public Offices at Greenwich.—The Greenwich Board of Works contemplate the erection of new public offices, and at their meeting last week, it was moved that the Board take into consideration the propriety of forming a building committee, to consist of four members for the parish of Greenwich, two members for the parish of St. Paul, Deptford, and two members for the parish of St. Nicholas, Deptford, to search for, and recommend, a site for the purpose of building such offices for the Board's use. The resolution was agreed to, and a committee appointed accordingly.

Miscellanea.

Maddening Drink.—The Superintendent of Colney Hatch Lunatic Asylum confirms the truth of an assertion made in the *Builder* some years since, that the alcoholic and intoxicating principle in modern drinks is not what produces the worst effects on those who use them, but that the toxicants, or poisons, with which they are adulterated for the purpose of producing an effect on the brain *like* intoxication, but far more dangerous, are the real sources of those maddening effects which fill the lunatic asylums and the prisons. The superintendent, Dr. Sheppard, is surprised that at a time when milkmen are pulled up for adulterating milk with water, the preparers of gin and beer, &c., are allowed to poison the public drinks with fusel oil, and such like abominations, without stint or hindrance. Has not the comparative difficulty in analysing organic substances something to do with this? We do not agree, however, with Dr. Sheppard when he maintains that the diseased craving of many for strong drinks is incurable. We have known of the cure of such craving by the simple use daily of certain bitters, such as camomile flowers and quinine, or Peruvian bark, continued for a time as a tonic for the stomach. But if amylic or fusel oil, as he states, produces such a craving or habitual sottishness, let even "moderate" tipplers beware.

Report of Medical Officer to Holborn District Board of Works.—The sanitary report of Dr. Gibbon for 1872-73 has been issued in a printed form. He states that the district has been more healthy than it has been since his appointment, although it never has been so densely populated as now. The Holborn death-rate, however, was 0·55 above the general death-rate of the metropolis, but 1·45 below that of all the central districts. The Holborn death-rate for 1872 was 21·95 per 1,000, and for 1871 it was 24·25, the general death-rate for the whole of London in 1872 having been 21·4 per 1,000, against 24·7 in 1871. In respect to constant water supply, the report says:—

"These regulations will involve a considerable expense, and appear to me to be unnecessarily stringent, seeing that the constant supply is not what is generally meant by that term, viz., a constant supply laid on at all times from the main to the tap, but merely a branch pipe to convey water from the pipes of the Company (*i.e.*, without the intervention of a cistern), for the special purposes of drinking and cooking, from a 'screw down' stop-valve inserted into the supply-pipe at its entrance into the premises. As the constant supply is to be controlled by a stop-valve at the entrance to each and every house, I think the existing fittings might be used in the first instance. In a sanitary point of view, many of the proposed regulations are excellent. All butts, except such as have metallic linings, are to be abolished; cisterns are to be provided to all closets, &c. It is to be hoped that a water waste-preventer will satisfy this requirement."

St. Oswald's Almshouses, Worcester.—The chief stone of a series of new almshouses in connexion with St. Oswald's Charity, to take the place of the old buildings, has been formally laid in the presence of the mayor, the sheriff, the recorder, the under-sheriff, and a considerable attendance of the general public. The buildings are but the beginning of a scheme for the entire re-erection of the hospital, chapel, and almshouses, which is estimated to cost from 20,000*l.* to 30,000*l.* This portion of the scheme involves the erection of 37 almshouses,—19 upon one side of the entrance and 18 upon the other,—and the foundations have been dug out for 18 of these buildings. With the portion in course of erection will be erected a new entrance-porch of suitable design. The almshouses will consist of a living-room, a sleeping-room, a coal-place, pantry, and the necessary sanitary accommodation. The buildings will be in the Gothic style of architecture, and will be two stories in height; the material, bricks with Bath-stone dressings. The buildings now in the course of being erected will cost about 7,000*l.* Mr. Rowe, of Worcester, is the architect, and Messrs. Collins & Cullis, of Tewkesbury, the builders.

Strange Accident at an Ancient "Barrow."—An appalling catastrophe has happened near Helston, West Cornwall. Three men went to a barrow or ancient heap of stones, to gather building materials, when suddenly the ground opened beneath them, and two of the men fell down 240 ft., into forty fathoms of water, along with many tons of surface earth. The covering of an old mine-shaft had given way with their weight. Attempts were made to reach the bodies, but nothing could be done.

The Alarming Outbreak of Fever near Preston.—The Preston rural sanitary authority has met to consider the outbreak of fever at Middleforth Green, near Preston. The result of the investigations made has been a discovery that in the house where the fever first broke out an old man died, a short time ago, of diarrhœa, and several on the premises were soon afterwards attacked by typhoid fever. Four persons are now suffering from the disease in this house. A quantity of offensive matter was found lying in front of the house, within a few yards of the door, and an open drain ran through the garden. The water which the residents used for domestic purposes was obtained from an open ditch, the overflow from an adjacent pond. The pool that formed the water-supply for these premises was situated close to a pig-stye. Dr. Spencer, the medical officer for that district, reported five fresh outbreaks. One of the cases was directly attributable to a person drinking of the stream adjoining Kay's premises. It was resolved that the nuisance inspector immediately order the removal of all nuisances observed in the district.

Completion of the Restorations of Worcester Cathedral.—At a recent meeting of the Restoration Committee, great satisfaction was expressed at the progress made by Messrs. Wood & Son with the works, and it has now been decided that the opening services on the completion of the restoration shall take place on Wednesday, Thursday, and Friday in Easter week, should circumstances prove favourable. It was announced that Earl Dudley would present the Dean and Chapter with a costly pulpit, designed by Sir Gilbert Scott, in conformity with the architecture of the cathedral; the carving to be executed by Forsyth, of London. The material will be marble and alabaster. Lord Dudley will also give a number of carved oak benches, to be placed in the eastern half of the nave. These benches have also been designed by Sir Gilbert Scott, to be erected by Messrs. Wood & Sons, and carved by Messrs. Farmer & Brindley.

Sanitary Report on St. Mary Abbott's, Kensington.—The annual report on this parish during 1872, by T. Orme Dudfield, M.D., medical officer of health, has been issued in a printed form. In speaking of licensed slaughter-houses, Dr. Dudfield rightly regards public abattoirs as the most satisfactory; but should the select committee of the House of Commons, under whose consideration the subject is, decide on retaining the present system, he will consider it his duty to recommend the vestry to oppose the relicensing of some of the private slaughter-houses at present in existence. He questions whether it would not be economical and advisable to appoint a special inspector to superintend the execution of the dust contracts, which are a perpetual cause of complaint and trouble. Among the principal sanitary wants of the parish, he still has to include a disinfecting chamber and a mortuary.

Building and Bye-laws in Brighton.—The subject of the Rev. Arthur Wagner's new church in Ann-street, which is said to contravene the bye-laws as to open space, has been reported on by a committee, who were of opinion that, had the original plans sent in by Mr. Scott shown a building of the great height which it had reached, the council would probably have insisted on more open space in rear or at the side for ventilation, but the council having in effect decided that the height of the building should not be reduced, and it being now impossible to increase the amount of open space, it did not appear to the committee that there was any other ground of objection to the plans, which the committee now submitted for the order of the council. After some discussion, the report was adopted and entered on the minutes of the council's proceedings. Some dissatisfaction is manifested by inhabitants.

The Late Mr. Evan Thomas.—We hear with much regret of the death of Mr. John Evan Thomas, late high sheriff of Breconshire. Mr. Thomas was a sculptor by profession, and was a pupil of Sir Francis Chantrey. Among his works are a colossal bronze statue of the late Marquis of Bute at Cardiff; a statue of the Duke of Wellington, on the Bulwark, Brecon; the statue of the second Lord Londonderry; and the statue of the Prince Consort, erected on the Castle-hill, Tenby. In the earlier part of his career he resided near London, and we can speak, from personal knowledge, of his good qualities as a man.

The Builder.

VOL. XXXI.—No. 1604.

The Squares of Bloomsbury.

THE name of Bloomsbury is of considerable antiquity, although the district itself was not built upon to any extent before the middle of the seventeenth century. It is a corruption of Blemundsbury, the manor of the De Blemontes, Blemunds, or Blemmots, in the reigns of Henry III. and Edward I., but an absurd statement has found its way into books that the name was originally Lomsberry. This mistake must have originated from the letter B having been dropped by the printer in the first book in which Lomsberry is mentioned, for such a name never really existed. Blemund's Dyche, which was afterwards called Bloomsbury Great Ditch, and Southampton Sewer, divided the two manors of St. Giles and Bloomsbury, and the whole northern division of St. Giles's parish is called in the old parish books "Bloomsbury side." The manor-house of the Blemunds stood on the site of the present Bedford-place, and is described in the St. Giles's Hospital Grant as "the capital messauge of William Blemund." The manor passed through several hands before it came into the possession of Thomas Wriothesley, Lord Chancellor to Henry VIII., who was created Earl of Southampton three days before the coronation of Edward VI. Henry, the third earl, who was the patron of Shakspeare, purchased the manor of St. Giles, which he united to that of Bloomsbury, and the two manors have remained together to the present day. Thomas, the fourth and last earl, who was Lord Treasurer to Charles II. and father of Lady Rachel Russell, rebuilt the manor-house and made it form the north side of a new square, which undertaking is noticed in Evelyn's Diary under date 9th of February, 1665:—"Dined at my Lord Treasurer's, the Earle of Southampton, in Blomesbury, where he was building a noble square or piazza, a little towne; his owne house stands too low, some noble roomes, a pretty cedar chapell, a naked garden to the north, but good aire." Pepys also noticed what was going on, and wrote in his diary, "To my Lord Sandwich's through my Lord Southampton's new buildings in the fields behind Gray's Inn, and indeed they are a very great and a noble work." Southampton House is generally stated to have been the work of Inigo Jones, but that great architect died eight years before the Restoration, and Mr. Peter Cunningham therefore suggested that it might have been by his pupil, Webb. The Earl of Southampton died in 1667 at this house, which is described by a contemporary writer as "near Holburne, in the suburbs of London." In the same year his daughter, Lady Rachel Wriothesley, married William Lord Russell, and the pair lived in Southampton House. It was said that when the patriot Lord passed here on his way to execution in Lincoln's Inn Fields, he threw a sorrowful look at the place where he had spent many happy years. His widow lived here till her death at eighty-seven, in 1723. The Countess of Southampton, second wife of Lord Treasurer Southampton, and step-mother of Lady Rachel Russell, was also living here in 1699. In 1704 the Duke of Bedford moved to Southampton House from Bedford House, Covent-garden, which was pulled down in the same year. Hatton, in 1708, describes the Duke as living "on the north side of Blomesbury-square, at the Lady Russel's, *alias* Southampton House." In the plan of St. Giles's parish given in Strype's edition of Stow (1720), the gardens of Montague House (now the British Museum), and those of Southampton House, are shown to adjoin, and beyond them were the Southampton-fields and the country. Strype, when writing of Great Russell-street, with its gardens on the north side towards Highgate and Hampstead, says "That it is considered by physicians as the most healthful [street] of any in London." Francis, fifth Duke of Bedford, sold the house in 1800, in which year it was pulled down, and new buildings planned out. It was thought strange at the time that the Duke should sell not only his house, but all the furniture and pictures in it. A week after the sale of the contents of the house, the double rows of lime-trees in the garden, and the ancient stem of the light and graceful acacia, which stood in the court before the house, and was commended by Walpole in his "Essay on Landscape Gardening," were also sold.

Bloomsbury-square was built, as we have already mentioned, in 1665, by the Earl of Southampton, whose house formed the whole north side until 1800, when new houses and Bedford-place were erected on its site. It was originally called Southampton-square, and is so named in Strype's "Stow" (1720), although long before that date it was known as Bloomsbury-square. "My Lady Baltingglasse's house in the great square of Bloomsbury," is mentioned in the *London Gazette* for 1674. Like Lincoln's-inn-fields, each side of the square had formerly a different name: thus the South side was Vernon row or street; the east, Seymour-row; and the west, Allington or Arlington row. Lord Castleton lived on the south side, in 1708, as did also Sir Hans Sloane. Ray directed to the latter, in 1696, "At the corner of Southampton-street, next Bloomsbury-square"; and another correspondent, in 1704, varied the address as follows:—"At his house at the corner of Southampton-square, Bloomsbury." The Earl of Chesterfield, mentioned in Grammont's Memoirs, lived on the east side in 1681, at the family mansion, which was inhabited by several of his descendants. Lord Paget was on the east side in 1708, and the great Lord Mansfield's house was at the north end of the same side, on the site of three houses since erected. During the Gordon Riots, of 1780, the mansion was plundered and burnt to ashes, and Lord and Lady Mansfield only made their escape by a back-door a few minutes before the rioters broke in and took possession of the premises. In 1708 Lord Northampton and Lord Chief Justice Trevor lived on the west side. The latter was Sir Thomas Trevor, successively solicitor and attorney general and Lord Chief Justice of the Common Pleas. In 1711 he was created Lord Trevor of Bromham, in Beds; in 1726, appointed Lord Privy Seal; and in 1730, one month before his death, president of the Council. He was the second son of Sir John Trevor, Secretary of State in Charles II.'s reign, and is not to be confounded with the corrupt Sir John Trevor, Speaker of the House of Commons and Master of the Rolls. Other distinguished inhabitants that must be mentioned are the great Nonconformist, Richard Baxter, whose wife died in 1681 in what he calls "this most pleasant and convenient house;" Dr. Radcliffe, the physician; Akenside, the poet, who was settled by his munificent patron, Jeremiah Dyson, "in a small but handsome house;" the great Lord Ellenborough before he removed to St. James's-square; and Isaac Disraeli, in a house (No. 6) built by Isaac Ware. Bloomsbury-square was once a favourite place of residence for the great lawyers, but after the building of Bedford and Russell squares they migrated to these more agreeable spots. In 1822, however, Lord Chief Justice Dallas lived at No. 39. Now the houses are given over to solicitors and architects for their offices, and to lodging-house keepers. There is still, however, one eminent inhabitant, viz., Sir Antonio Panizzi, the late principal librarian of the British Museum, and the large building at the north-west corner is occupied by the Pharmaceutical Society. The bronze statue of Charles James Fox, by Westmacott, which is placed in the enclosure opposite Bedford-place, is 9 ft. high, and stands on a pedestal of granite. It was set up in the year 1816.

Maitland states that in 1739 the number of houses in Bloomsbury was only 954; but we find that from 1792, when the enterprising architect, James Burton, began to build upon the Foundling Hospital estate, until 1829, 1,198 houses were built within the parish of St. George, Bloomsbury, and no fewer than 663 of these were built by or for Mr. Burton within a period of only eleven years, viz., from 1792 to 1803. Southampton-fields, afterwards called Long-fields, were notorious for centuries as the resort of the depraved, and robberies and murders were frequently committed in them. The fields at the back of Montague House were famous for many years as the favourite resort of duellists; but an extract from Aubrey's Miscellanies shows them in a more agreeable light. "The last summer on the day of St. John Baptist (1694), I accidentally was walking in the pasture behind Montague House; it was twelve o'clock. I saw there about two or three and twenty young women, most of them well habited, on their knees very busie, as if they had been weeding. I could not presently learn what the matter was; at last a young man told me they were looking for a coal under the root of a plantain to put under their heads that night, and they should dream who would be their husbands. It was to be found that day and hour." The ground at the back of the west end of Great Russell-street was formerly occupied by Capper's Farm, which belonged to two maiden sisters of that name. J. T. Smith describes them in his "Book for a Rainy Day" as wearing riding-habits and men's hats. "One rode an old grey mare, and it was her spiteful delight to ride with a large pair of shears after boys who were flying their kites, purposely to cut their strings; the other sister's business was to seize the clothes of the lads who trespassed upon their premises to bathe." The north-east end of Upper Montague-street is the site of the celebrated "Brothers' Steps," or "Field of Forty Footsteps," which took this name from a legendary story that two brothers were in love with one lady, who would not declare a preference for either, but coolly sat upon a bank to witness the termination of a duel that proved fatal to both. It is said that the bank upon which the lady sat, and the footmarks of the brothers when pacing the ground, never produced grass again. For the energy and skill which changed these dangerous places into handsome squares and spacious streets, London was indebted to Mr. Burton. Russell-square was built about the year 1804, and the bronze statue of Francis, Duke of Bedford, by Sir Richard Westmacott, which looks down Bedford-place towards that of Fox in Bloomsbury-square, was erected in 1809. When the buildings were in progress, a great quantity of brick-clay was taken from the centre, and the gap occasioned thereby was not filled up, so that the garden was formed in too great a hollow. Many years before Russell-square was built, Baltimore House stood alone upon a portion of its site. In 1767, a milliner was decoyed here by the abandoned accomplices of the last Lord Baltimore, and in the following year that nobleman and his two

creatures were tried at Kingston for the abduction of this young woman, whose name was Woodcock. When the square was planned, Baltimore House was made to form a part of the east side, and in 1803, and for many years afterwards Wedderburne, Lord Chancellor Loughborough, and subsequently Earl of Rosslyn, was its occupant. It was afterwards the residence of the Duke of Bolton, when it was called Bolton House, and it is now divided into two houses (Nos. 66–67). Three houses were also built upon the courtyard, and are now numbered 68, 69, and 70, and a house at the back, which is really in Guildford-street, but is treated as in Russell-square, and was for some time the residence of Professor Donaldson, is called Bolton Gardens House. The few houses on the east side of the square, between Guildford and Bernard streets, were originally known under the distinctive name of Southampton-terrace. Thomas Tooke lived at No. 12 in 1822, and William Tooke at the same house in 1829, and for some years after. Sir Samuel Romilly was living at No. 21 in 1818, when he took his own life in a fit of insanity. Lord Tenterden, Lord Chief Justice of the King's Bench, inhabited No. 28, for some years; and Mr. Justice Holroyd was at No. 46 during a few of the same years. Thomas Denman, afterwards Lord Denman, lived at No. 50; and Sir Thomas Lawrence in a portion of Bolton House, from 1805 to 1830, the last twenty-five years of his life. The Rev. John Mitford, writing in the *Gentleman's Magazine* for January, 1818, says: "We shall never forget the Cossacks, mounted on their small white horses, with their long spears grounded, standing centinels at the door of this great painter, whilst he was taking the portrait of their general, Platoff." The lawyers have always been fond of Russell-square. It was once the favoured residence of the judges and distinguished counsel, but now it is given over to the solicitors. In this present year, among the inhabitants are a baron, a baronet, an alderman, and a member of Parliament, some physicians, and other professional men. We cannot dismiss this square without noting the prominent position it occupies in Thackeray's "Vanity Fair," as the residence of the Selbys and the Osbornes, for the imaginary characters of fiction often throw a greater interest over a place than do beings of real flesh and blood.

The district usually understood as Bloomsbury, extends beyond the mere parish boundaries; therefore we need no excuse for including Bedford and Queen squares among the squares of Bloomsbury. Bedford-square was planned out in the very latest years of the eighteenth century. It was formerly even more than Russell-square the favoured place of residence for the judges. Mr. Justice Littledale lived at No. 5 in 1829, and Lord Chancellor Eldon next door, at No. 6, from 1804 to 1815, in which latter year he moved to Hamilton-place, Piccadilly. It was in his Bedford-square house that the memorable interview between Lord Eldon and the Prince Regent took place. The prince came alone to see the Lord Chancellor, when he was laid up with the gout, in order to obtain for Jekyll, the great wit, the vacant office of Master in Chancery. On the Chancellor's refusing, the prince threw himself back in his chair, and exclaimed, "How I pity Lady Eldon!" "Good God," said Lord Eldon, "what is the matter?" "Oh, nothing," answered the prince, "except that she will never see you again, for here I remain until you promise to make Jekyll a Master in Chancery." The result of such pertinacity was as might be expected, that the new Master was appointed then and there. Mr. Justice Burrough lived at No. 16, in 1829, and Basil Montagu, Q.C., the son of the Earl of Sandwich and Miss Reay, and editor of Bacon's works, at No. 25, in the same year. Lord Chief Justice Best occupied No. 29, and Mr. Justice Park No. 32, for several years at the beginning of the present century. Sir N. C. Tindal, Solicitor-General, was at No. 43, in 1829. This is a good list of legal luminaries, but now no judges are to be found in the neighbourhood. In 1873 the square can boast of possessing, amongst its inhabitants, a member of Parliament, and a consul-general, but most of the houses are occupied by medical men, professors of singing, &c., and artists. There is an Insurance Company and a Ladies' College, but no shops have yet intruded upon the privacy of the place. A part of the east side of Bedford square, and twelve houses in Brunswick-square are in the parish of St. George's, Bloomsbury; but Queen-square is entirely without the parish boundaries. The latter place is an outgrowth from the parish of St. Andrew, Holborn. In 1705 Sir Streynsham Master and fourteen others, who had been appointed trustees to conduct the business, agreed with a Mr. Tooley to give him 3,500*l.* for erecting a chapel and two houses on the site of the south-west side of Queen-square. In the following year the buildings were finished, but the commissioners for erecting the fifty new churches resolving to make this chapel one of the number, purchased it of the proprietors. A certain district was appointed for its parish, and the church was consecrated in 1723, when it was dedicated to St. George the Martyr, in compliment to Sir Streynsham Master, who had been governor of Fort St. George, in the East Indies.

Queen-square was named in honour of Queen Anne; and Dobie, in his history of St. Giles's, says that in 1713 it was called St. George's-square; but this must be a mistake, for in Hatton's New View of London (1708) it is described, under the name of Queen-square, as being then designed. This square has only three sides built upon, as the north side was left open, so that the inhabitants might enjoy the view. Now there are miles of bricks and mortar between the square and the fields. In Dodsley's "London and its Environs" (1761), we read,—"This is an area of a peculiar kind, it being left open on one side for the sake of the beautiful landscape formed by the hills of Highgate and Hampstead, together with the adjacent fields. A delicacy worthy, as it is an advantage to the inhabitants, and a beauty even with regard to the square itself." Alderman Barber, the printer, who erected the monument to Butler in Poets' Corner, died here in 1741, and in 1745 Jonathan Richardson the critic also died here, as did his son, Jonathan Richardson, in 1770. William Stukeley, F.R.S., called by his friends the "Arch-Druid of his age," who held the living of St. George the Martyr from the year 1747, died at his house in the square on March 3, 1765, in his 78th year. Dr. John Campbell, author of the "Lives of the Admirals," lived for some years at the north-west corner house, where most men of eminence in science and literature of his day used to resort on Sunday evenings. Dr. Johnson once said, "I used to go pretty often to Campbell's on a Sunday evening till I began to consider that the shoals of Scotchmen who flocked about him might probably say, when anything of mine was well done, 'Ay, ay, he has learnt this of Cawmell.'" Dr. Anthony Askew, who died in 1784, formed his celebrated library, which sold for 5,000*l.*, at his house in this square. Now most of the houses are occupied by societies, schools, colleges, homes, and hospitals. Dr. Williams's library, which was formerly in Redcross-street, Cripplegate, is now located at No. 8. This library was formed by the Rev. Daniel Williams, D.D., who, at his death, in January, 1715–16, left it to the public, but more especially for the benefit of Dissenting ministers. Torrington and Woburn squares have but little history. The former was completed about 1829, and according to Dobie, "it has proved a very successful speculation to its very industrious and worthy builder, Mr. Sims." No. 55 was the last London residence of the learned antiquary, Sir Nicholas Harris Nicolas, and the Right Hon. Sir John T. Coleridge lived in the square in 1829. Woburn-square was planned a few years after Torrington-square; but was in progress in 1829. Dobie states that it was to be called Rothesay-square.

When London, some years ago, was divided into districts, for the purpose of facilitating the work of the post-office, Bloomsbury was included in the west central district. We thus see that, in the short space of little more than half a century, London has so greatly increased in size that the streets and squares of Bloomsbury, which, at the end of the eighteenth century, were situated at the extreme north, have now become the very centre of the town.

Want of Houses at Ashby-de-la-Zouch.—The population of the town itself does not exceed 4,000, and is not likely to increase under present circumstances, for want of more house accommodation. Persons retiring from active life in the larger towns are frequently inquiring in Ashby for houses from 20*l.* to 50*l.* rental. Those who own the land around about, it is said, could not do the town a greater service than by selling or leasing land for building purposes.

ILL-PAID LABOUR: A SOCIAL DANGER.

We have taken occasion before now to call the attention of our readers to the effect of a great law of mechanics,—or we may say a great law of nature,—that known as the law of the line of least resistance. Its effect is, that when strain is put upon any body, organisation, or system, the weakest point is the first that yields. Thus, in point of fact, no mechanism, whatever be its nature, is stronger than its own most inefficient part. It is not the best, but the worst, of a thing by which its mechanical value is to be tested. Let us go to any cost, let us apply any amount of skill, genius, and labour to our work, the important fact can never be altered, and ought never to be neglected, that the strength and durability of the whole are accurately determined by those of the weakest part. One faulty rivet might sink an ironclad.

We wish our readers to accompany us in a little further consideration of this subject of the weakest point, and to reflect on the great truth that the stability and grandeur of the whole stately fabric of the British Empire depends, intimately and irrevocably, on the resisting power, not of the strongest, but of the feeblest part of our complex social organisation.

It was remarked by the writer of a pamphlet which we noticed on its first appearance, two years ago, that "when distress and misery accumulate to a certain pitch, outburst is certain to occur." If that great flood of trouble, of which only the very crests of the waves come to the notice of the general public, should burst its barriers in our time, it will not be the powerful, the noble, and the wealthy, who will be the first sufferers. Our danger lies, not so much in an assault on established institutions, as in the crumbling away of the lower *strata* of the social pyramid. We do not fear the angry surge of crime so much as the insidious canker of poverty. The evil that most threatens us is the gradual expansion of the quagmire of absolute pauperism,—the involving in its mischief of individuals, and families, and trades, that now maintain a brave hand-to-hand struggle with hunger, want, and disease. A Spanish proverb says,—"If you see your enemy in the water up to his knees, give him a hand and help him out. If you see that he is up to his waist, give him your hand and help him out. If you see him up to his shoulders, jump on him, and keep his head under." We fear those among us may be numbered by more than hundreds of thousands who are in the water much higher than the waist. The enemy who waits yet a little before jumping on and holding their heads under, is pauperism.

People who live in perfect ease are often little aware of the brave struggle which the respectable poor man makes to keep above the level of the pauper. In Saxony, for example, the people are far poorer than they are in England. But the case of a person dying from starvation was never known to occur in Saxony. Hardly a week passes, in the severer season of the year, without instances of death from actual want and starvation finding their way into the London papers. And for one that thus filters to the surface,—how many are there unreported? Again, how small a proportion do the deaths that positively occur from the want of the daily bread on the day of decease bear to those which are matured by the slow process of destruction of the vital power by a course of insufficient food, warmth, and comfort?

The part of our social system, then, which, as being the weakest, chiefly demands the anxious care of the true statesman, is that of the classes who are only just above the level of the poor-house; those who can just feed, or half feed,—clothe, or half clothe, themselves,—house themselves, or do without housing. It is highly important that the state and condition of these classes of the community should be fully and distinctly brought before the public. There is an enormous amount of charity bestowed in England. Some of it is given from the purest motives. We think that it is a melancholy reflection that so much money, given from a sense of religious duty, should be spent with the object of indoctrinating negroes or other people with special theological views. Upwards of 50,000*l.* per annum are raised and spent in order to prove to the ancient people of Israel how much superior is the wisdom of our modern institutions, based on what we call an enlightened religious knowledge,—to that ancient law which so tenderly provided for the poor, and which bade those who were themselves in comfort relinquish up to one-fifth of their income when there was need among their poorer brethren

It is not, however, in this way alone, but in many, that we have to inquire as to the distribution of our charity. There are, first, the true almsgivers,—the good parson, the good squire, the good lady of squire or parson, where these are not improved away by modern progress,—those who know the poor and sick of their parish,—who make the relief that they personally bestow of twofold value by kind words, good advice, and cheering sympathy. The most perfect system of alms-giving ever organised in the world is that of the Jews. Alms, according to the precepts of their law, are at once a debt due to man, and a plea for the favour of Heaven. The virtue and merit of alms-giving has eight distinct grades, the principles being that neither he who gives because he cannot help doing so, nor he who gives openly and ostentatiously, has any but the very smallest share of merit. Highest in the scale stands he who so gives that the left hand shall not know what the right hand doeth. But yet, higher is the praise of that man who prevents alms, by so aiding the tottering as to enable him to avoid a fall. He who, not by ostentatious gift, but by timely loan (so that it be a loan of free heart and free hand, not to be exacted till a fitting time) does this, has more than all burnt offering and sacrifice set down to his account in that great symbolical book in which, in some form or other, all men tacitly believe.

There are, then, the wisest and most useful givers of alms. There are the honest, religious, but prejudiced or misguided givers, who waste their alms. There are the ostentatious givers, who have their reward by the publication of their name in the newspapers; and to whose money, somehow or other, the want of a fructifying benediction often seems to cling. And so we come to the lowest, and smallest, and most insignificant,—but at the same time the most munificent givers,—to the poor who give alms to the poor; and we have no hesitation in saying that the actual total of these widows' mites is such as to exceed that of the silver crowns and golden sovereigns of all the other classes put together. In true merit,—that is to say, in ready self-sacrifice,—it is only the alms of the first class of givers, the personal visitors of the poor, that can compare with those of the poor man himself. The farthing of the latter is worth the crown of the theological subscriber, and outweighs the guinea of the Pharisee. But leaving any question of moral weight aside, the actual amount of money help which the poor give to the poor is greater than that which the rich give to the poor. It is larger, and it is far better administered.

It might ensue, from this consideration alone, —and there is ample proof to be collected from fact—that the timely help is of far more service than the larger but deferred donation. It may be a very great question whether our eleemosynary organisation, as a nation, is not based on a false principle. The matter has to be regarded from two entirely distinct points of view,—namely, the economical and the moral. The new principle has been adopted of late years that supplementary aid to the poor should be discouraged. The poor-house was intended to be the last resource. It was to stand between the poor man and starvation, when he touches starvation point; in he may go if he likes. But the help which should prevent him from going in is not contemplated by the wisdom of Parliament. On the contrary, it is discouraged as much as possible. It may even yet be matter of question whether this wisdom is absolute or the reverse; and that not only the reverse of being absolutely certain, but the reverse of wisdom. In a moral point of view there is very much to be said in support of the opinion that the whole influence of society should be directed rather to keeping people from being paupers than to supporting them when they have become paupers. In a financial point of view we think this latter opinion is capable of proof, which, of course, can hardly be admitted to be the case as to morality.

Here comes to hand a little book, lately published, without name of author, which fell under our eyes by what is called chance,—but by directing attention to which, all godfatherless as it is, we do a service to the cause of the poor man. It is called "Contrasts,"—a title which is ill chosen, as in no way indicating the contents. It is, in fact, a temperate, instructed, cautious appeal to the rate-payers throughout the country to consider whether the enormous sums which are now paid in rates are not, to a great extent, squandered. The writer is admirably free from any exaggeration, bombast, or sentimental appeal. He gives chapter and verse for his opinions. He compares the effect of definite sums of money applied to the support and healing of the poor under the Poor Law, and in the great hospitals and institutions which are munificently supported by the endowments left by the piety of our ancestors, or of the subscribers, whether pious or ostentatious, of our day, on the one hand, with less pretentious charity on the other; and he certainly shows how much farther the widow's mite goes than the shekel of the Pharisee. Thus he draws attention to this most important question,—is not injustice done to the poorer rate-payer by the extravagant distribution of the money raised for the support of the poor? The question is one that cannot be blinked. The sooner it is fully grasped by the public intelligence the better for the future hopes of England.

Let us look, for a moment, at that stratum of society where, as we before said, our weak point as a people is to be found, in a little detail. The traveller who is hurrying from the unattractive streets of London (perhaps intending to study in his journey the new "Digest of the Statutes of the Rural Sanitary Authorities," in the table of contents and index of which he will look in vain for the word "Engineer"), and is beset, at the door of the station, by two shrill voices,—one of them asking him to buy a half-penny newspaper, the other a halfpenny box of matches,—little thinks what has to be paid for out of those halfpence. We will say nothing of the first. It is a commercial speculation in the hands of the larger kind of capitalist. The second halfpenny represents the outcome of the combined labour of those who are not even small capitalists. They are,—to apply an old word in a new sense,—perfectly acephalous. What goes to make up the halfpenny of the acephalous manufacturer and salesman?

Children generally are employed in making the lucifer-match boxes. They are paid at the rate of 4d. a gross. Do our readers happen to remember how many go to a gross? Unless the famous purchase by Moses, in the immortal "Vicar of Wakefield," of the "gross of green spectacles," shall have led them to inquire, we venture to doubt their accuracy of knowledge. A gross is a dozen dozen, or 144. That is, the little manufacturer's labour is paid for at the rate of a penny for three dozen boxes; that is to say, at the rate of the *ninth part of a farthing* per box. It is not an extravagant rate; that is to say, if viewed from the side of the consumer,—our side. Nor is it too encouraging if regarded from that of the producer, the small acephalous manufacturer. Yet by hard work a clever child can earn at this work from 1s. to 1s. 6d. a week. Next has to be considered the more important capitalist who supplies the materials for the box. Then the matches which fill it have to be made. Here, again, come in labour and material; and here also comes in skill of a higher order,—that of the chemist. Some of the latest discoveries of science deal with the heteromorphic forms of the phosphorus that caps the matches. Last comes the distribution to the public. We cannot give all the details. It would be instructive to tabulate them. We know that out of the price of a book that costs 1s., 5d. goes to the distributors. The halfpenny match-box can hardly allow the net profit of five-sevenths of a halfpenny for the little retailer; and for the capitalist, of whom, as purchaser from the manufacturer, he is the agent. So it has happened that on the threat of a strike among these makers of boxes, which has resulted in an increase of their pay up to almost a quarter of a farthing per box, the increased expenditure, which would not in any way be thrown on the purchaser, by reason of the failure of our monetary system to take any cognisance of dealings so small, is thrown on the vendor. A child who could sell boxes enough to give him a profit of 1s. a week, must now sell an extra number. We give our readers the *data* on which to calculate *how* many more, in order to keep up that stable and satisfactory rate of income.

Another minor industry is told of by the same ignominious chronicler. It is that of the maker of skewers for dogs' meat. Who that pays dog-tax,—stamp and sign of eminent respectability as that expenditure is,—or who, not being a lover of dogs, has privately rejoiced at the diminution in the number of that species that may be traced to a fiscal cause, thought of the skewer matter? The price of dogs' meat itself is not high,—we cannot speak from personal experience of the present ruling market rate,—but out of every pennyworth of the aliment, the aliquot part that represents the cost of the skewer must require for its denomination a knowledge of decimal arithmetic hardly to be expected among the small merchants of whom we speak. We are wrong: we can give the data. The manufacturer of dogs'-meat skewers must be also a capitalist. He, or she, has to "find the wood." Finding wood, and finding labour, the gross return obtained by the small manufacturer is the 125th part of a penny. We have contrived to write it without the use of decimals. Taken in another way,—in the wholesale terms,—it is at the rate of eightpence per thousand, wood and all. At this rate, what is called life has been sustained by the dog's-meat skewer-maker, so that the disorganisation of the business by the falling off in the number of customers raised the question of the union or the grave, or at least the hope of a possible grave, from a charity not met with by the poor frail body, so long as, by the lingering within it of the chained immortal spirit, it was denied the advantage of becoming a palpably dangerous source of mischief.

Another female handicraft of similar magnitude has been improved away by the modern practice of selling hooks and eyes by the weight. The women who used to earn what is ironically called a livelihood by sewing hooks and eyes on cards for sale, are thus *démérités*. Then there are the women who do the needlework for umbrella-makers,—they receive tenpence for a dozen umbrella-covers. But this is superb; for it is only the labour that they find, not the alpaca or gingham,—so they obtain the whole five-sixths of a penny, without deduction, for making one umbrella. Let any lady who thinks this a remuneration in any way inadequate set to work to mend a seam of an inch or two long in an umbrella, and minute on her gold watch how much time it takes! Then there are hundreds of women who are employed by the penny toy-makers. The division of labour here has been carried to a detail which we dare not attempt to follow. The women who work in the cinder-yards can actually earn as much as tenpence per day in fine weather. But as they can earn nothing when it rains, Sundays and wet days must reduce their income to something like 2s. 6d. per week,—with the additional feature of total uncertainty when they will have a day's work and when a day's loss of income, entailing may be absence of aliment.

In these and similar small industries are occupied that numerous class of the honest poor who prefer semi-starvation to pauperism. The subject is not one thus briefly to be dismissed. But what a picture do not these few dry details give of the unobserved exercise of one of the noblest virtues of the citizen, if not of the man? There is something that the ancient philosophers call by very lofty names in the patient resolution that will rather earn a crust than accept a loaf.

We do not now speak of what are ordinarily called "the dangerous classes," of the Bedouins of our city life; those whose hand is lifted against any man who has an unguarded pocket. We have recently seen, in the walks sacred to the capitalist, how much skill, invention, observation, knowledge of the world, and cool courage, has been steadily employed to commit robbery on a large scale. No less is the "making" of many a good workman thrown away on the making of an adroit thief. Do not let us be too hard, even on him. If it be a virtue to die—slowly, or at once, rather than to beg—there is at least a word to be said on behalf of the child who finds it easier to steal than to beg. We are not condoning his fault, but yet, "who is his keeper?"

To this vast class which, by honest or dishonest means, strive to keep out of the poor-house, the ancient law would have held out just that degree of aid that would have enabled them to right themselves, and to become useful, instead of harmful, members of society. And it is not the fact that the public burden would be increased by preventive aid; on the contrary, it would be very largely diminished. The maintenance of two adult paupers in Kensington workhouse amounts to 12s. 2¼d. per week. The cost of four pauper children, in the Hanwell Asylum Schools, for maintenance and establishment charges, is 1*l.* 8s. 6d. per week. The dock-yard labourer, whose loss of work has thrown his family on the parish, earned 18s. per week, on which he kept them. But the cost to the nation, which forces them into the poor-house by refusing any preventive aid, is 2*l.* 0s. 8½d. per

week; and the 18s. was a fructifying outlay: some one or other was at least 36s. the better for it; the national wealth was increased to that extent. The outlay of the 40s. is not only an unproductive, but a demoralising outlay. The family is swamped in the morass of pauperism. Are not these questions worthy of very serious, patient, able investigation, even on the principle that the highest morality means the largest profit?

WINTER EXHIBITION AT THE DUDLEY GALLERY.

No scarcity seems to threaten that the supply of pictures will fall short of satisfying any reasonable call for them at this season, judging by what may be seen at present at the French Gallery and the Dudley Gallery. The nearly 400 "cabinet pictures in oil" that are to form part of the Egyptian Hall's attractions for a time are of similar character to former collections exhibited there, with the difference that the absence of some of its best supporters would be sure to occasion, added to no very great help from others who have formerly assisted so very much to establish the institution. There can be little fear of dearth, however general it might become otherwise, lessening so apparently illimitable a provision as that of such pictures as are wont to cover exhibition walls at all times of the year, since it has become the rarest of rare things to have to chronicle any great effort, leave alone commensurate success, on the part of British painters outside the Royal Academy (and not very often inside either!).

On the other hand, the opportunity of observing how clever and industrious they are, as a rule, obtains from Spring to Christmas. Such evidence as supply can put forth of demand would seem to justify a belief that pictures are included amongst our daily wants, and come under the category of common necessaries. It is quite to be wished that this should be the case, even by those who know it never can be; for taste is more often dominated by appetite than *vice versâ*, after all; and on dark days the beauty of the cream-jug is less an object of interest than the share of lacteal treasure it contains; and pretty things are not the first thought of when all things are dear alike.

There is nothing more remarkable to record of this score of scores of performances to which public attention is invited at the Dudley Gallery just now than the fact of there being so little that is remarkable. Although Mr. J. A. McNeill Whistler's admirers will be charmed again by his "Variations in Pink and Grey" (193), to the same degree, no doubt, as they have been by "Nocturns in Blue and Silver," and other variations, opinions of their real value will remain as wide apart as Cheyne-walk from Japan, with as little doubt.

Mr. A. Legros must be said to follow nature very conscientiously and earnestly. His study or sketch on "The Grand Canal, Venice" (135), is just the antithesis of what is but vague and vaporous indication of anything that anybody may choose it shall mean. The level of water and its colour, with the mist veiling the damp basement of buildings, that seem to shoot up like herbage from a marsh, to bloom into colour so soon as they may meet sunbeams, are more than suggested here.

It is a pity the law of evidence does not more frequently apply, or is not oftener made to apply, to nature's witnesses. If there were need it would be next to impossible to swear that a same number of girls, so plain, so homely, so ug—. Ugh! Well; thanks to Dorsetshire butter, or any other of the good and kind provisions, if Mr. Legros had depicted a formful of British girls, they would not, could not,—have afforded such a show of ungainliness as his "École des Filles" (379); and yet, how thoroughly well each girl keeps her place with no scumble to show distance! This and Mr. Haywood Hardy's "Stricken Lioness" are the loudest pictures in the room,—if one is to listen.

"The Stricken Lioness" (66) is too obviously dead to leave room for question. Her head and paws are admirably painted; and Mr. Hardy will fight his way up to very high position. Mr. G. F. Watts, R.A., has been usually better represented than by his study of "Eve" (75), one of a series of designs for large pictures, as, apart from the exquisite modelling of the torso, it can scarcely be accepted for a good specimen. Mr. G. D. Leslie, A.R.A., has reproduced the principal figure of his pleasant classic composition that gained him more laurels than he showed, in the background of "The Fountain" (156). The figure is still very pretty, but seems to miss her surroundings, and, like Mr. D. W. Wynfield's damsel culling dahlias, "The Morning Task" (178), to want freshness and vivacity. Mr. H. Stacy Marks, A.R.A., besides sending some admirable wayside studies of landscape, contributes one of the best figure-pictures—a monk, "The Convent Drudge" (221), polishing the chapel plate, with a patient submission equalling the care he is taking over the job. Mr. J. E. Hodgson, A.R.A., never excelled the completeness of execution and apposite character that distinguish his Algerian group of "A Coral Merchant" (248) noisily expatiating on the superlative quality of his string of beads to a would-be purchaser, who does not mean to be sold if he can help it, and contrasts by his imperturbable decision, the demonstrative eagerness of the vendor. A young girl leaning within the doorway makes up the number of actors in this ordinary scene, which is extraordinarily well painted. We shall try to visit the Dudley Gallery again.

A SACRIFICE AND A WARNING.

Crace Calvert, the well-known chemist, is dead, and was buried on the 29th ult. He died of typhus fever, caught in Vienna, making another victim to the insanitary state of the capital city of Austria.

Mr. Crace Calvert of late improved the manufacture of carbolic acid in all its forms, to be used for purposes of disinfecting and preventing disease which might be caused or aggravated by dirt; and yet he dies by what has aptly been termed "the dirt fever."

Mr. Calvert had gone over to Vienna to introduce and spread the sale of his carbolic acid in its various forms—as a soap, as a fluid, as a crystal, and also as a powder. He believed firmly in its power to prevent disease; as, also, that, to a great extent, the fluid preparation might be taken as a cure for disease. Alas! it did not prevent nor cure in his case. The lesson to be learned from this great loss and sad case is, Do not put too much trust in disinfectants, as putrid cesspools, and stagnant, corrupted atmospheres, will kill in spite of disinfectants. A city with corrupting refuse about and beneath the houses is a city of death.

In 1863 we made some comments, from personal observations in Vienna, on the want of fresh air in the houses and other unhealthful conditions, and wrote thus:—

"There must be other deadly agencies in operation in Vienna if the annual death-rate officially reported be correct. In London, on an average of ten years, twenty-four persons out of every thousand die each year, and this is greatly in excess of some of the healthiest parts of England, where, as at Eastbourne *formerly*, for example, only fifteen persons out of every thousand, die each year. Even in districts of London, sixteen or eighteen in the thousand is the usual death-rate. Now, in Vienna an average of forty-nine persons out of every thousand die each year: so that if the population be taken at 580,000,—which is probably correct, 11,500 *persons die every year merely because they reside in Vienna instead of London.* Much of this frightful waste of life, and its accompanying misery to survivors might surely be prevented. Here is a noble work that wants doing. We recommend it to the attention of the Emperor. A commission of inquiry should at once be issued (not to-morrow, but to-day) to a certain number of enlightened, disinterested, and instructed men, including, if it could be arranged, two or three Englishmen who have given special attention to the subject. Causes being made evident, remedies could be pointed out, and weakness, misery, pauperism, crime, and death would be lessened, just as certainly as that good food, if taken, will nourish, and prussic acid, if taken, will kill. Would it not be well, O Emperor, that history should say: 'In the reign of Francis Joseph Charles, life was lengthened, and sorrow abridged in the city of Vienna?'"

If these words had reached the ears, and convinced the understanding, of those who had power, and so led to works of amelioration, thousands of lives and millions of money might have been saved. The amount lost during this Exhibition year alone, through the unhealthy state of the city, which has kept away visitors, and made the Exhibition a failure financially, is far greater than would have been expended in rendering the city fit for healthful existence.

EXTENSION OF THE METROPOLITAN AND ST. JOHN'S WOOD RAILWAY.

ALLEGED INJURY TO BUILDINGS FROM VIBRATION.

The Metropolitan and St. John's Wood Railway Company are immediately about to commence new works in connexion with laying down a double line of rails, and also to extend their line by constructing new branches from the Swiss Cottage to the Finchley-road Station of the Midland Company; also to the Hampstead Junction of the London and North-Western line, near the Edgeware-road; and likewise a new branch line to Kingsbury, where extensive workshops and engine-sheds are about to be erected by the Metropolitan Company. The powers to construct these new works were obtained in the last session of Parliament, the Parliamentary committees also giving the Metropolitan and St. John's Wood Company power to run goods trains on their line, which, under the 88th section of a former Act, they were prevented from doing. The company's proposals were strongly opposed, more especially that to run goods trains on the line, on the ground that valuable property in the neighbourhood, consisting of high-class houses, would be seriously injured by shaking and vibration. On this point there was a remarkable conflict of evidence before the Parliamentary committees, and the question whether on the one hand builders are not eagerly anxious to build over and immediately on the margin of railways, or, on the other hand, are absolutely deterred from doing so through fear of vibration, was brought prominently forward. The following extracts from the evidence given by the several witnesses examined for and against the proposal will be interesting to all persons connected with building operations, as well as railway construction generally. Vibration and injury to buildings in the immediate neighbourhood of railways was the main point under consideration during the whole of the inquiry.

Amongst the witnesses examined on behalf of the promoters of the Bill was Mr. J. S. Forbes, the managing director of the London, Chatham, and Dover Company, and also chairman of the Metropolitan District Railway. In answer to the question whether any injury arises to property or any serious inconvenience to the inhabitants by the vibration caused by railways, he replied in the negative, and then remarked,—"Vibration is pretty well understood. It is a very convenient thing to raise before committees, and a very convenient lever for compensation; but the practical view of it is this, that where you have railways in tunnel or in cutting, you always find people willing to build houses over the tunnel or by the side of the cutting. Within a very few yards of this building [House of Commons], the St. Stephen's Club is being actually built over the District Railway. We have disposed of a great deal of property in different parts of the suburbs of London, which has actually been built upon over the railway; and a great deal more where they build close up to the railway. Those who are familiar with Camden-town know that people have built there up to the very banks. There is nothing in it *except in these rooms.* The surveyors, when the Bill is passed, very soon settle the vibration value. Judging by experience, I have not found that there is any deterioration in the value of property by the proximity of the railway, but quite the contrary. The rents of the houses on the railway with which I am connected have been enormously increased since I have been connected with them. As I have stated, the St. Stephen's Club are building over the railway. We sold them the land. They were not satisfied with buying the land up to the edge of the tunnel, but they would insist upon having the land over the tunnel."* In answer to the question as to whether any special mode was adopted for counteracting vibrations, he said there was not, but added,—"We had some questions as to the foundations of Westminster Abbey, in the Metropolitan District Railway, and there were additional precautions taken with reference to that building. I think there

* They are building over the railway, and have actually covered over what was an open part of the railway with iron girders, which are to carry the superstructure of their club.

were more solid retaining-walls and inverts. When you are dealing with a building like Westminster Abbey, you cannot allow a shade of a shadow of a doubt, and you take precautions which in an ordinary building would be uncalled for." In continuation of his evidence, he said he had found in his own experience of the London, Chatham, and Dover Railway the increase of the value of property that took place by the vicinity of a railway. "We know that," he observed, "perfectly well by the rating returns, and by the enormous increase of new houses. All the way from the south bank of the Thames, whether you go from the Elephant and Castle side or from Victoria, you will find houses growing up in enormous quantities, as far as Sevenoaks." On being asked if he had found any deterioration in the value of property along the Metropolitan Railway and the Metropolitan District Railway in consequence of the railway, he replied,—"I give my own experience. I have lived in Philimore-gardens, Kensington, for ten years, and I wanted to get out of London, and I sold my house. I gave 3,000*l.* for it ten years ago, and when the Metropolitan District Railway opened, three years ago, I sold it for 6,000*l.*, and I think some neighbours of mine have done better still. I have had as much experience as most men in these matters, because I have been connected with most of the railways about London. These outcries as to vibration are stock complaints,—they are good levers for compensation. On the very edge of the cuttings at Paddington and Euston-square whole streets of houses have been built since the railway was made.

Mr. Myles Fenton, general manager of the Metropolitan Railway, said it was the fact that houses were constantly being built over their railway. The company had considerable plots of land adjoining the railway, and parties eagerly sought them, and actually built, not only over the railway itself, but also on the walls of the railway. He would not say that there might not be some vibration; but, as he told the committee, they had persons living over the railway, and persons building houses on the walls of the railway. He did not think they would be likely to build if they feared vibration. They had large houses in Cambridge-square, where people were living on the top of the railway,—houses worth from 400*l.* to 450*l.* a year. One of these houses was built absolutely over the railway.

Sir Edward Watkin, chairman of the Metropolitan Railway, gave similar evidence, stating that he did not find the vibration on the Metropolitan Railway was at all a source of annoyance to people. He had found that, notwithstanding all the objections raised upon the question of vibration, people were not unwilling to come and take houses along the line of the Metropolitan Railway; and he added, that it had opened up a new demand for property at higher prices. The Metropolitan Company proposed to take about 40 acres of land at Kingsbury, on which to build engine and carriage shops, and also residences for the workmen. He did not say it would improve the neighbourhood for nice houses, but he should still be delighted to buy the whole of the land within a mile of the place for 50 per cent. more than it was now worth. He would give 150*l.* an acre for it.

Mr. Edward Wilson, C.E., who had had the superintendence of the East London, Great Eastern, and Metropolitan Railways, said that in his experience of building, people did not so strongly object to living upon a railway. "They come to you as a rule," he said, "and when you get a railway opened, the builders come to it. The District Railway runs right in front of Somerset House, and I have never yet heard a complaint about it. Again, it passes close to the clock-tower of this House, and we have never heard of the clock losing a second of time or showing any effects from the vibration."

In opposition to the proposed works several architects, surveyors, and builders, as well as owners of property along the line were called. Their evidence was to the effect that the houses in the neighbourhood of the railway had already severely suffered from the vibration caused by the railway, and that in the event of goods trains being allowed to run, the property would be still further injured.

Mr. Phillips, builder, in his evidence stated that the walls of a house which he had erected in Alsop-place had cracked in consequence of the vibration caused by the railway, and that he had had to move his workmen in consequence of the shaking caused by the trains.

Mr. N. F. Dawe, architect, said that there were cracks in several of his houses, caused by the vibration of the railway, and several of his tenants had left. They complained that the vibration shook down the ornaments. He had intended laying out 30,000*l.* in building high-class houses on land which he had purchased from Lord Portman, but if goods trains were to be allowed to run on the line he should not do so.

Mr. James Blythe, builder, gave similar evidence. As a resident in the neighbourhood for seventeen years, he spoke to the injuries which the houses near the line had received from the vibration caused by the railway, which would be worse if goods trains were allowed to run. He wished to erect several houses in the neighbourhood, but should not do so until the decision on the Bill was given.

Mr. Alexander Peebles, district surveyor, also deposed to the injuries which the houses in the neighbourhood of the railway had sustained by vibration, illustrating the case of his own house, where, on the occasion of a friend dining with him one evening, the vibration caused by a train almost shook the fork out of his friend's hand.

Mr. Henry Legg, architect, who had erected Trinity Church, in the Finchley-road, which was situated over the railway, said in his evidence that the tower had not yet been built, and that the increased vibration caused by heavy goods trains passing along the line would render it unsafe to build the tower.

Mr. William Todd, architect and surveyor, stated that he had been professionally engaged upon several houses and a church which had been injured by the vibration on the railway. The church had sustained considerable structural damage by two of the columns of the nave arcade having split.

After a prolonged inquiry, extending over upwards of a fortnight, the Bill authorising the construction of the proposed works and the running of goods trains was sanctioned, with the proviso that no such trains shall be run between Baker-street and the Swiss Cottage between eleven o'clock at night and six o'clock in the morning.

We understand that the new works are intended to be carried forward with all possible speed, with the view of the junction with the London and North-Western and the Midland lines being opened at an early day. It is also stated that the Metropolitan Company will take over the line, and undertake the construction of the new works.

ANTIQUARIAN RESEARCHES.

THE greatest possible service is being rendered to our national archæology by the publication of the Roman inscriptions and sculptures discovered along the line of the great Roman Wall, to which repeated attention has been drawn by the *Builder*. The public as yet is so little aware of this event (for such it may be correctly termed), that any notice of the undertaking will, it is hoped, be welcome to all who are anxious to know something more of Roman Britain than can be learned from the common sources of information current under the name of general history. The work is being produced under the auspices of the Society of Antiquaries of Newcastle-upon-Tyne, by the man best qualified for the important task, the Rev. Dr. Bruce. Dr. Bruce's "Roman Wall" soon grew from octavo into quarto volume, and a third edition has been published; but the materials specially applicable to historical purposes were so extensive and so continually increasing that something was yet wanted; and thus the "Lapidarium Septentrionale"* is being printed to complete and make accessible these records so necessary for fully investigating the Roman period of the history of our country. An undertaking such as this, demanding not only mental and physical qualifications, but also serious pecuniary means, could not be entered upon without care and prudence; but where earnestness is combined with ability and conscientiousness, it is seldom that sympathy and aid are withheld; and the late Duke of Northumberland, Mr. John Clayton, and the Society of Antiquaries of Newcastle cordially and effectively supported Dr. Bruce, who, under their assistance, is now bringing the noble volume towards a close.

* "Lapidarium Septentrionale; or, a Description of the Monuments of Roman Rule in the North of England." Folio; 1870-3. Newcastle-upon-Tyne.

Horsley and Hodgson had done much to prepare the way; but the "Britannia Romana" and the "History of Northumberland" are scarce and very costly works; and while the latter is without engravings of the inscriptions, the former entirely fails to represent their true character; and the sketches of the sculptures are almost burlesquely unlike the originals. Such monuments demand the most careful and accurate treatment. Scrupulous fidelity is imperative; for very often the correct reading of an inscription may depend upon a letter or a ligature; and the artist, if not trained for the purpose, should always be assisted by a practised eye, that he may never sacrifice truth to artistic effect; or, in the case of mutilated or imperfect inscriptions, add a stroke from conjecture. It is for the antiquary to restore, according to the best of his judgment, which is to be tested by the faithful engraving. To the inscriptions from the long line of the Wall itself, and of the stations to the north and south of it, Dr. Bruce has added the military diplomas of Trajan and Hadrian, the earliest documents yet discovered in respect to the Roman forces in Britain in the time of those emperors: these have been prepared in *facsimile* under the superintendence of Mr. Franks. The enamelled bronze cup, with names of some of the stations on the line of the Wall, discovered at Rudge, in Wiltshire, is introduced in a well-engraved plate, and the superb silver *lanx*, richly adorned with mythological subjects, which was discovered at Corbridge, has never before been so well represented and discussed.

The general arrangement of the "Lapidarium" is as follows:—Altars and slabs dedicated to deities; tablets erected to emperors; stones inscribed with the names of legions, alæ, cohorts, and centuries. Then follow sculptured stones without inscriptions, with other objects, of whatever material they may be made; all arranged under the localities where they were discovered. It would be utterly beyond the bounds of a notice such as this is to describe any of these valuable monuments so as to render adequate justice to their merits; but to convey some notion of the scheme of the work a very abridged description of *Procolitia*, the seventh station according to the *Notitia*, may be extracted,—not that it is particularly important; but because Mr. Clayton, to whom the district fortunately belongs, is at the present moment making excavations there which have yielded several new inscriptions, to which reference will probably be soon made in the *Builder*.

The site of this station, now called Carrawburgh, is open and exposed to the weather and winds from every quarter. It is a little to the south of the great Wall, and contains an area of about three acres and a half. Here the *Notitia* places the first cohort of the Batavi:—*Tribunus Cohortis Primæ Batavorum Procolitiæ*. Two inscriptions discovered upon the spot confirm the *Notitia*. One is upon an altar to Fortune, by M. Flaccinius Marcellus, Prefect of the First Cohort of the Batavi; the other records the erection of some building by the same cohort in the time of the Emperor Maximinus, when Perpetuus and Cornelianus were consuls. The Batavi are mentioned by Tacitus as being in Britain under the command of their own chiefs; and the same historian describes them, together with the Tringri, as materially contributing to secure to Agricola the victory at the Grampian Hills. They are also recorded upon Hadrian's diploma as being then in Britain. Here we find them in the time of Maximinus; and the *Notitia*, as before observed, shows where the first cohort was quartered when it was compiled at a later period. Another inscription proves that the first cohort of the Aquitani was, at some period, stationed here, probably in the time of Hadrian, when, from one of his diplomas, we know it was in Britain, and under Aulus Platorius Nepos, whose name is associated with that at Carrawburgh. This station, like others, is fertile in what are called centurial stones, recording work done in companies under centurions, as the century of Cæcilius Proculus, of the fifth cohort; the century of Gellius Philippus, &c. Sometimes the measurement of the work is given, as "the century of Florius, twenty-two paces." On some occasion, a further inscription informs us, the sixth legion, or a portion of it, was present, having been moved from its permanent quarters at York. An altar, erected by Tranquilla Severa for herself and family, has the dedication headed by the letters D. M. D. Dr. McCaul proposes to expand them to *Deabus Matribus Domesticis*; Dr. Bruce reads them as

Deæ Matri Deum, observing that it is not usual to indicate the names of obscure local deities by single letters. On another inscription (of a class common to the region of the wall), which has been lost, Dr. Bruce remarks that "the dedication may be DEO VETERI, "to the ancient god," a dedication not less common than DEO VITIRI. The sculptures from this station represent Minerva and a portion of another figure with her; and Neptune, or a river god; on which Dr. Bruce's remarks will be read with interest.

A work so important as the "Lapidarium Septentrionale" should be in every public library; its historical value cannot be estimated too highly; and, no doubt, from the limited number printed, it will soon become unattainable at its present price. C. ROACH SMITH.

STATISTICS OF CAMBERWELL.

THE opening of the new vestry-hall at Camberwell, last week, was the means of bringing before the public a number of highly interesting statistics respecting the enormous expansion of that parish, and which show the immense amount of building which must have been continuously going forward in the district for more than half a century past. The area of the parish of Camberwell is unusually large, occupying 4,342 acres, and extending from the Crystal Palace to the Walworth-gate, and to the Green Man-gate, in the Old Kent-road, and thence to New-cross. Its great increase within the last century is proved by the fact that whilst in the year 1773 the population was under 3,000, it is now, in 1873, upwards of 120,000. The number of assessments in 1773 was 517, and the rateable value of the parish, 13,233*l.*; whilst, in 1873, the number of assessments was 21,110,—an increase of 20,593,—and the rateable value, 575,599*l.*, or an increase of 502,366*l.* During the half-century between 1821 and 1871, when the last census was taken, the increase was marked and continuously rapid, the population in 1821 being 17,867, whilst in 1871 it was 111,306, or an increase of 522·96 per cent. The statistics also show that the relative increase of population in the neighbouring parishes has not been half so great within the same period as that of Camberwell, for we find that the increase in Lambeth is from 57,638 to 208,342 (no doubt a very large expansion), or an increase of 261·46 per cent.; Newington, from 33,047 to 88,722, or 168·47 per cent.; St. George the Martyr, from 36,368 to 56,077, or 54·19 per cent.; and Bermondsey, from 25,235 to 80,429, or 218·72 per cent.; thus showing an enormous per cent. in favour of Camberwell. The increase also in the population during the last two years between 1871 and 1873, being now 120,000 as against 111,000 in the former year, showing an increase in the population at the rate of 4,500 (or nearly 5 per cent.) in each year. The statistics again show that in the two last decades, between 1851 and 1871, the population more than doubled itself, the number of inhabitants in the first-named year being 54,667, whilst in 1871, as we have already stated, they numbered 111,000. Within the same period the number of houses built was 8,343, the number in 1851 being 9,412, as against 17,755 in 1871, or an increase of 88½ per cent. At the present time there are 4 miles of main drainage within the parish, 50 miles of sewers, and 45 miles of public roadway, in addition to a large number of streets made by private owners, which have been taken over by the parish. In the several streets and thoroughfares there are 2,300 lamps, which are constantly being added to. Building is still going forward at a rapid rate in the parish, several large estates having been laid out in streets and now being built upon. These include the Denmark-hill estate, formerly the well-known Denmark-hill grammar-school; also a large area of land in Peckham, containing several acres, and well known for several years past as a cricket-field. These two estates alone are laid out for the erection of from 800 to 1,000 houses, and a considerable number has already been built, whilst others are at present in progress. Notwithstanding this remarkable expansion of the population it was stated incidentally last week, during the proceedings in connexion with the opening of the hall,* that Camberwell was not nearly built over, and that there were yet hundreds of acres of land to be had at reasonable prices, and plenty of room for houses to be built.

* A view and plan of the Hall will be found in our volume for 1872, pp. 286, 287. Mr. Power is the architect; Mr. King, the builder.

THE CITY ARCHITECT AND EXTRA PROFESSIONAL SERVICES.

AT the meeting of the corporation last week, the Officers' and Clerks' Committee brought up a report recommending that Mr. Horace Jones, the architect and surveyor, be paid the sum of 5,000*l.* for extra services in connexion with certain completed works, which were not contemplated by the terms of his appointment. The report stated that had the outside profession been employed, the professional fees would have been:—For the Meat Market, 14,000*l.*; restoration of Guildhall, 2,300*l.*; Foreign Cattle Market, 5,600*l.*; new library and museum, 2,500*l.*,—showing that a saving of 21,000*l.* had been effected after deducting the expense of the necessary additional draughtsmen. The report further stated that in the judgment of the committee it was both just and right to recognise the special services of the architect, as they believed the works he had carried out did honour to the corporation, and were highly creditable to his professional talent. After some discussion, it was resolved that the report of the committee be printed and circulated, and its consideration deferred.

SIR EDWIN LANDSEER AND ANIMAL LIFE.

AMIDST the perplexities and disappointments of life, it is sometimes not a little consoling to discover, by accident or otherwise, that you have been, after all, to some extent right. A crude theory, not a little doubtful perhaps to not a few, turns out true, and its truth comes to be verified by something which no one can dispute. We have, time after time, urged that the *hand* of the artist is a prime necessity to enable him to interpret the inner *thought* that is in him. This, when plainly stated, seems almost a truism, needing no sort of proof, yet, as we know, the practice of the time in which we live is not a little adverse to it in very many sorts of ways. Art *manufacture*, or the production of art by a number of more or less able hands, working on the art object in succession, and taking it up one after another, is the method of art production now almost everywhere in vogue. It is in *painting* that the principal exception lies. A painting in the rooms of the Royal Academy may fairly be instanced as an example of a work of fine art,—by the *hand* as well as the *mind*,—of the artist exhibiting it. We could say not a little on this generalising theme. Our thoughts have again been drawn powerfully to it by a long examination of the series of etchings and engravings and lithographs of the admirable works of the late great animal-painter, Sir Edwin Landseer. Some 300 of these are now in the rooms of the Messrs. Graves, the printsellers, of Pall-mall, and in these works may be seen the sort of mastery which the executive artist and artist workman in Sir E. Landseer had over the forms of animal life which he drew, and indeed made his own. *Animal* life was the phase of nature which Landseer delighted in. Dogs and horses he never seemed to be tired of looking at and making notes of, and drawing and painting. It is on some few of these, and on the method of their rendering, and on the special work of their copyists and engravers, that we would venture a word or two.

In the first place, we would almost recommend the student who would really wish to profit by the study of these works of Landseer's to pay a visit, or many visits, to the animal collection at the Zoological Gardens, and to look well at the animal forms and movements therein to be seen. There are not a few drawbacks, it is true, but it will be found to be far better than not seeing at all. It was the actualities of animal existence, and the living ways of animals, that the painter loved to note and portray; so that the more the student looks at and knows the forms and ways of animals the better he will appreciate the imitative work, wonderful as it is sometimes, of the painter and draughtsman. Of course to those who can see into the life, if but a little, of the creatures themselves in their state of nature, it will be needless to say to him that to find the real nature and wonder of the animal existence and ways of life we must needs go to the animals and to their haunts. They will not come to us, except on compulsion, and by dint of more or less of *taming* and consequent loss of natural expression. To those who cannot do this, then, a zoological collection or an animal "show" is an enormous help, and can hardly be too much prized, or too often visited. It is well to pause and dwell for a moment on the importance of the distinction between the *wild* and the *tame* or domesticated animal. Landseer, be it observed, and the thought is somewhat new, studied animal life under both aspects; but, perhaps, unfortunately the most popular by far of his works, both paintings and their engraved copies, were those subjects in which the animal forms and groupings were of domestic and petted animals, and the groupings and composition invented and artificial. This is well worth note, and we should be disposed broadly to divide his works into two main divisions or classes;—those in which the animals represented are in their wild and native state, and those in which they are domesticated, and, so to phrase it, postured and groomed. This broad distinction, which to many may seem a slight one, but in reality is not, is well and significantly represented and typified in many of these engravings and etchings. One, and probably to many familiar, illustration of this distinction between animals, and their ways in a wild, as contrasted with a tame state, will be found in the "Otter and Salmon," engraved by J. R. Jackson. It must have been a very clever and slippery salmon which could have escaped from the savage jaws of this supple brute. No tamed and obedient otter could look like this one, and the painter must have studied well, and looked often and long at "otters," to have caught the wild expression as here to be seen even through an engraving on steel, not the best of mediums, by the way, through which to see into otter existence. Quite a study for a stone carver. No conventionality needed, and certainly no effort of invention could see anything more than Landseer could but see in the animal itself in its fish-capturing ways!

Other and remarkable examples of wild animal existence will be found in a series of small round etchings of deer and dogs in the Highlands. These little sketches seem to us to be thoroughly characteristic, and to have come from the heart of the painter. One of them, called "The Watch-tower on the Hill-side," takes fairly to the place itself. The deer on the look out for danger from the side of a desolate hill. Another subject, "Doomed, but who will find him?" Another named, "Off. They could na but catch the wind." Such things must needs be *seen* under difficulties, too, as Turner looked at snow-storms at sea: they cannot, with all man's powers, be invented. The "Dead Deer," the "Eagle," and "Missed" are other subjects worth all the study that can be bestowed on them; for if there are those who cannot go and *see* the realities themselves, then they may, through the keen eye and ready hand of this great animal-painter, see them almost as well, and certainly more safely and comfortably, in these masterly drawings. The three dogs in full chase, in the lower left-hand corner of the frame, could not be surpassed. And while in these small drawings, so much fuller of *life*,—animal life,—to our minds than the larger engravings, and the more showy and popular subjects,—you see less of the *means* and more of the subject,—we would point also to a series of small photographs taken from the walls of some Highland castle, whereon Sir E. Landseer drew roughly some deer and other subjects with singular force and life-like truth. The watchful animal in the centre panel is wonderful, in truth of form, as are the indications of the surrounding country. We name these small subjects because they are a little likely to be missed, being eclipsed by the more showy and larger engraved works around them; but they were evidently executed for the mere love of the work, and at moments when the painter was in the true humour for it. All thanks to him for thus leaving his *hand-writing* for us to read, each as we may and can. It is truly unfortunate that, as Mr. Graves informed us, these small photographs are now the *sole record* of the work done by Landseer in this northern castle, for it has suffered since by fire, and these clever paintings were destroyed. A something truly unhappy; for these light and sketchy works of love, and power of rapid hand, are always better in many ways, and more powerful, than the more painstaking and finished works of the studio. There are no "models" of any kind to go by,—the subjects exist in the mind, and find outward expression at the fingers' points. Another little work may here be specially named,—a small pet spaniel, most cleverly etched by the painter himself at Buckingham Palace. It must have been greatly admired, for it is certainly a true and life-like portrait. It is most wonderfully executed with but a few strokes of the needle.

We could thus go on, and particularise not a ew more of these productions of Landseer's, nd to do full justice to them would require a olume; but we can but indicate the way to ook at them, and offer a hint here and there, ith a tribute of admiration. It seems a pity hat they are not arranged in the order of their ate, or subject, or in some way which would ndicate the special faculty of the artist at the ime he did the work.

We have spoken of the Zoological Gardens, nd would fain believe that Landseer must have tudied well the familiarly-known white bears here, and their singular ways. They never seem o have forgotten their life, short as it was in the rozen North, and the painter must have marked hem right well. At all events, he has, as may e seen in the engraving "Man proposes and God disposes," taken full advantage of the nowledge thus got at. It may not be quite so trange as the life of the Polar bear on his own ce-flow, but it is very striking and admirably uggestive in its way. The engraving is by Thomas Landseer. May we not here ask, is not he life of the painter generally rather too much f a home-spun existence? Polar bears can carcely be made to go through the antics which Landseer's "dogs" so good-naturedly did,—to moke pipes, and take tea, and preside at social neetings,—and yet, too, all the time retain their avage and solitary isolation, and indifference to he genteel conventionalities of modern human xistence. We really know of nothing more triking than to gaze at the *new* animals when hey first make their appearance at the Zoological ociety's Gardens, and to note, which we have ften and often done, the ways and strange look f the creatures in their new and unaccustomed arrow cages, so totally different from the place hey came from. After a while this disappears; hey get used to the place, and to the good-natured mportunities of visitors; they get tame, and, to certain extent, but not altogether, the savage nd isolated nature is subdued. Is this a gain r a loss? What did Landseer think?

We cannot wind up these few thoughts without noticing, as showing how flexible was the and of Landseer, the two "Black Dogs." These apitally-drawn animals were produced by the ainter with the point of a charred stick, in a ew seconds. It would be difficult to find anyhere, or by any master, a finer drawing. It hows what can be done when you know well ow to do it,—with a clear head, a good eye, nd an obedient and flexible hand. It is not in he catalogue of his engraved works. It leads ack to our first thoughts on the power of hand f the artist-workman, and to the way in which his great painter of animals rendered them, nd to the loss of artistic power, and force, and xpression, if but for a moment he abandons to others this gigantic executive instrument. By o sort of possibility could any one, however ible, have helped the painter with this drawing. t is all his own work, and nothing else. It hows how he saw the dog-nature, and how he ould communicate to others what he himself aw so vividly, and loved so well. It is satisfacory to know that the Royal Academy, of which Landseer was so distinguished a member, is to ave an exhibition of his paintings. We trust hey will be classified, and, more than all, that he exhibition will include, if possible some of is *oil sketches*, and "first thoughts" for pictures. t is in the lighter and more rapid work of such master as Landseer that the true power lies. The working artist then is visible, and the rapid nd fleeting moments of the wild life of these wonderful creatures are best caught and perpetuated.

ARCHITECTS' DIFFICULTIES.

MANCHESTER SOCIETY OF ARCHITECTS.

At the last general meeting of this Society, the president, Mr. J. Murgatroyd, delivered the following address:—

The peculiar position in which an architect is placed, by his relations to his client and the builder,—the desire to achieve or maintain a reputation,—and the fact that his works are not for the cabinets of the few, but are exposed to the view and the criticism of the public,—present many difficulties, the surmounting or obviating of which forms often no mean task. Among those which at the present time force themselves most prominently on our notice are, firstly, the difficulty of getting our works executed in a reasonable amount of time; and secondly, that of securing what we consider the proper quality of materials and workmanship. The former is doubtless, to a very considerable extent, caused by the fact that the high wages earned, and the consequently short time worked by the operatives, have told upon production more rapidly than the laws of supply and demand have had time to balance by bringing a sufficient extra number of hands into the market. There are but few branches of the building trade into which any appreciable number of new hands can be imported from other and less highly remunerated callings, and I am of opinion that it is mainly to the rising generation that we must look for any alleviation of our wants in this respect. The increasing use of stone, as a material for facing our buildings, has thus received a severe check, much to be regretted no doubt; for magnificence in building and the use of costly material go hand in hand.

Apart from the great cost of working stone by hand labour (and no other method can produce other than mechanical-looking results), we must all have frequently regretted the delay caused by the non-appearance of frequently-promised and long-expected blocks of stone, the scouring of quarries for them, and the admission ultimately of a material of a different texture or of a colour varying from its neighbour,—no small drawback in this smoky atmosphere of ours,—the cause here being, I presume, that quarrymen find they can obtain better remuneration by working at piecework in blasting limestone for use at iron-smelting works, or in mining, or other occupations of a kindred nature to quarrying, but where the rough-and-ready process fills their pockets better than the care and judgment required for our purposes.

Our only or almost only other substitute for stone, superior brick, finds us in almost the same difficulty. Instead of brick-makers,—or, in their place, companies possessed of capital,—taking up the processes of brickmaking, and by machinery and the use of Hoffmann's or other improved kilns, securing the effectual prosecution of brick making and burning all the year round, independently of the weather and of brickmakers' unions, while obtaining at the same time a fair return on their capital, the manufacture is still mainly carried on in a primitive manner. Thus we have to use a material which one year may be bad and another good, according as the weather has been unfavourable or the reverse, and at all times one in which the endeavour to use too small a quantity of that now expensive fuel, coal, results in the production of bricks of so soft a nature and so irregular a shape that we are compelled to use more ponderous masses to carry a certain weight than ought to be the case.

As regards iron, the reports we hear from the iron and coal districts show that so long as the means of living can be procured by a small amount of labour, so long shall we suffer from a dearth of that metal and delay in procuring it, and that we may have again to revert to the use of those materials of which it was so satisfactorily and increasingly taking the place.

In devising new modes of construction, we architects are at a disadvantage under which, I think, no other profession suffers, in introducing a novelty into its practice. We have not only to deal with security to life and limb, but with that very sensible barometer—the pockets of our clients,—and while every advantage is theirs, the reverse falls on us most unmercifully. I do not, therefore, see any immediate channel of escape from the class of difficulty to which I have alluded, so far as first-class buildings and those to sustain heavy weights are concerned; but for others, such as cottages, villas, and other light buildings, where a return on the outlay is of primary consideration, there is one which hitherto has met with but little favour in this locality. I allude to the use of cement, more particularly to cement-concrete. We have all the materials cheap and at hand. Broken stone, rubbish from stone quarries, &c., could be procured in any quantity, and, with lime, clay, and coal within easy reach, there is no reason why in this district the manufacture of cement on a large scale should not be pursued. For suitable kinds of buildings, I say cement-concrete might successfully be used for walls, floors, and roofs, with the advantage of securing greater rapidity of building, sufficient durability, the use of less experienced labour, greater certainty of quality, and good resistance to the weather.

There is, no doubt, a great prejudice in the profession against the use of cement, except in place of mortar, but this, I think, is because it has generally been used as a sham; but the sooner we recognise its value as a building material, and learn how to treat it as such, the better. It is not by ignoring the use of a new material, or the novel application of an old one, that engineering has separated herself from architecture by such giant strides. Where common sense, guided by the results of scientific investigations, points to the proper use of that which we have hitherto disregarded, we ought not to be slow to follow her indications, bearing in mind that what we do be done well and sufficiently.

Turning now to the other branch of this subject—that of the quality of materials and workmanship—we all know and regret the difficulty of procuring these of the proper standard, and it may be interesting to discover the reason why. I am not sure that the builders are altogether in fault. The modern system of contracting and keen competition have, no doubt, much to do with it. The builder, in the proper interpretation of the term, hardly exists: he has become a contractor, not one who understands construction, and whose opinion may be sought on points of actual experience and the knowledge of material, such as were the builders of a quarter of a century ago, but one who undertakes the execution of work by others, not chosen for their ability to do it, but by reason of the price they will do it for.

But are architects themselves free from blame? Do not many occupy their time of study by attention to drawing, to the exclusion of acquiring a sound knowledge of construction and materials? I am also obliged to come to the conclusion that the habit of designing too ambitiously for the funds at their disposal has done much to foster the difficulty I have alluded to. It is, no doubt, by no means easy for an architect to resist the moral pressure often put on him by his client or committees, who urge the small cost of other buildings, or the ability of other architects, under circumstances which may not be fairly analogous to the case in hand; and in competitions we well know how apt a committee is to be misled by the specious promises of competitors. How often the fear of losing a commission, or the hope of gaining one, leads an architect to a too favourable view of his position,—all ending in his showing on paper that which he may find it impossible to carry out well and thoroughly. Then comes the reduction of every element of strength and solidity to a point verging on instability, and the searching out of those who will undertake the work at the least possible cost—men, it may be, inexperienced, or of little capital, who catch at straws like the drowning man—those who undertake work at ruinous prices in the hope of clearing themselves by a good bill of extras. Thus are the men of some reputation in their calling, who have an honest intention of doing properly what they undertake to do, but who cannot do so without that which ought not to be begrudged them—a fair profit—elbowed out of the way.

Thanks to the existence of this society, many of the fears that I have attempted to depict no longer exist for the architect, or at least they are, to a very considerable extent, reduced by the better feeling that has sprung up amongst us since the society came into existence; and I think it will be very much to our benefit, and to the real benefit of those who honour us with their confidence, if we set our faces resolutely against this letting of our work at any price. But to do this, some time must be devoted to acquiring that which is too often ignored—a knowledge of the value of materials and labour. Nor must we be unmindful that it will be also to our advantage that the builders of the future do not degenerate into mere *entrepreneurs*, without a knowledge of building at all as a science. I cannot, therefore, look upon the efforts which some of your body have been for some time making towards the technical education of the workmen, by means of the Building Trades' Institute, otherwise than with strong hopes of success.

But why should we stop here? Can we not look a little nearer home, and do something for those who are to succeed us as architects? I have often desired to place within the reach of architects' pupils and assistants some of those advantages which lie within the reach of their brethren in London; some means of gaining a knowledge of those matters appertaining to our profession which are not to be learned in the busy time of office hours, and that in a more systematic manner than mere individual, undirected, and often misguided research can afford. It is well known to all of us, that the office is

rather the place for the student to obtain a knowledge of the method of carrying on the *business* of an architect than for studying *architecture*; indeed, the former alone would occupy all, and more than all, of the time usually devoted to an apprenticeship. Are we not constantly grieved at seeing the productions, and the illustrations of productions, of some who imagine that, by "serving their time" in an architect's office, they have earned the right to assume the title of architect? How their efforts show a total ignorance of architecture as evidenced by its history and the knowledge of styles? A total inappreciation of proper harmony of proportion and balance of parts? An incapacity to perceive that features adopted *ad captandum* from one and another period of architecture are totally unfit and incongruous when brought together? Most disastrous, in my opinion, is the striving after prettiness, and the constant and laboured variety and exuberance of meaningless excrescences, to the total destruction of that repose which should characterise that which, by its very material, shows that it is intended to remain where it is placed for at least a generation.

Can we not, I ask, do something more than we have done to counteract this tendency? We have, it is true, published a list of books which it is desirable the student should make himself acquainted with, and pointed out where many are to be found for his free use. We have also established a prize to be competed for by pupils in Manchester offices; but knowing that study, to be of value, must be pursued systematically and out of office hours, would it be impracticable to establish for our pupils some institute, such as the workmen have done for themselves,—some evening classes where, for instance, figure drawing, the designing of ornament, some knowledge of building construction and building mathematics, some hints of an æsthetic tendency, could be imparted? Our School of Art does not offer the special education I would wish to have taught, and the difficulty of procuring capable instructors is, I am aware, very great, but I think not insuperable. I have often heard a valued friend of mine relate his experience, in time gone by, in such a school in London where sound maxims were gradually inculcated; and I, for one, should not only rejoice in seeing something of the same kind established here, but would willingly devote some time to that end if adequately assisted by those among us who have the same object at heart.

A few more words and I think I shall have trespassed sufficiently,—perhaps more than enough,—upon your indulgence.

It must be admitted that the street improvements that are, and have been, for some time in progress in Manchester, will not only be beneficial in affording more scope for traffic, and in introducing light and air into many hitherto insalubrious neighbourhoods, but will also afford the means of adding much to the magnificence of the city. It is much to be regretted, however, that in some instance, such as in what is practically a new street—Deansgate,—the corporation have not insisted on enforcing some of the powers which even their, at present, curious medley of building regulations confer upon them. An essential feature in street architecture is the proper accentuation of the angles of the thoroughfares, avoiding, however, the monotony likely to arise from an everlasting *rounding* of the corners; yet here we see fine angles spoiled by the erection of low, or comparatively low, buildings faced with stone, above which, no doubt, will tower the return brick walls of other buildings. It would be difficult to imagine anything more destructive to architectural effect, or less likely to redound to the credit or ultimate pecuniary advantage of the proprietor, than such a treatment. I do hope that if the rebuilding of any of these angle blocks fall into the hands of any member of our body, he will do his best to impress on his client the desirableness of accentuating the angle.

The competition question has in Manchester had another phase recently added to its already unsatisfactory character. The result of the Victoria Market competition, so far as known, is not likely to give confidence to architects in any future municipal competition. It is not, however, to the cruel disappointment caused by the reversal of the award of the premiums that I would draw your attention, but rather to the conditions of the competition itself. I am well aware that suggestions on the management of a competition emanating from architects themselves, though they might naturally be expected to have a little knowledge of the subject, generally share the fate said to attach to advice given unsought; and yet I think I may challenge any one to produce a scheme fairer for all parties than the "Suggestions on the Management of Competitions," published some time ago by this society. While, however, I had the pleasure of acting as your honorary secretary, I generally found myself too late to introduce it to the notice of a committee seeking designs, in competition, since the first intimation of their intention was usually conveyed to me by their advertisement. In the townhall competition our views were set before the city council, and some of our suggestions were adopted; but it was no suggestion of ours that the council should be at liberty to adopt any features they chose from any of the designs. This clause has, as you are aware, been used as a precedent for the same condition in the markets competition; but I believe the cases are not analogous, for in the latter a general competition was invited, while in the former the clause was introduced, if I remember correctly, into the second competition, when eight architects competed, each receiving three hundred guineas for his drawings. Then to require each competitor to design extensive frontages to the remainder of the plot not occupied by the market itself seems to me useless, unless it be intended to compel each person building thereon to adhere to such design. Should the successful competitor, then, whose premium is swamped in his commission on the outlay on the market only, be unremunerated for designing these other frontages, and submit to his ideas being appropriated by others?

The making a charge of one guinea to architects for the information that should decide them whether the competition be within their scope, was in this instance made, I am given to understand, under some misapprehension. As to the adjudication, not only in this but in any competition, when we take into consideration the number of years of study—and close study, too,—that must be devoted to the art and science of architecture before any one can properly "read" a set of designs, we must come to the conclusion that no ordinary observers can properly cope with the task, and that a report by a competent member of the profession should in all cases be laid before the ultimate judges. And here, again, a difficulty stares us in the face. What if a design equal to one of the most charming of Sir C. Barry's Italian elevations, and distinguished by his most painstaking care in symmetry and elegance of plan, were laid before an adviser of "acrobatic Gothic" tendencies? What chance would there be for the designer? There can be only two modes of avoiding this position. Either the committee must undertake at first that which they have to do at some period—decide on the style to be adopted,—or decide on the professional adviser whom they will consult, and this before announcing the particulars of the competition. Those who will bestow labour and skill on their drawings, without some such guarantees as I have indicated that they will at least receive some consideration, should surely not cavil at the results.

ST. STEPHEN'S, VIENNA.

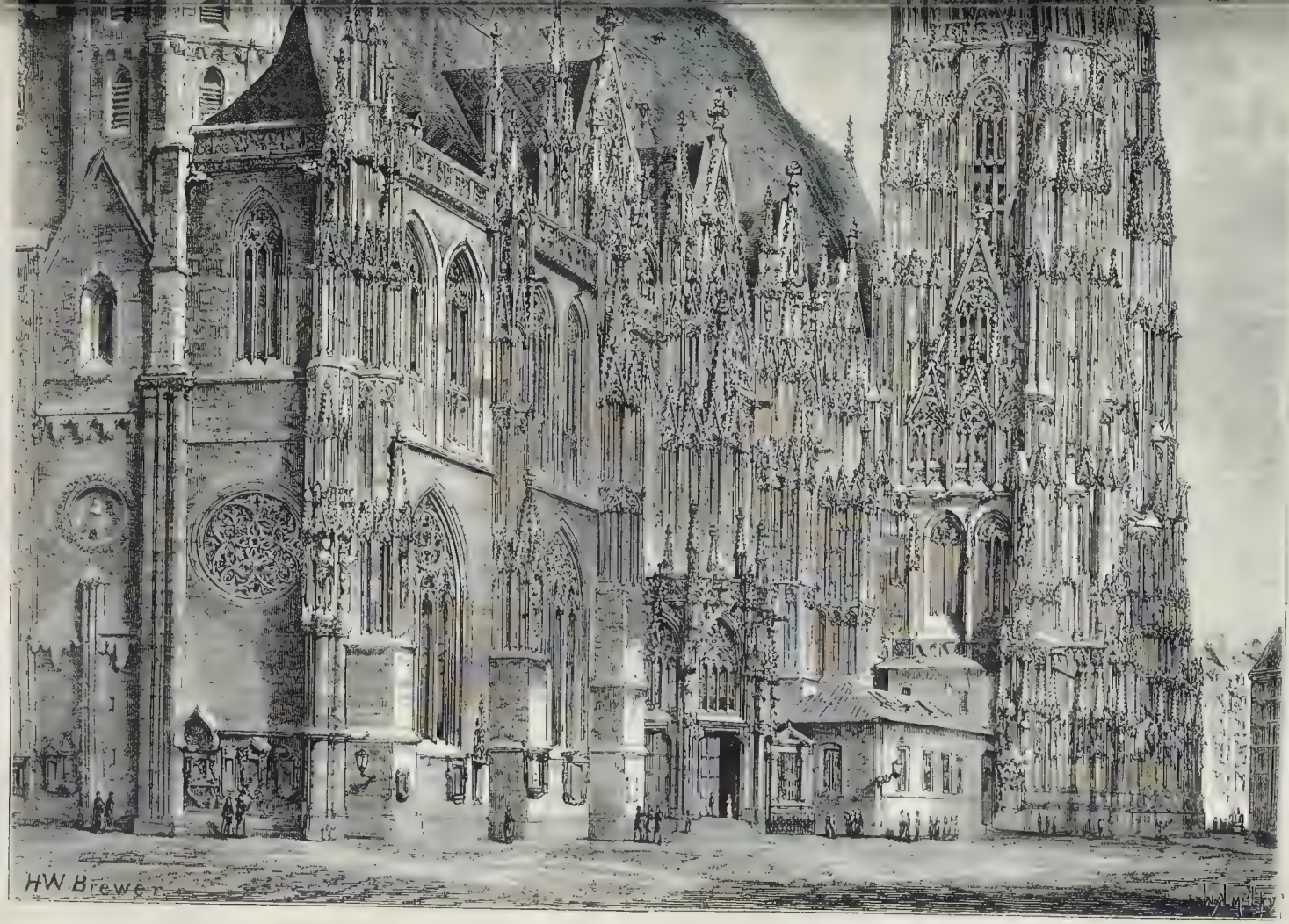
THE Cathedral Church of St. Stephen, Vienna, is one of those buildings which have been looked upon as representatives of the architecture of the various countries in which they are found: it is pre-eminently *the church* of the Austrian dominions, just as Cologne is pre-eminently *the* church of Rhenish Germany, and although St. Stephen's cannot be compared in point of design or dimensions with its Rhenish rival, yet St. Stephen's, Vienna, has one point about it which makes it more interesting in an archæological view than the cathedral at Cologne, and that point is the fact that St. Stephen's is a complete embodiment of German architecture,—a building so intensely national, so excessively German, that it could never have been built in any other country in Europe; and even more than this, its minutest details partake so strongly of all the beauties, and we may add all the defects of German Gothic, that not the slightest foreign influence is perceptible in any single feature of the building. In fact, St. Stephen's, Vienna, is to German architecture what Salisbury Cathedral is to English architecture. Do not let it be supposed that we wish it to be understood that St. Stephen's, Vienna, is the *finest* example of German architecture, or that Salisbury Cathedral is the *finest* example of English Gothic: far from it, as both the churches in a most remarkable way illustrate the defects of the styles of which they are examples; but as *examples* of their styles, they cannot be surpassed, and are therefore immensely valuable to those students who wish in the study of Gothic architecture to arrive at the principles which actuated the ancient builders.

The Cathedral of St. Stephen at Vienna is the largest example of what is called by the Germans a "hall church," and the great aim of its architect appears to have been the erection of a church which should be composed of as few parts as possible. The very opposite in this respect to Salisbury Cathedral, where the aim of the architect appears to have been to give a great effect of size by sub-division of the parts of the building, and it is most interesting to compare the two buildings as examples of two diametrically opposite schemes for arriving at the same result. Now, it need not be supposed that this is the result of the architects of these two churches having been brought up in two different schools, for in all probability if a German had been called on to design a church for such a site as that occupied by Salisbury Cathedral he would have erected a building sub-divided into numerous parts; and if, on the other hand, an English architect had had to erect a church in Vienna he would have designed a plan nearly as simple as that of St. Stephen's. The fact is, the architect of St. Stephen's, Vienna, knew that his church would be surrounded by lofty houses, and so he planned a church which should look like one huge monster of a building, one simple whole which by the very fact of its *oneness* and its compactness should preserve its scale, although surrounded by buildings which would simply swamp an ordinary church; and to prove the success of the architect's design we must mention a fact to which all who know the church can testify, and that is, that although St. Stephen's Cathedral is surrounded by houses seven and even eight stories high, and proportionately immense, yet the church not only preserves its scale, but looks much larger than it really is!

Although the general plan and arrangement of St. Stephen's is, as we pointed out, very simple, yet in the *detail* the principle of sub-division has been carried to an extent rarely to be seen in Mediæval work: thus every pinnacle is composed of a most intricate group of smaller pinnacles, and every gable is divided by mullions, then subdivided by other mullions, then subdivided, and then the spaces are filled in with most delicate tracery work, which is of two, and even in some cases of three, orders, cusped and *recusped*. This sub-division of the parts is carried to its extreme in the buttresses and pinnacles of the tower and spire, but kept so subservient to the general mass, and treated so skilfully, that it helps the scale of the building without giving that appearance of littleness which is the great danger to be avoided in the excessive subdivision of the subordinate features of a design.

Perhaps no Mediæval church in existence offers a more valuable field of study to a London architect than St. Stephen's, Vienna, for in studying this church he cannot fail to notice that every feature of the design had reference not only to the building itself but to its surroundings; that the great object which the architects of this building always placed before themselves was to make the church keep its place, and in this they have been eminently successful; and it appears to us that this is a point on which modern architects very generally fail. Some of our architects who profess to study "English Gothic" exclusively, and to avoid all foreign elements, and influences, might usefully notice how poor is the effect of a low village church placed in juxtaposition to a row of West-end mansions or East-end warehouses; and we submit that a study of the *large* (by the word we do not mean large as to positive dimensions, but largely treated) churches of Germany and the Netherlands, would be of more practical use to a London architect than devoting his time to the pretty little village churches of Northamptonshire, though undoubtedly the latter present a very fascinating study.*

* In our volume for 1863, under the heading "Going Along" (notes of a tour by the conductor of this journal), some particulars of St. Stephen's will be found, including an engraving of the remarkable stone gablets on the south side of the roof (vol. xxi., p. 772); also illustrations of the modern architecture of Vienna, the Votive Church (p. 741), private residences (pp. 724-25), &c. A view of the carved stone pulpit in St. Stephen's will be found in the *Builder*, vol. xvi., p. 727.



THE CATHEDRAL CHURCH OF ST. STEPHEN, VIENNA.——Fourteenth and Fifteenth Centuries.



HOMES IN HOMERTON.

WITHIN the last few days we have looked at some scores of streets, lanes, courts, homes and their back yards, in the district known as Homerton, which forms a portion of the extreme east of the parish of Hackney. The Homerton of to-day is very unlike the hamlet it was fifty years since, or even twenty-five years ago. The whilom hamlet contained a number of well-built red brick mansions, with large gardens, and these were occupied by wealthy merchants of the City. Several of these old residences still remain, but are sadly altered, and others have completely disappeared, and their site and that of their gardens are built upon. Numerous streets of houses have cropped up, and many more at this moment are growing, centrally and at either end of the ancient hamlet which has now swelled into a very populous neighbourhood. The great majority of dwellings now in course of erection, are of the cheap and speculative kind. They are built by a class of small employers, to suit the wants of mechanics, clerks, or those with small annuities, and their owners do not care to let them on any other condition than that of receiving the rent in weekly or monthly payments. These new dwellings are nearly all two stories in height, and contain on an average six rooms, front parlour, kitchen, and washhouse, and three rooms upstairs, one of these being a small bed-room above the projecting wash-house at the rear. The construction of these houses shows that they cannot afford more than proper room for one family, yet two families are to be found in some of them. The inconvenience that must exist in case of two occupiers will be illustrated when we state that the stairs of a number of these houses start from the back room, so that the members of one family would be obliged to pass and repass through the apartment of the other. The intention of the builders of these houses, as they aver themselves, is to let them to only one tenant; but it must be remembered the builders are for the time being only the temporary owners, and their object is to sell them as fast as they are finished. It is immaterial to them what condition these houses may be reduced to in a short time. Externally these cheap-class houses are, to a certain extent, what may be called "neat,"—that is, to the inexperienced eye,—and even their interiors present a certain amount of agreeable accommodation. Cupboards, or lockers, are provided in the recesses, and, as an inducement to a new tenant, Venetian blinds will be put up. In regard, however, to the workmanship and materials, the less, perhaps, that is said the better. Yet we cannot resist mentioning the fact that the doors and sashes are made out of 1¼ in. stuff, and, as a consequence, when ready for their first coat of paint, the smoothening process has reduced them to 1¼ in., and even less. Doors and sashes framed of such scantlings are bound to warp. The stairs are little better than steep step-ladders, boxed between a thin wooden partition and the wall, the partition being continued from the lower floor to the ceiling of the upper room, and of course forming one of the sides of the back top room. The speculators can afford to sell these houses singly, from prices ranging from 150*l.* to 170*l.* and make a profit. The weekly rent of a great number of these houses is fixed at 7*s.* or 8*s.* each, and for those which are a little better finished, or perhaps a little more roomy, 9*s.* are asked. The character of these new dwellings may be summed up—they are built to sell, and being built in rows, they are designed to mutually assist each other in standing or falling. Seven years' wear and tear of occupation, assisted by the elements, will render the majority of them a sorrow and a nuisance to the pocket and the health of their then owners or occupiers.

Having said thus much about some of the new and cheap speculative dwellings in and around Homerton, we will turn our attention to a few of the more aged, many of which in construction and accommodation could not be much worse. These dwellings are situated in the narrow streets, courts, and lanes on either side of High-street. Amongst the places we visited are John-street, Hayward's-buildings, Plough-lane, Cross-street, Church-terrace, Albert-terrace, College-lane, Farm-lane, Pickles-buildings, Crozier-street, Brooke-street, and its continuation Victoria-street, Bergier-street, and its vicinity, the offshoots of Sheppard's-lane, James-place, and some other smaller courts and passages that bore no name, or, at least, exhibited none. Many of the houses and the back premises in the above-named places are in a very bad and dirty state, and the drainage must be imperfect, or the smell and dirt we found would have disappeared. In several narrow and back streets and lanes there was little evidence of the scavenge-cart or the dustman. From Brooksby's-walk, extending through Brooke-street to College-lane, a large number of the houses on either side are in a very dilapidated condition in their interiors, and the back premises of some were in a really frightful state, when we made our visit. The places of accommodation were brimful of filth, and the seats, flooring, and fittings seething with rottenness and corruption. About here will be found women and children in rags and in wretchedness, foul walls, foul floors, foul bedding, foulness without, within, and around. We were happy in meeting some instances of cleanly persons and cleanly homes, hemmed in by others whose frightful example was sufficient to demoralise the whole neighbourhood. "My poverty," said one poor, thinly-clad woman to us, "never prevented me from keeping my children, or myself, or home clean." About Brooke-street, between Homerton Church and Homerton Hospital, the dwellings of the working classes are in bad condition, but they must be examined within and at their backs, or else no conception can be formed of their unhealthy state. Many of these houses we are now describing are not very old, neither are they of recent erection; but they are thoroughly ill-constructed, and are out of repair. Apparently, many of them were, when first erected, constructed of the materials of older houses. Were their occupants provided with a better class of dwellings, it would be a benefit to the health of the neighbourhood if they were demolished. About this quarter of Homerton no small number of the vendor and coster class seem to have settled down, interspersed with the labouring class from factories and builders' yards, and other classes of working men.

In a lane off the upper end of High-street, called James-place, the houses have no rear, and contain but two rooms, one below and one above, ascended to by a steep stair. There is a courtway in front, and at the further end there are two places of accommodation for the six houses. One of these closets is out of repair; indeed, the condition of both in the matter of drainage calls for instant attention, as does the whole court. We found some during our visit who complained bitterly against the action of the School Board. Mothers and fathers confessed to us that their children were put to work far too soon, but that they were obliged to do so, as the earnings of their children, small as they might be, were a help. Unfortunately, in Homerton, as in other places, there are numbers of parents who use every stratagem they can to keep their girls and boys from school. Where we found dirt, and filth, and rags, we mostly found the demoralisation of drunkenness. The beer-shops and gin-shops are plentiful everywhere, and a visit on a Saturday night and Sunday convinced us that our deductions from a day visit were well founded.

The homes of the poor must be improved before the work of the School Boards will produce good results; and *pari passu* with elementary education must proceed the inculcation of the laws of health.

Of very old houses of the half-timbered kind, there are a few in this district. Opposite Bridge-street, in the High-street, there are three or four with projecting windows, plastered fronts, and their roof line broken by gables. One used as a butcher's shop is the most picturesque of the lot, as an aged elm-tree springs up from the footway at one end of the projecting shop-front. It is an old landmark, and on the occasion of our visit the aged tree was being cleared of some of its extending branches, and the house was undergoing some repairs.

A few words more by way of *finis* for the present about Homerton. All the available waste ground is being fastly covered over. Four years ago there was a large space of unenticing ground situated between Church-road and Sidney-road. This space is nearly all built upon with a number of the cheap class of dwellings, some of which we have described in the opening of this paper.

Sidney House, a building which once belonged to a wealthy merchant, and which for a number of years has remained untenanted, its owner having fled the district, is now enclosed around, and its garden built upon. A Sisterhood of nuns of the Romish Church occupy this house; and a chapel, run up hurriedly, built of brick, has just been opened a few yards distant. There is plenty of work in this rough district for Christian ministers of all kinds; for sanitary officers, relieving officers, school boards, and for voluntary and philanthropic efforts. We fear that the dearness of coal, if it should continue, will work mischief in this and similar districts during the ensuing winter, should it prove to be severe. The poorly clad and the ill-housed and ill-fed, particularly the children, are certain to suffer from a number of complaints, which are aggravated through cold or a want of proper warmth. Typhus and bronchitis make havoc in winter as well as in other seasons, and cold and unhealthy homes, acting on ill-fed and uncleanly persons, are the best auxiliaries of disease and death.

THE BALDACCHINO A ROMISH ADJUNCT.

THE application for leave to erect a baldacchino in the Church of St. Barnabas, Pimlico, has been argued in the Consistory Court. Dr. A. Stephens, Q.C., speaking on the part of the opposition, said in the course of his address,—It would be his duty to contend that the real object of that application was to introduce, under the authority of the Chancellor's Court, a structure which was an adjunct to a Roman Catholic altar, in order to give a superstitious reverence to the consecrated elements, under the supposition of a corporal presence of Christ enthroned in the so-called altar,—in fact, to erect a monument of Popish superstition which was legally condemned and destroyed as such in the reigns of Edward VI. and Elizabeth. It had been stated in the course of the present application that the erection of the proposed baldacchino was unanimously agreed to at a vestry meeting on the 15th of April, but he contended that as no mention of the special purpose of the meeting was made in the notice convening it, it was illegal. In support of this view he cited a passage from the second volume of Sir Robert Phillimore's "Ecclesiastical Law," but he declined, he said, to take any technical objection in such a case, preferring to treat the matter upon its merits. The term "baldacchino" was so little known to English churchmen that it might be desirable to give a short definition of it. It originally meant, as stated by Mr. Orby Shipley, in his "Glossary of Ecclesiastical Terms," "cloth of gold made at Baldec or Babylon." In old English inventories the word "bandekyn" appeared as a material used for church vestments, and the late Canon Rock, in his well-known work, "The Church of Our Fathers," gave a copy of an entry of things bought for a Roman Catholic church in 1486, containing, among other items, "A canopy for the Pyx of white bandekyn." In time the term "baldacchino" came to be transferred to the canopies made of that material. In the "Rituale Romanum" it was ordered that a baldachinum was to be carried over the Host when conveyed by the priest to a sick person, and in the Feast of Corpus Christi, instituted in 1264 by Pope Urban IV., for the special adoration of the consecrated wafer, a baldacchino was ordered to be prepared to be carried over the Sacrament. Its use was also enjoined in the Rubric of the Roman Missal for the Mass on Good Friday. In Italian churches the canopy of state over the altar was not unfrequently an architectural structure of marble or stone in the form of a dome, supported by four pillars; and the term "baldacchino" was applied to such structures. The first definition of it by Mr. Shipley was "a structional covering on four columns of marble or stone, or a canopy hanging from the roof over the altar in churches," and in Bingham's "Christian Antiquities" and Webster's Dictionary were similar explanations. To all these erections the words "ciborium" and "canopy" were also applied indifferently, and it was thus that the baldacchino in Italian churches answered the same purpose as the simpler structure of the canopy in the English church s. Mr. Street, R.A., the architect of the propc d baldacchino at St. Barnabas, in a letter to the editor of the *Guardian* in August last, spoke throughout of the baldacchino as a canopy over the altar, and used the words "canopy" and "baldacchino" as synonymous terms. In tracing the history of the use of the canopy in the Church of England it was to him a source of sincere gratification that his learned friend Mr. Phillimore had conceded the point that baldacchinos and canopies were substantially identical both in

principle and object. He now proposed to show that such ornaments were adjuncts to a Roman Catholic altar, and totally incompatible with the rites and ceremonies of the Church of England. In 1215 the doctrine of Transubstantiation was first decreed by the Council of Lateran, under Pope Innocent III., in these terms:—"The body and blood of Jesus Christ are truly contained under the form of bread and wine, the bread being transubstantiated into His body, and the wine into His blood by the power of God." Before that decree no baldacchino or canopy was used or enjoined in the Church of England, and no mention of them was made in ecclesiastical documents; but in 1279 Archbishop Peckham of Canterbury issued the following order to the Church in this country:—"We charge you for the future that the most worthy Sacrament of the Eucharist be so kept that a tabernacle be made in every church with a decent enclosure, according to the greatness of the cure and the value of the church on which the Lord's Body may be laid." Canon Rock explained the necessity for that ritual observance by stating that "Christ is always coming down from above to dwell upon our altars," and added that the first wooden or stone tabernacle resting on the altar seen in this land was put up in Queen Mary's reign. The object of Archbishop Peckham's constitution was obvious. The doctrine of Transubstantiation having been decreed, it was requisite that it should be impressed by every possible means on the minds of the people. That end was best attained by placing a canopy over the Host, making that the most prominent object in every church, and thus promoting increased veneration for the consecrated wafer. This was in full accordance with the ordinary practice of the Roman Church, which invariably inculcated new doctrines through the means of the bodily senses. Canon Rock bore out his assertion in these words:—"It was profound devotion to the victim offered there that stimulated the piety of the faithful to spread the richest carpets round the altar, to hang gorgeous veils on either side, to canopy it with domes of porphyry or silver, to pile chalices of gold or precious stones upon it; to render it, in fine, as glorious as possible." He added, that the bishop's chair was not to be honoured with a baldacchino, unless a similar or more sumptuous canopy was suspended above the altar, for the honour of the consecrated wafer. The result was that, at the period preceding the Reformation, every church in England had a canopy more or less elaborate over the Host, indicating thereby the (supposed) presence of Christ in the consecrated wafer. The canopy was thus one of the adjuncts of the Romish altar, and being the most prominent object before the eyes of the congregation, it was most immediately connected in the minds of the people with the superstitious doctrines of the Mass. It was, in fact, the point to which the gaze of the multitude was directed in the adoration of the wafer. In the reign of Edward VI. the canopies which were found in all the English churches were removed and sold as monuments of superstition. The era on which the reformed Church of England was substantially based was the reign of Elizabeth. Her Act of Uniformity, with the statute enacting the Thirty-nine Articles, constituted the Magna Charta of the Protestant Reformed Church. That Act abolished the Mass, with all its adjuncts, and consequently the canopies over the sacrament were removed, like the rest, as monuments of superstition. In 1559, and again in 1565, the queen sent out commissioners to seize and destroy all the adjuncts of the Mass and other monuments of superstition then so plentiful in the churches, and among these, in the ancient chronicles, the canopy was constantly named. That universal condemnation and destruction of canopies clearly established the fact that such erections were incompatible with the reformed doctrine of the Church of England in regard to the sacrament of the Lord's Supper, being designed to instil into the minds of people the doctrine of the actual presence of the very body and blood of Christ in the consecrated elements. The doctrine of the Church of England was that the very body and blood of Christ were in Heaven, and not here, and that Christ was to be adored and known sitting on the right hand of God in Heaven. He submitted that it had been clearly established that, when the Roman Catholic religion prevailed in this country, canopies over the altar were in use; but when the Acts of Uniformity of Edward and Elizabeth came into force these canopies were condemned and destroyed as monuments of superstition.

SCIENCE AND ART CULTURE.

On Thursday evening, the 23rd ult., Mr. J. C. Buckmaster delivered an address before a large and appreciative audience, at the Mornington Institute, Hampstead-road, on "Science and Art for the People." Mr. Buckmaster said that his business that evening was to bring under the meeting's consideration some of the arrangements which had been made by the Government for the purpose of promoting and encouraging throughout the country a more general knowledge of science and art. This department of Government came into existence in this wise. It was thought by some, who had not paid much attention to the subject, that the Science and Art Department and the South Kensington Museum were entirely new organisations of the State, and that they had been called into existence without any definite purpose. But the intentions for which they were designed were by no means new to the Government; and long before the building of schools for the promotion of education, very large grants of public money were annually made for the purpose of the cultivation of science and art. So early as 1815 the attention of the Government was directed to this subject by a pamphlet, which recommended that the Government should vote a sum of money for the purpose of appointing competent lecturers upon the various branches of science and art which were thought likely to be useful. A few years after a general movement took place for the purpose of establishing institutions the chief feature of which was the delivery of a systematic course of lectures upon the various branches of science, art, and literature. It was the object of these institutions to teach, chiefly by means of lectures, something of these laws. An apprenticeship to a trade, he thought, disciplined men's natures to the performance of the kind of work with which they were engaged, and the doing of this day by day required skill; but scientific education addressed itself to the man's mind, enabling him to reason and think on what he was to do; and it was this idea that, some forty or fifty years ago, called into existence mechanics' institutes and such-like institutions.

Speaking of the amusements of the people, the lecturer went on to say that the character of such amusements provided was to be always considered a safe index of the refinement and culture of the people; the more educated a man was, the greater became his enjoyment of life, and the higher he rose above his fellow-creatures. In 1840, attention was again directed to the movement, and Mr. Foley Thompson, then President of the Poor Law Board, established at that time schools of design. These schools were almost entirely subsidised by the State; but they failed to exercise any important influence on the arts and manufactures of this country; they, in fact, never originated an original design. What was wanted was a general elevation and improvement in the art and tastes of the whole people. You wanted to cultivate a love of the beautiful in nature and art. If any improvement was to take place in the art industry of the country, it must come from the people being better educated in art, and this must have the commencement in teaching people to draw freehand drawing. But he doubted whether it was possible for people to arrive at a true appreciation of art unless they had been led to love and admire everything that was beautiful in nature. We had done all that we could on this earth to make this world as ugly as possible. The majority of men passed through this world perfectly insensible to the refining influences of nature. Cultivate, he said, then, a love of nature—if it were only a little plant, if it were only a tiny flower; love that and it could not but have a vast influence in refining a man's taste. The teaching of art was not easy. If you could only manage to obtain one good work of art, however simple it might be, if you studied that little work it would do you more good than a mere superficial careless gazing. The influence of a work of art must not be measured by the surface which it covered. A man who produced one lasting work of art exercised a far more powerful influence on humanity than a man who had painted thousands of pictures. A picture, to be of any use to you, must be studied; it must be looked at for some considerable time, and not in the mere casual way that we sometimes observed it. What was wanting was to cultivate carefully and accurately the powers of seeing things in their right light. This art-knowledge had always exercised a very important influence in the civilisation of the people. Without progress in art there was no progress in civilisation. The teaching of science, however, was a more difficult thing. Most of us could understand a work of art; but the results of science could not be made so evident to the senses. The gradual progress of development was far more important, probably, as a means for increasing wealth, than the mere conventional application of art. About fifteen years ago the Government passed a very comprehensive scheme for encouraging and promoting a more general knowledge of science, which name was merely another word for knowledge. All of these sciences were to be divided into a number of parts. Amongst these was geometry, the science of form teaching men something of form and shape, a knowledge of which was very desirable, so that the material should be turned to the best possible advantage. Then we had mechanics, machine drawing, free construction, elementary mathematics, theoretical mechanics, animal physiology, navigation, botany, &c., &c. But he would despair if any young man tried to master most of these. He believed in one or two subjects well done; and one subject thoroughly mastered was better than a superficial acquaintance with many. These sciences were valuable as part of your education; they were valuable also in their relation to work. The language of science was to most working men the language of a foreigner, and you could make no progress in any of these sciences unless you had mastered the definitions and axioms upon which these sciences are based, and with more exact language among working men there would grow up better language among the men themselves. Was there, he asked, anything in a life of labour which necessitated that hoarse, rough way in speaking to each other unfortunately too common among working men? It had been said that to give working men a knowledge of the sciences it would make them discontented, but reason and humanity rebelled against this. In conclusion, he said, educate men and they would feel more interested in their work; and new methods and new plans would suggest themselves to the man who had first been educated in those principles in which the success of his work depended.

PROPOSED BATHS AND WASHHOUSES IN SOUTHWARK.

The erection of baths and washhouses in the different crowded parishes of the metropolis appears at present to be occupying the attention of the several local authorities concerned, and we now find that the vestry of St. George the Martyr contemplate the establishment of an institution of this nature. At a meeting of the vestry held last week, it was decided to apply to the Local Government Board for the sum of 12,000*l.*, belonging to the vestry, held by that Board, and invested in Consols, for the purchase of a site and the erection of baths and washhouses thereon. The Local Government Board hold the amount named under the following circumstances. Four years ago the Board ordered the parish of St. George the Martyr into union with St. Saviour's Union and Newington, the result being that land and workhouse schools at Mitcham belonging to St. George the Martyr were sold, and after paying their share of the cost of St. Saviour's Workhouse there was a balance of 12,000*l.*, invested as already named by the Government Board, the parish taking the interest in mitigation of rates. At the meeting of the vestry last week it was stated that the president of the Local Government Board was willing to hand over the money to the vestry if they brought forward a proposition to use it for any permanent benefit to the parish, and it was urged that the erection of baths and washhouses would not only be a permanent benefit, but were highly necessary in that crowded district. It was agreed that, in the event of the Local Government Board complying with the request of the vestry, steps should immediately be taken for the erection of the building.

Proposed New Dispensary at Wandsworth.—The Wandsworth and Clapham Guardians contemplate the erection of a new dispensary in the neighbourhood of the Wandsworth-road, and at their meeting last week a committee was appointed to look out for a suitable piece of ground, and also to ascertain the cost, in view of the erection of the building.

MARGATE DRAINAGE COMPETITION.

The corporation held three meetings to consider the applications for admission to this competition, and on Tuesday last the selection was completed, and with the following result, viz.,—Messrs. Lewis Angell, J. Bailey Denton, J. E. Eachus, Gotto & Beesley, Russ & Minns, and Whittaker & Perrot, of London; Mr. Edward Appleton, of Torquay; Messrs. Brierley and Holt, of Blackburn; Mr. Goodison, of Liverpool; and Mr. Wilson (Native Sewage Guano Company's engineer), were selected. To these ten gentlemen will be offered the two premiums of 200 guineas and 100 guineas respectively for the best and second best plans, to be sent in to the council before the 30th of January next, the corporation stipulating that the selected plans must be approved by the Local Government Board before being premiated. There were in all fifty-four candidates.

An episode occurred in the course of the proceedings, Mr. Coghlan, the borough surveyor, having been put up as a candidate, and elected as one of the competing ten; but on a very strong remonstrance, led by Mr. Councillor Sear, himself a member of the profession, pointing out the manifest unfairness of the corporation putting up their own *employé* to compete; that his success would be open to a strong imputation of collusion; and that his local knowledge, which ought to be available to all the competitors who chose to apply to him for information, would give him a most unfair advantage over others,—Mr. Coghlan honourably withdrew, and Mr. Lewis Angell (who tied with Mr. Jacobs, of Barrow-in-Furness) eventually was selected in his stead.

THE FALL OF A CHIMNEY AT NORTHFLEET.

Sir,—"The jury found that the men were accidentally killed, and expressed their sympathy with Messrs. Gostling and with the relatives of the deceased; the coroner remarking that he agreed with the verdict." Surely this is not the kind of conclusion proper to so sad an accident as that by which six persons lost their lives, and others were severely injured, by the recent fall of a chimney at Northfleet. If one of these lives had been lost by a collision on the neighbouring railway or river, there would have been an exhaustive inquiry, not merely with a view of placing the responsibility for the disaster upon the right shoulders, but for the prevention of future accidents of the like kind. In the interest of all those who may be concerned in the building of chimney-shafts, the matter calls for some investigation beyond that which the coroner and jury have been able to give to it.

Nothing could be more satisfactory than the account of the work given in evidence at the inquest, if we did not know that the chimney fell. This was no hap-hazard job of the scamping contract kind. The design was made under professional advice, and carefully studied, with a view to the provision of unusual strength. All the materials were of the best, and were provided by the proprietors. The builder was experienced in this special class of work, and his workmanship was perfectly satisfactory to the proprietors, the architect, and to the experienced surveyor who was called in after the accident. Nevertheless the chimney fell, and the one thing which we have learnt from the catastrophe is, that if rebuilt in all respects as before it must certainly fall again. Let us see if, by examining the evidence anew, something cannot be learned from it of more practical utility than this.

Now, the building of a chimney 220 ft. in height, though no great undertaking in the manufacturing districts, is not so common in the neighbourhood of London as to be quite free from everything of an experimental character. Both bricks and mortar differ very materially from those in use in the north; and this should influence the designs of the structure, the execution of the brickwork, and the rate of progress. It is, therefore, not with a view of suggesting blame in any quarter where all seem to have taken great care and pains; but rather as suggesting modification in future practice that the following remarks are made:—

1. It is shown by the evidence that the thickness of the brickwork of the shaft was, on the average, not less than one-third more than in certain chimneys named, and, in particular, that in the lower part it was nearly double the strength of that in the famous chimney at St. Rollox. But as the accident seems to have originated at the top, there is no need either to question or to prove the sufficiency of the lower part, and it seems clear that there was no excess of strength beyond what is usual in the upper part of the shaft. The practice, indeed, is to make the wall at the top of a shaft, 1½ brick in thickness, where the internal diameter exceeds about 4 ft. 6 in., and to continue this thickness downwards for about 25 ft. Here the internal diameter was 8 ft. 9 in., or nearly double the above dimension, and the work in 1½ brick extended downwards for as much as 36 ft. 3 in., a consideration which, if it does not suggest the necessity for greater thickness of work, clearly suggests great care in the construction of that actually used.

2. What was the nature of the bond? The scientific evidence shows simply that there was "no filling in with bats or rubble," but it would be easy to make very unsound work out of whole bricks, and especially in the case of 1½-brick circular work of this radius. Indeed, it is easy to see that without extreme care there might be no effectual bond for the resistance of vertical fracture across the wall.

3. "The principal part of the bricks were of Rutter's paviours and the best picked stocks." Of what sort were the remainder, and how were the whole combined in the upper part of the shaft? If there was a facing of one kind and a backing of another there would almost certainly be some difference in thickness of the bricks, and consequently in the mortar-joints there would probably also be a difference in the degree, or at least in the rate, of absorption of the two bricks, and from one or both of these causes it is possible that the weight of the cap would, while the work was green, be carried by a very thin facing of wall.

4. Was anything done to aid in the bonding of the upper part of the shaft beyond grouting in "every few courses" with neat Portland cement? Wherever additional bond is supplied beyond that produced by the overlapping of the bricks it should be so strong as to absolutely resist every force that can be brought against it. A weak bond may resist the process of settlement to a certain extent, and then by snapping suddenly may be worse than no bond at all. Does the term "grouting" indicate, as it usually would, that the internal joints were left with little or no mortar, and were then filled up with liquid cement, in which case the desirable homogeneity of the work would be destroyed; or was it simply poured over the course after flushing up? In the latter case, though much advantage could hardly be expected, the possible mischief would be less.

5. The shaft, which was 220 ft. high, occupied sixteen weeks in building; not too short a time, perhaps, under certain conditions, but it is about the time ordinarily occupied in carrying up brickwork to one-fourth or one-fifth of this height. We are not told how much of this time was occupied in building the lower portion, and cannot therefore judge of the rate at which the upper part, where the accident originated, was carried up. Clearly, however, the work must have been quite green and in that condition of gradual settlement and consolidation which is most dangerous under heavy or irregular loading.

6. What were the design and construction of the cap? Its weight of 19 tons 3 cwt. would be of no material consequence,—assuming the brickwork under it to be perfectly sound,—but, as before said, it was green, and if its bearing on the shaft was not perfectly regular, the disasters may not be difficult to account for. No doubt the suggestion of the two bricklayers, that the cap had "swagged" the shaft over, was rude and inexact; but it seems only in accordance with common sense that this weight placed on the shaft only on the day preceding the accident must have had some influence in causing it. It may be that, as the architect said, the weakest time in respect of the cap only was on the previous night, when it was just completed, but the "weakest time" for the part where the fracture took place was unquestionably the time at which it fell.

7. What was the precise outline of the fracture visible immediately after the accident? A drawing of a building which has fallen down is often much more instructive than one of a building which stands.

Any one of the causes here indicated, or two of them in combination, would have gone far to produce such an accident as this. Possibly none of them may have existed; but if so, the difficulty of accounting for the accident is but increased; for, whatever it may have been, it cannot have been trivial in its action, for no trivial cause would bring down a structure such as this. It is to be hoped that all parties concerned will be ready to afford such information as may clear up the mystery which now exists, and render such works,—which are now increasingly necessary,—less hazardous in time to come. B.

SHAFT BUILDING.

Sir,—In the *Builder* of last week an accident in building a chimney-shaft at Northfleet is mentioned, which I think would not have happened if the following precaution had been taken:—

The employment of hard-burnt bricks, or paviours, of a *uniform thickness*; before being used, all wetted with water, and the brickwork grouted every course, and levelled and plumbed every 3 ft. Portland cement, instead of Dorking lime, tested as to its hardening quality in the proportion of one cement to two of clean sharp grit, well washed.

I think the top part of the shaft (being only 14 in. in mortar) was not sufficiently dry when the heavy cap was placed on it, which caused it to collapse or bulge. W. Whitehead.

PORTLAND CEMENT AND THE NORTHFLEET CHIMNEY SHAFT.

Sir,—Portland cement having been the subject of some remarks in your journal lately, and having had much experience of its use, I beg to trouble you with a few notes.

Some years since I was building a large factory; the walls were of stock bricks, the arches of the windows were described to be gauged and set in Portland cement. Of course a gauged arch must be cut in soft bricks; mine were so, and in order that the joint might be fine, my foreman set the arches in Portland cement made up very soft, the bricks well soaked, and the result was, that the cement expanded, and broke every brick in every arch. As they were semi or cambered arches, with a considerable rise, no harm resulted.

The above facts were brought to my memory on reading an account of the evidence given before the coroner as to the chimney at Northfleet, by gentlemen whom I know to be competent to express an opinion. I am inclined to think that the design was good, the materials were described as of the very best, but the work is described as flushed in with Portland cement, and if it was done with cement without a large admixture of sand, it is possible that the expansion of the cement rent the chimney from top to bottom. Brickbat.

PASSENGER REGISTER FOR OMNIBUSES AND TRAMWAY CARS.

Almost innumerable unsuccessful attempts have been made, in the interests of the proprietors of omnibuses and tramway-cars, to check the receipts of conductors. Probably a considerable proportion of the men who enter upon the occupation of conductor have been failures in other pursuits; and although there are doubtless many honest men on the footboard, it may be feared that some of them have a secret sympathy with the frank avowal of a certain shop assistant who, in asking for an engagement, was required to state what wage he expected. His reply was "I do not reckon so much on the wage as on what may be my chance of thievedom." It is perfectly notorious that the omnibus and tramway companies suffer greatly from the dishonesty of servants, some of whom put more in their pockets, probably, by peculation, than they receive in wages.

One of the most recent devices employed for keeping conductors honest, is by a system of tickets, delivered to passengers when they enter the vehicle, which they are expected to destroy when they leave it. These tickets they are requested to see torn out of a book, which contains a counterfoil, showing a fare corresponding to what they have paid. If every passenger were to require a ticket, were to see it actually taken from the book, and were to make certain that it could not be used again by a second passenger, the check would be tolerably effective; but this is not done. Some passengers, from sentimental, ill-founded, or improper considerations, object, by using these tickets, to acting as a species of

detectives; others carelessly, or in ignorance of the intention of the tickets, do not ask to be furnished with them; while others, again, leave them on the seats or floor of the carriage, and give the conductor an opportunity, if he be so minded, of issuing them again without an additional counterfoil debit against himself for the additional fare, thus defeating the essential object of the tickets. In any case, a self-acting register of passengers and their fares seems a thing much to be desired, alike in the interests of proprietors, passengers, and conductors.

A very effective apparatus of this character has been perfected by Mr. Marshall Arthur Wier, of Great Winchester-street, in his Pneumatic Passenger Register, which was exhibited in operation in one of the London Tramway Company's cars between Blackfriars Bridge and Brixton and back on Friday in last week.

This register, it my be stated, has been brought to its present efficient state, after a long series of trials and experiments upon the London Tramway Company's line, such trials having resulted from time to time in the modifications and charges that seemed desirable. The difficulties that beset the inventor have a curious illustration in one of the "steps" of his progress. Among other plans he contrived a "Step Register," in which he was fairly successful in recording the number of persons who trod upon the step, if not the entrance and exit of the actual passengers; but this system had radical defects, that he has now corrected effectually. Among the defects referred to were the readiness of persons to jump on to the step of the platform to make inquiries of the conductor; others get on and find they are on the wrong car; boys jump up for a short ride, when the conductor is beyond arm's length; the driver has to get off to attend to harness and other matters; the conductor has to get off to bear a hand in assisting old women of both sexes, who, in their trepidation, may make a species of treadmill of the step, and press it several times before they can get fairly either in or out. All these steppings would be recorded against the conductor, which is, of course, entirely incorrect.

The apparatus is now in operation on the London Tramway Company's line, and, as shown on Friday, consists of a neat brass gate across the door that moves in or out with ease by the person entering or leaving. This gate is connected, under the platform of the car, with the lower end of another,—a slide gate,—which passes behind, and follows the passenger in or out, as the case may be, and thus prevents two persons entering or leaving and registering at the same time. The gates are evenly balanced, and move easily and rapidly, so that no impediment is offered to the passenger, and entering and leaving the vehicle are quickly done. A brass box, locked, contains the register, and is attached to the apparatus. Strips of paper inside the box, of the kind used in electric telegraphy pass round two brass reels, and are moved by the apparatus. The passengers are noted by prickers passing through the paper at regular distances as the passengers enter and leave, the upper line indicating those who enter, and the lower line those who leave; the division of fares at each station is noted by blank spaces on the paper between the holes made by the prickers. This may be effected by either of four methods, two of which were shown on the car in operation separately. The first is by "crowning" the road at the stations from which the fares are charged. The road is gradually raised about an inch above the ordinary level, the rise being almost imperceptible. A wheel, of about 6 in. diameter, is placed under the car. That is attached to levers connecting with a box containing an air-tight chamber, with a tube leading to another chamber in the registering box. The movement of the wheel over the crowning portion of the road, presses the air-chamber, and causes the air to pass into the chamber in the registering box. The space on the paper, showing the station, is thus made apparent. The other mode is effected in a similar manner, by the conductor pressing a knob; the movement by the force of the air is produced in the same way. If he omits to press the knob at the proper station, the larger fare would be recorded against him. By the latter method the crowning of the road is not necessary. A very ingenious invention for noting the number of times the conductor enters the car is contained in a small box inside the car. This, also, is worked by means of the atmosphere.

Mr. Wier, the younger, inventor of this ingenious apparatus, which is worked partly by mechanical means and partly by compressed atmospheric air, is the originator of other pneumatic patents, and has, we understand, received a high testimonial from Capt. Halpen, Commander of the *Great Eastern* steamship, for the efficient system of pneumatic signals, invented by Mr. Wier, and used in the *Great Eastern* and other ships in laying submarine cables. For his Passenger Register the inventor may, we think, fairly claim that it will record every fare that should be paid to the conductors of the omnibuses or tramway-cars that are fitted with it; that it will note not only the number of fares, but their respective amounts; that it renders the use of tickets and the employment of detectives unnecessary; that it records the entrance of the conductor into the car, for the collection of fares, or other purpose, and distinguishes passengers who have mistaken their car, provided they leave it within a reasonable distance after entering; that the apparatus does not leave control of the register in the power of the conductor, or admit of its alteration by collusion between the conductor and the inspector or clerk in charge of the registering box; that the parts of the apparatus are strong and simple, and not likely to be easily damaged by rough usage; that the apparatus may be readily adapted and fitted to the present class of street vehicles for the conveyance of passengers; and, in fine, that its adoption would largely increase the receipts of tramway and omnibus companies, improve the moral, and it may be reasonably expected, by the increased wages that would be afforded, the material and social condition of conductors, and tend directly to the benefit of all parties concerned.

The enormous number of passengers carried by tramway-cars and omnibuses alone throughout the world, may be illustrated by giving the number of passengers carried in London and the suburbs. There are three tramway companies carrying about 40,000,000 passengers annually; the General Omnibus Company carry upwards of 40,000,000, and it is estimated that other omnibus companies in London carry about 20,000,000; thus giving 100,000,000 passengers carried annually, whose fares at only 2d. each amount to 16,666,666*l*. Every penny for this vast traffic throughout the world passes through the hands of an army of men who have only the semblance of a check upon them as to the amount received.

ARCHITECTURAL ASSOCIATION OF IRELAND.

The opening meeting and *conversazione* was held at the Rooms of the Association, 212, Great Brunswick-street, on Thursday evening, October 23, the president, Mr. J. J. O'Callaghan, in the chair.

Amongst those present were:—Jonathan Pim, M.P.; P. J. Smyth, M.P.; Very Rev. Canon Pope, Maurice Brooks, Marcus Keane, J.P.; J. R. Carroll, W. Fennell, H. Oldham, H. Brett, jun.; T. Goodwillie, A. W. Robinson, R. O. Longfield, T. Holbrook, J. Kirk, James Farrall, D. J. Freeman (treasurer), S. Catterson Smith, John Holmes, Dr. Barker, T. H. Longfield (hon. sec.), C. J. Allen, W. Neill, J. C. Morrell, Joseph Robinson, P. S. Swan, Dr. T. Purcell, C. Geoghegan, Peter Roe, A. E. Murray, J. Mulligan, E. L. Clarke, J. L. Robinson (hon. sec.), — Monsell, Dr. Frazer, Dr. Grimshaw, T. Dockrell, T.C.; W. M. Mitchell, V.P.; Rev. J. F. Shearman, — Mitchell, R. S. Swan, Sandham Symes, H. M'Manus, R.H.A.; Rev. J. Carolan, — Maguire, J. P. Griffith, C.E.; E. T. Owen, James H. Owen, P.R.I.A.; J. W. Haughton, H. Keogh, H. Wilmot, Charles H. Brien, H. Douglas, J. Cahill, E. Oldham, &c.

Mr. Longfield (hon. sec.) read the annual report.

The President then delivered the annual address.

Mr. Jonathan Pim, M.P., proposed the thanks of the meeting to the president for his address, and said that a great improvement had taken place in city buildings in the last twenty years. Twenty years ago there was not a building in Dublin of any architectural pretensions, except those erected in the last century, whilst now we could boast of as many and as fine public buildings, banks, insurance and mercantile offices, as any other city in Europe. Such an improvement had been brought about by societies like the Association, which he hoped would go on and prosper.

The Very Rev. Canon Pope seconded the resolution in an eloquent speech. God had not given power to man either to create or destroy anything on this earth, but the nearest approach to creative power is when the architect is enabled to raise a beautiful building that has originated from his brain and inventive genius. He said that he also had to bear testimony to the great improvement in architecture of late years, especially of buildings that were dearest to him,—the ecclesiastical edifices of Ireland, which were set as gems in the beautiful scenery for which the island is famed.

Mr. Rawson Carroll, in moving "that the Association is deserving of the support of the profession," said that as a Fellow of the Royal Institute of the Architects of Ireland, he promised the hearty co-operation of the elder body with the Association in all its undertakings.

On the motion of Mr. Maurice Brooks (Lord Mayor elect), it was resolved "that it is most desirable to enlist the sympathies of the kindred professions of painting, sculpture, and engineering." This motion was seconded by Mr. H. M'Manus, R.H.A., on the part of painting; Mr. M. A. Hayes on the part of sculpture; and Mr. Griffith, C.E., on the part of engineering.

A CRY FROM LEOMINSTER.

You have recently protested against the destruction of ancient buildings abroad; allow me to call the attention of your readers to the condition of the magnificent cathedral-like church of Leominster. It presents examples of some of the finest and most perfect Norman, Early English, and Decorated work in the kingdom, and on a short visit to the place last week my attention was first attracted to the smashed windows, one opening being at least a foot square; in and out of these openings the birds were gaily flying. On going inside, the roof of the south aisle was found soddened with rain, and the walls were saturated; from one part of the roof a number of fungi were growing, and upon the ground beneath *ferns* had been recently gathered, the place was full of birds, and an old altar painting at the east end was ripped into holes. During wet weather the rain comes in in streams, and what might be set right now for tens of pounds will soon require hundreds for its renovation. The south side is in course of rapid and irremediable destruction. W. G. S.

THE IRON RIBAND PILLAR.

This patent (of Messrs. Lee & Rogers's invention) has now been introduced for a sufficiently long period of time to test its value thoroughly; indeed, in the hands of the Riband Telegraph Post Company, which was formed at Manchester to develop and work it, it may be said to have passed beyond the introductory and experimental stage, and to have established itself as an essential adjunct and appliance in construction. The title of the company is, we are disposed to think, calculated to mislead, inasmuch as it would be an error to conclude that the application and use of the riband principle was limited solely to telegraph-posts; for there is really no case in which a vertical standard or support is needed, wherein its employment would not be advantageous, in substitution for the ordinary cast-iron columns, which have hitherto stood as the representatives of mere material strength. In point of distribution and economy of material, the Riband Pillar or post, possesses peculiar merits. Thus applied in a post, 10 ft. or 12 ft. in height, and 8 in. in diameter, the iron measuring only 1 in. in width by ¼ in. in thickness, a weight of 3 to 4 tons can be supported by as little as 2 cwt. of iron, which is the weight of the riband post, inclusive of cap and base; and, moreover, at a cost as low as from 5s. to 6s. per lineal foot. At the Company's Works, at New Islington, Manchester, many special forms and applications of this pillar, as also of a complete line of telegraph posts, of considerable length, doing duty with the telegraph wires in the immediate vicinity of the latter, may be seen. One of the Government telegraph engineers, Mr. Culley, in the discussion at the Society of Telegraph Engineers, on a paper upon the subject of the Riband Telegraph Post, remarked that if every one knew them, all the old wood poles would require to be removed from half the towns and districts in England.

In connexion with railways alone, there are

other purposes for which these pillars are coming into general demand and use,—such, for instance, as for signal-posts, pillars for supporting the roofs of railway-stations, gate-posts, &c., and, we learn in particular, that the company are executing large orders for India.

Among the general applications may be enumerated lamp-pillars, sign-posts, gate-posts, pillars of verandahs, conservatories, and greenhouses.

The company have just supplied two coal-sheds, fitted with the riband post, to the Famjong Paggar Dock Company at Singapore.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The library is open during the session, every Monday, Thursday, and Friday evening, from six to nine, as well as daily. The Council consider that this new arrangement is more likely than the former hours of seven to ten, to meet the requirements of students and others, who will be able, without loss of time, to use the library on leaving their offices. Several donations in books and drawings will be announced on the opening meeting of the session,—November 3rd.

The president, Sir Gilbert Scott, R.A., is not expected to attend the opening meeting, having been recommended to remain in Italy until the close of the year, in order to recruit his health. He has, however, forwarded to the Institute an inaugural address, which will be read. It is proposed that the Ashpitel Prize, founded by the late Mr. Arthur Ashpitel, and awarded for the first time this year, shall be presented on the same evening to the candidate who gained the highest number of marks in the architectural examination of 1873.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

On Saturday last the members of this Society visited, by permission of the Lords of the Admiralty, the extension works at Chatham Dockyard. They were met there by Mr. Bernays, the civil engineer in charge, and were by him shown over the whole of the works. Mr. Bernays gave a lucid description as well of the drawings and models as of the method of construction, and materials used in the works, describing the numerous difficulties encountered, and the means used for overcoming them.

Two docks are completed, and ready to take in the largest ironclad in the world, and the others are in rapid progress.

Mr. Bernays pointed out the great extent to which he had made use of concrete in the construction of the docks, and stated that the proportion of cement over the great bulk of the work was but one in twelve, but that the greatest care was exercised to ensure getting a first-class cement.

LABOURERS' COTTAGES WITH THREE BEDROOMS.

Sir,—In your issue for the 11th of October, you gave an abstract of a paper by Sir W. Jones, on "Labourers' Cottages," in which the writer lays down that three bedrooms are required, and two living-rooms; and that the best mode of giving this accommodation is to place the third bedroom on the ground floor. May I give the result of some experience, tending to show that this method of arranging the rooms will not always lead to success?

Some years ago Sir Joseph Whitworth desired to build some good model cottages, and employed me to see what had been done elsewhere, and to design his cottages for him. I arrived at the result which is embodied in Sir W. Jones's recommendations, namely, that the cottages should have their third bedroom on the ground floor, and they were so built. They were compact, and considered satisfactory, and I always fondly imagined that I had contributed something towards the solution of an important problem, till, having to go through the cottages after they had been occupied some time, I was chagrined to find that in no single instance had my ground-floor bedroom a bed in it! Those cottagers who were able to muster up a little spare furniture, a bit of carpet, and something to hang on the walls, had made a best parlour of it; few who were not so well off had not used it at all, except to store fruit or lumber. I have no doubt that in many other parts of England the result will be the same. The repugnance to occupying a ground-floor bedroom, which is, as we all know, common among English people of higher station, will effectually prevent the intention of cottage builders from being carried out if they adopt the plan recommended by Sir W. Jones; and if this be so an injustice may have been, I am sure, unintentionally done to the competitors referred to in the paper whose designs for cottages did not adopt this arrangement of rooms.

The true solution is the one which is condemned as inferior by the writer of the paper,—"building an external shed, and carrying up the walls to the top of the cottage;" and in one series of artizans' cottages, in Essex, which I have had an opportunity of examining, I found the well-known difficulty of keeping a lodger distinct from the household, provided for by giving this back bedroom an independent approach up a step-ladder, and through a trap-door out of the shed, as well as its door off the staircase. It strikes one, however, that a respectable cottager would often prefer to exercise that control over his lodger which is implied in letting him in by the regular door of the house, and that this, like many other ingenious devices, might be often foiled by the persistence of the inmates in adhering to their old arrangements.

T. Roger Smith.

INAUGURATION OF THE VIENNA WATERWORKS.

The Vienna Waterworks having been completed, after a labour of about three years and a half, a large fountain was erected on the Schwarzenberg Platz, in the grounds opposite to the palace of Prince Schwarzenberg, close to the famous "Ring-Strasse." Here the festive ceremony of inaugurating the supply of pure Alpine water to the city of Vienna and all its dependencies has taken place. An aqueduct conducts the water for many miles from the far mountain springs of the Kaisersbrunnen and the Stixenstein. These waterworks have been executed by the well-known hydraulic contractor, Mr. Gabrielli. The mayor, Dr. Felder, received a new token of distinction on the occasion from the Emperor Francis Joseph, who conferred upon him the order of the Iron Crown of the second class, which entitles the recipient to be raised to the rank of a Baron of the Empire.

At the great city fête inaugurating the completion of the works, the Emperor, Archdukes, and all the official personages of Vienna were present. The Burgomaster delivered an address, which was replied to by the Emperor, and both orations were greeted with great applause. The city in the evening was brilliantly illuminated. Count Hoyos Sprinzenstein, the donor of the Alpine source of the supply, has been raised to the dignity of privy councillor, and also decorated with the Order of the Iron Crown of the second class. Professor Suess has long striven to demonstrate the advantages of this undertaking, and was congratulated by the Emperor.

The centre column of water at the opening, it is said, rose to a height of above 180 ft.

JERSEY NEW HARBOUR.

CONCRETE BUILDING.

The necessity for increased harbour room and shelter led the States of Jersey to invite designs from four of our leading harbour engineers, the sum of 150 guineas being voted to each gentleman towards the expenses attending the preparation of the designs. The competition, however, was not restricted to those who were thus specially invited to take part in it, but was made general, the result being that forty-three designs were submitted, besides the four special plans. The Harbour Committee collected evidence, investigated the designs, and, after mature deliberation, selected three from among them, to which they awarded premiums. The selected designs were respectively by Mr. (now Sir) John Coode, Mr. Giffard, and Mr. Kinniple, whose names are placed in their order of merit, Sir John Coode, one of the invited competitors, taking the first premium. Shortly after the awards had been made, Mr. Giffard, a young engineer of ability and promise, was unfortunately drowned off the island. Ultimately Sir John Coode's design was selected for adoption, the necessary surveys were made, the preliminary arrangements completed, and the foundation-stone was publicly laid in August, last year, by the Bailiff of Jersey, supported by the authorities of the island.

The works on the western side of the existing harbour consist, in the first place, of a protecting breakwater, which commences at Fort Elizabeth and is carried over the Crow Rock, which has to be partly removed for that purpose. From the Hermitage the breakwater will be continued in south-easterly direction to a rock known as the Platte, where it will terminate with an elbow, 170 ft. long, at the head of which a lighthouse will be placed. This breakwater, which will have a total length of 2,700 ft., and will be 60 ft. high, and 38 ft. wide at the top, is to be constructed in depths of water ranging from 12 ft. to 20 ft. at low-water of ordinary spring tides. About 1,400 ft. of this structure will have its foundation below low-water, the depths in some places being 20 ft. The eastward arm of the breakwater commences by a roadway, which leaves the inner end of the present Victoria Pier, and skirts the foot of South-hill, as far as the Point de Pas, just below the Engineer Barracks.

A special feature of this work is the method of its construction, which is of concrete masonry, with steps, landings, and copings of granite. Sir John Coode has had considerable experience in concrete construction in other similar works. The landing-pier will have a roadway 48 ft. wide, flanked by a range of buildings, consisting of open shelters and waiting-rooms for passengers by the steam packets, refreshment-rooms, lavatories, lock-up sheds, and other convenient offices. The top of this range of buildings will form a promenade 18 ft. wide, having a parapet wall on the seaward side, and a light iron railing on that next the roadway. The main walls of the structure are being formed of compound blocks of concrete, connected by cross-walls of the same material, the spaces thus formed being filled in with rubble stone.

The estimated cost of the breakwater and landing-pier is 253,000*l.*, and it is anticipated that they will be completed in about nine years from the present time.

The *Times* of October 25th gives a fuller account of the works.

The authorities of Jersey are also erecting a lighthouse of considerable proportions, under the same engineer. This also is of concrete, formed on the spot, and so as to make the structure a monolith as nearly as may be. Very rapid progress is one of the results of the use of this material. It is expected that the light will be exhibited early next January.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

A meeting of the Midland Counties' Branch of the above Association was held at the Royal Pump-rooms, Leamington, on Saturday, October 18th. Mr. Lewis Angell, president; Mr. Lemon, of Southampton, vice-president; Mr. Jones, of Ealing, general secretary; Mr. Pritchard, of Warwick, local secretary, and about thirty members of the Association, were present; also Dr. Baly, medical officer of Leamington; and Dr. Wilson, medical officer of the Warwick Sanitary Union, as visitors.

The President, in opening the proceedings, said it afforded him very great pleasure to have the privilege of presiding at a meeting of such an important section of the Association as that of the Midland Counties. He regarded the Midland section as a most important one, because very many of the members represented large populations, large industries, and places with large sanitary requirements. They were so scattered that they necessarily could not meet very often, but when they did so each member represented a community. He was sure that meetings like the one recently held in Manchester must not only be of advantage to them individually as members of the Association, but to the communities also which they represented.

The members visited the Leamington Sewage Pumping-station and the Warwick Pumping-station; also Lord Warwick's sewage-farm at Heathcote, and the Warwick Corporation sewage-farm; after which they returned to Leamington, when papers were read by Messrs. Bettridge, Monson, and Allen upon sanitary matters.

The President, in closing the proceedings, said where a town, in adopting irrigation, had to contend with great difficulties,—was hampered in obtaining land, had to construct extensive pumping works, and to convey the sewage to a great distance, it was impossible to realise any profit if the original outlay on the necessary works were

taken into consideration. On the other hand, some towns might convey their sewage to the land by gravitation, and land might be obtained cheap, and, of course, such places would be able to adopt irrigation at a comparatively small cost. The questions of outlay and profit and loss must, therefore, be regarded as local questions. There were many places where it was utterly impossible to apply irrigation. He had recently had an opportunity of hearing and reading all that could be said for and against irrigation, and he was bound to confess that, using his knowledge and experience as an engineer and his common sense as a citizen, there was nothing which had hitherto proved so efficient and perfect a disinfectant as the earth. If circumstances were favourable, he was also of opinion that there were no better means of utilising sewage than irrigation. The question of profit and loss, as he had already said, must be entirely subordinate to local circumstances. There was one thing which they, as sanitary engineers, ought to guard against, and that was being possessed by one idea on the sewage question. It did not follow that because irrigation might be right and proper under certain circumstances, it was the only system. He agreed that raw sewage should not be put upon land. There should always be something to take out the solid matters, which caked the land.

The members afterwards dined together at the Crown Hotel, Leamington.

ACCIDENTS.

Fatal Fall of a "Steeple Jack."—An inquest on the body of John Prince, of Manchester, aged 25, has been held. Deceased was a fixer of lightning conductors and repairer of chimneys, and was also employed at the Broughton Copper Works as a labourer. He and several other men accepted an engagement to point a boiler chimney at the works of Messrs. Mather & Platt, Brown-street, Salford. Deceased was standing on a ladder, the foot of which was resting on the slated roof of the pattern-room, when the ladder slipped and threw him to the ground. It was not known what caused the ladder to slip, but there was a very strong wind blowing. Deceased sustained a severe injury to his head, of which he died. Verdict, "Accidental death."

Singular Accident and "Cure."—At the Ironworks, Seend, near Melksham, according to the *Bristol Times*, a large iron tube, about 30 ft. in circumference, through which hot air is blown from the engine, sometimes gets obstructed by ashes, and then a man has to creep into it for the purpose of removing them. A man named Drewe got into the tube for this purpose, and not making his reappearance a man was sent into the tube, and found him jammed in a narrow part and insensible. He was pulled out, still insensible, with severe scars and burns on his body. "The Staffordshire mode of bringing him to life" was then adopted. "A hole was dug in the ground large enough to receive Drewe's head, and into this hole his head was put, face downwards, and carefully covered up in the 'mother earth,' with the exception of a small hole left when breathing time came. Wonderful to relate, there were soon signs of returning life, and Drewe so far recovered as to 'unearth' himself. Brandy was administered to him, and he was soon himself again," which no doubt he would have been,—all the same,—minus the earth process altogether.

HOSPITAL ARCHITECTURE.

Dr. J. H. Worthington, of the Asylum for the Relief of Persons deprived of the Use of their Reason, situated near Philadelphia, describes the improvements in the asylum:—

"The improved window introduced in the front of the wings consists of an upper sash of irons, movable to the extent of 6 in. from the top, and a lower one of wood, which rises its whole height, and is protected on the outside by a light iron guard; the whole window being 7 ft. high, 2 ft. 10 in. wide in the clear, and reaching to within 2 ft. 10 in. of the floor. All the halls and corridors occupied by patients are now provided with windows of this description, and are thus rendered much lighter and more cheerful than they were formerly. The advantages of windows opening from the corridors directly into the external air, which induced the founders of the asylum to incur considerable expense in order to secure them, are now realised to a greater extent than ever before. To sit by the open windows, and to breathe the pure air fresh from the surrounding country, is a privilege which cannot be fully enjoyed in hospitals constructed in the usual way, with rooms on both sides of the corridors, but is now freely partaken of by all classes of patients in the asylum, and is peculiarly grateful to those whose physical suffering or weakness prevents them from taking exercise in the open air."

CLAIM FOR WAGES UNDER RECENT ARRANGEMENTS.

The first legal case arising out of the agreement entered into between the Master Builders' Association and the Metropolitan Society of Operative Plasterers, with respect to the increased rate of wage up to 9d. per hour, came before Mr. Serjeant Wheeler, the judge of the Brompton County Court, at its last sitting, and caused a large attendance.

The plaintiff, a plasterer, named Slade, claimed the small amount of 2s. 7½d. of Mr. Smith, a builder; and Mr. Newman, who appeared for the plaintiff nominally, but virtually for the Trade Societies, in opening the case, said, the sum sued for was of no importance as against the question involved in the dispute, as the decision would probably settle a difference between a number of workmen and their masters. In this case the claim was for an extra ½d. per hour between the 2nd and 9th of August last.

Mr. Slade stated that in July he entered Mr. Smith's employ as a skilled plasterer, and he then received the customary wage of 8½d. per hour. After he had been at work three weeks, the Master Builders' Association authorised by a general meeting of builders, agreed that plasterers should be paid 9d. per hour, the same as masons, bricklayers, and carpenters, after Saturday, August 2nd.

Mr. Barnard, counsel for the defendant, contended that evidence of this nature was not admissible, as there was nothing to show that the defendant had come to any such agreement between himself and his workmen, and he objected to its reception.

In answer to the judge, the plaintiff said the majority of employers paid, and still did so, the extra ½d. per hour to their workmen. If he were paid at the increased rate for the week ending August 9th, the sum now sued for would be due to him. He had seen other plasterers paid in the defendant's employ the 9d. per hour on the 9th of August.

In cross-examination by Mr. Barnard, the plaintiff said he was a member of the Society of Operative Plasterers, and the Society had taken the case up for him, and would pay all the expenses of the trial. He was aware that the rise in wages was originally intended for masons and joiners only.

The Judge here interposed by observing that in his opinion if the defendant's men had gone to him on the 2nd of August, and acquainted Mr. Smith that they would not continue to work for him unless the agreement said to be entered into by the Builders' Association as to the rise of one halfpenny, was paid by him, then they would be entitled to recover; but as far as the plaintiff's evidence had gone he did not see any case against the defendant.

Mr. Newman urged that if some of the men were paid 9d. per hour, and his client only 8d. per hour, the plaintiff was entitled to recover his claim.

The Judge said he certainly did not hold that view of the case. A man had a right to do what he liked with his money. The plaintiff was bound to either prove an agreement to which the defendant was a party, or show that his master, Mr. Smith, promised to give the increased halfpenny per hour. This the plaintiff had failed as yet to do.

Mr. Newman here inquired of the plaintiff if he were aware whether Mr. Smith was a member of the Master Builders' Association.

The plaintiff replied that he was. He and others deputed some of their fellow-workmen to wait on the defendant's foreman on Wednesday, the 6th of August, to make full inquiries respecting the rise of wages, and the foreman then said he would see Mr. Smith about it. As nothing further was said about it, the men concluded that the firm would pay the 9d. per hour, and which they did to a number of their hands.

The learned Judge said even now there was really no case for the defendant to answer.

Mr. Newman then called Mr. Thomas Langdon, secretary to the Metropolitan Society of Operative Plasterers, and this witness deposed to his knowledge of an agreement being made, to which Mr. Smith was a party, and that the agreement was reduced to writing.

The plaintiff's solicitor said the witness was alluding to a letter, signed by Mr. Bird, the Secretary of the Master Builders' Association. If admissible, he would put the letter in evidence.

The Judge said the plaintiff and his society must first prove that the defendant, Mr. Smith, was a member of the Master Builders' Association referred to, and they must also *subpœna* the person from whom the letter was sent to the Metropolitan Society of Operative Plasterers to give evidence as to the proceedings of the society by which the plaintiff contended Mr. Smith was bound.

The plaintiff's solicitor admitted he was not in a position to prove all this, and accepted a non-suit.

The counsel for defendant said his client would not ask for costs.

Mr. Serjeant Wheeler observed that it was very handsome treatment of Mr. Smith, or he certainly should have given them, because the action was not brought by a single man, but by a body of men.

Nonsuit, without costs, accordingly.

KENSINGTON GARDENS.

Sir,—I am glad to see that you have brought the subject of the trees in Kensington Gardens to the notice of the public. It is indeed full time that something was done, as the gardens at the present time are in a most disgraceful state, and sadly require the superintendence of some intelligent person. The decay of so many fine trees may, I think, be put down to three causes,—a bad soil overdrained, too thick planting, and the habit of raising the ground round the roots of the trees, causing the rotting of the bark at the crown of the roots. The first cause can in part be removed, where the trees stand by themselves, by removing the soil around the roots, and replacing it with better; or if the trees were watered occasionally in the summer-time with liquid manure (sewage), the same end might be perhaps gained. In the second case the trees, as you suggest, should be thinned; and, lastly, if the ground were kept away from the bases of the trees, the third cause of mischief would be avoided In these last cases the cause of mischief seems so obvious that it is extraordinary that the persons who have the management of the gardens should not see it. At the present time two fine trees at the entrance of the gardens, near Rotten-row, may be seen, both of which have been killed by raising the ground around their roots.

An Inhabitant of Kensington.

"ASSOCIATED HOMES."

Sir,—I have long urged the social necessity of these adopted Homes to a vast number of persons in the middle and lower classes, combining (as they might be made to do) all the privacy and independence of the individual home; the stringency and selectness of, say, a West-end club; the order, domestic arrangements, and committee of management of our great London and Continental hotels, and, like them, erected by companies; lastly, economy, enormously less, affording that social and intellectual intercourse of society not otherwise attainable; diminishing (that refuge for so many) evening amusements, drinking, abuse of tobacco, the social evil, idleness, and dissipation; and avoiding that source of all ruin to young people the life and solitude of lodgings, chambers, and isolation of living.

Augustus John Harvey, F.S.A.

RUST'S MOSAICS.

Sir,—Referring to your remarks on "The Use of Ornamental Tiles," in your last issue, as I notice you term the mosaics manufactured by me "artificial," I am anxious to correct the impression which this description would be likely to convey, and to call attention to the fact that this material, as laid in the north court of the South Kensington Museum, &c., and the glass mosaics used by the ancients, at St. Mark's, Venice, &c., are identical, and in no particular *more artificial* than that or the other kinds of ancient mosaics, viz., marble and clay.

The general prejudice, especially among the architectural profession, to any material coming under this head, is my reason for troubling you in the matter.

J. Rust.

LEGACY TO WIGAN.

We understand that the late Mr. Joseph Taylor Winnard, surgeon, of Wigan, who was interred in the cemetery there last week, has left a handsome legacy to the town, in which he has long resided. The executors (one of whom is a local architect) under the will of the deceased have informed the mayor, through their solicitors, Messrs. Leigh & Ellis, that the residue of Mr. Winnard's property is bequeathed to the mayor of Wigan for the time being, for the purpose of purchasing books for the proposed free library. The amount has not yet been stated, and many figures between 10,000*l.* and 30,000*l.* have been mentioned as the sum which is bequeathed to the town. Mr. Thomas Taylor, who has offered to give a building for a library, may now begin its erection at once, knowing that as soon as erected its contents will be ready, and further, that it may be stocked in a manner which should make the institution one of the first of its kind in the county or the kingdom.

THE ECONOMIC CONSUMPTION OF SMOKE.

The operation, at Glasgow, of Messrs. T. & T. Vicars's patent self-stoking smokeless furnace, which is perhaps a little better known in England than in Scotland, is thus spoken of in the *Glasgow Herald*. It meets the case more thoroughly than any invention of a similar kind that has hitherto come under notice, and is simple in construction as it is efficient in operation. The coal is placed in a hopper, over the front part of the furnace, into which it falls in small quantities through a couple of apertures. It is not necessary to open the front door of the furnace, except to see how the fire is getting on, for by a simple mechanical readjustment the man in charge of the furnace may regulate the quantity almost to an ounce. As it is added to from above, the coal sinks down, and slides slowly inward until it reaches the bars forming the bottom of the furnace. These bars are acted upon by plungers, which carry them forward together, with their layer of coal on the top, and then, an eccentric being applied, every third bar in the series is brought back to receive a fresh supply. In this systematic and continuous way the furnace is fed with coal, which passes right through in slow and easy stages, the same quantity of fuel being at all times in exactly the same state. Combustion is therefore perfect, the smoke is burnt up, and the waste fuel is discharged, in the form of clinker or slag, into the ash-pit. The works of which we have been speaking are those of Messrs. Crum, at Thornliebank, where upwards of thirty of these furnaces are in operation, and others are being erected with all diligence. A small donkey-engine, with four-horse power, is sufficient to

work sixteen furnaces, the manual labour in connexion with them being reduced to a minimum.

It has been found that when "triping" or round coal is used, the saving is from 20 to 25 per cent., while in the case of dross it is about 15 per cent. So far as the working of the furnaces is concerned, it seems to be all that could be desired. We may add that one of the furnaces at the Thornliebank Works was taken down after being in operation for nearly twelve months, and the furnace-bars were found to be quite perfect. The amount of wear and tear on these is reduced to a minimum by an arrangement of water-troughs, wherein the edges of the bars are constantly immersed, which effectually keeps them cool and insures their preservation. The cost of a furnace on this principle is 150*l*.

PUBLIC BUILDINGS IN READING SINCE 1848.

A CORRESPONDENT has sent us the following list of new public buildings, restorations, and extensions in Reading during the last twenty-five years:—

New Churches.—Christ Church, Grey Friars, St. Stephen's, St. John's, All Saints'.

Churches Restored and Enlarged.—St. Mary's, St. Giles's, and St. Lawrence's.

New Chapels.—Trinity, Wesleyan, Carey, Augustine, Brethren, Providence, Zoar, Cumberland-road, Spring-gardens.

Chapels Enlarged.—King's-road, Friends', Wesleyan Reformers', Primitive Methodists'.

New Church Schools.—St. Mary's, St. Giles's, St. Lawrence's, Trinity, St. John's, Grey Friars', St. Stephen's, Christ Church, St. Mary's Chapel (enlarged).

New Chapel Schools.—Castle-street, King's-road, Trinity, Friends', Cumberland-road, Wesleyan.

Halls.—Town Hall (enlarged and decorated), Albert Hall, West-street Hall, Abbey Hall.

Public Institutions.—Berks Hospital (several enlargements), dispensary, County Courts with county police stations, borough police station, Forbury-gardens, restoration Abbey-gateway, markets, abattoirs, savings-bank, bathing establishment, twenty-eight almshouses, water company (extension), gasworks (extension), new Caversham Bridge, two reformatories, cattle market, Church of England Young Men's Institute, Servants' Training Institution, sewerage pumping works, Freemasons' Hall, and union houses.

General Schools.—New Grammar school; boys', girls', and infant schools upon British system; Blue-coat school, Coley and Silver-street Board schools, Mr. Sutton's school (New Town).

Railways.—New stations of Great Western and South-Eastern railways.

Buildings in Progress.—The sewerage works, new master's house of Grammar school, new chapel of Grammar school, Newtown and Orleigh and Katesgrove Board schools, new public offices.

Of the above buildings, the majority of which were erected for the direct spiritual, intellectual, and physical benefits of the inhabitants, forty-six were raised by voluntary contributions, showing the public spirit of the town.

The following is a carefully-calculated summary of the cost of the churches, chapels, schools, and charitable institutions erected in Reading by voluntary contributions (from which all debts have been deducted) during the same period:—

Churches and Church Schools	£74,325
Chapels and Chapel Schools	32,350
General Institutions	28,200
	£134,875

DESTRUCTION BY LIGHTNING AND BY FIRE.

Ripponden.—The church spire has been struck by lightning. There was a lightning conductor, however. In its descent some portion of the electricity entered the clock chamber, doing considerable damage to the gearing connected with the chiming apparatus. Thence it descended by the wire-rope by which the weights are suspended, severing it and breaking in two one of the heavy weights. It then appears to have been attracted by the gas-piping, the lead portion of which it melted, igniting the gas at the meter. A woman gave the alarm, or the woodwork within the tower must have been destroyed, together with the works of the clock.——In the same district a mill has been struck by lightning. It entered at the end of the blowing-room, igniting some cotton on its way out.

Glasgow.—A disastrous fire has occurred in an industrial school at Mosbank, near Glasgow. During a short lightning storm the roof of the building was struck, and the woodwork having ignited, the flames spread with alarming rapidity. Before the City fire brigade could reach the spot, the centre portion of the institution was enveloped in flames, and, in consequence of the scarcity of the supply of water, the firemen were unable to check the progress of the conflagration, which soon extended to the eastern and western wings of the establishment. The fire has almost completely destroyed the large building, the chapel and the engine-house alone being saved. The damage is roughly estimated at 12,000*l*., but this sum is covered by insurance. The boys connected with the institution, numbering over 400, were at play in the grounds. They were taken to the Barnhill poorhouse until other accommodation is provided. The buildings, which were of brick, were opened only about three years ago.

Halifax.—Two churches in the parish of Halifax have had a narrow escape from destruction by fire. The little church at Lydgate, Todmorden, was in great danger in this respect, and but for the timely arrival of a fire-engine would have been totally destroyed.

THE RICHMOND DRAINAGE AND SEWAGE WORKS.

A SPECIAL meeting of the Richmond Select Vestry (as the urban sanitary authority) has been held, for the consideration of the several schemes for disposing of the sewage of the parish, so as to comply with the requirements of the Thames Navigation Act, 1866, and the Thames Conservancy Act, 1867. Admiral Stopford, J.P., occupied the chair, and twenty-five members were present. Thirteen schemes were submitted from the several engineers, and were described as follows:—No. 1, "Immersabilis" (irrigation); No. 2, "Mr. G. Erder Eachus" (irrigation); No. 3, "Messrs. Mill & Wilcocks" (irrigation with filtration); No. 4, "Experience" (irrigation combined with intermittent downward filtration); No. 5, "Practice" (intermittent downward filtration with irrigation, or for irrigation only); No. 6, "The Solution" (intermittent downward filtration); No. 7, "Drainage and Sewage Engineer" (downward intermittent filtration); No. 8, "Experientia docet" (intermittent filtration); No. 9, "X. Y. Z." (chemical and intermittent filtration); No. 10, "Mr. George Smith" (filtration by charcoal); No. 11, "Ex Luco Lucellum" (irrigation by A B C process); No. 12, "P. F." (filtration); and No. 13, "Spes" (filtration). The several schemes were considered *seriatim*, and on a show of hands two only—viz., No. 4, "Experience," and No. 5, "Practice"—were reserved for further consideration, the others being outvoted. Subsequently these two were examined and contrasted, when "Practice" came to grief on the motion of Mr. Steel, seconded by Mr. Jones. It was ultimately resolved—"That the scheme of 'Experience' be further considered at a special meeting on Tuesday next, with a view of adopting the same if approved." Several of the members were anxious to adopt it at this meeting, but it was ruled by the chairman, on the wording of the Vestry notice, "That no scheme could be adopted that day under any circumstances."

VARIORUM.

"CHILDREN of the Olden Time," by the author of "A Trap to Catch a Sunbeam," is a remarkably pretty book for the young people of this time, who, reading it merely for amusement, and very amusing it is, will find in it information they will be glad to recall when they have ceased to be children. It was a capital idea, going back to the Saxons, the Normans, the Plantagenets, and so forth, and would justify even a bigger book on another occasion; but as it is we can strongly recommend it, and shall be surprised if it does not come to be regarded as classic in juvenile literature. The book is copiously illustrated from old sources, including an engraving of the children of Charles I., after Vandyck. Mrs. Mackarness's little book has a preface by her father, Mr. J. R. Planché, which serves to afford assurance of correctness even beyond what might be looked for in such a work; and the publishers, Messrs. Griffith & Farran, have given it an attractive appearance outside and in.——Mr. Murray has published the eloquent and suggestive sermon, delivered in St. Paul's Cathedral, by Dr. Hessey, on the occasion of Sir Edwin Landseer's funeral, the idea inculcated being,—"The Artist a Great Moral Teacher." With his outburst on "the duty of delight," we fully sympathise, and agree with him that God bids us rejoice, and that He thus bids those of us who have the power to enable our brethren to rejoice, innocently.

Miscellanea.

The Sanitary Survey of the Alnwick Union.—The valuable reports of the sanitary inspector of the Alnwick district continue to be made to the rural sanitary authority. Not only hamlets, but single premises are carefully examined and reported on. Among others, the more extensive and important premises of Howick Hall are overhauled. The inspector states that within the last few years Mr. Rawlinson converted all the privies in and about the house into water-closets. "There are now," says the reporter, "eight water-closets in the house, and four others in adjoining buildings. These twelve water-closets are drained into the burn at a point properly remote from the premises. Formerly the outlet of the main drain was immediately in front of the hall, but it was unbearable and dangerous there, and a lower point has been substituted. Until the great question of the day, as the Earl admitted to me that he considered the proper disposal of sewage to be, has been satisfactorily determined, this disposal must be accepted as sufficient. The water supply is not quite so contenting. . . . . The best mode of improving the water supply to this great house would be to prevent the discharge of any drains into Howick burn by the utilisation of all the sewage along its course, as elsewhere; but as this cosmopolitan question is not yet sifted to its bearings, pure water might meanwhile be obtained from the hill ranges bordering his lordship's estates."

The Sewage Question at Maidstone.—The report of Mr. George Livingstone, C.E., Borough Surveyor, on the collection, removal, and utilisation of the sewage of Maidstone, has been received. He is of opinion that there are many reasons why irrigation should not be adopted in Maidstone, and the *Maidstone Journal* thinks the A B C system should be also discarded, as it has had a very fair trial, and has been found wanting. The Borough Surveyor proposes to collect and remove the whole of the fæcal matter and other refuse of the town, and to dispose of it as a dry manure; and in the second place, to convey the whole of the remaining sewage by a low-level intercepting outfall-sewer, to a point below Allington Lock, on the line of which should be constructed a suitable tank through which the sewage should be filtered, the effluent water being allowed to flow into the river in a comparatively pure and harmless condition. The removal of the contents of dust-bins, night-soil, and other refuse, Mr. Livingstone recommends, should be carried out by the local authorities, on a plan which is an adaptation of the Pail or Tub system in use at Nottingham and other towns, and profit is calculated upon from the undertaking.

Cheltenham and Gloucestershire Victuallers' Asylum.—The foundation-stone of this asylum has been laid by the Duke of Beaufort. The building will be in the Domestic Gothic style of architecture, according to plans by Mr. Darby, of Cheltenham, architect, and will cost about 1,200*l*. The accommodation to be provided for the inmates will be complete, but at present only the central portion of the building will be proceeded with; two wings, for which provision has been made, will be added in due course. In all, twelve families will be accommodated.

Parliament-street.—Many will be glad to hear that Messrs. Glasier & Sons have received instructions to proceed with the sale of the materials of the houses in Parliament-street, in front of the new Home and Colonial Offices.

Woolstone.—The works at the church here, mentioned in our last, were executed by Mr. A. Hawkins, of Cheltenham.

Eucalyptus v. Fever. The French Academy of Sciences has received an interesting communication from M. Gimbert, who has been long engaged in collecting evidence concerning the Australian tree, *Eucalyptus globulus*, the growth of which is surprisingly rapid, attaining besides gigantic dimensions. This tree, it now appears, possesses an extraordinary power of destroying miasmatic influence in fever-stricken districts. It has the singular property of absorbing ten times its weight of water from the soil, and of emitting antiseptic camphorous effluvia. When sown in marshy ground, it will dry it up in a very short time. The English were the first to try it at the Cape, and within two or three years they completely changed the climatic condition of the unhealthy parts of the colony. A few years later its plantation was undertaken on a large scale in various parts of Algeria, and complete immunity from local fever has been maintained by it. In the island of Cuba, paludean diseases are fast disappearing from all the unhealthy districts where this tree has been introduced.

Prizes for Designs of Philadelphia Exhibition Building, 1876.—The United States Centennial Commission, at a meeting held in Philadelphia, on August 8th, according to the *Polytechnic Bulletin*, awarded the premiums of 1,000 dollars to each of the authors of the best ten of the competing designs for the Exhibition building 1876, viz.—To Samuel Sloane, of Philadelphia, for No. 9; to John McArthur, jun., & Jos. M. Wilson, of Philadelphia, for No. 11; to Calvert Vasex, of New York, for No. 21; to Collins & Autenrick, of Philadelphia, for No. 23; to C. C. Clark & H. A. and J. F. Sims, of Philadelphia, for No. 32; T. C. Sidney, of Philadelphia, for No. 15; J. S. Fairfax, of Wheeling, W. Va., for No. 20; Thomas M. Plowman & Co., Washington, D. C., for No. 22; Francis R. Gatchel & Stephen Rush, of Philadelphia, for No. 24; and J. H. Veydage, of Terre Haute, Ind., for No. 25. From these ten the design for the building will be selected, it being understood that their authors have the privilege of amending their designs before competing for the main prize.

Finsbury Park.—A right of way over Finsbury Park is preserved by law to Messrs. Wing & Ducane, who, as the owners of the pasture land adjacent, are empowered to drive cattle across the park at all hours of the day and night. In consequence of this, the park cannot be properly fenced in and preserved. An offer was made by the Park Committee of the Metropolitan Board of Works to make a special road through the park, but it was not accepted, and the question is now under arbitration. Pending the report of the arbitrator, Mr. Baron Pollock, it has been thought desirable to postpone all action with regard to the promotion of a Bill in Parliament to remedy the nuisance.

Soluble Glass in the Arts.—The employment of this substance in the arts is rapidly extending, and it has become indispensable in many industrial branches. It seems to be specially well adapted to the production of cements: when intimately mixed with fine chalk it is found that a hard cement will be formed in from six to eight hours. With powdered sulphide of antimony a black mass is produced, which is susceptible of taking a high polish, and possesses then a superb metallic lustre. Fine iron-dust gives a gray-black mass of great hardness. Zinc-dust gives a gray mass of much hardness, and having a metallic lustre. Zinc castings can be readily repaired by its aid.—*Journal of the Franklin Institute.*

The New Townhall at Wavertree.—The townhall which has been erected by the Local Board of Wavertree has been formally opened. The foundation stone was laid in August of last year by Mr. J. A. Picton, chairman of the Board. The architect is Mr. John E. Reeve, of Wavertree and Liverpool, and the builders are Messrs. O'Kills & Morrison, of Wavertree. The opening was celebrated by a dinner in the new building, Mr. Picton presided; and the guests included the mayor of Liverpool, and other officials.

Scindhia's New Palace at Gwalior.—We learn from the *Bombay Gazette* of September 20th, that the new palace which Maharajah Scindhia is erecting at Gwalior, is an exact copy of the Government House in Calcutta. There are at present 9,000 men at work on it.

Antiquities in the Caucasus.—*La Caucase* states that the archæological excavations made during the past summer in the districts of Alexandropol and Etchmiasdin, in the province of Erivan, have produced important results. Utensils of iron, silver, gold, and bronze have been found, which belong to an age anterior to the introduction of Christianity into the country. The excavations in the neighbourhood of Alexandropol have brought to light a Pagan temple of gigantic dimensions, and not far from it a cuneiform inscription, of which a photograph has been taken.

Hospital Barracks.—One of the twenty gold medals given by the Empress Augusta for the purpose of rewarding those persons who have this year exhibited the best articles for the care of the sick and wounded in war, has been awarded to the Crown Princess of the German Empire, for the model of an improved hospital barrack, executed by Mr. Jacobi, an architect at Homburg, from drawings and descriptions of her Royal Highness. On being informed by the committee of the award, the Crown Princess at once decided that the medal should be sent to Mr. Jacobi, who has shown great skill in the construction of the model.

Improvements at the Midland Station, Derby.—Extensive alterations have been going on. Additional offices have been erected for the clerks and station-master; and these and other alterations and extensions have cost several thousand pounds. Important improvements have also been made in the refreshment department of the station, with new *buffet*, refreshment-rooms, and dining-room. The new dining-room is 30 ft. by 36 ft., and occupies the site of the station-master's offices and the second-class refreshment-room.

The Assyrian Expedition.—The proprietors of the *Daily Telegraph* have received a complimentary letter from Mr. Winter Jones, on the part of the trustees of the British Museum, thanking them warmly for the valuable collection of antiquities which were brought together by Mr. Smith in his recent expedition to Assyria. The antiquities,—upwards of 500 in number,—are now all in the British Museum, except the stone monument of the reign of Merodach-Baladon I., king of Babylon, which is on its way to England.

Remains from Mileto.—The Messrs. de Rothschild have just made to the (Paris) Administration of Fine Arts a valuable present, consisting of columns, statues, and bas-reliefs coming from the ruins of a temple dedicated to Apollo-Didymus, discovered in the neighbourhood of Mileto (Anatolia), in the course of excavations made for some years past at the cost of these gentlemen. According to *Galignani*, these relics of antiquity will be placed in the Musée des Antiques at the Louvre.

All Souls, Oxford.—A reredos, discovered some time ago in the chapel of All Souls, Oxford, is being restored to its original beauty by Mr. Geflowski, of London. All the niches and canopies are completed, and a number of statuettes and other figures have been fixed. Earl Bathurst, a Fellow of the College, has undertaken this work, at a cost of between 3,000*l.* and 4,000*l.*

A Wilberforce Memorial.—The memorial stone of a chancel to the Church of St. Michael and All Angels, at Silvanmore, Isle of Wight, which is being erected to the memory of the late Bishop Wilberforce, has been laid on the feast of Saints Simon and Jude, by Miss Raine. The chancel alone will cost 1,700*l.*, and towards this sum Miss Raine has given 1,000*l.*

The Old Opera House, Paris.—At half-past eleven on Tuesday night a fire broke out in the old Opera House, in the Rue Lepelletier, Paris. The flames soon spread, and in three hours the destruction of the building was complete, although a large number of engines were at work endeavouring to save it.

TENDERS

For building at Saffron-hill, for the Ragged School Shoe-black Society. Mr. M. C. W. Horne, architect:—

Pritchard	£3,679 0 0
Scrivener & White	3,553 0 0
Wagstaff & Son	3,475 0 0
Staines & Son	3,443 0 0
Niblett & Son	3,145 0 0
Wagner	3,068 0 0

FOR SCHOOLS AT HULL.

For School Board schools now erecting at Hull. Mr. Augustus W. Tanner, architect. No quantities.

Daltry-street School, for 750 children:—	
Habbershaw	£5,521 10 0
Brown	5,444 0 0
Helas	5,325 0 0
Stanley	5,269 0 0
Barritt (accepted)	4,456 18 0
Courtney-street School, for 816 children:—	
W. & J. Hall	£6,466 0 0
Musgrave & Son	6,200 0 0
Marshall	6,018 0 0
Hockney & Liggins	5,449 10 0
Hutchinson & Son	5,383 0 0
Brown	5,375 0 0
Habbershaw	5,315 7 6
Jackson (accepted)	5,224 0 0
Bulmer	4,228 10 0
Lincoln-street School, for 816 children:—	
Drury & Harper	£5,138 15 0
Evington	5,075 10 0
Sergeant	4,874 0 0
Lisen & Wilkinson	4,820 0 0
Barritt	4,739 12 0
Helas & Son	4,602 10 0
Brown	4,465 0 0
Jackson (accepted)	4,428 0 0
Wawne-street Schools, for 750 children:—	
Habbershaw	£5,140 13 0
Helas	5,016 0 0
Brown	4,980 0 0
Barritt	4,857 17 0
Hutchinson & Son	4,799 0 0
Jackson (accepted)	4,783 0 0

For vicarage-house, Finchley. Mr. Norton, architect. Quantities by Mr. Thacker:—

Beresford	£3,180 0 0
Boden	2,950 0 0
Stephenson	2,751 0 0
Tibbitts	2,745 0 0
Rankin	2,740 0 0
Niblett & Sons	2,700 0 0
Simpson & Baker	2,674 0 0
Carter	2,670 0 0
Plowman	2,600 0 0
Boyce	2,578 0 0
Smith	2,577 0 0
Gilmour	2,520 0 0
Sharp	2,499 0 0
Blackmore & Morley	2,493 0 0
Webber	2,466 0 0

For additions to Rosemount, Eastbourne, for Mr. Matthey. Mr. H. E. Rumble, architect. Quantities by Messrs. Hovenden Heath & Berridge:—

	General Works.	If Concrete Walls.	Add if oak Ship Oak Joinery.
Cheesman	£7,087	£6,977	£596
Colls & Sons	6,937	6,647	900
Holland & Hannen	6,770	6,730	1,513
Peerless	6,636	6,438	460

For an addition to 2, West Kensington-gardens, for Mr. R. Lloyd. Mr. W. P. Griffith, architect:—

Lawrence & Sons	£248 0 0
Morant	215 0 0
Wilson	195 10 0

For constructing new roads and drains on the Eversfield Estate, St. Leonard's-on-Sea. Fowler & Hill, architects, London and St. Leonards:—

Cole	£3,293 0 0
Thompson & Son	2,950 0 0
Wainwright	2,850 0 0
Potter	2,631 12 7
Symonds	2,505 0 0
Williams	2,443 0 0
Hughes	2,407 3 0
Goodair	2,219 10 0
Wood & Geary	2,167 0 0
King	2,000 0 0
Hughes	1,770 0 0

For new vagrant wards, &c., at Uxbridge. Mr. George Eves, architect. Quantities by Mr. Sidney Young:—

Taylor	£1,292 0 0
Garratt & Co.	1,180 0 0
Nias	1,139 0 0
Kearley (accepted)	1,038 0 0

For alterations, painting, &c., to St. Matthias Church, Bethnal-green. Messrs. T. & W. Stone, architects:—

	General repairs.	Add if painted and grained to sittings
Brown	£900 0 0	£50 0 0
Thomerson	576 0 0	75 0 0
Wire	575 5 0	88 0 0
Kiddle & Son	563 0 0	24 0 0
High	496 10 0	25 10 0
Higgs	479 1 0	40 7 0
Howard*	434 0 0	61 0 0
Christopher Bros.†	277 0 0	30 0 0

* Accepted. † Withdrawn.

TO CORRESPONDENTS.

W. M. T.—D.—H. G.—M.—O. S.—L. A.—C. R. S.—W. W.—J. P.—J. N.—Miss W.—H. H. & B.—G. & Sons.—A. W. T.—C. J.—J. W. (next week).—M. M. (next week).—B. B. (thanks).—W. K. (thanks. We cannot find space for the lines). H. B (near the floor). F. K. & B. (we shall be glad to see them). —C. B. (under our mark).—W. D (shall be forwarded). —B S. (we should be disposed to as removal of obstruction could not be insisted on. Inquiry, however, might show otherwise)

We are compelled to decline pointing out books and givi addresses.

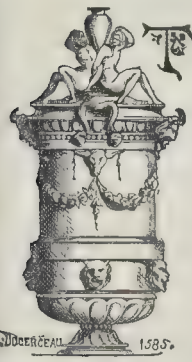
All statements of facts, lists of tenders, &c., must be accompani by the name and address of the sender, not necessarily f publication.

NOTE.—The responsibility of signed articles, and papers read public meetings, rests of course with the autho

The Builder.

VOL. XXXI.—No. 1605.

On the Value of Symmetry and Design.



THE Greek verb *συμ-μετρίω* has for its literal meaning "to measure one thing by another," more literally "to measure together"; and the corresponding adjective, *σύμμετρος*, signifies "of like measure or size with." It is only when we come to the substantive derived from this, *συμμετρία*, that we find the word in the more general signification which we attach to it in common parlance, as signifying generally pleasing proportion of parts and outline of form. But the more literal and restricted sense, as indicating that in which one part is measured from, and is a repetition of another, is undoubtedly the original sense of the compound word; and as we have no single word in English to express this likeness between parts, it is convenient to use the word "symmetry" sometimes in its narrower meaning, as indicating repetition of parts on each side of the centre line, in any artistic composition or ornament.

In speaking of the "value" of symmetry, considered in this sense, we are not assuming that a symmetrical treatment is in all cases desirable, but proposing to consider how far it is an essential element in architectural and ornamental design, and whether or not it is a characteristic of the highest class of design; both sides of the proposition having been respectively asserted in a pretty positive manner by critics of different schools. By one writer absolute symmetry is regarded as the necessary concomitant of any complete and artistic ornament; by another it is decried as a mere mechanical and soulless method of treatment, substituting "vain repetitions" for thoughtful elaboration of work.

This latter view is generally backed by an appeal to Nature,—to the endless variety in natural vegetation, &c.; and if we compare the productions of architecture and its tributary arts with the works of inanimate nature, the contrast in regard to this matter of symmetry is certainly remarkable. The objects we are accustomed to regard as beautiful in the latter are in almost every case characterised by utter absence of symmetry; the constituent elements in a landscape are utterly irregular, whether in detail or in combination; no plant, and scarcely even a leaf or a flower, is absolutely symmetrical, though they both approach, in some cases, very closely to this condition. But, on the other hand, the almost universal consent of mankind so far (with one or two exceptions to be noted hereafter) has been for more or less symmetrical treatment in ornament; in most cases absolute symmetry, in nearly all cases a symmetry more formal and precise than anything found in natural growths. There appears to be little connexion, either, between these symmetrical tendencies and a high state of civilisation or intellectual culture. If we compare the carving on the canoe or paddle of a New Zealander with the design on a Greek vase, we find, though the former is far less refined in line and execution, almost the same importance is attached in both to the symmetrical treatment of each half of an object, and of the ornament worked on it; and throughout the intermediate links between barbarism and civilisation there is apparent, in the characteristic ornament of each nation, the same principle (or habit) of reduplication and balance.

It is the consideration of this constant recurrence of the symmetrical principle in almost all schools of design which has doubtless led, in great measure, to the exaggerated estimate of the value of this element in ornament taken by some critical writers. It has been asserted that reduplication is the very essence and foundation of ornament; and a favourite example is the result produced by marking any form on a piece of paper and folding it over while the ink is wet, so as to produce a corresponding opposite impression. Here, it has been asserted, is the rough genesis of ornament; a form which was without meaning or beauty when first sketched, becomes "ornamental," and acquires a sense and purpose the moment it is shown as a symmetrical repetition. This is an extreme statement of the case, which, however, we met with not long since in a book put forth by an official instructor in art. It would not require much research, certainly, to find examples to set against so general a statement; specimens of beautiful but unsymmetric ornament of the Mediæval school could be at once adduced; and it is quite possible to produce exceedingly ugly would-be ornament in the strictest duplicate symmetry. The part which symmetry really plays in ornament consists in supplying the evidence of law and of design. The evidence of law, the relation of parts to a fixed purpose, in nature, depends upon minutiæ far more numerous, various, and delicate than anything which man's handiwork can attain to or imitate; nor would such imitation, if attained, be sufficiently subordinate or quiescent in expression to serve as appropriate ornament to anything so artificial as a building. But the principle of symmetrical opposition, suggested by nature in the growth of vegetation from a central stem, and carried out further and more completely in the higher forms of life, furnishes the readiest and most recognisable means of imprinting on man's artificial work the expression of law, and of a fixed intent governing his productions. Mere imitation of nature in her thousand irregularities, wants this expression of law, because we can after all only produce an imperfect imitation of certain details, which fail to exhibit any but a very small suggestion of the great physical laws of the world; we have therefore to make to ourselves a smaller and more easily defined law, which we can illustrate in the compass of a panel, or a ceiling, or a frieze; and it is only the ornament composed according to such an obvious readily comprehended law which has been regarded by mankind as of permanent value in its own class, and as matter for study and admiration. Mere knots, festoons, Grinling Gibbons carvings, and such matters, are of interest historically, but not artistically, except as to mere power of handiwork.

This expression of law and design through symmetry may be obtained, however, either by the employment of forms and details absolutely symmetrical in themselves, as in the Greek honeysuckle ornament, of which each section consists of two similar halves; or by the use of a form not symmetrical in itself, but giving the effect of symmetry by repetition. This is exemplified in much of the best Gothic ornament, especially in illuminated border designs. And we may take, again, a well-known example from the Greek, the "key" pattern, no portion of which is strictly symmetrical, but which runs in a symmetrical sequence. The radical distinction between these two forms of symmetry and their expression, is, that the last-named (the repetition form) always indicates movement,—a tendency in one direction, while the other indicates repose Each portion here is complete in itself, and could in a suitable position be used alone. No section of the other form can be used alone, for it absolutely depends for its motive on the parts preceding and following it. The greatest stateliness and sumptuousness of ornament belongs to the repetition of forms complete in themselves; the greatest life and piquancy to forms which are interpendent and only symmetrical in their juxtaposition. This is an important and wide principle, which in the main decides which type of ornament is suited to any given building, room, or situation. Where the mass of the building is severely symmetrical, the ornament must be in keeping with it, and must not assume, by the introduction of too many unsymmetrical forms, a liveliness and piquancy out of keeping with the structure which it adorns. Where the main building is unsymmetrical, romantic, "picturesque," in type, the ornament may display the tendency to movement and life which the use of unsymmetrical forms in connexion furnishes. Palatial state and luxury is best adorned and embroidered by symmetrical ornament; the drawing-room and boudoir, on the other hand, are better illustrated by the less rigid types of running ornament, approaching more to the life and vivacity of nature; and this is the more true, inasmuch as the strictly symmetrical type of ornament, in order to tell and produce its full effect, requires both careful and exact execution and considerable richness and elaboration; the repeating style of ornament, less stately and more piquant, is satisfactory in simpler forms, and with less perfect execution; any imperfections in the latter point being far less marked than in the case of decorative features which profess to be precisely and mathematically similar on each side of their centre. We have here been supposing the case of buildings in the same style, but intended for different uses. It might be said that the buildings for the most solemn uses in the Gothic style contain a good deal of totally unsymmetrical ornament; but if we compare styles with one another, we shall find that in most of the successful styles of the world, the relation between the symmetry of the building and of its decoration is kept up. In the pure and rigidly defined Greek building we have the greatest proportion of strictly symmetrical ornament; in the Gothic, which is much less restricted in general composition, there is a similar departure from uniformity in ornament; but in the earlier stages of the Gothic, when the logical development of the plan and construction of the building was more strictly observed, the ornament also (in French Gothic especially) is largely governed by symmetrical disposition; it is only in the florid decadence of the style that the freedom and irregularity of nature are affected in the ornamental details.

In addition to the two types just mentioned, and which are illustrated chiefly in ornament arranged in longitudinal or vertical lines, there is a more subtle and ingenious combination of symmetrical effect with variety, which is possible in ornament designed to fill spaces and angles. In such positions the remark as to the superior stateliness and sumptuousness of perfectly symmetrical ornament still holds good in the main, and the practice of mankind in general has ratified it. But a more interesting and more piquant treatment is that in which a symmetrical arrangement of the leading points and outline is adhered to, but the connexion between them,—the manner of passing from one point to another,—is varied. This is what gives much of its charm to the beautiful school of Moorish

and Arabic ornament, where we see a centre or a spandrel filled with what at a first glance appears to be an elaborate symmetrical design, but which on closer inspection is discovered to be studiously varied in the details of its construction, while preserving a perfect balance of the main portions and forms. A remarkable though very simple instance of this school of design, this symmetry produced unsymmetrically, is shown in the small centre-piece of mosaic inlay given by Sir Digby Wyatt among his sketches in Spain: it is typical of the whole principle and genesis of this style of ornament. The intellectual interest of this style of treatment, when well carried out, is considerable, and its accomplishment, on at all an elaborate scale, demands more trouble and thought than most other methods of decorative design; its drawback is that it is apt to degenerate, and with its inventors did at times degenerate, into mere artifice and ingenuity; the thoughts of the designer becoming fixed rather on the cleverness than on the beauty, meaning, or suitability of his work.

In considering the decorative treatment of a whole building *en masse*, we can perceive that here, again, there are degrees in symmetrical treatment. In decorating large features, divisions, or bays of a building, which in their main parts are symmetrically repeated, we may either treat these with absolutely similar decoration, and depend for effect on the breadth and largeness of expression thus gained, or we may, while preserving a general correspondence of appearance, of size, and of motive in the decoration, when viewed as a whole, give a more immediate interest to each portion by a separate and varying design in the details. The former principle, we need not remark, is that of the classic school, and, much as it has been decried and condemned in some quarters, there is almost everything in its favour, where great dignity and a monumental character are sought for. How far variation of features, similar in the main, can safely be carried, will depend, again, on the degree of logical rigidity of style in the whole. Any variation of the capitals in the Doric temple (except, of course, between columns and *antæ*, which are really different features) would have been an undoubted error, the capital being so severely and rigidly designed to give exactly the expression that was wanted, and nothing more. In the more florid and less rigidly constructive Corinthian capital, on the other hand, a variation of the design, so as yet to preserve the main outline, and keep the general proportions of all the capitals symmetrical, might hardly have been out of place even in Greek architecture, though the distinction would have to be very delicately and slightly accentuated in such a style. In a less rigid style, but with a form of capital as symmetrical as the Corinthian, the early French Gothic architects in many cases effected this variety in unity very happily; and it may be seen in a somewhat ruder manner, but very delicately carried out in principle, in the early Transitional capitals of our own architecture, when the Norman scolloped capital was played with and varied by the architects previously to its final dismissal in favour of the foliated capital. The variation in the mouldings of the main arcades in some of our cathedrals might be cited as another instance of this principle of treatment, so far as effect goes; but this was in many cases the result of work being carried on at slightly different periods, by different hands, rather than of a deliberate intention. In Norman work, as at Peterborough, it appears, however, to have been done with design. But in general it may be observed that this method of varying the treatment of symmetrical parts may be more fully and safely applied to portions which are not a part of the constructive design,—more to spandrels and panels than to piers and arches; and this is the more so, of course, the more rigid and symmetrical the general style of the building. Any important variation in the archivolt mouldings of an "Italian" arcade would be likely to be felt as an impertinence. On the other hand, the unsymmetrical treatment of symmetrical parts is a principle especially applicable to small works of the nature of furniture, vases, and other such classes of articles. Of this we see admirable examples in the design of the ornament on a good many of the enamelled Japanese jars which have come so largely into the market of "taste" lately,—those in which the body of the vase is divided into circles or segments of circles, symmetrically arranged, but filled in with ornament differing both in colour and design in each compartment.

Proceeding from parts to the whole, and considering the application of symmetry to entire buildings, or to architecture in the largest sense, we find the observations which we made in regard to its value in ornament holding true to very much the same extent and in the same manner in regard to complete structures. Whatever may have been urged to the contrary, mankind have considered, and will continue to consider, symmetry of general design as an important element, one of the most important elements, in the expression of architectural grandeur and dignity. This may be carried into pedantry, no doubt, as in the case of a critic of St. Paul's referred to in a recent article, who thought it must be evident to every right-thinking person that the building was defective in not having the dome in the centre and the two ends identical in design. This good man's mistake arose from his not considering that St. Paul's was not intended to front each way, but to be entered (on great occasions) at one end, and that the progressive development of the design was from the westward towards the dome as the main internal feature. But if we take the west front of the same building, every one can readily imagine how much the dignity and stateliness of this, the main front externally, would be impaired by a variation in the western towers, so as to destroy the symmetry of the design. If the cathedral had been intended to be approached by a main avenue from the side also, and the flank had thus become as important as the front, there can be little doubt that Wren would have constructed it symmetrically, and have placed the dome centrally with the said avenue, if not with the building. It is not to the purpose to quote such an instance as the spires of Chartres in opposition; because, in the first place, Gothic is a less quiescent style and aims less at repose than Greek or Roman, and therefore what would assist the expression of the one might militate against the expression of the other; and, secondly, because the variation of the Chartres spires is a matter of accident rather than design, and its interest is at least as much historic as artistic; and there can be no doubt that any one who made a design now with that degree of variation in towers so placed (symmetrical on plan) would be held to have blundered. As a general rule, indeed, the great buildings of the Mediæval period are not nearly so much examples of a contempt for symmetry as has been pretended; the noblest of our cathedrals were designed as symmetrical buildings in their main mass, with a precise repetition of features on each side; the adjuncts of chapter-houses, cloisters, &c., which go to make a one-sided plan, and give the idea of irregularity, ought strictly speaking to be regarded as separate structures from the main design. The extent to which the cathedrals have been pulled about and added to at different periods has created in the mind of the public and of architectural amateurs an idea about their want of symmetry and regularity which is contrary to fact and to the intentions of their builders. On the other hand, it may be said with truth that in the largest proportion of buildings which have to be erected in the present day, absolute symmetry is unnecessary and unsuitable, in many cases highly untruthful; for it is contrary entirely to the genius of architecture to mask an irregular and unsymmetrical plan behind a symmetrical exterior. What has been observed in regard to ornament—that symmetry means repose and stateliness, and that irregularity or partial symmetry means movement and vivacity,—holds true to the same extent in regard to buildings. Where we require the highest form of stateliness and dignity, either in the palace, the town-hall, or the mansion, we require symmetry of design, the more so because in almost every such case symmetry of plan is a necessary element also. Where we wish for the expression of comfort, convenience, elegance, and what is called the picturesque element, we may discard symmetry; and the extent to which we do so will almost be the measure of our progress from the palatial to the domestic, and from the architectural to the picturesque.

These considerations are not without significance in relation to the great attention which has lately been bestowed upon almost the only national school of ornament of real originality and value which has in a considerable proportion of its productions ignored symmetry altogether—the Japanese. These remarkable decorators have understood, as we observed, how to employ symmetrical arrangement in their designs without symmetrical details. But in a large class of their works symmetry is entirely ignored, and the only object seems to be to put on as much as possible of beautiful workmanship, without any reference of one part to another, or of the whole design to the object to which it is applied, and which it decorates. We are exhorted sometimes to admire this "artistic freedom," and to imitate this haphazard overlaying of articles with miscellaneous ornamental detail. Now, unless the tastes and perceptions of all the rest of mankind, including the most highly-cultivated races that have ever existed, were totally wrong and mistaken, it is evident that a distinct law in the arrangement of ornament, and a distinct reference to the space and shape it is to occupy, form a great part of the art of design. To throw upon an article, be it what it may,—a vase, a flower-jar, a cabinet,—to throw upon it irregularly ornamental detail, of however elaborate and beautiful design and workmanship in itself, without order or symmetry, is simply for the designer to ignore one half of his work. The admirers of the Japanese cabinets for which such prices are given speak of what they are pleased to term the uninteresting and unintellectual repetition of parts in ornament of the Renaissance school. The fact is that the careful execution of a symmetrical ornament is one more evidence of the skill and care of the workman. The perception of this is really at the bottom of the rather affected objection to stencilling coloured ornament held by some modern Gothic architects,—it is a mechanical performance of what should be done by the care and skill of the art-workman. The sense of a difficulty carefully overcome always adds to our pleasure in the contemplation of a design; and thus, if we do not advocate the execution by hand of all painted ornament of the symmetrical type (the gain scarcely compensating for the loss of time in such a case), we contemplate with loving admiration the exact execution in marble of the Greek symmetrical ornaments, the two sides identical to a hair's breadth, as a beautiful example of delicate, and careful, and conscientious workmanship, compared with which the Japanese and Chinese irregular and unsymmetrical elaborations of ornament appear comparatively coarse and unintelligent efforts, in which that combination of intellectual interest and mechanical perfection which is necessary to produce the highest forms of artistic ornament is absent.

BLACKFRIARS GOODS WAREHOUSE.

IRON FOR STRUCTURAL USES.

THE new goods warehouse that is being built by the London, Chatham, and Dover Railway Company, and which has been in progress for more than two years, and is now very near completion, is an extraordinary structure in various respects, but most notably perhaps for the enormous quantity of wrought and cast iron that has been used, and with much skill and success in the erection.

The building is remarkable also for the quantity of property that had to be demolished in clearing the site. Upwards of thirty houses had to be taken down, and although the property was of an inferior character, the company had of course to pay full value for it, or rather more. In the case of a dilapidated tavern in Holland-street, with ten years of the lease to run, for which the occupier, it was stated, considered 5,000*l.* an insufficient *solatium*, we are not prepared to say this was wrong. Holland-street was for the greater part absorbed by the goods warehouse, and closed as a carriage-way, but a subway in its stead was provided for foot-passengers. One side of the warehouse faces Blackfriars-road, from which, however, it is but little seen, because of the numerous lines of railway that intervene. The other side elevation fronts Green-walk, now a spacious thoroughfare of about 22 yards wide, which now takes the traffic into Southwark-street and Blackfriars-road. One end of the warehouse faces what remains of Holland-street, from which are the principal entrances: the other end is towards Southwark-street, at which also there are entrances.

The site covered is an irregular parallelogram, being about 276 ft. long by 126 ft. at its greatest, and 120 ft. at its narrowest, widths. Having five floors, including a basement, it would appear that the building has an aggregate of about 18,090 square yards, or nearly 4 acres of floor-space. It is divided on the sides into eleven bays, with two windows in each, or nearly 300

windows in all, including the end elevations. The windows are all of iron. The only communication for goods between the basement and the floors above it is by hatchways and hoists. The basement, which will be appropriated to the storage of ale chiefly, is 9 ft. 8 in. high, and is paved with Staffordshire bricks. The roof of the basement is supported upon 101 longitudinal wrought-iron girders, having a total length of 10,400 ft., and 550 cross girders. Between the cross girders jack-arches, with two rings of brick, are thrown, which are covered with concrete, levelled up, and 4 in. thick at the crown. The principal floor, immediately over the basement, is supported by the girders already referred to, that are borne by 164 cast-iron columns, including 27 principals, 9 ft. 4 in. high and 2 ft. diameter, each weighing 2½ tons. These are the main supports for the whole of the interior. They have under each column an iron bed-plate, 4 ft. square, and weighing 1¼ ton, the bed-plates being laid upon granite bases, and these again upon beds of concrete, 8 ft. 9 in. square. The remaining 137 intermediate columns in the basement are from 9 in. to 7 in. diameter. The total weight of cast and wrought iron at and under the ground-floor is 471¼ tons.

On the ground-floor, to which carts and wagons have access, the forest of columns in the basement, and in the upper floors, would be quite inadmissible, and only the twenty-seven principal columns appear, which are carried right up through the other floors to the support of the roof. These columns are 22 ft. high, 2 ft. diameter at the base, and 1 ft. 9 in. at the capital; they weigh five tons each. Intermediate columns are introduced in the upper floors, which necessitates the provision of enormous strength in the girders that have to carry them and the superstructure. The main girders, 106 in number, that support the first-floor, are probably the most remarkable collection of wrought-iron riveted girders to be met with in the world. Sixty-one of these girders weigh an average of 11 tons each, and forty-five others an average of 4 tons each; in all about 800 tons. Upon these main girders 300 cross girders rest, that are the same in construction as those on the ground-floor level, that is, 12 in. by 6 in. by 6 in., and 58 lb. per foot. These are placed at distances of 6 ft. 6 in. between centres. The total weight of iron work in this floor is about 940 tons of wrought-iron girders, and 135 tons of cast-iron columns. The largest of these girders, which are fish-bellied, have the large dimensions of 3 ft. 11½ in. deep in the centre, and 3 ft. 3 in. deep at the ends. The ground-floor is paved with granite cubes for the wagon ways, and with wood paving in other parts. This floor has two strong planked loading stages each 235 ft. long, 10 ft. wide, and 3 ft. high.

The first and second floors are almost entirely alike in construction, as regards the iron work. They have 361 wrought-iron girders, and 310 columns, including the continuations from the basement of the 27 principals. The first floor is 10 ft. 6 in. from floor to ceiling, and is laid with 2½ in. tongued planks; the second and third floors are 10 ft. and 9 ft. 6 in. high, respectively, and are laid with 2 in. tongued planks. The joists are 12 in. by 3 in., and 11 in. by 2½ in. The upper floor has 32 cast-iron columns, that bear the lattice girders upon which the principals of the transverse roofs rest. The roof principals are placed 27 ft. apart. The tie-beams are 11 in. by 4 in.; the king-posts, struts, and other binding parts 8 in. by 4 in., purlins 8 in. by 3 in., and the rafters 6 in. by 2½ in. Strong wrought-iron forged straps are employed at all the junctions of the principals. Diagonal boarding, 1 in. thick, and Countess slates cover in the whole. There are six roof gutters across the building, each 2 ft. wide, and laid with 6 lb. lead. The gutters are 58 ft. above the ground line. Fourteen of the main columns are made available for conveying part of the roof water to drains at the base of the building, from which it is conveyed to a street sewer. There are also cast-iron rones in each bay on the Green Walk side for the same purpose.

The ground-floor is laid with a line of rails along each side of the two stages, and a single line across each end of the warehouse, and is also furnished with eight turn-tables,—two at the ends of each of the stages. The rails on the ground-floor are 28 ft. 9 in. below the level of the rails by which the Midland and Great Northern Companies will communicate with the warehouse. The loaded trucks will be lowered and raised by powerful hydraulic lifts. There will be twelve cranes on the ground-floor, capable of lifting from 25 cwt. to 2 tons each. The communication between the ground and upper floors will be by nine cranes, inside and outside. There is communication between the floors by hatchways,—four to the basement, 12 ft. by 6 ft.; six from the ground to the first floors; and two each in the second and third floors. The walls, of Staffordshire blue and white Burham bricks, are 3 ft. thick, with a foundation footing 7 ft. 6 in. broad. They are built in cement to the rail level; there are also six bands in cement, a foot deep, all round the building, at graduated heights.

The quantity of iron used in the building exceeds considerably 2,000 tons, including more than 78 tons of best wrought-iron rivets. The quantity of timber used in it amounts to about 31,000 cubic feet.

The whole work has been designed by, and executed under the direction of, Mr. Wm. Mills, C.E., engineer-in-chief to the London, Chatham, and Dover Railway Company; resident engineers, Messrs. J. A. C. Hewitt and R. Barker; contractors, Messrs. Hill, Keddell, & Waldron; contractors for the ironwork, Messrs. Mat. T. Shaw & Co., of London and Stockton-on-Tees, whose engineer, Mr. C. M. Chittick, arranged the working drawings, and supervised the manufacture of the ironwork. It is worthy of note that, notwithstanding the irregular shape of the building, one side of it being a curve, and its width at any one point being different from what it is at every other, the girders are so numerous, so varied in form and dimensions, and many of them so enormous in size, it was thought practicable to put them together at a distance, which was done with complete success; the whole of the girders having been made at the works of Messrs. Shaw & Co., and brought upon the ground ready for their places, into which they fitted readily, not only without alteration, but with absolute precision, a result of which the firm may reasonably be proud.

OVERCROWDING IN SOUTH WALES.

It appears from the proceedings of the local authorities, that the expansion of the mineral trade of South Wales, and the consequent increase of the population in the various centres of industry, are attended with a scarcity of houses for the constantly-increasing number of inhabitants. At the meeting of the Cwmdn Board of Health last week, a case was named of a house where eleven persons, including three married couples, were occupying one small sleeping-apartment! and instances were given where six, eight, and even ten persons, consisting of different families, were living, cooking, and sleeping in the same room. In the course of a discussion which took place on the subject, it was proposed that immediate steps be taken to put a stop to such overcrowding as highly injurious to health, and that the officers of the Board be instructed to take measures to prevent it, when several of the members present opposed the proposal on the ground that "the inspector had no legal right to interfere with private houses," and the matter was allowed to drop without any action whatever being taken. We should be disposed to say it is will rather than power that is wanting.

THE NEW BLOCKS AT PEABODY SQUARE, BLACKFRIARS.

The two new blocks of buildings which have for some time been in course of erection in addition to those already occupied, and known as Peabody-square, in the Blackfriars-road, are now nearly completed, and will be ready for occupation in a few weeks. These additional blocks, which have been erected by the Peabody trustees in consequence of the numerous applications for dwellings in Peabody-square, are situated on the north side of the present building, on the site formerly occupied by the Magdalen Hospital, and extend to Webber-street, Blackfriars, which forms their northern boundary. They have each a frontage of about 60 ft., but the principal elevation of only one block faces Blackfriars-road, the block immediately adjoining the present buildings running east and west, with a north frontage, the side elevation of this block, and the main frontage of the extreme north new block being a continuation of the Blackfriars frontage of the original buildings. Although the architectural elevation of the new buildings is mainly uniform with those already occupied, it is not quite of the same character, the new blocks being five stories in height, whilst the others are only four stories. On the ground floor of each block there are two dwellings containing three rooms, and two containing two rooms; whilst on the first, second, and third floors respectively, there are five dwellings, of which two have three rooms, two two rooms, and the other a single room. The fourth story contains three dwellings with three rooms each. The blocks thus contain twenty-two dwellings each, or forty-four dwellings in all. The wash-house and laundry are situated at the top of the buildings on the fourth floor, and provided with wash-tubs, wringing-machines, and other requisites, in addition to two large drying-rooms. There is also a dust-shaft on the same floor, carried down to the bottom of the building, to which there is access at the several stories. An improvement has been made in some portions of the fittings, the cupboards, amongst other things, being larger and more convenient than those in the adjoining blocks. At the rear of the blocks there is a recreation-ground, although rather limited in space. We understand that the number of applicants for the new dwellings exceeds their number, and that they are already let.

The architect is Mr. H. A. Darbishire, who designed the original block, and Messrs. W. Cubitt & Sons are the builders.*

IMPROVED STREET CONVEYANCES.

With the introduction of "Hansom's Patent Safety" cabs, or as they are called for the sake of brevity, "Hansoms," a marked improvement took place in the means of conveyance in the streets. Every other cab plying in the streets of London is now a Hansom, and the large provincial towns have adopted the improvement. When the underground railway was opened, people prophesied that a marked decrease would be apparent in the number of public vehicles in the streets; but experience has shown that the number of cabs and omnibuses has increased instead of lessened. When, two or three years ago, tramways, on improved principles, were revived among us, it was said that the use of omnibuses, at any rate, would become less common; but still they seem to increase in number, and, instead of decreasing, cabs and omnibuses are becoming more and more numerous. With all this demand, hardly any improvement has taken place in the comfort of the public vehicles: "four-wheelers," or as they are irreverently called, "growlers," are not a whit better looking or better fitted than the first "hackney carriage" of an age gone by.

The Society of Arts has at last come to the rescue of the grumbling, but patiently suffering, British public, by offering prizes for the best cabs that have actually plied for hire in the streets of London for six months before the date of the competition. About eight or ten different vehicles, — four-wheelers and two-wheelers, accepted the challenge; and after complying with the necessary conditions, were subjected to examination and comparison, and exhibited among the other carriages in the International Exhibition, which closed on the 31st ult. These cabs have thus undergone not only examination by the Society of Arts Committee, but by the public in general; and the verdict is in most cases the same. Those who have not been enabled to see the "pattern" reformed cabs at South Kensington will have an opportunity of doing so at the Crystal Palace, whither they are, we believe, to be transferred.

The prize cab, that which by public consent is declared the best, and which has received the medal of the Society of Arts, is an improved Hansom,—a two-wheeler. Its chief feature is its roominess: carried on wheels of the same width as the ordinary Hansom, its inside measurement is 4 ft.,—7 in. or 9 in. wider than the average cab. Two doors in front, opening simultaneously from the centre, and reaching to the roof, take the place of the awkward folding windows and doors of the ordinary Hansom. The upper part of the doors is fitted with windows, which can be opened or shut at pleasure; these doors can also be shut or opened by the driver on the seat behind, by connecting-rods at the top of the cab; at each side of the cab are sliding windows. The shafts are hung on a spring, giving greater easiness in riding; and the cab is decidedly most comfortable in every

* A view and plans of the original buildings will be found in our volume for 1872, pp. 26, 28, 29.

respect. It weighs 8 cwt., costs 75*l.* to 90*l.*, and is built by C. Thorn, of Norwich.

Next to this comes a four-wheeler, by Lambert, of Great Queen-street, which has received a prize of 30*l.* It is a most roomy cab, more like a private Brougham than a cab in appearance. The back part of the roof can be folded back by any one inside,—a lady might close or open it,—thus affording an open carriage for the summer. Beneath the lining at the back of the front seat is a roomy "boot," and at the back of the cab a convenient box for "nose-bag," &c. The price is 85*l.*

A four-wheeled cab to carry four inside (by Quick & Norminton, of Kilburn) presents some novel features; but it appears too complicated, and lacks solidity enough for street traffic. The front part of the cab is fitted with windows, and, by raising the box-seat, can be doubled back so as to form a carriage open in front, with a hood behind, for summer use. Beneath the box-seat is an open space available for parcels, &c. Behind is a ventilator, and it is proposed to add a clock to prevent disputes as to hire by time. The windows are provided with small discs of india-rubber,—a very slight, but very noticeable, feature in the comfort of the vehicle. A company has been formed for the purpose of supplying these cabs to drivers at the rate of 16s. per week. The price is 90*l.*, and the carriage weighs about 9 cwt.

A novel feature in several cabs, both four-wheelers and two-wheelers, is the position of the doors, which are placed neither at the side, as in a Brougham, nor exactly in front, as in a Hansom, but at the fore corner, diagonally. A Hansom (two-wheeler), by Marston, of Birmingham, has a semicircular front, with a door on each side, hung on a door-post in the centre of the foot-board, and opening towards the horse. Another, by the same firm, has the doors opening outwards; and a four-wheeler to carry three inside has a similar arrangement. Messrs. Mansfield & Crosse, of Exeter, exhibit a four-wheeler, to carry two, with doors similarly hung. The advantages of these doors are apparent at once. There is no awkward entrance through which one has to take one's seat in the cab backwards, and no folding window against which to crush one's hat, as the doors reach from the floor to the roof, and are fitted with drop-windows. Messrs. Marston also contribute a Hansom which dispenses with doors, but has instead a large stiff apron, which lifts upwards against the splash-board, and when closed forms a complete covering to the legs: it has the disadvantage, however, of the old fashioned dropping window. A very awkward innovation divides a similar apron into two parts, necessitating two movements to open it; provides a small door reaching half-way up to the roof, which opens outwards, diagonally, falling open of its own accord if not actually fastened; and retains the old windows doubling back against the roof. Such a complication of movements would deter any one from entering the vehicle.

Messrs. Turston, of Leeds, exhibit a curious adaptation of the Hansom, with two doors reaching to the roof, one on each side, opening diagonally on a common centre; the seats are four in number, two in the ordinary position, and one on each side of the cab, the body of which is necessarily much longer than that of the existing cabs in general use.

Such are some of the more noticeable features in cab building which the prize of the Society of Arts has brought forth. It is to be hoped that two or three of the types will be brought into actual use in our streets. A man with a cab like that of Messrs. Thorn, of Norwich, Messrs. Marston, Messrs. Quick & Norminton, or Messrs. Lambert, would hardly ever be without a "fare." In fact, when these cabs were serving their term of probation, it is said that they were continually engaged.

The Proposed Building Act.—At the meeting of the Metropolitan Board of Works to be held this, Friday, November 7th, a report of the Parliamentary Committee will be considered:—

"Submitting, for the approval of the Board, the draft of the Metropolitan Buildings and Management Bill; and recommending that the Board do consider the same, and declare as to its introduction into Parliament in the next Session."

And the following notice of motion by Mr. Roche:—

"That the Board approve of the principles of the Bill, and that the same be referred to the Works and General Purposes Committee to report whether any of the clauses require alteration or amendment."

RECENT EXCAVATIONS IN ROME.

On this subject Mr. J. H. Parker delivered a lecture last week in the Ashmolean Museum, Oxford. Mr. Parker said much credit is due to the Italian Government for the vigorous manner in which they are carrying on excavations in the Forum Romanum, and on the Palatine Hill, and in the Thermæ of Caracalla, as well as at Ostia and at Tivoli; in fact, all those antiquities which are acknowledged to belong to the Government. The Italian Parliament votes 1,200*l.* a year for this purpose, which is understood to be chiefly for the excavations of the Palatine Hill, with the slopes round it, including the Forum Romanum. They have now connected the excavations made in the time of Napoleon III., and each fresh excavation proves more clearly the substantial truth of the ancient legendary history of Rome. These it is intended ultimately to make into a second Pompeii in the middle of Rome, including the most interesting archæological ground in the world, but many years must elapse before this admirable project can be fully carried out. In the meantime, since Rome has been made the capital of Italy, a new city is being built within the old walls, but practically on what is now a new site, in the city of the empire, upon the hills on the eastern side of Rome, which had been deserted for centuries; the modern Rome of the popes of the sixteenth century having been built on the level ground between the hills and the Tiber; but the great flood decided the builders not to build on that site, and to begin the new city on the high ground. This new city is making extraordinary and rapid progress; upwards of 2,000 houses are building in Rome at this moment. New streets, new quarters of the city are being built, new drains being made on the most magnificent scale, and at an enormous depth, vieing with those of the old Romans. But in doing all this the remains of the ancient city of the time of the empire are being brought to light week after week, and often buried again the next. The municipality of Rome does its utmost, by appointing an Archæological Commission, with a very active secretary (Signor Lanciani), to preserve the records of all that is found in the shape of notes, plans, drawings, and photographs, and they publish a monthly archæological journal to record what is found, and whatever works of art are found, if portable, rescued and carried to their museum on the Capitol. Further than this they cannot go. If anything is to be preserved in its place it must be purchased by some one, and presented to them, when it would not be refused; they would gladly take charge of it, and guarantee its preservation by the proper officials. This has frequently been done in France by the French Archæological Society, who purchased antiquities, and had them officially registered as public property. In Rome it has happened unfortunately that from the ignorance of the architects and engineers employed by the Government a number of very interesting historical monuments must now be destroyed, which might just as well have been preserved without loss to any one if only the Government had possessed proper information. The first mistake was in giving a part of the thermæ of Diocletian, and the great reservoir of water that supplied those thermæ, as a site for the railway station, and therefore cutting through the great agger of Servius Tullius obliquely in order to arrive at it. The station might just as well have been placed outside of the agger in the space, half a mile wide, between that and the outer wall. The consequence of this has been that the railway station being naturally made the centre of the new city, all the rest of the agger is rapidly being destroyed. The Government engineer fixed upon the northern end of it as the site for the new Government offices (the Somerset House of modern Italy); consequently he was obliged to make a temporary railroad for the purpose of carrying away the thousands of loads of earth which had been piled up more than 2,000 years ago, and which might just as well have been let alone. It was an enormous waste of public money, which would have been disgraceful to all concerned had it been wilful; but it arose from mere ignorance, and nothing else. The most recent discovery is the foundation of the round temple of Vesta, at the corner of the Palatine Hill, and just to the south of the Forum Romanum, in front of the Church of St. Maria Liberatrice, in the garden of which inscriptions have been found of vestal virgins buried there. It had previously been ascertained that the celebrated three columns near this point belonged to the temple of Castor and Pollux, which also served as a vestibule to the palace of Caligula, which was therefore on the low ground at the foot of the hill, close to it. The remains of the temple of Julius Cæsar have also been found between this and the temple of Antoninus and Faustina, with a fountain at the south end of the Forum, the whole length of which has now been excavated on the western side, with the platform of the great Basilica Julia, called also Curia Julia, on which Signor Rosa has built a number of brick bases.

CHEAP SUBSTITUTE FOR DOUBLE WINDOWS.

Dr. Oidtmann, of Linnich, in a pamphlet on Sanitary Measures, suggests that "double-grooved window-glazing" should be used, instead of double windows, by which, as he says, great expense may be saved. This is done in the following manner:—Two grooves are channelled in the frame for receiving the panes, an outer and an inner one, and in both of them panes are then put in and puttied. A space of about 3-16ths to 3-8ths inch is thus formed, containing a dry atmosphere, cut off from the air both in the room and in the open air. As it cannot perceptibly contract or expand, the outer panes repel the cold of the outer air, the inner the warmth of the room. For such a double-grooved window-glazing good hard glass (poor in potash) must be selected, so that, especially in southern aspects, the rays of the sun do not decompose and render dull the facing sides of the panes, which naturally cannot be cleaned. In putting the panes in, therefore, care must be taken, not only that the facing sides are scrupulously cleaned of all dust and dirt, but also that the air between the panes be dry. The glazing of the window should therefore take place only in dry weather. It is self-evident that ice-flowers never appear on such windows. Their increased cost will be covered the first year by saving in fuel. The new method acts also as a protector in summer against the troublesome heat of the direct rays of the sun. A room provided with double-glazed windows, at a temperature of about 26° R., will be 4° R. cooler than one with ordinary windows. The method may also be applied to hotbeds, for which it has proved efficient, and for large areas of glass and greenhouses double glazing might be likewise very advantageously used.

THE ARCHBISHOP OF YORK ON ART.

The annual meeting in connexion with the Selby School of Art was held on Wednesday in last week, when the Government and local prizes were presented to the successful students by the Archbishop of York. On the walls hung the drawings and paintings of the pupils during the year, as well as upwards of 100 works of art, lent by the director of the South Kensington Museum. Amongst those supporting his grace on the platform were Colonel Graham (one of her Majesty's inspectors of science and art schools), Rev. Canon Harper, Rev. G. Wyndham Kennion (diocesan inspector of schools), Rev. J. B. Mitchell, Mr. J. T. Atkinson (sec.), and others.

The secretary read the report, and the Archbishop in the course of his address said:—Art is of all things the most democratic. It cannot be produced without a certain gift, which seems to be imparted equally both to the highest, to the middle, and to the lowest class; and here every one may meet upon a common ground, and he who has to deplore,—if it be a thing to be deplored—that he is one of the humblest class, may yet see his name stand high with those of the foremost artists in the world, for they, too, have sprung from but humble origin, and, using well the talents God has given them, rose to be the admired of mankind, and the benefactors of their race. That applies to every art—to architecture, to music, to painting, to sculpture,—to everything that is called art. It is a fair field, and the course is open to all, and those who start under some disadvantage of education find in this more than any other career how easy it is for pains and trouble to compensate those differences, and place them in the front rank, although they started in the last. Let us ask ourselves what art is. And that is rather a difficult question. A Frenchman said that art was that which taught you to do easily something

well which by nature you could do naturally but very ill. I think you will find that remark, although it is not a definition, goes a long way towards the truth. Art is the production of things in beautiful form of every kind. There is an art in writing the article that you read every day in the newspaper,—that easy style of writing which is now attained by so many, and which once was the privilege of only a few,—is, in fact, attained by great practice and great painstaking, and that nice taste and feeling which prevents error in all development of thought. Art, then, is the power of doing something which naturally we could do, but which we cannot do properly or easily without the help of rule and of practice, and of a certain innate gift which it would be extremely difficult to define.

THE PHOTOGRAPHIC EXHIBITION.

The present exhibition, made by the Photographic Society, in the Rooms of the Water-Colour Society, Pall-mall East, has a special feature of its own, and should be visited by all who are interested in the art. Mr. Crawshay, himself a distinguished photographer, offered prizes for life-size portraits, open to the whole world. The following gentlemen were the adjudicators:—Mr. J. Glaisher, F.R.S.; Mr. G. D. Leslie, A.R.A.; Dr. Diamond, F.S.A.; Mr. W. Mayland; Mr. H. Baden Pritchard, F.C.S.; and Mr. G. Wharton Simpson, M.A.; and the result is as follows: –

First prize for large heads (50*l.*), Messrs. Robinson & Cherrill.

Second prize for large heads (25*l.*), Colonel Stuart Wortley.

First prize for small heads (25*l.*), Mr. Valentine Blanchard.

Second prize for small heads (12*l.*), Messrs. Robinson & Cherrill.

Prize for Enlargements (25*l.*), Mr. B. J. Edwards.

The exhibition includes the portraits submitted in competition, some of which are remarkable works, and must be regarded as exhibiting the greatest advance in the art of photography made for some time past. Several foreign practitioners of high reputation are amongst the exhibitors.

THE FALL OF CHIMNEY AT NORTHFLEET.

Sir,—The important questions asked by your correspondents of last week deserve the completest answers that can be given to them, and these, with your kind permission, I will try to put in as concise a form as possible. I will take the various points in the order in which they stand, beginning with those in the letter signed "B."

1. The first question raised is, whether, considering the diameter of the chimney at top (8 ft. 9 in. inside), the 14-in. work (36 ft. 3 in. deep) did not extend too far down. I do not understand your correspondent to suggest that there was the least approach to anything like a crushing weight on the lower part of this work, and a simple calculation (taking the common estimate of 15 tons to the rod) will show that while the pressure on the base of the 3 ft. 9 in. work (which has never shown the slightest crack or flaw) was 6½ tons to the foot super., the pressure on the base of the 14-in. work was barely 2½ tons to the foot super. In other words, the thin part of the shaft was three times as strong as the thick part, in proportion to the weight it had to carry. The inquiry seems, however, to be directed to the power which this 14-in. work might have of resisting an oblique pressure (such as might for instance, be caused by slightly uneven bedding) tending to make it bulge or crumple outwards; and the suggestion is whether 36 ft. is not a rather extreme height for a 14-in. circular wall of as much as 9 ft. internal diameter. I have now before me the working drawings of a chimney at Wokington, belonging to the West Cumberland Iron and Steel Company. This chimney is 200 ft. high above the ground, 12 ft. 10 in. internal diameter at the top, and is only 14 in. thick for 67 ft. down. I am informed by a builder at Manchester, who has erected a great number of lofty shafts, that they are generally finished with 9-in. work, and that this thickness is continued for 30 ft., 40 ft., and even 50 ft. down. More remarkable than these, however, because wider than most of them, is the shaft at Messrs. Pontifex's chemical works, in the Isle of Dogs. It is 228 ft. high above ground, 8 ft. in internal diameter at top, and only 7 in. thick in the brickwork for a depth of more than 40 ft. Other examples could be given, but these will perhaps be enough to show that we must look beyond this item for the causes of the failure.

2. The bond was that known as "half-brick bond," which is specially intended to prevent vertical fracture across the wall. Chimney builders say that this sort of fracture is the one that almost always happens in the failure of a shaft, and that a split of the opposite kind, down the middle of the wall in the direction of its length, is hardly ever heard of. To prevent transverse fracture, the more stretchers can be used the better; and in a straight wall, the "half-brick bond" contains at least twice as many as would occur in old English bond. In circular work, no stretchers appear on the outside, but the principle is carried out in the remainder of the thickness. The brickwork at Northfleet was bonded throughout on this system, with the greatest care, and probably this part of the work could not have been much improved unless by using facing-bricks made purposely to the curve of the chimney.

3. The whole of the upper part of the chimney was built of the best paviors, and even these were picked, every imperfect brick being rejected. The lower part of the walls was partly composed of the hardest stocks that could be got, and partly of paviors; but within 50 ft. of the ground there was a small proportion—perhaps 5 per cent.—of rather over-burnt and somewhat vitrified bricks, approaching in character to "rough stocks." There was no difference between the facing and backing; the same quality of bricks was carried right through the wall.

4. There was no artificial bond besides that described at the inquests. At intervals of about 3 ft., two courses of brickwork successively were built with the vertical joints dry, and then grouted with neat Portland cement. The cement which was thus poured in as grout set admirably; after falling 200 ft. these bricks were still found joined in double courses, and they had as often broken through their own substance as through the cement. There was not the least sign of expansion; but the best proof that there was none, is the fact that a large mill floor on the works was laid at the same time with the same lot of cement, and that to this day there is not a flaw or a blister in it. Your correspondent speaks of the "desirable homogeneity of the work being destroyed" by bond courses grouted with cement; but, provided that the cement sets perfectly, and without expansion, as it certainly did in this case, it is difficult to conceive how they can be anything but a source of strength to the walling.

5. The thick and thin parts of the shaft both went up at about the same number of feet per week, excepting, perhaps, the lowest section of the walling, which was done a little more slowly. Of course, more bricklayers could work where the diameter of the shaft was wider, and more materials could be drawn up by the windlass in a day when there was not so far to draw them.

6. The cap was formed entirely of brick in cement, and the cement here, as elsewhere, was the very best of the Burham Cement Company's make. The original intention was to mix it with an equal measure of sand; but, by the advice of persons experienced in this class of building, it was actually used with a small quantity of mortar instead. The idea was, that though the ultimate strength of the cement and sand might be as great, yet the cement and mortar would adhere to the bricks better at the beginning. Whatever may have been the cause, it appeared after the accident that a considerable part of this cement-mortar had not set with anything like the firmness of the neat cement grouting; and though it is hard to see how, on a quite calm day, this imperfect setting could have caused the fall, it is evident that it may have helped to make it possible. A tentative opinion was expressed at the inquest that the vibration from the derrick might have had something to do with this imperfect setting; but this theory did not seem to be confirmed in the course of the inquiry. It is only certain that while the cement which was used as grouting set like iron, the same cement used as mortar set in many places but very indifferently. There are two considerations which naturally suggest themselves here: one is, that if bricks are not sufficiently wetted (and most bricklayers show an invincible repugnance to wetting them sufficiently) the more liquid the cement the better; the other is, that cement grout, once set, cannot be worked up again and used, whereas cement-mortar can be, and I fear too often is. I make these remarks without intending the smallest personal blame to the contractor, Mr. Blagburn, who showed himself an excellent and very careful workman; but a great part of his time was necessarily passed at the foot of the shaft, in superintending the mixing of the mortar and the selection of materials.

Proceeding to the shape of the cap, I may say that it was formed of equal oversailing courses of brick, each course projecting about three-eighths of an inch beyond that below. The extreme projection attained by the body of the cap was 15½ in. beyond the point from which it started; but as it took nearly 10 ft. of height to do this, and as the shaft diminished upwards at the rate of 6 in. in 10 ft., the projection of the top of the cap from the receding line of the shaft was 18½ in. Upon the body of the cap there were eight flat projections or piers, each 1 ft. 11 in. wide, carried up in oversailing courses, ranging precisely with those of the body. The projection of these piers, from top to bottom, was 4½ in. beyond the main part of the cap; and the bottoms of them were supported on a series of courses oversailing still more gradually than the upper ones. Above the cap, the shaft wall was continued up above for a height of 4 ft. 6 in.; and the result of the whole was, that at the time of the accident the sectional area of the projecting cap was 7 ft. 4½ in. super., while the sectional area of that part of the shaft which counterbalanced it was 20 ft. 10 in. When it is remembered that this section had the immense additional security of being worked on a circular plan, it seems very evident that the cap had no tendency to fall outwards by its own weight; and, on the other hand, its pressure on the 14-in. wall below it was considerably less than half a ton to the foot super. It ought to be known that the two bricklayers who came forward at the inquest to express an opinion that the cap had "swagged" the shaft over, had never seen either the cap or the drawings of it. Your correspondent will observe, from the above description, that the cap was not "placed on the shaft only the day before the accident," but was merely finished on that day, having been built up like the rest of the brickwork.

7. As to the outline of the fracture, the highest part was on the south-west side, and it sloped down irregularly for perhaps 30 ft. in the opposite direction. For about 100 ft. at the bottom the shaft was upright and sound, except where small cracks occurred, in the upper part of this length, from a cause to be presently described. The top of the ruin overhung considerably towards the north-east, and there were vertical fissures extending for a short distance down. The smaller fissures, and very likely some of the larger ones, were produced as follows:—The cross timbers on which, one after another, the internal scaffolds had rested, were left in till the completion: at the moment of the accident, great masses of brickwork fell on these timbers, and thus violently jarred the walls at the points where they were inserted, and the result was that many of these points were subsequently traceable on the outside by bulges and radiating cracks.

We do not know, and probably never shall know, what caused the instantaneous collapse. It may have been started by some slipping of the derrick on which the men at the windlass below were hauling; it may have been begun by the falling inwards of a part of the chimney wall above the cap. The first warning of the accident was the descent of bricks down the interior of the shaft, and this preceded the general fall. The only witness who has deposed that he saw the actual collapse from the outside states that it began, so far as he saw, by the bulging of a point on the north-east side of the shaft, some 10 ft. below the cap. If we suppose a mass of brickwork from the top chimney wall, built that very morning, to have been pushed over by any cause, and to have struck the cross battens at this level, we have a not impossible way of accounting for the disaster.

James Cubitt,
Architect to Messrs. J. C. Gostling & Co.

The Institution of Surveyors.—The President and Council have issued invitations for a *conversazione* on Wednesday evening, the 12th instant.

A MEMORIAL REREDOS OF THE LATE BISHOP OF WINCHESTER.

The late Bishop of Winchester laid the foundation-stone of the Church of St. John the Divine, in Vassall-road, Kennington, which is intended to be one of the largest churches in the metropolis. The chancel, externally, was completed about two months ago, and it was originally intended not to open this portion of the edifice, along with a temporary nave, until the estimated cost for the permanent church was subscribed; but in consequence of an anonymous donation of 10,000*l.* towards the building fund having been received, the erection of the nave and the other portions of the permanent building has just been commenced, and the foundations are now being got in. It has, however, been determined not to wait for the completion of the whole building before the opening takes place. A portion of the nave will, in the first instance, be completed, and, as at present arranged, the opening ceremony has been fixed for the month of May next. In the meantime, the completion of the interior of the chancel, the lady chapel, the sacristy, organ-chamber, and other portions of the edifice already built, will be proceeded with simultaneously with the erection of the nave, and the internal decorations include a reredos, which has been designed by Mr. Street, the architect of the church, as a memorial of the late Bishop of Winchester. The central panel will contain a large crucifix, whilst beneath will be a figure representing Dr. Wilberforce kneeling in prayer! The estimated cost of the reredos is 500*l.*

DIAGRAMS OF BUILDINGS FOR INTERNATIONAL EXHIBITION.

The following rules have been issued by her Majesty's Commissioners for the preparation of diagrams of ancient and modern buildings of all countries in Division II., Class 9 (civil engineering), architectural and building contrivances, of the Exhibition of 1874:—1. The diagrams should be of a bold scenic character. 2. They should be executed on canvas, and may be in oil colour or distemper. 3. They may be executed in colours or in monochrome. 4. They should be perspective views. 5. Each diagram should be at least 5 ft. by 10 ft., but single diagrams ought not to occupy more than 10 ft. in height and 20 ft. in length. 6. Each diagram should be attached to a roller, and sent rolled. 7. The scale should be clearly marked upon each diagram. 8. Her Majesty's Commissioners would be glad to have the right of purchasing the diagrams, if for sale, at the prices attached to them. We are not quite sure that competent persons will find sufficient inducement for the preparation of such diagrams as are desired.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The first ordinary general meeting of the session of the Royal Institute of British Architects was held last Monday evening, at the House in Conduit-street; Mr. Horace Jones in the chair. The following gentlemen were duly elected as Fellows:—Mr. Henry P. Legg, 32, Bedford-row, and Mr. John Lowe, of Manchester.

Several donations of books, pamphlets, drawings, paintings, &c., were announced to have been presented to the Institute, as well as a bust of Inigo Jones, modelled in Italy, the gift of Mr. James Noble. Among the many donors to the library fund are, Mr. John Gibson, vice-president, 25*l.*, and Mr. G. T. Redmayne, associate, 3 guineas. Thanks having been voted to the donors,

The chairman proceeded to award the Ashpitel Prize of 1873, won by Mr. H. Stannus, for having distinguished himself the most in the architectural examination; and, in presenting it, stated that this was the first time such a prize had been awarded,—the gift of their lamented friend, Mr. Ashpitel.

In the absence of Sir Gilbert Scott, in Italy, owing to ill-health, the secretary, Mr. Eastlake, then read the presidential address, which we print *in extenso*.

The chairman said that they probably felt that, in the absence of the worthy president there were fewer opportunities for discussion than if he had been present; still, they would be glad to hear friendly criticism.

The Marquis of Westminster, who was warmly received, said that it would be highly presumptuous of him, an amateur, to take objection to anything the President had said bearing upon architecture, upon which he (the Marquis) had no claim whatever; but there were one or two points in Sir Gilbert Scott's address which particularly struck him. One of these was the excellent, powerful, and very round abuse which he had given to the dreadful specimens of architecture which covered our country and the towns of England. It seemed to him that until the public had some knowledge of architecture, and their tastes were somewhat cultivated, such discreditable specimens of architecture would very long disgrace the country; and especially so in the case of those who in after-life would probably have the means of erecting buildings. It was very unfortunate, he thought, that in high-class society very little knowledge of architecture existed. He did not know whether the Institute would have any power, but they would certainly have influence, in recommending some course of study, to suggest whether some small or better knowledge of the principles of architecture could not form a part of education in public schools. With regard to these public schools, he did not know whether it was a practical suggestion; but it seemed to him that it might be of some use to this powerful association if it used its influence in that direction. He was talking, he went on to say, a short time back to a friend of his, who had now arrived at the age of seventy-four, regarding an abbey at St. Alban's, and in reply to a question of his connected with its architecture, his friend told him that the greater part of the architecture was Roman, and that some of it must have been Norman, for it had a good deal of "dog-tooth" ornament about it. If such ignorance prevailed in old age, the time had come for giving opportunities in early life in public schools to attain to some knowledge of the art of architecture. He had but one other point to mention, and that was to take the opportunity, which he said he ought to have done long ago, of thanking the Institute for having done him the honour of electing him an honorary Fellow.

Mr. B. Ferrey, in proposing a vote of thanks to the president for his address (which was seconded by the Marquis, and carried unanimously), said he felt that the matter Sir Gilbert Scott had brought before the meeting was of so large and vast a character that it would ill become him to enter into any detail regarding it. We all deeply regret his absence, and are greatly indebted to him for his address, considering the state of his health, and the great calls upon him in his professional capacity. We must give him credit for devoting so much time to the many points embodied in his address, and we must also thank the noble Marquis for the able way in which he has expressed himself on the points he brought forward.

Mr. Ewan Christian said that with regard to the subject of the Benevolent Fund, mentioned at the annual dinner, and in which the President, he was glad to say, took such an interest, he would mention a case in illustration that had lately come under his notice. An architect of real capacity,—a man who would no doubt, had he but lived, have achieved a reputation in his profession, died, leaving a wife and family without any means of support; he had not lived long enough to make his practice profitable, or to reap the fruits of his early labours, and consequently his family was left to the charity of strangers. It was a reproach, he thought, to architects that their Benevolent Society could only in this case allow out of its funds the small sum of 60*l.* The Artists' Benevolent Society were taking care of three of the children; and for the Architects' society to allow this was a great reproach upon us as architects. Our society ought to be better supported, and more generous subscriptions should be given than those miserable subscriptions and few donations which it now received.

Mr. Jennings was of opinion that the Artists' Benevolent Society and Architects' Benevolent Society ought to be one body, as many people thought they were, and said that it was a great disadvantage that the two Associations were not more thoroughly connected.

The meeting then adjourned. Among the papers to be read during the session are the following:—

"On the Central Iron Dome of the Vienna Exhibition Building," Mr. J. Scott Russell; "On the Sanitary Aspects of House Construction," Captain Douglas Galton; "On the Old Hall and Assize Court at Winchester," Mr. Thomas Henry Wyatt; and "On Chinese and Japanese Architecture," Mr. W. Simpson.

ARCHITECTS AND ARCHITECTURE.

THE ADDRESS OF THE PRESIDENT AT THE INSTITUTE OF ARCHITECTS.

It is with unfeigned regret that I have to ask your kind forbearance with me, in my failure to appear in my place, as your president, at the opening of the first session after you have done me the great honour of electing me to that office. I had previously to that event had some idea of spending a part of this autumn and winter at Rome; and had mentioned it to my predecessor when he announced to me the kind wishes of the council. I had, however, wholly relinquished this idea, and was preparing to return from a Continental tour, when I was so urgently pressed by friends, whose opinion I had every reason to respect, to prolong my absence with a view to confirming the good effects upon my health, of the rest and relaxation in which I was indulging, that I felt I should be doing wrong to resist their remonstrances; and I have now to throw myself upon your kind indulgence, and to beg you to allow my inaugural address to be read *for me*, instead of being delivered, as it ought to be, by myself.

My regret at this is increased, and my apologies rendered the more needful, by the fact of my absence rendering it impossible for me to deal with some subjects I am bound to allude to with that care and fulness of information which I should have aimed at had I been present. These subjects, unfortunately, are amongst the most important topics for the year; as, for instance, the transactions of the Institute during the past session; the papers read at its meetings; the public occurrences relating to our profession; the more important works undertaken or completed; the Great International Exhibition at Vienna, as viewed in its bearings upon our art; and the melancholy duty of chronicling the annual obituary of members of our Institute, and of giving a sketch of the career of the deceased. On all these points my notices must be more or less defective.

On the last-named point I will venture on asking the aid of members of the Institute best acquainted with those whom we have lost, as there would be an appearance of partiality and inequality were I to attempt to record the merits of those I happen to have best known, to the neglect of those I chanced to be less acquainted with. Nor would it be proper to attempt a notice of the professional lives of those whose position was so prominent as clearly to demand a special memoir, as is clearly the case with our lamented Past President Sir William Tite, whose merits have already been frequently brought before the notice of our meetings, with that respectful warmth of feeling which delights to celebrate even facts the best known and acknowledged; and they will, I feel convinced, be shortly laid before us in a more formal manner, and one more proportioned to their public importance. I leave, then, this melancholy though grateful task, to such hands as may be selected as best fitted to its importance.

Our obituary for the year is, unhappily, a very long one. It is as follows:—Sir William Tite, M.P., Past President, Mr. R. R. Banks, Mr. R. P. Browne, Mr. W. Slater, Mr. A. S. Newman, Mr. J. H. Stevens, Mr. S. S. Teulon, Mr. C. Buckeridge, Mr. H. Williams, Mr. G. T. Randall, Mr. E. A. Spurr, Mr. W. Corbett, Mr. J. D. Simon. To these I must add our respected honorary member, Mr. G. L. Taylor; and our honorary corresponding members, M. De Caumart, Professor Hessemer, and Il. Cav. Nicolo Matas.

Those best known to me in the sad catalogue were Mr. Teulon, Mr. Slater, and Mr. Buckeridge; the first so well known as a zealous and successful follower of the Gothic revival, and the builder of numerous churches, &c.; the second as the successor of the lamented Mr. Carpenter. He having been cut off in the midst of his days, left his extensive practice, and the professional training of his young son to the care of his faithful pupil and assistant, Mr. Slater, who *right loyally* performed the task thus bequeathed him; keeping up the practice, largely as I believe, for the benefit of his friend's family, and carrying on the professional education of the son, till he was of an age to unite with him in partnership; and only living long enough to see him fairly and successfully launched as the successor—through this faithful and efficient medium—of his talented and lamented father. Mr. Buckeridge was a pupil of my own, and was carrying on his practice with great devotion, talent, and success, when cut off at an early age by a sudden illness.

I hope that further notices of these and other members of our Institute will be laid before you by those who have facts better within reach than is at this moment (unfortunately) the case with myself.

The International Exhibition at Vienna, in its bearings upon architectural art, is another subject on which I must beg the kind aid of such as have given the most attention to it; circumstances having wholly deprived me of the opportunity of making myself acquainted with it, as I feel I ought to have done.

Of public transactions bearing upon our profession I may say much the same.

I much more regret that I am not able, as I had hoped, on the present occasion to notice the works of architecture now about to be commenced, or those recently finished. I had promised myself much pleasure in the performance of this part of my duties; but this necessitated absence during the summer has rendered it impossible, and I must beg to reserve it to a future occasion, should such offer. It would to me be a most grateful task, both to visit the many admirable buildings which have recently been completed, or are in the course of erection, in a more careful and systematic manner than one would perhaps venture upon under other circumstances, and to record the just praises of their architects; and it would on the present occasion have been the more gratifying, because, in the remarks I shall have to offer, I shall feel it my duty to call attention, not indeed to the demerits of any specific works, for that would be an offensive and a presumptuous act (indeed, I rarely inquire the name of the architect of any work I should be disposed to censure), but to the general fact of the immense gulf which intervenes in our day between different works one passes, and to ask your special attention to this as one of the most serious questions of the day. Having, then, a painful duty to perform of this nature, it would have been a relief to have enumerated, and lovingly dwelt upon, some of the most admirable works of our period,—works which would have done credit to any age in either of the great branches of our art, and works which tend to establish one most encouraging fact beyond the reach of question, that if we live at a day when much is done which tends to discourage, we also have the happiness to live at a day when works of the most contrary class are produced, —works of noblest aim, of the deepest and most loving study and care, and of the highest artistic character.

I must, however, of necessity relinquish or postpone this delightful task.

Of public buildings about to be undertaken I will mention one only. I will content myself with congratulating the Institute that the great work of their talented member Mr. Street is, after so long delay, about to be commenced. I regret to observe the statement in the public papers to the effect that a considerable amount is to be struck off from its embellishments. I have not seen the drawings beyond such as have been laid before the public; but from them I should have judged that the architect had already exercised great reserve in this respect; and I fear that a further pruning down, such as is suggested by the sum named, will of necessity have a very serious effect upon the design; and I earnestly, though respectfully, urge upon the attention of the Government the importance of reconsidering this instruction; inasmuch as an amount which sounds like a small percentage upon the entire cost of a building, must bear a very serious proportion to the cost of its mere embellishments, and may go so far as to reduce them to the very verge of poverty. This is a building of which too much has been said, which has been far too prominently before the public, not only of this country but of the whole civilised world, to permit of its perfection being tampered with to save some paltry percentage. Such a result would be a disgrace to our age and country, which have a right to demand from those in power that the architect entrusted with such an edifice shall not have his hands thus cruelly bound, but shall be allowed to embark upon this great national,—this great European,—work with a fair and reasonable amount of liberty, to render it worthy of its origin and destination; while the fierce attacks to which it has been subjected would call forth, even from their originators, if actuated by a true English love of fair play, the demand that the architect should not be unduly restrained, but should have every reasonable opportunity and facility allowed him for the production of a truly noble work, worthy at once of his own fame and of the age and country which the building will represent.

I will now proceed to the affairs of our Institute.

The annual report, which has been for some months in your hands, together with the brief conspectus of the proceedings at the ordinary and at other general meetings, will give a correct idea of what has been done during the last session, as well as of the general prosperity of the Institute.

From the former document it will be seen that our pecuniary status is well kept up; that our list of members shows a constant increase; that the Institute has been actively engaged on a number of important questions, bearing both upon our professional dignity and upon the interests of our art; that in the consideration of these questions we have been well met and aided by the Conference of Architects from all parts of the kingdom, from which conference very useful results are likely to arise; that the architectural examination of students seeking our diplomas have met with revived and increasing encouragement; that our offers of prizes, medals, students' prizes, &c., have been responded to not only by satisfactory numbers of candidates, but by a degree of excellency in the competing works of a most encouraging character, while the sketch-books of the medallists have shown a most cheering result. Also that the standing committee for the conservation of ancient monuments has been working with activity. In short, that the Institute has been actively and successfully performing its arduous duties. In the latter document will be seen a list of the excellent Sessional Papers read at our meetings, as well as further particulars as to many subjects which have come under the consideration of the Institute.

The medals, prizes, &c., awarded have been as follows:—The Soane Medallion (with the sum of 50*l.*, under the usual conditions of Continental study) to Mr. William Frame, for a design for a public hall; and a medal of merit for a design for the same subject, to Mr. J. H. Eastwood; and the Institute Silver Medal, with five guineas, to Mr. Alexander E. Kersey, for drawings illustrating St. Mary's Abbey, Old Malton; and medals of merit in the same competition to Mr. Thomas Garratt for drawings illustrating St. Mary's Abbey at Lilleshall; and to Mr. Arthur Hill, Associate, for drawings illustrating St. Cormac's Chapel, Cashel. Of the high standard of merit evinced by these several sets of drawings I am able myself to speak in the strongest terms. A medal of merit has also been awarded to Mr. Alfred Jowers, Associate, for an essay on "Modern Architectural Criticism."

It was also unanimously resolved humbly to recommend to her Majesty that the Royal Gold Medal should be awarded to our late excellent president, Mr. Thomas Henry Wyatt, which recommendation was, as you so well know, graciously accepted.

Though the pecuniary condition of the Institute cannot be viewed as other than prosperous, I think that an examination of our annual accounts will be sufficient to afford conviction that our income is not more than sufficient to meet the actual demands of the Institute itself. I cannot, therefore, wholly sympathise with the yearning so often expressed, for a union under our single banner of all the societies bearing upon our art or profession. Had our income sufficed, or could it be made to suffice for all objects, I should rejoice to see all united, and that our Institute should have the credit of all; but, when I see a gift for a most important object in promoting the study of our art only agreed to on an express understanding that the application should not be repeated, and am obliged to acknowledge the conditions, however ungracious it may appear, to have been necessary, I cannot but rejoice that the efforts for our common object take numerous channels, and that no attempt is made at their undue centralisation. Let them be bound together by a bond of common sympathy, but let their finances and their management be several; for, depend upon it, no single list of subscriptions will ever be sufficient to cover the multifarious objects which bear upon an art of such universal application.

Art-education, however, is an object of such paramount importance that, in spite of all discouragement, I recommend it to the special attention of the Institute. As to its finances, it ought, I feel convinced, to be in great degree *self-supporting*, but it ought to be nevertheless, in a greater or less degree, under the direction of our Institute and of the sister Association.

The Royal Academy has of late given greater attention to the subject than formerly, and it has occurred to me that a useful result might arise from a conference between our Institute and that body, though I have not sufficiently matured my thoughts on this subject to enable me to offer any specific suggestions. I will say, however, that I feel very averse to so rigid and straight-laced a system of training as that adopted in France, which seems to me calculated to repel by its slavery rather than to win the warm affections of its students.

It occurs to me, however, that much may be done, both by increasing our library and by adding in every way possible to the facilities for making use of it; and if we have any surplus from our annual income, I would strongly commend that direction as the most profitable for its expenditure.

I will take the liberty of mentioning that two points struck me rather painfully at our professional dinner last June. The first was this,—that the chairman to the Metropolitan Board of Works, when alluding to the proposed demolition of Northumberland House, seemed to state that the Board had been encouraged in pressing that project by the opinion of our Institute. Now, I am not well versed in the subject itself, or in our own course with reference to it, but strongly holding, that in all public improvements, it should be made a principle to preserve both existing public monuments and private buildings which from their importance assume a public character, I trust that I misapprehended what I heard; for though it *may* occasionally become *unavoidable* to deviate from this principle, I should be distressed to think that such deviations should ever be able to claim the authority, or even the connivance, of an Institute which should be, and is, the protectress of all public monuments.

The other point I allude to is this:—In the annual report of the Institute, I find that in announcing the intention of having a professional dinner, it is stated, that "it will afford an occasion for enlisting subscribers to the charity (the Architects' Benevolent Society), by the same means which are adopted in the case of other benevolent institutions." Now, at that dinner no such means whatever *were* adopted, and had it not been for excellent and almost remonstrant addresses from Mr. I'Anson and Mr. Christian, the subject announced as the special object of the meeting might have been almost forgotten.

I take the liberty of alluding to this, for the sake of recalling attention to the subject, and especially to the remarks of Mr. I'Anson and of Mr. Christian: as, with all our professional prosperity, it would ill become us as a representative institution to forget the claims of our less fortunate brethren.

In reviewing the whole subject of the position of our Institute, I cannot but sincerely and heartily congratulate you on its constantly increasing usefulness, influence, and prosperity. Few instances probably can be found even parallel to this, and I earnestly trust that our success may not only be permanent, but may grow at an ever-increasing ratio.

While congratulating ourselves, which we have every ground for doing, on the material prosperity of our Institute, on its happy effect as a common ground of reunion, in which the members of our profession meet on equal and friendly terms;—as a means of producing genial feelings amongst them one towards another, of softening asperities, of rubbing off prejudices and cementing friendships;—as a standard and referee on all questions of professional practice and etiquette, and as the protector of professional honour;—and further, as a society which, by its prizes and medals, encourages and incents to exertion, and at whose meetings instructive and interesting papers are read and discussed, calculated to disseminate the knowledge of matters bearing upon our common art, and the important practical matters which relate to it;—while congratulating ourselves, I repeat, with just pride on our success in all these, and many other ways, which it would be too lengthy to enumerate;—let us never, for one moment, forget that such societies as ours, and others to which allusion has been made, are but instruments to aid in the promotion of the common end and object for which we should all be earnestly labouring;—the raising of the great art of architecture, and the arts subsidiary to it, to that high level which the civilisation and

prosperity of our age, and its advancement in science, in literature, and in mechanical art, *imperatively demand*.

This, Gentlemen, I need not say is the *real*, – the *ultimate* objects of such institutions as ours; and towards *this* should all our efforts tend as the one great central object of our earnest aim, and our heartfelt aspirations.

At all great periods of art, so far as we can gather from historical records, or from the internal evidences so abundantly supplied us by the actual works which have been spared to us, there can be no room for doubt that the efforts, the enthusiastic strivings, and the whole heart and soul of each artist, from the humblest to the most exalted, were ever directed, as their single object, to the advancement and perfection of the art on which they were engaged.

However different, and even contrary, may be the artistic sentiments expressed by the remains of the great Pharaonic period, of the age of Pericles and Phidias, of the Augustan age at Rome, of the age of Justinian at Constantinople, of the twelfth and thirteenth centuries in North-Western Europe, of Arnolfo and Giotto with their host of Mediæval fellow-workers, and finally of that army of painters, sculptors, and architects who accompanied what is known as the period of the Renaissance, works which have defied all their followers to rival;—whatever, I say, may be the difference, and even the contrariety, of the artistic sentiments which inspired these almost superhuman productions of art, one fact is common to them all, one golden thread unites them as it were into one;—the fact, I mean, that they are all the works of men who were devoted *heart* and *soul*, absolutely and unreservedly, to their art; and with whom personal advancement, social position, or any other consideration was as dust in the balance when weighed against the perfection of the arts to which they had sworn allegiance.

Until we can resuscitate among ourselves a like glorious enthusiasm, it is vain to hope for another great period in architecture.

True it is, that knowledge and skill are elements necessary to perfection, but neither one nor the other can be acquired without that burning zeal which pervaded the old schools of art, while its presence impels its possessor to their acquirement, and even goes far at times towards compensating for their imperfection.

Now, though I do not believe that such chronic enthusiasm can be brought about directly by intention, or by any external means, but rather that it arises from a spontaneous excitement of the human mind, apart from deliberate intention, I do nevertheless think that, if once excited, it may be promoted and cherished, or that it may be damped or even extinguished, by generous encouraging sympathy upon the one hand, or by cold-hearted absence of sympathy on the other.

Let us for a moment inquire whether, in our own day, we have had any promise of such a spontaneous rise of earnest enthusiasm as would suggest the possibility of the advent of a great period in our art.

Of individual and enthusiastic zeal we have had much, of which the contemplation is entrancing. Our founder and former president, Professor Donaldson, gave us in his inaugural address a charming sketch of the career of his lamented predecessor, Professor Cockerell, from which, — and we have ample evidence besides,—we can see that that admirable man possessed all the burning zeal and generous enthusiasm, united with that high artistic sentiment and power, which have characterised the artists of the greatest periods. Our friend's own participation in those noble feelings, were not other proofs so abundant, is sufficiently evinced by the earnestness with which he records them; and that they were shared by many others we have only to look to the artistic lives of Barry, and many others of our architects, who have rendered their memory imperishably great, and having arisen during a period of comparative deadness in the art, have laboured earnestly and successfully in instilling into it a new life.

Besides these great men, however, we have in our day been witnesses to a movement in our art, which, however different may be our estimates of its value, can at least lay claim to the merits of having been at once spontaneous and enthusiastic, of having united in a single aim a greater number of persons, whether professional or otherwise, than any other movement of modern times, and of having, to a greater extent than any other been *collective* rather than *individual* in its character, sinking, in a great degree, personal and individual feeling in one great flood of collective ardour.

I need hardly say that I refer to the revived feeling for the study and resuscitation of Mediæval architecture.

Many of those among us who, not having personally participated in this movement, view it naturally from the outside, fail to see in it anything but a deliberate effort to overthrow the previously existing state of things, and to erect in its place the creation of a new fashion. For myself, without laying claim to any primary share in this great movement, but being nevertheless a contemporary of its earliest activity, and having devoted to it an early allegiance, I am able to speak of it, not from the *outside*, but from the *inside*, not as a Laputian critic who, soaring a little above the level of human occurrences, could record them as they passed under his notice without the least personal sympathy in the feelings which gave them birth, but as one within the pale, who has from the first been cognisant of most that has passed, and can speak of it from his own personal consciousness; and in such capacity I am able to assert that the movement has been absolutely spontaneous, and the result of mere love for the study on which it was founded, apart from any hostile feeling towards the *status quo*, and almost free at first from even the thought of disturbing it. If I may speak of my own experience without incurring the charge of egotism, I would say that my own devotion to Gothic architecture began before the thought of my future calling occurred to me; that the choice of my profession arose wholly from that devotion, and that when I subsequently found that my tastes had nothing whatever to do with my practical employments, I still followed them as my almost solitary amusement, with scarcely a thought of their ever becoming the subject of my professional work, which I was for the time passively content should be of necessity in another, and the dominant style.

How this great change came about seems to me as a dream; nor can I clearly recall the manner in which it took place. It seemed to arise spontaneously and unconsciously, the effect of a burning love for the architecture of our forefathers; which, without external cause, without premeditation or concert, had taken possession of the minds of a large number of persons unknown to each other, and only waited its time for practical development.

Nothing parallel to either the cause or the effect has occurred since the great Italian Renaissance! It has not been our doing; *we* have been the mere humble instruments of a great and unthought-of mental movement; and truly its effects are marvellous in our eyes! I have, thus, alluded to *two* great exhibitions of earnest architectural zeal, which have been manifested in our day:—the one tending to the reviving of Classic art from a state of comparative torpor; the other having brought about the actual resuscitation of the architecture which was indigenous among our own family of nations, and which it has re-established, side by side, and on equal terms, with the long-established result of the Classic Renaissance.

I am not going over this already well-trod ground, with any object of partisanship, but simply in search of an answer to my previous inquiry:—*whether in our own day we have had any promise of such a spontaneous rise of earnest enthusiasm, as would suggest the possibility of the advent of a great period in our art*; for, as I said before, until we can resuscitate among ourselves a like glorious enthusiasm, with that which has in former times given rise to the great movements in our art, it is vain to hope for another great period in architecture.

Gentlemen and brother architects,—I put the question to you, to which ever of the two great phases in our art you may have vowed your allegiance:—*Has* our age been unmarked by such noble enthusiasm? *Have* we lived in days when everything has gone on in its wonted course, unruffled by any special movement, undistinguishable from any other period of equal length in the smooth current of undisturbed art history? The *very reverse*, I boldly assert, has been the case, and the proofs of it are no matters of past and recorded history, but are within the range of our memories, are coincident with the existence of this Institute, and are the motive causes of our own daily acts.

Yes:—it has been our own privilege to live during the days of great mental strivings,—of deep and earnest enthusiasm in our art: and though, unlike the great periods of old, our art camp has been divided, and we must be content to work in two parallel courses and in two diverse styles, we have a right,—nay, we are in *duty bound*, to ask ourselves, whether we are doing each our duty by the great period of mental up-stirring, in which it has been our lot to be placed; for, I repeat, that such mental movement *may be* promoted and cherished, or that it may be damped, and even extinguished, by our own conduct towards it.

The first question which suggests itself is, do *all*,—does each in his chosen camp, and each according to his abilities and opportunities,—strive to the utmost to do his work *well*, and to fit himself for doing it in a manner characteristic of a period of earnest onward striving?

Now, one of the most marked characteristics of the productions of the great periods of architecture is this, that, though the works of any one of them differ in artistic merit,—some displaying the highest genius, others only comparatively unassuming correctness and propriety,—yet no *really bad* architecture is ever to be found among them. From the most majestic and glorious building downward, to the least pretending, the same matured knowledge, and the same careful, thoughtful working, is found ever to prevail. Who ever heard of a work of the Greeks at the great period of their art which they would presume to call *bad* architecture? Even in Byzantine art, though it laboured under great disadvantages, we have proofs in the ruined cities discovered in Syria, that these buildings of the more vernacular classes were as carefully studied as the mighty works by which their architecture is better known; while in works of the twelfth and thirteenth centuries in our own and neighbouring lands, as well as in Italy, the same masterly skill, and the same studious handling, are found in the simple village church as in the noblest cathedral,—nay, one is often disposed to uncover oneself in humbled reverence before the work of some unheard-of mason or carpenter in an obscure village, of which we had never before so much as heard the name; nor did these old workmen,—so unambitious of fame,—ever produce work to the like of which the best or the most self satisfied among ourselves need be ashamed to attach his name.

Now,—is such the case among ourselves? I is worse than idle to attempt to blind our eye by bland felicitations or to seek the bliss of fool's paradise;—let us rather look facts boldly in the face; and if they prove unpalatable, le us make it our business to correct them.

The true answer to the question is, that n contrast could be more marked than the differ ence in this respect, between the present stat of things amongst ourselves and that whic prevailed at the great eras alluded to.

Instead of all works (each in its own style displaying the same instinctive sentiment, th same understanding of its style of art,—th same careful, wise, and thoughtful handling,— *the very reverse* of all this is actually the case From each of our art-camps, productions ar put forth of the highest, and of the most con temptible, character, as well as of every inter vening stage of merit and of demerit. Our ag and country will hand down some works of whic no age or country need be ashamed, and other at which any age or country, however degrade its art, ought to blush; while I fear a larg number of the buildings which will represen our period will be of that negative kind which being neither hot nor cold, but only lukewarm will not tend to excite any but a sickly emotion

Among the works of the classic school, an more especially among those of a civic and mer cantile class, one is, in passing along our streets often quite startled and taken aback at th excellence of individual works, while, perhaps next door to them, one sees others displaying a degrees of want of skill and knowledge, or c ill-instructed and worse-effected attempts a originality; while in our provincial towns on often sees, perhaps, a building rivalling in meri those of the best ages, and others, the mecha nics' institutes, corn exchanges, and such lik buildings, the execrable results of those com petitions which seem to be inaugurated rathe for the amusement of ignorant committees an town councils, than in any wish or aim at addin honour to their towns by a work of good archi tecture, however unpretending.

In the Mediæval school the same unpleasin fact stares us in the face. On the one hand w may felicitate ourselves that there exists a ban of true architects, who produce works of a high

and some of them of the highest, degree of excellence, such as one would fain believe would be acknowledged by the architects of the best age; while, on the other hand, we are disgusted by the works of a host of mere pretenders, who wholly unconscious of their ignorance and want of skill, disfigure our towns and our country with buildings either so utterly contemptible as to be beneath the lowest grade of criticism, or so sickening in their mediocrity that one wishes they were either cold or hot, as some more pronounced degree of demerit would be almost a relief from their mawkish inanity.

I exclude from my censure upon our two great schools those works, most of which we know, and all of which we may hope are not the works of architects at all.

We have recently seen marvellous statements as to the number of dwelling-houses which have, within the present century, been erected on our land.

Though, personally, we are, for the most part, innocent of these, I would put it to our two great schools of architecture to say what proportion of these are not a disgrace to our age and a blot upon our towns and our country! The exceptions are, happily, numerous, and in many cases actually brilliant; but they bear no proportion to the immense comprehensiveness of the rule. If the erection of this multitude of houses, instead of being crowded into three-quarters of a century, had been extended over five centuries, counting back from the middle of the last, few indeed would have been the number of those with which any serious fault could be found; and, if we were to concentrate our period a little more, one may almost say that on nearly all one might have looked with some degree of satisfaction. It has been reserved to our own age,—the age of mechanical and scientific progress,—to deluge our land with an inundation of brick and mortar and compo, more degrading in its forms than any previous period has produced. This plague of nearly unmitigated barbarism is so inveterate that one sees no means by which it can be remedied, except by so absolutely elevating the art produced by members of our own profession, however unpretending their position, as to reflect of necessity its merit upon those of the non-professional builders beneath and around them, and to produce such an atmosphere of tolerable art that it may become impossible for such atrocities to continue to be perpetrated.

There is, however, a yet sadder form of inequality to be recorded,—sadder because irreparable in the injury it has inflicted. The million of ugly houses, or the evil majority of them, may go to decay or be rebuilt; but a single ancient edifice destroyed or ruined by ignorant "restoration" can never be recovered.

It is unquestionable that the ancient structures, from the study of which a knowledge of our Mediæval styles has been resuscitated, had suffered for the most part so severely from neglect, ill-usage, and decay, as to demand the aid of a loving and careful restoration; and this they have, happily, in very many instances, received. The knowledge and skill of our non-Mediæval architects has often been devoted with admirable success to this grateful work, and from among the restorations of ancient buildings may be instanced many of the most happy results of the Gothic revival. But here, again, the unhappy diversity I have alluded to, as existing in our new works is found to exist in its most aggravated form. Our old buildings, too often,—nay, in a majority, I fear, of cases,—fall into the hands of men who have neither knowledge nor respect for them; while, even amongst those who possess the requisite knowledge, there has too often existed a lack of veneration,—a disposition to sit in judgment on the works of their teachers,—a rage for alteration to suit some system to which they had pledged themselves in their own works; and even the preposterous idea that the ancient examples they were called upon to repair were a fitting field for the display of their own originality!

Nor have the official guardians of our ancient buildings exercised much restraint upon these vagaries; on the contrary they have too often been most culpably careless as to the hands to which they have committed their trust, and are usually the inciters to ignorant tampering, the needless removal of valuable features, and even to the condemnation and destruction of the buildings under their charge. The result has been truly disastrous—so much so that our country has actually been robbed of a large proportion of its antiquities under the name of "restoration;" and the work of destruction and spoliation still goes on merrily, while at the public festivities by which each *auto-da-fé* is celebrated, we find ecclesiastical dignitaries, clergy, squires, and architects congratulating one another on the success of the latest effort of Vandalism. Our Institute has done itself infinite honour by appointing a Standing Committee to investigate and protest, and by publishing a code of excellent suggestions as to the mode of dealing with ancient remains; but still the work goes on, and the equivocal motto of the *Ecclesiologist*—"Donec Templa refeceris" seems likely to prove well-nigh the death-knell of our ecclesiastical antiquities.

I fear I shall be thought to have painted the darker side of our architectural status with greater perspicuity than its brighter side. I do not intend this, as I have a very hopeful appreciation of the happier circumstances of our position; but it is of little use to congratulate each other on our successes if we fail in courage to confess and denounce our radical failures. I trust, therefore, you will have patience with me if I spend a few moments in suggesting some of the possible causes of the inconsistencies we deplore, leaving to your own consideration the means of removing or abating them.

One would have imagined that there would be no such thing as a really ignorant and thoroughly unskilful or cold-hearted architect; that the spirit-stirring nature of our art would have rendered the existence of such a person impossible; and I am convinced that at the great periods I have so much dwelt upon none such did exist; but during a dull period, such as has preceded our own, architecture came to be viewed by the public as a *profession* rather than as an *art*—as one of the quarters in which a youth could be provided for, rather than as a glorious field for the exercise of mind, imagination, and zeal. Just as the Church was viewed by a former generation as an institution providing for sons rather than for saving souls, so has architecture been dealt with as a *means* of *living* rather than as one of the noblest employments of life; and in choosing it as a profession the question has too often been decided by the prospect of a good connexion rather than by evidences of any zeal for the art.

It has happily been the case that at all times, however dead, a goodly number of ingenuous youths have allied themselves to our art from the highest motives, and this has of late years so rapidly increased that I am convinced that it is becoming rather the rule than the exception; yet I cannot but fear that the old leaven of *professionalism* versus *art* has been one cause of the extraordinary contradiction I have been attempting to chronicle. This evil does not *necessitate* ignorance, it is true, but it *induces* it; for though a man, in spite of a non-inclination for art, may study it from a sense of duty and interest, this is hardly expected to go far; and a youth so circumstanced, however conscientious, is far more likely to devote his attention to the far more business-like and practical parts of his profession, from which he can most clearly perceive the advantages to be derived, than to those more refined studies of which he feels, perhaps, too little appreciation to be conscious of his defects, not to mention that many young men are naturally so little given to application of any kind that, if they lack the internal fire, they will never bring themselves to that zealous study which is essential to excellence.

A second cause,—and perhaps the most damaging of all,—is, that the public, as a body, really scarcely perceive the difference between good architecture and bad; so that one of the young gentlemen I have alluded to, if he has tolerable introductions and good address, and fair business habits, is really as likely to get on as if he possessed the higher qualifications: nay, I could name many young men of the highest promise who are at this moment *actually languishing* for employment, while others almost innocent of art are making their way prosperously.

This bears directly upon the third cause I would mention—competitions as now conducted; for what can we hope from them if the judges are known to have no kind of perception as to whether a design is good or bad? Competitions have thus become a mere lottery, into which the most ignorant and unskilful may throw his design; and, provided he gives a low estimate and makes his drawings look smart, he knows that "the race will not be to the swift nor the battle to the strong," but time and chance may happen to any; and even if professional or amateur judges be appointed, it may at the best be decided by the fancies of an individual or a clique.

Another—I will not say *cause*, but—*promoter* of this state of things, is the prevailing style of architectural criticism; for, much as our profession is held up to public scorn, one rarely sees a word said against the mere offal of our art, which is the great disgrace of our age; nearly all which appears is against those who have really their hearts engaged in their work, and are enthusiastically aiming at a high standard of art. These are singled out for depreciation, I know not by whom nor with what motives; nor would I care to inquire. Of such critics I would rather say, "O my soul, come not thou into their secrets." Yet, however this may be, it obviously has the effect of encouraging those who employ inefficient architects, and of making the public the more satisfied with their own want of perception.

The next cause, or promoter, of the evil in question to which I will allude, is the want of concert, of mutual sympathy, and of a common aim among the most earnest-minded architects themselves.

I am not alluding to the diversity between the standards of the two great camps into which we have become divided; I doubt whether much harm would come of this, were those who occupy each camp of one heart among themselves. Neither in one, however, nor the other, can this be said to be the case. In neither is one style so prevalent or so paramount as to be clearly the style of the day; in both eclecticism prevails almost to the extent of dissipation. One man has a "fad" for one shade of style, another for another; and, if common opinion seems for a moment to be settling down into a single channel, this is but a signal for revolt, and in a few years that promised bond of union becomes a mere term of reproach,—the one thing of all others to be scoffed at and rejected. Meanwhile our camps are visited by that great enemy of union and sympathy—self-conceit. I do not refer to that noble self-reliance which gives a man courage for his work, however difficult; but that lower sentiment, which too often makes him scornful of his fellow-labourer, however true-hearted; and by means of mutual scorn and depreciation, tends to encourage those whose innocence of art keeps them beyond its range, and warns the careless public against the employment of those who thus bear witness one against another.

I will close my list, by suggesting one of the difficulties of our day to be the absence of any recognised means of instruction in, or facilities for, the study of the higher branches of architectural art. This difficulty may, it is true, be met and overcome by the zealous; but it affords a practical excuse for the neglect of the study of our profession *as an art* by those who lack enthusiasm. It is "the lion in the way," which is sufficient to deter the apathetic from exertion.

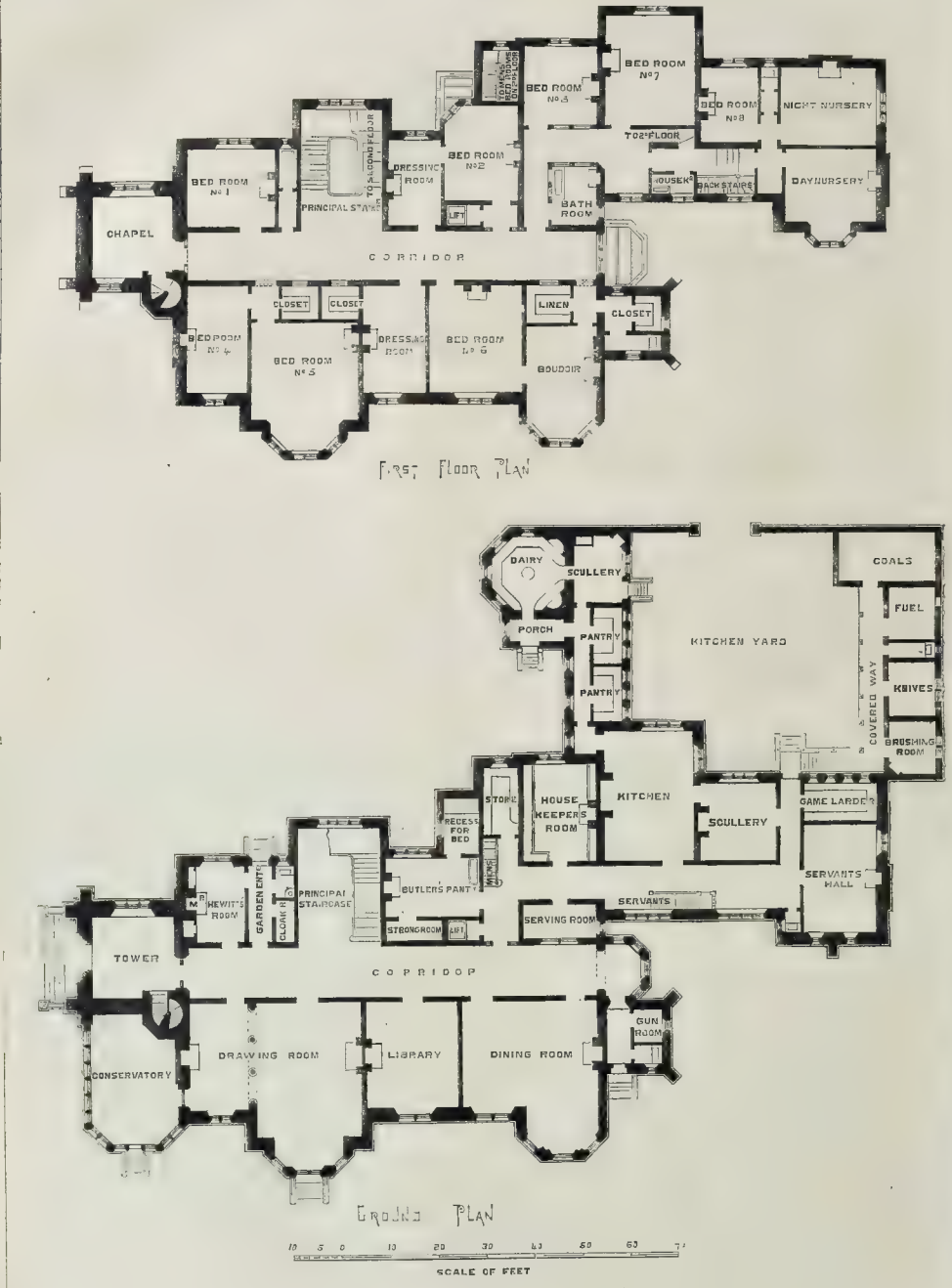
I am conscious that I utterly lack the sagacity to suggest a remedy for all these inherent evils, which seem to drag us back from the goal at which so many are sincerely aiming. I would, however, commend the question to the united wisdom of the Institute, as one of the most important considerations on which it can engage itself.

With every apology for the length to which my address has extended, and for its plainness of speech, which has been so far from being personal, that in my allusions to the defects in some of the architecture of our day, I have in no one instance had a specific architect in view, and feel that I may have myself challenged a *tu quoque*, I now bring my remarks to a conclusion with repeated congratulations, good wishes, personal thanks, and appeals to your kind forbearance.

GEO. GILBERT SCOTT.

ENLARGEMENT OF THE ROTHERHITHE INFIRMARY.

THE infirmary at Rotherhithe has for some time been found inadequate in size, the number of wards being unequal to the number of patients seeking admission. Under these circumstances the St. Olave's Board of Guardians, on the recommendation of the Local Government Board, have decided to make extensive additions to the building, which will shortly be commenced. The estimated cost of the additions is 12,000*l.*, and at their meeting last week the guardians resolved to borrow this sum, the amount to be repaid in thirty annual instalments.



HOPE END, NEAR MALVERN.

HOPE END, NEAR MALVERN.

The new mansion at Hope End is being erected for Mr. C. A. Hewitt in a commanding position between Malvern and Ledbury, in place of the old house now being pulled down, which was built about seventy years ago at the bottom of the valley. The new house is being built of local red sandstone, with dressings of Bath stone, and is to be roofed with dark red tiles.

The reception-rooms are all placed on the south front, which commands the most extensive view.

The kitchen and offices have a north-east aspect.

In the basement are placed wine and beer cellars, larder, &c., also the apparatus for heating and ventilation.

The chapel, and the smoking-room in the upper part of the tower, are approached direct from the entrance-hall by the turret staircase, as well as from the upper floors of the house.

The men-servants' rooms on the second floor are approached by a separate staircase from the ground floor.

The corridors and staircases are all to be fire-proof.

The building is being erected by Mr. Tongue, of Plumstead, from the designs of Messrs. Habershon, Pite, & Fawckner, of London.



MANSION AT HOPE END NEAR MALVERN.—Messrs. Habershon, Pite, & Fawckner, Architects.

PUBLIC WORKS REFORM IN INDIA.*

It has been too common an idea in England, notwithstanding our knowledge of the ancient temple and palace architecture of India, that the Hindus are without an engineering history, that there are no works extant of their engineering skill, and that they owe to us all that they possess in that department. Col. Tyrrell shows that such is not the case. India *has* an engineering history, marked by works whose usefulness may vie with works of any other nation,—works on which her life depends.

Some parts of India, particularly the south, are covered by a network of tanks; they are found, however, all over India, and the ruins of some bear witness to their immense size. Their number and extent, and presence all over India, prove the general idea that was felt of their necessity. In order that we may have some notion of their size, he gives the dimensions of four large tanks now in existence, and there are even larger ones:—

District.	Name of Tank.	Height of Band.	Length of Band.	No of Villages Watered.	Annual average Revenue to Government.
		Feet.	Miles.		Rs.
Mellore	Connigherry Tank.....	20	2	23	78,000
North Arcot . .	Cauvenpaukum Tank	45	4	23	43,000
Chungleput .. .	Chumbrumpaukum Tank... .	25	3½	58	49,000
South Arcot	Veeraunum Tank	21	9	149	114,500

To the east of Hyderabad in the Deccan, and of Nagpoor, and even as far east as the Boad Country in Orissa, the remains of tanks are numerous,—showing that at one time, even in those wild tracts (where at present there is little besides jungle) there was a thriving people.

The ancient engineering works of India in the south are, with the exception of tanks, neither very numerous nor well executed. The ancient Hindoo buildings are, in fact, more of the nature of curious works than works of engineering skill; they are, in many instances, extremely solid and strong, but the arch is seldom met with. Huge stones cover their temples, as in Humpee or Bejanuggur, founded by Virjza Ragu, A.D. 1119, on the banks of the Toongabudra; some of these measure 24 ft. long by 4 ft. wide, by 1½ ft. thick. The chief attraction of the ancient Hindoo temple is, however, generally the elaborate carvings of figures, &c. The old bridges met with in India are not built on very scientific principles. These generally rise very high in the centre, with a gradient often of 1 in 6 to 1 in 10; there is generally a great want of waterway, and the approaches are often covered with water during floods. The old annicuts on the Coleroon and Toongabudra and other rivers are not neat constructions; they, however, gave us the idea, and are the foundation of our most successful irrigation works. The chief works executed by the old Hindoo rulers were tanks, of which there were thousands; many silted up, many in ruins, many dry by destruction of the supply channels.

In Central India, and towards Bombay, we have many curious works, but not very instructive in an engineering point of view; such are the tombs of the Ghond Kings at Chanda, the forts of Gawilghur and Narnulla on the Satpoora range of hills, about 3,000 ft. above the sea, built extremely massively of black basalt, quarried on the spot; the lime must have been all brought up from the plains with great labour on the backs of bullocks. These forts were taken by Lord Wellesley in 1803. We have then the caves of Adjunta and Ellora, near Roza, and the caves of Elephanta in the harbour of Bombay; the former were doubtless used by the Brahmins for religious purposes, and at an earlier period by the Buddhists. Col. Tyrrell is of opinion, however, that they were originally Egyptian in idea. The capitals of the most ancient columns have a strong resemblance to the Egyptian form, and the paintings which formerly covered the caves of Adjunta were painted on a material and with pigments exactly corresponding with those found in Egypt; and, comparing the figures themselves, there is often a striking resemblance; in some instances, one could well imagine the Egyptian idea depicted by an Indian hand. These temples were cut out of the amygdaloidal trap by a pick; the marks of the tools are still visible. The work was doubtless laborious, but required but little skill and no science.

The ancient Mahommedan rulers left us noble examples of architecture,—elegance of design, massiveness, and science in construction. The Taj at Agra, and its very inferior copy at Aurungabad, are good examples of masonry. There are also some fine examples of stonework and scientific construction in the Mohammedan remains built by Yoosuf Khan in 1849, around the very ancient Hindoo city of Vijzapûra. They were also aware of the importance of canals, and commenced our present system in the north. Thus the history of native engineering in India as regards the Hindoo is not brilliant, but it was useful. Yet we, with all our boasted science, have failed to do what the Hindoo did in a most efficient manner in many parts of the country (see a map of the Tondeman's country south of Tanjore; it is a network of tanks); that is, store water all over it. We have taken water by annicut in the large deltas, following the example set us by the natives; but in storing water against an insufficient monsoon, we have done scarcely anything; yet this is the great want of India to protect her from those dire famines, when the dead may be reckoned by tens of thousands. The matter is, however, it is acknowledged, one of difficulty. The ancient Hindoo was fully alive to the necessity of storing water, more so than we are,—being only birds of passage; and the necessity has not as yet penetrated the Government: the Hindoo had a power we do not possess; he turned out the whole of the inhabitants of a district, and made them make their own tanks by compulsory labour. We do not behave in this way; but the raising funds by local taxation and municipal officers would appear to be our remedy.

Since Captain—now Sir A.—Cotton wrote in 1837, we have done much for India. We have struggled on; we have changed much; we have made many miles of railway, and have considerably increased the engineering establishment; but we have not, by any means, grasped the magnitude of the work to be done, nor the vastness of the interests at stake; nor have we yet become alive to the radical errors of our system. Considering the vastness of the country, the immense sums required, and the large number of qualified men that the works would demand, it may have been, perhaps, impossible to have moved faster than we have done. But surely the following conditions of the Public Works Department in India, pointed out by Col. Tyrrell, must be now patent to all, viz.:—

"That, notwithstanding the checks and counter-checks, work is unsatisfactory in the highest degree; that true responsibility is *nil*; that the resources of the country are by no means adequately used or developed; that native talent is altogether ignored; and, finally, that the time has arrived for a thorough reformation of the department commensurate with the just demands of the country and our duty towards it."

After briefly describing the present system, Col. Tyrrell thus proceeds:—

"To commence a review of the system that I propose, I will state, first, the training that the young engineer should undergo, and then follow him up, until I build up the whole system as I would suggest it. Before doing so, I would preface it by repeating and laying down certain broad principles that I consider our rulers are bound to observe in dealing with India. First, I would observe that the establishment of any engineering department should have for its object not merely the development of the resources of India, but it should also equally and primarily aim at the development and advancement of the intellectual and practical knowledge of the natives, and teach them not only to work, but to design. Secondly, that any engineering establishment must be the most economical and simple that can be devised, and not made with a view of finding high pay for a number of European officers, but made solely with a view to bring out the resources of India, intellectually and materially, in the quickest, least expensive, and most efficient manner. To obtain this object the following arrangements would be necessary. There should be Government colleges or schools at several large towns, -say Poonah, Calcutta, Roorkee, Madras, and Hyderabad, or a less number should these be found too numerous. Here the native and European would have to pass a certain standard in mathematics, natural philosophy, &c.; and Europeans would have to pass in one of the native languages. The instruction would be in English. In several of the towns mentioned above, there is an embryo of such institutions. Men, however, who had gone through the same course in England, could pass the required examination in England, and then go through the second practical course (now to be mentioned) also in England, but would have to pass the prescribed examination at the Indian practical school after a sojourn of six months or a year, and passing in one of the native languages. These men, having already acquired practical knowledge in England, would receive some small pay, as probationers, during this time of service. This second practical stage has to be created, and this it is that I would lay the greatest stress on. Practical schools of instruction must be established. After a lad has passed out of the initiatory theoretical school, he should be sent to an iron manufactory and engine shop, or should be sent to some large works in progress, where he would find Government instructors to teach him the higher branches of his profession, and where he should pass through a practical training in masonry, bricklaying, carpentry, &c., or acquire a certain knowledge of iron-work and machinery.

The practical schools would be established for the time being at any extensive work or works where there were workshops. The student would there find a Government instructor in each branch. For fitters and moulders, and for the study of the different branches of working iron, there would be provided permanent instruction in the iron manufactories, &c., that I propose to establish. It might also be found convenient to establish a manufactory or manufactories for doors and windows and woodwork generally, where wood could be easily procured, and thus save much expense in haulage of raw material. But for foundations, for bridges, for masonry generally, railway work, plate-laying, &c., the student would be placed under some Government official on some work in progress, whose duty it would be to see that the pupils under his charge worked practically, and also acquired the knowledge demanded of them.

And here I would point out that India is the proper field for the student of the Indian Public Works. There are peculiarities in many things that do not strike the theoretical man."

After pointing out some of these peculiarities, he continues:—

"Let us go back to the engineering course. We have now the pupil in the initiatory school, the student and apprentice at his practical work, learning the routine of an engineer's office, and the general supervision and measurements of work, management of workpeople, and the chief practical parts and details of his profession, before he becomes able to fly alone. After passing his term in the practical school—say two years, it could not well be less, for building, and five years for a fitter—he could pass into some executive engineer's office, as an assistant, after passing his examination, either as a mechanical engineer or architect, or hydraulic engineer. He would now be brought, on the strength of the Department, as a paid member. Until the native pupils could vie with their European brethren in practical knowledge and efficiency, they would find posts in sub-ordinate ranks as assistant executive engineers, as assistant-accountants on works, or assistant-overseers over repairs, or be placed in charge of stores. The assistant engineer would be promoted entirely by merit, and would be placed at such work as he showed the greatest aptitude for. These men would eventually form the body of Executive Engineers. From these would be chosen the Superintending Engineers and Chief Engineer. These are the officers of the Department, Public Works, and their training.

The Department over which these officers should have control would require to be entirely remodelled. At present a man is too often called on to perform that which is physically impossible, and to apply himself to too many branches of his profession. This is neither fair nor advantageous to the Departmental officers nor to the taxpayer.

The Department would therefore be divided into four grand divisions, to each of which there would be a Chief Engineer and Council, composed of the Chief Engineer; two Superintending Engineers of same grand division; and two civil officers, or commissioners of the district. The grand divisions would be:—1. Military buildings, &c.; 2. Communications, roads, and civil buildings; 3. Railways; 4. Irrigation.

List of officers of the Public Works Department for each grand division:—One Chief Engineer and Secretary to Government Military Grand Division; one Chief Engineer and Secretary to Government roads and civil buildings; one Chief Engineer and Secretary to Government railway; one Chief Engineer and Secretary to Government Irrigation; Superintending Engineers for each grand division, as may be required; Executive Engineers, four classes, as now, for each grand division, as may be required; Assistant Engineers, two classes; overseers, two classes; store-keepers, two classes."

Col. Tyrrell then proceeds to describe the duties of the different grand divisions, then of the several officers, &c.; and afterwards gives a general sketch of the accounts that would be required from each.

Such is the course he recommends and slightly sketches. He does not put it forward as an organised scheme; but what he wishes to impress on Indian officials and the Indian public is, that there must be, in any remodelled scheme of public works, a clearly defined responsibility and a simple system of accounts; that men shall be chosen for their practical knowledge of work, and shall fall or rise by merit alone; and let all acknowledge and act up to their duty of developing native intellect and native resources as much as protect the pockets of the taxpayer. We are not justified in making the inhabitants of India pay exorbitant prices for iron, for example, when it lies in inexhaustible quantities at their very doors; nor are we justified in dragging her sons to England to learn a profession that must of all others affect most seriously and beneficially the physical and moral condition of India, when that profession can be better learnt in India.

In the year 1871-72, 168,049 tons of material, costing 707,765*l.*, besides 223,617*l.* for freight, were sent to India. In 1872-73 the price would

* Public Works Reform in India. By Lieut.-Col. Tyrrell, Madras Army; formerly Executive Engineer Public Works Department. London: Bumpus, Holborn-bars. 1873.

be doubled, and the price will increase year by year. This is doubtless good for English iron trade, good for English shipowners. But is it right? Are we never to rise above our old appellation, a nation of shopkeepers? The price of iron is now so high, and the price of coal likely to remain a difficulty, that we must perforce commence earnestly to develop the immense resources of India in this respect. Then let us manfully do our duty, however tardily commenced. Our difficulties are removed; with a little patience and perseverance India may not only supply her own material, but work with her own brains.

Finally, concludes Col. Tyrrell, there is nothing that promises so well for the rapid advancement of India as the thorough development of her iron and coal trade, and the education of her sons to work out that development. No reform of her public works will succeed without the honest cultivation of native talent and the promotion of her material resources. *Salus populi suprema lex est.*

PORTLAND CEMENT.

Sir,—Regarding the strictures in your paper upon the alleged "Failure of Portland Cement" as most important to architects, builders, and others, I have often desired to communicate my thoughts, but for several reasons I have previously refrained.

If the concrete roof of an underground building can be so finished as to allow loaded lurries to pass over, thus exposing it to weight, wear, and weather, it goes to prove that Portland cement will not fail if properly treated. If factories can be fire-proofed in 10 ft. and 12 ft. spans of arches,—the bays being from 30 ft. to 40 ft. long,—and the top of the arch doing service as a floor, carrying all machinery, &c., without any other support than the ordinary iron beams, I think any other kind of work may be done with the same material, and I can point to several works such as indicated.

I venture to give the following as truisms:—

1. With bad cement good work cannot be done, care and good workmanship notwithstanding.

2. With good cement bad work may be done, by (*a*) improper ballast, (*b*) improper mixing, (*c*) injudicious working.

3. With good cement, clean sharp rubble of proper size, properly mixed in right proportions, and handled by a good workman accustomed to cement work, failure is impossible.

4. It would be just as wise to allow the use of soft, insufficiently burnt bricks, set with inferior mortar by unskilled workmen, and then cry out against brickwork, as to say that because *some* concrete is not good "Portland cement fails."

I hazard nothing in saying that best Portland cement, if properly treated, cannot fail. I have blocks of cement concrete, now (and have been for years) lying about my yard, and are hard just in proportion to their age. Good concrete hardens by time and exposure,—bad concrete perishes rapidly.

I have been engaged extensively in the cement concrete business for some years past,—often using many tons per day,—and I can assert confidently that every "failure" can be traced to ascertainable and perfectly natural causes,—such as I have indicated. The fact is, that whilst almost any person may determine good bricks from bad ones, good stone, &c., from bad, not one in five hundred can detect bad from good cement,—till all the damage is done. Not all the materials about a building require half of the constant attention that cement-work does.

In the majority of cases, as cement-makers can testify, inferior cement is preferred by ordinary users. But how few can,—miller-like,—judge good cement by the mere handling of it? Yet this may be done after years of study and close attention; and if cement-work is to occupy its proper position in the building trade, it can only be made to do so by persons who will make a speciality of it.

I have not by any means found that the high-priced cements are the best, but often to the contrary.

All cement-makers turn out some cement worse than their best; but some makers cannot make good cement, often for want of the proper materials. Much of the cost of cement depends upon the quantity of coal used. Good Portland must have considerable burning. The high price of coal reduces the chances of obtaining good cement. Manufacturers may learn some day that the best way to destroy their trade is to teach the public that the quality of cement cannot be depended upon.

Malcolm Macleod.

Some Portland cement manufacturers, in reply to the assertion of one of our correspondents, that cement-makers produce three kinds "or qualities, viz., good, bad, and indifferent," assert that they make but one article, and are careful that all buyers shall be well served. "There are many other respectable houses in the trade who, we believe, act upon the same rule. Therefore, 'Zeta's' statement, applied in a general way, would manifestly convey a false impression, which we shall feel obliged if you will correct." We insert the statement, but that a great deal of cement lately used has failed is undeniable, and, indeed has not been denied. It is in the interest of all that we seek to learn the cause, and prevent a recurrence of the evil.

DEFENCE OF SHAMS.

Sir,—My letter in defence of shams was not written in the "*interest* of art," for which, from Mr. Proud's point of view, I care nothing, but in the *service* of humanity, for which I care a great deal. That art which has no reference to the civilisation of the nineteenth century has, I am bold enough to say, no hold upon my sympathies, and posterity will, to my way of thinking, be best served by those who strive to do well the much-needed work of their own time and generation. That "art which sits humbly at the feet of her great mistress" is not the art we most need; and Nature herself, outside of Mayfair, is not always the mistress at whose soil-stained and travel-torn feet an average lover would care long to sit. The office of handmaid to Dame Nature is not a sinecure, and the "rose and lily" of poetry owe much to the "paint" of modern floriculture.

What more can I, the practical worker, say to Mr. Proud, the dreamer? Does he need to be told that the "works at which the old masters so lovingly and patiently wrought" can never be known to the thousands condemned to toil through life in something more than brutal ignorance of nature and of art?—that thousands dwell where the first is only the sky above and the tradition, perhaps, of fields that once were thereabouts, but are no more; where art is that of the labouring bricklayer and the sanitary commissioner? The walls of the tenements protect the inmates from the worst of the weather, and the common privy, which is the central structure of the courtyard, has at last a decent roof. There is water, too, for the pumping, though the fastidious may still object to its proximity to the cesspool. But there are no "shams" here. Those wicked and "devil"-born abominations have not yet displaced or covered up "things honest in the sight of all men." So "honest," indeed, are all the surroundings, internal and external, that no devil of any pretensions to taste of any kind has ever been suspected of even visiting them. And as the dwellings, so are the dwellers; for humanity, chameleon-like, takes colour from its surroundings.

Will Mr. Proud think of these things, and let us know how the art of his imaginings will here carry out its lofty mission? And will he permit me to suggest that his reasoning may be quite as forcible if the language used be not made studiously discourteous?

C. Henry Whitaker.

IMPROVEMENTS AND BUILDINGS IN ILKLEY.

The rapid transformation which has taken place of late years in this charmingly situated little town furnishes a striking illustration of Yorkshire enterprise. The thatched village has been supplanted by the well-built, thriving town. The change, however, extends only to the style of architecture, the opening out of new roads and drives, and the greatly increased number of houses and semi-public buildings. The natural features of the landscape are, if anything, improved by the new phase entered upon, the slopes of the hill on which the town is built every year receiving fresh ornamentation by the erection of pretty villas, with appropriate plantings of trees and shrubs. Amongst the most recent schemes is the erection of a large family hotel, which is to be commenced forthwith. The opening of the short line of railway from Bradford and district, and the probable creation of a military camp in the neighbourhood, have influenced a few gentlemen to take this step, in the belief that such an establishment is much needed, and that it will contribute to the prosperity of Ilkley. The new erection is to be called the Victoria Hotel, and is being promoted by the Ilkley Hotel Company, Limited. The external dimensions of the building will be 167 ft. by 62 ft. wide and 62 ft. in height. It will be carried out in the Italian style of architecture, the more prominent features being equally distributed on two frontages. The intervening land between the hotel and the river is intended to be laid out in terraces, with gardens and croquet-grounds, &c. The architect is Mr. George Smith, of Bradford, from whose designs many of the private residences at Ilkley have been erected.

Active steps are being taken towards commencing the erection of the Home for Convalescents which Mr. Charles Semon, of Broughton Hall, is about to build at Ilkley. Plans have been prepared by Mr. George Smith, and tenders are now sought for the necessary works, which will be commenced forthwith. The building will occupy an elevated site, overlooking the valley of the Wharfe. The Home will have a good approach by Queen's-road and West Wood Drive, and will stand in its own grounds of six acres. The building is intended to be substantial rather than ornamental: its style of architecture, however, a domestic Gothic, will be in harmony with the site and with the style generally adopted in the vicinity. The building will be T-shaped, the cross representing the principal front; but this will only have an extra width of 13 ft. beyond the main body. The length from front to back will be 141 ft., the frontage width being 51 ft., and the remainder 38 ft. The principal entrance will be in the front of the building, on one side of which will be the matron's rooms, with bay-window (which is carried to the floor above), and on the other the men's sitting-room, 28 ft. by 17 ft. The bed-rooms for male patients will also be on the ground-floor, approached from a corridor. On the first floor are placed the bed-rooms for females, with a corridor as on the ground-floor. Their sitting-room will also be on this floor, and will occupy the front wing over the matron's rooms. On the opposite wing will be the general dining-room, 30 ft. square. In the attic-story rooms are obtained, which are lighted by dormer-windows, with a corridor giving access to them. All the bed-rooms are walled to the ceiling, each patient having a separate room, except in a few cases, where double-bedded rooms have been provided. All the rooms are fitted with fixed wash-basins, with water-pipes, &c. Accommodation will be afforded for sixty patients, besides the servants. Special attention has been paid to the heating and ventilation. The latter will be on the system adopted by Drs. Hayward and Drysdale, of Liverpool. It is self-acting. The vitiated air is carried from the ceiling of each room or corridor into a central flue, whence it is drawn off by the heat of the kitchen fires, and it then passes up the chimney-shaft. When in working order, the institution will not be a "charity," in the usual sense of the term. A fixed charge will be made for each patient, which, however, will be more than returned in attention and generous diet, and, it is hoped, in that restoration of health which is the chief desire of the generous donor.

A NEW THERMOMETER.

M. Palmieri, the director of the observatory on Vesuvius, has at present exhibiting at the Royal Academy of Sciences at Naples a new metal thermometer provided with alarm bells. The latter are sounded as soon as sudden changes of temperature take place. The apparatus is so sensitive that its band is constantly in a state of oscillation. When the change of temperature has attained a certain height, the alarm signal sounds, thereby enabling the observer to notice the rise and fall of temperature. By means of a peculiar arrangement the highest and lowest grades of temperature prevailing at a certain time will be registered; and this is independent of the proper purpose of the instrument, viz., to indicate when certain limits are exceeded. The Professor had been commissioned by the Empress of Russia to construct such a thermo meter; it will be hung up in the Imperia travelling carriage, and by its help the tempera ture may be regulated by heating or ventilation

THE ARCHITECTURAL ASSOCIATION.

The new session has commenced under the presidency of Mr. E. J. Tarver, and the opening *conversazione* has passed off successfully. Paintings, drawings, metal work, embroidery, carved woodwork, painted tiles, terra-cottas, and other objects of interest were lent for the occasion by various manufacturers, members, and their friends.

As usual, some of the prizes offered by and through the Association were formally presented by the president, the successful students receiving hearty applause as they came up to the chair. The following is a list of the awards :—

For the two best series of designs in the Class of Design:—1st, H. W. Pratt; 2nd, H. Avern. Honourably mentioned, T. Garratt.

For the best set of drawings in the Elementary Class of Design, to L. A. Shuffrey. Honourably mentioned, A. Ingleton.

For a design for a country mansion,—offered by the late Sir William Tite, C.B., M.P.,—to H. Avern. Honourably mentioned, H. G. McLachlan, H. Whipple.

For measured drawings from existing buildings in England previous to the eighteenth century, offered by the Architectural Union Company, to W. Talbot Brown and to T. Garratt. Further prize offered by the Association, to E. Sugden.

For a descriptive account of the churches visited during the Newark and Lichfield excursion, offered by Mr. Edmund Sharpe,—to F. P. Johnson; &c.

A short address from the president formed part of the work of the evening. In this he alluded to the many opportunities for mutual study afforded by the Association, and to the friendships which should naturally be formed by young men constantly meeting and taking active interest in special pursuits. He thought in the main the best service afforded to members was in this mutual help and emulation; and that less stress should be laid on the professional interest of the members who will probably deal with such matters with more weight in after years. Still the presence of older men is welcome and called for,—who can and will give assistance in studies and otherwise. As a past president who has maintained for many years such a position, Mr. T. Roger Smith was called on, and made a few remarks on the architectural activity in the large commercial towns of the North of England,—for instance, Liverpool, Manchester, Preston, Halifax, Leeds, and others. There is to be found in the public and private buildings of these places,—which he had recently examined personally with much care, — a thoroughness in design, and execution too, rarely met with in London. Is the activity of thought and deed less in what was once the intellectual as well as political capital of England? Or are greater strides being taken elsewhere than here? As to architecture, the future answer to that question will no doubt be materially affected by the character of the studies and of the students in the classes of the Architectural Association.

The first ordinary meeting of the session was held on the 31st ult., the president in the chair.

The following gentlemen were elected members:—Messrs. C. J. Bentley, W. J. Wood, S. J. Lethbridge, J. G. Stevenson, R. W. Collier, J. Rowkwood, jun., W. J. Kemp, J. E. Sears, J. Gandy, R. R. St. Ledger Morrison, G. H. Jeffrey, W. F. Unsworth, C. J. Graham, W. S. Guildford, E. B. Lamb, &c.

The Secretary, Mr. Paice, read the report, which mentioned the increasing number of students joining, in order to take advantage of the many and still fresh opportunities for, and help towards, self-education. Careful arrangements have been made with respect to the work of the several branches of the Association. It is to be hoped that, with the fewest possible exceptions, each member will be able to interest himself thoroughly in the success of one, if not more, of these branches, giving in this and other ways, as may be in his power, hearty assistance towards the realisation of the objects for which the Association was originally formed, viz., the promotion of friendly intercourse among the younger members of the architectural profession, and of efficient study in fellowship of matters affecting their common pursuits. Contributions having been from time to time offered by members and others, a prize fund was established at the commencement of the session, to which the following gentlemen subscribed:—Professor T. Hayter Lewis, Mr. J. Douglass Mathews (ex-president), and Messrs. E. J. Tarver, T. H. Watson, R. Plumbe, J. S. Quilter, T. A. Paice, and S. E. Barnes. It was decided that three prizes, value five guineas each, should be awarded towards the expenses of members in their sketching tours. After a competition, in which work done previously was submitted, the prizes were given to E. J. May, R. C. Page, and T. C. Yates.

The Treasurer (Mr. J. Douglass Mathews) then read the balance-sheet for the past session, which showed that the total income was 439*l.* 10s. 3d., and the total expenditure was 435*l.* 1s. 8d., thus leaving a balance of 4*l.* 8s. 7d. in hand.

The secretaries of the various classes afterwards presented their reports. It was shown that in the Class of Design, although the attendance was not so numerous as could have been wished, some good designs were produced. The Class of Construction and Practice, in its reconstituted form, under experienced visitors, was very successful, both as to the numbers attending its meetings, and as to the work done. The architectural examination was held in May, when three candidates, all members of the Association, passed in the Class of Proficiency; two others, in one section only; and twelve (including several members) in the preliminary examination. The fact that those who passed were more numerous than in any previous year should afford encouragement to intending candidates. A contribution was made for the first time towards the funds of the Architects' Benevolent Society, consisting of small subscriptions of members, and a sum voted from the funds of the Association.

Mr. Walter Spiers, in answer to inquiry, said the value of the library was about 350*l.*

The Chairman, in the course of his remarks, said that if they confined themselves within the range of standard works in the profession, and did not attempt to act within these walls as practitioners, they would devote their powers to the proper object. Among the members were included many of the most successful architects of the day. The Association then numbered about 600. Of these eighty-eight joined last session; but he regretted to state that sixty-five of these new members had not contributed in any way to the common stock of knowledge, thus showing a want of appreciation of the objects of the Association. The Sketch Book numbered no fewer than 158 subscribers; out of these only thirty-three contributed sketches, thus leaving a tremendous amount of work to these contributors: and he urged upon the new members to work hard with them. Many leading men naturally expressed surprise at the leading copies of their work. It was the bane of the profession that there were so many imitators, so let them think for themselves.

On the motion of Mr. Ridge, seconded by Mr. Quilter, thanks were voted to the President, and the meeting then terminated.

LABOURERS' COTTAGES WITH THREE BEDROOMS.

Sir,—The difficulty of providing three bedrooms is met, on the plan of Sir W. Jones, by placing the third bedroom in a lean-to on the ground floor; and, on that of my friend Mr. T. Roger Smith, by "building an external shed, and carrying up the walls to the top of the cottage." Both expedients seem to me, not only objectionable, but quite unnecessary; indeed, I have not found it needful to depart from the traditional arrangement of an ordinary English house, in which the living-rooms and offices occupy the whole of the ground floor, and the bedrooms occupy the whole of the floor above them.

Thus, according to the received authorities, the minimum sizes for the three bedrooms are 100 + 80 + 70 = 250 ft., which, with a few feet for passage-way, will make say 265 ft. in all. The minimum sizes for the ground floor rooms are 150 + 70 = 220 ft., which leaves 45 ft. only as the excess in area of the bedroom floor over the ground floor. This is little enough for the pantry, which is a necessary adjunct, and the entrance lobby, which is most desirable. Every architect will work out the details in his own way: in practice the bedrooms are generally made somewhat larger than these minimum dimensions. I am now designing some cottages in which about 40 ft. are added to the bedrooms, and this is easily divided amongst the living rooms, pantry, and lobby.

A cottage built in perfect accordance with English traditions is usually occupied after the English fashion. When we find the third bedroom used as an apple store, we should consider how few pantries are large enough, or dry enough for the winter stock of garden produce, and we need not rush to the conclusion that there is indecent crowding in the other two rooms. If one of the ground-floor rooms is made into a parlour, is it not the special ambition of every housewife to have one room untrodden by working-day feet? A proprietor who, out of pure good nature, has made his cottages theoretically perfect, and finds that his labourers, after living in two rooms for many generations, do not all at once occupy five rooms just as he would wish, should have patience: in two or three generations more the parlour will become a dining-room, and a lean-to will be needed for the drawing-room or boudoir.

Thos. Blashill.

DEAR COALS AND DOMESTIC SAVINGS.

I have waited a long time to see in the *Builder* some practical suggestions for a general improvement in house (or room) warming *for the million*; the various plans put forth (as far as I recollect) being only adapted to houses of the higher class, and expensive; and I must express my ignorance at present as to what is being done at the Society of Arts in regard to the prizes offered. Lighting the fire in the common stove at the top, and putting a plate at the bottom, has not become popular, and never will. Gentlemen who pay 10*l.* for a new stove, &c., on that plan do not get a "cheerful fire," and grow tired of looking at it. A new grate at a cost of 15s. to 20s., to give more heat, is the desideratum, and could be managed by the manufacturers in the North, if they would give their attention to it. The long-standing wasteful defect is *bedding the ordinary stoves in brickwork*, and consequent loss of heat in the wall. The fireplace should be plastered clean all round, arched over, and the stove stand clear; the feet being set on brick and cement, about 6 in. deep, but a short connexion of iron or brick into the arch above; the front of the stove being perforated or trellis-pattern, to let out the heat: and for the modern "breakfast-parlour," or other rooms below, a great improvement would be the insertion of pipes from underneath the floor to the side of the fireplace, bringing a stream of fresh air to impinge against the cheeks, and these should be of fire-brick, fitted on an improved plan. This ventilation would, of course, save much rotting of floor, and increase the draught when doors, &c., are closed up.

For small rooms, lodgers, &c., especially where the chimneys smoke the wrong way, a little grate might be made (as some are now) only the width of the fire, but with a hot hob or shelf at each side *cast in a piece with the fire-grating*. These should stand flush with the chimney-piece, and having a neck slightly sloping back into the flue, when they would no doubt draw well.

Corrigenda.

THREATENED COLLAPSE OF THE NEWINGTON-BUTTS IMPROVEMENTS.

An Act of Parliament was obtained last year by the Metropolitan Board of Works for making a very important improvement at Newington-butts by materially widening the thoroughfare. The project involves the taking down of the present parish church (which projects in an unsightly manner into the highway), and building a new parish church on another site which has already been secured; but although the plans of the new church have for some time been in readiness, the building of the structure has been delayed, owing to a certain amount of money not being forthcoming; and, from the proceedings which took place at a protracted meeting of the Newington Vestry, last week, it now appears that the entire scheme is not unlikely to end in failure, and the abandonment of the improvement, which is one of great importance, and much to be desired.*

The question of this improvement has already been referred to in the *Builder*, in connexion with the proposed new parish church, and also a second new mission church, now in course of erection in Newington Churchyard. The discussion of the subject at the meeting of the Newington Vestry last week was the result of a resolution of the Church Building Society forwarded to the vestry, stating that the committee saw little probability of the requisite sum being raised within the time specified by the Act of

* But, beyond this, the threatened failure of the scheme is a matter of considerable gravity to owners of property in the locality, as several blocks of houses have changed hands on the faith of the improvement being carried out.

Parliament, and the discussion of the meeting turned upon whether the vestry ought not to find the money, seeing that the removal of the church was to benefit the parish by widening the thoroughfare. The rector of the parish, who presided, appeared to be of opinion that the money ought to be found by the ratepayers; whilst, on the other hand, it was contended that this would be an injustice, if not illegal, one of the speakers observing that the ratepayers, through the Metropolitan Board, had already agreed to contribute 4,500*l.* for the old church and the site. Ultimately it was resolved,—"That the vestry memorialise the Board of Works to petition Parliament to repeal so much of the Metropolitan Streets Improvement Bill as related to the deposit of the sum of 5,000*l.* in the hands of the Ecclesiastical Commissioners, and for power to constitute the new church now in course of erection the parish church for the time being." The rector observed that he could only say that if they went to Parliament, he should oppose them there; and as to the mission-church, he hoped to show them it was needed.

It is thus not improbable, from the resolution adopted by the vestry, that there will be another Parliamentary fight in connexion with this long-talked-of improvement, and that, in the meantime, the improvement itself is jeopardised.

A LABOUR QUESTION.

Is it true that there was a strike in the stone-quarries at any time during 1873? A contractor has stated that between the months of January and July, 1873, there was a strike among stone-quarrymen, which has had the effect of raising the price of stone. Is this statement correct?

A. B.

LUDGATE-HILL.

Chaos just now reigns supreme in Ludgate-hill. This thoroughfare, at the best of times, is not very easy to pass through, being so crowded; but now that the pavement is taken up, and other works are being carried on which tend to block up the space intended for foot-passengers, the state of affairs is really becoming serious. The street is being paved with the wood pavement under the auspices of the Improved Wood Paving Co., and the smell of tar is just now very powerful in Ludgate-hill. Passers-by appear to be much interested in the process of laying the wood pavement, and as this leads them to congregate, the attendant policemen have no little difficulty in keeping the road clear. At the lower end of Ludgate-hill, towards the station, building operations are going on, and have been going on, well, if not quite since the memory of man, certainly for a considerable period. When these buildings will be completed, and the thoroughfare in its ordinary state again, of course we cannot say, but the improved wood pavement, as well as the other improvements, ought certainly to prove very beneficial in order to recompense the public for present discomfort in Ludgate-hill.

DRAINAGE AND SEWAGE WORKS.

Twickenham.—The plans for the drainage of this parish, prepared by Mr. H. Malcolm Ramsay, the town surveyor, having been finally approved and adopted, have been submitted to the Local Government Board for their sanction to borrow the necessary funds (20,000*l.*) to carry out the works. The system advised by Mr. Ramsay for disposal of the sewage, is that of intermittent downward filtration, as also advised by him in his scheme submitted to the Richmond vestry. Mr. Ramsay is of opinion, as explained in his report, that ultimately a market will be found for the sale of the sewage in the surrounding agricultural districts, and that, therefore, it would be unwise for the local authority to adopt irrigation, and thereby incur the costly alternative involved in the purchase of a large tract of land.

Richmond.—A special general meeting of the Richmond Select Vestry rescinded a resolution passed at a former meeting, for the adjournment of the drainage question for three months, and to consider farther the scheme sent in by "Experience" (Messrs. Russ & Minns's), and if approved, to adopt it. The meeting was a very full one, there being twenty-six members present. The chair was occupied by Admiral Stopford, J.P. After a somewhat stormy discussion the resolution was carried by fourteen against twelve. It was subsequently resolved, by thirteen against eleven, "That the scheme of 'Experience' be now considered," and ultimately, by a majority of eleven to six, "That after the long and careful consideration of that scheme, and after the final satisfactory answers that have been made by the engineers, the vestry do fully approve the said tunnel scheme." This was the signal for some tumult, during which Mr. Sims gave notice to convene a meeting to rescind the resolution then carried. This meeting has since been held, and has affirmed, by 13 to 12, the resolution previously passed to adopt the tunnel scheme; and resolved that the scheme be referred to Mr. Abernethy, C.E., with a request that he will advise the vestry as to its suitability and effectiveness, and the estimates and engineering details, and generally on the subject of the disposal of the sewage of the parish. —— We omitted to mention in our account of the different schemes that the author of the scheme "Practice," left in finally to compete with "Experience," is Mr. H. Malcolm Ramsay, surveyor to the Twickenham Local Board.

UTILISATION OF SLAG.

SOCIETY OF ENGINEERS.

At a meeting of this Society, held on Monday last, a paper was read "On the Economic Uses of Blast-furnace Slag," by Mr. Perry F. Nursey.

The machinery of Mr. C. Wood, of Middlesbrough, and of Messrs. Bodmer, of Hammersmith, was described by the author, with the aid of diagrams. Mr. Wood's machines, he said, were of two kinds, one a horizontal revolving table, and the other a vertical revolving drum. By the first machine the slag was cooled as it left the furnace under a stream of water, and becoming disintegrated, was broken up and pushed off the table at a certain point, by scrapers, into trucks placed beneath. In this state the material is in a fit condition for making concrete for buildings. The second machine is for reducing the slag to a finer condition. It is run from the furnace into the drum, through which a stream of water flows. The drum has screens placed within it, and as it revolves the slag becomes reduced to a fine sand, and it is delivered in that condition into trucks. This sand is utilised in making bricks, cement, mortar, and for other similar purposes. Messrs. Bodmer's plan consists in the use of a pair of rolls, through which the slag is run from the furnace into a travelling band, which delivers it where required. The sheet of slag thus produced is readily broken up for use in making concrete, or ground into powder for bricks, cement, or mortar. For some purposes Messrs. Bodmer run the slag into water; but for bricks and cement they produce it dry. They have also a special system of machinery for the manufacture of slag bricks, which is worked by hydraulic power.

SCHOOLS OF SCIENCE AND ART.

Wolverton Science and Art Institute.—The anniversary of the opening of the science and art classes in connexion with this Institute has been celebrated by a *soirée*. The proceedings commenced with tea, of which upwards of 600 persons partook. The room was decorated for the occasion. After tea the large company adjourned to the Institute, where the prizes were announced to be distributed to the successful students during the past year. Mr. Thomas Brassey, M.P. for Hastings, and a director of the London and North-Western Railway, presided and presented the prizes. The room, although large, was densely packed with people. Mr. R. King (secretary to the Institute) gave some information respecting the present position of the Institute. There had been an encouraging increase in the number and success of those who had availed themselves of the advantages of the institution. At its opening in 1864 the number of members was 244, and of science subjects only three or four were taught, and only about 20 students attended. Since then the number of members had been raised to 450, and the number of students in science and art subjects had increased to 152. For the most part the science teachers conducting the classes had been men employed in the works, who, having worked themselves up in certain subjects, had by competitive examinations obtained teachers' certificates from the Science and Art Department, South Kensington. The committee has thus been enabled to arrange for instruction in many subjects without incurring great expense in teachers' salaries. The teachers were Messrs. Coker, A. Goyer, G. Green, and T. Moore (art teacher). After giving the number of students who had passed in the different subjects, the secretary stated that the following honours had also been gained by Wolverton students:—

"In 1872 E. G. Field obtained a Whitworth scholarship of 100*l.* per annum for three years, and W. H. Warren gained one of the bronze medals given by the Department for excellence in mathematics, and also a Royal Exhibition of 50*l.*, with free education for one year at the Royal College of Science, Dublin; and in 1873 W. H. Warren obtained a Whitworth Scholarship, and also a certificate with prize of 10*l.* given to the best student in honours at the Society of Arts Technological examination in the manufacture of steel, coupled with an offer of a studentship of 50*l.* by Her Majesty's Commissioners of the Exhibition of 1851. Both young men are now studying at Owen's College, Manchester."

RE-OPENING OF THE BURY ATHENÆUM.

The large hall of the Bury Athenæum, after being closed for many months, has again been opened to the public. The building was erected in 1851, under the superintendence of the late Sir Robert Smirke, R.A. During the past few years the directors have had on several occasions to repair the timbers of the roof. In the autumn of last year appearances were so threatening that they gave instructions to Messrs. Maxwell & Tuke to make a thorough investigation of the state of the roof, and to report upon it. These gentlemen, in their report, stated that the timbers were far too slight for their work, and were in many places absolutely crushed by the load they had to carry, and insisted upon the necessity of new and much more substantial framing. This report being adopted, the architects were authorised to prepare plans and get the works executed. These have now been completed, with the exception of a little painting and decoration still remaining unfinished. The replacement of a new and substantial roof for the old shaky construction necessitated an entirely new ceiling for the large room, and a carved and panelled ornamental ceiling now replaces the old and comparatively plain one. Three large sunlights have been placed in the ceiling. The platform has been raised 1 ft., and a performers' room conveniently placed underneath, with stairs both on to the platform and into the room. Various other improvements have been made. The plastering and painting have been executed by Messrs. Jacob Lomax & Sons; the joiners' work is by Mr. Waddington; the stonework, by Mr. James Hill; and the plumbing and gasfitting are by Mr. R. Caton.

OPENING OF A NEW RESERVOIR AT OSWESTRY.

The ceremony of turning on the water into the new reservoir has been performed by the Mayor of Oswestry. There was a large number of ratepayers and others present on the occasion.

The new reservoir has been executed by Mr. John Whittington, under the gratuitous inspection of Mr. George Owen, C.E., and Mr. W. H. Spaull, and has cost the ratepayers nearly 4,000*l.*, including the cost of the land. There has been a shortness of water supply in the three dry summers since the two first reservoirs were completed.

The present reservoir was "trigged" out by the surveyor, Mr. E. B. Smith, and his assistants, on the 5th of January, 1870. The work was completed in about fifteen months, and the formal opening took place on the 11th of May, 1871. The cost of the reservoir to that time was about 2,000*l.* The site of the reservoirs had been for a century past used as brickyards, and to convey the water where it was required for brickmaking had caused the surrounding land to be "honeycombed" with drains. These were not discovered at first to the extent they existed, and consequently in a short time afterwards the south-western and north-western banks gave way, and gradually fell down into the middle of the reservoir. It was allowed to remain in that state until the spring of 1873, when Mr. Ward undertook to trace the drains to their source, put down a deep puddle wall, remake the banks, and line the sides of it with a large wall of stone, filled in with hydraulic lime, and concrete the bottom, for 1,350*l.* A considerable sum of money additional has been expended to make walks around it, trim the

opes occasioned by the deposit of the excava-ons, and other matters, all of which has been ccomplished.

The depth of the reservoir from the water-ne downwards is 21 ft., and 3 ft. from the ater-line to the surface, making a total depth 24 ft. The quantity of clay excavated, at rst, was 43,000 cube yards. Such was the den-ty of the clay, that it weighed 140 lb. to the ibe foot, and great quantities of it had to be blasted" with gunpowder.

The present consumption of water by the wn is about 150,000 gallons per day; and the ree reservoirs will contain over 9,000,000 llons; so that, when once filled, they will ntain sixty days' supply. The main pipes, owever, are in a corroded state, and the council ve it under consideration to get them raped.

REREDOS, PLYMOUTH.

The chancel of the Catholic Apostolic Church s recently been enriched by the erection of a redos, or altar-screen, executed in carved oak, Mr. J. T. Legassick, from a design by Mr. H. liott, architect, of Plymouth. It extends across e whole of the chancel end, and consists of nopied arches and niches of light open work, namented with tracery, pinnacles, crockets, d other enrichments, the wall at the back ing lined with oak panelling, except certain aces which will ultimately be filled in with coration in colour. It is intended to refit the les of the chancel with carved oak stalls and nelling to harmonise in general character with e work above named.

The roof and upper portions of the walls of e chancel have already been finished in colour d gilding.

CAUTION TO BUILDERS.

The committee of works of the vestry of St. orge, Hanover-square, have instructed Mr. mkins, surveyor to the board, to summon all ilders who stack bricks and other materials tside hoardings where new work or repairs are ing done.

Mr. A. Scott, builder, of 48, South Molton-eet, Grosvenor-square, is the first to feel the ect of this order by being fined, by the magis-ate at Marlborough police-court, the sum of s. and costs, for piling up a stack of bricks tside the hoarding of a job Mr. Scott has on nd in Albemarle-street.

As no notice is given either by the police or e vestry preparatory to a summons, builders ving work in St. George's had better take a te of this paragraph.

DWELLINGS OF THE METROPOLITAN POOR.

The report of the Special Committee of the arity Organisation Society on the Dwellings the Poor was presented at the weekly meet-of the council, on Monday. It was signed Lord Napier and Ettrick, and is a careful tement, with notes and appendices. The clu ling and principal recommendation is t,—

tensive and effectual powers of purchase, demo-n, and direct or delegated reconstruction, should be ed in the chief existing municipal authorities of don -the Corporation and the Metropolitan Board of ks, in order that they may follow the example set he municipalities of Glasgow, Edinburgh, and other incial cities which have been armed by Local Acts such prerogatives; and that the Corporation and ropolitan Board should be urged to use those powers, n obtained, in a bold and comprehensive manner, but special regard to the interests of the poorer members e community."

REMIUMS AWARDED TO ENGINEERS.

The Council of the Institution of Civil Engi-rs have awarded the following premiums :—

A Watt Medal, and a Telford Premium, in books, r Charles A. Hartley, for his paper on "The Delta of Danube, and the Provisional Works executed at the a Mouth."

A Telford Medal, and a Telford Premium, in books, mes Deas, for his memoir on "The River Clyde."

A Watt Medal, and a Telford Premium, in books, to Head, for his paper on "The Rise and Progress of n Locomotion on Common Roads."

A Watt Medal, and a Telford Premium, in books, to am Anderson, for his description of "The Aba-el-f Sugar Factory, Upper Egypt."

A Telford Medal, and a Telford Premium, in books, illia n Thomas Thornton, C.E., for his essay on "The ive Advantages of the 5 ft. 6 in. Gauge, and of the e Gauge for the State Railways of India."

A Telford Medal, and a Telford Premium, in books, to Colonel William Henry Greathed, C.B., R.E., for his "Account of the Practice and Results of Irrigation in Northern India"

7. A Telford Premium, in books, to John Milroy, for his paper on "Cylindrical or Columnar Foundations in Concrete, Brickwork, and Stonework."

*8. A Telford Premium, in books, to William Pole, LL.D., for his "Notes on the Rigi Railway."

*9. The Manby Premium, in books, to Thomas Sopwith, jun., for his paper on "The Mont Cenis Tunnel."

The Council have issued a list of subjects on which they invite communications of a complete and comprehensive kind in competition for premiums. A copy of it can doubtless be obtained at the Institution by persons who are interested.

The opening meeting will be held on the 11th inst.

SCHOOL BOARD SCHOOLS.

Fulham.—The schools built at the instance of the London School Board, called the Harwood-road schools, situated at the corner of Parsons-green, Fulham, have been formally opened.

Leicester.—The Leicester Schools Committee, at their meeting on the 23rd ult., decided to erect a new Board school in Belgrave-road, at a cost of 6,000*l.*, the plans for which have been prepared by Messrs. Millican & Smith, architects.

ACCIDENTS.

Fatal Fall from a Scaffold at Reading.—An inquest has been held on the body of Henry John Baylis, a lad seventeen years of age, who died from injuries received in falling from a scaffold. George Russell, a labourer in the employ of Mr. Knowles, builder, said that he was at work with deceased at a building at Binsey. Deceased was going up a ladder with a hod of bricks on his left shoulder, and while stepping on the landing about 16 ft. high, the handle of the hod caught the scaffold and he fell to the ground, the bricks in the hod falling on his shoulder and collar-bone. Mr. Palmer, house surgeon of the Radcliffe Infirmary, said deceased was badly injured in the spine, and paralysed in both legs. A verdict of "Accidental death" was returned.

Carelessness with Blasting Powder at Trimdon Grange.—Two children were allowed to play with a pit flask near a quarter barrel of blasting powder and exploded the whole, killing one of the children and destroying two houses built back to back.

THE INTERNATIONAL METRE.

According to *Les Mondes*, the first International metre measure was cast, in the presence of the commission now sitting at Paris, in the laboratory of M. Sainte-Claire Deville, who has been able, with the assistance of M. Debray, to alloy platinum and iridium in their pure chemical state. The *modus operandi* is to serve as a guidance in the production of all future original metres. The operation was considered of such importance that the President of the French Republic and several high dignitaries of State were present during the proceedings. Nine kilogrammes of platinum and one kilogramme of iridium were melted by means of the oxy-hydrogen gas blow-pipe. This process took three-quarters of an hour; the molten mass was then let off into a mould made, like the crucible, from a block of limestone, whose inner surface was burnt to lime in consequence of the enormous heat. In applying this substance, there is consequently no danger of a fracture in the mould. The metal did not lose its lustre in cooling. The casting, which was considered a perfect success by all present, will have to be submitted to all the processes necessary for converting it to its eventual use.

CHURCH-BUILDING NEWS.

Bathwick.—The foundation-stone of the long-talked of chancel of St. Mary's, Bathwick, has been laid by the Rev. Prebendary Scarth, rector of Wrington, who originated the idea of making this desirable addition to the church, including, as it does, a vestry and organ-chamber, during his incumbency of the parish. The cost of the work will be not less, probably more, than 3,000*l.*; of which, we believe, about two-thirds has been paid or promised.

Bradford.—The new church which has been erected in Little Horton-lane, Bradford, and which is dedicated to St. John, has been consecrated for divine service by the Bishop of Ripon. Consisting of nave, with north and south aisles and chancel, the edifice will afford accommodation for 700 persons. The style of architecture is Early Decorated Gothic of English character. A tower 23 ft. square at its base rises from the western half of the chancel, and is carried on arches on the four sides. It is surmounted by a belfry constructed for a peal of eight bells. The total height of the top of the vane is 115 ft. The architects are Messrs. T. H. & F. Healey, and the contractors for mason and joiner work Messrs. J. & W. Beanland. The cost of the building, including the site and extras, has been about 11,000*l.*, and of this amount between 9,000*l.* and 10,000*l.* have been raised, leaving a balance of about 1,500*l.* still to be made good.

Manningham (Bradford).—The chief stone of St. Mark's Church, Manningham, has been laid by Mr. F. S. Powell, M.P., in the presence of a large assemblage. The building, which is well advanced, is situate in Grosvenor-road, Manningham; is in the Early Decorated Gothic style, 150 ft. long by 72 ft. wide; and consists of nave, side aisles, baptistery, and narthex, and will have a tower and spirelet, rising to a height of 150 ft. The internal height is 65 ft. Accommodation will be found for 1,000 persons. The nave and aisles only are to be erected at present. Inclusive of land, the portion proposed to be erected will cost 8,000*l.*, but it will take upwards of 10,000*l.* to complete the building. The amount received and promised is 5,300*l.*

Toseland.—The church has been re-opened and consecrated. The architect, Mr. T. Streatfield, has endeavoured to restore the church as nearly as possible to its original state; and his plans have been worked out by Mr. Osborn, St. Neot's, and Mr. Wade, Eaton Ford.

Yankley.—The little church of this parish has been re-opened, after a restoration, which has been carried out from the designs of Mr. F. Preedy, of London, by Messrs. Collins & Cullis, of Tewkesbury, at a cost of 1,100*l.* Of this amount 950*l.* have already been raised, to which Lord Lyttelton, who is the principal owner of the soil, contributed 500*l.* The restoration comprises the putting in of new foundations to all the walls, the rebuilding of the south chancel-wall, the erection of a new south porch, the replacing and fitting of the roof, and the insertion of several new windows in the church. Inside the walls have been relieved of the plaster, and a new chancel-arch erected. The roof timbers have been thrown open, and the church seated with new open benches. A new arch has been opened at the west end, and the font has been placed under the tower.

Dorking.—At a recent meeting of the parish church building committee, it was resolved to proceed with the erection of the Wilberforce Memorial Tower a further height of about 20 ft., making nearly 60 ft. in all, and carrying it to the apex of the nave roof. It was also resolved to instruct the architect (Mr. Woodyear) to make provision for the church-clock in the portion of the tower now about to be undertaken. The late fine weather has enabled the contractors to make considerable progress with the works generally. It is hoped that in about a month or five weeks the nave roof may be on and partly completed.

Shipston-on-Stour.—A new church has been consecrated at Darlingscott, in the parish of Treddington. The edifice, which is but a small one, is erected on a site presented by Sir G. R. Phillips, bart., who was also a subscriber to the building fund to the extent of 200*l.* The style of the church is English Gothic, built of white Armscot lias, with Bath stone facings. The interior has no pretence to decoration. It is capable of accommodating about 200 persons. The south transept is so constructed as to be appropriated on week-days to the purposes of a national school, being partitioned off from the nave of the church by a movable screen. The want of a church and school has long been experienced in the village, as the mother church and national schools are situated in the parish of Treddington, some two miles distant.

Parwich.—The new parish church of St. Peter, Parwich, built at the sole cost of Mr. T. W. Evans, of Allestree Hall, patron of the living, has been opened by the Bishop of Lichfield. The new edifice has been built from designs by Mr. F. J. Robinson, of Derby, architect. The style adopted is late Norman, the chancel being rather later, and bordering upon Early English. In plan the church consists of a

* Have previously received Telford Medals.

chancel 16 ft. by 22 ft. 6 in. in the clear; the nave and north and south aisles are 47 ft. by 41 ft. in the clear. There is a western tower and spire, which rises to the altitude of about 100 ft.; and there is an organ-chamber and vestry, 18 ft. by 12 ft. at the east end. The pulpit, which is of worked stone, occupies the east end of the northern arcade, and the old Norman font has been replaced at the south-west end of the nave near to the tower. There is a new reredos, of Ancaster stone; this is carved, and has upon it, immediately over the altar-table, two seraphim with veiled faces. These stand upon pedestals. The panels on either side of the central cross are carved with foliage suggestive of the Sacrament. The extreme length of the building, from out to out, is 96 ft., and the extreme width, 51 ft. The nave is separated from each aisle by arcading of four bays, each column being surmounted by carved capitals. Two of the responds are old examples, and the types of these, as well as of other local Norman work, have been retained by the carvers. The aisles are lighted on either side by circular-headed single-light windows, and by double-lighted ones on their western ends. The clearstory is lighted on each side by nine cinquefoil circular windows, recessed in a running arcade. The walls all through the interior of the church are of ashlar stone, and the roofs of the nave and chancel and the lean-to roofs of the aisles are of timber. The seating is open, and of pine; the stalls in the chancel are of pitch pine. The ancient chancel arch in the old church has been preserved, and made to form the tower arch. The church is entered by a western tower door, and a priest's door. Over the former is the Early Norman arch that originally belonged to the south door, and within it is a tympanum, sculptured in Norman type. The roofs are slated, but the spire, which is low and squat, like nearly all the local spires, is entirely of stone. The carving throughout the building has been executed by Mr. Harry Hems, of Exeter, sculptor. The builders are Messrs. H. & J. Slater, of Derby; and the Coxbench stone, produced from a quarry belonging to these contractors, has been used for all the work.

Portmadoc.—The foundation-stone of a church, dedicated to St. John the Evangelist, has been laid here. The church will consist of a nave 64 ft. by 25 ft. 6 in., north and south aisles each 65 ft. 6 in. by 10 ft.; chancel, 31 ft. by 21 ft.; with organ-chamber and vestry on the south side, heating-room below, and an entrance porch at the north-west corner. Owing to the want of funds, the chancel and chancel aisle will for the present be omitted, as well as a tower contemplated for a subsequent date to complete the design. The church is arranged to accommodate 400 persons, and the present contract amounts to about 2,700*l.*, towards which about 2,050*l.* have been already subscribed.

DISSENTING CHURCH-BUILDING NEWS.

Manchester.—The corner stone of a new Presbyterian church, situate in Singleton-road, Higher Broughton, has been laid by the Hon. George H. Stuart, of Philadelphia. The site of the church is on the south side of Singleton-road, about half-way between Broughton Bar and Park-lane. Mr. John Stuart, brother of the Hon. George H. Stuart, has expressed his willingness to defray the entire cost of the erection. The church and schools, the foundation for which is already completed, will consist of nave, 74 ft. 4 in. long by 29 ft. 4 in. wide, with aisles on either side, 8 ft. wide, and transepts 20 ft. 4 in. wide (the latter containing galleries for school children), at the south end of the church, right and left of the pulpit platform. The style of the architecture is Early French Gothic. The exterior of the edifice will be executed in Pierrepont stone, with cut stone dressings. A lofty tower and spire (the latter ornamented by angle pinnacles and lucarnes), will rise from the west or right-hand side of the front elevation; and on the opposite side of the same front there will be a lower tower, surmounted by a pyramid of slate roof terminating in a metal finial. Each of these side towers will serve as an entrance porch, and will be gained by arched and moulded doorways. An arcaded corridor stretching across the whole front of the nave will join the two entrance porches, and from this corridor access will be obtained into the two main aisles or passageways between the seats of the church. The side walls of the church will be divided into four bays, in addition to the transept gables. Those to the aisles will contain a two-light window, with large traceried circle in the head of each, the whole being contained within a pointed arch. The clearstory will have coupled circles, with sexfoil tracery. The front gable over the arcaded corridor between the main entrances, will be enriched by a large wheel-window under a spacious pointed arch. The transept gables will have circular rose windows, with four small lancet lights below. The seats and timbers throughout are to be of pitch pine. On each side of the steps leading to the pulpit will be an arched and traceried door opening from the church into the long corridor of the school buildings. On the ground-floor of these back buildings will be placed the sessions-room, the minister's and the deacons' vestries, and the caretaker's residence. From this back corridor will rise two staircases, of ornamental design, in pitch pine, to the large lecture-hall, 56 ft. 3 in. by 25 ft., which will extend the whole length of the rear building, and which will have an open timbered roof. An opening will be left in the wall between the organ recess in the church and the lecture-hall, and will be provided with movable shutters, in order that the organ may be available for the lecture-hall as well as the church. Messrs. Price & Linklater, of Manchester and London, are the architects; and Messrs. Neill & Son, the contractors. The total cost of the building will be about 7,000*l.* The church is to accommodate over 700 adults, and the lecture-hall about 300.

Chester.—The new Wesleyan Methodist Chapel, on the City-road, which is to supersede the Home Mission Chapel in Black Diamond-street, has been opened for divine worship. The style is Gothic, and the materials used in the erection are Runcorn and Handbridge red sandstone. The front elevation is to the City-road, and presents a gable, with two entrances,—a smaller gable on the one side, and a tower, with broach spire, on the other, being used for access to the body of the chapel and galleries, as well as for descending to the school-room below. According to the designs of the architect (Mr. Botterill, of Hull), the spire was to be 118 ft. high from the City-road level, but the cost was considerable, and it was at one time decided not to erect a spire, and to finish it off just above where the buttresses now terminate. But the building fund was augmented beyond expectation, and the result was that the spire has been added, though somewhat reduced in height. In the centre of the principal gable is a group of three two-light windows, which, with respect to the interior is in the west gallery; and to avoid hiding this, the organ was divided,—one portion being placed on the one side of a recessed arch, the pedals communicating with the other portion on the opposite side. Below this large window is a three-light window, or group of three lights, and on each side of the building are rows of two-light windows, with alternate quatrefoil and sexafoil traceried heads. All the windows are glazed with an obscured glass, with ruby-tinted border. The chapel, which will accommodate nearly 800 persons, is 68 ft. long by 47 ft. wide, and the height from the floor to the ceiling, at the collar-beam, is 46 ft. There are galleries on three sides, with a communication by means of a narrow balcony across the chapel, at the east end. The whole of the interior fittings, with open roof-timbers, are of red fir, stained and varnished. Below the chapel there are a school and class-rooms, which are entered from Leadworks-lane. The principal school-room is 50 ft. by 46 ft., and 13½ ft. in height, and there are two class-rooms 16 ft. by 13 ft. each, and one 17 ft. by 12 ft., with room for heating-apparatus and other convenient and requisite appurtenances. Mr. Stringer, of Sandbach, contracted to build the chapel for 4,445*l.*, but that did not include the spire, which together with the site, gives a total cost of 6,500*l.*

The New County Police Station, Shipston-on-Stour.—The station now in course of erection will be built with brick and Bath-stone facings, and will consist of entrance-hall, court-room (34 ft. 6 in. by 16 ft. 6 in.), superintendent's parlour, and magistrates' retiring-room; there will also be a kitchen, scullery, pantry, laundry, and offices, and four bedrooms; prisoners' yard, four cells, stabling, and coach-house. The architects are Messrs. Medilam & Son, Gloucester, and the contractor Mr. John King, builder, of Shipston. The amount of the contract is 1,610*l.*

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Chester.—The first stone of a new Roman Catholic Church in the city of Chester has been laid. The site of the new building is very close to the park. The new church is to be dedicated to St. Werburgh. The designs of the architect, Mr. Edmund Kirby, of Liverpool, show a building of an Early English character. All superfluous ornamentation will be dispensed with, as the intention of the founders is to make the building as spacious as possible, regard being had at the same time to dignity of style. It will be composed of a chancel, where the high altar will stand, and will terminate with an apse of seven sides, to which will be attached side chapels, sacristies, and cloisters; a nave of six bays of sets of arches, with north and south aisles, and a tower, which, when completed, will reach a height of 200 ft., and will thus rival the highest towers and spires in the city. The exigencies of the site have altered the customary position of the chancel and tower. The former will be at the west end instead of the east, and the latter will be in the place that should be appropriated to the former. The roof, the height of which will be 72 ft., will extend from the apse throughout the nave. The width of the building will be about 30 ft., and the entire length 140 ft., divided thus:—Chancel, 30 ft.; nave, 80 ft., and base of the tower, 30 ft. Stourton stone is the material to be used in the construction of the church by the contractor, Mr. Thos. Hughes, of Aldford. At present only the chancel, side chapels, and cloisters, with four bays of the nave, will be built, the cost being estimated at upwards of 6,000*l.* The remaining portion of the design, which includes a presbytery or priests' house, will be built afterwards.

Workington.—The new Church of Our Lady and St. Michael, at Workington, is to be a cruciform structure, from a design by Mr. Edward Welby Pugin, architect, and in the Early English style. The entrance will be surmounted by a bell turret 90 ft. high from the ground. Beneath the turret there is to be a carving in stone representing the crucifixion and underneath this two pointed windows. The building, which will consist of two aisles, a nave, a chancel, north and south transepts, a corridor, a sacristy, two confessionals, two chapels, and an altar, is to be 159 ft. in length by 63 ft. in breadth; the breadth across the transepts being 63 ft. There will be an organ gallery arched over, and the pillars which support the nave roof are to be of polished granite with marble bases, the lower and upper portions being of red sandstone. The chancel, which is to be arched, will contain niches for figures. There is to be a large pointed window at the east end with five lights. The seats are to be made of pitch pine, and open. The church is be built of Lazonby stone, and for ashlar or tracery work stone from the St. Bees and Aspatria quarries is to be used. The structure, when completed, will accommodate 800 persons, and its cost will be 8,400*l.* Mr. Hugh Yates, of Liverpool, is the contractor for the whole of the work, and under the superintendence of his manager, Mr. Seagar, considerable progress has already been made with it.

SCHOOL-BUILDING NEWS.

Hill Top.—The four memorial-stones of a new schoolroom in connexion with the Wesleyan Schools, Hill Top, have been laid. The building, which will accommodate about 200 persons, is estimated to cost about 1,000*l.* Purses were laid upon the stones, which, together with various donations, realised a considerable sum.

Pickering.—The foundation-stone of a new school has been laid at Cropton. The school is to be ready for use by Christmas.

Worthing.—The new schools at Broadwater have been opened. The "mixed school" is nearly 50 ft. by 18 ft., and a teacher's residence will, it is hoped, soon be added. The architects were Mr. E. E. Scott, and Mr. Hyde, of Broadwater; and the builder, Mr. W. Softly, of Worthing.

Burrough-on-the-Hill.—The new parochial school, which has been recently erected on a site given by the rector at the east end of the village, was opened a few days ago, on the occasion of the harvest thanksgiving. The building is of brick, with white stone dressings and has a bell-turret in stone in the east gable. The walls, internally, are lined with presse

bricks, and the roof is open-timbered, stained and varnished. A porch at the west end answers the purpose of a cloak-room. The works have been executed by Mr. Hayes, of Melton Mowbray, builder, from the designs of Mr. R. W. Johnson, of Melton Mowbray, architect.

Ockley.—Mr. W. J. Evelyn, of Wotton, granted a site for the new schools at Wallis Wood, near Oakwood, and contributed 500*l.* towards the building expenses. Messrs. Colls & Sons, builders and decorators, of Dorking and London, furnished plans and specifications for the school buildings, to accommodate 120 children, and for an adjacent residence for the master. The work was undertaken by Messrs. Colls, and the total cost has been about 1,400*l.* The formal opening of the schools has taken place.

Wilberfoss.—The new village school has been opened. The Rev. Nicholas Walton, with the principal landowner (Lord Leconfield), and the tenant farmers and tradesmen, formed a committee, and all subscribed liberally towards so desirable an object. The school has a master's residence attached to it. It has been erected from designs prepared by Mr. Whitaker, of Manchester (formerly of Wilberfoss); and the contractor for the works was Mr. Richard Horner, builder, Bishopthorpe. It is proposed to erect fence walls round the school grounds, which with other minor matters required) will bring the cost up to nearly 1,000*l.*

STAINED GLASS.

India.—Messrs. Heaton, Butler, & Bayne have produced some rich heraldic windows for the Indian Government. They are intended for the New University Senate Hall, Bombay.

Cholesbury Church, Bucks.—The east window of this church has recently been filled with stained glass from the works of Mr. Pepper, in the Euston-road. It is of three lights, and illustrates the Nativity, Crucifixion, and Ascension of our Lord.

Beckenham Church, Kent.—One of the windows on the south side of the old parish church has been filled with stained glass by Alderman Wilson. It is designed in the Late Decorated style, and consists of two openings, containing respectively subjects representing the Resurrection and Ascension of our Lord, placed upon blue diapered backgrounds, having draped figures in the foreground. These are surmounted by architectural canopies, based upon ornamental pedestals, and surrounded by suitable borders in the style of the period. The glass is in memory of "Jeremiah Wilson." The whole is designed and executed by Mr. Charles A. Gibbs, of Marylebone. In the same church is placed a two-light window on the north side of the clearstory, the subject being the Return of the Prodigal Son. The figures are placed under canopies, with borders and pedestals of the Perpendicular style. The treatment of the subjects is in keeping with the style. This window was presented by Mr. Charles Lee-Wilson, of Beckenham, son of Alderman Wilson, and was designed and executed also by Mr. Charles A. Gibbs.

Tottenham Church.—Three clearstory stained windows have been recently placed by Messrs. Cox & Sons, of Southampton-street, Strand, in this church, the windows consisting of two lights and a sexfoil, opening in tracery respectively. Six of the eight beatitudes enunciated in the sermon on the Mount (Matt. v.) have been selected to be represented therein:—"Blessed are the poor in spirit," &c., by the Angel of the Lord appearing to the shepherds at Bethlehem; "Blessed are the meek," &c., by Joseph manifesting himself to his brethren; "Blessed are the merciful," &c., by the parable of the good Samaritan; "Blessed are the pure in heart," &c., by Simeon in the presentation of our Lord in the Temple; "Blessed are the peacemakers," &c., by Lot's separation from Abram; "Blessed are they which are persecuted for righteousness," &c., by Joseph in prison. The figures fill up the entire space without any accessary aid of ornament.

St. Clement's Church, Sheepscar.—The west end of this church has, by the kindness of Mr. J. W. Taylor, of Newton Grove, been decorated with a stained window and encaustic tiling. The window is by Mr. Wailes, of Newcastle, who has been employed largely on the windows of Ely Cathedral. It consists of five lights, and is devoted to Old Testament subjects, as the east to fourteen of the last scenes in the life of our Lord. The subjects are "The Sacrifice of Noah," "Abram and the three Angels," "The offering up of Isaac," "The giving of the Law," and "The Ascension of Elijah." The tracery is filled with the emblems of the twelve tribes and the ark in the centre, while in the two large quatrefoils are Moses and Aaron. Beneath the window was a large mass of walling, but this has now been covered with some encaustic tiling. The whole is a memorial to a daughter of Mr. Taylor. A design has been prepared for the east end to give an opportunity for the exercise of liberality.

Doncaster Parish Church.—In St. George's Church, Doncaster, a new stained-glass window has been erected by Sir Isaac Morley, of Beechfield, to the memory of his wife. The artists were Messrs. Ward & Hughes, of London. The window is the great one situated at the west end of the church. It consists of seven lights, each light containing four distinct representations. The design comprises an illuminated chart of the genealogy of Christ. In the main stem are figures of the fourteen generations of kings and patriarchs, from Jesse to the time of our Lord. The window is designed on the principle of the window in Merevale Abbey. The first of the chief lights contains representations of Jesse, David, Solomon, and Rehoboam. In the second are figures of Abia, Asa, Jehosophat, and Joram. The four subjects in the third are Ozias, Joatham, Achaz, and Ezekias. The representations in the fourth are Manasses, Amon, Josias, and Jechonias. In the fifth are figures of Salathiel, Zorobabel, Abiud, and Eliakim. In the sixth are personified Azor, Sadoc, Achim, and Eliud; and in the seventh Eleazar, Matthan, Jacob, and Joseph. Springing from the upper part of these lights, and forming the top row across the window, is a foliage, embracing the subjects of the Annunciation, the Nativity, the Transfiguration, the Resurrection, and the Ascension, the representation of the latter being supported on either side by an angel.

Kippen Church (Scotland).—The decoration of the side windows of this church with stained glass, in harmony with the two pulpit windows recently presented by Mr. James Scott, has been commenced. The centre window in the north side has been filled in. The window is in two lights, and, in conformity with a complete plan proposed for the illustrations throughout all the windows of the church, represents two of our Lord's miracles. In one light is "The giving sight to the blind man," and the other, "The raising of Jairus's daughter." The window was designed and executed by the firm of James Ballantine & Son, Edinburgh.

Church of Fornham St. Martin.—The latest additions to the numerous painted windows with which this renovated church is now adorned, consists of the insertion of stained glass in one of the windows on the north side of the nave, next the chancel arch, in memory of the first wife of Mr. John T. Ord, of Fornham House. The window consists of two lights, each of which contains a group representing one of our Lord's miracles,—in the one case, the healing of the woman who expressed her faith in the words, "If I may but touch His garment I shall be whole"; in the other, the restoration of sight to the blind beggar Bartimæus. The tracery in the heading of the window is filled with angels bearing scrolls, on which are inscribed the words, "Jesus said, come unto me, all ye that labour and are heavy laden, and I will give you rest." Messrs. Wailes & Son, of Newcastle, executed the windows.

Miscellanea.

The Silber Light.—In reply to the question what is the Silber light, we may state that it consists in the inventions of a Mr. Silber, in the hands of a company called the Silber Light Co., for the improvement of lamps and burners, argand, batswing, &c., so as to secure, as far as possible, the perfect combustion of the material, in mineral and vegetable oil lamps, as well as in gas-jets. Air currents are admitted both into the centre and round the circumference of the flame, in various forms of lamp and burner manufactured by the company; and it is said that thus an argand burner, for example, is got which will burn only 5 ft. of gas per hour, or the usual consumption of a common fishtail burner, while yielding a light equal to twenty-one candles. These improvements are secured, not by complicated arrangements, but simply by constructing the burners so that the material is as completely burned as possible.

The Australian Jarrah Wood. — The "Swan River mahogany" is a species of Eucalyptus (*E. marginata* of Smith) which is restricted to Western Australia. It is thus described in the Journal of the Society of Arts for the 24th ult., which, however, does not state whether this species of Australian Eucalyptus is known to possess the singular sanitary properties of the Eucalyptus globulus, of which some account was given in the *Builder* of the 1st inst., or whether it be the same species. Djaryl or Jarrah is the aboriginal name. It is applicable for furniture and every purpose for which ornamental wood can be required, some of it being of the very finest grain, and showing much figure, mottled curls, feathers, and excrescences, a feature peculiar to colonial wood, and highly effective in point of ornament. The tree grows to an immense size, attains a great height, and is very plentiful. None of the neighbouring colonies possess timber of similar character, or endowed with equally valuable properties. The advantages of this timber are its great strength, hardness, and closeness of grain, combined with durability under exposure to either salt or fresh water. It is never attacked by white ants or by the *teredo navalis*. It somewhat resembles the red gum in appearance. It is invaluable to the Western Australians, who use it for shipbuilding, pier, and railway construction, as well as for the interior of buildings and for furniture. It defies decay; time, weather, water, the white ant, and the sea-worm have no effect upon it. The chief objection raised against it is that it is liable to "shakes," the trees being very commonly unsound at the heart. It will doubtless shortly come into more general use, as two companies have been formed for supplying the market on a large scale, one Indian and the other colonial.

The Periodical Floods in Towcester.—An attempt to get rid of the floods which the river Tove produces in the town of Towcester after heavy rains is about to be made by the parochial sanitary committee, who have adopted a plan suggested by a Mr. Savage and recommended by their medical officer of health, Mr. Haviland. This plan essentially consists in converting the winding course of the stream which causes the floods into a straighter channel. At present the water-way meanders in four S-like loops through the town, and the result in heavy rains is that floods and unwholesome damps pervade the town and diminish its healthfulness. Our readers may recollect of Mr. Haviland in connexion with the important subject of the geographical distribution of disease. "Floods," he remarks in his report on the Towcester question, "are the cause of many diseases,—rheumatism, phthisis, and many pulmonary complaints from dampness,—and I was the first to point out that that dreadful disease, cancer, especially in women kills more persons in the districts subject to floods than in any of the other parts of England."

Amalgamation of the Leeds Schools of Art.—Arrangements have been completed for the amalgamation of the Leeds School of Art and Science, South Parade, with the Leeds School of Art in connexion with the Mechanics' Institute. The desirability of this step has for some time been patent to those cognisant with the matter. Messrs. Nussey, representing the South Parade School, have agreed with the committee of the Leeds Mechanics' Institute School of Art, represented by Mr. John Holmes (chairman), Messrs. Hick, Kempe, Sales, Wardman, and Woodcock, to transfer the pupils in the former school, and the latter agreed to recommend their general committee to appoint Mr. A. Stevenson to be head master of the amalgamated schools.—At a special meeting of the general committee of the Leeds Mechanics' Institute, the report of the School of Art Committee was presented, and agreed upon without a dissentient vote. By this union it is anticipated that there will be a great advance made in the position of the School of Art.

Explosion of Gas.—An explosion has taken place at the Kew Gardens Station of the London and South-Western Railway, doing damage to the extent of about 200*l.* It appears that the head porter had, about ten minutes previously, lighted the gas in the waiting-rooms on the up side, and while another porter was standing on a truck lighting the gas outside an explosion followed, blowing out the windows and doors of both waiting-rooms, and destroying the ceilings. The cause of the explosion was an accumulation of gas in the ceilings.

Education of Children in the City.—A public meeting, called by the Lord Mayor, has been held in the Egyptian Hall, at the Mansion House, for the purpose of considering a scheme for the education of children in the City of London, prepared by a committee, consisting of Sir Sydney Waterlow, Sir J. Bennett, Rev. H. I. Cummins, Rev. W. H. Milman, Mr. S. Morley, M.P., and the Rev. William Rogers, and which involved the amalgamation of the ward, endowed, and national schools, with exceptions, and the erection of three large schools, capable of accommodating 1,000 children in each, in the neighbourhood of Farringdon, Fenchurch, and Moorgate, and under one general Board, with the Lord Mayor at its head. Into the minutiæ of the scheme, however, we need not enter, as an amendment, "That, while thanking the committee for their services, this meeting declines to adopt the scheme suggested," was carried in the face of the scheme by a majority of at least 20 to 1.

The Proposed Byker Bridge, Newcastle-upon-Tyne.—Some months ago, designs of a scheme to bridge the valley of the Ouseburn were prepared by Mr. Thomas Parker, architect, showing on the ground-plan three different lines. A roadway of 30 ft. width is shown in connexion with each, or equal to that, at the High Level Bridge; the shorter line shows a bridge of sixteen arches, making a total length, with approaches, of about 1,500 ft.; whilst the other line requires eighteen arches, of 60 ft. span each, and is, with the necessary approaches, about 2,000 ft. in length. The cost of the scheme, calculated on the basis of the shorter line, and for a brick structure, is estimated at about 40,000*l.* The cost of the longer line, it is considered, would be higher in about the proportion of its greater length of approaches. The provisional committee have referred the matter to Mr. Robert Hodgson, C.E. It is hoped that arrangements may be made to enable the promoters to obtain the necessary powers during next session of Parliament.

Opening the Cottage Hospital at Sevenoaks.—The new hospital which has been erected near the Bat and Ball Station has been formally handed over to the general body of subscribers. The total amount promised or paid has been 1,166*l.*, and the expenditure up to the present time, 1,046*l.*, which includes furnishing, gas-fittings, &c. They had, however, to lay out the grounds, and pay for fencing, which would require about 80*l.* more, but they opened free of debt. At present the annual subscriptions promised amount to 69*l.* 10s. 3d., but the promoters estimate that they will require about 200*l.* a year. A vote of thanks has been given to Mr. Hooker for his gratuitous services as architect. The hospital has been fitted with eight beds, and a small weekly payment, according to the means of the patients will be charged.

The Ryde Water Supply.—A report upon the water supply of Ryde, by Mr. George H. Staton, C.E., the borough surveyor, has been printed by the borough authorities. The report relates to the present and future supply, the constant system supply, extension and renewal of mains, fire arrangements, street-watering appliances, and the costs thereof. The surveyor is of opinion that there will not be any difficulty in obtaining any quantity of water for an increased supply, the only question being the one of expense. The cost of the works he proposes, including a new rising main and additional-service reservoir, will, he estimates, be about 6,800*l.*, involving, if borrowed at 3½ per cent. interest, repayable in fifty years, an annual payment of 289*l.* odd, or a rate of about 1¼*d.* in the pound per annum.

Fall of Railway Works at Halifax.—A portion, 30 to 40 yards long, of an immense retaining-wall on the Halifax and Ovenden Branch Railway, now in course of construction, has fallen down at the bottom of Lower Wade-street, Halifax. The wall was built in the bed of the Hebble Brook, and behind it was an immense quantity of earth and other *débris*. The wall had been noticed to have given way, but still the permanent way had been laid behind it. By its fall many hundreds of tons of *débris* were let down into the brook, the waters of which were dammed up behind the mill of Messrs. Cockcroft, silk-spinners, which it was feared they would flood. However, the waters were diverted; but it will be weeks before the damage to the wall and earthworks can be made good, and more may give way.

Casket for Sir A. D. Sassoon.—The gold casket presented by the Corporation, with the freedom of the City of London, to Sir Albert David Sassoon, C.S.I., has been designed and executed by Messrs. Howell, James, & Co., of Regent-street. It is designed in the Renaissance style of Art, and executed in 18-carat gold. The body of the casket is supported by four ornamental columns, relieved by panels in *repoussé* and carved gold, each end inclosing a medallion painted in enamel with crest and monogram. The lid is dome-shaped, and surmounted by the arms of the City in gold and enamel.

Charge against Surveyors of Wandsworth District Board of Works.—Charges against these surveyors of having received certain sums of money from contractors to the Board are being inquired into. A committee of the whole Board to go into the matter has been formed. The Clapham local committee reported the resignation of Mr. Trussler, road foreman of the parish. The Board refused to accept the resignation, as he was one of the persons implicated in the pending inquiry.

Earthquake in Sicily.—An earthquake has taken place in Sicily, after twenty-one days' continuous rain. The sulphur mine of Fra Paolo has been completely destroyed. Its value was 300,000*l.* The shafts, galleries, and aqueducts, in operation for fifteen years, all collapsed. The mines of the Giona Sulphur Company have also suffered greatly. Mount Etna is in eruption, the Tiber has overflowed its banks, and the Pantheon is under water. Vesuvius is showing signs of eruption.

Enlargement of the Camberwell Cemetery.—In consequence of the increasing number of interments in the Camberwell Cemetery, near Lordship-lane, Dulwich, it is about to be enlarged, and for this purpose the vestry have agreed to purchase a plot of land adjoining the upper part of the cemetery. This is in addition to another portion of land which has already been purchased on the other side of the cemetery, with a view of carrying out the enlargement.

A Case against Workmen dismissed.—A complaint made by Messrs. Chubb & Son, the lock manufacturers, against two of their men, for absenting themselves from work, was decided at Lambeth in favour of the defendants. It appeared that these men had been in the habit of keeping "Saint Monday," but as it was admitted that they afterwards returned to their duty, and also that deductions from their wages were made for all absences, the magistrate said that the summons must be dismissed.

Outbreak of Typhoid in Wellington.—Typhoid fever is reported to have broken out in the neighbourhood of Wellington, Herefordshire. No fewer than thirty cases have been traced to impregnation of well-water, and it is said the district is not only almost without natural, but devoid of artificial, means of drainage. Dr. Sandford, who has reported on the outbreak, describes the contamination by sewage as "something fearful to contemplate."

The National Safe Company's Premises. The first stone of this building, of which we have already given some particulars, has been laid. In the course of the excavations for these offices, at the north-western corner of Walbrook, a considerable number of antiquities were discovered and preserved, and are described in a quarto book issued by the Company, some account of which we will give on another occasion.

Patents for Inventions for the Year 1872.—The number of applications for letters patent recorded within the year 1872 was 3,970; the number of patents passed thereon was 2,771; the number of specifications filed in pursuance thereof was 2,734. The aggregate surplus income from patent fees on balance of accounts from the 1st of October, 1852, to the end of the year 1872, amounts to the sum of 1,012,928*l.*

The Artizans', Labourers', and General Dwellings Company.—This Company's new houses, Lecture-hall, and Working Men's Institute, on the Shaftesbury Park Estate, Lavender Hill, Wandsworth-road, were opened on Monday last, November 3rd. Lord Shaftesbury delivered an opening address, and some other gentlemen took part in the proceedings. We will make an opportunity to look over the place quietly.

St. Pancras.—Mr. E. W. Hudson has resigned the office of assistant surveyor to the St. Pancras Board of Works.

New Park for Sheffield. — The Town Trustees of Sheffield decided to purchase twenty acres of land in the outskirts of the town for the purpose of a park and recreation-ground. The cost is 14,000*l.* A few months since the corporation of Sheffield purchased a park at a cost of 18,000*l.*, and the land to be purchased by the town trustees is in close proximity to it.

London Tramways.—Speaking in our last of the number of persons using public conveyances in London, the writer, by an inadvertence, made the transport of 100,000,000 persons at 2d. each amount to 16,666,666*l.* instead of 833,333*l.* In working out the sum, shillings were called pounds.

Want of a Mortuary for Battersea.—At the last meeting of the Wandsworth Board of Works, attention was called by Dr. Kempster to the want of a mortuary for Battersea. The need of such a building is admitted, and it has been decided to refer the subject to the Battersea Local Committee for inquiry and report.

Close of the International Exhibition.—The third of the series of annual International Exhibitions, held at South Kensington, has come to a close, without form or ceremony of any kind. The Exhibition has not been without some useful results.

Close of the Vienna Exhibition.—This Exhibition was closed by two of the archdukes, without ceremony. On the southern terrace, three large military bands played the National Anthem. This was followed by cheers from the thousands of persons present.

Railway Station, Bristol.—The tender of Mr. Jonathan Marshall, contractor, of Plymouth, has been accepted by the Joint Railway directors for the second and main portion of the new general station at Bristol, the first of which he has now in course of completion.

Transit of Animals.—The Royal Society for the Prevention of Cruelty to Animals offer premiums amounting to 400*l.* for improved cattle-trucks. The conditions will be found in our advertising columns, and ought to produce competitors.

TENDERS

For repairs to twelve houses, Union-road, Southwark. Messrs. Jarvis & Son, architects:—

Shepherd	£500 0 0
Lacy	410 0 0
Kent	250 0 0

For erecting and completing new premises, Nos. 12 and 13, King-street, Covent-garden, for Messrs. Barr & Sugden. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Plaxton:—

Downs & Co.	£6,210 0 0
Patman & Fotheringham	5,894 0 0
Scrivener & White	5,390 0 0
Boyce	5,370 0 0
Macey	5,314 0 0
Browne & Robinson	5,131 0 0
Sheppard	4,971 0 0

For repairs to Clifton House, Dalston, and erecting two shops in front of the same, and building two houses and shops adjoining, for Messrs. Puckeridge & Nephew. Mr. Joseph Turner, architect:—

Turner & Son	£3,590 0 0
Devereaux	3,334 0 0
Mann & Son	3,290 0 0
Larke	3,170 0 0
Mustoe & Son	3,048 15 0

For erecting new carpet showrooms, for Messrs. Maple & Co., in Grafton-street East, W. Mr. H. Woodzell, architect:—

Carter & Son	£5,700 0 0
Holland & Hannen	5,687 0 0
Newman & Mann	5,582 0 0
Colls & Sons	5,540 0 0
Browne & Robinson	5,516 0 0
Fish	5,496 0 0
Cooke & Green	5,494 0 0
Longmire & Burge	5,490 0 0
Manley & Rogers	5,476 0 0
Scrivener & White	5,346 0 0

For new church in Mare-street, Hackney. Mr. J. Drake, architect. Quantities supplied by Messrs. Goodman & Vinall:—

Stephenson	£4,422 0 0
Dove, Bros.	4,175 0 0
H. J. Turner	3,950 0 0
C. R. Turner	3,850 0 0
Carter	3,840 0 0
L. H. & R. Roberts	3,793 0 0
Greene	3,793 0 0
Cooke & Co.	3,771 0 0
Greaves (too late)	3,636 0 0
Blackmore & Morley	3,613 0 0
Niblett & Son	3,490 0 0
Norris, jun.	3,475 0 0
Chinnock	3,368 0 0
Robbins & Co.	3,220 0 0

The Builder.

VOL. XXXI.—No. 1606.

The Belgravian Squares.



ALTHOUGH the fashionable neighbourhood of Belgravia is a growth of yesterday, and arose suddenly out of a damp, waste, and uninteresting district; yet to-day many of its streets have been rebuilt by their proprietor. As the boundaries of London are enlarged, the surrounding pasture-land is gradually swallowed up; but in this case only fields "where the robbers lie in wait" were destroyed; for there were no fields of wholesome grass:—

"A marshy spot, where not one patch of green,
No stunted shrub, nor sickly flower was seen!"

Thus writes Mrs. Gascoigne, who has sung the glories of London's most *distingué* quarter, and describes its former state as follows:—

. . . . Belgravia's waste.
Dreary indeed it seem'd, and full of awe!
I saw not much,—but quaked at what I saw!
Spirits of evil seem'd to me to brood
O'er that forlorn, mysterious neighbourhood,
Prowling with stealthy, treacherous step around
Or crouching on the damp, unwholesome ground,
Whilst sounds unearthly,—voices strange and deep,
Fell on my ear, and often scared my sleep."*

The name Belgravia was at first merely a convenient term to express the fashionable squares and streets around Belgrave-square. We remember a letter so addressed by John Britton, writing to the creator of the district, Mr. Thomas Cubitt, which had been forwarded by the post-office to Hungary, and came back to Britton after many days. But the title gradually became recognised, and has now almost pressed out of existence the proper name of the district. Pimlico is one of those place-names for which no thoroughly satisfactory etymology has ever been proposed. The word frequently occurs in the writings of the old dramatists of the sixteenth and seventeenth centuries, where it seems sometimes intended to designate a man, sometimes a drink, and at other times a place. In "News from Hogsdon" (1598), we find,—"Have at thee then, my merrie boys, and hie for old Ben Pimlico's nut-brown." Here is the man. In Robert Greene's comedy, "Tu Quoque," the place is referred to. Sir Lionel Rich says,—"I sent my daughter as far as Pimlico for a draught of Derby ale, that it may bring colour into her cheeks." Nearly eighty years after this last passage was written, the liquor "Pimlico" is mentioned in the "Counter Rat" (1670):—

"Let Hogsdon's scrapers on their base,
Sound fum—fum -rum—from tattered case,
Nor Mean nor Treble now take place,
But Tenor.
A Counter-Tenor is that note.
Tho' easy, 'tis ne'er sung by rote,
But got with wetting well your throat
With claret,
Or stout March beer, or Windsor ale,
Or Labour-in-vain (so seldom stale),
Or *Pimlico*, whose too great sale
Did mar it."

* Belgravia: a Poem. Second edition. London, 1851.

The explanation of this seeming contradiction usually given is that Ben Pimlico kept a house of entertainment at Hoxton, which was a popular place of resort for pleasure-seekers in the days of Good Queen Bess, and that the liquor he sold and the place where he sold it gradually came to be known by his name. Pimlico thus being understood to mean a place of public entertainment, the name would be likely to be given to a house of the same character in another quarter; and a passage in Ben Jonson's "Alchemist" seems to corroborate this view:—

"Gallants, men and women,
And of all sorts, tag-rag, been seen to flock here
In threaves, these ten weeks, as to a second Hogsden
In days of Pimlico and Eyebright."

The first mention of the Pimlico near Chelsea is in the parish books of St. Martin's-in-the-Fields for 1626, and one little point that makes it probable that this Pimlico took its name from the one at Hoxton, is that at both places there was a Willow-walk. It is curious, however, that as there are places in Wales, Lancashire, and the Chiltern Hills, named Piccadilly, so there are Pimlicos in Yorkshire, at Cudham in Kent, and near Clitheroe in Lancashire, and also one at Bankside.

To return to our Pimlico. It lies between St. James's Park, the River Thames, the village of Chelsea, Hyde Park-corner, and the hamlet of Knightsbridge, and appears to have been first inhabited about the year 1680. In 1687 four persons are described in the rate-books of St. Martin's as living in it, viz., the Duke of Grafton, Lady Stafford, Thomas Wilkins, and Dr. Crispin. The Duke of Grafton lived at Arlington House, afterwards Buckingham House, and now Buckingham Palace; and Lady Stafford at Tart Hall, in James-street, Westminster. Pimlico, or Belgravia, is in the manor of Ebury, which belonged to John de Benstede, in the reign of Edward I., and that king granted to the said John, in 1307, a licence to fortify his manor-house. By skipping over a little more than two centuries, we arrive at the time when the manors of Eybury, Neyte, and Hyde were exchanged by the Abbey of Westminster with Henry VIII. for the dissolved Priory of Hurley, in Berkshire. In the Act of Parliament (28 Henry VIII., c. 49) by which the exchange was confirmed, the manor of Ebury is stated as lately in the occupation of Richard Whashe, and a person of that name rented the more considerable part of it known as Ebury Farm (which contained 430 acres) in 1592, direct from Queen Elizabeth. The manor afterwards became the property of the Davis family, who owned it for a long period of time, until 1665, on the 2nd of July, in which year Alexander Davis, the last male of the family, died. His only daughter and heiress, Mary, married Sir Thomas Grosvenor on October 10, 1676, and on her death, in January, 1730-31, the manor devolved upon her husband, in whose family it has remained to the present time, the Marquis of Westminster being the Lord of the Manor of Ebury. The increase of Pimlico owes its origin to the existence within its limits of the residence of the king and queen. George III. foresaw that many persons would be drawn towards the place where he himself lived, and therefore when he was adding a portion of the Green Park to the gardens of Buckingham House, he desired that some fields, which were to be sold for 20,000*l.*, should be bought for him; but George Grenville, the Prime Minister, refused to sanction any such expenditure. In consequence, the building of Grosvenor-place was commenced in 1767, and the king's grounds were overlooked by the dwellers in the new houses, much to his annoyance. Streets running out of the main line were also built, but all these were terminated by high mud-banks, which formed a boundary that few felt any wish to cross. Beyond were the Five Fields, which remained a desolate waste until 1825, when Mr. Thomas Cubitt and Mr. Seth Smith took leases from the Earl of Grosvenor, and built Belgravia.

"What name
Shall fair Belgravia's sons transmit to fame?
Who raised a town where once a marsh had been,
And fenced with palaces our noble Queen?
Thine be the praise, O Cubitt! thine the hand
That being gave, to what thy mind had plann'd:
That caused Belgravia from the dust to rise
Thy might to prove,—thy name t'immortalise!
A fairer wreath than Wren's should crown thy brow:
He raised a dome,—a town unrivall'd thou!"

Of course we are not bound to endorse this last assertion, notwithstanding the regard in which we hold the memory of Thomas Cubitt.

The Five Fields obtained that name from being divided into five parts by the paths that intersected them. The only road across was a trackway for the use of the farmers and gardeners, and this was formed into a public road in the reign of Charles II., when it was found to be a near way from Whitehall to Hampton Court. This road was very insecure, and for many years soldiers patrolled the ground, fifty-two privates and six non-commissioned officers being told off for the service. Half of this number were on duty every alternate night, but when there were gala nights at Ranelagh still more were required. It was always thought advisable for those who wished to cross the fields to wait until a sufficient number (to insure proper protection against the gangs of robbers who frequented the place) were collected together, and then all sallied forth under the guidance of two men who carried lanterns on long poles. This was the King's-road, which is now built upon, and runs from Buckingham Palace wall, through Eaton-square, to Sloane-square. As a strong instance of the dangers of the King's-road, it is sufficient to mention that Grosvenor Bridge was formerly named Bloody Bridge,* and before it was built in a regular manner in the reign of Charles II. was only a foot-bridge, consisting merely of a plank or board. In the Chelsea registers for 1590 there is the following entry, "John Dukes was this year enjoined to make a causie at Bloody Gate," and in *Read's Journal* for May 21, 1733, we find that "on Saturday evening last, February 24th, a servant belonging to Mrs. Temple was robbed and barbarously wounded near Bloody Bridge, in the King's-road, leading from Chelsea. Her Royal Highness the Princess Amelia coming from Hampton Court, hearing a man groaning, ordered her servant to stop; and it proving to be the man above-mentioned, he was taken behind the coach and brought to town; and her Highness ordered all possible care to be taken of him." Still later, in the last century, the stage-coach that ran from town to Chelsea was frequently stopped by highwaymen. The Five Fields are mentioned both in the *Tatler* and the *Spectator*. In the former we read (No. 34), "I fancied I could give you an immediate description of this village [Chelsea] from the Five Fields, where the robbers lie in wait, to the coffee-house where the *literati* sit in council." The notorious Jerry Abershaw lived at a house near the Willow-walk, which was afterwards the head-quarters of those who delighted in duck-hunting and bull and bear baiting. The Five Fields were much frequented by the men and women who took their pleasure in brutal sports, and every Good Friday large numbers resorted to the place to witness the cock-fighting that was always practised on that day. Most of these persons belonged to the lower classes, but a higher order of persons were often to be found here, and these were the duellists. In the reign of Charles I. a duel took place between Lord Mohun and a foreign nobleman. The English lord was killed, and there was some suspicion of foul play. The darkest picture has usually a bright spot of some kind in it, and there is something cheerful to be said even of the Five Fields.

* Faulkner, in his "History of Chelsea," says that this is called Blandel Bridge in old records.

The old herbalists frequented them, and gathered the "wild clary" and the bitter cresses that grew along the river's bank. Swift, when writing in 1711 of his walk into London from Chelsea, says, "the hay smells so sweet as we walk through the flowery meads;" but, he adds, "the haymaking nymphs are perfect drabs." There is still an historical incident to mention which illustrates the retired character of these fields in the reign of Charles I. Hampden, "King" Pym, and other of the Parliamentary leaders of those disturbed times, found it a convenient place for private consultations, and seem frequently to have used it for that purpose. Lord Clarendon relates that he was once dining at Pym's lodgings in company with Hampden, Marten, and Fiennes, when the latter proposed a ride in the fields. Here the conversation turned upon the Episcopacy Bill, which was then agitating the public mind, and Fiennes asked Hyde why he adhered so strongly to the church, and expressed the opinion that blood would be shed before certain proposed changes were submitted to. This, Clarendon adds, was the first positive declaration he had heard from any particular man of the party.

We must now pass on from the past history of Pimlico to the present state of Belgravia. It happened at the time when it was decided to raise a new town upon the site of the miserable "Five Fields" that the formation of the St. Katharine's Docks was projected, and the Earl of Grosvenor, taking advantage of this opportunity, obtained for the improvement of his property the soil which was excavated there.

Belgrave-square (called by Faulkner in his "History of Chelsea," "Lord Grosvenor's new magnificent square") is 684 ft. long, and 637 ft. broad, and is one of the finest open spaces in London. It was designed by George Basevi, and commenced in the year 1825. The detached villas, however, were designed by Mr. H. E. Kendall and other architects. The square takes its name from the village of Belgrave, in Leicestershire, where the Marquis of Westminster has considerable property. The architect's name is prominently recorded on one of the porches on the south side of the square. Although its history is very recent, it can boast of several distinguished inhabitants, and Mrs. Gascoigne writes of it, rightly or wrongly,—

"Nought that is rude nor mean, may venture there."

The detached mansion in the south-west corner was built for Mr. Kemp, of Kemp-town, Brighton, and in 1837 became the residence of the celebrated Lord Hill, who was commander-in-chief for many years. General Sir George Murray died at No. 5, in 1846, and Napoleon III.'s well-known ambassador to the Court of St. James's, M. Drouyn de l'Huys, lived for a time at No. 10. The late Duchess of Kent lived at No. 36 (sometimes called Ingestre House) in 1840; and at No. 16 most of the celebrities of the day have met beneath the hospitable roof of the late Sir Roderick Murchison. Other former inhabitants of this square to be mentioned are Mr. James Goding, the picture-collector; Field-Marshal Lord Combermere; Lord Herbert of Lea; the last of the Dukes of Gordon; and the last male representative of the Scrope family, who published "Days of Deer-stalking," in 1839; "Days and Nights of Salmon Fishing," in 1843; and died at his house here on July 20th, 1852, in the 81st year of his age.

Eaton-square was set out by Messrs. Cubitt, and commenced in 1827, but was not wholly completed until 1853. Its name is taken from Eaton Hall, Cheshire, the chief country-seat of the Grosvenor family. We are accustomed to squares that are not squares, but Eaton-square is one of the most extreme instances of an oblong square in London. It is 1,637 ft. long and 371 ft. broad: thus its length is more than four times its breadth. The public road runs through it from end to end; a road which long remained in a highly unsatisfactory state, but the return of which to cleanliness is celebrated by the poet we have quoted:—

"The square of Eaton—theme of discord dire!—
Has cleansed, at last, its fearful road from mire."

At the east end of the square is St. Peter's Church, designed by Henry Hakewill, and built in 1826, but burnt in 1835, and lately added to under the direction of Mr. Arthur Blomfield.

This square is a favourite one, and has its full share of members of past and present ministries among its inhabitants. The late Ralph Bernal formed his magnificent collection of artistic treasures at No. 75, and died in that house in 1853. In the same year Lord Chancellor Truro died at No. 83. No. 71 was for some years the official residence of the Speaker of the House of Commons before the Palace at Westminster was completed, and here Viscount Eversley (then Mr. Shaw Lefevre), held his levees. Other noted inhabitants to be mentioned, are Lord Alvanley, whose jokes figure so largely in "Raikes's Diary"; Admiral Sir Edward Codrington, the hero of the battle of Navarino; General Codrington, one of the commanders-in-chief in the Crimean war, and the well-known Jacob Omnium (M. J. Higgins), whose tall figure was at one time frequently depicted in "Punch's" cartoons, and was often to be seen in Hyde Park.

There is little to be said of the other Belgravian squares. Chester-square was built about the year 1840, and takes its name from the city where much of the Marquis of Westminster's property is situated. Its appearance is greatly improved by the handsome church of St. Michael, designed by Mr. Cundy.

Victoria-square, a poor little out-of-the-way place, without any enclosure, was built about the year 1836. There is an interest attached to No. 8, as it was the last London residence of the poet Campbell. A statue of the Queen, on a globe, which once stood in the centre of the square, was taken away a few years ago.

Ebury-square is on the site of the old Ebury Farm, and Eccleston-square takes its name from Eccleston in Cheshire, where the Marquis of Westminster has a large property.

We shall close our present account of the Belgravian squares with a notice of Lowndes-square, which more properly belongs to Knightsbridge. In Thomas Faulkner's "Chelsea," published in 1829, the site is described as a meadow, which was let to Mr. Cubitt, by Mr. J. Lowndes, of Chesham. Close by this meadow formerly stood a famous old place of entertainment, known as "The World's End," which was visited by that indefatigable sight-seer Pepys, and is mentioned in Congreve's "Love for Love." The first houses in the square were built about 1836, but the whole place was not completed until 1849. Mrs. Gascoigne, while painting in brilliant colours the whole of Belgravia, reserves her greatest enthusiasm for the square where her own home is:—

"Nor whilst my muse still haunts these favourite bounds,
Shall she forget to sing thy square, O Lowndes!
Harbour of peace, near which the troubled sea
Of human traffic roars unceasingly,
Yet enters not, though day by day it swells
Fiercer and fiercer."

Sir William Molesworth, Sir William Tite, Mr. Brassey, the contractor, and Mr. Leader, once M.P. for Westminster, were inhabitants of the square. M. J. Higgins (Jacob Omnium), already mentioned,—

"A man whom rage and clamour ne'er withstood,
The well-known champion of the neighbourhood"—

lived at No. 1 before he removed to Eaton-square. The value of the houses here has greatly increased. For one of them, on the west side of the square, when first built, the sum of 4,000*l.* with 1,000*l.* afterwards for the improved ground-rent was paid. About a year ago the lease of a similar house on the same side, at the original ground rent, 10*l.*, and with about forty-five years to run, was sold at auction for 9,500*l.*

Colonel Gurwood, the editor of the Duke of Wellington's Despatches, lived at No. 33; and Mrs. Gore, the novelist, at No. 42, Lowndes-street. In 1837, Mrs. Gore was living in Paris, in the Place Vendôme; and Mr. Planché, in his "Recollections" gives a curious account of her mode of literary work. He asked her one day how she managed to write the multifarious works that issued from her pen, and she replied, "I receive, as you know, a few friends at five o'clock nearly every evening. They leave me at ten or eleven, when I retire to my own room, and write till seven or eight in the morning. I then go to bed till noon, when I breakfast; after which I drive out, shop, pay visits, and return at four to dress for dinner, and as soon as my friends have departed, go to work again as before."

At No. 11, William-street, Lowndes-square, lived for many years Lady Morgan, of whom Mrs. Gascoigne writes:—

"Endow'd with manly powers, a woman's quill
Can treat and master every theme at will."

Anecdotes of this lady were at one time very numerous, but the following, related by Mr. Planché, is characteristic. She had invited a large party to dinner, and on the day specified was dressing to receive her guests, when a note was brought to her, a reminder from a lady of rank that she was expected to dine with her that same evening, an engagement she had utterly forgotten. The hour she had named for her own dinner was six, that of the one she was invited to, seven. Her mind was made up in an instant. She finished her toilet, received her company, sat down with them to dinner, and a few minutes before seven informed them of her dilemma, begged them to excuse her for an hour or two, and finish their dinner quietly, she would rejoin them as speedily as possible. Off she drove to her friend's, dined there, and returned before nine, bringing with her the poet Moore, and several other desirable additions to her own party.

The squares have lately been quite eclipsed in splendour by the new houses that have been erected in other parts of Belgravia. A few years ago the late Marquis of Westminster planned the rebuilding of a large portion of his property, and the result has been the erection of the Belgravia Mansions and the immense houses in Grosvenor-gardens, forming a very remarkable neighbourhood.

OLD FASHIONS.

THERE are people who can give a grace to any caprice, and make slaves of the judgments of the rest of the world. Happily or unhappily, however, they are few in number, and generally so well conscious of their own eccentricities, that they are able on the least provocation to become more piquant than ever by their grave, serious soberness. We have little to do here with the head practitioners of these delightful arts,—to whom setting the fashion must be an enjoyable mixture of self-confidence and masterly skill,—and more or less malicious pleasure in the discomfiture of others. But something of the same sort finds its way into most of the occupations that depend on ready wit and good training. Did not Scott, after reading an historical romance in his own manner, say of his imitators, with a proud humility, in the language of Sir Andrew Agnucheek, "Ay; they do well enough, if they be disposed, and so do I, too; they fool it with a better grace, but I do it more natural"? And might not more than one modern architect provide himself with this useful phrase for his occasional consolation, when he thinks he sees but little honour coming to some special manner of his choice?

Perhaps, when people measure acts by a good high standard, there is not much to be said for anything but the following of the dictates of the best and most cultivated judgment, looking at things in bright white light,—without condescension to what is felt to be second-rate, or even lower, albeit pleasant enough and enjoyable in its way. When the formation and exhibition of human character is in question this is always tacitly acknowledged. The high types of heroism and self-devotion in manifestation of more than average virtue actually effect something like what is known in other ways as supererogation. They render it possible for the rest of us,—not formed with souls of so fine temper,—to draw breath in a purer moral air as the result of their victories or struggles.

In spoken truth too, in the forms of high endeavour, this is at once accepted. A great epic or any work conceived on a grand plan, and carried through with all the force of a rare nature, and its resulting rank among the precious things of the earth;—the mastery of the sculptor rendering instinct with spirit the dull matter, the vehicle of his craft, and that for no trivial purpose, but as the result of a thought strong enough to touch all his fellows:—these are but the commonplace examples adduced by all our teachers to illustrate the different scales of human work. There is no condemnation of lesser things, or want of perfect appreciation of them shown or implied in such teaching: the decisions may fairly be come to without that being even suggested. Addressing children the case is stated very simply:—"The horse is nobler than the fly; there is involved in his powers, his aptitudes, his whole nature, his graceful strength or magnificent energy,—something that appeals to a different class of feeling from that excited by the observation of the transparent winged insect, notwithstanding that this last may be found to contain delicate beauties peculiarly its own." The questions as to such natural and comprehensible preferences justified by right reason, and as to the distinction between these and the

hobbies, crotchets, whims, oddities, and all that kind of thing which crop up in buildings from time to time,—causing controversy, and at times it is to be feared making those who are anxious to be deemed judicious demonstrate their grief,—would be settled without difficulty; —if only well-constructed architecture was a little less enduring;—if freak in solid stone or granite did not seem to acquire a seriousness from such embodiment that it could hardly claim before. Only fanatic earnestness condemns the exclusion of trifles from our lives and works,—those graceful trifles, those bits of by-play that are the "business" of art. But there is a show of sound judgment in the wish to confine the eccentricities to comparative trifles, and not thrust them forward as the staple work of the best powers of our time. A leaning towards this kind of serious estimate of any strenuous work may account for some of the strong feeling expressed at times, by those who deserve to be listened to, as to "the degradation of architecture," "the acceptance of *motifs* of well-acknowledged inferiority," "the use of great skill only to revivify for a time or in a case or two the debased Jacobean,—or the inane architecture of the later Stuarts." No one is surprised at the pleasure felt by artists in some characteristics of this kind of work. If one prominent quality more than another marks a good deal of the recent building of mediocre quality of both the modified Gothic and Classic Renaissances,—it is want of breadth. Fritter,—frequently absolutely false in scale,—a love for surface decoration carried beyond mere difference of colour into a desire to teaze the wall areas into broken effects; these and even stronger specimens of the art of making a building busy were practised till it became pretty certain that the time for change would soon be at hand. When it came, as usual the leaders of the revolt were ready and stood out sufficiently in front of everybody else, prepared to carry the old qualities temporarily undervalued into the supreme place,—to make the contrast as forcible as possible. Like all revolutionists, they found that the surest way to make their new position clear was to go to the other extreme,—or at any rate as far as they could with show of reason. It must be confessed that a salutary influence of this sort was needed, and that features and qualities may thus be brought into vogue too long forgotten by those architects who are content always to be followers of others,—possibly with benefit to the future of the art at large. There may be imbibed, and permanent change effected by means of, the love of the quality of repose:—the attainment at any price of that perfect balance and proportion of parts having which a building can dispense with decoration, and still retain distinction of character. Further benefit will probably result from the suggestion of an increased range for wood construction and plaster decoration,—more, one would hope, in the way of assimilation of the spirit than mere copyism of the general forms and details.

Before attempting, however, a little longer to peer into the future, a word may be said as to the interest in things "old fashioned,"—that has also a good deal to do with this curious leaning towards what aforetime was regarded with a lifting of the eyebrows. It is necessary to leap back to the Stuarts before we reach an architecture with anything of a rust about it, and at the same time sufficiently notable, for its inherent qualities, —for fineness and vividness of sentiment, to make it interesting. The work that is in this way nearest to our own time,—most like what our habits require, which also pliable but habit-loving human nature has accustomed itself to regard without a sense of dreary strangeness,—must of necessity possess attractions that,—except under strong excitement of personal or other similar influence, as of eloquent imagination, or under a stirring of the sense of novel experience in one or two highly sensitive minds—could not be found in anything belonging to a more remote antiquity. It is not for Roman art it would seem in this year of grace 1873 that is conceived the feeling of personal nearness, of homeliness and thorough comprehension which is called up by the Stuart work; perhaps far inferior in quality, but when once looked to with an open mind very charming through this sense of ancestral connexion. The over-looking, the fixing the eyes on other times and aims,—which has been hinted at above as no unworthy pursuit of pure and perfected models in the arts,—will account for the fact that for many a year these unaltered and well-looked-at productions have never been seen with the sort of preparation that would allow—or rather without the sort of antidote that would deny, this peculiar power of association its full legitimate influence. The observant Hans Breitmann, writing of Leyden and its air of sixty years ago, searched in his noble heart and found the sentiment:—

> "They may dalk of ancient hishdory
> Und for romantisch seek,
> De ding that mofes most teeply ish
> Old-vashioned,—not antique."

All the above has been said on the assumption that for no long time,—for no longer, in fact, than till now,—will the merely imitative phase last, and impress its peculiarities on modern work. The stage at which the ready-witted are learning as quickly as they can to practise a newly-sanctioned game is never a very interesting one. Apparently all that has been said on Imitation of the Past, as well as all the concord of sentiment about it, proves really of little avail against the constant action of the forces that are so certainly making mere eclecticism in the future a course easy to the consciences of the easy-going. Perhaps, in truth, this process, by exhausting the various opportunities for imitation, is thus clearing the ground for a more uniform and consistent effort to drop the archæological manner, and to design simply at first hand,—disregarding no form that was used in other days for special purposes, but using it for any purpose that may seem fit;—disregarding no teaching as to the right end and means that may be learnt in careful training by precept and example.

The present tendencies of the Gothic Renaissance,—seemingly fast winning its way, even if it had not already won it in the view of many an observer even a few years agone,—might well cause to any one who had not seen the course of events in the interval a slight shock of surprise. The pure mediævalism of the best dates was then, by an agreeable fiction, stated to be the only manner at all suitable for English domestic and civil buildings. Not by the contests of sworn foes of the movement,—not as the result of persuasion from without,—but apparently as the result of steadily advancing progress within, has noteworthy change shown itself in a section of one body of the fighters of the Battle of the Styles,—and made itself patent to all. There are Abdiels, it is true, and perhaps more than just now one is inclined to give credit for, who do not feel disposed to leave their flag and amalgamate with their opponents,—who cling to the cause that has won them personal honour, and that, at one time at least, made them earnest in proportion to the excitement of all their combative feelings. The manifestation of a most accommodating willingness to be on both sides shown and persisted in by a strong partisan in the case of the Home and Colonial Offices and the other buildings of that bulky pile must have had no small moral effect,—towards weakening the spirit of antagonism and of self-assertion that got from most of us some reverence,—men are wont to believe in the believers in themselves,—even if our eyes were not wilfully kept half closed, so that the other side might be kept out of view.

Perhaps, after all, however, the future had best be left to work itself fully into form, before prophets can perform their proper function, and explain its meaning by the lights of insight and the past. In such,—in architecture as other things,—changing times, and with such easily changeable materials, there would be more honest confidence required than prudent men would like to confess to, for venturing to outline even the immediate future of architectural development. It will be found, however, a great addition to the comfort with which changes are on their appearance viewed to have below the surface of the thoughts confidence in the new possibilities lodged in the womb of change. The transitional character impressed on our architecture considered as a whole,—the want of definite aim (or, at any rate, of the same aims at the same time),—among the practitioners, might lead to dissatisfaction, did we not feel that there is a counteracting influence in the possession of an honest pride in the subtle minds and trained powers of the considerable number of workers to whom excellence of high kind, even if not the highest, is possible under such strange calls for their versatility.

A real belief that good work is a thing confined to no special period of art-history,—but found equally in its kind through all the ages, will prevent any one from indulging a non-catholic spirit. The recognition of the special charms, and even the special possible benefits to the art, of certain new-revived-old features and manners, will prevent a taint of bitterness mingling with the cheerful recognition of the inevitable, as far as to-day is concerned when in this connexion we use the words,—"The thing that hath been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun." Practical optimism is, after all, the possession of the impression that things are not violently different from what personally one would expect them to be, and that all future movement will bring things nearer to our wishes. The perfect art of the future must apparently gain its character through the decay of the influence of the whole past, and the union from many sources of forms that have been triumphantly perfected in different ages and climes, handled with a new spirit.

Not, however, that one would, even when in so contented a spirit, pass without notice everything that is inharmonious with such prevalent *couleur de rose*. Some constraint must, if necessary, be put on amiability, if only to indicate one of the little blemishes in this apparently best possible state. Reverting to the beginning of these notes, it will be found that the imitator is introduced, as the somewhat ridiculous pupil, aping with imperfect capacities the manners and performances of a thoroughly capable leader or master. There is another way of looking at the matter, which does not present the injured follower in quite so innocent an aspect. Instead of being penetrated with the fine qualities of his pattern, he, sad to say, actuated by a less worthy motive than the sense of reverence, sometimes aims only at a clumsy mechanical copy of what he found brought into visible form through the real talents, the learning, and hard work,—the genius, it may be,—of another. It should be considered out of the way, instead of being quoted as an average proceeding, for an architect to convey his design into his capable assistant's pencil by the use of the magical formula, "Make some sketches in the X Y style." X Y is not an algebraical quantity, though, of course, an unknown one as far as information is derivable through these lines. He is, however, really a well-known and popular architect, with some "debased" sympathies; and a large part of his success with apparently untractable materials is due to his personal power, which is so marked that no one would rank him as a mere imitator even when the sources could be traced from which he had drawn suggestions. Less skilful and less trained hands, coolly copying at once these special designs, with no thought of the preliminary acquisition of a right to "convey," will vulgarise the peculiar forms, and drive away the spirit of delight in them. Cannot each man's special hunting-ground be left mainly to himself, especially when he has won his way to it by something far more his own than even Ancient Pistol's useful moral axiom,—Steal! foh! a fico for the phrase"? Cannot it be hinted also to the less accomplished, as we are talking of corantos danced on horseback, that they should make themselves aware of the small amount of dignity, and the many chances of tumbling that may fall to the lot of those not truly to the manner born?

THE "PRINCIPLES" OF ARCHITECTURE.

In the course of a discussion which followed the reading of the Presidential address at the opening meeting of the Institute of Architects last week, the Marquis of Westminster took occasion to lament the obstacles to the progress and advancement of architecture occasioned by the ignorance and indifference of the general public on the subject, and urged among possible remedies for this state of things that "some knowledge of the principles of architecture should form part of the education of our public schools." We have too often called for some more definite and distinct recognition of architecture among the subjects comprised in higher education than is at present obtained, to be supposed to be at all lukewarm in regard to such a subject. But the suggestion of instruction in "the principles of architecture" induces the reflection, what are those principles, and in what tangible form and under the sanction of what authorities could they be crystallised "for the use of schools," as the title-pages of the Latin and Greek exercise-books have it.

The question really is not quite so easily answered

as might at first be supposed. To teach abstract principles of a practical art to those who are not intending to practise it is a somewhat vague and indeterminate undertaking in most cases, and would certainly not prove least so in regard to architecture. One might, no doubt, teach some very definite principles, if we could make up our minds which to select. We might give text-books of the venerable and revered "five orders," with their proportions in modules and intercolumniations; and it did happen to us to discover not long since, on the counter of a "repository of arts," a small new book of educational diagrams and descriptions with this very object, and which affected us much as the aspect of a re-animated mummy might be supposed to do. Or we might back the "Seven Periods of Gothic Architecture," stifling a kind of discomforting conviction that these respectable divisions of the study were destined to follow their five brethren of the elder branch of the architectural pedigree. Or should we rather strive to inculcate, in comprehensible words, that habitude of design which is now vaguely called "Gothic feeling," and which appears, with those who most delight in the term, to signify in the main the reduction of everything, from the town-hall to the lodge, to as nearly as possible the likeness of a barn? Or, if none of these are catholic enough, by what end are we to get secure hold of our principles, so as to apply them successfully to the enlightenment of the British schoolboy?

The fact is that "principles" is a vague expression, and if we attempt to define what is really meant by it in this case, or to find a definite meaning for "principles of architecture," it will appear that for educational purposes this can scarcely be done in any concrete form. What we really think of as principles of architecture are those general views of the relation between design and utility, and between design and material, which arise upon an intelligent study of the best styles of architecture, combined with the practical working out of new structures. It is really impossible to tabulate these for a scholar, and to put a theoretical student of architecture on the same footing, in regard to the comprehension of the art, with a practical one. Nor is the fact that this is so any disparagement to architecture, as inferring it to be a study with no real definitions or boundaries. We do not start with the idea of principles in other branches of education. We do not teach a boy the principles of Latin poetry, but we teach him to read Horace. We do not introduce the study of drawing or music into our schools by teaching their "principles." We teach a boy to draw by placing examples before him, and encouraging him to study and copy, either from nature or from other drawings. And most painters would be very much at a loss if they were asked to define the principles of their art. Such principles as these are, applicable to painting in general, are apprehended through the study of various schools of painting combined with the practical study of the method of delineation. In short, what is wanted in a general educational system is a study not of such vague generalities as principles must result in, but of the *history* of the art, combined with some knowledge of its practical problems; and it is quite possible this is what the marquis intended to ask for. The theory of architecture unfolds itself on a study of the history of its principal phases, and the manner in which one was developed out of another (a study which may be very much facilitated, no doubt, by an able concurrent criticism), and on a knowledge, combined with the historic study, of the principal mechanical problems involved in construction with various materials. The relation of design to material becomes almost self-evident when the history and the mechanics of architecture are studied in reference to one another.

The "history of architecture," then, it is, rather than the "principles of architecture," which should form a part in the curriculum of schools and colleges: and thereby will the principles become evident for those who have the faculty of comprehending such things; and for those who have not, teaching of any kind is useless in matters of this nature. But the faculty of comprehension in regard to the forms of art expression may to a great extent be developed by the study of their productions historically: and a better security for a wide eclecticism (the true de-ideratum for the amateur) is secured by this means than by any formal attempt at inculcating "principles." There is but too much danger of teachers mistaking their own predilections, or those of a sect to which they have given their adherence, for immutable and incontrovertible principles. Historical study precludes, or at least offers the best antidote to, this kind of bias; for if the historical facts given are mainly true, and their bearing be rightly apprehended, the "principles" may be trusted to take care of themselves. Nevertheless, we are equally obliged to the Marquis of Westminster for the tendency of his remarks.

THE "CRITERION," PICCADILLY.

In our volume for 1871 we published the selected design for this building, and plans of the principal stories.* Previously in the same volume (p. 220) we had given some particulars of the competition in which the design (by Mr. Thomas Verity) had been chosen. In July of that year the tender of Messrs. Hill, Keddell, & Waldram, for the basement and works to party-walls (7,995*l.*), was accepted, and on Saturday last, the building, to all intents and purposes finished, was inspected by a large number of persons invited by the proprietors. No one who has seen it and knows anything of such matters will be disposed to deny that a very large amount of work has been done in the time, especially when the underground difficulties and the legal obstructions, touching light, air, and party-walls, are remembered. Messrs. George Smith & Co. are the contractors, Mr. Chaney being their foreman of works. Mr. Bare was the architect's clerk of works. The sum originally named for the cost, exclusive of decorations and fittings, was 20,000*l.*, afterwards raised to 25,000*l.* The sum spent, it has been stated by the proprietors, is over 80,000*l.*

We repeat some of the descriptive particulars. The Piccadilly façade is of Portland stone, in the style of the French Renaissance, and is divided into centre and wings; the principal feature, and a fine one, being the deeply-recessed arched doorway, which rises through two floors, and is 16 ft. wide. This archway is filled in with glazed framing supported by two pairs of bronze columns (modelled by Mr. Kremer, and cast by Messrs. Masefield & Co.). The side entrances lead respectively to the luncheon buffet on the left, and the theatre on the right, and are decorated on front and reveals, with figure-subjects of an appropriate character in high relief. Placed in niches on the next story are four figures, 6 ft. in height, representing the seasons. The range of windows on the upper floor, which light the grand hall, are also decorated with sculpture in the spandrels. The whole of this sculpture has been exceedingly well executed by Mr. Ed. W. Wyon.

Above the main cornice is an attic, which marks the position of the dome in the great hall, and surmounting the whole is a Mansard roof.

The Jermyn-street front is executed in brick, with Portland stone dressings, with the exception of the ground floor, where the external wall for part of its length is supported by detached granite piers, while another wall, faced with terra-cotta, is built about 5 ft. back, to form an area for the purpose of lighting the basements. The entrance to the building on this side is by an arched doorway, flanked by granite piers, leading to a small vestibule which communicates with a staircase, and gives access to all parts of the building.

The kitchens and serving-rooms are over each other, and situated in the centre of the building, immediately under the dining-rooms, for economy of service. The retiring-rooms, again, form a distinct block, with the exception of the ladies' room, where their convenience and privacy have been the first consideration, and where every requisite has been provided for their comfort.

The decoration shows a very large use of hand-painted glazed tiles, effectively arranged. These and other painted decorations have been executed by Messrs. Simpson. The figure-subjects were painted by Mr. A. S. Coke.

From the central vestibule access is obtained to the dining-saloon on the right hand, 80 ft. by an average width of 27 ft.; and on the left to the refreshment buffet, at the south end of which is the smoking divan.

The grand staircase gives access to the ball-room, through a vestibule. The ball-room, 80 ft. long by 50 ft. wide, and 35 ft. high, occupies the whole width of the building fronting Piccadilly, and is lighted by a range of windows on the north side, and a dome, 25 ft. in diameter, in the centre of the ceiling. The decoration of this great room seems to us less successful than that of some other parts. Near this is the ball supper-room.

The floor above is devoted entirely to culinary purposes, and here Messrs. Benham & Sons, Wigmore-street, have well fitted up three distinct kitchens, each with its serving-room, larder, vegetable kitchen, and scullery.

Descending again to Piccadilly, on the right hand is the entrance to the balcony and orchestra stalls of the theatre, by a staircase decorated with painted tiles and mirrors. The theatre, which is all below ground, will accommodate about 800 persons. The decorations are white, blue, and gold, and the general effect elegant.

The entrance to the amphitheatre stalls and parterre is from Jermyn-street; and here, too, is the entrance to what is called the Grill-room for chops and joints for hasty visitor.s

Warming and ventilation are to be effected by forcing air through channels in which are placed hot-water coils; these channels communicate with flues in the walls, and by means of these flues the air is to be distributed to all the rooms, thereby ensuring an equal temperature all over the building. Mr. W. W. Phipson, C.E., has superintended this part of the work, and by-and-by we may be able to test the efficiency of the arrangements.

The engine and boiler room is on the lower basement.

Let us add that the fireproof construction throughout is by Dennett & Co.; the water supply, hydraulic lifts, pumps, &c., are by Turner & Co.; and the marble mosaic floors by Burke & Co.; the parquetry floors are by Arrowsmith, Steinitz, Oppenheimer, and Davenport; the gas-fittings by Verity & Sons; the lavatories and sanitary fittings, by Geo. Jennings & Co.; the ornamental ironwork is by Perenne, of Paris, Macfarlane & Co., and Hodkinson & Co.; and the furniture by Sexton. The stage was fitted up by Grieve & Son.

The original design, as shown by our engraving, has been for the most part adhered to: where change has been made in some of the details, it is not an improvement; as, for example, the substitution of upright panelling for reclining figures in the spandrels of the great central archway.

* Vol. xxix., pp. 526, 527.

THE NATIONAL ARMOURY.

Robert, Baron Zouche, who died at Parham Park, Pulborough, Sussex, on the 2nd of August, gives permission to his son in his will, just now proved, to sell his collection of ancient arms and armour, the first offer to be made to the Tower of London. The collection includes, if we remember rightly, some interesting specimens. Who is there at the Tower with knowledge and authority to act rightly and wisely in such a case? We have strong reason for believing the answer must be,—No one; and that the national collection, which ought to be carefully tended and perfected on all available occasions, is still discreditably neglected. If this occurs under a Prime Minister like Mr. Gladstone, who is known to have a feeling for history, antiquarian associations, and art progress, in what quarter can we look with a hope for better things? The priceless memorials in the Tower are still treated simply as "stores," and are exposed to such dangers from fire, water, and ignorance as the most ordinary stores would scarcely be subjected to by wise managers; and all this, too, while it brings money enough of itself to set everything right.

THE ARCHITECTURAL MUSEUM.

In the report which has just been published, the council say the subscribers to the institution may rest assured that their support is accorded in aid of a great and thoroughly useful work, which has culminated in the successful establishment of classes for modelling and drawing. To start these, Messrs. Brindley and Redfern volunteered their aid, and Mr. Francis Child has kindly given his services as honorary secretary of the classes.

From a report presented by him to the council in May last, it appeared that as many as sixty art-workmen had paid the entrance-fee of 2s. 6d., and had attended the classes as frequently as the constant removals incident to a change in their working localities would permit.

"It may safely be asserted that never until now

has so large a number of *bond-fide* art-workmen been brought together under the beneficial influence of so fine a collection of objects of study for the purpose of receiving instruction of the highest order in the very detail of their craft, and for so insignificant a payment as 6d. per week.

These remarks bring the council to another important and equally *practical* subject,—*i.e.*, the provision of an annual income sufficient for the engagement of a paid instructor, now that the classes, by the self-sacrifice for a period of six months on the part of the gentlemen above-named, have been successfully inaugurated."

A fair number of students have, we believe, presented themselves for the present session.

"HOMES IN HOMERTON."

Our remarks under this heading have been received by the local press in a proper spirit. The *Hackney Express*, on reprinting the article, writes,—

"An article in another column presents in forcible terms some phases of the sanitary and social condition of Homerton. In reproducing it in our columns, we wish particularly to impress the matter upon the attention of the Hackney authorities, especially so in reference to the medical officer and the sanitary staff. Homerton is indeed a neglected part of the parish, and one which has not yet received a fair share of attention. It requires a good deal of 'opening up,' and offers a wide field for such as give their attention to street improvements. As to its social condition, an old inhabitant declares to us that it is one of the most barbarous districts on the face of the earth. 'Talk of wild Caffirs and Red Indians,' says he; 'why, the purlieus of Homerton will produce far worse specimens of humanity. *These* are the heathens who want Christianising.' Possibly our friend's estimate is rather extreme; but there can be no doubt that the district would bear a good deal of attention. We shall probably have more to say upon the matter."

It is to be hoped the matter will not end with talking: endeavours should at once be made to remove some of the evils complained of, and alleviate the present condition of things.

SANITARY ADMINISTRATION.

At the South-Western Poor-law Conference, held at Exeter, on the 21st ult., Dr. Ackland, of Oxford, read a paper on this subject, in course of which he said,—If we were to listen to the criticisms which are made in various quarters, we might imagine that the arrangements for public health in England are the worst, the laws the most mischievous, and the administration the most benighted. Probably the fact is that public health administration is more advanced in England than in any other country, and that the sanitary laws are more intelligently progressive now than at any previous period of history. Nevertheless, it must be owned that under the most favourable aspect there remains much to be done; there are blots to be removed, anomalies to be rectified, irregularities to be corrected, additional powers to be obtained. . . . . The Sanitary Acts of 1871 and 1872 appear to me to have taken the course best calculated for a speedy solution of most of the questions. 1. They have adopted the principle of having one central sanitary authority, under one Cabinet Minister, thereby terminating the conflict of independent departments in London. 2. They have placed every spot in the country under one authority, and only one. 3. They have required the appointment of an inspector of nuisances and a medical officer of health for every district in the country. 4. They have given power to the central authority to appoint, as they are required, with the sanction of the Treasury, whatever number of experts in any subject-matter the Board may find to be necessary. But the Acts have not done certain things. They have not required that old administrative areas shall be compulsorily broken up, without experience as to what areas are the best for a permanence. Nor that existing counties or unions should be forced to appoint sanitary officers with special qualifications to discharge duties whose very nature is uncertain. Nor that the offices created as being the best under existing and transitional circumstances should be permanently maintained after experience shall have shown that some other are better suited for the permanent Public Health organisation of the kingdom. The efforts which the guardians throughout the country have been making in the last year will throw light on the real wants of the country, will have educated themselves to an understanding of those wants, and will, I make no doubt, result in a most intelligent public opinion, as to what, apart from all theory and fancy, will conduce to the physical well-being of the people. I am not prepared to say as yet the task is accomplished.

The Sanitary Commission having made careful inquiries into the arrangements of the various public departments, and having taken into consideration the great number of inspectors already employed by the Central Government, determined to use, as far as was consistent with efficiency, the extensive medical organisation of the Poor Law Board. The President of the Local Government Board starts, therefore, with the whole Medical Staff of the Privy Council, the Inspectorate of the Poor Law, the legal advisers of more than 600 unions, and about 4,000 medical practitioners. This was fairly described as "a big Health Army." The fitness of the agents here enumerated, and the completeness or incompleteness of their organisation will be more fully appreciated if it is borne in mind what departments are comprised necessarily in the office of the Health Minister. There are at least six—Legal, Medical, Statistical, Engineering, Relieving Destitution, Parliamentary. Under each of these six distinct departments there are subjects to be considered too numerous for even recital on this occasion.

SANITARY REPORT ON SOUTHWARK.

The annual report of Dr. H. Bateson, the medical officer of health for the parish of St. George the Martyr, Southwark, for 1873, has been issued in a printed form.

The officer of health congratulates the authorities that they have got rid of one pest, the small-pox, which has been epidemic for two or three years, and have not, as yet at least, had any other inflicted on them. The Public Health Bill, he considers, bears traces of the results of much labour and thought, and shows that the Government is no longer heedless of the health and comfort of the people. Still there is much in the passing of it, he thinks, to abate one's ardour in its favour. The Adulteration Act is next alluded to, as a great desideratum, adulteration having reached a most shameful extent, injuring alike the health of the purchaser and the morals of the seller.

On the subject of fever in the abstract as a possible epidemic, Dr. Bateson says:—

"In like manner as I brought before you the destructive powers of small-pox when uninterfered with by vaccination, so I will place before you fever as it rages in localities where sanitary measures are neglected. In the beginning of the year 1871 fever was epidemic at Buenos Ayres, the effects of which were similar to those of the plague in London, only that the mortality was actually higher. It commenced in the low and thickly peopled districts. It spread rapidly and with ever increasing virulence. Through the hot months of February and March the death list grew longer and more sad, till early in April the climax was reached, for in one day there were 700 deaths out of a population (reduced by flight and death from 200,000) of 70,000. By the middle of April, not more than 30,000 were left in the city: of this number it was calculated that 7,000 were ill of the fever, and there were still 300 deaths occurring daily. . . . . This city of 200,000 souls was without a drain. Cesspools were dug in the courtyard of every house, through the soil until water appeared, the depth of which averaged about 26 ft. This filled, another was dug close by, and so the process went on. The water was drawn from wells into which the cesspools drained (A. D. Carlisle, B.A.). Means more fitted to bring about these terrible results could not have been adopted. The mere money loss from this epidemic would have built a city of marble, and with such sanitary appliances as the world must wait long centuries to see."

New Masonic Hall, Derby.—This building is being rapidly erected in Gower-street. On Saturday last the trustees placed a memorial tablet in the banqueting-room. This ceremony was performed by Bro. J. Smith, P.P.G.J.W., the Mayor of Derby, Chairman of the Trustees. The stone was engraved and the initials painted in, and it is a permanent record of the originators and trustees of the enterprise. The mayor hospitably entertained the trustees, architect, and builder, at dinner. The mayor has been a large donor to this new institution in Derby, and contributed 400*l.* towards the building fund.

SANITARY IMPROVEMENTS AT STRATFORD-ON-AVON.

At the Leamington meeting of the Municipal Surveyors' Association, already mentioned,—Mr. T. T. Allen, borough surveyor, Stratford-on-Avon, read a paper on sanitary improvements in that town. Premising that the town was well known throughout the civilised world as the birthplace, the grave, and the home of Shakspeare, he remarked that it was a very ancient town, and had been traced to a period of 300 years before the Norman conquest; and it derived its name from being on the great north road from London to Birmingham, which passed straight through a wide part of the river Avon close to the town. Soon after the passing of the Public Health Act of 1848, and mainly through the exertions (and in the face of much opposition) of the late Dr. Thomson, a name well known in Leamington, who was then a resident at Stratford-on-Avon, after stating the various improvements which had been effected, he mentioned that Mr. Knott, the district auditor, at the last audit of the Local Board accounts, said that he did not know any town where so many improvements (considering the size of the town) had been carried out, at so moderate an outlay as at Stratford-on-Avon. A system of sewerage and main drainage had been carried out, and the whole of the private property throughout the town connected with the sewers. The outfall sewer at present conveys the sewage into the river Avon, at a considerable distance below the town, and, as the population was small, this did not cause much pollution of the stream. This, however, would not long be continued, as the Local Board were anxious to obtain the best information as to the disposal of the sewage of towns, and the most economical and least offensive method of dealing with the matter, on which there are so many conflicting and opposite opinions at the present time. The attention of the Board had recently been directed to the surface repairs of streets, which he considered might well be classed as sanitary improvements. Within the past five years the Board had newly paved nearly every street in the town, and had expended about 5,500*l.* on the work. The main streets had the footpaths laid with York stone, and the others with the best of the old paving stone and blue bricks. The result had been that the appearance of the town had been greatly improved, and from being one of the untidiest it was now one of the cleanest in the kingdom.

ST. MARY'S CHURCH, NUN-MONKTON, YORKSHIRE.

This interesting church, after being closed for two years, was re-opened on the 16th October, with great ceremony, by the Bishop of Ripon, accompanied by the Dean of York, and about thirty of the clergy of the diocese.

It was built in the twelfth century as a church for a Priory of Benedictine nuns, and was endowed by William de Arches in the reign of Stephen, a descendant of Osbern, to whom the Conqueror granted the estate. The names of some of the prioresses are recorded down to Johanna, the last, who surrendered the priory to Henry VIII.; from which time to the present this ancient and venerable church has suffered various degrees of neglect and injury.

In 1869 Mr. Cranhall, the patron of the living and occupant of the adjoining mansion, pulled down and rebuilt the offices which occupied the site of the chancel, at a cost of 1,300*l.*, and soon after the new chancel was commenced. Most fortunately, the wall that formed the eastern end of the reformed church had buried, and thus preserved the rich fragment of what was evidently the beginning of the choir, showing great varintion in detail from the rest of the gallery. This has been carefully followed. Two windows were continued on the north side, and one on the south, and the gallery carried all round the building. Below, on the north side, an organ-chamber is obtained, opening into the church by an arcade of three arches, with clustered shafts of polished granite. With the organ-chamber is connected the vestry, under which is the warming-chamber. These additions are contrived so as not to block up any window, or otherwise impair the continuity of the triforium gallery. On the north side also is the credence-table; on the south, the fragment of the deeply-recessed Norman door has been carefully followed, and the door now gives access to the chancel. Within the sacrarium are placed

the sedilia, in three compartments, and the piscina.

The east wall, and part of the others, have, owing to the existence of cellars, been carried down to a depth of 11 ft. below the nave floor. The east wall is 4 ft. 6 in. thick, the others 4 ft. above the plinth. The three-light window corresponds,—with somewhat richer details,—with the exquisite window of the west front, externally.

Internally the east wall exhibits an open arcade of five open lancet arches, rising with the gable, the three centre ones being opposite the east window. The openings of the arcade have massive and deeply-recessed jambs, with shafts in two orders, of polished Frosterly marble, with the dog-tooth enrichment that characterises the west windows very freely introduced.

The reredos, which is lofty and prominent, is of Caen stone, in five compartments. The centre one, of greater width and height, has a cinquefoil-headed arch. The side compartments have a trefoil-headed arch. They are divided by clustered shafts of polished serpentine marble.

The chancel, which is 33 ft. deep and 27 ft. wide, has two rows of seats on each side, and reading-desks for the clergy and choir.

The nave, which is 50 ft. 7 in long, is separated from the choir by a low stone screen or septum, pierced with cinquefoil openings, with gates of ornamental ironwork. There are two rows of seats, of oak, which are all free and open. The centre passage, 7 ft. wide, is laid with Godwin's tiles, of a plainer pattern, with square panels of stone let in at intervals, to indicate the position of former monuments. The brasses and other monuments of no great interest have been preserved and refixed, and two monumental slabs found below the floor, with foliated crosses incised, have been placed on end at the west of the church.

The whole of the inside of the church has a layer of concrete, 1 ft. thick, spread over it. While sinking for this another base moulding was discovered to the piers, showing the floor to be about 5 in. below the existing one. This ancient level has been preserved, though it entailed a step down at the west door. This doorway has been inclosed with oak framing and inner folding doors provided, and over it is an open oak singing-gallery corbelled out to obtain space, which is somewhat contracted for the singers.

The restoration generally has been carried out by Messrs. Weatherley & Rymer, builders, of York, and their foreman Mr. Plows, under the superintendence of Mr. John W. Walton, of London, architect. The reredos and pulpit were executed by Mr. Beall, of Newcastle-upon-Tyne, who also completed the whole of the carving to the church.

The enlarged building is intended to provide accommodation for 217 persons, being an increase of ninety over the former building. The cost, including the painted windows, has been about 5,000*l*.

MEMORIAL SCHOOLS FOR BRIGHTON.

The foundation-stone of Schools to be erected, by the congregation of St. Margaret's Church, to the memory of the late Rev. Edmund Clay has been laid. The design for the schools (which are situated in Queensberry-street, facing west, towards Regency-square), was chosen from twenty in a competition confined to Brighton and Hove architects; the selection being made by the Memorial Fund Committee, assisted by Mr. G. G. Scott. It is by Mr. George Tuppen, of Brighton, and consists of two schools,—one above the other,—with a covered playground in the basement, 31 ft. by 28 ft. The front elevation is in the Gothic style of architecture, and each floor is lighted by three bay mullion and transom windows, with moulded arches; the centre one having three lights, and the window on each side two lights. The windows on each floor are immediately over one another, and correspond in every particular, with the exception of the centre window on the upper floor being higher, and having tracery in the head. The division between the two floors is marked by a moulded brick cornice and stone fascia (3 ft. 6 in. deep), in which is cut the inscription, "Edmund Clay Memorial Schools"; the cornice and fascia being continued over the entrance portion of the building, which is lower than the schools proper, and covered with a flat, finished by a parapet. The entrance, which is on the south of the schools (but also facing west), has two doors divided by a lancet-shaped window; and it is beneath this window that the memorial-stone is placed.

In the gable is a three-centre ventilator, surmounted by a bell-tower. The front of the building will be red kiln bricks, with Portland stone mullion and dressings, and a continuous label moulding running over the arches of the windows on the second floor. The first floor is intended for the infants' school, 37 ft. 6 in. by 34 ft., to accommodate 150 children; and a class-room in connexion with it, 34 ft. by 12 ft., will be for fifty little boys; the second floor being set apart for the girls' school, 51 ft. by 34 ft., capable of accommodating 200.

The contractor is Mr. Bruton, of Brighton. The Industrial Girls' School (adjoining the Memorial Schools on the north) will be used as a school for boys, thus concentrating the whole of the educational institutions in connexion with St. Margaret's Church.

SCHOOL-BOARD SCHOOLS FOR LONDON.

The new schools in Essex-street, Globe-road, Mile-end, were opened on Monday in last week. They provide accommodation for 1,137 children. The infants' school and class-rooms are detached, and an old building has been partially utilised for them. The junior and senior boys and girls' schools, with the accompanying class-rooms, are on the first and second floors of the new block, the ground-floor portion forming a covered playground. Rooms are provided for the masters and mistresses, and one for the managers. There is also a room specially designed to be used for drawing-classes.

The whole of the building is heated by hot water.

Messrs. Cooke & Green, of Napier Works, Blackfriars, are the builders, and the hot-water apparatus has been fitted up by Mr. H. Watts, of St. John-street, Smithfield.

Mr. A. G. Hennell is the architect.

A Board school has been formally opened in Hamond-square, Hoxton. The school stands in the centre of a very populous and poor neighbourhood, and is constructed to accommodate 375 boys, 388 girls, and 376 infants, making a total of 1,139 children. The rooms are spacious and well ventilated, and one novel feature is a covered playground for the girls, on the roof, and of a height of 41 ft. from the ground. This arrangement enables the children to breathe comparatively fresh air. The building was designed and carried out under the superintendence of Mr. E. R. Robson, the architect to the Board. The total cost of the building was about 6,144*l*.

At the last meeting of the Board, Mr. C. Reed, M.P., called attention to the satisfactory paragraph in the finance committee's report relative to the statement of the architect of the Government that the Board's estimates were very moderate, being at the rate of 10*l*. per head, or considerably less than in most other towns. The Rev. J. Rodgers asked whether that sum included the site. The Chairman said not the site, but the fittings. Mr. Freeman said, leaving out the fittings, the building and site would be about ten guineas. Mr. Reed said the aim of the works committee had been to produce the simple building at a cost of 7*l*. 10s.

SCHOOL BOARD SCHOOLS.

Diss.—The chairman, at a recent meeting of the Local Board, stated that Mr. Henry Angold was requested to produce some pencil sketches of new buildings required, and four plans were placed before the Board. These plans were looked into, and after necessary consultation, No. 4 was decided on. It was also considered that the present stoves were very expensive, and that it was desirable before erecting the new buildings to know the most economical and yet most effective way of warming the schools, and it was suggested the Rev. Mr. Moule's system be ascertained, and probable cost of same. It was agreed that Mr. Angold should proceed with No. 4 plan, according to the requirements, and to get some information as to the mode of warming the buildings.

Middlesbrough.—Mr. Isaac Wilson, J.P., of Nunthorpe Hall, has opened the first schools (in Fleetman street), erected by the Middlesbrough School Board. Mr. Wilson said he considered this event a new and important era in the application of the Education Act in Middlesbrough. These schools were capable of accommodating 800 children, and altogether the Board was at present providing for 2,800 scholars. Although this was the first school they had erected, they had not been idle, for they had now 900 or 1,000 children attending their schools. The Government ordered them to provide accommodation for 3,000 children, but they must not forget that the town was increasing, and by the time their schools were ready they would have an extra 3,000 to provide for. He then declared the schools open.

Devonport.—The Devonport School Board, on 6th inst., formally opened the first of four new schools being built by them in the borough in compliance with the orders of the Education Department, viz., the Ford Schools. The schools are in the Gothic style, and consist of three departments—boys, girls, and infants. The boys' and girls' departments face Cambridge-road, the former on the ground floor, the girls with a similar arrangement above them. Each consists of a large room, 45 ft. by 20 ft., and four class-rooms, each 18 ft. by 15 ft. Surmounting the boys' porch is a bell-turret with spire 10 ft. high, and giving also accommodation for a clock. The infants' department, facing Melville-road, comprises a large room, 75 ft. by 20 ft., and two class-rooms. The rooms are heated by open fire-places, and are well lighted and ventilated. Ample lavatories and offices are attached to each department. The schools are erected from designs of Mr. John Chudleigh, jun., of Newton Abbot, by Mr. N. R. Yerren, of Plymouth. The Education Department on the 30th of January, 1872, communicated their opinion to this Board that accommodation was required for 2,750 children. The Board have accordingly taken steps to meet the requirement of the Department in the erection of the following schools, which will provide accommodation for 2,529 children, viz.:—

	Boys.	Girls.	Infants.	Tl.
Ford.				
Architect, Mr. Chudleigh; contractor, Mr. Verren	192	192	225	609
Morice Town.				
Architects, Messrs. Dwelley & Sons; contractors, Messrs. Hodge & Martin	240	240	240	720
Cherry Garden-street.				
Architect, Mr. C. Clifton; contractor, Mr. Trevena	240	180	240	660
Stoke.				
Architects, Messrs. Moorshead & Ching; contractor, Mr. Finch...	180	180	180	540
	852	792	885	2,529

The Board invited public competition for the plans of the different schools, and those selected have been approved of by the Education Department. The lowest tenders for the erection of the buildings have in all cases been accepted; and the ascertained outlay under this head, including cost of sites, school fittings, &c., will be as follows:—

	£	£. s. d.	
Ford Schools	2,904	or 4 15 4	per head.
Morice Town Schools	3,792	or 5 5 4	,,
Cherry Garden-street Schools	3,190	or 4 16 8	,,
Stoke Schools	3,488	or 6 9 0	,,
Total.....	£13,374		

giving a general average of cost per head of 5*l*. 6s. 7d. The Morice-town and Cherry-garden-street Schools will be completed in February next, and Stoke Schools on or about August 1st next. The Public Works Loan Commissioners have agreed to advance in loan 13,374*l*., repayable with interest at 3½ per cent. at the end of fifty years. The annual charge on the school fund in the repayment of the principal and interest of this advance when completed will be 568*l*. 7s. 7d. per annum, or 1⅝d. in the pound on the rateable value of the parish.

Liverpool.—The School Board of Liverpool is working actively in the erection of new schools for that town. At the meeting of the local body on Monday last, the proceedings of the Sites and Building Committee included a recommendation (which was adopted), that the tender of Messrs. Holme & Nicol, amounting to 8,700*l*., for the erection of schools in Beaufort-street, should be accepted. Upon this Mr. Pooley asked how many schools remained to be erected to meet the requirements of the Education Department. In reply, Mr. Roberts stated that they would have yet to buy land and build schools to accommodate as many as 16,000 children.

An Architect-Mayor. Mr. Alfred Norman, architect, has been elected Mayor of Devonport. Mr. Norman is joint architect with Mr. Hine for the new Guildhall, Plymouth.

THE CONSTRUCTION OF PUBLIC ABATTOIRS IN LONDON.

A good deal of evidence was given with reference to this subject before a select committee of the House of Commons, which recently held an inquiry as to certain provisions of the Metropolitan Building Act of 1844. The evidence of Mr. Thomas Rudkin is of interest. With regard to the construction of abattoirs within the limits of the metropolitan district, he suggested that there should be about ten in number. There would be one at the Copenhagen Cattle Market; one at Deptford, which would have to be enlarged and improved; the third one would be near the Great Eastern Goods Station, this neighbourhood being a very poor one, and the houses small; the fourth would be near the Hackney Station; the fifth, near Bow Common; while others would be at the Bricklayers' Arms Station, on the Surrey side of the river; at the Battersea-road, near the London Gas Works; on some open land near the Westminster Workhouse; in the rear of the Great Western Station at Paddington; and the tenth, near the Camden-town Goods Station. He had visited the whole of these sites, and found amply sufficient open space near to each of them for the construction of slaughter-houses, without, in his judgment, any detriment to the surrounding neighbourhood. His idea was that these sites should be purchased by rates collected from the metropolitan inhabitants, and that public abattoirs should be constructed thereon. They should be under the control of the Metropolitan Board of Works, if they would undertake it; if not, the Corporation of London might possibly be asked to do so. With regard to the expense of the construction of these abattoirs, he had no hesitation in saying that they would very well pay for the outlay. He estimated the cost of construction for the ten at 200,000*l*. His notion of an abattoir was that it should be constructed by public authority, and be their property; that the tenants should pay rent to the public authority, and that it should include an ample water-supply, both hot and cold, and every expense, except gas. As to the area the abattoirs would cover, he calculated it an acre or an acre and a half. There was no necessity for there being a very great distance between them and the neighbouring houses, as there need not be much nuisance. He thought that the sites he had mentioned could be easily purchased for the purpose of building the abattoirs.

Dr. Letheby was examined upon the same subject, and expressed the opinion that it was desirable to establish fixed and properly-regulated abattoirs round London in proper localities, and that these should be well looked after in a sanitary point of view. The present system of slaughter-houses he described as a great nuisance,—such a nuisance as ought not to be tolerated in this metropolis, and, he believed, would not be tolerated in any other large city in Europe.

Lieut.-Col. Hogg, chairman of the Board of Works, said that if Parliament should decide that public abattoirs were best for the public, the Board would be very happy to undertake any duties imposed upon them.

Abattoirs in Paris.—In the course of the evidence taken, some interesting information is given as to the public abattoirs of Paris, and a brief *résumé* of this information will not be uninteresting to the readers of this journal. The first witness examined was Mr. J. W. Crouch, solicitor to the Butchers' Trade, who said that in Paris there was nothing similar to our private slaughter-houses. In that city there is at the present time one large market, with abattoirs adjoining, called "La Villette": it occupies an area of about 100 acres. About one-half of this space is occupied by the market, and the other half by the abattoirs. In addition there are two other abattoirs in Paris,—the Ville Juif and La Grenelle,—but these are in a dilapidated condition, and look as though they were about to be abandoned. With regard to rats being a great pest there, they were kept out by there being no entrances from the sewers into the slaughter-houses, and the doors were shod with iron. These abattoirs are described as working very well, and are not shut on Sunday. Meat is sold in Paris habitually on the Sunday; in fact, there is a fresh supply every day in the year. There is no comparison (Mr. Crouch said) between Paris and London as to the means which exist for having a private slaughter-house. The water is not laid on in Paris in the same way as in London, although the supply is better now than it ever has been. In a large number of houses in Paris the water is not laid on, but more houses are being continually supplied with water. When the abattoirs were instituted Paris was practically without water-supply, so far as slaughtering was concerned. The construction of Paris is such that there is no space for private slaughter-houses. The next witness examined upon this subject was Mr. J. W. Keates, chemist to the Metropolitan Board of Works, who said that he believed the abattoir of La Villette was intended to absorb the two other Parisian abattoirs. He had visited La Villette, but it did not strike him as being particularly offensive. He considered that there would be a very great increase of expenditure in having a large central abattoir built, either in London or the neighbourhood. Mr. T. Rudkin, in his evidence, gave some information as to Parisian abattoirs. In the year 1866, he mentioned that there were seven abattoirs in Paris, including the Ville Juif, Grenelle, Montmartre, Poppincourt, Les Batignolles, and Bellard; but, with the exception of three, he believed these had been closed. With regard to the large abattoir at La Villette, he said,—"The most curious thing I have ever seen in my life connected with the meat trade is this abattoir, for cleanliness, order, and perfection."

ANTIQUARIAN RESEARCHES.

A recent visit to Leicester and Sheffield has enabled me to acquire information, which I submit to the *Builder* and its extensive influences. Above all, as the most important and pressing, I draw attention to the imminent danger of destruction to which the old town-hall at Leicester seems doomed, unless some extraordinary and prompt exertion be made by the people of the town to save it. Modern Leicester has so increased in extent, and is growing at the present moment so widely on all sides; old streets have been so renovated and altered, and the ancient boundaries so effaced, that it is only by the aid of plans and maps and the main roads, that the limits of Roman *Ratæ* can be at all understood; and it is almost the same with mediæval Leicester. But one interesting monument of the latter yet remains, environed by recent buildings which convey a conviction that the town-hall will shortly be doomed to complete uniformity, and make more room for the demands of trade. Of course such a result may be avoided. It is not necessary: Leicester is rich; there is room for trade and commerce; but public apathy will certainly lead to the destruction of the hall, if it be not met by active remonstrance and persuasion.

The architectural features of the edifice are nothing remarkable, except that they afford a good example of what such buildings were, four centuries and more ago, in all of our towns; and the place is in a good state of preservation. But it derives interest in the highest degree from its associations with Shakspeare and his colleagues, who, as "the Queen's Players," were accustomed to perform, through a series of years, in this very building, converted for the purpose into a playhouse. Of Hall-place, at Stratford-upon-Avon, where Shakspeare lived towards the close of his life, and where he died, scarcely one stone remains upon another; the theatres in London in which he acted are no more; but here we have the hall and its fittings, much, if not wholly, in the very state and condition in which, in the prime of life, though not yet in the fulness of honour, he took parts in his own plays, which have contributed more humanising and moral influence than all the dramatic writings of ancient and modern times. "It is surely something," says Mr. Kelly, "even yet, to be able to gaze on the very pulley which has revolved to draw aside the curtain and disclose Shakspeare on the stage!—the living, breathing form of him, the greatest of dramatic poets, who 'was not for an age, but for all time.'"* So writes Mr. Kelly in his excellent volume on popular amusements in Leicester in the sixteenth and seventeenth centuries; and in the same spirit let us hope his fellow townsmen at the present moment will think and act.

In the western side of what was Roman Leicester, to the west of the Church of St. Nicholas, and close to the churchyard, stands a pile of Roman masonry, in height about 20 ft., and in length about 70 ft.; in width it varies from 6 ft. to 14 ft. This mass is pierced, but not through, with four arches or recesses, and in the centre is a small arch of about half the height of the others. In a valuable paper communicated to the British Archæological Association,* by Mr. James Thompson, the historian, of Leicester, it is suggested that this Jewry Wall, as it is called, formed part of a temple, dedicated to Janus, and that it stood near to or adjoining the western entrance to the town. Excavations have since been made which confirm Mr. Thompson's opinion, so far, at least, as to prove that what we now see is only part of an extensive and grand building, and certainly not a gateway, as has been conjectured. The churchyard, unfortunately, covers what may yet be preserved of the foundations of this building; and the Church of St. Nicholas itself probably stands upon part of the site. Reparations of the church now being made, show that it was constructed chiefly with materials from Roman buildings, many of the lower squared stones being of large dimensions. Inscriptions throw no light on this and the other important edifices of the Roman town. I cannot find that even a solitary sepulchral epitaph has ever been discovered; yet the portions of columns and capitals and other architectural remains, exclusive of the Jewry Wall, prove the presence of public buildings; while tesselated pavements of which a few fine examples are preserved, attest the importance of the place. One of these pavements, now in the Town Museum, has a group of three figures, consisting of a nude female, a stag, and Cupid bending his bow towards the female. The subject has been supposed to be intended to represent the myth of Actæon and Diana. This it cannot be; but it is not so easy to say satisfactorily what the artist meant to depict. The museum contains some valuable Roman and Saxon remains from the town and vicinity, and they are being augmented by the zeal and intelligence of the curator, Mr. Harrison, who showed me among other objects just discovered, a small carved tessera of blue lias, inscribed, in two lines, C · PAL · GRACILIS; and a fragment of lustrous yellow marbled pottery, stamped OF · MAPOMI,—the only instance I know of this peculiar and rare Roman ware bearing a potter's name. Mr. Harrison has also lately acquired the iron framework and chain of a bucket from a Roman well, 25 ft. deep, situated just outside the south gate of Leicester; and three leaden coffins, from Newarke-street. One of these I had an opportunity of examining. I cannot ascribe to it a Roman paternity; for, although it may not be many centuries posterior to the Roman period, it does not conform in character to any one of the many leaden coffins of undoubted Roman manufacture with which I am familiar. I will not say these coffins may not be as late or later than the eleventh or twelfth century.

Although the museum contains no lapidary inscriptions relating to Roman Leicester, it has the good fortune to possess a fine columnar milestone upon which appears the name of the town, *Ratæ*. It was discovered some years since, on the military road, at the distance of two miles from the town, which is marked upon the stone at the end of the name and titles of the emperor Hadrian,—A RATIS II. It is possible that the root of this name may be identical with that of Ratsby, where, by the kindness of my host, Mr. Alfred Paget, I was shown a British earthwork.

Of Sheffield I have but little to say that can belong to the domain of archæology. From time immemorial the place has been celebrated for its hardware; and now for its cutlery, its iron and steel manufactories, it holds the foremost position in the world. When we look at Sheffield in connexion with our railways, and regard its contributions to our domestic necessities and comforts, we can but feel admiration and gratitude for the minds which have conceived and the hands which have wrought so much in improving the commercial and social condition of society. These feelings will be intensified by mixing with the population of the town, and seeing at what a sacrifice to liberty and to health the blessings we enjoy are purchased. As yet Sheffield has no museum; but there is a Literary and Philosophical Society and an Architectural and Archæological Society, which include men of intellect, zeal, and benevolence, who are resolved on showing that eminence in mechanical and industrial arts is not incompatible with science and literature.

* Notices Illustrative of the Drama, &c. By William Kelly. London. 1865.

* Journal of the Association, vol. vi., p. 393.

Mr. William Bragge is preparing a collection of ancient and mediæval works in iron and steel which he intends to present to the town. It is a happy and appropriate idea; and, emanating from such a man, it will surely never die in conception. In this department there is scope for the introduction of much that has hitherto been overlooked in our museums, as, for example, agricultural and horticultural implements, domestic utensils, &c.

To Mr. Bragge I am indebted for an inspection, under favourable circumstances, of the earthwork at Bradfield, about seven miles from Sheffield. It is called Bailey Hill, and is situated on the north-west of Bradfield Church, at a short distance. It is a very lofty hillock, which at a remote period has been converted into an exploratory citadel, for it commands a view of a wide extent of country; and is by nature and art almost impregnable. The Rev. Joseph Hunter considered it a Saxon fortress on the frontier of Northumbria; and the late Mr. S. Mitchell was of the same opinion. The Rev. J. Stacye, in the second edition of Hunter's "Hallamshire," by the Rev. A. Gatty, while he does not dispute the possibility or probability of its serving as a Saxon castle, gives it a far earlier origin; and with good reason considers it to have been one of the strongholds of the Brigantes. I cannot do better than direct attention, for the sake of comparison, to Conig's Castle, and Cranborne Castle, in Dorsetshire, so well described and illustrated in Mr. C. Warne's "Ancient Dorset." Some of his remarks on these hill fortresses will well apply to the Bailey Hill, at Bradfield. C. Roach Smith.

SANITARY SCIENCE.

At a meeting of the members of the National Health Society, held on Thursday evening, the 6th instant, at the Rooms of the Social Science Association, Adam-street, Adelphi, Dr. George Ross, Medical Officer of Health, Bloomsbury, read a paper on "Helps to Householders in Sanitary Matters."

The chair was taken by Canon Kingsley, who, in introducing Dr. Ross, said that he had always taken a deep interest in anything that concerned the health of the community, which interest he trusted would be of a more practical character since certain changes had brought him here to London, in the centre of civilisation, and, alas! in some repects, of modern barbarism. The movement on the part of the National Health Society, to teach practically the science of health, was growing and growing; and in this direction a considerable progress had been made in Birmingham, owing to the munificent sum of 2,500*l.*, which the authorities had received for the purpose of spreading in Birmingham and its neighbourhood the practical laws of physiology and health. Dr. Corfield's lectures there had been so well attended, that we might presume that Birmingham would become the great health centre, and this movement was progressing slowly and steadily. One of the most important publishers was telling him only two or three days ago that this health movement was stirring men's minds wherever he turned; and that there was an increasing demand for lectures and pamphlets connected with the simple science of health, and those rules by which mothers and fathers of families could ensure the health of their children; and that there would be for any works on health, which would be of that cheapness and compactness to make them attainable by, and interesting to, the middle classes, quite an unlimited sale, which would increase, not in arithmetical but in geometrical progression, spreading out right and left into an exceeding wide curve as the movement gathered strength and popularity, proving its own efficiency and life-giving power, which he (the chairman) had no doubt but that the movement would do.

In the course of Dr. Ross's paper, he said that whilst everybody admitted theoretically the value of health, most people practically disregarded it. Hence sanitary science could scarcely be called popular. Yet sanitary science, when its principles should be well established and fully carried out, would supersede, to a very large degree, all that was now known as the practice of medicine; for even now, in its state of infancy and imperfection, it had revolutionised the healing art. Much had been done, too, in regulating and improving the physical conditions of our social life. Our mighty city had carried out a colossal system of drainage, which was scarcely completed before it was declared to be too small. How much yet remained to be done to promote sanitary principles! Look at the enormous masses of human beings who are herded together in our larger cities in miserable houses, so dirty, so dark, so ill-ventilated and comprehensively loathsome, that no gentleman would keep his cattle in them with the least regard to his own interest. Yet the owners were not always to be blamed; it was often their misfortune rather than their fault that their property had fallen into the ruinous and disgraceful condition in which we often found it. Householders generally found a difficulty in keeping their houses in a good sanitary condition. Unfortunately, the sanitary arrangements of our houses were so universally bad, *ab initio*, that all that could be done in most instances was merely palliative of incurable evils. For example, our sewers ran underneath the streets in front of our houses, as also did gas and water pipes, necessitating frequent disturbance of the roadway for repairs, and setting free offensive gases either from the sewers or the gas-pipes. To abate this, it had been proposed to make a tunnel or subway in which all pipes should be placed. The plan, which was a good one, had been adopted in the construction of the Holborn Viaduct. But it would be a long time, he thought, before Mr. Hayward, the City Engineer, would be able to carry it out in the narrow streets of the city. Our water-closets, too, were almost universally inside our houses; and no trapping of them, however ingenious, would, at all times, avert nuisance and danger. The drains also ran through the houses underneath the passage in the basement, and the risk of leakage was constant, even though there should be pipe drainage. Now the reverse of this was necessary to a good sanitary system. There should be a road at the back of every row of houses for the especial purpose of providing for domestic accommodations. The main sewer and the water and gas-pipes should run down underneath the road. Water-closets should be built outside houses in the rear, and cut off by proper arrangements, so as to prevent contamination of the air of the house. Many people thought that if they trapped a drain they were then afterwards safe; but this was a mistake. A bad stench would ascend through a drain with the best mechanical trap. The efficiency of a trap depended upon the water it contained; and unless a trap be frequently flushed, either the water would evaporate in hot weather, or the water would be contaminated with the offensive gases, and be itself a source of noxious exhalations. There were numberless forms of traps recommended; but whatever trap might be employed, we should always remember that as a trap would not work of itself, so as to be clean under all circumstances, it should be well flushed after each usage. The commonest sources of annoyance with which he had to contend were old brick drains, soaked soil, rotten foundations, and damp, fœtid walls; should this be the case in any of the houses with which the meeting had to contend, he would recommend them to call in a surveyor, or an experienced builder, to report upon and have the matter seen to. There was a sanitary maxim that a water-pipe should never enter a drain; but a few years ago it was equally a maxim that all water-pipes should be carried into drains; and they were so carried to this hour by order of some public Boards. Both maxims would be found wrong in practice, if indiscriminately applied. All water-pipes and sink-pipes should be trapped, both at the top and bottom. With regard to cisterns, it should be an inviolable principle that the supply of water for drinking and cooking should be distinct from the supply to the drains. Every possible risk of the contamination of drinking-water by sewage impurities should be strictly avoided. The cistern for drinking-water should be double, or one cistern within another; and the water should enter by a ball-cock, the vacant space between the two cisterns; and as it flowed should ascend through one or more charcoal filters placed at the bottom of the inner tank. Thus all dirt suspended in the water would be deposited at the bottom of the water cistern, and the charcoal filters would effectually purify the water of all pollutions. The overflow-pipe should be always trapped and empty itself into space. The tank arrangements for drinking-water were radically bad. There was an absolute necessity for obtaining an abundant supply of water. This was not the case at present, for the supply was likely to diminish year by year if the demands of the companies were admitted. Our population was increasing rapidly, and we did not see any way of providing for its sanitary needs except by the system of water-carriage already in use. The companies were even now complaining of their inability to meet the demand, and of the expense they incurred to carry out the requirements imposed upon them by the Legislature. A constant supply was the thing wanted, and the companies would not afford it except upon such restrictions as would make it practically inoperative as a sanitary agent,—the very end in view. But local authorities should have a greater power of commanding an ampler supply for flushing and cleansing purposes than they now possessed. More water must be had even if it came from the Welsh or Westmoreland lakes. It was quite likely that, if the demands of the companies continued to rise, it would be cheaper to bring water from mountain districts (as the people of Vienna had recently done from the Alps), from Wales to London, than leave it ourselves to the present sources of supply. This was a large question, and had many aspects; but the time was not far distant when the urgent wants of this vast and rapidly multiplying city would enforce that the matter should receive due consideration.

An interesting discussion followed the reading of the paper.

THE LATE DR. CRACE CALVERT.

We have received letters from friends of Dr. Calvert asserting that, although he took typhoid in Vienna, the disease from which he really died was pulmonary consumption. Mr. Richards, the writer of one of them, says,—"You are perfectly correct in assuming that the late Dr. Calvert had implicit faith in the power of carbolic acid as a preventive of typhoid fever; but unfortunately could not carry it about with him to disinfect every place he stayed at in his travels. I may, however, mention that it was successfully used in the treatment of his case, and that although his wife and nurses were in constant attendance on him, and many of his friends visited whilst he was suffering from the fever, not one of them took the disease, thus showing that, by proper care, infection may be prevented." We had no desire to depreciate carbolic acid in its proper place. What we meant to show was, that it must not be supposed to render unnecessary, or to compensate for the want of, proper sanitary arrangements.

WHAT TO BUILD WITH.

Sir,—If your correspondent, "H. T.," will turn to the *Builder* for 1872, he will find some articles germane to his reflections occasioned by the view from Westminster Bridge of three public buildings under repair from decay. The titles of two of these articles are, I think, "The Architecture of Great Cities: a New Style," and "Concrete Building and Encaustic Tiling," and there are probably others. They deal with the question of the employment of polished granite, *in all its varieties of tint*, as admirable for large public buildings, as capable of a most sumptuous effect, as necessitating a broader and simpler treatment than is now too little resorted to, and as meeting the question of so much concern in city architecture, the preservation of the material employed from the dirt-producing and corrosive properties of the atmosphere of cities and large towns, which more than anything else is destructive of effect, if not by actual decay at an early date, yet by blurring and defiling the building to such an extent by dirt and weather stains, as to make it very quickly an eyesore. It is surprising that so little is attempted with different tinted and polished granite.

The suggestion as to concrete was that it could be employed in the fabric of the building, and that then, whether for exterior or interior decoration, we had in encaustic tiling a material capable of endless variety of colour and design, according to the character of the building and the genius of the designer, and thus would be combined all the advantages of durability, light, cleanliness, and a novelty and freshness of style which would be a great relief upon existing modes.

For a clear country atmosphere the materials most ready to hand in the district should always be used, there being no need for such resorts as the above. A.



NEW REREDOS, HERNE CHURCH, KENT.—Messrs. Goldie & Child, Architects.

NEW REREDOS, ST. MARTIN'S CHURCH, HERNE, KENT.

This, in addition to a restored chancel and other screens in carved oak, has been erected by Mr. Earp, sculptor, from the designs of Messrs. Goldie & Child.

The reredos now represented is composed of alabasters, marbles, and Caen stone, of delicate detail, and is richly carved.

The centre subject is the Crucifixion, and those on either side the Sacrifice of the Lamb, and Abram receiving from Melchizedek the Bread and Wine; the arcade flanking these containing half-figures in relief, the Evangelists, &c.

The rich gables forming the upper part of the reredos are pierced to admit of an effect of colour given by the new stained-glass window.

On the apex of each of the projecting canopies, which are brought forward over the panels, and carried by carved corbels, is an adoring angel. Flanking the canopies, partly receiving the mouldings of the arches, are grouped niches, filled with the twelve apostles, all being crowned with rich pinnacles.

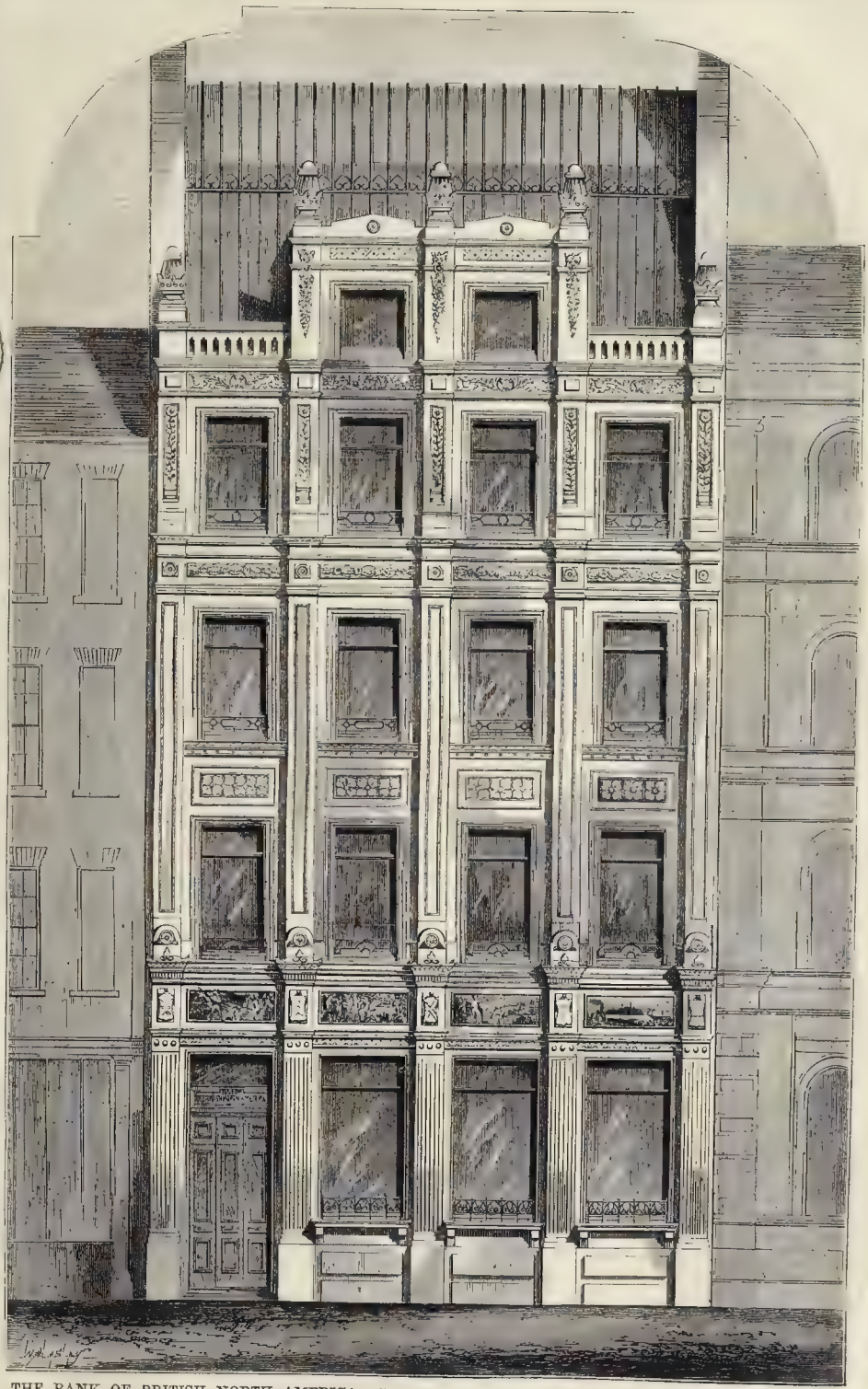
THE BANK OF BRITISH NORTH AMERICA, LONDON.

Our engraving represents the front elevation of the new premises of the Bank of British North America, in Clement's-lane, City, now approaching completion. The premises contain on the ground-floor public banking-room, with manager's and messengers' offices, and a double staircase, one giving access to the board and committee rooms on the first floor and the other to suites of offices on the second and third floors, and the housekeeper's apartments on the fourth floor. The strong rooms, lavatories, and closets are in the basement.

Buildings in the narrow streets of the City seem to require a different treatment from those in more open spaces, for it must be remembered that heavy projections not only cut off the view of the architectural features above them, but diminish to a considerable extent the light in the street itself. Accordingly an effort has been made here to produce a satisfactory architectural work, and at the same time to limit the projections of cornices and other features to a very few inches.

The ground-floor is constructed in red and grey polished granite, and the upper floors are in red and yellow Mansfield, Forest of Dean, and Ancaster stones. The four panels over the ground-floor windows are filled with subjects in terra-cotta, emblematical of the transition of the Red Indian, from his state of wildness to his introduction to commerce.

The interior fittings of the bank and offices will be constructed in mahogany, oak, and walnut wood. The builders, Messrs. Perry & Co., of Tredegar Works, Bow, are executing the works from the designs of Mr. Chancellor. The carving is by Mr. Ckremer.



THE BANK OF BRITISH NORTH AMERICA: CLEMENT'S LANE, LONDON.—Mr. Chancellor, Architect.

SHAMS.

SIR,—Now that this ever-interesting subject has cropped up in the *Builder*, it would be a thousand pities that we should in the result find it more confused than ever, instead of the reverse. Will you, therefore, allow me to ask a question or two, and thus indicate the sort of difficulties that controversialists would with advantage set themselves to solve?

1. Strange as it might appear, Mr. Whitaker would seem to have (p. 890, &c.), used a word which ordinarily conveys condemnation, although he was speaking in reference to something which he wished to favour. Was this done in order to pique curiosity, or in an honest endeavour to change this bad meaning of the word "sham," into a meaning conveying no sentiment either of praise or blame? He is speaking of the non-costly luxuries that may, now or in the future, be made to render somewhat less bare and poor the lives of the least fortunate of the struggling in modern western civilisation. Such productions may have their own good qualities in good hands, though their material may be neither rich nor rare; and though the qualities that would be possible with rich and rare materials had better not be aimed at. For instance, woodcuts may well be hung on a cottage wall, and they need not profess to be steel engravings; plaster casts may as well remain plaster, except perhaps where they represent an original in bronze; steel ornaments need not ape the delicacy and softness possible in silver, but will best retain the geometrical character of design to which they readily lend themselves; and so on. The progress of the arts, the facilities for increased production, would thus result, as he puts it, in a service to humanity; but as yet we see no necessity for what we commonly know as a sham,—*i.e.*, a counterfeit or cheat.

2. We seem, however, to have a different question to deal with when we get on the subject of more or less luxury in dress and personal adornment. When we talk only of Greek coins reproduced by electrotype, or other such multiplication of objects of rare beauty, in order that they may be the daily delight of the many instead of the few,—we show all round the most admirable concord. But rings, and brooches, and watch-chains of mosaic gold and imitation silver!—here we approach the tug of war. Is the desire for personal decoration so amiable and spirit-stirring a quality as to render worthy any sort of gratification that may be afforded it? Is it like the care for children and other such helpless ones that with most moralists would render laudable the, if need be, forcible demand for food for them?—or is it even more strongly, if possible, a leaning wholly to virtue's side?—or is there really nothing more than conventional half-opinion to tell against these pretensions to a wealth desired but not possessed?—or the snobbishness of the well-to-do, despising and endeavouring to render contemptible the little strivings of those poorer than themselves? If we could settle this point of morals we should be able to apply it very usefully to debated points,—further extensions of the question as to personal trappings, such as cheap substitutes in building, temporary and makeshift contrivances,—many of which are now perhaps a little unduly passed by. But we need not hint thus at what is behind in order to justify the discussion. There would be something useful done if we could all agree as to what a sham is, and who may counterfeit. We might then approach Mr. Proud's questions, p. 851, such as,—Are any deviations from the standards by which we are accustomed to appraise productions in the fine arts to be brought about? Are intrinsic qualities to become of less, and the uses to which things may be put (their service to the many, for instance), of paramount importance? Or are we still to see great differences between the perfect work of a great artist executed in perfect materials, and the humbler though not utterly commonplace work that must for ages yet, it is to be feared, content the most of us—as far as ownership is concerned?

A SPECTATOR.

King's College Chapel.—The chapel of King's College, London, after an interval of about three months, during which it has been closed for the completion of the decorations, under the superintendence of Sir G. G. Scott, has been re-opened. The style of ornamentation adopted is the Byzantine, and the cost of the whole work is about 2,500*l.*

THE NEW PUBLIC OFFICES AT LEWISHAM AND THE ARCHITECTS.

SOME little excitement is being caused amongst the inhabitants of Lewisham and the district by the course which the Lewisham Board of Works have just taken in connexion with the new public offices which are about to be erected in that township. It appears that a few months ago advertisements were issued inviting architects to compete for the new building, and fifty-seven gentlemen sent in their names and testimonials, when the subject was referred to a committee, who brought up a report recommending not that a certain number of the gentlemen who had forwarded their names should be invited to send in designs, but that a former member of the Board (Mr. Elkington), who had sent in his resignation some months previously, should be selected. This recommendation was adopted, but subsequently one of the members of the Board moved that six architects be selected to compete, and that the former resolution be rescinded; but the motion was lost, and Mr. Elkington remains the architect for the building. This decision of the Board appears to have excited a certain amount of dissatisfaction amongst the inhabitants, who, not doubting Mr. Elkington's abilities, urge that the fifty-seven architects who sent in their names have not been treated fairly, and a public meeting is talked of.

At their meeting last week a somewhat odd and amusing discussion took place on architectural style generally. The new offices committee recommended that the style should be Gothic, and that the architect's commission should be at the usual rate, Mr. Elkington signifying his willingness to accept the compensation laid down by the rules of the Institute of Architects, in case the building should fail to be erected. Upon this recommendation being submitted to the Board, Mr. Lemon, one of the members, moved as an amendment that the building be erected in the Italian style, and not in the Gothic. In the discussion which followed the relative merits of the two styles were freely canvassed by the members present. Eventually it was decided that the building should be Gothic in character, and Mr. Elkington was instructed to prepare designs accordingly.

EXPANSION AND CONTRACTION IN BRIDGE BUILDING.

THE ST. LOUIS BRIDGE, MISSOURI, U. S. A.

AN American paper affords the material for the following concerning the progress of this undertaking:—

The difficulties to be encountered in putting in the connecting tubes to complete the span of the first arch of the bridge are not generally understood, hence there is a little surprise amongst a large portion of the public on account of the delays which have occurred. At present the weight of the superstructure is supported by the cables, and whilst that is the case, the expansion and contraction of the tubes by heat and cold are of no consequence; but when it comes to putting in the last tubes, expansion and contraction play an important part. When the connexion is once made, and the supports removed so that the arch is self-sustaining, a new element is introduced,—the contraction due to pressure.

When the cables are slackened, the arch at the centre will, from this cause, settle about 3 in. Provision has been made for this by increased length in the tubes, all the calculations being based on a temperature of sixty degrees. At that temperature it is known to the sixtieth of inch what would be the intervening space between the approaching tubes, and the last points have been diminished accordingly.

Only once since the workmen have been ready to put in these last tubes has the temperature been favourable. On one morning recently, the conditions were favourable, but owing to some inexplicable tardiness on the part of the workmen, the opportunity was lost. One tube was put in and fitted to a nicety. In the meantime the sun shone on the bridge, and when it was attempted to place the other tube, it would not go entirely to its place, being about a thirtieth of an inch too long, on account of the expansion of the tubes in place. An attempt was made to drive it into place with sledges, but without effect. In consequence of not being able to put the second tube in place, the first one had to be taken out again, and a more favourable opportunity waited for.

The prospect being that a delay of several days would occur before the exact temperature required would be obtained, it was determined to try a little strategy in the case by reducing the temperature artificially. Accordingly, about forty-five tons of ice were applied to the tubes and bound on by many yards of gunny bagging, forming perhaps the most extensive ice poultice ever used. On the afternoon of the same day the expansion had been reduced about 2 in., and our informant concludes it was expected that in a few hours more the contraction would be sufficient to admit of the tubes being put in place. We hope to hear of the successful execution of this experiment, so that we may chronicle it in a future number of the *Builder*.

PUBLIC WORKS IN BRITISH INDIA.

AN official statement has just been published, showing the amount of imperial funds expended on public works in British India during recent years. A short *résumé* of this statement will not be uninteresting. Each presidency or province is classified separately, and we find that the sum expended on ordinary public works in Bombay (including Scind) was, in 1872, 493,869*l.*; while the amount expended similarly in Madras was 252,250*l.*, and in the Punjab, 346,070*l.* The total expenditure in British India in 1872 was 2,489,722*l.*, the amount being in 1863, 4,400,632*l.* The statement also shows the amount expended by Government for irrigation and other extraordinary public works in British India. From this we find that the largest expenditure under this head, in 1872, was in the Punjab, the amount being 621,765*l.* In Bengal there was expended 334,281*l.*; while the grand total of expenditure for these works, in 1872, was 1,628,474*l.* This shows a slight increase on former years, with the exception of 1870, when the amount was considerably over two millions sterling. Of the sum thus expended in British India during the past year, it appears that irrigation works have absorbed the largest amount. The cost of irrigation is divided into the following heads:—Construction, 708,611*l.*; establishment, 216,495*l.*; tools and plant, 24,723*l.*; and increase to stock, 33,201*l.* In former years, it appears that the cost of irrigation works in India has not been so great as during the past year; and it is noticeable, indeed, that in 1868 the sum expended was only 219,000*l.* During recent years we find, too, that there have been "Bombay Special Fund works," the amount expended being thus classified:—Construction, 325,871*l.*; establishment, 21,031*l.*; guaranteed railways, 54,481*l.* For State railways the amount put down, in 1872, is 497,767*l.* With regard to the railways of India, we find, from a statement upon the subject, that the length of line open for traffic was, in 1872, 5,087 miles, as against 2,234 miles in 1863; that the total number of passengers conveyed was, in 1872, 19,222,506, the receipts from this traffic (in addition to that from the goods traffic) being 2,012,925*l.*; and that the working expenses in 1872 were 3,406,617*l.* The greatest length of railway now open is in Bengal, the distance being 2,520 miles. Madras and Bombay are next in proportion. The number of miles of telegraph in British India was, in 1869, 14,014, subsequently to this date no statistics are given upon the subject.

THE PROPOSED NEW BUILDINGS ACT.

METROPOLITAN BOARD OF WORKS.

AT the meeting last week, the Parliamentary Committee submitted for the approval of the Board the draught of the Metropolitan Buildings and Management Bill, the object of it being to consolidate the Building Acts, to regulate the formation of streets, and to amend and extend the provisions of the Metropolis Management Acts respecting the line of buildings and management of streets; to make special provisions against fire, and to provide better protection for the Board's sewers. The Bill consists of 111 clauses, and is supposed to meet all the difficulties which have been found in the existing Acts.

Mr. Roche, in moving the adoption of the draught Bill, said that at that late hour of the day he should say as little as possible in reference to the motion he had to propose, which was that the Bill should be submitted to a committee of the whole Board, when the whole of the clauses could be considered. The first part of the Bill embraced a consolidation of all the existing Building Acts, which eighteen

years' experience of their working had shown to be necessary; the next was to regulate the form of streets and lines of buildings, and to make special provisions against fire. Those were the main principles of the Bill, and they had for five or six years been brought by the Parliamentary Committee under the notice of the Board. They had also communicated with the building trade, saw-mill owners, and pianoforte manufacturers, who had attended their meetings from time to time, and all their objections had been fully considered. The first principle of the Bill to which he wished to draw attention was as to the cubical contents of buildings, as by the existing law no building could be erected where the cubical contents were more than 216,000 ft., but by the new Bill the cubical contents were enlarged to 220,000 ft. The second object referred to the line of buildings, and under the new Bill power was given to the Board to define the line of buildings instead of the architect, who was responsible to no one. There were also separate provisions against fire, which were of great importance to the metropolis. By the present law there was no power to prevent a large accumulation of timber in timber-yards, and if any attempt were made to interfere with it that would be attended with a great cost in the form of compensation for the removal of timber-yards. A provision contained in the present Bill would prevent any such erections in future, and there would be no accumulation of timber in yards beyond those in existence at the present time. Another matter was in reference to steam-engines in timber-yards, and as regarded them the committee had adopted the same principle, and no new places of this description would be allowed to exist. The great provision of the Act was to prevent the extension of fires, so far as the structural arrangements were concerned. At present the district surveyors had a power quite independent of the Board. Many persons did not object to the power being exercised by the Board, but they did strongly object to such large powers being conferred upon district surveyors. Under the new Bill all orders would come from the Board, and the district surveyors would only be their servants, instead of, as at present, being vested with a *quasi* judicial authority. He moved that the Bill be referred to a committee of the whole Board, to consider the clauses in detail.

Mr. Fowler seconded the motion, which was put and agreed to.

THE NEW MASONIC TEMPLE, PHILADELPHIA.

The new Masonic Temple recently erected at the corner of Broad-street and Filbert-street, Philadelphia, and already briefly referred to in our pages, was opened on the 26th ult. by the officers of the Pennsylvanian Grand Lodge, and a grand procession of all the lodges in the city took place on the occasion. The building, which is just finished, contains one of the largest assembly-rooms in the world, and is a curious specimen of architectural art. The structure has been nearly five years in building, and cost upwards of 1,300,000 dollars. The outside is built entirely of granite, with brick backing, walls, and arches, which are very thick and substantial. The chief frontage is of finely-dressed Quincy granite; the Filbert-street front, running to Juniper-street, is of Richmond dressed granite, and the Juniper and Cuthbert street fronts are of granite also. The building has a basement and three lofty stories. The main entrance in Broad-street is modelled from the doorway of St. Mark's Church, Venice, with the exception of the figures, these being symbols of the order. The style of architecture on the first and second floors is Norman and Gothic, and throughout the rest of the edifice Corinthian. The meeting-room of the Grand Lodge is the largest apartment in the temple. From an octagonal vestibule at the western end the visitor enters through massive walnut doors, with cedar sinkings and raised panels of mottled French walnut. The work is highly polished. The furniture of the hall is of walnut and cedar, covered with blue plush. On every side Masonic emblems meet the eye, carved in wood or stone, or shining from stained-glass windows and cut globes. The Grand Chapter Hall is the next largest room; then come the Egyptian hall, the Ionic, the Normal, the Oriental, and numerous other halls.

The library is situated on the second floor, and if the plans of the Grand Lodge can be carried out successfully it will be the repository of a complete Masonic library. It is intended that every publication relating to Freemasonry shall be taken, and more especially the publications of all Masonic bodies in the United States. During 1872 about 365 dollars were expended for Masonic works of rarity.

EXTENSIVE BUILDING OPERATIONS AT BARROW-IN-FURNESS.

We have on more than one occasion, in these columns, noticed the extraordinary expansion of Barrow-in-Furness, which, from a hamlet containing less than 100 inhabitants not twenty years ago, has now become a town of great commercial and maritime importance, with a population of upwards of 50,000. In addition to the numerous establishments for manufacturing purposes, including flax and jute, steel wire, and timber and saw-mills, which have been erected within the last two or three years, additional works of this character, on a scale of great magnitude are now in course of erection at one end of the town alone, and the inadequacy of house accommodation in this particular district for workmen constantly coming to reside in the town, has led Messrs. Yendall & Hitchen, extensive contractors, to make arrangements for the building of between 700 and 800 cottages on 100,000 yards of land, which has just been purchased from the Duke of Devonshire for the purpose. The work of building these cottages has already been let, and their erection is to be proceeded with immediately. It is computed that, within the last two years from 1,200 to 1,500 houses have been erected, and that independently of the 800 cottages above referred to, 500 new houses at least are at present in course of erection. New iron works for the smelting of the large deposits of valuable iron ore in the district, are constantly springing up, as well as additional steel manufactories, which is now one of the great staple industries of the town. The gigantic wet dock of 200 acres, for the accommodation of a fleet of large ocean steamers, is also now giving employment to more than 1,000 artizans, whilst the steam-ships themselves, six in number, and between 3,000 and 4,000 tons burthen each, are also being built in the port.

VENTILATION OF THE BRIGHTON SEWERS.

Some doubt having arisen as to Sir John Hawkshaw's views on the question of ventilation, the engineer writes:—"There is no choice between providing efficient ventilation and running the risk of sewer gas in its worst and most concentrated form finding its way into dwellings. Ventilation, however, to be of use, must be thorough. A few long and circuitous connexions between sewers and rainwater pipes, for instance, and contrivances of that nature, are of little use. Ventilators also in which charcoal is introduced, are unsuitable, as the charcoal hinders the pure outside air from entering the sewers and the diluted gases from escaping through the ventilators. If the ventilators are properly made and sufficiently numerous, you will find them unobjectionable. The least distance apart at which ventilators should be placed will vary according to circumstances. In the intercepting sewer I have placed them 200 yards apart, between Hove and Kemp Town: east of Brighton they are rather more than 300 yards apart. These distances are sufficient for the intercepting sewer with its large sectional area and flat curves, but in the case of tributory sewers of small sectional area and having sharp curves, the ventilators may have to be more frequent. Indeed, the more numerous they are within reasonable limits, the better. As regards the other part of your resolution, viz., as to whether districts entirely without ventilation will, if none be provided, be in greater danger of sewer gas entering the houses than at present, the change of circumstances that will occur when the intercepting sewer is in operation will be that all the sewers and drains discharging into the intercepting sewer will, through that sewer, be made to communicate with each other. But the intercepting sewer will, as I have already intimated, be provided with effective ventilation, and I do not consider that after it is in operation, there will be more danger of sewer gas entering the houses than at present. Hitherto you must have been running great risk in this respect."

WESTMINSTER BRIDGE AND ITS SURROUNDINGS.

Sir,—In reply to a question in the House of Commons last session, Mr. Ayrton stated that he would take care the building for St. Stephen's Club should not exceed in altitude the Palace of Westminster. Of course he did not mean the clock tower; but I observe that advantage has been taken of the recess to carry up the new building considerably higher than the ridge line of the palace. What is Mr. Ayrton's successor about, to allow this?

Having my pen in hand, I beg to express my surprise that from neglect, or some other cause, Westminster Bridge is not yet finished: in the piers immediately under the lamps at the north-west and south-east ends, and on the four central piers, handsome cast-iron plates were inserted. There are ten other piers, and in each spaces were evidently left for the insertion of similar plates: probably those ten plates are in store somewhere; if not, and the pattern is destroyed, one of the plates could be readily taken out and ten more cast from it. It should be somebody's duty to see the bridge finished.

Again, at the top of the landing-steps, from the Speaker's lawn, there are placed two handsome stone piers for lamps. Years since an old lamp, of the usual hideous street pattern, was placed, evidently temporarily, on one of these piers, and there it remains: gross neglect this on the part of some official in care of the Government buildings. At the east end of the bridge on the Southern Embankment, a gateway was constructed, and filled up with deal boards. It was doubtless intended by the architect that a gate should take the place of the boards. Is there a question as to whether the gate be supplied by the Metropolitan Board of Works, or by the authorities of St. Thomas's Hospital?

These are matters of small moment; but it appears the more strange they should be so long neglected. Curio.

THE PUBLIC HEALTH.

The last quarterly return made by authority of the Registrar-General is satisfactory. It shows that in the third or summer quarter of this year 114,343 deaths were registered. The annual death-rate was so low as 19·4 per 1,000, and 2 per 1,000 lower than the average rate in the corresponding quarters of the ten years 1863 72. The death-rate last quarter was lower than in the corresponding period of any year since the remarkably cold and wet summer of 1862, when the deaths were equal to but 18 per 1,000 annually of the population. Had the death-rate last quarter been equal to the average rate in the ten last summers, nearly 12,000 more persons would have died than those whose deaths were actually recorded. A very large proportion of this decrease in the number of deaths was due to the continuance of a marked decline in the fatality of the principal zymotic diseases.

In the eleven registration divisions of England and Wales, the annual death-rate last quarter ranged from 15·0 and 15·3 per 1,000 in the agricultural counties of the south-western and south-eastern divisions, to 23·1 and 23·5 in the principal manufacturing and mining counties of the north-western and northern divisions. Durham and Northumberland were the only counties in which the deaths registered last quarter exceeded the average numbers returned in the three preceding corresponding quarters.

The population of the registration districts and sub-districts containing all the chief towns of England and Wales is now estimated at about thirteen millions and a half of persons; the annual death-rate among this large urban population was equal to 22 per 1,000 during last quarter, and was 2·1 below the average rate in the ten previous corresponding quarters.

Exploration of the Libyan Desert.—The German expedition for the exploration of the Libyan Desert is expected to start from Europe about the end of November, and from Egypt early in December. The leader of the expedition is Dr. Gerhard Rohlfs. The funds for the expedition are furnished by the Khédive. They are prepared for the long journey over land destitute of water, for they take with them 500 iron cases, capable of holding 1 cwt. of water each.

THE MANCHESTER SOCIETY OF ARCHITECTS.

SIR, -In the President's address, printed in your paper of the 1st inst., amongst other remarks he says he is very desirous to see a more available system of instruction for students established, "and some of those advantages which lie within the reach of their brethren in London," &c. Does it not seem rather inconsistent that from this same Society, promoted mainly (if I mistake not) by the president, who was previously the honorary secretary, all students are *excluded?* And it is limited to architects who have been some years in practice. One would have thought such burning zeal as is here expressed might have, at least, given the youngsters a chance of benefiting by the wisdom and experience of their elders, as in other architectural societies. It is a fact that a man may be an Associate of the R.I.B.A., or a member of the Architectural Association, and yet excluded from the local Society; and I respectfully venture to express the opinion that it is unwise to set up a close corporation of this kind, and patronise pupils and assistants, having reason to know that some of its members are also of the same way of thinking. At all events, it would be better, whilst this system is maintained, to say little or nothing about affording facilities for improvement to the younger members of the profession. E.

STATISTICS OF CHIMNEY SHAFTS.

SIR,—The importance of thoroughly sifting the cause of the Northfleet catastrophe is so fully recognised, that every ray of light which can be thrown upon the subject I believe will be received with interest; and as I have details which I prepared seventeen or eighteen years back of some of the tallest chimney-shafts in this neighbourhood (Woolwich), I forward the following statistics for the information of your numerous readers, if you think them worth insertion.

The highest chimney is that of the shell foundry in Woolwich Arsenal, and was built in the year 1856. It stands 223 ft. 9 in. above the ground-line, and the brickwork is continued down to a depth of 16 ft., making the total height 239 ft. 9 in. above the concrete. It was built from the inside. It has a base above the ground-line 20 ft. square, and with plinth and cornice 27 ft. high, above which the octagonal shaft commences, being externally 16 ft. 9 in. in diameter at the bottom, and 6 ft. 6 in. at the top. The walls are 2 ft. 7½ in. thick at starting, and reduced 4½ in. at every 31 ft. 6 in.; the upper 26 ft. being only 9 in. thick, all built in mortar, excepting the top 9 ft., which is bell-shaped, and built in cement, and is surmounted by a Portland stone cap and blocking, weighing by measurement about 17 tons.

From the day of laying the first brick to the time when eight or nine of us connected with the work mounted to the top and sat on the parapet at the ceremony of laying the last stone was only nineteen weeks (see the *Builder* for 1856, p. 638). An attempt was made to take a photograph of the buildings below, but with a slight wind the oscillation was too much to admit of such being done, and was quite perceptible, notwithstanding which it has stood many a gale, and is likely to bear many more.

There is another chimney in the gun-factory department, with a base 18 ft. 9 in. square, and 30 ft. high, above which rises an octagon shaft, 140 ft. high, having an external diameter of 13 ft. 1 in. at the springing, and 5 ft. 6 in. at the top, the greatest thickness of brickwork being 1 ft. 10½ in. for the first 50 ft., and above that reduced 4½ in. in thickness at every 30 ft.; the top 9 in. thick, and finished with a bold stone cap and blocking. There are several others varying from 120 ft. to 150 ft. high, and in no case were they built more than 9 in. thick at the top, and gradually increased downwards: some are octagonal and some square, and no failure has occurred in any of them.

Comparing these facts with the chimney at Northfleet, it will be found the latter has an enormous advantage in point of strength, being of larger dimensions and thicker walls, the weight of the cap is only equal to half a ton per foot on the brickwork, while that of the chimney before referred to is one ton and a quarter per foot; and if allowance be made for laying 129 rods of brickwork in the foundations of the shell-foundry chimney the rate of progress in the erection of both is about the same. It appears to me, therefore, it would be erroneous to attribute the failure either to want of skill in the design, the too great weight of cap, or the rate of progress; but I should look with great suspicion on the few words given by the builder in his evidence as the sole cause of the evil,—"every few courses being grouted in with new Portland cement." Three years ago I had experience of several failures from the use of cement, which was supposed to be *too new*, but which fact was not discovered until the work was done: in one case, a recently-built parapet was cemented inside and out, and had every brick severed the one from the other, both horizontally and vertically, in consequence of the expansion of the cement, and had to be rebuilt; and in other cases the work was entirely destroyed. If the same thing took place in the unfortunate chimney it had better have been built of brick laid dry, and I doubt then if it would not have been the stronger of the two. W. R.

CHIMNEY SHAFT NEAR GRAVESEND: COMBINATION OF MATERIALS.

SIR,—The evidence of Mr. Gostling on inquest, p. 852, may be read thus,—"The best Dorking lime was used with the best Thames sand, forming compressible mortar, which shrinks in setting, the interior being grouted in new Portland cement, which swells in setting."

Thus the shaft might be safe while the lining carried the facing work, which facing work rather reduced than increased the strength, but failed when the proportions varied, as at the height of 160 ft. there was an equal thickness of each.

Thus it might be compared to a tube of iron inserted in one of lead to support a large weight.

JOSEPH CRETIEN.

A ROMAN CEMETERY AT YORK.

OUTSIDE the south-western walls of York, on the right bank of the Ouse, and just opposite the gardens of the Philosophical Society and the ruins of St. Mary's Abbey, the ground has for some time been clearing for the new station of the North-Eastern Railway, which, with its attendant buildings, will cover a very large area. It is found that the whole had been a Roman cemetery, and so used for a great length of time. It was apparently the burial-place of a poorer class than that which raised its monuments by the side of the great road; but it is also clear that it was divided into separate "regions," and that certain classes had their own portions and arrangements in it. The Roman interments are found in the uppermost bed of soil; and in some parts of the ground it would seem that Roman carters had been in the habit of "shooting" rubbish from the neighbouring city. There are thick strata of Roman bricks, mortar, and pottery, mingled with fragments of wall-plaster, on which coloured patterns are still distinct. Adjoining this rougher portion of the cemetery two or three deep pits, or "putei," have been found, into which, as was usual, the bodies of slaves had been thrown carelessly and pell-mell. No such "putei," it is said, have been found elsewhere in Britain. There are blocks of Knaresborough stone, about 20 in. by 10 in., roughly tooled and without inscription, which can have served no other purpose than that of a modern headstone. There is a small hollow on the top of some of the blocks now found, possibly for a wooden ornament, or for some sacrificial vessel.

The cemetery coffins had clearly been bought cheaply from some stonecutter's shop; and one at least was imperfect when so bought,—1,600 years ago. A single coffin bearing an inscription is very noticeable, since it records a "Decurio" of the "Colonia" of Eboracum, and is the first proof that the Roman city had a municipality.

Pottery, including some fine Samian fragments, bronze ornaments, coins in great numbers, shattered statuettes, and, in one case, a child's ball, with a clay centre, have been found. Two remarkable relics are specially mentioned. One is the skull of a young woman, containing a false palate of very thin gold; the other is a small tablet of bone on which are the words, "Domine victor vincas felix," — a mysterious line which is much exercising the antiquaries of York. It may be Christian; but is thought more probably to have a reference to the "Victor" sun of the Mithratic worship, which, as is known from its relics, was established in Eboracum.

The gravel below the cemetery bed has been excavated in some places to a considerable depth. It is full of glacial blocks, some of them boulders from Shapfell, and others masses of *greenstone from some unknown source.* The arrangement of these should be carefully examined, as they may have formed a sacred inclosure of an ancient British or Druidical order. One of the stone circles of Stonehenge, if we are not mistaken, is of greenstone from a distance.

HOW SCOTTISH LAW KEEPS HOUSES TENANTABLE.

A CASE has just been decided in the Edinburgh Law Courts that would be of service if applied to England.

James Thompson, a shopkeeper, sued his landlord, Daniel Gunn, for 8*l.*, in name of damages sustained in consequence of the defendant not keeping his tenant's shop, house, room, and cellar in such a state of repair as to render them fit for occupation, the same being utterly uninhabitable. The amount claimed was made up of various items, such as rent of another house, lodgings for children boarded out, and a doctor's bill for attendance and medicine.

Mr. Daniel Gunn would not admit that the state of the house was so bad as set forth by Mr. Thompson, and utterly repudiated the notion of a landlord's liability for a tenant's sickness and lodgings. The tenant, however, produced evidence to show that about a week after taking possession of the house it was discovered the family could not take up their permanent abode therein, as it was not only ruinous and dark, but was filled with very bad smells. The family slept on the premises occasionally.

Two police officers called in to inspect the place gave it a very bad character, and considered it a habitation totally unfit for human beings.

The landlord's advocate excused the charge made by the police, on the ground that the house was one of the oldest in the city of Edinburgh, and the landlord was desirous of preserving its antiquity, although he had done everything in his power to put it in a proper condition.

The Sheriff, in giving judgment, said there was no doubt of the house being in need of a great number of repairs. It was well known that tenants in the social position of James Thompson were not able on all occasions to avail themselves of the remedies presented to them by the law, and they were at the mercy of bad landlords who cared for nothing but rent, and, moreover, poor tenants did not care to institute proceedings of this nature on a chance of success. His judgment would be for the tenant, to whom he should award 5*l.* damages, with full Court costs, and 10*s.* for the police witnesses.

NEW TOWN-HALL FOR ST. HELEN'S.

THE memorial-stone of the new Town-hall for St. Helen's has been laid.

In 1871 the old town-hall, in the Market-place, was partly burnt down, and was subsequently temporarily repaired; but some months ago it was again burnt. It was then determined to erect a building suitable to the increasing requirements of the borough, and plans, by Mr. Sumners, of Liverpool, architect, were adopted.

The site of the new building is on the north side of Cotham-street, and is bounded on the north by Parade-street, on the east by Hardshaw-street, and on the west by Birchley-street, and covers an area of 6,000 superficial square yards. The principal front will be in Cotham-street, and will have a frontage of 200 ft. The style of architecture adopted is a simple adaptation of Gothic, suitable to the materials to be used in the construction, viz., picked grey bricks and Stourton stone, for porch, bay windows, and other finishings. The main entrance-porch will form a prominent feature in the design. It is approached by a spacious flight of steps and wide landings, enclosed by stone balustrades and piers for lamps, and has a buttressed base, upon which rest clustered red granite shafts, with carved caps and moulded bases, from which springs a deeply-recessed and moulded archway, with gable over. On the left of this, attached to the centre high portion of the building, and separating the same from the police buildings, is the clock-tower. It is square on plan to a height

of 85 ft., and to the top of the vane, on the upper slated roof, 130 ft. On the right of the porch is a wing, of two stories in height, terminated at the junction of Cotham-street and Hardshaw-street by a gabled projection, having a large overhanging bay-window, belonging to the mayor's parlour. On the left of the clock-tower will be the police-offices and court-room entrances, and at the base of the tower the entrance to the library and reading-room. In the plan the building is designed to afford accommodation for numerous municipal offices, including council-chamber, 42 ft. long by 32 ft. wide; assembly-room, 96 ft. long by 45 ft. wide, and 40 ft. high to the ceiling, and capable of accommodating about 1,000 persons; also police buildings, forming part of the general design and frontage to Cotham-street, and entered therefrom, with court-room, 50 ft. by 29 ft.

The total cost of the new structure is estimated at 28,000*l.* Mr. George Rome, of Liverpool, is the contractor, and the sub-contractors are,—for brickwork and excavating, Messrs. Makinson & Glover, Liverpool; masonry, Mr. James Leslie, Bootle; plumbing, Mr. Merrick, Liverpool; and plastering and slating, Messrs. Tanner & Son, Liverpool.

LEWES NEW TOWN-HALL.

A NEW Town-hall for Lewes, built by public subscription, on some land belonging to the Lewes Provision Market, having just been completed, the following vote of thanks, emblazoned, framed, and glazed, and surmounted with the Lewes Arms, was on Saturday last presented to the clerk. It bears the following:—

"Lewes Town and Record-room.—At a meeting of the Commissioners of the Lewes Provision Market, held at the above room, on Tuesday, the 7th October, 1873, it was moved by Mr. Frederick Flint, seconded by Mr. Thomas Bance, sen., and carried unanimously, 'That the best thanks of the Commissioners of the Lewes Provision Market be given to Wynne E. Baxter, esq., their clerk, for the able and efficient manner in which he has discharged the duties appertaining to that office, and also for the services rendered by him during the construction and completion of the new Town and Record Room; and that the High Constables of the borough of Lewes be requested to have a copy of this resolution illuminated and presented to him.'—(Signed) Robert Crosskey, Chairman, Senior High Constable of the Borough of Lewes."

THE ROMANISING OF OUR CHURCHES.

SIR,—You have inserted some very useful and timely particulars as to the "*Baldacchino*," but the placing of a table "*Altarwise*" and use of the term "*Altar*" are equally Romish and mischievous. Would it not be worth while to follow it up with the following letter of Archbishop Williams, of York, 1636, as nobody seems to know how entirely wide of the real Anglican Church "by law established" our buildings have now strayed? E. L. GARBETT.

A
COPIE OF THE
LETTER WRITTEN
to the VICAR of GR: against the
placing of the COMMUNION TABLE
at the EAST END of the
CHANCELL.

[By Archbishop Williams, when Bishop of Lincoln, in 1636. To the Vicar of Grantham.]

SIR,—With my very hearty Commendations. When I spake with you last, I told you that the standing of the Communion Table was unto me a thing so indifferent that unlesse Offence and Vmbrages were taken by the Towne against it, I should never move it, or remove it. That which I did not then suspect, is come to passe. The Alderman whom I have knowne this 17 or 18 years, to bee a discreet and modest man, and farre from any humour of Innovation, together with the better sort of the Towne, have complained against it. And I have (without taking Notice of your Act, or touching in one sillable upon your Reputation) appointed the *Church Wardens* (whome it principally doth concerne under the *Diocesan*) to settle it for this time, as you may see by this Copy inclose I.

Now for your owne satisfaction, and my poore Advise for the future, I have written unto you somewhat more at large than I vse to expresse myselfe is this kinde.

I doe therefore (to deale plainely) like many things well, and disallow of some things in your carriage of the Businesse. It is well done that you affect Decency and Comlinesse, in the officiating of GOD's Divine Seruice: That you president yourselfe with the Formes in his Majesties Chappels, and the Quires of Cathedrall Churches (if your Quire, as those others, could containe your whole Congregation,): That you doe the Reuerence appointed by the Canon to the blessed Name of JESUS, so it be done humbly, and not affectedly, to procure Deuotion, not Derision of your Parishioners, and that you do not maintaine it *Rationibus non cogentibus*, and so spoile a good cause with bad Arguments. These things I doe allow and practise. But that you should be so violent and earnest for an *Altar* at the vpper end of the *Quire*; That the Table ought to stand *Altarwise*; That the fixing thereof in the *Quire* is *Canonicall*, and that it ought not to bee removed to the Body of the Church; I conceive to be in you so many mistakings.

For the first, if you should erect any such *Altar* (which I know you will not), your Discretion will proove the onely *Holocaust* to be sacrificed thereon. For you have subscribed when you came to your Place, that *That other Oblation vsed by the Papists were vsed to offer vpon their Altares*, is a blasphemous Figment, and pernicious Imposture, *in the thirty-one Article:* And also, that we in the Church of *England* ought to take head lest our Communion, of a Memory, be made a Sacrifice: *in the first Homilie of the Sacrament.* And it is not the *Vicar*, but the *Church-wardens*, that are to provide for the Communion, and that not an *Altar*, but a faire joyned Table: *Canons of the Consocation*, 1571, pag. 18. And that the *Altars* were removed by Law, and Tables placed in their stead, in all, or the most Churches in *England*, appeares by the *Queenes Injunctions*, 1559, related vnto and so confirmed in that point by our *Canons* still in Force. And therefore (I know) you will not change a *Table* into an *Altar*, which *Vicars* were never inabled to set vp, but allowed once with others to pull downe. *Injunction of* 1° Elizab. *for the Tables in the Church.*

For the second point. That your Communion Table is to stand *Altar-wise*, if you meane in that place of the *Chancell* where the *Altar* stood, I thinke somewhat may be said for that; because the *Injunctions*, 1559, did so place it; and I conceive it to be the most decent situation, when it is not vsed, and for vse too, where the Quire is mounted up by steps, and open, so that hee that officiates may bee seene and heard of all the congregation. Such an one I heare your *Chancell* is not. But if you meane by *Altar-wise*, that the Table should stand along close by the Wall, so as you be forced to officiate at one end thereof (as you may have observed in great men's chappels): I do not beleeve that even the Communion Tables were (otherwise than by casualtie) so placed in countrey churches. For, besides that, the countrey-people would suppose them *Dressers* rather than Tables; and that Qu. *Elizabeth's* Commissioners for Causes Ecclesiasticall directed that the Table should stand, not where the *Altar*, but where the *Steps of the Altar* formerly stood (*Orders*, 1561), the Minister appointed to reade the Communion (which out of the Booke of Fast in 1° of the King, are pleased to call *Second Service*) is directed to reade the Commandments, not at the end, but at the North Side of the Table, which implies the End to bee placed towards the East great Window.—*Rubrick before the Communion.* Nor was this a new Direction in the Queenes Time onely, but practised in King *Edward's* Raigne, for in the Plot of our Liturgie sent by Mast. *Knox*, and *Whittingham* to Master *Calvin* in the Raigne of Queene *Mary*, it is said, that the Minister must stand at the North Side of the Table. *Troubles of Frankford*, pag. 30. And so in King *Edward's* Liturgies, the Ministers standing in the Middest of the *Altar*, 1549, is turned to his standing at the North Side of the Table, 1552. And this last Liturgie was revived by Parliament, 1° *Eliz.* cap. 2. And I believe it is so used at this Day in the most Places of *England*. What you saw in *Chappels* or *Cathedrall Churches* is not the Point in Question, but how the *Tables* are appointed to be placed in *Parish Churches*. In some of the *Chappels* and *Cathedralls*, the *Altars* may be still standing, for ought I know; or to make use of their Covers and Ornaments, Tables may be placed in their roome, of the same Length and Fashion the *Altars* were of. Wee know the *Altars* stand still in *Lutheran* Churches; and the Apologie for the *Augustan Confession*, Art. 12, doth allow it. The Altars stood a yeare or two in King *Edward's* Times, as appeares by the Liturgie printed 1549, and it seemes the Queenes *Commissioners* were content they should stand, as wee may gheese by the *Injunction*, 1559. But how is this to be vnderstood? The Sacrifice of the Altar abolished, these (call them what you will) are no more *Altars*, but tables of Stone or Tymber; and so was it alleaged 24 *Negoth.* 8° Edw 6, 1549.—*Subsato enim reliquo sacrificii, sequi videbatur mutatio tectorum.* And so may bo well used in Kings and Bishops Houses, where there are no People so void of understanding, as to bee scandalised. For upon the Orders of breaking downe Altars, all Dioceses did agree upon receiving Tables, but not upon the Fashion and Forme of the Tables.—*Acts and Monum.*, pag. 1212. Besides that, in the Old Testament, one and the same Thing is termed an *Altar* and a *Table*; an *Altar*, in respect of what is there offered unto God, and a *Table* in respect of what is there participated by Men, as for Example, by he Priests. So have you *God's Altar*, the verie same with *God's Table* in *Malachie* i. 7. The Place is worth the marking. For it answers that very Objection out of *Heb.* xiii. 10, which you made to some of your fellow Ministers; and one Master *Morgan* before you to *Peter Martyr*, in a Disputation at *Oxford*. Wee have no *Altar* in regard of an *Oblation*, but wee have an *Altar* in regard of *Participation*, and *Communion* granted unto us. The Use of an *Altar* is to Sacrifice vpon, and the Use of a *Table* is to eate upon; and because Communion is an Action most proper for a *Table*, as an Oblation is for an *Altar*, therefore the Church in her Liturgie, and Canons, calling the same a *Table* onely, doe not you call it an *Altar*. In king *Edward's* Liturgie of 1549 it is everywhere, but in that of 1552, it is nowhere called an *Altar*, but the *Lord's Board*. Why? Because the People being scandalized herewith in Countrey Churches, first beat them downe *de facto*, then the supreme Magistrates by a *Kind of Law* puts them downe *de jure*, and setting Tables in their roomes, tooke from us the *Children of the Church* and *Commonwealth*, both the Name and the Nature of former *Altars*, as you may see, *Injunction* 1559, referring to that Order of King *Edward* in his Councell mentioned, *Acts and Monum*, pag. 1211. And I hope you have more learning than to conceive the *Lord's Table* to be a new Name, and so to bee ashamed of the Name. For besides that CHRIST himselfe instituted this Sacrament upon a *Table*, and not upon an *Altar*, as Archbishop *Cranmer* observes, and others, *Acts and Monum.* pag. 1211, it is in the Christian Church 300 yeares more ancient than the Name of an *Altar*, as you may see most learnedly proved out of S. *Basil*, *Origen* and *Arnobius*, if you doe but reade a Booke that is in your Church, *Jewel against Harding of Private Masse*, Art 3, p. 143. And whether this name of *Altar* crept into the Church in a kinde of complying in Phrase with the People of the *Jewes*, as I have read in *Chemnitius*, *Gerardus*, and other *sound Protestants* (yet such as suffer Altars to stand); or that it proceed from these Oblations made upon the Communion Table for the Vse of the Priest, and the poore, whereof wee reade in *Justin Martyr*, *Irenæus*, *Tertullian*, and other ancient writers; or because of the Sacrifice of Praise and Thanksgiving, as Archbishop *Cranmer*, and others thought (*Acts and Monuments*, pag 1211), the Name being now so many yeares abolished, it is fitter in my Judgement, that the *Altar* (if you will needes so call it) should, according to the *Canon*, stand *Tablewise*, than your *Table* to trouble the poore Towne of *Gr:* because erected Altarwise.

Lastly, that your Table should stand in the higher part of the Church, you have my Assent already in Opinion: but that it should be there fixed, is so farre from being canonicall, that it is directly against the Canon. For what is the *Rubrick* of the Church but a *Canon?* And the *Rubrick* saith, it *shall stand in the Body of the* Church, *or of the* Chancell, *where Morning-prayer and Evening-prayer be appointed to be read.* If therefore Morning and Evening Prayer bee appointed to be read in the Body of the Church (as in most Countrey Churches it is), where shall the Table stand most Canonically? And so is the Table made removeable, when the Communion is to be celebrated, to such place, as *the Minister may be most conveniently heard by the Communicants*, by *Qu. Eliz. Injunct.* 1549. And so saith the *Canon* in Force, that *in the Time of the Communion, the Table shall bee placed in so good sort within the Church and Chancel, as thereby the Minister may be most conveniently heard.*—Can. 82. Now iudge you whether this Table (which, like *Dedalus* his Engines, moores and remooves from Place to Place, and that by the inward Wheeles of the Church *Canons*) bee fitly resembled by you to an *Altar*, that stirres not an inch, and supposed to be resembled canonically. And if you desire to know out of *Eusebius*, and *Augustine*, *Durandus*, and the fifth *Councell of Constantinople*, how long Communion Tables have stood in the Midst of the Church, reade a Booke, which you are bound to reade, and you shall bee satisfied. *Jewel against Harding of private Masse*, Art. 3, p. 145. The sum of all is this:—

1. You may not erect an *Altar*, where the Canons onely admit a Communion Table.

2. This *Table* must not stand *Altarwise*, and you at the North End thereof, but *Tablewise*, as you must officiate at the *North side* of the same.

3. This Table ought to bee laid up (decently covered) in the Chancell onely, as I suppose, but ought not to be officiated upon, either in the *first* or *second Service* (as you distinguish), but in that place of the *Church* or *Chancell*, where you may be seene and heard of all. Though peradventure you be with him in *Tacitus*, Master of your owne, yet are you not of other Men's Eares; and therefore your Parishioners must be Iudges of your Audiblenesse in this Case.

Whether side soever (you or your Parish) shall yeeld to the other, in this needlesse Controversie, shall remaine, in my poore Iudgement, the more discreet, grave, and learned of the two. And by that time you have gained some more experience in the *Cure of Soules*, you shall finde no such *Ceremonie* as *Christ in Charitie*;

Which I recommend unto you,
And am ever, &c.*

LIABILITY OF VESTRIES UNDER LOCAL MANAGEMENT ACT.

BAD DRAINS.

THE Solicitor-General, at the instance of the St. Pancras Vestry, has revived the vexed question, in regard to the liability of parishes to make good damages arising from bad drainage.

The case is one of some interest to the building world, as well as to owners of houses in London, and may be briefly disposed of by stating that at the last term a jury, before the late Lord Chief Justice Bovill, gave a verdict, with 50*l.* damages, to a Mr. Hammond, of the Elephant and Castle Hotel, St. Pancras, against the Vestry of St. Pancras, through an old brick drain bursting and flooding his cellar of wines.

The vestry still disputing their liability, the Solicitor-General moved for a rule to enter a nonsuit. At first it was doubted whether the drain was dedicated to the parish, but the vestry now admitted that the Local Management Act had made them its sponsors, as it drained more than one house. The 72nd section of that Act imposed upon parishes the duty of seeing "that the sewers were properly constructed, cleared, cleansed, and emptied."

At the trial the jury found that the Vestry did not and could not have known of the drain, though they might have known, by the exercise of care and inquiry. They also found that the defendants did not know, and could not have known, of the obstruction before the mischief occurred.

It was submitted to the Court, sitting in *Banco*, that there was no duty upon the Vestry to cleanse drains of which they did not know the existence; and it would be a very serious thing if they were saddled with ruinous drains constructed before the Vestry acquired any jurisdiction in the matter, and unknown to them. A rule was also asked to suspend judgment upon a technical ground, that the declaration did not allege negligence, but simply an omisson to perform a duty on the part of the Vestry, and therefore showed no good cause of action.

The Judges, Brett, Grove, and Keating, granted the rule to show cause; and where and when the ligigation will end is a query.

BRADWELL, OXON.

THE Church of SS. Peter and Paul, Bradwell, having been closed for some months while undergoing a thorough restoration, was opened on the 30th ult. by the Bishop of Oxford. The church consists of nave, chancel, western tower, with spire, north and south transepts, and a north chantry chapel. The walls of the chancel are early twelfth-century work, though they have been pierced, and windows of the early part of the fourteenth century inserted. The chancel arch and the arch to the chantry chapel are thirteenth-century work, and the walls of the chapel were probably built at the end of the same century, and the east window, which remains, is of that period.

The south transept is early fourteenth-century work, with arch and window of the same character, and contains a very good piscina, with a pointed outer arch and trefoiled inner one; the surface of the wall round the outer

* From "*A Coale from the Altar*, or an Answer to a Letter, not long since written to the *Vicar* of *Gr.* against the placing of the Communion Table, &c., &c. Lond. 1637." Brit. Mus. Lib. 700, g. 13.

arch enriched with foliage, and a corbel for an image close to it.

The north transept is fifteenth-century work, with a stair turret at the north-east angle. The arch opening into it from the nave is thirteenth-century work, with good foliated capitals; one of which was mutilated, but has been well restored.

The font is very good twelfth-century work; it has a large basin of the quatrefoil form, with heads in the hollows, and is supported on four large shafts, with scalloped capitals, and small shafts introduced between the large ones.

Amongst other works, the old ringing-floor has been replaced with a new one at a higher level, thus throwing into view three thirteenth-century single-light windows in the base of the tower; and the font has been restored and placed here, and a very convenient baptistery is the result.

The architect is Mr. E. G. Bruton, of Oxford; and the builder is Mr. Alfred Groves, of Milton.

BUILDERS' BENEVOLENT INSTITUTION.

The twenty-sixth anniversary festival in aid of the funds of this Institution was held at Willis's Rooms, King-street, St. James's, on Thursday evening, the 6th inst., the President of the Institution (Mr. Thomas Robinson, of the firm of Cubitt & Co.) in the chair.

The usual loyal and patriotic toasts having been duly honoured (Captain Stanley Bird responding for the Volunteers),

The Chairman said: Gentlemen, I have now to claim your serious and earnest attention to the toast of the evening, "Prosperity to the Builders' Benevolent Institution." I need not occupy your time with any detailed account of the origin or the history of the Builders' Benevolent Institution, for they are known to many of you better than they are to myself. I may, however, briefly remind you that during the time that the Institution has been established there has been invested in the Government funds the sum of 16,620*l.*, out of which sum 3,360*l.* are set aside for a special building fund should you determine to build, but which remains for future action, leaving upwards of 13,200*l.* invested, and available for the objects of the Institution, and the interest of which is constantly added for the maintenance of the expenses of the Institution. During the time, in addition to the amount invested, there has been distributed in pensions the,—I think I may say large,—sum of 17,150*l.* This large amount has been distributed with great care amongst the deserving objects of the charity, and it is impossible to calculate or to over-estimate the good that the distribution of such a comparatively large sum must have effected amongst objects so deserving. There have been altogether 124 individuals who have been recipients of the Institution's pensions, 80 of whom are now deceased, leaving 41 still dependent upon the funds of the Institution, and receiving its benefits; and there is to be an election of two more pensioners during the present month, which will make up the number to 46 pensioners now receiving the benefits of the Institution. Such, then, gentlemen, is the state of our funds and progress. But while we cannot but admit that it is to a certain extent satisfactory that so much good has been done, I think that most of us will admit that there is still more to be done; and I ask you to bear in mind that, then to continue the good which has been done in the past, it is necessary to continually agitate for subscriptions. The committee would be glad, if we will give them the funds, to place a few more pensioners on the list, so that as few as possible might be sent away unsuccessful and discouraged. The committee would also be glad, if they had the means, to give something more to pensioners than the 24*l.* or 20*l.* which they now receive, which, although of great use to its poor recipients, does not seem to me quite what it should be, considering the interests connected with this charity. Making the building trade generally, I think it is pretty well known that it is one of a more than usually hazardous nature. The great risks they have to contend with, the fierce competition they have to fight against, the many unpleasant circumstances and complicating causes over which they have no control,—all these things, I say, tend to make the trade of the builder a peculiarly hazardous one; and bearing that in mind, it is not to be wondered at that some few may succumb to these adverse circumstances, and sink, even from affluence into comparative poverty, and even, in many cases, to positive distress. In conclusion, the chairman strongly urged the necessity of the amounts of the annual subscriptions being increased.

Mr. Macey, in appropriate terms, proposed the next toast, "The Chairman and President," which was duly responded to.

At this stage of the proceedings, lists of subscriptions in aid of the charity were announced. The total amount promised was 324*l.*, and this announcement was received with great cheering, although the chairman stated that the amount was not so satisfactory as on some former occasions.

The Chairman next proposed "The Patrons, Vice-presidents, and Trustees," coupled with the name of Mr. Rogers, who briefly responded.

Mr. George Dines proposed the next toast, "The Treasurer" (Mr. George Plucknett), who, in responding, earnestly advocated the necessity for increasing the funds at the disposal of the Institution.

"The Architects and Surveyors" was proposed by the chairman in graceful terms, and responded to by Mr. Sandell.

The next toast was, "The Directors and Stewards," coupled with the name of Mr. Simpson, who responded.

The last toast, "The Secretary, Mr. A. G. Harris," was proposed by the chairman in appreciative terms; and Mr. Harris, in responding, said he had now been twenty-five years in the service of the Institution, and had ever made it his business to promote, to the utmost of his ability, the prosperity of the Institution.

THE ARTIZAN REPORTERS AT THE VIENNA EXHIBITION.

Among the pleasing incidents which marked the visit of the English artizan reporters sent by the Birmingham Chamber of Commerce and the Society for the Promotion of Scientific Industry, Manchester; at the banquet given to them by his Excellency Baron Schwarz Senborn, the Baron requested each artizan reporter present to forward to him on their return to England a photographic portrait, with his name, address, and the manufacture upon which he reported. The "cartes" have been sent inclosed in an album said to be of considerable beauty. The address which precedes the portraits was drawn up by Mr. Charles Hibbs (the reporter on guns), and the title of the address and various words and initial letters are illuminated by the pen of Mr. Frank G. Jackson. The portraits were arranged in sets of four to each page, and the whole was bound together in dark brown russet-tinted morocco, ornamented in gold, with white satin linings in the interior of the boards. On the cover there was introduced the monogram of Baron Senborn, surmounted with a baron's coronet, in saw-pierced metal, enamelled and gilded. Well done, men of Birmingham.

TECHNOLOGICAL EXAMINATIONS.

The Programme of Society of Arts' Examinations in the Technology of the Arts and Manufactures of the Country for 1874, is now ready for issue. These examinations are held annually, in conjunction with the examinations of the Science and Art Department.

The subjects for the year 1874 will be Cotton, Paper, Silk, Steel, Carriage-building, Pottery and Porcelain, Gas-manufacture, Glass-making, and Cloth-manufacture. Candidates, in order to obtain certificates in any of these subjects, must pass the examinations of the Science and Art Department in certain sciences, which are specified in the programme as bearing upon the particular art or manufacture. In addition to these, special papers will be set in the technology of each manufacture, by examiners appointed by the Society of Arts.

The prizes offered by the Society in each of the nine subjects are given in the programme.

In order that these examinations may really be successful in promoting technical education in this country, it is desirable that encouragement should be given to candidates by the offer of prizes and scholarships. With this object the council appeal to the trade guilds of the city of London, to merchants and manufacturers, and to the members of the Society generally, to aid them by contributing to the prize fund.

Books Received.

A Record of my Artistic Life. By J. B. Waring. Trübner & Co. 1873.

Such a title as "A Record of My Artistic Life" requires a strong name after it to obtain the attention of the public, and we are disposed to think Mr. Waring would have had a better chance of a good sale if he had called his book "Art Jottings and Home Struggles"; "An Architect's Note-book"; "Rambles Abroad and Hard Work in England," or any other general title less personal than the one he has adopted. We hope for his sake that our impression may prove incorrect. Mr. Waring has travelled, and is, amongst other things, a very clever draughtsman; and the book before us mainly consists of the notes and jottings made abroad, with here and there an illustration by his facile pencil, and an occasional complaint that his endeavours have not obtained for him the return he deserved. Some of his earlier lucubrations are reprinted from our own pages, where they first appeared. We quote a few paragraphs from his later observations, headed "On Lineal Expression and Architectural Design," as a sample of the style of the book.

"Architecture, I think, shows the stubbornness and incongruity of strongly-marked qualities more clearly than the other arts, there being less to confuse the ideas than in sculpture or painting, and it exhibits better the gradual, almost imperceptible differences by which alone they are made to harmonise and their antagonism rendered less palpable. It must be premised that as art, like civilisation, admits of no chronologically continuous development, but shows various phases in various and unconnected periods, in filling up and explaining the necessary gradations of a particular class or style of building, we must be prepared to put chronological order out of our minds. As one, for instance, would be forced to commence the history of architecture with the comparatively modern remains of Druidical times.

Let us commence, then, with retaining what is beautiful of the Italian, what is grand of the Egyptian, what is picturesque of the Gothic, and how does the idea of the most skilful fusion of them affect the mind? Even unite the graceful picturesqueness of Moorish leaf ornament and the rough picturesqueness of a Gothic monument, and could any imagination conceive an agreeable combination? In either of the cases would a superior or equal style be educed? or rather would there not be a hybrid conglomeration, destroying the charm of each? Sicilian and Spanish Saracenic have both been skilfully blended with Norman and Gothic respectively. Yet the architecture thus produced, however its novel effect may charm us, ranks in each case lower than its primary and pure constituents, and is universally allowed to be *theatrical*, in a lowering sense of the word; it is here the same as before, the different qualities of each are deteriorated in combination. Let us now take an Elizabethan building: here we have much that is allowedly coarse and grotesque; here, might the breeder of styles say, 'is a fine opportunity for a cross with the graceful or the beautiful'; let him then put up a Canova in the niche, or replace that grotesque column with its Grecian type, and is he not on the right track to ruin the whole building? It is not prejudice which would affright the admirer of this style were you to bring the orders of ancient Greece for his use.

The building has one distinct quality or character, and his sense of propriety or taste at once tells him that these, though good in themselves, are not good for his purpose, but if carried out through the whole building, even retaining the outline would ruin its charm. We may assert the same as regards two phases of character in the same style. There is a corresponding phase of Italian architecture in Venice, as seen in many parts of the Doge's Palace. I mention Venice more especially, because the Cinque Cento of that city bears more striking features of resemblance to our Elizabethan than the Cinque Cento of Italy generally, having amongst them those many curved gables so common with us. Now, were you to apply any ordinary string-course, niche, moulding or foliated ornament of the one to the other, they would be mutually out of place; for the character of strong or grotesque picturesqueness in the one will not amalgamate satisfactorily with the grace, the delicacy, often the weakness, of the other.

There is no more difference as regards the

expression of form between Grecian, Roman, and Italian architecture, or between Doric, Ionic, and Corinthian, than there is between the expression of form in the Hercules, the Gladiator, and the Apollo. Yet who would expect to form a more perfect fourth from the most skilful and artistic combination of the three. Blend them as you will, and the many attempts of this nature by various celebrated modern architects, however satisfactory in themselves, all point out the futility of hoping to excel or equal the excellence of each as they are known to us in their separate characters. It would seem, then, essentially wrong to graft the excellencies of one style to the excellencies of another, in form or ornament; and yet we have many buildings whose size alone would render them grand, and arranged in the grand simplicity of Grecian art, detailed out with the spirit of Ancient Rome, of Palladio, and Vignola, nay, often with the weak delicacy of Cinque Cento and the richness of Gothic. It is but too usual to see the celebrated works of the past the models for our modern buildings, and while the essential original forms are retained, the whole character is deteriorated, if not destroyed, by that studied refinement and variation of detail which our books, our travels, our studies render so easy of obtaining, and which are so ruinous in their effect."

Touching the author's complaints, he is much too sensible not to see that the course he took, consequent on his expressed dislike of "office work," the confinement of which "suited neither his health nor his temper,"—was not calculated to insure success as an architect; so that it must have been in another direction that he looked for the reward which he considers he has failed to obtain.

The book contains many useful observations and suggestions; and we cordially wish the author a good future out of consideration for the industrious past.

How to Make Money by Patents. By CHARLES BARLOW. Third edition. London: Marlborough & Co., Warwick-lane.

IN the preface to this edition of a volume already noticed in our columns, the author says:—

"Never has there been so prosperous a time for the owners of patent privileges as during the last few years. The rising prices of fuel and of raw materials have both stimulated and rewarded patentees. If it were inquired what is the best mode in these days of acquiring wealth rapidly, the ready answer might be,—to procure a patent and then form a limited liability company to purchase it. The number of such companies formed within the last three years for purchasing and working patents almost exceeds the bounds of credibility, and the amount of capital subscribed almost exceeds computation. Thus much is certain, that whenever a patentee can show successful, or at any rate dazzling, experiments, or *prima facie* demonstrate the feasibility of his invention, he may readily procure capital for working it through the instrumentality of a company."

Mr. Barlow writes in the interest of inventors and patentees; and we must refer those of them who wish to know "how to make money by patents" to his successful publication.

By the way, we may here note that the report of the Commissioners of Patents for inventions for last year has been issued. The number of applications for letters recorded within the year 1872 was 3,970; the number of patents passed thereon was 2,771; the number of specifications filed in pursuance thereof was 2,734; the number of applications lapsed or forfeited, the applicants having neglected to proceed for their patents within the six months of protection, was 1,199; the number of patents void, the patentees having neglected to file specifications in pursuance thereof, was 37. It appears that 27,683 patents bear date between the 1st of October, 1852, and the 31st of December, 1865. The additional progressive duty of 50*l.* was paid at the end of the third year on 7,798, and 19,885 became void. The additional duty of 100*l.* was paid at the end of the seventh year on 2,664 of the 7,798 remaining in force at the end of the third year, and 5,234 became void; so that about 72 per cent. of the 27,683 patents became void at the end of the third year, and 91 per cent. at the end of the seventh year.

The Journal of the Royal Historical and Archæological Association of Ireland; originally founded as the Kilkenny Archæological Society. Vol. II. Fourth Series. July. 1873. No. 15.

THIS issue of the Irish Archæological Journal contains an interesting memoir of Gabriel Beranger and his labours in the cause of Irish art, literature, and antiquities, from 1760 to 1780, with illustrations, by Sir W. R. Wilde, M.D.,—continued from Vol. I., Fourth Series, page 260. There are also papers on inscribed pillar-stones,—Gowran,—by Mr. R. Rolt Brash, M.R.I.A., and on a pagan cemetery at Drumnakilly, near Omagh, by Mr. N. F. Wakeman; besides others, and the usual report of proceedings.

VARIORUM.

MR. THORNBURY, in the current number of "Old and New London" (Cassell), has the following paragraph on the clock of the Royal Exchange:—"The clock constructed by Dent, with the assistance of the Astronomer Royal, is true to a second of time, and has a compensation pendulum. The chimes consist of a set of fifteen bells, by Mears, and cost 500*l.*, the largest being also the hour-bell of the clock. In the chime-work, by Dent, there are two hammers to several of the bells, so as to play rapid passages; and three and five hammers strike different bells simultaneously. All irregularity of force is avoided by driving the chime-barrel through wheels and pinions. There are no wheels between the weight that pulls and the hammer to be raised. The lifts on the chime-barrel are all epicycloidal curves; and there are 6,000 holes pierced upon the barrel for the lifts, so as to allow the tunes to be varied. The present airs are "God save the Queen," "The Roast Beef of Old England," "Rule Britannia," and the 104th Psalm. The bells, in substance, form, dimensions, &c., are from the Bow bells' patterns; still they are thought to be too large for the tower. The chime-work is stated to be the first instance in England of producing harmony in bells."——According to the *Art-Journal*, "It is rumoured that a well-known firm of picture-dealers has offered 50,000*l.* for the artistic contents of the late Sir Edwin Landseer's studio."——The *Gardener's Magazine* thus treats of the winter decoration of flower-beds:—"The best mode of employing bulbs is in association with early-flowering herbaceous plants, such as wallflowers, candy-tufts, arabis, primroses, and other such things that are adapted for planting in masses and belts. A display of bulbs may be heightened in effect by means of a sufficient surfacing of the ground with close growing herbaceous plants that flower early, and an additional advantage of employing them is that they serve to mark out the lines of the beds, and give them a furnished, and therefore useful, appearance throughout the early portion of the winter, when, as yet, not a crocus or hyacinth or tulip has speared through. Generally speaking, very little difficulty would be experienced in effecting a comely combination; but to carry out any good scheme of the kind requires a large stock of plants, and to provide them is one feature of the method the garden artist must follow."——A writer in the *Leisure Hour* says of "The Seven Churches of Ireland":—"It has been affirmed that the early Christianity of Ireland came not from the Continent nor from Britain, but direct from the East; and there is even a legend that St. James visited Ireland after having been in Spain. Were this so, there might be ground for supposing the early Irish Christians to have taken 'The Seven Churches' of Asia as the model for imitation. But waiving such speculation, it is a curious fact that groups of seven churches were in former times common throughout Ireland. There are only two such sites now celebrated and visited by tourists, Glendalough and Clonmacnoise, but in many parts I found traces or traditions of the same number of churches, even when the actual buildings or ruins gave no sign of their existence. Clonmacnoise, four or five miles from the Shannon Bridge at Athlone, is the rival of Glendalough as the site of '*The* Seven Churches,' but at Clonmacnoise there are ruins of many more chapels than seven, and *two* round towers. At Scattery, in County Clare, and at Rattoe, County Kerry, are also seven churches. At Kilbarry there are remains of three chapels only, and the stump of a round tower; yet the neighbours speak of 'the seven churches of Kilbarry.' Tuam, we know from old records, had once seven churches, but only one of them survives, which is now the Cathedral of St. Mary. Inniscealtra, the holy island of Lough Derg, in Clare, is one of the few places where the ruins of exactly seven chapels, and the usually attendant round tower, can be seen. But in remote times the sacred and symbolic number was common in Ireland, even when (as at Clonmacnoise) the zeal and piety of builders had added new chapels to the original ones."——According to *Nature*, "Professor Sylvester has recently made a discovery which is likely to create some interest, not only amongst mathematicians, but also amongst mechanicians and instrument-makers. By means of a sort of lazy tongs, he has succeeded in converting spherical motion into plane motion, a result, we believe, hitherto looked upon as unattainable."

Miscellanea.

The Albert Memorial Chapel, Windsor Castle.—The marble reredos and *bas-reliefs* intended for the decoration of the east end of the Albert Memorial Chapel have just arrived at Windsor Castle, having been forwarded from Baron Triqueti at Paris. The design of the reredos consists of a base and three panels, canopied, and surmounted by a Greek cross. From the top of the base to the upper part of the cross the height is about 13 ft.; the width being about 10 ft. The base and ornamental work is executed in coloured marbles and alabaster. The three panels are sculptured in white Sicilian marble, and represent the Resurrection. In the central panel is the figure of the Saviour, rising from the tomb or sepulchre. In the right panel a kneeling angel clasps portions of the cross; the left panel being occupied by a *bas-relief* of an angel holding in the right hand a crown of thorns, and, uplifted in the left, the sacramental cup. The inlaid marble panel on the left represents the dead Christ being borne by Joseph to the burial-place which he had prepared. The inlaid marble panel to the right shows the Saviour lying in a sarcophagus open and partly covered with the grave-clothes, while above is the figure of a female kneeling.

Reopening of the Chapel Royal, Savoy.—The Chapel Royal, Savoy, which has been closed during the last two months for the purpose of being decorated, and also to admit of two memorial windows being erected, has been reopened. The Rev. Henry White, the chaplain, preached in the forenoon, when there was a crowded congregation, and some hundreds were unable to obtain admission. One of the memorial windows—that on the east side of the nave—is in commemoration of the recovery of the Prince of Wales. The window on the west side is in memory of the former chaplain, the Rev. John Foster, who died recently. The restoration of an interesting memorial has also been effected since the closing of the chapel. Bishop Dunkeld, who resided within the limits of the Savoy in the sixteenth century, was buried within the chancel of the chapel at that period, and an inscription in Latin, engraved on brass, was placed over his tomb. This brass was missing after the fire which took place in the chapel some years ago, and has only recently been discovered. It has again been set in a full-length tombstone of black marble, and placed in the chancel over Dunkeld's grave.

Causes of Railway Accidents.—At a meeting of the King's-cross branch of the Amalgamated Society of Railway Servants, Mr. Bowles, secretary to the North London district, said if the society could carry out one of its great objects, viz., the shortening of the hours of labour, there would be fewer railway accidents. Nine out of ten railway accidents were preventable. The companies had been frequently recommended by the Board of Trade and the coroners' juries to adopt the absolute block system and interlocking signals, but all these would be of little use if the hours of labour of railway servants were not reduced, or if engine drivers had to work from fourteen to twenty hours at a stretch without getting sleep. If juries will persist in keeping such disgraceful facts as Mr. Bowles brought forward in view in amercing railway companies in damages for accidents until their directors are compelled to wake up themselves and employ waking officials, instead of waking up the own and other sleepers with the intolerable nuisance of railway whistles; the unmerciful use of which implies that the normal state of the signal-men is the sleeping state.

Marylebone Church.—This church has been opened after being closed for a period of two months. The internal portion has undergone renovation, painting, and artistic decoration which were executed by Messrs. Phillips, Baker-street, under the direction of the borough surveyor and a committee of inspection.

Lead Water-Pipes.— The outcry against lead-pipes has been as loud and as indiscriminate in Paris as in London. The action of pure or distilled water on lead was shown many years ago by Professor Christison at Edinburgh, and was first brought under public notice by the *Builder*. Since that time a variety of assertions have been made and opinions expressed on the subject of the action of lead on water, or of water on lead, and "counsel has been darkened by words without understanding"; but it seems to be an ascertained fact, long since noticed in our columns, that water containing carbonate of lime, which very generally prevails in potable water, so acts on lead as in most cases to produce a coating which protects the water from the lead and the lead from the water. This seems to be the case in Paris; but an inventor of tin-lined pipes appears to have created a stir against the use of lead water-pipes at all, although such pipes are known to have withstood the action of Paris water for many years, and the council run the risk of being called upon to replace something like 1,000 miles of lead-pipes. The subject, we hear, is to be referred to the Academy of Sciences, which, it is to be hoped, will settle the question once for all.

The Assyrian Discoveries.—We are glad to learn that the trustees of the British Museum have directed Mr. Geo. Smith to proceed to the scene of his recent labours in Mesopotamia, for the purpose of pursuing his researches there. However reluctant the trustees might have been to undertake the expense of the new researches, it was hardly possible for them to shrink from it after the liberality evinced by the proprietors of the *Daily Telegraph*. Mr. Smith has read two interesting papers before the members of the Biblical Archæological Society. The first related to fragments of an inscription giving part of the chronology from which Mr. Smith believes the Canon of Berosus was copied; while the second referred to a new fragment of the Assyrian Canon belonging to the reigns of Tiglath-Pileser and Shalmaneser, and Mr. Smith states that these fragments materially confirm the chronology of the Bible. Sir Henry Rawlinson expressed his opinion that the inference drawn by Mr. Smith was too wide for his premises, but he acknowledged that the subject was full of interest for the Biblical and archæological student.

Inauguration of Working Men's Extension of Queen's Hospital, Birmingham.—The new out-patient department, or working men's extension of the Queen's Hospital, Birmingham, has been opened by the Mayor in the presence of a large company of spectators. In the new building now erected there is a large room, together with sleeping and sitting rooms, for the officers of the institution; and, besides that accommodation, there is now at the back a mortuary and a laundry, where all the washing can be done without being sent off the premises. To provide all this, the committee had to expend a large sum of money; but the additional accommodation will relieve the old hospital to such an extent as will allow them to provide from eighteen to twenty new beds, so that the whole of the cost is not to be charged to the out-patient department. The committee has spent upwards of 20,000*l.*, which will include alterations in the old building, and of that amount they still want the sum of 7,000*l.*

The Dock at Fleetwood.—A dock is now in course of construction here. Two wells, each about 40 ft. deep, have been sunk at the north-east and south-west corners of the site of the intended dock, and in the latter a steam-pumping apparatus has been put down. These wells will drain the water from the surrounding land, and will be kept clear by pumping. There is now on the ground a large quantity of stone, in immense blocks, from the quarries at Longridge, near Preston, and several limekilns are being built. The trench for the dock wall will be 17 ft. wide, and this part of the undertaking is now in progress. The foundation will be upon concrete 14 ft. wide, and will rest upon a bed of fine stiff clay; and the stone wall will be 31 ft. high. The dimensions of the dock will be 1,000 ft. long by 400 ft. wide. The entrance-gates will be 50 ft. across; and the depth of water at spring tides will be 21 ft.

A New Town-hall for Hastings.—The town council of Hastings have decided to erect a new town-hall, at a cost of 10,000*l.*, and sums of 100*l.*, 50*l.*, and 25*l.* are to be offered for the best designs. A proper town-hall has been long needed for Hastings.

The Cottage Home System for Pauper Children.—The benefit derived from this system is being widely recognised. Not only are the children kept in better condition, but the cost, instead of being nearly 10s. a week for each child, is generally not more than 5s., or even less. There is a movement, however, for the establishment of lady visitors and ladies' committees of inspection. In those places where the greatest success has attended the boarding out, it is almost invariably found in connexion with the watchful supervision of benevolent ladies, as at Birmingham, Windermere, Swindon, Dorking, &c. At Swindon Union the guardians have appointed a ladies' committee to co-operate with them in the oversight of boarded-out girls. The Government, have collaterally set a good example, by the appointment of a lady, Mrs. Nassau W. Senior (sister of Mr. Thomas Hughes, M.P.), as one of the Local Government Board inspectors of union schools, &c.

A Fever-stricken City.—The yellow fever has been raging in Memphis for six weeks, and the mortality has been dreadful. The deaths have already been 1,000, out of a population of 40,000, but large numbers of the people fled from the city. There were five Roman Catholic priests in Memphis, and all remained faithful to the sick and dying, and all fell victims to the disease. Their places were filled, as fast as they died, by Catholic priests from other cities. A large number of sisters of charity were indefatigable, and some have died at their posts. The fever was brought to the city by a sailor. A kind-hearted Irishman received him into his house, and cared for him, but he died the next day. Good nature does a deal of harm in the world. The Irishman and all his family died, and the pestilence spread in all directions. This year Memphis has had small-pox severely, then cholera, and now this last and dreadful disease. The city resembles London during the great Plague.

Interesting Archæological Discoveries.—Mr. J. R. Mortimer, of Driffield, an archæologist, has examined three tumuli in the "Garton Slack," Wetwang, near Driffield. In these tumuli were twelve interments by inhumation, and four after cremation. The relics which accompanied these interments consist of a beautiful jet button of large size, a bone pin, and two other bone articles of unknown use, a dagger-shaped instrument or weapon, 10½ in. long, made from the left-side human femur. There were also found a finely-polished flint axe, three flint knives, and many flakes. The articles of earthenware brought to light comprise a fine food vase, and a small cup-shaped vessel; also four elegantly-formed and ornamented drinking-cups, one of which was uninjured.

The Metropolitan Tramways.—The London Tramways Company, which, amongst its other routes on the south side of the Thames, has a line between Vauxhall and Camberwell-green, in connexion with the line between Camberwell, Peckham, and Greenwich, has just opened an extension route over Vauxhall Bridge to the Victoria Railway Station, so that the line originally contemplated between Pimlico, Peckham, and Greenwich, is now practically effected. There are now three companies in active operation,—the London Tramways Company, the North Metropolitan Tramway Company, and the London Street Tramways Company; and there are thus at the present time nearly sixty miles of tramway open for traffic in the metropolis, with additional lines in course of construction.

Fire in a Church during Divine Service. Trinity Church, Nottingham, has just undergone alterations, and while the Bishop Suffragan of Nottingham was preaching the opening sermon a person entered the edifice, and said the upper part was on fire. The vicar hastened to inform the preacher, who, without emotion, closed the service. The congregation, though not knowing the cause of the sudden dismissal, quietly walked away. After an investigation it was found that the roof had caught fire, owing to the heat of the new pipes. The superintendent of the fire-brigade was fortunately amongst the congregation, and the fire was extinguished before any great damage had been done.

The Institution of Civil Engineers.—At the first meeting of this Society for the Session 1873-4, which was held on Tuesday, the 11th inst., Mr. Hawksley, the President, being in the chair, the paper was read on "The Design and Construction of Modern Locomotive Engines," by Mr. John Robinson, C.E., of Manchester.

Wykham Park, near Banbury, Oxfordshire.—Extensive alterations have been completed here, the seat of Mr. Wm. Mewburn, in removal of the old staircase, and reconstruction of a new one, with oak stairs. The entire mansion has undergone renovation and decoration. The large dining-hall, drawing-room, music-room, library, ordinary dining-room, staircase, and bedrooms, having all been treated in various styles of art, including a Pompeiian boudoir. The builder's work was executed by Mr. Albert Kimberly, of Banbury; the heating by Messrs. Boulting, the gas arrangements by Mr. Rothwell, and the decorations by Messrs. Phillips, all of London. Messrs. John Tarring & Son, were the architects.

Vandalism at St. Sophia.—A paragraph in the *Levant Herald* mentions the wanton destruction of an inscription found near the south-west corner of St. Sophia, where a new enclosure is being built. It occupied the left corner of the entrance to the courtyard, and *was* valuable—*was*, for the only part which can make the rest intelligible has been knocked of. The authorities would perhaps look on the matter in a serious light, if they knew the fact that what has been destroyed is a name that they reverence. Antiquaries complain that improvements are going on so far and wide over the city that within a short time there will be nothing left to interest.

Eltham, Kent.—The foundation-stone of a new church at Eltham was laid on Friday last, by Sir C. H. Mills, bart., M.P. for West Kent, in the presence of the Lord Bishop of Rochester and a large assembly. The church is to be dedicated to St. John the Baptist, after the old church, which, upon the completion of the new one, is to be taken down. The execution of the works has been entrusted to Mr. James G. Naylar, of Rochester, from the designs of Mr. A. W. Blomfield, M.A. The quantities were prepared by Messrs. Gardiner, Son, & Theobald. This is the third church, besides church schools, which Mr. Naylar has erected at Eltham within the last six years.

Thornhill Obelisk, Stalbridge. — Mr. Boucher, of Thornhill House, has restored to the sight of the inhabitants of the neighbourhood the form of an object well known to their fathers,—the obelisk which they called "Thornhill Spire,"—a memorial of a Dorset worthy, Sir James Thornhill, who built it to the memory of George II. and Queen Caroline. Nearly the whole of it some years ago fell down, as we believe, from the force of a storm. Mr. Boucher has now entirely rebuilt it of Box stone, the whole being solid throughout, instead of, as formerly, filled up with rubbish.

Opening of a Jewish School at Bucharest. On the 26th ult. a Jewish school was opened in Bucharest, according to the *Jewish Chronicle*. The school was founded by private initiative, chiefly of the late M. and Madame Jacob Lebal, who bequeathed 22,700 francs for its foundation. About 44,000 francs were received from other sources. The school contains six classes, in which nearly 900 pupils have to be taught. This will be giving no less than about 100 pupils to each class. The inauguration was presided over by General Tell, minister of public instruction and worship.

Paper as a Building Material.—The use of paper as a substitute for wood in the construction of railway carriages has long been known, but the use to which this material can be put seems now to be without limit. The *Journal* of the Society of Arts says there is a paper church actually existing near Bergen, which is capable of containing about 1,000 people. It is circular within, and octagonal without. The relievos outside, and the statues inside, the roof, the ceiling, are all of *papier mâché*, rendered waterproof by saturation in vitriol, lime-water, whey, and white of egg.

Buried Alive in a Sewer.—While a number of men were engaged cutting a sewer at Barrow, on Saturday, a fall of earth took place, and two of the excavators were buried beneath some 8 ft. of sand and clay. The sewer had been cut to a depth of 10 ft., and considerable time elapsed before the labourers who witnessed the accident could get at their unfortunate comrades. Life was then extinct.

The Royal Literary Fund.—The King of the Belgians has again sent a donation of 100*l.* to this admirable institution. This munificent and thoughtful act on the part of His Majesty will be widely appreciated.

Proposed Pier for Sandown.—Some public-spirited gentlemen have started the idea of obtaining a pier for this rising watering-place, and, with this idea, intend applying for a Provisional Order during the ensuing month to confer on the promoters the necessary powers. It is proposed that the pier shall start from the Battery-road slipway, and will extend across the foreshore into the sea a distance of 700 ft., which will give a fine promenade for visitors, and make a secure landing-place for steamers and boats.

A Caution to Builders.—The Leeds stipendiary magistrate has given judgment in the case in which the Leeds corporation proceeded against an owner of house property in the borough for building a larger number of back-to-back houses in one block, and thereby leaving less space vacant, than the Local Improvement Act of 1872 allowed. Mr. Bruce decided that the buildings were contrary to the law, and ordered them to be demolished, but granted a case for appeal. Costs were allowed in the case.

Statue of Sir John Burgoyne.—It has now been fully decided that the memorial by the corps of Royal Engineers of their late distinguished officer, Field-Marshal Sir John Burgoyne, shall take the form of a statue, which will be placed near Whitehall. Mr. Foley, the sculptor, has been entrusted with the work. About 1,000*l.* have been contributed towards the fund by the officers and men of the late Field-Marshal's corps.

A Lutheran Church in Jerusalem.—The excavations having been completed on the plot of land in Jerusalem assigned by the Sultan as a present to the German Crown Prince on the occasion of the opening of the Suez Canal, the buildings in connexion with the proposed Lutheran Church, for which the land is intended as a site, will shortly be begun. The block of buildings is to include a Lutheran Church, a school, and a parsonage. The designs have been prepared by Professor Adler.

Roots in Drain-pipes.—Mr. Meehi says,—"An agricultural friend assured me (when discussing the filling up of drain-pipes by the roots of trees or plants) that where the drain-pipes have been well coated with gas-tar, there is no risk of choking with roots; for the roots turn away from the tar, evidently sensible of their danger. I hope this hint may prove useful; for I know that no spring drain is safe near trees, fences, or even strong-rooted weeds."

Sewer Accident in Hereford.—In the excavation for the new flood culvert in Friars-street, Hereford, which is being made by Mr. James Bowers, the contractor, a labourer has been killed by a fall of earth, which buried and crushed him to death. There had been a good deal of rain, which was believed to have loosened the sides of the excavation. The city surveyor and the coroner's jury exonerated the contractor, and the jury gave a verdict of accidental death.

The Statue of Prince Albert on the Holborn Viaduct.—In answer to a question in the Court of Common Council, it was stated that it is intended to unveil the statue of Prince Albert on the Holborn Viaduct on Monday, the 24th inst.

TENDERS

For rebuilding the Chequer Ball Inn, Wolverhampton, for Mr. Joseph Lawrence. Mr. John Cotton, architect:—

Carter	£1,522 0 0*
Nelson	1,429 0 0
Collins	1,343 0 0
Gough (accepted)	1,300 0 0

* Exclusive of plumbing and painting.

For erecting grocer's warehouse at Longford, Coventry, exclusive of cast-iron girders, for Mr. Masser. Mr. John Cotton, architect:—

Enson	£510 0 0
Banks & Jepheott	470 0 0
Nelson	311 0 0
Hancox	307 0 0
Bell	280 0 0
Ward (accepted)	250 0 0

For repairs and alterations to Nos. 1, 2, and 3, Princess-street, for Messrs. Allen & Co. Mr. H. Cotton, architect:—

Cross	£269 0 0
Thoms	260 0 0
Temple & Foster	248 0 0
Harris, Bros.	219 0 0

For houses and shops, Dalston, for Messrs. Puckeridge & Nephew. Mr. Joseph Tanner, architect:—

Turner & Son	£3,590 0 0
Devereux	3,334 0 0
Marr	3,290 0 0
Larke	3,170 0 0
Mustoe & Son	3,043 15 0

For rebuilding two dwelling-houses and shops, Silver-street, Bedford, for Mr. J. S. Peacock. Mr. John Usher, architect. Quantities supplied:—

Spencer	£1,329 0 0
Corby	1,233 11 0
Moore	1,195 0 0
Richards	1,195 0 0
Cunvin	1,169 0 0
Hull	1,125 0 0
Carter (accepted)	1,069 0 0

For erecting and completing new schools in Church-street, Landport, for the Portsmouth School Board. Mr. George Rake, architect. Quantities by Mr. C. M. Houghton:—

Burbidge	£6,320 0 0
Light	6,300 0 0
Quick	5,810 0 0
Smith	5,680 0 0
Evans	5,670 0 0
Ward	5,625 0 0
White	5,600 0 0
Barnes (too late)	5,600 0 0
Morey, jun. (accepted)	5,518 0 0

For the erection of cow-sheds, root and corn stores, at the Industrial Schools, Leavesden, Woodside, Herts, for the guardians of the poor of the parish of St. Pancras:—

Thoms	£819 0 0
Blott	793 0 0
Waterman	720 0 0
Chalk	717 0 0

For additions to present schools at Tettenhall. Mr. J. R. Veall, architect:—

Lovatt	£335 0 0
Higham	326 15 0
Allen	298 16 0
Collins	276 10 0
Groves	260 0 0
Gough (too late)	247 0 0
Horsman (accepted)	235 0 0

For new schools at Tettenhall Wood, for ninety-four boys and seventy girls. Mr. J. R. Veall, architect:—

Lovatt	£1,008 0 0
Collins	928 9 6
Higham	922 14 2
Cockerill	856 15 0
Allen	849 15 0
Groves	840 0 0
Horsman (accepted)	820 0 0
Gough (too late)	750 0 0

For Church school at Finchfield, for sixty children. Mr. Veall, architect:—

Higham	£600 0 0
Lovatt	579 0 0
Cockerill	516 10 0
Groves	493 0 0
Gough (too late)	483 10 0
Horsman (accepted)	480 0 0

For new school and residence at Kingswood. Mr. Veall, architect:—

Lovatt	£760 0 0
Horsman	650 0 0
Higham	623 0 0
Groves	603 0 0
Gough (too late)	404 0 0

For tower and spire to St. John's Church, Reading (second contract). Mr. W. A. Dixon, architect:—

Niblett & Sons	£2,500 0 0

For alterations, Garm House. Mr. W. A. Dixon, architect:—

Niblett & Sons	£210 0 0

For warehouses, Gresham-street, for Messrs. Bartrun & Harvey. Mr. W. A. Dixon, architect:—

Wicks & Bangs	£2,700 0 0

For pulling down and rebuilding No. 24, Bond-street, Brighton, for Mr. H. Cozens. Mr. B. H. Nunn, architect:—

Lynn & Son	£1,095 0 0
Patching & Webber	1,029 0 0
Parsons	950 0 0
Newnham	928 0 0
Lockyer	800 0 0

For the erection of a villa residence and stable at Elstree, for Mr. F. Jones. Mr. Gundry, architect:—

Manley & Rogers	£2,195 0 0
Kelley & Bros.	2,175 0 0
Sharp	1,965 0 0
Walton	1,829 0 0
Dumfers	1,645 0 0
Hill	1,589 0 0

For ornamental farm buildings, Reading, for Mr. Robert Toomer. Mr. W. A. Dixon, architect:—

Wheeler & Sons	£700 0 0

For the erection of public-house and stables in Rice-lane, Liverpool, for Mr. Eaves. Messrs. T. E. Murray & G. H. Thomas, architects:—

Excavator, Bricklayer, and Mason.

Sellars	£540 0 0
Shaw	523 0 0

Carpenter and Joiner.

Thompson & Cook	£528 10 0
Roberts	510 0 0
Winterburn & Mason	350 0 0

Slating and Plastering.

Lloyd	£200 0 0
Pritchard	185 10 0
Griffiths	185 0 0

Plumbing, Painting, and Glazing.

Punnington	£235 0 0

For the erection of six villa residences and hotel at Colwyn. Messrs. T. E. Murray & G. H. Thomas, architects:—

Roberts	£3,300 0 0

For villa residence at Hampstead Hill Gardens, for Dr. Gwynn. Mr. John Norton, architect. Quantities by Mr. Thacker:—

	House.	Stables.	Conservatory.
Boyce	£3,980 0	£325 0	£230 0
Sabey & Son	3,857 0	351 0	208 0
Toms	3,733 0	319 0	193 0
Raukin	3,460 0	312 0	210 0
Graver	3,433 0	300 0	217 0
Bullivant	3,395 11	281 13	189 7
Gould & Brand	3,320 0	300 0	190 0
Smith	3,300 0	275 0	211 0
Kenat & Co.	3,295 0	310 0	210 0
Simpson & Baker	3,165 0	283 0	167 0
Tibbitts	3,144 0	275 0	195 0
Jobling & Co.	3,100 0	260 0	181 0
Sharp	3,039 0	245 0	164 0
Niblett & Son	3,000 0	300 0	200 0
Robbins & Co.	2,999 0	289 0	170 0

For Roman Catholic schools, Wallington Grove, Lower Sydenham. Mr. C. G. Wray, architect. Quantities by Messrs. Linsdell & Giffard:—

Perry & Co.	£695 0 0
Wicks, Bange, & Co.	676 0 0
Merritt & Ashby	669 0 0
Bullivant	650 0 0
Richards	639 0 0
Robbins & Co. (accepted)	615 0 0

For Roman Catholic schools and teacher's residence, Burton Park, Petworth, Sussex. Mr. C. G. Wray, architect. Quantities by Messrs. Linsdell & Giffard:—

		Extra for Farehan Brick Facings.
Morey	£950 0 0	£70 0 0
Whitcomb & Son	905 0 0	17 0 0
Peskett & Taylor	855 0 0	40 0 0
Pulling	838 9 1½	10 0 0
Ellis	779 0 0	26 0 0
Wright Brothers, & Goodchild	745 0 0	15 0 0
Heath	723 0 0	12 0 0
Goddard & Sons*	694 0 0	23 0 0

* Accepted.

For the earthwork in the formation of new roads at Beauport Park, Hastings. Messrs. Cross & Wells, surveyors:—

Goddard	£1,900 10 0
Neave & Son	1,895 0 0
Woodham, Bros.	1,770 0 0
Hawkes	1,728 12 0
Bull	1,582 15 0
Gardner	1,550 0 0
Goodair	1,446 0 0
Potter	1,444 0 0
Symonds	1,380 0 0
Longhurst (accepted)	1,150 0 0

TO CORRESPONDENTS.

The Northfleet Chimney Shaft.—Several further communications on this subject will have consideration in our next.

G. T. C. (shall be put in hand).—G. W. (we are unable to advise correspondents as to their private requirements).—T. D. (thanks for good intentions).—P. R. (opening should be deducted).—R. M.—B.—F. G. H.—C. C. R.—J. M. R.—J. G. E.—W. H. P.—T. F. P.—H. H.—F. & Co.—J. E. G.—Amicus.—S.—W. A. D.—Mr. W.—B. F.—Mrs. S.—S. & Son.—W. G. S.—T. P.—M. & T.—Mr. D.—T. B.—J. P.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

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The Late Fire at 70, Grosvenor-street.—In consequence of the above unfortunate occurrence, Messrs. MAYER & CO. have REMOVED to 37, CONDUIT-STREET during rebuilding of their premises. As all their objects are manufactured in Munich, and a large part of their stock having been saved, they are able to continue business as usual, and invite inspection of their stained glass, statuary, church furniture, &c.

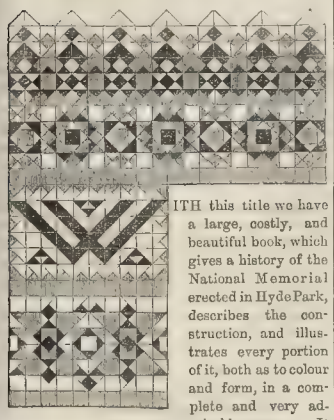
Bills of Quantities, Specifications, &c., Lithographed by ROBT. J. COOK & HAMMOND, 29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[ADVT.]

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VOL. XXXI.—No. 1607.

"The National Memorial to his Royal Highness the Prince Consort." *



WITH this title we have a large, costly, and beautiful book, which gives a history of the National Memorial erected in Hyde Park, describes the construction, and illustrates every portion of it, both as to colour and form, in a complete and very admirable manner. It is not too much to say that every Englishman is interested in the circulation of this volume, which will serve to convince all who study it, and who may not be able to visit the monument itself, that the finest modern work of its kind has been produced in this country, and that we have amongst us artists (as well as constructors) of high ability.

It is a distinguishing feature of the book before us that the name of every artist is given in connexion with his work, which should, and we hope will, have the effect of bringing to some of them increased fame and fortune. We would point for example to the remarkable histories written with the chisel on the marble podium, half by Mr. J. Birnie Philip and half by Mr. H. H. Armstead,—the first setting forth the architects and sculptors; the second the painters, poets, and musicians; producing a whole honourable alike to the country and the artists, both as regards conception and execution.

We agree with Mr. Scott that this, taken as a whole, is perhaps one of the most laborious works of sculpture ever undertaken, consisting, as it does, of a continuous range of figure-sculpture of the most elaborate description in the highest alto-relievo of life-size, more than 200 ft. in length, containing about 170 figures, and executed in the hardest marble which could be procured; each figure, not cut, as is usual, out of a detached block, so that every portion can be easily reached, and the waste stone readily struck off, but, on the contrary, hewn out of the solid mass of the monument, just as if the forms were cut out of a solid rock of marble; so that every opening between figures, or between parts of them, became a work of unusual cost and labour. We can bear testimony to the zeal with which both the sculptors, Mr. Armstead and Mr. Philip, persistently carried on their several proportions of the work, though they found a difficulty in respect of the great hardness of the marble, not calculated on when they made their original estimates as to cost. The producers of this successful work deserve some public recognition, and should have it. The name of every figure is appended, and we would note that the lettering should be filled in with some permanent dark material, some of the names being already illegible.

The history of the Memorial will be found scattered through the last dozen volumes of our journal, and we need but slightly refer to it. Mr. Scott, now very properly Sir Gilbert, submitted a precise estimate for the work in April, 1864, and the executive committee accepted in that year the offer of Mr. John Kelk, the terms of which, embodied in an agreement, we print, as honourable to that gentleman:—

"London, April 18th, 1864.

I hereby agree to erect and complete the proposed National Memorial to the late Prince Consort (exclusive of the eight groups of figures and the statue of the Prince), in accordance with the designs and to the satisfaction of George Gilbert Scott, esq., for a sum not exceeding 85,508*l.* At the completion of the work the accounts are to be examined by auditors appointed by her Majesty: and if it should appear that the prime cost of the work to me is less than 85,508*l.*, then the sum to be paid to me is to be reduced to the amount of such cost, but in no case is the amount to be paid to me to exceed the sum of 85,508*l.* The committee are to pay for the work as it proceeds, by instalments of 5,000*l.* each, on the certificate of Mr. Scott.

I also agree to bind myself, and in case of my death my representatives, in a bond of 10,000*l.* for the due performance of this agreement. I am also willing that the terms above stated shall, if you think necessary, be embodied in a formal legal document."

Sir Gilbert Scott testifies to the value of the assistance rendered to the work by Mr. Kelk. Honourable mention also is rightly made of Mr. W. Cross, who acted as director of the works for Mr. Kelk.

The last timber of the scaffolding was taken down on the 31st of March, 1871.

When this was done, the iron tie-rods between each arch became visible, and an impression prevailed that these rods had only just been introduced as a precaution against thrust.* They had, however, been fixed in 1866, whilst the arches were being turned, and it was thought to be more satisfactory to allow them to remain for a time after the centreing had been removed, in case any tendency to subsidence or thrust might appear, though from the peculiar arrangement by which the spire is carried, such a contingency was not considered to be at all probable. Each of these rods consisted of two pieces of iron joined together in the centre by a large screw-nut; they were tested from time to time, but no tension was ever observed. They appeared to be affected only by change in the atmospheric temperature. After remaining in position for nearly five years, they were removed in April, 1871.

The central portion of the monument is based upon a mass of concrete, 60 ft. square and 17 ft. in thickness; indeed, in some parts it is of much greater thickness, owing to the inequalities in the solidity of the ground. Upon this are laid two continuous courses of thick stone landings, bedded in Portland cement, and on this platform is erected the superstructure of massive brickwork, upon which the monument is based. The substructure which supports the steps and landings surrounding the monument, though planned simply with a view to their practical uses, form a curiously intricate and picturesque series of catacombs, which may be entered by a trap-door provided beneath the surrounding platform.

The materials of which these steps are formed is mainly the grey granite from Castlewellan, in the county of Down, the same granite being used for the large pedestals at the angles of the steps; a portion, however, of the steps came from Dalbeattie quarries, in the county of Kirkcudbright.

Owing to the slope of the ground towards the south, an additional range of steps was required on that side leading down to the drive in front. These steps,—no less than 200 ft. in length,—are of the granite from Penryn, in Cornwall, while the blocks which terminate them are of the same granite capped with the pink granite from the Isle of Mull. The landings of the steps are paved with stone of varied colours, consisting of the white mountain limestone of Hopton Wood, in Derbyshire; the red magnesian sandstone from Mansfield, in Nottinghamshire; and the dark slate stone from Charnwood Forest, in Leicestershire.

The granite up to the levels as yet alluded to is unpolished, but wrought by the axe with extreme delicacy and precision. Above this level, however, all the granite which is exposed to view is finely polished, and has been studiously selected in point of colour and texture, with a view to the harmony of its artistic effect.

The podium, or stylobate, which forms the base of the great canopy, and to the carving on which we have already alluded, is of two kinds of granite, and of marble. Its base-moulds, 3 ft. in height, are of a single course of the richest red granite from the Ross of Mull, and the cornice, 2 ft. in height, is of a lighter-coloured variety from the same locality; both wrought and polished with the greatest care and precision. The intermediate portion, which is of marble, and is occupied entirely by sculpture, is 6½ ft. in height in a single course.

The construction of the four main clusters of shafts which carry the canopy was of course all-important. These do not trust alone for their bond of union to the metallic band which binds each cluster. Each of the four greater shafts (which are about 2 ft. in diameter) is attached by a dovetailed groove to the central core, and the groove is run in solidly with Portland cement. Besides this, there is another very important method of attachment; for, while the shafts are jointed behind the metal band at about one-third of their height from the base, the core is jointed at about the same distance from the capital, thus, as the workmen say, "*breaking joint*;" the longer length of one crossing and strengthening the joint of the other, while the joint in each is attached to the side of the other by strong copper cramps, and each block is also plugged with four copper dowels to that below and above it; so that the entire group is, as it were, in one piece.*

The spire, which surmounts the stonework, is wholly of metal, and is supported by two enormous "box" girders of wrought-iron. Each girder lies diagonally from corner to corner of the structure. They may, perhaps, be more truly described as *one* girder in the form of a cross, for at their point of intersection they are so united by the interlacing of their component parts as to become in reality a single girder. The girders are in section, 3 ft. 4½ in. in depth, by 3 ft. 6 in. in width; their length each way is 31 ft. 6 in., and their clear bearing 23 ft. 6 in. Their weight is 23 tons, and it is calculated that they are capable of sustaining a load equal to 360 tons. The ends of the girders rest upon vast blocks of granite, which being laid across the angles of the structure, tend to bind its walls together, and to carry down its weight directly and vertically upon the columns. How the amount of iron used in the construction may behave in the course of time is a problem not yet to be solved.

The architectural carving was carried out by Mr. Brindley. Sir Gilbert says,—"The capitals of the great piers [of which we are enabled to reproduce the illustration given†] are, as I think, very effective work. They are founded on such as we find in ancient buildings in France and Germany, and such as we see in this country, in the eastern parts of Canterbury Cathedral,—a form of capital originating in the Corinthian, but entirely rethought out by the great Mediæval artists. The arches are, in some of their divisions or orders, beautifully carved with pierced

* London: John Murray, Albemarle-street. 1873.

* This idea was very prevalent at the time; allusion was frequently made to it in different newspapers, and a question referring to it was even asked in the House of Commons. The reply of the Chief Commissioner of Works at once disposed of the notion.

* The weight borne by each group of columns is 21 tons per foot super.

† See p. 926.

foliage in high relief, thus obtaining effect by contrast."

The architect was personally represented on the works by his assistant and former pupil, Mr. Coad, who had been engaged in the preparation of the working drawings in conjunction with the architect's second son, Mr. J. O. Scott; the drawings which were submitted in the first instance to the committee having been made under the architect's own inspection by his eldest son, Mr. G. G. Scott, who devoted to them much laborious attention.

A very important part of the monument is the artistic metal-work, the whole of which was carried out by Mr. Skidmore. "It is here [says the architect] that my thought of realising on a large scale the ideal of the old shrines comes literally into practical operation; for here the classes of art and ornamentation displayed in those exquisite works on a minute scale, suggesting only the models of some large structure, are directly reproduced in cognate materials, and to a scale of reality instead of mere miniature models. The materials in which the works of the Mediæval gold and silver smiths are thus translated, as it were, into life-size, are copper and lead, and in these humbler metals are reproduced in noble workmanship, and to a noble scale, the *repoussé* work, the chased and beaten foliage, the filagree, the gem-settings, and the matrices for enamels, such as are found in the shrines of the Three Kings, or of St. Elizabeth. No nobler work in metal for architectural purposes has, so far as I know, been produced in our own, or, probably—considering its scale and extent—in any other age." And the architect then pays a high compliment to Mr. Skidmore. We have only to add in this direction that the mosaics in the tympana and spandrels, also the vault of the canopy, were executed by Signor Salviati, after cartoons by Messrs. Clayton & Bell.

Now, as to the sculptural works not already alluded to, the general scheme may be thus stated:—The great statue of the Prince Consort himself, by Mr. J. H. Foley, forming the central feature, round which all other works of art group themselves, we have at the angles four ranges, each containing four illustrations of subjects to which the Prince had devoted his study and patronage.

1st. On the pedestals at the outer angles of the steps we have groups of figures in marble, representing allegorically the quarters of the globe, with reference to the Great International Exhibitions which have done so much for practical art and manufactures and the productions of varied industry, and which claim the Prince Consort as their originator. These were executed by Mr. J. H. Foley, Mr. Macdowell, Mr. W. Theed, and Mr. John Bell; and are noble works.

2nd. We have on the upper pedestals, which form the angles of the podium, groups, also in marble, illustrating Commerce, Agriculture, Manufactures, and Engineering, all furthered and promoted by International Exhibitions: these are by Mr. Thornycroft, Mr. Calder Marshall, Mr. Henry Weekes, and Mr. John Lawlor.

3rd. The great pillars of the Memorial bear on their outer faces—on pedestals of polished granite and bronze—statues in bronze, representing Astronomy, Geology, Chemistry, and Geometry; while

4th. On the niches immediately over the capitals of these pillars is a second range of bronze statues, representing Rhetoric, Philosophy, Medicine, and Physiology. The whole of these were executed by Mr. J. B. Philip and Mr. Armstead.

These groups and statues, which occupy the four *angles* at successive heights, thus illustrate the whole range of science, and of practical art and industry.

Some of the bronze gilt statues in the spire, designed by Mr. James Redfern, are very beautiful.

We are glad to find that Mr. Murray has supplied an omission in his first published smaller account of the Memorial by printing the names of the Mansion House Committee, by whom important work was done.* It was the privilege of the conductor of this journal to co-operate with some half-dozen other gentlemen deputed to act for the general committee (as it also had been his privilege in raising the Memorial of the Great Exhibition of 1851, at South Kensington), so that we speak from personal knowledge when we record the zeal and loyalty with which the original committee long and sedulously worked.

The Memorial bears the following dedicatory inscription, executed in mosaic work, and which may fitly end our notice. It runs round the structure, and is so divided that each side shows a complete sentiment:—

QUEEN VICTORIA AND HER PEOPLE
TO THE MEMORY OF ALBERT PRINCE CONSORT
AS A TRIBUTE OF THEIR GRATITUDE
FOR A LIFE DEVOTED TO THE PUBLIC GOOD.

* The closing report of this committee, forwarded to her Majesty in October, 1872, will be found in our volume for that year (XXX., p. 9-9): it is signed, "George Godwin, chairman; Charles Hill and P. Le Neve Foster, members of the executive committee; Michael Gibbs and S. E. Goodman, honorary secretaries."

THE HASTINGS AQUARIUM AND BATHS COMPETITION.

During the past few days there have been on view in the Market-hall, Hastings, sixteen sets of designs, sent in competition for a premium of 100 guineas, for the best scheme to enable the town council to inclose a recessed portion of the shore so as to widen the parade and roadway, and to apply the under space to the purposes of aquarium, baths, or "such other purpose as may suggest itself to the designer." The spot in question is at White Rock, about 150 yards east of the new pier, where the Eversfield Parade terminates in a bastion, 40 ft. farther seaward than the beach to be inclosed. In reality, taking a base line from the pier to the Queen's Hotel, the shore nearly forms a triangle, 1,300 ft. long, and 120 ft. from base to apex. The portion to be dealt with is the western half of the triangle, into which the sea sweeps in rough weather with terrible force. The eastern part, forming Carlisle-parade, belongs to the Crown. A prime condition of any plan adopted must be that it does not throw the sea into the adjoining shore, so as to cause damage to the Crown estate. Originally the council contemplated the erection of a sea-wall only. The estimate for the work, prepared by Mr. Andrews, borough surveyor, showed the cost to be 4,000*l.* A delay having arisen, Mr. Alderman Howell, one of the principal builders, suggested the utilisation of the site by forming an aquarium, baths, &c., within the wall. Hence the resolve to offer the premium. No conditions were laid down, each competitor being left to inclose what space he would, and deal with it how he would. Probably this was a mistake. It was understood in the council that a company was to be formed to carry out the work, with the probable effect of releasing the town from the cost of the wall. In that case, local experience has shown that 40,000*l.* would be the utmost amount of capital which could be raised; consequently no more expensive scheme has the slightest chance of being adopted.

No doubt, the best plan would be to enclose the whole triangular area. This would offer several advantages, but would also involve the purchase of private rights, and bargaining with the Commissioners of Woods and Forests.

In sketching the features of each set of plans, we mainly confine ourselves to name the specialty of the design in each case. Three or four sets are evidently the work of tyros, or of those conceited persons who think no training necessary in order to produce an architectural design. On the other hand, there is shown, in several instances, more than ordinary ability in planning and arranging the space at disposal. As a rule, the competitors go seaward, fully to, or beyond, the line of Eversfield Parade; and they end with more projection at the east end than exists at the present bastion; an objectionable feature, as the probable result would be injurious to Carlisle Parade. A shaft would have to be provided, for the steam-engine and boilers; and all the designers propose a tunnel under the roadway and houses, to the cliff in the rear, after the plan adopted at Brighton. Three of the competitors propose to enclose the whole triangular space; and the most elaborate and most expensive design of all is arranged in that view. The others only suggest the advisability of doing so. The majority have selected the east end as the better place for the baths, and have placed entrances in the centre of the parade. This seems to be the better plan, as there would be less diversion of the line of traffic than there would be by any other arrangement. There is reason to believe that nearly half the plans sent in are from local men. Indeed, the names of authors in two instances are so well known, that an impartial judgment can hardly be pronounced. As matters stood, the award of the premium rests with the council, amongst whom are two of the principal resident building contractors, an architect and surveyor connected with an important estate, and others experienced in building matters.

The various plans are now presented in a classified form. Amongst the schemes which adopt openings for light in the sea-wall, "Alpha" goes to the farthest extent. In the face of a granite wall, reminding one of the Thames Embankment, he has upwards of a dozen windows. These are to be glazed hexagonally; but it may be doubted whether any glass could possibly be "so strong as to resist the most violent seas" which the wall will have to withstand. The ladies' baths will be at the extreme east, with separate entrance. Hot baths, Turkish baths for sixty or seventy persons, and a gentlemen's plunge-bath, follow in succession,—the latter 100 ft. by 35 ft. The aquarium is in a crypt, 40 ft. wide, divided into two by granite columns. The tanks are on each side,—those on the south, under the windows in the sea-wall. The north would be lighted from the parade-surface, the skylights being hidden by covered seat-houses, for public use. The author is enabled to give larger dimensions than other competitors, by using the space under the present parade. His sea-wall would continue in a straight line for 850 ft., and would take in a wide strip of the shore. The entrance to the aquarium would be separate from the baths. It would lead to a vestibule, a library and reading-room, 96 ft. by 17 ft.; a museum, same dimensions; and a lecture-room, 40 ft. by 27 ft. No estimate is given; but, compared with other plans, it could not cost less than 50,000*l.*

"Persia" derives light principally from twenty circular openings near the top of the sea wall. He proposes to inclose only a narrow strip of the shore; but by going 200 ft. farther westward than either of the other plans he gets 825 ft. total length by a width of 40 ft., ample space for aquarium at the west end, 320 ft. by 30 ft., with tanks on the north side only. Between each window opening in the sea wall is a massive buttress. The recess is filled with ferns, &c. The hall is sub-divided into a series of courts. The roofs to form promenade will be of iron plates, supported by cross girders, and covered with concrete and asphalte. There is but one entrance, in the centre, with toll-houses on the landing of a double flight of stairs. A hall, 30 ft. square, leads to the aquarium on one side and baths on the other. The author indulges largely in fanciful arrangements of rock-work, ferneries, and caverns, with out-look to the sea, through the windows. His interior decorations are as gorgeous as "a style combining the brilliant jewel-colouring of India with massive Babylonian solidity" can make them. In the baths "Persia" introduces a feature in which he stands alone. Two baths, 20 ft. wide, and each 50 ft. long, are separated by folding doors. A gallery is fitted over the bath-rooms, and thus, on gala occasions, swimming matches, &c, a large number of persons could be accommodated as spectators. In two other details, the author of the Persian plan is original: he takes his starting-point for the sea-wall farther west, and keeps inside the present wall at the corner, and he provides chambers 90 ft. long, at either end, which he would let out as vaults, but which could be used for an extension of the aquarium and baths when required. Estimated cost of building, 17,500*l.*; and 3,965*l.* additional for engine, furniture, &c.

"*Au bon Droit*" produces a "cheap" plan, though not altogether defective. He puts the baths at the west end, and shows one spacious entrance for the whole. The stairs lead to an open court, with arched corridor. The refreshment-room and reading-hall are at the east side of the corridor. There are twenty-eight tanks in the aquarium, which is lighted both from openings in the sea-wall, and from flush lights in the parade. A marine pond with rock fernery is placed at the end of the structure. The baths are lighted by windows on the parade. The larger plunge-bath, 107 ft. by 45 ft., is for gentlemen; and the second class bath, "to be used occasionally by ladies," is 77 ft. by 45 ft. The hot baths are well arranged. A Byzantine style of architecture is adopted. Like "Persia," the author prefers to narrow the eastern end, so that it does not project far beyond the present wall. He is more in favour of baths than an aquarium as one of the needs of Hastings. His estimate "that 10,000*l.* would suffice to build the place," makes it the cheapest scheme in the room.

"*Nunc aut Nunquam*" illustrates his plan by the best drawings in the hall; and (though locally unknown, apparently belonging to London), has evoked favourable professional opinion locally. Both exteriorily and internally he produces good effects. A Classic style is adopted. Seven turret-like projections in the sea-wall break the monotony, and afford room for seats. The wall would be of concrete, faced with granite. The projection into the sea, at the east end, would be very great—110 ft. This would help to carry a future extension on to the Queen's Hotel, in a direct line. It is the only plan which discards stairs, and uses a sloped way for entrance. The author says he proposes to make the building cellular in construction as far as may be. The roof would be for the most part vaulted, the brickwork built upon walls and girders. Light "is introduced in a way to make the corridors cheerful and agreeable." The aquarium is at the west end, baths at the east. A large entrance-hall divides the two portions. The aquarium is in two corridors, with intervening conservatory, 58 ft. by 52 ft., to serve for concerts. There are eight tanks (some very large), in the east corridor, and fourteen tanks in west corridor. The author has availed himself of the advice and experience of the naturalist and the engineers of the Crystal Palace Aquarium. He strives for a good effect by placing all the principal apartments in one direct axial line, and in discarding any impediment to a clear view from end to end. The estimate is 50,000*l.* to 60,000*l.*

Nearly the most ambitious design of the whole is marked "*Utile Dulci.*" This plan must be distinguished from a second author of the same name, by its proposed dome and spire. Its features are novel, though there is a question as to its practicability, both as to cost and danger from the extent of projection seaward. Besides carrying his sea-wall considerably beyond the line of the pier entrance, three bastions are shown with still greater projections. These are protected by a lower parade, which would form a private promenade. The force of the sea at the east end is proposed to be modified by adopting a double curve. The sea-wall would be 10 ft. thick, formed of concrete, faced with stone. "*Utile Dulci*" thinks a paving below high-tide level would be opposed to a resistless force of water from below. To obtain sufficient height, he would raise the parade surface by a gradual slope towards the entrance,—in the centre,—as much as 4 ft. to 6 ft., and thus secure 18 ft. height above the highest spring tide. This plan shows the aquarium at the east end. The buildings connected with it are in the Early Pointed style. The entrance-hall and reading-room, 70 ft. by 60 ft., gives access to the refreshment-room, 40 ft. by 35 ft.; the curator's room, &c. There are forty-seven tanks, some very large, arranged at the sides of corridors, 200 ft. long, intersected by an open room. Beyond the corridors is the circular concert-room, over which the dome and spire are raised. Cloisters around the room are used to form the floor of a gallery, which is to be reached by winding stairs in a grotto on the south. A winter garden is also planned. The corridors of the baths are roofed with a barrel vault. There are shown 25 hot baths; swimming-baths, 60 ft. by 25 ft., and 70 ft. by 50 ft., with semicircular head, for gentlemen. The ladies' baths are approached by a different passage to those of the gentlemen, from an entrance-hall, 42 ft. by 35 ft. Besides a swimming-bath, 48 ft. by 30 ft., there are 18 hot-baths and Turkish baths. No reservoirs are provided, on the ground that they would be an unnecessary expense. The space inside the bastions is used as part of the design. The ladies' bath, and some other portions, would be lighted by patent prismatic pavement lights; the remainder by skylights. The objectionable features are too numerous to give this design the premium. Estimate, 87,000*l.*

"Neptune" produces the most costly design of all. Even though it should be thought the best, the estimate would prevent any attempt to carry it out. The plan shows the baths on the forbidden ground, within the eastern part of the triangle. The author can consequently afford more convenience than those who take up less land; and his arrangements would be likely to give general satisfaction. The ladies' baths show a plunge-bath, 68 ft. by 50 ft.; and the gentlemen's ditto is 104 ft. by 75 ft. There are sixteen private baths, and a Turkish bath of large size. The ladies have a separate entrance, but the gentlemen find admission at the entrance-hall, 92 ft. by 66 ft. The aquarium is divided by a large central hall, 66 ft. by 46 ft., containing two very large tanks. Altogether there are three corridors,—one 200 ft. long,—with tanks; also a concert-room, and tanks for seals and reptiles. There can be no doubt that Brighton has provided a model in this instance. An alternative plan, confined to the smaller space, gives the same arrangement of baths, &c., except that the Turkish bath is rejected. The larger plan would cost 150,000*l.*; the other, 90,000*l.*

"*Murus Maritimus.*" The design under this name, illustrated by eight or nine plans and drawings, has, from local causes, with another set adjacent, shared the bulk of popular favour. Unnecessary ornamentation is avoided; but a good scheme has been arranged. The drawings show a lighter kind of structure than the others, in consequence of the free use of iron girders and lofty ceilings. The principal tank-room has a large central passage, and two aisles close to the tanks—an arrangement which would be useful whenever a large number was present. The two entrances and three sets of skylights are placed in the centre of the parade, the latter being hidden by the backs of public seats built around the openings. A good space for promenade is left on either side. The entrance to the aquarium at the west is through an open courtyard: Besides the large room for tanks, already mentioned, there is an octagon room and two corridors for small tanks, which are placed on the sides of a room for a museum of considerable dimensions. From the eastern entrance, which also serves as an exit from the aquarium, males and females have separate corridors to the baths. The boiler and engine-room are under the stairs. The ladies' plunge-bath is 56 ft. by 21 ft., and the men's, 100 ft. by 40 ft. The authors of the design explain that they have arranged the sea-wall (of concrete) in such a manner that it may stand alone, and that they have kept in view the possibility of any change which might take place in the opinion of visitors to require other attractions. The plan shows a projection beyond the line of the existing wider parade; and the propriety of inclosing all the triangular area, is warmly advocated. Estimated cost, 32,000*l.*

"Cancer" is also favourable to a straight line of protection, from the pier to the Queen's Hotel, and he carries his sea-wall out to enclose a depth of 120 ft. at the east end. He omits baths, in order to have a large aquarium. Between the two rows of skylights which light the tanks he proposes a terrace, 5 ft. high and 30 ft. wide. The lanthorn of an octagonal pavilion, at the east end, is made less objectionable by surrounding it with covered seats; and some other useful arrangement is contemplated in connexion with the raised entrance at the west end. An Italian style of architecture is adopted in the open courtyard, with fountain in the centre, and arcade around. The tanks,—altogether, twenty-four large and sixteen small,—are well arranged: many of them are recessed, so that a crowd of persons could watch the fishes without the pressure of a moving crowd, on holiday occasions. The author farther provides a submarine gallery, with tank, 68 ft. by 28 ft.; a room for large tanks, cutting off the continuation of the corridors; a court, 54 ft. square, with pond for diving-bell; a *restaurant*, &c. A subway under the aquarium, to be used as a reservoir, would fill at sea-level. The cost is put at 24,000*l.*

"Victor" may be coupled with "Cancer" in designing an aquarium only. His sea-wall would inclose about 70 ft. width of beach, except at the east end, where a semicircular bastion would project an additional 10 ft., the purpose being to make an incline for Bath-chairs. The entrance would be at the east end, with a courtyard, entrance-corridor, and entrance-hall and reading-room, 62 ft. by 53 ft. A large refreshment-room and a dining-room are shown near the steps. The tanks are placed down the centre of the corridor, which is broken by a vestibule 50 ft. by 39 ft. Beyond is the grand corridor, 170 ft. by 31 ft. 6 in., with large tanks at each side. At the end is the conservatory, or concert-hall, to seat 1,000 persons, 82 ft. 6 in. by 62 ft., with fernery, waterfall, and ponds beyond. The boiler, &c., is at the extreme west; whilst the offices are at the entrance end. A kitchen would be formed over the dining-room. The material would be largely brickwork, stone, and terra cotta. The author avoids all signs of building out promenade space. He places the toll-houses on a landing, 9 ft. below the surface; and proposes to get light from numerous glazed iron frames, fixed, as an ordinary vault grating would be, in the surface of the parade. Ventilation and fresh air are obtained by means of openings near the top of the sea-wall, and in the courtyard. The estimate is 40,000*l.* to 50,000*l.*; but "Victor" says "the question of cost is most elastic."

"Stability" is the design which competes with "M. M." in local favour. Besides plans and fair perspective views, a large model makes clear the intentions of the designers as to the exterior. This plan would occupy a considerable portion of the promenade space for lights, &c. The entrance-stairs are put close to the roadway, so that persons could alight from carriages at the door. In the underground arrangement one is struck with the number of circular and oval-shaped divisions introduced. From the eastern entrance-hall access is gained to the aquarium corridors, in connexion with which are a seal-pond, caverns, and rockeries. The men's bath is oval in shape. The Turkish bath and the private baths are satisfactorily placed. Three tower-like projections from the surface of the wall, whilst they add considerably to the interior space, are likely to offer a great obstacle to the heavy waves in a storm. The estimated cost is 30,000*l.*

"*Utile Dulci*" (No. 2) is, on the whole, entitled to praise. He follows the majority in putting the aquarium at the west end; but his covered-portico entrances, with waiting-rooms, offices, &c., above the parade, will be an objection to the design. He also curtails the promenade-space too much, by surrounding "the remaining portion of the building site" with an ornamental balustrade, within which is a terrace-walk, from the waiting-rooms. At the baths-entrance, the ways to the ladies' and gentlemen's departments are separated, on the landing. Each department has a hot as well as a cold sea-water bath, rooms for eight bathers, and ten private rooms for either hot or cold baths. The engine and boiler are put between the two sets of baths. The staircase to the aquarium is only 10 ft. wide, which is not sufficiently ample. The aquarium (having thirty-two tanks of uniform width) is 160 ft. long, 26 ft. wide, and 13 ft. 6 in. in average height. Light is admitted through the arched ceiling through circular openings. A saloon, 50 ft. square, is at the west end. The sea-wall is shown strongly arched at the back, to resist pressure from the waves. Ferns are shown in the recesses. The sea-wall, of brick, is to be faced with glazed bricks "for the better exclusion of damp." Cost, 40,000*l.*, supposing ballast and sand for concrete are to be had on the spot, and that no extraordinary difficulties would arise in carrying out the work.

"Aquarius" offers another "cheap" plan (18,111*l.*), though he starts 20 ft. outside of the line of Eversfield Parade, and finishes 80 ft. from the existing sea-wall, at the east end. He plans two buildings above the parade-surface,—one for the *restaurant*, the other as a reading-room, with residence for the person having charge of the building. This author stands alone in placing the aquarium in the centre, and assigning the extreme ends for the baths. By putting a platform over the courts of the baths, he would form corridors 20 ft. wide. One of these would be part of the entrance; the other would give space for a museum, fine-art gallery, aviary, &c. The tanks are on either side. A large hall is provided across the centre of the corridor. Baths are shown of large size, and private baths around them. The hydraulic arrangements are made so as to avoid the expense of pumping. A considerable portion of the centre of the parade is taken up by the buildings and skylights; but a broad space is allowed on either side, connected by cross-passages. The sea-wall (concrete) is put at 3,950*l.*; central hall and aquarium, 4,675*l.*; baths, 7,486*l.*; surface buildings, 2,000*l.*

The conception of "*Finis coronat Opus*" is commonplace. By going back farther westward, and using a part of the present broad parade, he gets a length of 698 ft. A circular staircase, on the east, divides the ladies' and gentlemen's baths. These are plunge only,—the larger, 80 ft. by 40 ft.; the smaller, 50 ft. by 40 ft. Next to the ladies' bath is the engine-room, which separates the east portion from the aquarium. The stairs to aquarium are close to an oval central wall, 68 ft. by 52 ft., opening from which are two corridors, 130 ft. long, with eight tanks to hold 17,000 gallons each, and thirty-one to contain 9,000 gallons each. A semi-circular seal-pond is also arranged for. Close by is an exit. Estimated cost, 46,000*l.*

Designs are also sent in by "C. E.," 44,752*l.*;

"Dreadnought," 32,000*l.*; "Student," 25,000*l.*; and "*Non quo, sed quomodo*" (no estimate). These are so indifferent in design or execution, or so meagre in particulars, that they need occupy no space here.

A large number of townspeople have looked at the designs, as displayed in the Market Hall; and considerable commendation has been bestowed upon the authors of those best coloured and most ably drawn.

It is to be hoped that the Council will call in the aid of some disinterested professional adviser.

THE FIREPLACE, ARCHITECTURALLY CONSIDERED.

From the "noble savage" cowering over a heap of burning sticks or dried leaves, to the owner of a modern mansion sitting before the sculptured or tile-bedecked erection which forms the setting to his patent grate, is perhaps a transition as strongly marked as any which can be shown, from the conditions of barbarism to those of civilisation. That which in the former case is the mere means of obtaining the warmth necessary for life and for the preparation of food, in the latter case has become the central point of the decorative treatment of the chamber, the gathering-place of family and friends; and the very word "fireside" has become in northern countries, suggestive of, almost synonymous with, the most heartfelt associations of domestic happiness and regard. It is no wonder, then, if, as soon as domestic architecture became developed in countries where climate necessitated frequent fires, the fireplace should have received special attention not only in regard to its utilitarian purposes and adaptation, but as an opportunity for combining comfort or luxury with architectural, or at least ornamental, effect.

Viewed in this light, the fireplace may be regarded as an emanation of Mediæval life especially; the centre of its domestic life, as the fountain is the centre of home life of classicalism. It had its rise, and came into form, at the commencement of the great period of Mediæval architecture; and its earlier specimens are impressed with that massiveness and largeness of treatment, and that rough, but on the whole strictly logical, relation of form and treatment to practical utility which characterises nearly everything belonging to that great age of artistic construction. It must be observed, however, that in these earlier specimens of the fireplace the *architectural* idea is completely in the ascendant. Of the three objects of decorative treatment in the modern fireplace,—the mantel or surrounding masonry, the hearth, and the grate itself,—the first only could be said to occupy the attention of the Mediæval workman, and that in a way which differs most essentially from the treatment of the modern "chimney-piece;" for while the latter is in most cases a separate erection capable of being purveyed for in a showroom and fixed up after the house is finished, the Mediæval fireplace, according to the stern and uncompromising architectural spirit of its constructors, is an integral part of the edifice, built up and bonded with the other masonry, and forming an opportunity for the display of ingenious masonic construction and architectural character and dignity of expression. The hearth in these old examples was not, so far as decoration is concerned; the grate, where existing at all, was a plain receptacle of iron bars, innocent of the glitter of polished steel; but on the other hand, the chimney, now a disguised necessity, so far as the interior of an apartment is concerned, was boldly shown, the lower part often corbelled out far from the wall, and showing like a vast tunnel opening upward from the room. The absence in the first instance of a grate to hold and concentrate the fire, was probably the original cause for bringing out the chimney in these large proportions; for the erratic smoke from a fire of wood loosely piled on a hearth could only be fully caught and collected by such ample provision. M. Viollet-le-Duc, who gives in his "*Dictionnaire*," illustrations of some fine examples of these older fireplaces (under the head of "*Cheminée*"), observes that,—

"*Le cheminée primitive se compose d'une niche ... [illegible] ... et ... [illegible] ... cette niche et d'une hotte, sans laquelle ... [illegible] ... Les plus ... [illegible] ... sont souvent ... [illegible] ... l'entre-sol.*"

This plan of the fireplace, with the circle thus worked into the back of the fireplace proper, and carried out as a convex semicircle in the projection of the chimney, is highly characteristic, in its unity and simplicity, of the spirit of Early Gothic architecture, or perhaps we may rather say, of the spirit of true architectural design everywhere. In these old fireplaces, however, the chimney-shaft, or tunnel, as it may rather be called, formed a portentous erection to see cutting up one side of your apartment, and breaking the ceiling line so awkwardly, as it frequently did, at the top; and it could only be in days when luxury and finish in the furnishing of apartments were unknown that such a huge excrescence could be tolerated. Its deliberate imitation in some modern Gothic mansions or "castles" is scarcely to be justified, now that we have every means for manipulating the fire so as to get it in a small compass, and place it where it will most readily be drawn up the chimney without building out the latter to catch the smoke. What about the draught of these old smoke-tunnels, though? We do not remember whether there is any old monastic or baronial chronicle which would give information on this head; any chapter *de chimnibus smokentibus*, which would record how far our ancestors suffered from down-draughts, before "tall boys," and "cowls," and all the other contrivances which make our street-roofs hideous, were thought of.

But, however the mind of the architect may approve, in the abstract, of such a purely architectural treatment of the chimney as the Mediæval examples show, this treatment, in its integrity, is scarcely to be rendered suitable to a modern habitation. In the transition period between the old and the modern fireplace, when the bulky smoke-tunnel had been found inconvenient, and probably draughty, but before the taste for largeness and depth in fireplaces was extinguished, the compromise was effected by having a great fireplace opening, with a deep recess, at the back of which was the actual grate and fireplace, opening into a chimney of convenient and practically effective size. Thus the dignity of the fireplace was preserved, in regard to the size of the opening, and the sides of the recess formed places for a fireside seat. The modern system has gone further, and reduced the fireplace, even in the highest class of residences, to a mere hole-in-the-wall affair, and effect and richness are sought for in applied decoration and accessories. But, even granting the good taste of all the applied decoration, it may be questioned whether we should not do better to follow the older plans somewhat more than we do, or at least to apply them in a modified manner. We cannot in these days carry the actual masonry of our house into the drawing-room fireplace. Modern manners and tastes will not admit of this; but we may, in arranging and designing fireplaces on any large scale, endeavour to connect and bond the work of the chimneypiece design, be it marble, or Caen stone, or whatever else, into the mural construction, so far as to make it a permanent portion of the architecture, and not a mere applied "fixture"; and we may design it in reference to the room and to its immediate adjuncts, which is not very often done. The value of the large recess for the fireplace depends a good deal on what it is wanted from the fire, and whether the main part of the room is otherwise warmed or not. There can be no doubt that the aspect of the large recess is far the best and most dignified, and that there is a comfortable and home-like appearance in the "inglenook," with its seats, which no other arrangement gives to the same extent; but it is equally certain that a fireplace so placed does not avail much to warm the centre and further corners of the main apartment; and the only way to satisfy both demands would be to have the fire for effect, and hot air or water circulation for actual heating. The fireside recess, however, is an idea which is recommending itself to some architects and their clients at present, and has been exhibited in recent designs of this kind, some happily combining the old "homely" look (in the best sense of the word) with modern good taste and refinement in style of decoration, some showing the mere naked reproduction of Mediæval baroness and clumsy proportion, without Mediæval picturesqueness.

In regard to the modern chimneypiece, in its ordinary forms, we must confess here, indeed, to finding a sad downfall from the older style of fireplace design. There is something in the usual style of slab chimneypiece, in "bardiglo" or "black and gold," which is indescribably offensive and flimsy in manner and effect. The whole thing is such a mere piece of veneer, planted out to look solid; the thin slab at the top is so mean a termination, without weight or massiveness, that the article appears to be specially calculated to repel and annoy all our architectural susceptibilities. Of the current forms of design, if it can be called so, for these things, and the kind of look that they have all in a row, in their repetitions of nothingness, in the dealer's show-room, we are not worthy to speak adequately. Only, it seems very absurd, seeing what the fireplace is, and that it is the place to which every one naturally turns in a sitting-room, and opposite to which the master or mistress of the house naturally sits to read or to rest, that it should be so almost universal, in the average type of "well-to-do" dwellings, to take for this part of the furnishing of the room some hackneyed dealer's model, instead of having the thing done according to some definite motive, and in harmony with the owner's taste. If we must have marble, and cannot afford it in solid blocks, it is much better to use it as a single broad band or architrave round the opening, which may be treated with inlaid panels, and to avoid altogether the pretence of pilaster and architrave which forms the usual receipt. In regard to the usual termination to the chimneypiece, the shelf, this is objectionable only because it is usually so badly treated: it is too thin, and it is constantly fixed so as to appear, and to be in reality, very insecure. The shelf should be much thicker than it is usually made, and moulded on the edge, and should always be supported either by large and ample brackets, giving an obvious support, or by shafts rising from the base of the design; a feature which might be much oftener used than it is, and would afford scope for considerable novelty in design, especially in the combination of the shaft and bracket. Where economy is an object, and some comparatively inexpensive stone is used for the chimneypiece, turned slate shafts may be used with very good effect, and at very little expense. The tendency among those who profess to have specially architectural tastes at present is to ignore altogether the mantelshelf, and to finish the chimneypiece by a raking set-off dying into the wall-surface. But the shelf, if properly designed and constructed, is really a suitable and well-placed feature, for the position is a very good one for arranging small ornamental objects, of artistic interest, where they can be well seen and contribute to the general appearance of the room; and if it is replied that the set-off is the architecturally correct treatment, representing externally the "gathering in" of the flue, it may be found that it is quite possible to combine both, and to bracket out the shelf from the face of the set-off. But the absence of the shelf will be generally felt to be a loss, except among those who go merely by fashion.

Where either economy or taste is against large and massive architectural erections as chimney-pieces, the employment of oak or other hard wood would often be much more suitable than marble. The panel treatment, which is suitable in flat designs of this kind, is the natural treatment of wood, while it is not really suitable to marble; and wood used in flat slabs can be fixed and tenoned in a more permanent way than is possible with the marble veneers which form so many of our chimneypiece designs, and which are constantly getting loose, and showing gaping joints. Inlay of darker woods would be most suitable as ornament in such a case; or even silhouette designs in a dark tint, where inlay is too expensive. We very much want attempts to make the chimneypiece more artistic and attractive, in its comparatively inexpensive forms, than it is to be found at present. The cheaper forms of marble chimney-piece, as usually designed, are enough in themselves to impart meanness and vulgarity to the aspect of an otherwise tastefully furnished apartment. The very lowest form of all, the "mantle sham," as it is called in furnishing ironmongers' language, which is considered good enough for cottages, lodges, and upper bedrooms, is certainly one of the very meanest-looking articles ever invented. A border of plain stone slab is far superior to the paltry mock marble chimney-piece of cast-iron.

In cases where a design of size and importance is to be carried out in connexion with the fireplace, this should, if possible, embrace the whole height of the room, and not appear merely as an insertion in the lower part of the wall. The fireplace opening, with its centre of bright flame, should thus appear as the basis and central point

of a large composition, which above may take the form of a niche, or series of niches, for statuary; of a stand for the display of articles of pottery, ornamental tiles, or other objects of beauty and interest. The chimney-breast-glass, so long considered the *ne plus ultra* of decorative treatment for this position, is in doubtful taste, more particularly as it is in a position where any one standing by the fire must be troubled with his or her own reflection, which is not always desired even by the vainest or the most beautiful, still less by those who want one or both of these characteristics. Designs of considerable originality and interest have occasionally appeared recently for this extended treatment of the fireplace design; one or two have been engraved in our pages. In general the complaint to be made against modern designs of this class is, that in seeking refinement and elegance they rather fall short of dignity and architectural character: an infusion of the large manner of the Middle Age fireplaces, without imitation in every respect, seems desirable, to raise the fireplace to something like its ancient dignity. Among old methods of treatment in large halls may be mentioned the combination of two fireplace openings, side by side, in one design,—a method greatly extending the accommodation for the fireside circle, and which certainly would be susceptible of very brilliant and effective treatment in point of design; but, considering the present price of coals, we cannot, in justice to our readers' feelings, enlarge upon such a topic.

Of the grate as usually designed there is little indeed to be said on architectural grounds; the majority of grates, large and small, costly and plain, are for the most part marked by entire absence of true taste in their design, and in the treatment of the material. Mouldings, which are eschewed very often in the marble pilasters and shelf forming the chimney-piece, where they would be quite in keeping with the material, and improve the effect, are, on the contrary, sedulously introduced in the iron grate, to which a different style of treatment would be far more suitable; and cast-iron wreaths and foliage are liberally bestowed, in vulgar profusion. These, in fact, often serve to hide more serious faults of structure and manufacture; and those who purchase grates are often surprised to find that the perfectly plain one is more expensive than the one with the pretty festoons, &c., which latter are, in fact, screens for bad workmanship. There is one point in regard to which the grate manufacturers hit upon the right thing, in the introduction of polished steel into the grate. No source of effect in itself can be better or more suitable for the situation, as it not only reflects and magnifies the glow and glitter of the fire, but reflects heat also. Still, this source of effect may be overdone, and some of the forms of "patent" grate, nearly all an expanse of polished steel, are gewgaw-looking when empty, and almost oppressively-heated looking when the fire is burning, at least for a room of moderate size; and the difficulty of keeping them bright is greater than the effect is worth. What we require generally in the treatment of grates is a less pretentious, less pronouncedly *drawing-room* appearance, and more attention to the nature of the material, which requires treatment in straight lines and in flat surfaces and sunk or slightly relieved ornament, rather than in those super-elegant flowing curves and cast-iron vegetation which form the staple of the ironmonger's "illustrated catalogue."

We have referred to the hearth as a space for ornamental treatment, but, in fact, coloured tiles are almost the sole form of decoration suitable to such a position; and the chief desideratum here is that the colouring should not be too bright or the design obtrusive; anything of such a character looks out of place in a surface, which if exposed to view, and not covered by some of the patent grate arrangements, is in reality a receptacle for dropped cinders. Tiles of brighter and more pronounced design may very fitly be introduced in the jambs or splay of the grate, where they enhance the cheerful effect of the fire, and furnish opportunity for a design with some motive appropriate to the situation.

Architectural unity and consistency of treatment in all its parts, and in relation to the various materials employed, is above all things what is needed, if we would remove the surroundings of the fireplace from the category of mere tradesman's wares, and revive, with whatever modifications, something of the architectural style and character which it has at former epochs presented.

SYMMETRICAL EDUCATION.*

THE readers of the *Builder* already know a little about "the Golden Mean," to which Mr. Cave Thomas has devoted much attention; and we need scarcely say that the present volume is based upon this principle. We cannot venture, except in his own words, to give them any idea of the way in which he here reduces that principle to practical rules, results, and opinions, either in favour of a new system of education, or against more ordinary principles and ideas: we shall therefore transfer one or two leading passages to our pages, in order that the author may speak for himself.

The whole tendency of the technical system, according to Mr. Thomas, is to specialise and reduce men to mere machines; and to specialise is to narrow the sphere of vital action; for there are but two possible tendencies in nature, viz., either to excentration or to symmetry, either to the unbalanced or the balanced: the eccentric, the unbalanced, the disproportionate, are but different expressions for *special* development. The two opposite tendencies may be thus formulated:—

1. Beings in which the greatest number of faculties are concentrated in their mean or moderate degree of development, manifest the largest *general* powers.

2. Beings in which any special faculty, or group of faculties, are inordinately developed, evince but some *special* aptitude, but are deficient in *general* mobility, in *general* capacity. Their *special action* increasing as the excentration or disproportion constituting their individuality or characteristic increases.

Now, if the full import of these two positions be thoroughly grasped, the title "Proportionate or Symmetrical System" will at once be understood, indicating, as it does, a system essentially opposed to that which has so long been in vogue, viz., that based upon the misconceptions that bias in the human character should be cultivated, and that quantity and variety of knowledge are preferable to quality in education, to the regulated, symmetrical cultivation of the whole manhood.

If the popular notions on the subject of education be examined, continues our author, it will be found that they are, in the main, founded on phrenology; and under the supposition that this is a sound theory of the constitution of the mind, when it is nothing but a mere shaky hypothesis: hence tendencies in character resulting from accident and habit are attributed to the promptings of certain cerebral organs. These organs, confidently mapped out, are so numerous that it can scarcely be wondered if teachers and parents, whose notions are derived from phrenology, should be anxious to "cram" youth with all kinds of information, lest it should appear naturally deficient, *minus* any cerebral protuberances. Hence one of the principal motives of "cramming," and the origin of the absurd notion of the great variety of study necessary to develope the intellect. This is, indeed, one of the most absurd and fatal mistakes of modern times, and is as injurious to mental development as "cramming" the stomach is to digestion; the heal by action of the mind, as of the body, is impossible under such treatment. . . . . .

The proportionate or symmetrical system of education we are now advocating, the author elsewhere remarks, is based on that great and immutable science of definite proportional relation which obtains throughout the Cosmos. The leading positions of this doctrine, applicable to the subject in hand, are thus stated:—

1. That all wrong, imperfection, disproportion, are aberrations from a *mean*, or *average* condition. The mean, therefore, is the common measure of rectitude in all things, of the proportioned, the symmetrical, of the good, the perfect, the beautiful.

2. That any *special* excess in any system of being, necessarily involves a *special* defect: this results from a transfer or excentration of power.

3. That as the vitality of power in any system of being is a *fixed* quantity, any excessive expenditure of vitality, by one function or group of functions, must be compensated by inaction in others; or by the system generally, by a period of absolute rest; otherwise organisation will be impaired, the common store of vitality unduly drawn upon, and existence shortened. Thus exposing the great law of compensation, by which irregular activity in body or mind may be corrected and health restored.

That any *special excess* or any system of being necessarily involves a *special defect*, at once indicates the weakness of the educational system which would promote or develope *bias*. For it will at once be seen by (2) that any special aptitude of mind or body can only be developed at the expense of its proportion, its symmetry. The general efficiency of the humanity is impaired by such a course. The truth of this position is, in fact, frequently attested by the exclamation, "Oh, yes! he is very clever in that way, but a fool in respect to everything else." That we have a public superficially informed, crotchety, eccentric, incapable of observing or reasoning correctly, thinking deeply or seeing far ahead, is due to the absurd system of developing *bias*.

The cultivation of *bias*, of special intellectual or physical idiosyncrasies, inevitably tends to foster and increase what is evidently by (2) a predominance or disproportion in the man, and, therefore, to destroy that proportion or symmetry in which well-being consists, or that regal manhood which is neither in excess nor defect of anything essentially human.

An ill-natured critic, we may here remark, might curtly describe Mr. Thomas's system as an endeavour to introduce and establish a mean level of mediocrity suppressive of all talent, all genius, all superiority, either mental or corporal, and devoid of those stimulants to emulation and excellence in all and every direction which would bring mankind, in the aggregate, to a high level, instead of to a low one such as Mr. Thomas's system would. Nevertheless, we think there is much truth in his principles; but why *he* should scout phrenology as he does, one cannot well see. Even though not ourself satisfied, by any means, with phrenology as an analysis of mind, we think it is quite as much in accordance with Mr. Thomas's principles as the contrary; for where smallness of cerebral development and weakness of capacity are coincident, it does not follow that this leads to, or specially countenances, the further development of the more prominent faculties, and the neglect of the weaker. Quite the contrary; and we should think as many phrenologists keep the one way in view as the other. But we must leave such questions to be discussed by the phrenologists themselves with Mr. Thomas, and would only wish to say one word as to "the ideal man," or "the regal manhood," to which the author alludes; for this is his grand "pattern" of perfected manhood, right or wrong, which rules and regulates all his conclusions as to what is right or wrong, and true or false, in education, and everything else within the sphere of humanity.

Let us suppose that in adjusting the balance of political power on the globe, we were to exclude the Americas. However equitable and symmetrical such a *balance* might be made in itself, would it be a false balance or a true one? Everything depends on the expansion and completeness of the view we take. If we regard as a sphere what is only a hemisphere, we calculate without our host, and our idea is worthless. If we regard as "the whole man" what is only half the man as a true and integral whole, our conclusions are certain to be wrong. And from what Mr. Thomas here and elsewhere says, we rather fear he does so.

* Symmetrical Education; or, the Importance of just Proportion in Mind and Body. By W. Cave Thomas. London: Smith, Elder, & Co. 1873.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

MEDIÆVAL BRICKWORK OF POMERANIA.

THE second ordinary general meeting of the session was held last Monday evening, at the Rooms, Conduit-street, when a paper was read by Mr. J. Tavenor Perry, Associate, "On the Mediæval Brickwork of Pomerania:" Mr. John Gibson, vice-president, in the chair.

Mr. W. S. Barber, of Halifax, and Mr. James Lemon, of Southampton, were elected as Fellows.

The Secretary (Mr. Eastlake) announced amongst other donations, the presentation, from Lady Tite, of a large water-colour drawing, which was on view, representing the various buildings erected by Inigo Jones, for which a special vote of thanks was passed.

After the reading of the paper, the Chairman, in inviting discussion, called upon

Mr. Street, R.A., who, in the course of his remarks, said that this Mediæval brickwork, of which Mr. Perry had ably treated, extended all over Germany, from the Baltic to the North Sea, and if he were to say anything at all, it would not be upon the buildings exactly in Pomerania, but out of it, although they were of the same description. Every one visiting Germany was immediately struck with the beauty of this brickwork; but wherever it was used, it seemed the fashion to make the most of it. He trusted that next year we should know more about the subject, though the younger members

of the profession, he thought, did not seem inclined to visit Germany, there seeming to be a want of interest in foreign art and architecture. He would like himself to know more about the internal furniture of some of these churches in Pomerania, this furniture being, as far as he knew to the contrary, the most interesting feature, consisting of old altars, vestments, &c., everything, in fact, being left in the most perfect state to show what a Mediæval church was like before it had been ruined. The gateways, too, were among the most important things which immediately struck visitors. These brick buildings were really of a most picturesque character; and one could not help admiring their extreme beauty, the gable at Prenzlau being of great excellence, and the tracery of so simple a character. In conclusion, he moved a vote of thanks to Mr. Perry for his paper, regretting, at the same time, the paucity of attendance.

Mr. Charles Fowler, in seconding the motion, said that he was not very familiar with the exact places in Pomerania to which Mr. Perry had referred, but there were other towns, he thought, to which his remarks would apply. Stargard, however, he, with Mr. Perry, had seen; and when he visited it twenty-five years ago, it was a quaint old town, the picturesque buildings of which seemed to him to be of the fourteenth century. The old brick walls were remaining almost intact; and his theory was that the style of architecture was imported from adjacent countries, there being but few earlier buildings than those of the fourteenth century in Pomerania; but possibly this might be explained by the inference that during this century, when the country was in a high state of prosperity, the early buildings were pulled down in order to make room for the magnificent churches which were then erected. Mr. Perry had not directed the attention of the members to domestic buildings, of which there were some fine specimens, though not of a large variety, being of a gabled character, the gables being the feature of the building; but where there were a great number of them they were extremely picturesque. The quality and character of the bricks employed, Mr. Perry had called attention to, but it would have added greatly to the effect of the buildings, he thought, if they had been made of a finer colour, and if they had been smaller in size, large-sized bricks being difficult to handle.

Mr. Phené Spiers was of opinion that there were other towns in the same country, such as Lubeck and Danzig, the style and character of which were precisely the same as those which had been mentioned. He confessed that, from a personal examination of the buildings, he had come to the conclusion that they were imported into the country, and also imported into a place where previously stone was the chief material employed. With regard to the town of Neubrandenburg, he thought it was of the fourteenth century. If the style was imported, it soon became a natural one in the country. With regard to the peculiarity of carving bricks, in England we very seldom thought of carving bricks; but it was very certain that in several parts of Pomerania brick was carved. In the churches at Danzig the mullions rose to a height of 70 ft. beyond that of the iron doors, which was certainly surprising. The tracery, too, was of an elaborate character; and, in conclusion, he regretted that so very little was known of this interesting brickwork.

Mr. Fowler said, with regard to carved bricks, his experience was, that upon a careful examination he had come to the conclusion that no bricks were carved which had been burnt.

Mr. W. H. Brewer stated that the paper had been of great interest to him, for it had pointed out one of the difficulties under which architects laboured during the Middle Ages with regard to the material employed; they not only had to use a certain material, but had to find out how to use it. They knew, however, that if they had to build a church, living in the thirteenth century, they were to build it only in that particular style, thus overcoming the greatest difficulty an architect had to contend with at the present day. The use of brick to these Gothic architects in the Early Ages was really one of great difficulty; but when they came to employ stone, it was interesting to note what use they made of it, and how the style developed itself. He ventured to assert that the style developed by the use of brick was not of so fine a character, being an inefficient style altogether to that which developed itself in the employment of stone. Gothic architecture was really more applicable to stone than brick, and it might be looked upon more as a stone style than a brick one. The finest specimens of brickwork of the Middle Ages were to be seen in the old Tudor houses in England.

Mr. Street said, that with regard to the tracery, these brick works were only imitations of tracery, and in the gables all over the buildings there were to be seen nothing but traceries, the architects having the material at hand which so easily lent itself to the making of tracery. Brick traceries were also to be found in the north of Spain, and again in the south of France.

Mr. Thomas Morris thought that history was really the basis of any kind of architectural study; and it was very essential that the subject of which the lecturer had been treating should be so defined that, when we spoke of brickwork we should not speak of terra cotta, in which the Italians excelled. It appeared to him that when things were moulded, and carried by the score or the thousand from one part of the Continent to another, it was quite possible that some of the decorative portions might have been carried to Lubeck, and there been disseminated into the northern parts of Europe. He thought that this was a point concerning which history might be able to show in what direction such a style travelled.*

THE PROFESSION IN IRELAND.

ARCHITECTURAL ASSOCIATION OF IRELAND.

THE president of this Association, in his opening address, said,—What are the prospects of the profession? You have certainly complainings, and justly. You have also strong proofs of prosperity on every side. The number of architects is increasing every day. You should take courage from the fact, as it is pretty certain that architectural practice is becoming more and more general,—in fact, becoming a necessity of the age. I need scarcely dwell on the fact patent to you all, that the influence of the profession is being felt day by day; and though you occasionally hear statements made relative to the profession, you find on examination that these observations are made oftentimes without sufficient ground on the part of the individual; often still, without any knowledge of the subject. I think it only reasonable to expect that before men criticise, they should learn even a small portion of the knowledge which an architect should possess. Men of real influence seldom or never indulge in such criticism, but place themselves unreservedly in the hands of their professional advisers.

I would also mention that the influence of the press, as a rule, has been everything that could be desired in supporting the dignity of the profession. I hope it will continue in the same course, never sparing us when our buildings depart from their proper uses and truthful principles. You may then be satisfied that the increased influence of the architect, founded on his improved attainments, proves that the profession of architecture is fairly prosperous, and that no one of ability need fear to succeed in it. I shall not dwell on the fact of how we are to get practice, or how act in our intercourse with our clients and those who may assist us to carry out our designs. Then, having formed some idea of how to represent the work to your client, you should perhaps consider our relations with them and all others in our paths (professionally). The latter, Professor Cockerell, gave it as a rule, than which I think none could be better,—"To be an artist amongst gentlemen, and a gentleman amongst artists."

As to getting practice, almost every man's experience in this way is different from his neighbour's. Competition afforded to many rising young architects a means of distinguishing themselves in early life, although there is a great risk; yet I think the principle is a noble one, if only properly carried out.

When you have got clients, you must do all in your power to realise their wants, fall in with their views, hold out against them when you feel that the result will not be satisfactory; and in the case of prominent buildings, it probably will be better to retire from the work altogether than that your name should be associated with that which is opposed to the true spirit of art. It was very delightful to meet with intelligent clients who clearly stated their wants, and rendered all the assistance in their power; and it was still more delightful to fulfil successively the conditions required by such clients. The work of the architect should not be confined merely to the designing and superintending the building itself, but the whole work of decoration and furnishing should be left in his hands, for it is very sad and very discouraging to the architect to find that when he has tended and cared a building to completion, he found that the fittings and decoration were utterly out of keeping with the rest,—often in a different style altogether. This should not be so. To remedy this state of things, fine art must be studied by the general public. This study can give the greatest delight. By it you learn to see beauty where before all was blank. This study produces a spirit of gentleness and refinement, and without it you can hardly realise to the full the beauties of creation. The earlier in life you get this power the more readily you learn to understand those beauties. You then can sympathise with the efforts of the artist, and a more charitable feeling will arise when you witness defects, as you will be better prepared to understand the difficulties of his position. You should also study art, and support professors in every possible way; for this reason,—that they live for their country's good, and it is the only thing that shall remain to give a just idea of our state when all else shall have passed away. Lose, then, no opportunity for the cultivation of this art, and a training to appreciate works of art. Architecture is the history of civilisation; it was the first necessity,—it is the real and only foundation of fine arts, and should be the guiding spirit to the others, which were created for her decoration.

The late Cardinal Wiseman, speaking of architecture, says:—"It may seem superfluous to observe in writing of architecture, that it obviously divides itself into two branches, —the purely artistic, and the constructive or scientific. If, on the one side, it seems to descend towards the class of mechanical pursuits; on the other, it rises so high as to command its other two sisters, and to be almost necessary for their perfect existence. I have sufficiently intimated that one great difference between ancient and modern art, including Mediæval art, under the first division, consists in this,—that ancient art was public, and modern is private. Galleries of sculpture were anciently unknown. Its most matchless pieces were in temples or in public halls, such as those baths, or in open gardens, perhaps, adorning fountains, but generally accessible to the most plebeian eye; but this very circumstance shows how architecture is in the highest sense a fine art, and must always necessarily grow as such commensurately with the advancement of the other two branches of art of design."

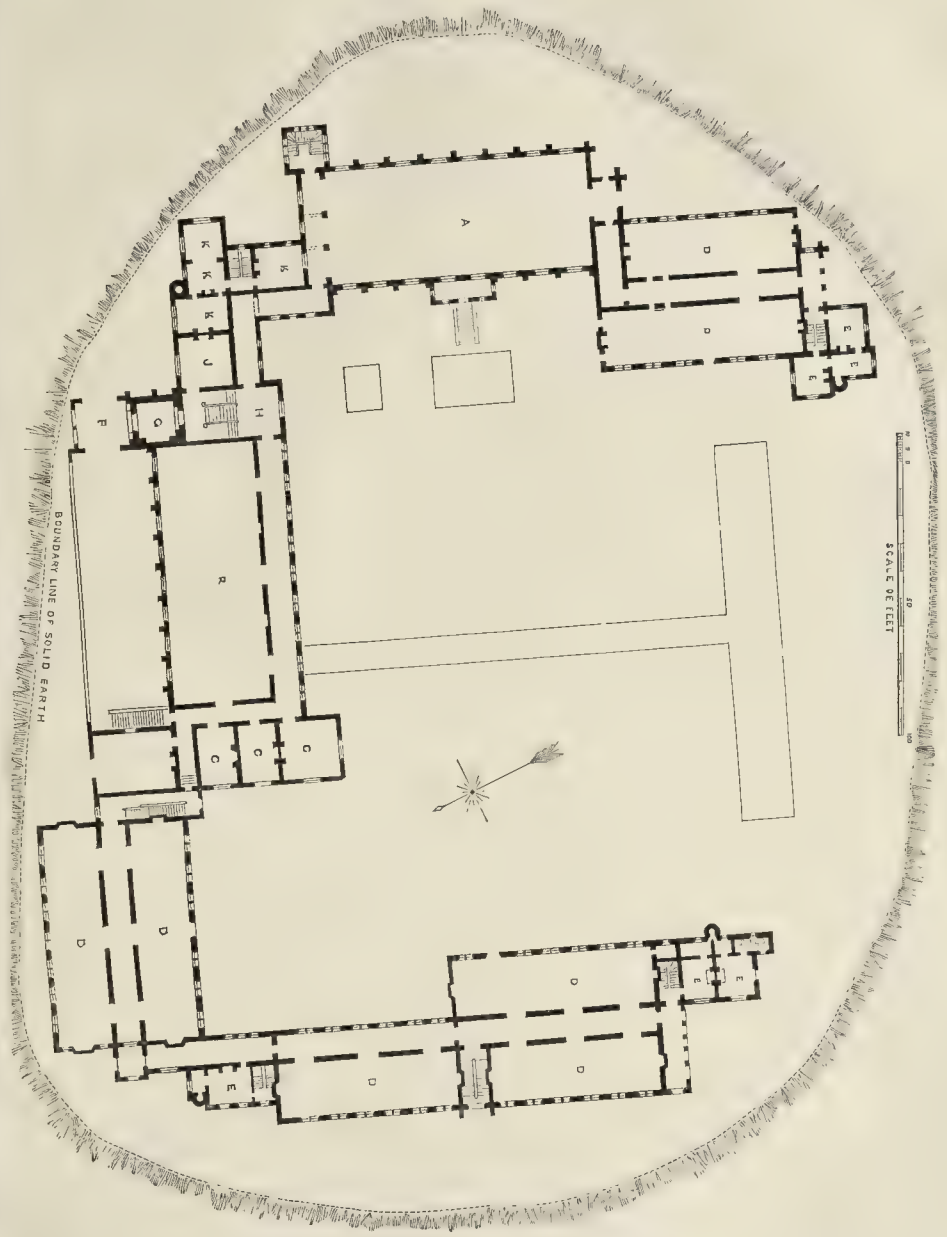
It is sad to think that in our universities the fine arts receive none of that consideration which is their due, and which they should receive, if the education afforded is to supply the intellectual wants of the age. In England, France, and most other countries of Europe, those arts have always received due attention; but in Ireland we are very far behind. I am happy to see that in one of the universities attention is being paid to fine art and antiquities, and I hope the day is not far distant when our "silent sister" will remove the reproach that practically the fine arts are expunged from her programme.

The Government of the country do very little for art education. It is absolutely necessary that museums should be established, and public lectures instituted, if we would hope for a real knowledge of art in our midst.

However, notwithstanding all the drawbacks, I am happy to congratulate you on the exertions you have made in the past, and the success attending those efforts. It must have been a source of great pleasure to you to find your effort so well assisted by many of the senior members of the profession; and the friendly aid given in several ways by the Royal Institute of the Architects of Ireland must also be encouraging; and, though last, not least, the friendly interest displayed by your friends who have honoured you here this evening, must be to you a proof that if you work earnestly for the advancement of the fine arts you need not fear that your efforts will go unrewarded.

* It was announced that at the next meeting Mr. Simpson would read a paper "On Chinese and Japanese Architecture," owing to Mr. J. Scott Russell, who was to have read a paper "On the Central Dome of the Vienna Exhibition Building," being called away to Vienna.

The John Stuart Mill Memorial.—The execution of the statue of Mr. Mill has been entrusted to Mr. J. H. Foley, R.A.



A. Dining-hall.
B. School-room.
C. Class-rooms.
D. Dormitories.
E. Sergeants' Quarters.
F. Porch.
G. Entrance-hall.
H. Principal Staircase.
J. Library.
K. Principal's Residence.

THE LAWRENCE ASYLUM, OOTAKAMUND.——*Plan of Ground Floor.*

THE LAWRENCE ASYLUM, OOTAKAMUND.*

This building has been recently erected by Government in commemoration of the late Sir Henry Lawrence, at a cost of 50,000*l.* It is intended to provide a home and education for the children of the European soldiery, and affords ample accommodation for 400 boys. The scale of room is as follows:—

School-room space, 9·7 superficial feet per boy.
Dining-room ditto, 11 „ „
Dormitory ditto, 5·7 „ „

Dimensions of dining-room, 107 ft. by 40 ft.
„ School-room, 96 ft. by 36 ft.

The erection of this building required much labour and skill, being built at a height of 8,000 ft. above the sea level.

The architect was Mr. R. F. Chisholm, of Madras.

* See p. 927.

ART CRITICISM.

In a recent work on the science of language, Professor Max Müller, in illustration of the manner in which a primitive root may be traced in its wanderings through the various later tongues, takes as an example the root AR (to plough). After finding it represented in the Sanscrit by a word meaning labour in general, and under various modifications of sound in all the Indo-European languages, bearing the same or cognate meanings, it is discovered in the Anglo-Saxon word *Ar* (hence oar), to propel a ship through the waves, to *plough* the deep; in the old English word *ear*, in the words *earnings, earth*, &c., and from the same root, come our modern words *Art, Architecture*.

Art cannot exist without labour; labour, however, which in itself ministers to no bodily want, serves no physical necessity, but labour which is performed because man has more than a mere animal life, something distinct and superior which craves food and exercise, and affords him the highest enjoyment, because he has a spiritual being which can partake of and assimilate the good, the true, and the beautiful.

Ethics, science, and art are the three provinces of mental culture, which, each having a distinct and separate centre, yet overlap, intermingle, and partake of each other, and there exists between them a strong analogy and natural harmony. The first care of man has ever been and must ever be to satisfy his animal wants, the necessary support of his bodily existence, but the mere eking out of material existence has satisfied only the very lowest types of the species. Wherever the true dignity of our birthright can be traced men have craved for some sort of intellectual pleasure, and all intellectual pleasure is more or less identified with the perception of the beautiful. As man has advanced on the path of civilisation he has endeavoured the more earnestly to give grace and comeliness to the works of his hands, to surround himself with things of beauty, to polish the mirror of his soul so that it may receive and reflect impressions of the beautiful in its highest development, and in thus cultivating the æsthetical faculty within him he is the more able to comprehend the great source of truth from which his inspirations spring.

It is the perception of the beautiful, either through the senses or memory, that gives charm to art; and it is the moulding and fashioning of his material through its inspiration that exercises the genius of the artist, whether it be in filling the eye with graceful form, skilful composition, or harmonious colour, or filling the ear with "the inarticulate mystic speech of music," or stirring the soul through the measured rythm of poetry. Nay, something of a kindred pleasure and emotion to that which the perception of the beautiful excites may be traced in the delight some minds take in the exact sciences, the apprehension of the beautiful in the abstract; the idea of unity, design, variety, and harmony in those sciences which treat of order in the universe of created things.

When under the influence of that which is exquisitely beautiful we are drawn out of ourselves towards it, it takes possession of our souls; and this emotion excited within us by the power of the beautiful in insensate nature, or in skilful art, is of the same nature (differing only in quality and degree) as that which is kindled within us by the power of the good, the noble, and the fine in living action. The godlike in the soul is the beautiful in morals; and its contemplation evokes a higher emotion than the sensuous beautiful, inasmuch as spirit is nobler than matter. And yet there exists a certain relationship between our perceptions of the external and sensuous beautiful and the inner and moral beautiful, betwixt material beauty and grandeur, and spiritual loveliness and greatness: they are emanations and manifestations of God, the source of all that is good and true. It is the setting forth with power and skill this moral beautiful that has exercised the genius of the great workers among men. "Was it not to preach this higher that sages, and martyrs, and poets, in all times have spoken and suffered, bearing testimony through life and through death to the godlike that is in man? and in the godlike only has he strength and freedom." Outer nature is only the clothing and manifestation of spirit, of an inner life; and the inner life, with its hopes and fears, its moral powers and spiritual aspirations is the true field of action of the poet, but only in a relative degree of the painter and sculptor. Representative art in its first degree is content with the mere evolving of outward beauty, and the charm which such is calculated to produce on the perception of the beholder is its chief motive; but in its higher aspects it aims at a moral beauty, the expression of emotion and passion, the touch of nature which makes all men kin.

Yet while this element of sentiment forms a component part in the highest efforts of representative art, it receives its full and proper development in poetry. In this matter art and poetry to a certain degree overlap each other, for while the raising of emotion by sentiment is sometimes a purpose of the artist, and the realisation of a scene or action the effort of the poet, yet in the main the creation of a beautiful work of art is the true vocation of the one; the evoking of sentiment and emotion is the true vocation of the other. Both, indeed, deal with the outer and inner life of man, but it is the assurance of the "relativity of our perceptions," in regard to the material and sensuous beautiful which give confidence in his work to the artist, whilst poetry appeals more to our inner life, the life we live alone and apart, yet which finds communion from soul to soul by means of sympathy, and it is the assurance of the *relativity* of our moral perceptions that gives to the poet his existence. A true sense of the material beautiful is essential to constitute an artist,—a certain sympathetic and emotional temperament is essential to constitute the poet; the one deals with succession of thoughts and harmonies, the other with thought crystallized in material form.

The sympathy and aptitude to emotion must exist in the soul ere art steps in to intensify or exalt it; but where the responsive cord is wanting, the appeal is in vain. The poet may not be a good art critic, nor the artist a judge of poetry.

"Every man is the measure of all things to himself." No criticism on a work of art can be true and just unless the critic can place himself at the point of view of the artist, unless he can sympathise with the feelings, emotions, and objects of the worker. Education will not *produce* this sympathy; the germ must exist in the soul before it can spring up and be cultivated.

THE GOLD AND SILVER MINES OF SCOTLAND.

Within the shadow of "dark Lochnagar" the Marquis of Huntly has commenced prospecting for silver. He has employed labourers, under the guidance of an expert, to reopen a silver-mine which was worked with partial success about the middle of last century. The undertaking of the noble proprietor is anxiously watched by the inhabitants of Dee-side, who, should it prove successful, look forward to a new field for labour being opened in their midst. The most successful prospector for silver in Scotland, in later times, was Sir John Erskine, of Alva, who discovered a valuable mine of silver in a ravine of the Ochil Hills, which formed part of his estate. The silver in this mine made its first appearance in small strings of ore, which, being followed, led to a mass of that metal. A part of this had the appearance of malleable silver, and was found, on trial, to be so rich as to produce 12 oz. of silver from 14 oz. of ore. Not more than 50*l.* had been expended when this valuable discovery was made. For the space of four months, it is credibly affirmed that the proprietor obtained ore from this mine to the value of 4,000*l.* per week. When this mass was exhausted, the silver ore began to appear in smaller quantities, symptoms of lead and other metals presented themselves, and the search was for a while abandoned. Sir John, however, drove another shaft in the vicinity of the first; and the result of the undertaking is made plain by the following anecdote. Walking over his estate with a friend, Sir John pointed out a great hole, and remarked, "Out of that hole I took 50,000*l.*" Then walking on, he came to another excavation, and concluded the sentence, "I put it all into *that* hole." In 1767, Sir John's nephew presented a pair of silver communion-cups to the church of Alva, with an inscription, which may yet be read, stating that they were fashioned from silver found in the parish.

The earliest mention of gold and silver mines in Scotland occurs in the reign of King James IV. In the royal accounts for the years 1511, 1512, 1513, in connexion with the gold and silver mines in Lanarkshire, there are payments mentioned to the "master-finer," "the finer," and "the melter of the mine." In 1561, when a lease of the lead-mines of Glengoner and Wanlockhead (Lead Hills), was granted by Queen Mary to John Acheson, "master cunyer," and John Aslowan, burgess of Edinburgh, they were bound by agreement to deliver forty-five ounces of fine silver for every thousand stone weight of lead ore. In six months the leaseholders delivered at the Mint "nine hundred ounces of utter fine silver." In 1563, the queen granted to John Stewart, of Tarlair, Banffshire, and William his son, licence to "win" all kinds of metallic ore between the river Tay and the Orkney Islands, and in the event of their finding any gold and silver where none were ever found before, the product was to be brought to her majesty's Mint; "the unce of gold for ten pund, and the unce of utter fine silver for twenty-four shillings" (Scotch). Of this grant nothing further is recorded, but it may be taken for granted that the Tarlairs failed in their undertaking, as also did Eustache Roche, a Fleming, who entered into a contract with King James VI., whereby he was empowered to break ground anywhere in search of the precious metals. It was not till 1593, when Thomas Foulis, goldsmith, in Edinburgh, who was in those days to King James what the Bank of England has often been in modern times to the British Government—a ready resource when money was urgently required for State purposes, that the search in Scotland for silver and gold was industriously conducted. The king, in consideration of loans—and very heavy ones they were,—granted to Thomas Foulis, a lease of the gold, silver, and lead mines of Crawford Muir and Glengower, for twenty-one years. During his lease, he worked them well, and in time they passed through his granddaughter into the possession of her husband, James Hope, of Hopetoun, the founder of the noble house of Hopetoun. The estate has long been one of the best in Scotland.

While Foulis was mining and prospecting, an Englishman named Bulmer, with the licence and favour of Queen Elizabeth, and a patent from the King of Scots, set seriously to search for silver and gold throughout the border country of Scotland. The enterprise was ruined by his personal extravagance, according to a record of the period. "Upon Glengoner Water he builded a very fair country-house to dwell in, and he brought home a watercourse for the cleansing of gold and silver; by the help thereof he got much straggling gold and silver on the skirts of the hills and in the valleys, but none in solid places, which maintained himself then in great pomp, and thereby he kept open house for all comers and goers: as is reported, he feasted all sorts of people that thither came." Here ends a brief notice of silver-mining in Scotland in the days gone by. The mines were in many instances worked with a profit; but one thing must not be forgotten, the men who worked upon these mines were, to every intent and purpose, slaves. Reference has been made to the silver-mine at Alva, the property of Sir John Erskine: one Alexander Steuart was bestowed as a gift on Sir John with a view to his being employed on the silver-mine, and his *proprietor* was enjoined to fit a metal collar upon the man, bearing the following inscription:—"Alexander Steuart found guilty of death for theft at Perth, the 5th of December, 1701, and gifted by the justiciars as a perpetual servant to John Erskine of Alva." This collar was dredged up in the Firth of Forth many years ago, and is now in the museum of the Scottish Antiquarian Society. Even until the year 1775 the restraints upon the personal freedom of miners and salters—the villainage of the Middle Ages—were in full force until extinguished by a statute of George III.

Three hundred years ago gold and silver were found, but not in abundance, on the mountain sides where the Marquis of Huntly is at present prospecting. There is no doubt of the existence of veins and nuggets of these precious metals in the mountainous and moorland districts of Scotland, but will the value of the "finds" be able to overbalance the amount expended on the labour employed? That is the question.

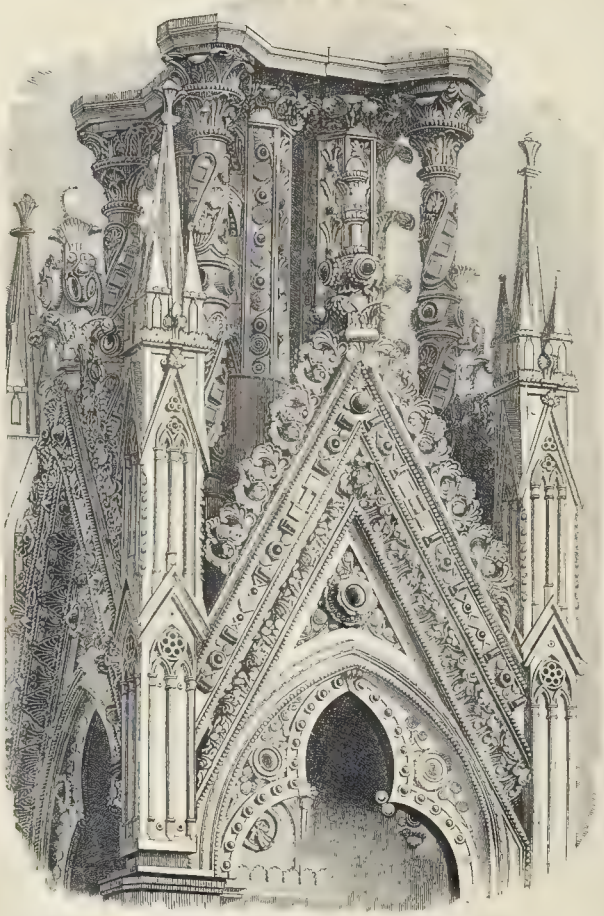
SCHOOLS IN THE COUNTRY.

Worthing.—The new schools in connexion with St. George's, Worthing, have just been opened. The accommodation is for 208 children, without residences. The total cost, including fittings, architect's fees, &c., but exclusive of ground, has been about 1,069*l.*, or 5*l.* per head. Mr. George Truefitt was the architect; Mr. Smith, of Worthing, the builder.

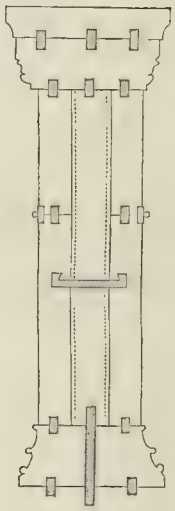
THE PRINCE CONSORT NATIONAL MEMORIAL, HYDE PARK.

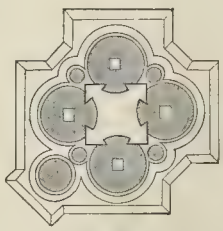


Capital of Great Pier.



Canopy of Niches in the Spire.





Plan and Section of Pier.

[See p. 917, *ante*.



THE LAWRENCE ASYLUM, OOTAKAMUND, MADRAS PRESIDENCY, BRITISH INDIA.—Mr. R. F. Chisholm, Architect.

POSITION OF THE NATIONAL ARMOURY.

SIR,—Allow me in the name of all lovers of art and advocates of education, to thank you for your observations respecting the collection of the late Lord Zouch, and the present state of the National Armoury in the Tower. I can testify to the truth of every word you have said in condemnation of the red tape system which compels the authorities to regard our priceless antiquities as "stores" in a "fortress," instead of instructive treasures in a museum, and in exposure of the constant peril they are in of destruction either by fire or water.

I am weary of representations to the War-office, having found them ineffectual from the days of Lord Panmure to those of Mr. Cardwell, although I can produce official acknowledgments from nearly every administration of the justice of my remonstrances, and the desire of the authorities to remedy the evils complained of.

It is unnecessary for me to occupy your space by repetitions of the facts and arguments which have already appeared in your columns, and been re-published in my "Recollections."

For your constant and strenuous support I am deeply grateful, and if the public press generally would take up the subject, some hope, I have private reasons for believing, might be entertained of the reformation of the present "penny wise and pound foolish" system; but nothing, I am assured, will be done except through "pressure from without."

The Government has suffered the matchless Meyrick Collection to be dispersed without purchasing a single article. That it will avail itself under the present circumstances of the patriotic offer of Lord Zouch is exceedingly problematical.

An average income of nearly 3,000*l.* per annum is derived from the exhibition of the armour in the Tower alone, and of this sum not one shilling is set apart for the increase and improvement of the collection. Contrast this with the inclosed extract from the return to Parliament, ordered some year or two ago by the House of Commons, of the expenses of the South Kensington Museum. "The amount expended in purchases of works of art and science, books, &c.," is therein stated to have been 224,873*l.*! independently of the cost of arrangement.

The only self-supporting exhibition in the metropolis is not allowed to be benefited by its own income. J. R. PLANCHÉ.

College of Arms.

"*South Kensington Museum.*—From a Parliamentary return ordered by the House of Commons on the 14th ult., the entire cost of buildings, including repairs of buildings for schools, appears to amount to 306,372*l.*; the cost of arrangement, which includes management and expenses for the circulation of objects of art amongst 107 local schools, 630,555*l.*; and the amount expended in purchases of works of art and science, books, &c., 224,873*l.* Gifts to the museum are estimated at 160,000*l.*, in addition to the 100,000*l.* given by Sir Joseph Whitworth for scholarships. Objects on loan are estimated to be of the annual value of 300,000*l.*, and since the foundation of the museum it has been visited by 9,056,818 persons."

SOMETHING ABOUT IRON.

MR. MORRIS, manager of Dallam Forge, has read a paper before the Warrington Literary and Philosophical Society, entitled "Notes on Iron: its Sources, Processes of Manufacture, and a Few of its Characteristics." We print the earlier portion of it. He said: What is this material called iron; this most useful of all metals,—the intrinsic value of which exceeds all others, and which, in proportion to its use, should be the cause of progress of civilisation in the world wherever it is manufactured; and that the amount of its consumption by any nation, both in times gone by and at the present day, indicates very truly the degree of its attainment in the arts and sciences? If we ask the geologist, he tells us that it impregnated the waters of the old red sandstone period, and tinged with rusty red the whole of that system; that it now appears in the segregated form of thin layers and bands of ironstone; that its ores are found more or less in all parts of the world, either as beds in the sedimentary rocks, or in the massive deposits in the olden rocks, that the United Kingdom derives its principal supply from the earthy carbonates of the coal measures, from the carboniferous formations where some particular coal-fields possess large deposits of rich hematite ore. The meteorologist tells us the sun and the atmosphere played a most important part during the carboniferous era, and that now we are consuming the millions of years past bottled-up sunlight in the making of iron. Again, iron in the shape of falling meteors has been found, and from one of these bodies a Persian emperor had made two sabres, one knife, and one dagger. This iron of lightning or thunderbolt could not be worked up by itself, but must have been mixed with one-fourth of common iron before the Tubal Cain of that day did his master's bidding. It would be a wrinkle worth knowing how he obtained the mixture.

Coming to our nearer friend, the metallurgist, he lets us know the numerous combinations and analyses of the particular metal you wish to study; what mechanical and chemical sciences are involved to complete the separation and evolve the metal to that condition of purity desired by the manufacturer; what flux will best suit to form a glass with the multifarious ores during their fusion in that huge laboratory, the smelting-furnace; and that without flux to separate the earthy matter from the ores, glasses would be formed, instead of the carburet of iron and slags; and that the best-known flux for nine-tenths of the ores is limestone, which is incapable of holding iron in solution at high temperatures; that there must be blown, under pressure, from six to ten tons of atmospheric air in the furnace to produce the required oxygen for the reduction of one ton of pig iron from the ore. The pig iron the finished iron manufacturers take in hand, and by two distinct processes convert it into bars, plates, wire, &c. We have arrived now at the puddling process, which is replete with interest, consisting, as it does, of converting cast metal into malleable iron. The present system of puddling, as carried on almost universally, with few modifications (which shall be named), was invented by an ironmaster of the name of Cort, about the year 1780, the bed of whose furnace was made of sand, consequently the carburet was refined, many of its impurities especially the carbon which is the metalloid causing fluidity, was driven from it; hence, when the pig iron was melted it assumed the form of grain. If the carbon had been left in the pig metal the bed of the furnace could not have stood; besides, silica is fatal to iron, causing what is technically known as shortness or extreme brittleness. The deteriorating influence which sand and silica had on the iron when worked in contact with it was seen some years afterwards by Mr. Samuel Baldwin Rogers, who introduced the present system of iron bottoms to furnaces, which eventually did away with the finery process. Both of these gentlemen died in poverty, yet their inventions in their day were as much a desideratum, and were the cause of greater revolutions in the iron trade of that time than the Bessemer process or Dank's rotary puddler in our time. Many imagine that the gentleman with the cloven foot invented puddling, and I confess that for four or five months in the year it is one of the most distressing processes to the physical system of all manual labour, yet puddlers do not all stagger from the furnace fainting at the age of forty, as a certain special newspaper commissioner would have us believe. These joint inventions were the means of this kingdom taking the lead of all other nations in the iron trade, for up to this time we were dependent for our supplies upon Norway, Russia, and Sweden. From the latter place even now a large amount of their produce finds its way into England. In describing this puddling process it should be explained that the furnace is divided into two compartments, separated by a bridge about 12 in. thick, and 14 in. high. Over this the flame passes it from the grate, and comes in contact with the iron, and after it has done duty there passes round the boilers, generating the steam necessary for driving the machinery required for forging and rolling the iron. The chamber or compartment the pig metal is charged with, consists of iron plates forming the bottom and sides, which are lined with refractory slags rich in oxides of iron. In changing the heat, slags and scales from the hammers and rollers are thrown on the hearth or bottom, and on this the charge of pig-metal, consisting of 510 lb. to 540 lb. Fuel is then thrown into the grate, and in about twenty-five or forty minutes this carburet of iron becomes liquid, and assumes the form of a molten plate of iron some 1½ in. to 2 in. thick. Being heavier than the slags, the latter pass through it, and rise to the top. In passing, the oxygen contained in the silicates combines with the carbon of the iron, and decarbonises it; but unless the iron is agitated it will not become malleable. Hence the puddler, with a bar called a rabble, agitates the metal, and brings in contact the oxygen of the silicate with the carbon and other impurities of the iron. As the carbon is leaving the metal, its atoms expand and become of less specific gravity, and it throws off carbonic oxide gas, the blue flame of which is plainly seen by any one who watches the process. The puddler at this stage must be incessant in his operation, for the transformation scene is coming, and the crude iron is becoming malleable. The boiling of the mass is kept up by the fresh energy of the puddler until, as the carbon diminishes, the atoms of the iron begin to knit or agglutinate together in a soft spongy consistency, the cinder taking the place of the once molten iron. The iron is now as sensitive to oxygen as a tropical plant would be if placed in a temperature at zero, and as the human lungs would be if inhaling pure oxygen: it lives, as it were, too fast. It is at this point that smoke-preventers are puzzled; but a deoxydising flame is kept on the iron while it is being kneaded and divided into balls, preparatory to being brought out of the furnace; and, when done, the lump is taken to the hammer and beaten into the required shape for rolling it into the puddled bar of commerce. This operation is called shingling. From what has been said you will readily understand that the puddling operation consists of chemical combinations and mechanical application; and the inventions brought forward to assist the puddler in his part of the business are legion. The schemes tried to prevent smoke, save fuel, &c., may be counted by scores. Quacks by the dozen have sprung up with physic to throw in the molten iron during the process, to drive off the deleterious substances, the one idea being that the iron would have a greater affinity for their dose than it had for the metalloids, carbon phosphorus, and silicon, and so leave the iron pure. None of these recipes, however, have been so effectual as to warrant their continual and general use. Mr. Bessemer some twenty-five or thirty years ago accomplished the grand idea of forcing air through a molten mass, anticipating that the oxygen of the air would decarbonise the carburet and give him malleable iron; but he failed, for when the iron had given up its last equivalent of carbon to the oxygen it commenced to burn it up. Besides, it lacked the kneading, or mechanical part of the operation. The chemical part he got over so far as to produce a metal thoroughly tenacious; and its resistance to wear proves it to be the most durable and economical material for railway and other purposes. This invention of Bessemer's awakened metallurgists, and gave rise to several inventions for steel-making, but up to the present time there is only one invention of any practical importance, and that is the Siemens-Martin process. About the same time as Bessemer was completing his inventions, two gentlemen,—Mr. Tooth, of London, and Mr. Walker, of Wolverhampton,—brought out patents for oscillating and rotating puddling furnaces, which proved a step in the right direction. Somehow they got across, and their scheme was dying when Mr. Menelaus, of Dowlais, bought up their rights, built a forge, and made some good iron.

HEATING HOTHOUSES WITHOUT COST.

WE have long looked towards the utilisation of the enormous amount of heat (as also power) now wasted, and have pointed out directions in which such a result seemed possible. A writer in the *Garden* has described a notable instance in which this is being effected. We will condense his account. He says from Dromore, in Ireland, the new system of lime-kiln heating hothouses is spreading throughout England and Scotland, and kilns are being built daily. 1,000 ft. of piping were recently heated under difficulties at Manchester. Since that great show other kilns have been set to work in various parts of England and Scotland. I have just heard of one near Edinburgh that heats a series of houses at different levels with the utmost ease, and to the entire satisfaction and great surprise of all concerned. Many distinguished horticulturists have met at Hatfield House to see a kiln heat 7,000 ft. of 4-in. pipes, extending through a series of vineries and other houses, and running in various directions out of doors. The kiln was 8 ft. deep and 6 ft. in diameter, and it is proposed to give it 3,000 more feet of 4-in. pipes to warm. There

could be no question as to the power and sufficiency of the heat provided by the kiln. Mr. Cowan also purposes adding still more to the potency of his boiler by sinking it lower into the glowing heat of the lime-kiln. The sides of the kiln are so intensely hot that if a series of boiler-rings can be introduced into the kiln itself, without interfering with the burning of the lime, there can be no question as to the heat penetrating through the iron, nor of its power to warm the water. And all this will be additional, for it may be assumed that the boiler in the kiln will in no degree check the energy of the heat sent up vertically to heat that portion that will in any case be placed right over it. If it be found practicable to sink any or a large portion of this boiler into the kiln, then less vertical depth will be required for the effective working of this new and cheap method of heating. I found a general impression among those assembled at Hatfield, that the plan was only applicable to large establishments. Nor was this to be wondered at; the example before them was large and powerful; 7,000 ft. of pipe, actually heated, with reserve force capable, possibly, of heating 3,000 more; and a cart-way down to the mouth of the kiln, an arrangement made to facilitate the making or removal of lime on a large scale. The kiln itself had probably an excess of power. This was also the first experiment with chalk, and it was important in such a large undertaking that the kiln, at least, should not fail for lack of area; and, after all, I have seen stoke-holes as large and far more costly, doing a mere tithe of the work. But it would be illogical to reason that because of the magnitude of the works at Hatfield the system is not adapted for small places. Why should not the small place have its heat free as well as the large one? The expense of the kiln need not be much more than the expense of a well-built furnace, and all beyond the kiln costs neither less nor more, on Mr. Cowan's system than any other. Less coal was used at Hatfield than at Manchester. At the latter the rate was two of limestone to one of coal; at Hatfield it was seven of chalk to three of coal. The experiment may be pronounced a splendid success. The system seems equally well adapted for the heating of manufactories and public buildings, as for horticultural purposes, and is likely to be extensively adopted wherever sufficient depth is available, and limestone or chalk within easy distance. I do not anticipate much difficulty in commanding a market for the lime made. The next experiment needed is to test the cost of conveying limestone or chalk to the kiln, and this is about being worked out in Glasgow, where a kiln is being erected to be fed with limestone from Ireland.

THE FALL OF A CHIMNEY AT NORTHFLEET.

SIR,—The particulars obligingly furnished in your last number materially add to, and in some respects correct, those previously reported. If we cannot now fix upon the immediate cause of the disaster, we may draw from it some practical hints, and I think they should be these:—

1. The building of a chimney-shaft of great height, of circular plan, and battering profile, is a work so special in all its conditions that it cannot for a moment be compared with ordinary walling. We know that shafts much more slight than this one was have stood securely; we do not know how narrow may have been their escape in their early and unconsolidated state. No doubt the rule which would fix the upper stage of 14 in. work at about 25 ft. in height is rough and unscientific, but as it happens, curiously, that the first bulge seen in the shaft was at about 10 ft. below the cap,—the point to which the above rule would have led one to carry up the 18 in. work,—it seems advisable to follow it, at any rate, until science shall have provided a better.

2. The bond seems to have been as good as was possible under the conditions, although, as compared with that we can obtain in ordinary walling, it was very indifferent. On this account alone it would probably be better to build such shafts on an octagonal plan, which would admit of nearly perfect bonding, and in that case the base would be made a little broader than in the case of the circular form.

3. The excellence of the bricks, like that of the materials generally, seems to be borne out.

4. Many persons being of opinion that cement used as in this case is of advantage, which opinion I hold to be erroneous, we may put the matter to a simple test. At intervals of about 3 ft. in height, two courses of brickwork successively were built with the vertical joints, dry, and then grouted with neat Portland cement. It is not necessary to dispute with your various correspondents as to whether this cement work would expand or not; if it did, it would fracture the rest of the work; whether it did or did not the rest of the work would fracture it. For this cement work would constitute a sixth or a seventh of the whole shaft, and any appreciable expansion would have force enough to pull out the green brickwork to the extent of its own expansion. If it did not expand, but set, as we say, "like a rock," the best way to judge of it will be to consider how a piece of rock similar in hardness would behave under the like conditions. Let us suppose a flat ring of stone, about 12 ft. or 14 ft. in external diameter, and only 5¾ in. thick; the ring moreover being almost, but not quite, divided into two laminæ, by a horizontal bed of fresh mortar. Admit that this can be bedded perfectly upon a mass of green brickwork, and then carry up more brickwork at the rate of 6 ft. in height, per day. Your ring would break like glass wherever the least inequality of pressure took place (which would be inevitable), and what would happen to one such ring would happen to any number of others in detail, and just as the separate pieces of broken glass might be perfectly sound and very strong, so might be the stone or the brick in cement. This would be quite consistent with its inutility as a bond or tie, which inutility may be inferred from the result in the present case. It seems a wise caution never to use cement brickwork in intimate combination with mortar brickwork, and also to use, by preference, a mixture of perfectly clean sharp sand equal to, or in excess of, the cement. When we use good brick and mortar on a good foundation, we know pretty well what we may rely upon. If other bond is required the introduction, at intervals of a few feet, of three courses of iron hoop bond, while it can do no harm, will effectually resist any ordinary disturbance during settlement, and when the work is thoroughly set, it will need no assistance. The octagonal form of shaft would much facilitate the use of such bond.

5. Such a rate of progress as 6 ft. per working day, or 35 ft. per week, seems to require very favourable conditions, to be free from all chance of failure.

6. Why must every chimney have a ponderous cap, and thus add to other sources of danger this final one? Brickwork corbelled out to the extent of 15½ in. beyond the face of the wall, with an additional 4½ in. in the piers, would, to a great extent, be dependent upon the cementing material, and without it might fall away bodily. The introduction of mortar into the cement, in such a position, can never be entirely trusted, and certainly not unless actually made and used under perfect supervision.

The most difficult question in the whole case arises out of the fall of "great masses of brickwork" down the chimney *before* the general catastrophe; but it seems a question of scaffolding rather than of construction. There does not appear to have been a rigid framework of timber which would interfere with the settlement of the brickwork, nor anything beyond the needful scaffold constructed upon the last stage of cross-timbers, which were carried by the brickwork. Some fracture in the scaffolding or hoisting machinery may have acted upon the cross-timbers, and so tilted the parapet over. This, therefore, must be reckoned amongst the dangers which render the bonding and tying in of structures of this kind a matter of special importance.

B.

Two bricklayers (brothers of one of the deceased) tendered evidence which, if utilised, contained the real cause, and with their statements I cordially concur; from that of the architect, and also of the architect of forty years' practice, I dissent point-blank. The latter gentleman (evidently oblivious of the fact that the chimney was already down) said, if the cap swayed at all it must have swayed all round. Mr. Culvitt, however, puts in the *coup de grace*, by stating that if there was any tendency to swagging it would have taken place before then, when the work was fresh; as if the whole shaft was not fresh, even to its foundation.

I have seen something of shaft-building in Manchester and other Lancashire towns, and am not aware of a single chimney this height erected in less than twelve months; the usual mode of procedure being to erect it to half its height, and then allow it to stand for six months, thus becoming consolidated, when the rest of the work may be afterwards completed. Had this course been adopted in the instance before us, the shaft would at this moment have been upright.

For the information of your readers I will describe how the work in the cap would be carried out from the architect's plans. The projection is obtained, as stated above, by a series of courses overlapping each other ½ in. each. Well, sir, the first course would be fixed so as to leave a cavity of ½ in.; the second, 1 in.; the third, 1½ in., and so on, the interstices being filled in by bats or rubbish, depending for bond upon the cohesion of the mortar, which, in this instance, had not had time to set. From personal observations I can assure you that the vibrations of shafts, which have had more time than this in building, are of a character difficult, if not impossible, to conceive by persons unaccustomed to remaining at the top. I have on many occasions felt frightful oscillations, by wind, but more frequently by workmen discharging the loads from the derricks upon the scaffold, &c., some of which would describe an arc of 13 in. to 14 in. decreasing in intensity, but increasing in speed, until it regained its equilibrium by what the men describe as a trembling motion.

JNO. PARKER.

ANTIQUITIES IN READING.

At the opening meeting of the Reading Architectural and Archæological Society, held on the 5th inst., the Rev. L. G. Maine, Vicar of St. Lawrence, said the need of a society to discuss archæological subjects in Reading had lately received remarkable illustration by the appearance of a letter in the *Builder*, in which assertion was made that the old building in St. Lawrence's Churchyard was the original Grammar School founded by Henry VII., in which Archbishop Laud was educated. In the object of that letter we must all sympathise. It was, in fact, an appeal to those educated at the school, not to suffer an old historical building to fall to decay without an effort to restore it. In fact, however, this is not the old school. I propose to discuss the site of the old school, and then to say a few words about the character of the old building, now existing on the north side of St. Lawrence's Churchyard. If we would seek for the original school of Henry VII., to which he gave 10*l.*, we must seek it in the basement of the present town-hall. And now if we may not identify the old building in St. Lawrence's Churchyard with the old schoolroom used in Henry VII.'s time, what may we think about it? Has it no history of its own? I think we are much indebted to the writer in the *Builder* for drawing our attention to such an interesting relic of olden times. I think we may identify it with the old barn or granary of the monastery. The present building has two stories plainly corresponding to the two floors to be found in many old barns. The granary has plainly undergone many alterations which may be accounted for. Considering its history, I would express my regret that the old granary is to be destroyed. It is a veritable relic of the old monastery. It is interesting, too, as having been the residence of Sir William Armorer, a man of rough aspect, who escaped after the battle of Worcester, and became equerry to King Charles II. He was probably the king's keeper of the stables. A mitred abbot like that of Reading when he went forth in state was accompanied by his retinue of a hundred horse. He rode with a hawk on his fist, on a mule with a gilt bridle, with saddle and cloth of blood colour. But an ordinary monk was enjoined by statute never to appear without the cowl and regular habit of the order. The vicar of St. Lawrence, who commends this paper to your notice, may lay some claim to discuss the subject of the stables, because in former days in these stables a horse was kept for the use of his predecessors whenever they were called upon to attend the invitation of the bishop.

At the conclusion of the paper, a discussion ensued, in which the president, Mr. Morris, Capt. Kennedy, Mr. Rolfe, and other gentlemen took part; and it was unanimously held that the destruction of such an interesting relic as the old Abbey Granary would be a great misfortune to the archæology of Reading; and that, so far as possible, it would be most desirable to retain an erection of such antiquarian value.

Supposed Discovery of a British Stronghold at Grassington.—A gentleman, who is well acquainted with the beautiful country around Grassington, near Skipton (where it is proposed to establish a hydropathic establishment), in the course of his explorations in the neighbourhood has recently discovered some ruins of a British fortress. The main building, he states, has possessed three compartments of a large size, and has been defended by an outer wall, which runs from it for a considerable distance, and then returns to its lower extremity. Within the circle of the wall there has been another building, and hundreds of tons of rubbish lie upon the ground. The remains are upon the highest hill in the picturesque wood, and cover about half an acre of its surface.

CONGREGATIONAL CHURCH BUILDING.

THE ARCHITECTURAL ASSOCIATION.

At the ordinary general meeting of the session, held last Friday evening, the 14th inst. (Mr. J. S. Quilter, vice president, in the chair), the following gentlemen were elected members: Mr. E. E. Deane and Mr. A. G. Northover.

The chairman announced that Sir William Tite's prizes had been awarded to;—1. Mr. H. Cheston; 2. Mr. H. G. McLachlan; Messrs. Langford, Hemming, Wood, and Taylor being honourably mentioned.

Mr. E. C. Robins then read a paper on "Congregational Church Building," and in the course of it said that by the term "Congregational Church Building" he did not mean only to refer to a denominational system, but rather to the desirability of building churches for the special convenience of the congregations who should use them. It may not generally be considered that seeing and hearing were so important where ritual observances were paramount, or where pulpit ministrations were the predominating element in the services; but where large numbers congregated to hear an able preacher, it became of considerable importance that the pleasure of seeing and hearing distinctly should be assisted by the building within which they were for that purpose assembled. There would ever be those who

> "Love the high embowed roof,
> And antic pillar's massy proof,
> And storied windows richly dight,
> Casting a dim religious light."

If churches were to correspond with the wants of congregations, then it would not be wise to ignore this powerful sentimental craving, or to measure every want by geometrical progression.

The old basilican form of church, which impressed itself so deeply upon the Mediæval mind, and left us the rich inheritance of numberless parish churches and all our glorious cathedrals, had still a deep-rooted hold of the sympathies of a vast company of religionists whose feelings had a right to be considered, and for whose worship it was the fittest form of expression, the most eloquent shrine of their deepest sentiment. Emulating, then, the liberality of our National Church, he did not share in the general condemnation of the usual form of Gothic churches, which was so suitable to the requirements of a very large section of the church; and that it should become a conventional form was not only to be regretted, but overcome. But some of the leading men had, nevertheless, set good examples of sturdy independence. Mr. Spurgeon had his own ideal, and executed it; Samuel Martin had a higher, and better realised it; Newman Hall had the best conception and intention, but it yet remained to be seen how it would be developed. These and other men had, at all events, in our own day given examples, the great cost of which proved that large means were yet forthcoming at the bidding of earnest men, and expense of realisation need not deter rising architects from attempting noble designs, even in this so-called utilitarian age. What we had chiefly to avoid was wasting the money at our disposal in little prettiness, at the expense of the main outlines and general plan of the structure,—elaborate tracery, hooded buttresses, foliated pinnacles, and a forest of carving.

The ecclesiastical buildings, in the Classic style prevalent in the earlier part of this century, must not be altogether passed over in silence, although they were not in fashion now. There was a large number of parish churches in and around London, erected during the revival of Grecian architecture, which were eminently suited for Protestant congregational uses, and for which they were specially designed. Of wide span and without internal columns, except some small ones for the support of the gallery-fronts, which in these buildings were so far made an integral part of the design that it was a rare thing to find them absent, they indicated what was felt to be all-sufficient for the simple services of that day. But they were usually bold in the extreme, cold, and cavernous; they offered good opportunities for coloured decoration, but were not of that character that commended themselves to the lover of our national style of architecture. The grandest specimen was that of St. Pancras Church, which had been decorated with colour to overcome its internal dreariness. Pratt-street Church, Camden-town, was another which had also been treated with decorative colouring, as well as the church in Waterloo-road, opposite the railway-station; and St. Matthew's, Brixton. Hanover Chapel, Regent-street, was a widely different adaptation of Grecian art, and was an attempt to bend its forms to the wants of a large congregation on so restricted a site that a double tier of galleries was required, and this building was now undergoing restoration under his superintendence. In the execution of this work he had introduced (the first time, he thought, in London) the use of the steam-jet for cleaning down the stonework, which obviated the necessity of any tooling of the surface of the stone. The time had come, he thought, for upsetting the old English practice concerning the orientation of churches, in defence of which he had heard no sufficient reason given, which had long since exploded abroad, and in consequence of which this particular church had been spoilt.

Prior to Inwood's revival of the Grecian style, Roman was prevalent,—the style of all Wren's churches, and those of his contemporaries and immediate followers, great nobility of conception being observable in them all. He thought that it was quite time that the rules and regulations of the Incorporated Society for Building Churches were revised and corrected. It might have been, and indeed was, very useful in the earlier stages of the Gothic revival to insist on a careful adhesion to precedents; but surely some latitude might now be given, and some experience must have been acquired by the examiners of plans, sufficient at least to enable them to issue a less pedantic and restrictive set of rules.

In the discussion that followed, Mr. Sulman said that with regard to acoustic properties of church buildings, he thought it absolutely necessary that every one present should hear; but the subject was beset with many difficulties. He advocated the adoption of the parallelogram to meet this question, which would convey the voice to any part of the building. He would like to be better informed with regard to the use of the steam jet for cleaning down stonework; and, in conclusion, proposed a vote of thanks to Mr. Robins for his paper, which was carried.

Mr. Paine was of opinion that with regard to building a church where people were to worship, it should be done with as little money as possible; and with the planning of the building the architect should suit the requirements of those who employed him. He thought that the Mormon Tabernacle at Utah was a capital building for hearing and seeing, being a convenient shape. With regard to the development of church architecture in other countries, it was interesting to know in what position England stood. He was of opinion that we stood alone in this respect as compared to other countries. He would ask whether it was a good plan to adopt "Middle Aged" architecture? In almost all modern churches in France the aisles were never used for seats, and he thought that this was an advantage, the aisle being only a place to walk in. In Germany the churches that were built were carried out with a rigid symmetry, unknown in England; in this country churches being built with a great paucity and bareness about them.

Mr. Reddett advocated, with Mr. Robins, the adoption of cast-iron pillars for church buildings, which should be erected on the circular plan. No one could go into the Tabernacle of Mr. Spurgeon without being struck with its likeness to a theatre in point of shape.

Mr. Flint Clarkson said that it was very necessary in churches that the congregation should hear and see well. He believed that the reason why there was comparatively an anxiety not to go in for prodigious outlay in church buildings mainly proceeded from the idea that the problem was an unsolved one. One could feel that naturally the thing was more of an experiment, and that any one who boldly tried such experiment should learn by their failures. It was a new kind of problem to join monumental architecture with a congregational church. With regard to the adoption of the elliptic or modification of the circle plan, the question arose as to whether such a method would give the building sufficient dignity. But the gallery was really the great difficulty, and he believed that the plan of suspending galleries from a very powerful roof had been successful, but still this was involved in some difficulty.

Mr. Ridge regarded a church as purely a place of worship, and for this purpose it was undoubtedly desirable that a church should be so arranged that the persons therein should hear well. He took exception to the adoption of long transepts, and advocated the adoption of the horseshoe system of building churches. He trusted that the liberality allowed in future church buildings would give a larger space upon which they were to be built.

Mr. Hugh Stannus thought that the idea of a church was more for teaching than worship, and therefore it was necessary that people should both see and hear well. For this purpose a building should be comparatively small, and the roof must be kept down as much as possible. A theatre-shaped building was, after all, really the best. He would ask whether it would not be advisable to build churches in the form of the Greek amphitheatre.

Mr. Robertson was of opinion that the function of the architect was not to prescribe in what manner congregations should worship, but to satisfy the requirements of those who employed him.

The chairman said that the great object which appeared to him to cause the church of the present day to differ from other churches was the entire absence of symbolism; and this essential element of the early church was gradually losing its force in this utilitarian age. In this respect we were to a certain extent following the Americans. With regard to the pulpit, why should it not be abolished altogether? Many attempts had been made to do this, but without success.

Mr. Robins, in reply, said that the discussion had been of a very interesting character. He had great respect for the form of worship, as represented by the High Church party, there being an immense amount of beauty and poetry in it. With regard to foreign churches, they were almost invariably large ones, and were vaulted, and were not designed or intended to be used only for teaching purposes. The theatre plan, or the adoption of the Greek amphitheatre with regard to the building of congregational buildings, was a subject beset with many disadvantages, one of the difficulties being to make it church-like.

ST. MICHAEL'S HALL AND SCHOOLS, HACKNEY.

A new building, combining the double purpose of schools by day and a public hall at night, has been opened in Lamb-lane, South Hackney. The establishment has been promoted by the Rev. J. B. Podmore, rector of St. Michael's, and is intended to be conducted on voluntary principles. Means for erecting the hall have been provided by private subscription among residents in the district, aided by other contributions. This is one of the largest institutions of the kind that has been opened since the passing of the new Act, and is regarded as being, to some extent, in opposition to the Board school, which is situated on the opposite side of the lane. St. Michael's Hall is built on a site adjacent to the church of that name in London-fields, the ground having been purchased from the Great Eastern Railway Company, whose new branch line to Enfield runs close by. The interior is spacious and lofty. The area is capable of containing an assemblage of 1,000 persons; but for the purposes of the schools it has been deemed advisable to divide the room by means of huge folding-doors, surmounted by independent partitions reaching to the roof, and effecting a complete separation of what are intended to be the girls' and boys' departments. One room is intended to accommodate 250 girls, the other 500 boys. Mechanical arrangements have been introduced for the purpose of changing the schools into the hall. The cost of the building, including 900*l.* for the site, is 3,500*l.* Of this sum 2,238*l.* have been received, and a grant of 530*l.* from the Privy Council will be made when the remainder of the money has been raised.

A TELEGRAPHIC CABLE AT THE TAY BRIDGE WORKS.

The works at the great bridge now in course of construction over the Tay are being vigorously pushed forward, and, with the view of still further accelerating the progress of the undertaking, a telegraphic cable was laid last week between the contractor's offices at the north and south ends of the bridge. The cable was paid out from the steamer *Excelsior*. The whole operation was accomplished in about forty minutes, and immediately afterwards the instruments were connected and signals exchanged. Another connexion is at once to be made with the station on board the store-ship in the middle of the river, and it is expected that this means

of communication will give great facilities in the work, as much time is often lost for want of means to command a tug at the right moment, and transmitting other orders. The contractors have also made arrangements to increase the plant considerably, especially the part which is used to pump the sand out of the piers, as this has proved to be a point which could not go on with sufficient speed, compared with the other operations. It is fully expected that the works will be completed in less than two years.

THE WORKS ON THE SEVERN BRIDGE RAILWAY, AND THE SEVERN TUNNEL PROJECT.

The works in connexion with the Severn Bridge Railway, powers for which were obtained during last session of Parliament, are about to be commenced, it having been decided within the last two or three weeks to proceed at once, but some time is expected to be taken up in the purchase of land over which the railway on the forest side of the Severn will pass. The line commences in a township named Sydney, near the parish church there, and the river will be spanned at the point known as the Wheel Rock. The Glasgow and Berkeley Canal Company have decided to contribute 50,000*l.* of the capital necessary for the construction of the bridge and railway, the company being under the impression that the new line will increase their revenue by producing an export trade at the new docks, and affording access to new markets.

The borings for the Severn Tunnel are also in progress, and the process is watched with great interest by geologists and persons in search of coal.

THE ALBERT HALL.

The Royal Albert Hall Choral Society sang Bach's sublime Passion music (*St. Matthew*) on Thursday, 14th inst., being the second concert of the season. The choir, under Mr. Barnby's direction, gave the choruses in such a manner as to maintain fully the reputation it so deservedly gained last season. The points were all taken up with most praiseworthy precision, and the only fault we could find, were we inclined to be hypercritical, would be a slight tendency on the part of the soprani to flatten on the sustained note at the end of one or two of the chorales, which otherwise were beautifully sung, the *pianissimo* passages being especially good.

Foremost among the soloists was Madame Patey, whose rendering of the contralto music was simply perfect, more particularly in the air, with violin obbligato, "Have mercy upon me." Mr. Cummings is now so familiar with the tenor music (the part of the Evangelist), that his rendering of it leaves nothing to be desired. Mr. Thurley Beale, who has recently made rapid strides in his profession, sang the principal bass part like a thorough artist; while Miss Emily Spiller (soprano), who possesses a sweet voice, would be heard to greater advantage in a smaller hall.

Handel's "Israel in Egypt" is to be given at the next concert, with Miss Edith Wynne, Madame Patey, and Mr. Sims Reeves.

STREET IMPROVEMENTS AND TRAMWAYS IN SWANSEA.

The Corporation of Swansea have just entered into an arrangement with a public company for carrying out important street improvements in that town, under circumstances of an entirely novel character. A company of London capitalists, calling themselves "The Swansea Tramways and Improvement Company (Limited)," have made a proposal to the corporation of Swansea to construct a number of tramways in Swansea, and also to undertake the making of several new streets in the town, and the widening and improvement of others. The proposal includes the purchase in fee, by the company, of all the sites necessary for the undertaking, and also the payment of compensation to parties injuriously affected. The estimated cost of the works,—including the tramways, 36,000*l.*,—is 136,000*l.*, towards which the company propose that the corporation should contribute 25,000*l.*, the company undertaking to keep the streets and roads permanently in repair, to the extent of 8 ft., which it is calculated will effect a saving to the corporation to the extent of from 750*l.* to 1,000*l.* per annum. The improvements also include the construction of a new bridge at the outskirts of the town, leading to one of the main thoroughfares, which will materially reduce the present gradient of the road, viz., from 1 in 19 to 1 in 35. As a guarantee that the company will carry out the works, they are prepared to deposit 5 per cent. upon the estimated cost of 100,000*l.* for the improvements.

The proposal was discussed at a special meeting of the town council, which has just been held on the subject, when the feeling in its favour was warm and unanimous. It was stated by the Mayor that during the whole annals of the corporation, a more important matter had not been brought before it. He added that the proposed improvements would be the making of Swansea, and that the suggested street alterations would be most advantageous to the town. The figures to be submitted to the council would show that the alterations, which had become necessary through the great traffic in the streets, would be executed without the corporation ultimately incurring any expense.

The resolution was unanimously adopted, the Mayor remarking that it had been arranged that only when the improvements were carried out was the corporation to pay the sum agreed to. The surveyor had divided the 25,000*l.* between the different alterations, and only as they were carried out would the instalments be paid. The works contemplated are to be completed within three years from the time of the passing of the Bill.

THE NEW YORK BUILDING TRADE.

The building trade of New York has of late been very dull; in fact, the present season is exceptional in this respect. According to the statements of the largest builders in New York, this state of inactivity has been brought about by a variety of causes, not the least of which were the threatened strikes last spring, and the actual eight-hour contests previously. The vastly increased value of real estate, the great expense of labour, and the scarcity of money have rendered men unwilling to speculate in what has always been regarded as one of the safest possible investments of capital. The uncertainty that the men would stick to their work after it was commenced, and not strike for higher wages or fewer hours' work, was a great objection to the builder to continuing upon the construction of houses, the site and materials for which cost such high prices. The occurrence of the late financial panic was only required to bring about the utter stagnation of this branch of trade. In the suburbs, however, where the influences so potent amongst the operatives of New York are not felt, and where living as well as real estate is cheaper, capitalists have been spending their money more liberally, and associations for building up and improving localities have been actively employed, though to nothing like the extent of 1872. With regard to the general situation of the building trade of New York, one of the prominent builders of that city states,—"The fact of the matter is, the building trade is wholly dependent upon the general trade of the country. When the latter is bad building will be bad, and *vice versâ*. The present stringency of money affects us as much, if not more, than others, and coming at this time of the year, when men rarely enter upon new building speculations, because of the winter being so near, the prospects of builders and their *employés* during the remainder of 1873 are very dark indeed."

THE AMERICAN CENTENARY BUILDING COMPETITION.

Sir,—Being a subscriber to your journal, and now on a tour through America, I have thought that it may be interesting to your readers to have an example of the way in which competitions seem to be managed in this country; and if the instance I shall mention be the rule, I think we may cease complaining of our system.

America intends, or *intended*, having a grand Centenary of its Independence in 1876, in the shape of an International Exhibition. Two winters ago a commission was appointed from all the States to make preparations, when great pains were taken to assure Americans that they would all be interested in the event, and help would be expected to come from all parts of the country.

This commission, by the beginning of the present year, had so far advanced in its work as to have decided on Philadelphia as the place most suited for its object and America's glory. On this decision, it would seem, the commission and committees were reorganised, and out of seven as the number of the committee for the selection of designs, four were Philadelphians, or at least Pennsylvanians. Prizes of 1,000 dollars each were offered for the best ten designs for the necessary buildings, and all architects were invited to compete for them. Forty-four accepted the invitation, and spent some weeks of hard labour in preparing their drawings. In course of time the best ten were selected, and requested to revise their plans for a second competition, from which the best four were to be selected, and to receive respectively 4,000, 3,000, 2,000, and 1,000 dollars each. The decision on this last competition has just been made known, with this result:—

It seems that out of the forty-four sets sent in on the first competition, six were from Philadelphia architects. These six were among the first ten selected, and now four of them are selected to receive the second premiums offered, and all outsiders have worked to no purpose. It would also appear that it is not the intention of this committee to follow any of the plans to which these premiums have been awarded, as the expense of carrying them into execution would be too great, and would also require a much longer period of time to get completed than they have at their disposal.

I do not remember of any case in which such conspicuous partiality was shown. Instead of its being a national affair, it would seem it is to be solely for Philadelphia, unless capital be required, when they will look to outsiders to supply them. H. G. B.

Washington.

*** The account certainly reads oddly, but we have yet to learn whether or not the designs from Philadelphia deserved the position given to them.

PARLIAMENTARY NOTICES AS TO RAILWAY AND OTHER WORKS.

Among the notices already given by advertisement of intention to apply to Parliament in the coming Session for Bills, &c., are the following:

Westminster Boulevard. Construction of new street from the New Palace-yard, near the Clock Tower of the Houses of Parliament, to Eaton-square, near St. Peter's Church, and streets therefrom to or near to Victoria street, widening of other streets, junctions with and stopping up and appropriation of various streets and thoroughfares, works in connexion therewith, construction of market-place, market powers, compulsory purchase and appropriation of lands, &c., model lodging-houses, provisions in relation to parochial and local rates, incorporation of company, powers of construction, &c., to such company or company incorporated under Companies Acts 1862 and 1867.

Midland, Highgate, and Alexandra Park Railway.—Construction of a railway from the Tottenham and Hampstead Junction Railway to the Edgware and Highgate Branch of the Great Northern Railway Company. Incorporation of Company. Powers to the Company and the Midland and London and North-Western, Great Northern, Great Eastern, Tottenham and Hampstead Junction, and Hampstead Junction Railway Companies, and the Alexandra Palace Company (Limited), or some or one of them, to carry the said Act into effect. Running powers over the Midland and London and North-Western, Great Northern, Great Eastern, Tottenham and Hampstead Junction, and Hampstead Junction Railways, and the Alexandra Park Branch of the Great Northern Railway, and the Railway and Station of the Alexandra Palace Company (Limited). . . . . Conversion of Highgate Archway-road into a public highway, &c.

Alexandra Park Railway.—Extension of time for Purchase of Lands and Completion of Works. Provisions as to Abandonment of Undertaking and Dissolution of Company.—Amendment or Repeal of Act.

Aldgate and Cannon-street Railway.—(Completion of inner circle).—Construction of a railway from the Metropolitan Railway at Aldgate to the Metropolitan District Railway at Cannon-street; abandonment of part of Tower-hill Extension Railway; new streets and wideninga and adaptation of existing streets; powers to company to be incorporated, and to Metropolitan and Metropolitan District Railway Companies,

he Corporation of London, and the Metropolitan Board of Works, or any of them, to execute the works, &c.

Wandsworth, Fulham, and Metropolitan Railway.—Incorporation of company; construction of railways from Wandsworth Bridge to the authorised Metropolitan and South-Western Junction Railway at Fulham; traffic and working arrangements with Metropolitan District and Metropolitan and South-Western Junction Railway Companies; compulsory purchase of lands; stopping up streets; tolls, &c.; amendment of Acts, &c.

Notices relating to new northern railways have also appeared. The Midland and North-Eastern railways apply for a new line from Swindon to Knottingley, making the Midland as short as the Great Northern, for traffic arrangements, and other powers. A company is to be incorporated for uniting the Midland and North-Eastern railways from Skipton to the Otley and Ilkley line, with powers to both companies: and there is notice of a Leeds suburban railway to Roundhay Park, with running powers to Midland and North-Eastern. The North-Eastern also applies to construct a railway from Hull to Kirk Ella, new lines at York, a railway from Pickering to Seamer, at Middlesbrough and Hartlepool, near Durham, at South Shields and Sweedmouth, with various other alterations. The Kirk Ella line is designed to relieve the frequent block on the Hull and Selby, and the Pickering and Seamer line fills up the vacant gap to Scarborough.

THE CITY FRUIT AND VEGETABLE MARKET.

Sir, The Corporation is advertising most perseveringly to get as many designs from architects as it can for the above; but why should we exert ourselves, since we believe that the City Architect will be employed to carry out the idea, or a selection of suggestions from the premiated designs, as was the case with the Dead-meat Market, the pioneers being forgotten, and the man who carries out the work being the only architect remembered?

William Gilbert.

"A LABOUR QUESTION."

Sir,—"A. B." asks a question under the above heading, in your issue of November 8th.

My quarrymen "struck" for an advance of wages in February last, which was partially conceded. They again demanded a further advance in June, which was conceded; and in July their working-hours were reduced to 49½ per week. I am not aware that there has been a simultaneous "strike," but many of the quarry-masters in this district could tell their woes, if it is too much trouble to write them. One of my quarries was nearly drained of men during the summer by the re-opening of an old quarry, and the offering of large wages, which said old quarry is now closed. I fancy quarry-plant will be cheap by and by.

Stephen Seal.

Darfield Quarries, near Barnsley.

SANITARY STATE OF THE NORTH OF ENGLAND.

Dr. Gwynne Harries, a medical inspector of the Local Government Board, was sent down from London some time since to take measures to alleviate the shocking state of the whole county of Durham, and on Wednesday week he left South Shields for the London Fever Hospital, having contracted scarlet fever in the performance of his duties. The disease followed an unusually rapid course, and he died on the next Saturday.

When the following reports made to the parochial authorities are taken into consideration, the only surprise is that the whole of the inhabitants of the county are not candidates for the Fever Hospital:

Six Beds in One Room.—At the ordinary meeting of the Headgate Local Board, Mr. Hawdon, the inspector, reported several cases of overcrowding. One house of two rooms was occupied by the tenant, four children, a female servant, and no fewer than eighteen lodgers. The room upstairs contained six "shakedowns," there not being room for a particle of furniture in the apartment.

At the Spennymoor Local Board of Health, one of the members inquired of the surveyor if any steps had been taken about some cellars.

The Surveyor. Notices have been served, but nothing further has been done.

The Member.—I say that it is abominable that no further steps have been taken to put down this overcrowding.

The Chairman.—There are scores of homes almost as bad as these cellars.

A Member.—The state of this place is something horrible. In one of the cellars there are seventeen people living and sleeping. I went to the place, and the smell was something fearful. I should like to know what is going to be done in the matter.

The Surveyor (coolly).—I can take the occupants before the magistrates if I get orders.

The Chairman.—But you do not require orders. You have the inspector of the place, and can take them before the magistrates without our orders.

The Clerk.—You had better give the surveyor authority to take legal proceedings.

A Member.—Let that be done at once. There are only three beds to seventeen people in one cellar. They are worse than a lot of pigs and savages. If we do not mind we shall have officers from London here to do our work.

Fever is raging round about for miles.

REPAIRS OF FOOTWAY.

HAMILTON V. VESTRY OF ST. GEORGE'S, HANOVER-SQUARE.

This case (in Court of Queen's Bench) raised a somewhat curious point as to the appellant's liability to repair the footway in front of his house.

The appellant is owner of a house on the north side of Eaton-square. The cellars in front of the houses on that side of the square are formed of brick walls, covered on the top by the pavement-stones without any brick arches supporting the pavement, the upper surface of which forms the footway, while the under surface forms the roof of the cellar. At the time when the houses were built it was necessary to obtain the sanction of the then local governing body before the stones were put down. The builder of the houses, with such sanction, put down the flagstones 5 in. thick, and without any substructure; but the constant traffic of foot-passengers has worn down the flagstones to only 2½ in. thick, and they cracked so as to become dangerous. The vestry put down new flagstones in front of the appellant's house, and demanded the cost of so doing from the appellant. This he declined to pay, contending that, as the public had worn away, the public were bound to repair it. The magistrate to whom the question was submitted, by a sort of Solomon's judgment, ordered that the appellant and the respondents should each pay one-half, it being the statutory duty of the owner to keep his cellar in repair, and of the public to keep the way in repair; and against this decision the present appeal was brought.

Mr. Justice Quain said the magistrate's order must be set aside; that as the injury had been done exclusively by the public walking over the cellar it was just that they should pay the expense of repairing it, and that equitably as well as at law Mr. Hamilton was not liable.

Mr. Justice Archibald concurred.

EDINBURGH.

The foundation-stone of a new United Presbyterian Church, at Palmerston-place, was laid on the 4th inst. The building is to be erected at a cost of 13,000*l.*, from the designs of Messrs. Peddie & Kinnear, architects. The style is Italian in character. The elevation towards the street shows a pediment flanked by towers 18 ft. square, and 100 ft. high, surmounted by domes and lanterns. An arcaded porch, supported by six pillars having foliated caps, is reached by a flight of eight steps; the porch or portico is 14 ft. high, and the front wall is continued over it to the height of 23 ft., and is terminated by a cross at the apex of the pediment. This elevation is pierced by five double-light windows, arched, and divided by pillars. Within the porch are three doors leading to a vestibule, 40 ft. by 12 ft., and on either hand are stairs leading to a gallery, and in the towers are retiring-rooms. The interior is square at the pulpit end, but is semicircular towards the front, and a corridor, 6 ft. wide, runs round both area and gallery; above the portico there is a hall, and in the upper portion of the towers are a vestry and waiting-room. The whole of the windows are semicircular-headed, and the furnishing is unpretending and suitable.

The movement towards introducing instrumental music into the Kirk is gaining ground. A new organ was opened in Newington Parish Church on Sunday last. The instrument was built by Messrs. Forster & Andrews, of Hull, and is said to be a very fine one. Preparations are also in progress for the introduction of an organ into the College-street United Presbyterian Church.

The Church of the Sacred Heart in Lauriston-street, a building in the "Jesuit style," lighted from the roof by glass domes, has been decorated in a grandiose manner by a German artist.

Operations are to be commenced immediately for the widening of the North Bridge. The contract amounts to the sum of 12,670*l.*

It is proposed to erect new medical schools in connexion with the University at Park-place, adjoining the new infirmary. Every department of the medical faculty is to be provided for, and the buildings are to contain theatres, laboratories, and class-rooms adapted to the scientific and teaching requirements of the separate departments, along with a suitable hall for academical meetings, and examination or graduation ceremonies. The late Sir David Baxter left a sum of 20,000*l.* towards this object, and the total subscriptions amount to 36,000*l.*,—about half the sum requisite to carry out the scheme in its entirety. It is thought that a grant in aid may reasonably be expected from Government.

The governors of Heriot's Hospital have resolved to erect two new schools at Abbey Hill, at a cost of 2,000*l.* and 1,000*l.* respectively.

An exhibition of water-colour drawings is now open at Hill's Galleries, St. Andrew's-square. It contains examples of well-known artists, both English and Scottish, but none of them are worthy of special notice.

SHAMS.

Sir,—If there was any personal discourtesy to your correspondent in my letter I am truly sorry for it. I am not aware of any, nor was any intended. For the improvement of the dwellings, about which he wants my opinion, I can only suggest a little limewash and more "accommodations" in preference to decorations, whether shams or otherwise. When he has made the tenants and their houses clean, and taught them to keep them so, "chromolithographs that rival paintings" may be added *as their purses permit*; but it would do them more good to get a stout pair of boots, and take an occasional walk in one of the many parks. They may by that means learn to love Nature, and not trouble themselves about "Mayfair."

But your correspondent has caused me to wander from the point at issue, viz., the influence of shams on mankind. What is a sham? A deception, an imposture,—in other words, a substantive lie. We all hate a verbal or an acted lie. Where has the substantive lie or sham the advantage?—that it should be encouraged and set up as "the humanising influence of the nineteenth century."

Has a thought been bestowed by this defender of shams on the producers of these same lies? See how they toil all day in close atmosphere at the most monotonous work for the lowest possible wages (or how else can the shams be cheap?). What satisfaction can they have in their work, the object of which at best is to emulate "Mayfair" and foster that pride which is as surely the forerunner of degradation as that humility which your correspondent depreciates is the only road to social advancement and true happiness. I do not think it will be necessary to trouble you with further letters on this subject, as I have confidence that Truth will prevail when Falsehood is once unmasked.

In conclusion, I would earnestly exhort your readers, if they will forgive my presumption in doing so, to strive after Truth in all things, and to avoid anything that savours of deception.

T. F. P.

INSTITUTION OF SURVEYORS.

A conversazione to celebrate the opening of the new rooms of this society, was held at No. 12, Great George-street, Westminster, on Wednesday, November the 12th. At the invitation of the president and council, a large number of members and associates assembled in the commodious suite of rooms which have just been completed at a large outlay. The society had so far outgrown the premises which it previously occupied, that further accommodation for its present needs had become absolutely necessary, as well as provision for its future expansion. In addition to this, it was considered by the council to be necessary to erect a room suitable not only for the fortnightly meetings of the society, but which should also be especially fitted for the numerous arbitrations held at the Institution by its members, and for which the old rooms were found to be to some extent ill adapted. As many of those members of the Institution who reside in the country have no Town offices, special rooms have been provided in the new building, in which they can meet their professional friends, hold consultations, write letters, and so on.

On the occasion in question, the rooms of the society were well decorated. The libraries were filled with Mr. J. A. Rose's magnificent collection of historical portraits lent by that gentleman for the occasion, as well as with many valuable and beautiful water-colour drawings by Mr. R. H. Mason. The walls of the council-room were covered with oil-paintings lent by members and friends. In the large lecture-hall (a handsome and lofty room) was exhibited a portion of the remarkable collection of prints illustrative of the topography of ancient London and Westminster, lent, with his usual liberality, by Mr. J. E. Gardner. Other contributors of objects of

value and interest were the Watcombe Terra Cotta Company, who sent a collection of pottery executed in that material; Mr. J. E. Price, who exhibited some Roman pottery, and his well-known collection of Pilgrim signs; and Mr. Lambert, of Coventry-street, who decorated the refreshment-tables and some of the recesses with rare examples of the ancient Goldsmith's art. Mr. J. P. Heseltine, Mr. H. Vignolles, and others, were also contributors. A special feature of the occasion was the excellent musical performance under the conductorship of Mr. J. B. Zerbini. The *conversazione* was perfectly successful, and gave happy augury of the future prosperity of the society.

IMPROVEMENTS IN PARLIAMENT STREET.

THE PUBLIC OFFICES.

Several of the houses on the west side of Parliament-street, near the Whitehall or north end of the street, have been sold, and are in course of removal, and the improvement which has been so long projected in the widening of Parliament-street to the same width as Whitehall is at last in a fair way towards actual achievement. The doomed buildings comprise rather more than half the block which at present obstructs the view of the new Government Offices in Downing-street, and their removal will bring into the light of day the west end of the pile. It will also make more obvious certain departures from "the square," which will doubtless excite comment. We hope the other portion of the block will speedily follow, and in a few years we may look for the completion of the work in the demolition of the houses between Upper Charles-street and Great George-street. The approach to the Houses of Parliament from Charing-cross would then be one of the widest avenues in Europe,—too wide, indeed, for the convenience of pedestrians.

Mr. F. Sang has re-arranged his designs, suggestive of improvements in Westminster, and the concentration of Government Offices, of which we gave an account in a previous volume. His drawings are at this moment with the Metropolitan Board of Works.

The proposal is to enlarge Trafalgar-square on the north, in a rectangular shape, and on the south in a semicircle or crescent, and to an avenue in a straight line from the centre of the Nelson Pillar to the centre of the Clock Tower of the Parliament Houses. Beyond the crescent of the square an opening of 150 ft. leads into a second square, surrounded by public offices of large dimensions, an arcaded thoroughfare of seven spacious arches on each side, one leading to the new Thames Embankment, the other into St. James's Park. A large circus at the Westminster Bridge end completes this Grand Avenue. He further proposes to prolong the Mall in St. James's Park, and form a commodious drive and thoroughfare into the southern part of the enlarged square leading to the new Thames Embankment.

SCHOOL BOARD SCHOOLS.

London.—On the recommendation of the works committee, it was resolved "That the tender of Mr. George Wall, of 2A, Dale-road, Kentish-town, N.W., amounting to 9,269*l.*, for the erection of a school to accommodate 1,070 children on the Haverstock-hill, Marylebone, site, be accepted. That the tender of Messrs. T. Niblett & Son, of 37, Birkbeck-road, Hornsey-rise, N., amounting to 7,180*l.*, for the erection of a school to accommodate 755 children, on the site in Hawley-crescent, Camden-town, be accepted."

Scarborough.—The opening of the principal board-school at Scarborough was celebrated by an appropriate demonstration on the 25th ult. The schools are meant to serve the central portion of the town, and form the chief work which the first school board elected by the borough have executed. The central schools are situated in Trafalgar-street West. The building has two frontages,—the infants' department facing Trafalgar-street, the girls' and boys' department facing the new road now in course of construction by town council, the board-room and caretaker's residence being placed at the extreme corner. The architecture of the schools partakes of the Gothic, and the building is of red brick, with stone dressing. The rooms are capable of accommodating 800 children,—viz., 400 infants, 200 boys, and 200 girls. The infants' department consists of one large room, 65 ft. by 31 ft., for the assemblage of all the infants at one time; one class-room, 32 ft. by 18 ft.; two class-rooms, 20 ft. by 18 ft. each; teachers' room, cloak-room, lavatories, &c. The girls' department consists of one large room, 80 ft. by 20 ft., for the assemblage of all the girls at one time; two class-rooms, 20 ft. by 14 ft.; teachers' room, cloak-room, lavatories, &c. There is a large playground about 1,300 square yards, common to the girls and infants, with shelter-sheds for the accommodation of the children in wet weather. The boys' department is similar to that of the girls, having one large room, two class-rooms, &c., with large playground, effectually cut off from the girls and infants' department. The Board department consists of the Board-room, 20 ft. by 18 ft.; clerk's office, 16 ft. by 12 ft.; and lavatory; attached to this is a living-room, and over the whole are three bedrooms. The architects were Messrs. Stewart & Bury.

Drighlington.—After a long discussion the local Board has resolved:—"That the principle of 'wide schools' had been adopted in the plans after due consideration of the relative advantages of wide and narrow schools, and also has been, in some measure, determined upon on the nature of the site. At the same time the Board would adopt the suggestion of the Department so far as to make the width of the schools 32 ft. within, and that the architets be requested personally to attend before the Department and urge upon them the advisability of their approval being given to the plans already prepared and submitted to the Department, subject to the above-named modifications."

Hull.—The competition for plans of proposed schools and teacher's residence at Keyingham has been decided in favour of those submitted by Mr. Robert Clamp, of Hull.

"HOMES IN HOMERTON" AND THE HACKNEY BOARD OF WORKS.

Since our last issue, at a meeting of the Hackney Board of Works, a member called the attention of Dr. Tripe, the medical officer of health, to the article in the *Builder*, and asked him what he had to say in the matter. Dr. Tripe is reported to have said that "he had seen the article in question, which was very much exaggerated, although some of the statements as to nuisances, and the state of certain buildings in Homerton, were substantially correct. Immediately on reading this article, he instructed inspectors to visit the district at once, and he was happy to state that many of those nuisances had been removed, whilst the other matters complained of were receiving constant and proper attention."

It would have been more candid, we think, if the medical officer had boldly acknowledged that not some, but *all* our statements were substantially correct. Instead of exaggerating we understated the extent of the evils we found in Homerton and an adjoining district, which will probably come in for a separate notice. We have again visited Homerton; and although we found, in regard to one or two spots, a something had been done by the owners since our former visit, the radical evils yet remain. The back premises of a few houses in Brooke-street and Victoria-street have been cleansed, and the places of accommodation have undergone some patching in their fittings; but houses in Homerton, in number and variety, are bad, and removal in several instances, we fear, will be the only certain remedy. As to the inspectors, do they possess such practical knowledge in respect to the construction and drainage of dwellings as to properly qualify them for the task they are expected to perform? Moreover, unfortunately, the hands of inspectors are tied in the majority of instances, and they shirk their duty, because the performance of it might entail upon them the disagreeable necessity of reporting on the acts of some who are to be found sitting as their masters. Homerton, we repeat, is quite as bad as we have described it, and there is no lack of independent corroborative evidence, not only to bear us out in our statements, but to supplement them, if necessary.

Dingwall.—The hospital recently built at Dingwall, in memory of the late Dr. William Ross, has been formally opened.

CHURCH-BUILDING NEWS.

New Chesterton (Cambs).—St. Luke's Church is in progress, as recently noticed. Early in June a contract was made with Mr. Thoday, of Cambridge, to build the chancel, three bays of the nave and south aisle, and the south transept, for 2,888*l.* The designs were furnished by Mr. Smith, of London. In August, three bays of the north aisle were added at a cost of 340*l.* To complete this portion eastwards, there remain the north transept, which will cost 300*l.*; and the vestry and warming-chamber, about 80*l.* A gentleman has offered 30*l.* towards the north transept, if nine others will give the same: six have already promised. The committee wish to increase the number of sittings to 500, and save the expense and ugliness of temporary walls. The church, when completed, will consist of a spacious nave (30 ft. wide) of five bays in length, north and south aisles, a chancel with apsidal east end, and north and south transepts. At the west corner of the south aisle a tower and spire will be placed, rising to a height of 150 ft., and a vestry will be provided on the north side of the chancel. The style adopted is Early Fourteenth Century. The materials used are Cambridge bricks, with Bath stone for the dressings, and the open timber roofs will be covered with Staffordshire tiles. The total accommodation provided when the church is completed will be for 700. The pressing need of a church in this district has compelled the committee to commence building, though they are not in a position to undertake the whole of the work.

Thruscross.—In the valley of the Washburn, a little distance from the Fewston Reservoir of the Leeds Waterworks Scheme, the Bishop of Ripon has consecrated the Church of Holy Trinity at Thruscross, or West End, a rural district in the parish of Fewston, sufficiently numerous and sufficiently distant from any other church to render their spiritual wants an object of solicitude; and it is indeed gratifying to know that the Rev. J. E. Brigg, formerly of Leeds, actuated by true missionary spirit, has taken the work in hand, and has not only been instrumental in finding funds for the erection of the church, but has undertaken its ministry, and the ministry of the district, without fee or reward, without a stipend. The church can hardly be termed new, seeing it occupies the site of one and includes a portion of the walls of a chapel which existed in 1660; and on the porch of the new church is a slab bearing the following inscription:—"Church of Holy Trinity, Thruscross. A chapel existed here A.D. 1660. Enlarged 1841. Nave rebuilt with chancel, and consecrated A.D. 1873." The church is a plain Gothic building, with porch, nave, chancel, and vestry. The seats are all open, of pitch-pine varnished. The chancel has a circular end, with four lights. The centre window is presented by Mr. J. D. Hannam, of Knaresborough, and others by the Rev. G. Hales, E. M. and A. Kirtley, and other friends, and Mrs. M. S. Dury, Birstwith. The floor of the communion and chancel is laid with encaustic tiles, and the building is warmed by heated air. The architect is Mr. H. Cockbain, of Middleton, Manchester. Assistance has been rendered by the neighbouring farmers in leading stone, &c., free of charge. Attached to the church is a burial-ground, given by Mr. W. Roundell, of Gledstone.

Upton Snodsbury.—The ceremony of re-opening the church here has taken place. It had become so unfit for use that it was found to require large and expensive repair and restoration. At last, owing to the decay of the timbers of the roof, it became unsafe to use it any longer for public worship, and the rector determined to commence its restoration, with the inadequate sum he had in hand, trusting to the liberality of churchmen to complete the restoration as funds would permit. A great portion of the walls have been rebuilt; new roofs have been erected to the nave, chancel, and aisle; new encaustic tile floors have been laid; and the whole church re-seated. The mischief done from time to time by churchwardens has been repaired; the gallery removed, the lofty tower arch thrown open, and the western window of the tower exposed to view. All the old features of the church have been retained, except a rood-screen, the remains of which are placed under the tower, only waiting for the necessary funds, to be restored. The chancel contains windows of unusual character. Mr. Wm Jeffrey Hopkins was the architect, and Mr. George Warner, of Malvern, the builder. The portions of the work that remain unfinished for lack of funds are the restoration of the ancient

rood-screen, the proposed new porch, the restoration of the tower, and other details.

Tunbridge Wells.—A new cemetery has been consecrated by the Bishop of Chichester, for the Church of England portion of the community. The cemetery is situated on a slope commanding woodland scenery, and consists of about twenty acres, the land having been purchased by the town, of the Earl of Abergavenny. There are two entrance-lodges, and of course the usual cemetery buildings for the members of the Church of England and the Nonconformists. These were erected from designs by Mr. Stephens, of Maidstone, by Mr. Constable, of Penshurst.

Thirsk.—The church of St. Mary Magdalen has for many years gradually become more dilapidated. The tower, together with the tracery of the whole of the windows, is shortly to undergo restoration. A Restoration Committee has been appointed. Mr. Street is the architect, and he estimates the probable cost of the restoration at 4,600*l.*, that sum being made up as follows: — New floors and seats of oak, 1,000*l.*; repair of internal and external stonework, 1,300*l.*; repairs of roof, 700*l.*; chancel, 550*l.*; warming, 250*l.*, &c. By a re-arrangement it is expected fifty additional sittings will be obtained. Subscriptions amounting to nearly 1,300*l.* have been promised.

Boston Spa.—The parish church, partially rebuilt and generally renovated, has been reopened. The designs selected were those of Mr. Walter H. Parkinson, of Leeds, and in accordance with them the partial reconstruction has been carried out, as will doubtless be the rebuilding hereafter of that part which stands. The work was begun in July, 1872, by pulling down the east end, consisting of a low chancel-arch and very short chancel. A new chancel-arch, chancel, with organ-chapel at the north side and two vestries at the south side, have been added eastward of the existing nave, and a transept and part of aisle southward, open to the nave by an arcade of four arches. The style of architecture is Early English, the stone used being the local limestone from Clifford, Wetherby, and Bramham Moor quarries. The chancel walls are faced with dressed wall-stones both externally and internally. The chapels, transept, and aisle are plastered internally up to the ashlar-work of the windows and arches. The chancel is 26 ft. 6 in. long (greater length could not be obtained, as it is now built up to the eastward boundary of the churchyard), 22 ft. wide, and 45 ft. in height from floor to ridge. The roof is an open-timber one, of red pine, varnished. The east window is a triplet with cusped lancet-heads, moulded internally, the arch-moulds being carried on foliated shafts. The centre light is 18 ft. high in the clear. North and south of the sacrarium are double-light lancet windows with cusped heads. The organ, inclosed in a pitch-pine case, with coloured pipes, has been built by Messrs. Forster & Andrews, Hull. The chancel-arch, which is double-rimmed, is 18 ft. 4 in. wide and 30 ft. 6 in. in height from the floor of the nave to the apex. The south transept is 18 ft. long by 19 ft. 6 in. wide, and is 40 ft. high from floor to ridge. That part of the south aisle now completed is 42 ft. long and 11 ft. wide, and is divided into three bays, with two small single lancet windows in each bay. Nave, transept, and aisle are now fitted with open pitch-pine sittings. The work which still remains to be done is the taking down of the nave, north aisle, and tower; completing the nave, arcade, and south aisle with another bay; building a similar arcade, transept, and aisle on the north side; erecting the clearstory above the arcades, and a new nave and tower at the west end. The roof also will require to be renewed. The reconstruction so far carried out, exclusive of furniture, has cost about 2,300*l.* The church will accommodate about 500 persons.

Dudley. St. John's Church, Kate's-hill, has been re-opened, after undergoing extensive alterations, including the erection of a new chancel, with organ chapel and a vestry. The central portion of the roof has been raised, and additional light given by the introduction of quatre-foil windows immediately beneath the raised portion. A new portion of the roof is supported by an arcade of seven bays, having columns of red stone (from Lord Dudley's "Straits" quarries), with bands and carved capitals in Bath stone. Old obstructions in the shape of inside porches to the galleries have been swept away, and outside porches erected. This arrangement gives considerably more room in the church. The floors have been laid with encaustic tiles. The pulpit, of Caen stone, carved and inlaid with marble, is the gift of Mr. E. Terry, one of the wardens, and his family. One of the stained windows has been subscribed for by the teachers and scholars. The reredos, of Caen stone, alabaster panels, is the gift of the family of the late Mr. John Jones, of Cawney-bank. The total cost of the alteration of the church is 2,600*l.*

Tedstone Wafer and Edvin Loach (Herefordshire).—The parishes of Tedstone Wafer and Edvin Loach are consolidated, and the consecration of the churches, although erected some years ago,—the former after designs by Sir Gilbert Scott, and the latter from plans furnished by Mr. Haycock, of Shrewsbury,—has been delayed. The necessities of the parish have, however, in the case of the new edifice at Edvin Loach, been met by licensing it for public worship. Additional space has also been thrown into the churchyard, rendered necessary by the circumstance that it is the only ground available for interment for both parishes. The churches were erected by the late Mr. Edmund Higginson, of Saltmarsh Castle. The building at Edvin Loach is situated on high ground. The tower, which contains three bells, is surmounted by a spire, and stands upon pillars. Upon entering, the space underneath the spire has the appearance of an ante-chapel, which is divided from the nave by an arch, at the opposite end of which there is a short chancel and apse, containing three coloured windows. The roof is of polished timber, plastered within the interstices. The choir stalls are of pine, and the body of the church is furnished with open stalls. The whole of the sittings, of which there are about seventy, are free. The accommodation, however, can be increased when necessary by the introduction of chairs. The church at Tedstone Wafer was built by Bowers & Co., of Hereford, and is provided with accommodation for about seventy persons, the seats, of polished oak, being open and free. The principal feature of this church, which consists of nave and chancel, is a Bath stone screen in front of the harmonium. The east window consists of three pointed lights, the western end admitting of a larger one with four. There are several other small windows in character. The roof is of polished timber and plaster. Both churches are built of grey stone, roofed in with coloured tiles. The consecration of both has now taken place.

Hartford.—The ceremony of laying the foundation-stone of St. John's Church, Hartford, which is being rebuilt, has been performed by Lieutenant-Colonel Marshall, the patron of the living. The new church will be built partly on the old site, and partly on land recently purchased, adjoining the Chester and Northwich-road. From the designs, which have been prepared by Mr. J. Douglas, of Chester, architect, we learn that the edifice, architecturally, will be Gothic, of an early type, and will consist of nave, north and south aisles, with tower, 22 ft. square at the west end, terminating with a broached spire; chancel, with transept for children on north side, the organ-chamber and vestry being on the south side of it. The nave is separated from the north and south aisles by an arcade of piers and arches. The church will be entered through porches on the north and south sides. The walling of the exterior and interior will be Macclesfield stone, the dressings being of Runcorn and Eddisbury stone. The roofs are to be open-timbered, and all covered with Broseley tiles. The ceiling of the chancel is proposed to be arched in stone, with moulded ribs and cornice. The church will be fitted with open pews, capable of accommodating 520 persons. The present contract, 3,700*l.*, is let to Mr. R. Beckett, of Hartford, but this does not include the tower and spire. The masonry contract has been sublet to Mr. John Holland, of Northwich. Mr. Walter Edwards is appointed clerk of the works.

Testimonial to Mr. H. Brady, C.E.—A dinner was given at the Pier Hotel, Ryde, on Wednesday evening in last week, on the occasion of the presentation of a testimonial to Mr. Henry Brady, C.E., late district engineer of the London and South-Western Railway Company, when a number of gentlemen connected with the railway and steam-packet companies running to the Isle of Wight sat down. The testimonial consists of a handsome luncheon tray and salver, of considerable value, made by Mr. Thurlow, goldsmith, of Ryde.

STAINED GLASS.

All Saints, Broadchalke.—The completion of the memorial west window, to the late vicar of Broadchalke, has been celebrated. The design was drawn up and executed by Messrs. Ballantine, of Edinburgh. The window is a five-light traceried window, of Perpendicular style. In the centre light is our Lord, holding the orb in one hand, and the other hand uplifted; while underneath is inscribed the text, "I come to bear witness unto the truth." In the two lights on the right side are figures of Elijah, the preaching prophet, and Isaiah, the writing prophet; while on the lights upon the left side of the window are figures of St. Paul and St. John. Canopy work rises into the cusped arches of each light, and divides this under-tier of figures from those inserted above in the tracery windows. Four of these tracery compartments are illustrations of the life of Dr. Rowland Williams, who is represented therein respectively as student, teacher, preacher, and writer. The main compartment above is occupied with the allegory of Truth overcoming the world.

Church of St. Lawrence Jewry, Gresham-street, London.—A second stained-glass window, from the establishment of Messrs. Cox & Sons, has lately been erected in this church to the memory of Mr. John Kynaston. It is one of the circular-headed windows piercing the screen which divides St. Lawrence Church from that of St. Catherine, and consequently it receives a borrowed light: hence great judgment and discrimination required to be used in the general arrangement and colouring. The main feature of the design is an architectural composition, Renaissance in style, enriched by festoons of flowers, leaves, and fruit, relieved by scroll-work dividing the whole space at the springing of arch into two grand portions; in the lower and larger of which, within a niche, stands a full-length and full-size figure of St. John the Evangelist in the act of writing, with the head slightly upturned, accompanied by the eagle; in the other, at the head of the window, is depicted a representation of Christ rising from the Tomb, in a large circular medallion, the latter supported by a broad rich border running round the arch, broken up by smaller medallions with cherubs' heads.

Standish Church.—The Misses Sheringham, daughters of the late vicar, the Rev. Canon Sheringham, for some three years or more have laboured quietly to fill the east window of this church with stained glass. This has just been done by Messrs. Clayton & Bell. The five lights are occupied by five scenes from the history of our Saviour,—the Annunciation, the Nativity, the Crucifixion, the Resurrection, and the Ascension,—and are respectively memorials.

Berkeley Church.—There has just been put up in the chancel of this church a memorial window to Dr. Jenner, the discoverer of the vaccination system. The movement which has now been brought to a successful result was started some years since, when the Rev. J. C. Norman was in charge of the parish, but for a long time little progress was made. A fresh start was, however, given to the proposal through the instrumentality of Mr. Kingscote, who got a committee formed in London; and the necessary funds (500*l.*) having been procured, the provision of the window was undertaken by Messrs. Hardman, of Birmingham, and the work has been completed. The window is of large size. The compartments depict various miracles of healing recorded in the Gospel of St. Luke; the centre one represents the Saviour as the Heavenly Physician, underneath is Luke the physician; and on either side are representations of our Lord as the Good Shepherd and the Good Samaritan. Another item of restoration which is much needed, is a new reredos. A portion of the old one remains; but it is in such a decayed state that at present it is covered with a curtain. The cost of a new reredos is estimated at 1,000*l.*

St. Mark's Church, Tollington Park.—Three painted windows have lately been placed in this church in memory of the late Rev. John Lees. The entire work is from the studios of Messrs. Gibbs & Moore, Southampton-row, London.

Barnard Castle Church.—A memorial window has just been placed in this church, by Messrs. Brownless and the Misses Brownless, of New Broomielaw, to the memory of their parents. The window,—a three-light one,—is by Mr. Baguley, of Newcastle-on-Tyne. The first compartment is filled by a representation of Mary anointing our Lord's head. Our Lord is seated

at meat, and in the act of rebuking Judas for his fault-finding of Mary's loving act. Behind are seen trees, flowers, &c., and buildings showing the Oriental fashion. The central compartment is the woman touching the hem of Christ's garment. The third compartment is Mary sitting at the feet of Christ, in the house of Lazarus. The groups surmount tabernacle work, and below are bases of the same.

Stow-on-the-Wold Church.—A stained-glass window, executed by Messrs. Wailes & Son, of Newcastle-upon-Tyne, has been erected in this church, by Mr. Hayward, surgeon, to the memory of his mother. The window consists of two lights, in which four subjects are introduced, illustrative of the story of the Good Samaritan.

VARIORUM.

For thirty years the *Agricultural Gazette* has formed a constituent part of the well-established and well-esteemed *Gardeners' Chronicle*. So widely, however, has the interest in horticultural and agricultural matters extended, that it is now found desirable to make them separate weekly publications, and as such they will appear in the coming year.——A new candidate for public favour in the colonies and at home is being established at Melbourne, Victoria, under the title of the *Australian Sketcher in Pen and Pencil*. It issues from the respectable office of the well-known Melbourne *Argus* and the *Australasian*. The new journal is a monthly, and is intended, as its title indicates, to deal with the picturesque phases of public and social life in the colonies. The best talent is to be employed in preparing the views, and arrangements have been made to obtain sketches of noticeable objects or events in the other colonies of Australia and New Zealand, and also for obtaining views of subjects of special Australian or great intrinsic interest from England and the Continent of Europe. The literary portion of the paper will pay attention to original productions of local art and literature, and will seek to present a bright and interesting reflex of the more lively aspects of Australian life in town and country.——"Gas Consumers' Manual; or, How to Obtain Cheap Gas and Good Light. By E. S. Cathels, C.E. London: King, Bolt-court." This is a very useful manual for all who wish to know how to obtain cheap gas and good light, and to enjoy the advantages and comforts of gas for lighting, cooking, and heating. It also gives directions how to read the index of the meter. The Manual was issued at Montreal, of the gasworks of which the author is the manager; but the treatise is based on his knowledge as an experienced gas engineer in this country, Mr. Cathels having been connected with the Crystal Palace District Gasworks before he went to Montreal. We do not see in the Manual, however, anything as to the more recent forms of burners which have been exciting interest in this country, and talk at least of which has been superseding that of older forms. ——"The Setting and Working of Retorts. By E. S. Cathels, C.E. London: King, Bolt-court." An account of Cathel's retort settings is given in this pamphlet, which consists of a paper read by the author at the Society of Arts, Adelphi, in 1870.

Miscellanea.

Museums and Galleries of Science and Art.—A deputation from the Council of the Society of Arts had an interview yesterday with the Royal Commissioners of Scientific Instruction. The deputation consisted of Major-general F. Eardley-Wilmot, R.A., F.R.S. (chairman of the Council); Mr. E. Chadwick, C.B.; Colonel Croll, Mr. Hyde Clarke, the Rev. Septimus Hansard, Admiral Ommanney, F.R.S.; Colonel Strange, F.R.S.; Mr. Seymour Teulon, with Mr. Le Neve Foster, secretary. The chairman of the Council stated that the object the Council had in view was to bring before, and ask the support of the Commissioners the action the society was now taking in reference to museums, and pointed out that this especial regard to the State giving increasing aid to existing museums, to aiding in the multiplication of such museums, and rendering them available for educational purposes. He further pointed out the necessity for all museums being placed under the control of a Cabinet Minister, responsible to Parliament.

Improvements in Athens.—The *Levant Herald* says,—"It must be confessed that the Government and the municipality of Athens are doing their best both to render our city agreeable to the eye and to add to the salubrity of its climate by improvements of every kind. Lately Mr. Deligeorges, accompanied by the mayor, minutely inspected the squares, public gardens, and buildings in course of erection. The result of this inspection has been the appointment of a commission on the improvements to be introduced, which has already begun by planting trees and laying out flower-beds in the large square named after the great Philhellene, King Louis of Bavaria, which is situated at the entrance of the town. It has also been decided to convert into a public garden the large space lying between the Palace gardens and the columns of Jupiter Olympus, where the ruins of ancient Roman baths have lately been discovered, and where it was proposed to build the exhibition building. By this decision several advantages, both moral and material, are secured; an agreeable promenade will be created in one of the most picturesque positions in Athens; the view of the noble old columns will remain unmarred by the proximity of any modern edifice; the exhibition buildings will be placed on a more appropriate site, near the ancient Stadium; and the ruins of the Roman baths will be preserved."

The Pneumatic Despatch.—This system is now undergoing a practical trial, the experimental working of which may, it is hoped, lead to satisfactory results. Its usefulness in the metropolis might be very materially increased. The Pneumatic Company have already a terminus at the Euston Station, and the proximity of the Midland and the Great Northern Stations at once, as the *Times* remarks, suggests short extensions to both of those points, and the relative position of the Holborn Station with that of the South-Eastern Railway at Charing-cross, and of the Post-office Station with that of the same railway at Cannon-street, would render an extension in either of these directions no very difficult matter. Then there are the district offices of the postal system, most of which might be placed in direct communication with the chief office by means of the pneumatic tube, in the same way that, to some extent, and by means of small tubes, the postal telegraph offices are connected at the present time. There appears to be no reason, in short, why it should not be generally extended to all parts of the metropolis, and to the suburban districts.

Banquet to Mr. Joseph Mayer.—A banquet has been given by the tradesmen of Liverpool to Mr. Jos. Mayer, on the occasion of his retirement from business as a goldsmith and jeweller in the town. Mr. Mayer's chief fame, as many of our readers know, was as an antiquary, and his collection of rare specimens of ancient art and manufacture, to which we have had occasionally to refer, is one of the most complete in the country. He is also highly esteemed for his philanthropic schemes and gifts, having presented to the town of Liverpool a museum of so valuable a character as to be designated the "Mayer Museum," and having established a public library and a large park for the village of Bebington, in Cheshire, near to which he resides. The proceedings at the banquet were of a most enthusiastic description. A handsomely illuminated address was presented to the guest of the evening. The mayor and the leading public men of the town were present.

Macclesfield School of Art. The annual meeting of the Macclesfield Useful Knowledge Society and School of Art, has been held at the town-hall. There was a good attendance. The president (Mr. W. C. Brocklehurst, M.P.) occupied the chair. In the course of the meeting Mr. Nicholson announced the following subscriptions towards the erection of a new school of art:—Messrs. Brocklehurst & Sons, 500*l.*; Alderman Birchenough, 50*l.*; Alderman D. Clarke, 25*l.*; Alderman Wright, 25*l.*; Mr. William Smale, 25*l.*; himself, 25*l.*; the Mayor, 20*l.*; Mr. John Jackson, Modern School, 5*l.*; Mr. John Walker, 5*l.*; Alderman Bullock, 25*l.*; Critchley, Brinsley, & Co., promised by Mr. Brodrick, 10*l.*; Mr. J. J. Brunt, 10*l.*; and Mr. J. Dawson, 20*l.* They would be pleased, he added, to hear that Mr. Chadwick had kindly promised 200*l.*, and if 5,000*l.* were raised he would supplement it by 300*l.* more, making 500*l.* altogether. Other subscriptions have been since received.

Oxford Architectural and Historical Society.—The Saturday walks and excursions have commenced. The following have been arranged for this term:—Saturday, November 15th, Brasenose College and All Souls Chapel were visited; the latter with especial reference to the progress which has been made in the restoration of the Chichele reredos. It is somewhat similar in arrangement to that in Winchester Cathedral, including two stories of canopied niches, one over the other, and a large cross over what was the altar. All the corbels and canopies have been chopped down to a uniform face. On Saturday, November 22nd, it is proposed to meet in the hall of Pembroke College, when the Rev. the Master will receive the members, and the Bursar will conduct them over the various parts of the college. They will afterwards visit Bishop King's House, an interesting example of domestic architecture of the sixteenth century.

White Lead.—Mr. William Thompson, of Wandsworth-road, has patented some improvements in the manufacture of white lead. The invention relates to improvements in the process of and apparatus used in manufacturing white lead. The melting-pan is made in compartments for regulating the temperature and securing the purity of the blue lead. This lead is made into thin sheets of open texture by pouring it into a revolving cylinder kept cool, and it is granulated by running it in a thin stream between a roller and an inclined knife, and receiving it in water. The sheets and granules are charged on trucks, which are run upon rails into the chambers where the chemical reagents act on the lead, so as to convert it into white lead, the trucks charged with the converted lead being run out at opposite doors. The converting-chambers are supplied with acid gases and vapours heated before their introduction in steam-jacketed pipes or vessels.

Handy Chemistry of Farm Crops.—A simple table indicating the amounts of chief manurial constituents contained in average crops calculated per imperial acre, has been published by the Agricultural and Horticultural (Co-operative) Association, 47, Millbank, Westminster, being the third of a series so published. The principal manurial constituents appear in red, blue, and yellow lines, longer or shorter according to the quantities of the nitrogen potash, and phosphate; with a key to the table, to enable the farmer to regulate his dressings of manure by simple reference to the table. Of course, everything depends on the accuracy of the table, which is easily understood. There are columns showing the names of the crops, and the quantities per acre, with the average weight in pounds, and the constituents by name. The mangolds hold a distinguished place in the table, especially as regards the nitrogenous constituent.

The London Lunatic Asylum.—At the last Court of Common Council, Alderman Besley brought up a report from the visiting justices of the lunatic asylum, recommending that an additional sum of 5,000*l.* should be appropriated to the sum of 4,000*l.* already agreed upon to provide suitable accommodation for seventy additional pauper lunatics. He said that alterations which could have been effected for the original sum of 4,000*l.* had been submitted to the Commissioners of Lunacy, who disapproved of them, and recommended certain alterations to be carried out, which would entail an additional expense of 5,000*l.* He observed that "lunacy appeared, unhappily, to be very much on the increase among the poorer classes in the city of London," and it was absolutely necessary that the visiting justices of the lunatic asylum should provide the necessary accommodation to receive them. The report was agreed to, and the recommendation ordered to be carried out.

A Canine Memorial.—A fountain of Peterhead granite, of which we have before spoken, has now been erected at George the Fourth's Bridge, Edinburgh, in memory of a terrier known as Greyfriars Bobby. The memorial is erected by the Baroness Burdett-Coutts, who was attracted by a narrative of the dog's attachment to its master. The pedestal bears the following inscription:—"A tribute to the affectionate fidelity of Greyfriars Bobby. In 1858 this faithful dog followed the remains of his master to Greyfriars-churchyard, and lingered near the spot until his death in 1872. With permission, erected by the Baroness Burdett-Coutts."

The Builder.

VOL. XXXI.—No. 1608.

Lincoln's Inn.



N the legal profession jokes are numerous, and generally appreciated, but in spite of these jokes, every Englishman must be proud of the Bar and Bench as one of the noblest of the institutions of his country, and he cannot, therefore, fail to feel interest in the history of the nurseries in which the lawyers and judges have been reared. The Inns of Court are pre-eminent among the antiquities of London, and within their gates we breathe an atmosphere of the past. The term *Inn* formerly denoted the residence of a nobleman, and these legal colleges were mostly founded where such residences had been. They were called Inns of *Court*, because they were places of study preparatory to practice in the courts of law, which were anciently held in the *Aula Regis*, or court of the king's palace. The first students were sons of the aristocracy, and in the reign of James I. an order was made, which was signed by Coke, Bacon, and others, that "none be thenceforth admitted into the Society of any House of Court that is not a gentleman by descent;" but in spite of this exclusiveness, it has always been a rule that no dignity or title confers any rank at the Bar, so that the highest nobleman takes his place in accordance with legal precedence alone. Considerable changes, however, have taken place at different times in this precedence. The degree of Serjeant-at-law is the most ancient, and formerly was the highest in the law, but now Queen's Counsel rank before Serjeants both in court and elsewhere. Lincoln's-inn is the most ancient of Inns of Court, and takes its name from the inn or town house of Henry de Lacy, Earl of Lincoln (who died in 1312), which occupied a considerable portion of the site of the present Inn. The earl built his mansion upon ground granted to him which had previously belonged to the ancient monastery of Black Friars, by Holborn. The other portion of the present Lincoln's-inn was occupied by the palace of the Bishops of Chichester, which was built by the great prelate Ralph de Neville, Lord Chancellor of England and Ireland in the reign of Henry III.

The buildings of Lincoln's-inn consist of an odd mixture of styles, from the ugliest specimens of house-architecture to the handsome new Hall. Of the new Chambers now in course of completion, contiguous to the Hall, and similar to it in style, we give a view and plan in our present number. The old buildings were erected at various periods between the reigns of Henry VII. and James I., and have their chief frontage to Chancery-lane, formerly called New-street, and afterwards Chancellor's-lane. The gate-house is an object of considerable interest; but it is expected that it will have to be taken down to make way for some new suites of chambers. Sir Thomas Lovell, K.G., treasurer of the household to King Henry VII., contributed liberally towards the erection of this gate, as he did to the funds of the Nunnery of Holywell, in the parish of St. Leonard, Shoreditch, where the windows are inscribed with these lines:—

> "All the nunnes of Holywel
> Pray for the soul of Sir Thomas Lovel."

The oak doors of the gate are the original ones which were put up in the sixth year of Elizabeth's reign (1564). Chancery-lane existed in the reign of Henry III., but continued for many years in a very miserable condition, and was not paved till 1542. New-square, or Serle-court, as it was formerly called after Henry Serle, a member of the inn, was erected about 1683. In 1800 Sir Samuel Romilly lived at No. 2 and Sir William Grant at No. 3. A Corinthian column used to stand in the centre of the square, on which was raised a vertical sundial, and at the base of the shaft, four *jets-d'eau* arose from infant tritons holding shells. In 1845 the open space was inclosed by railings, and planted in compartments with trees and shrubs. Stone-Buildings were built in 1780 from the designs of Sir Robert Taylor, and were only part of a scheme for rebuilding the whole inn. The architecture is very plain, but the effect of the Portland stone is pleasing. It is said that the drawings were executed by a pupil of Taylor's, named Leach, who afterwards became Master of the Rolls as Sir John Leach. In 1845 the buildings, which had been left in an unfinished state for sixty years, were completed by Mr. Hardwick.

The chapel was built by Inigo Jones, "after the Gothick manner, in imitation of that of St. Stephen's, Westminster," in the reign of James I. when the ruinous condition of the old chapel had rendered a new one necessary. The crypt beneath the chapel, with its open arches, was used as an ambulatory or place for lawyers and students "to walk in, to talk and confer their learning"; and Pepys describes himself as having gone "to walk under the chapel by agreement." It is now railed in, and used as a place of interment for the benchers. The first stone of the chapel was laid by Dr. John Donne, and the completed building was consecrated on Ascension Day, 1623, by Dr. George Mountaine, Bishop of London, the sermon on the occasion being preached by Dr. Donne. The building is more curious than admirable; but the stained-glass windows, by the Flemish artists, Abraham and Bernard Van Linge, are worthy of some attention. Mr. Winston says of them, "in point of colour they are as rich as the richest decorated glass I have ever seen." Alexander Brome, the Cavalier song-writer; John Thurloe, Secretary of State to Oliver Cromwell; the indefatigable William Prynne; Sir John Anstruther, one of the managers in the impeachment of Warren Hastings; and Francis Hargrave, the author of "Notes on Coke upon Littleton," were all buried under the chapel. Some of the most distinguished and eloquent divines of the Church of England have filled the office of preacher to the Society, and amongst these the names of Dr. Donne, Archbishops Usher and Tillotson, Bishops Warburton, Hurd, and Heber, are perhaps the most conspicuous. Dr. Langhorne, the translator of Plutarch, was assistant-preacher for several years. The Warburtonian Lectures, founded by Bishop Warburton, in 1768, are delivered in this chapel. The old hall was erected in 1506, in place of a still older hall, which had become so ruinous that it had to be pulled down. Alterations were made in this goodly hall in 1625, 1652, and 1706, and in 1800 the exterior was repaired and stuccoed by Bernasconi. In 1819 the room was lengthened by about 10 ft.; but some few years ago it was divided near the centre by a temporary partition, in order to form two courts, for the sittings of the Lord Chancellor and the Lords Justices. In 1750 Hogarth was engaged, on the recommendation of Lord Mansfield, to paint a picture for the chapel, and he painted his well-known "Paul before Felix," which was so unecclesiastical in its treatment that the benchers thought it wiser to place the picture in the hall than in the chapel.

The Inns of Court were of old great places for masques and revels, and Lincoln's-inn was not behind its sister societies in these amusements. The seniors loved to see the juniors enjoy themselves, and in the seventh year of James I. an order was made "that the under-barristers be by decimation put out of commons for example's sake because the whole bar were offended by their not dancing on the Candlemas-day preceding, according to the ancient order of the Society, when the judges were present," and a threat was added that if the like fault were repeated, they would be fined or disbarred. Charles II. attended the Christmas revels in 1661, and ten years afterwards he made a second visit, in company with the Duke of York, Prince Rupert, the Duke of Monmouth, and others of the nobility. The king and his suite enrolled themselves as members of the Society, and after pledging the welfare of Lincoln's-inn the king conferred the honour of knighthood on two of the benchers, one of the barristers and one of the students.

In the beginning of the year 1843 the benchers of Lincoln's-inn determined upon the erection of a hall and library that should be worthy of their Society, and they adopted the designs of Mr. Philip Hardwick, R.A., which were carried out in a manner that satisfied all concerned. The foundation stone of the new building was laid on the 20th of April, 1843, by Vice-Chancellor Knight Bruce, who was then treasurer of the Society. Two years and a half afterwards a building had arisen which added one to the small number of elegant edifices that adorn London. It is constructed of brick, with stone dressings, and all the stone used in the exterior decoration was quarried at Anston, in Yorkshire. Part of this afterwards failed very considerably. The hall is much larger in its dimensions than any of the halls of the other Inns of Court. It has a timber-framed roof, and on the northern wall a fine fresco was executed by Mr. G. F. Watts in 1859, which represents an imaginary assemblage of the early law-givers of various nations, from Moses down to Edward I., and has been entitled "The School of Legislation." When the new buildings were completed the Queen honoured the Society with her presence, and on the 30th of October, 1845, the ceremony of inauguration took place. The Prince Consort was admitted to membership, and the ceremonial was concluded by a banquet in the hall, of which the Queen partook. The library is in the same building as the hall, and forms a suitable repository for the valuable collection of books which is placed therein. It is probably the handsomest library in London, and now that it has been enlarged in this present year, it is 130 ft. in length from east to west, exclusive of the two oriels, which are each about 6 ft. The original foundation of the library is of considerable antiquity. In the thirteenth year of the reign of Henry VII., A.D. 1497, "John Nethersale, late one of this Society, bequeathed forty marks, partly towards the building of a library here for the benefit of the students of the laws of England, and partly that every priest of this house, in the celebration of divine service every Friday, should sing a mass of requiem for the soul of the said John." Little progress, however, was made in the accumulation of books; and in 1608, "because the library was not well furnished with books, it was ordered that for the more speedy doing thereof, every one that should thenceforth be called to the bench in this Society, should give twenty shillings towards the buying of books for the same library, and every one thenceforth called to the bar, thirteen shillings and

fourpence." The collection of books is now a peculiarly rich one, for not only are here to be found all the treasures of English law from Glanville, Bracton, Britton, and Fleta, to the latest digests, but foreign law, theology, English and foreign history, classics, dictionaries, and topography, are all adequately represented. The Society have been fortunate in the donations that they have received from various benefactors. Serjeant Ranulph Cholmeley, three times reader at Lincoln's-inn, in the reigns of Edward VI., Philip and Mary, and Elizabeth, gave many valuable books to the library. Sir Matthew Hale bequeathed a large collection of manuscripts, and the celebrated William Prynne presented three volumes of his invaluable "Records," which are now of the greatest rarity, on account of a large portion of the original stock having been burnt during the Great Fire of London. In 1849 the Society, acquired at the sale of the Stowe library for 335*l.*, the volume containing the author's introduction to those "Records." The library was formerly in Old-square, whence it was moved to a suite of rooms in Stone-buildings, in 1787. Here it remained till the new library was ready for its reception. There can be no doubt about the improvement that the new buildings have made in the character of Lincoln's-inn, but there was one evil connected with their erection, which was that the celebrated gardens were destroyed, and the elms under which Ben Jonson loved to walk, were felled. In the first and second years of Philip and Mary's reign, the walk under the trees in the Coneygarth or Cottrell Garden was made, and in 1663 the garden was enlarged, a terrace walk made on the west side, and the wall raised higher towards Lincoln's-inn-fields. It was this wall that gave point to the distich on the characteristics of the four Inns of Court :—

> "Gray's-inn for walks, Lincoln's-inn for wall,
> The Inner Temple for a garden, and the Middle for a hall."

The enlargement of the gardens of Lincoln's-inn grew out of an arrangement with James Cowper, Robert Henley, and Francis Finch, esqrs., and other owners of Lincoln's-inn-fields, who were exempted from forfeits or penalties in regard to any new building they might erect on three sides of these fields previously to the 1st of October, 1659, on condition that they paid certain sums for the public service, and conveyed the residue of the fields to the Society of Lincoln's-inn, for laying them into walks for common use and business. Pepys mentions the alterations in his "Diary," — "To Lincoln's-inn, to see the new garden which they are making, which will be very pretty;" and between forty and fifty years afterwards Isaac Bickerstaff expressed in the *Tatler* his liking for these walks,—"Having taken a round or two I sate down, according to the allowed familiarity of these places, on a bench." Coneygarth, to which we have referred above, obtained its name rom the number of rabbits that were found in the place; and by various ordinances of the Society in the reign of Edward IV., Henry VII., and Henry VIII., penalties were imposed on the students hunting them with bows and arrows, or darts.

The eminent men who have been connected with colleges and societies are always a source of pride to the members of such institutions, and Lincoln's-inn can boast of a long list of distinguished students, out of which we may select the names of Sir John Fortescue, Lord Chief Justice of the King's Bench, and Lord Chancellor under Henry VI., who was one of the most learned men of his age, and author of the celebrated work, "De Laudibus Legum Angliæ"; Sir Thomas More, Lord Keeper Egerton, Dr. Donne, Attorney-General Noy, Sir Henry Spelman, William Prynne, Sir Matthew Hale, Sir John Denham, George Wither, John Rushworth the historian, Lord Shaftesbury, Lord Mansfield, Lord Erskine, Spencer Perceval, George Canning, Lords Lyndhurst, Brougham, Cottenham, and Campbell.

Mr. Spilsbury, the librarian of Lincoln's-inn, has published in this present year a second edition of his interesting little book on the Society, which first appeared nearly five-and-twenty years ago.* And in his preface he remarks that two-thirds of the benchers of 1850 have now, in 1873, passed away from this life. Amongst those who have gone are the Prince Consort, Lord Brougham, Vice-Chancellor Sir Lancelot Shadwell, Lord Cottenham, Lord Leigh, Sir James Knight Bruce, Matthew Davenport Hill, Sir James Wigram, Charles Purton Cooper, and Lord Macaulay. Among those that remain,—the third,—there are the venerable Lord St. Leonards, Sir Richard Kindersley, Sir William Hayter, Bart.; Sir John Stuart, Lord Eversley, Sir Edward Ryan, Lord Hatherley, Sir James Bacon, Mr. Spencer Walpole, and the Lord Chancellor. Although the list is so changed, the dead are replaced by such worthy successors as Lord Justice Sir William James, Lord Cairns, the Master of the Rolls, and many other distinguished men.

Mr. Spilsbury's book, with the handiness of a guidebook, combines the learning of an elaborate treatise. It is written by one who knows and loves his subject, and is able to make his readers know and love it too. We have been much indebted to this book for the information contained in our present article.

Here we might close, but we cannot leave Lincoln's-inn-fields and all its historical associations unnoticed although it does not belong to the Honourable Society of Lincoln's-inn. In 1683 the patriot William Lord Russell was executed in this place, and nearly a century before (1586), Ballard, Babington, and their accomplices, lost their heads "even in the place where they used to meet, and conferre of their traitorous practices." This square was anciently called Fikattesfeld or Ficket's Field, and as early as the year 1376 "was a common walking and sporting place for the clerks of the Chancery, apprentices, students of the law, and citizens of London." It appears that one Roger Leget set some traps in a certain trench, "where the said clerks, apprentices, and other men of the said city had wont to have their common passage, in which place he knew that they daily exercised their common walks and disports, with a malicious and malevolent intent, that all who came upon the said trench should be maimed, or else most grievously hurt." The clerks, apprentices, and others brought Mr. Leget before the king's council, and complained of his conduct. In consequence he was sent to the Fleet prison, "there to expect the king's grace." Ficket's Field remained as a promenade, or place of recreation, for the students of Lincoln's-inn and the public, until the latter end of the reign of Elizabeth, when it first began to be built upon, in an irregular manner. It then fell into a very neglected condition, so that in 1618 James I. appointed a commission, consisting of Lord Chancellor Bacon, the Earls of Pembroke, Worcester, Arundell, and others, assisted by the king's architect, Inigo Jones, to plan it out as a handsome square. The instructions given to the commissioners were to "reduce those fields, called Cup Field and Purse Field, both for sweetness, uniformitie, and comeliness, into such walkes, partitions, or other plottes, and in such sorte, manner, and forme, both for publique health and pleasure, as by the said Inigo Jones is, or accordingly shall be, done by way of map." The great architect planned out the square, as is generally stated, so that its dimensions should be exactly the same as those of the Great Pyramid, but this, it has been shown in our pages, is incorrect. Although he proposed a magnificent scheme, the west side only was completed by him, and although some years afterwards a few buildings were erected, which were "inhabited for the most part by Popish recusants," the north and south sides of the square were not completed until after 1657. The condition of the enclosure in the centre was for a long time wretched in the extreme, and in the petition of the inhabitants of the parishes near Lincoln's-inn-fields (1656), its neglected state was complained of. Many thousand loads of dung and dirt had been laid in the fields, "whereby the petitioners were much hindered, and almost quite deprived of their common liberty of walking, training, drying of clothes, and recreating themselves." At this time Lincoln's-inn-fields were divided into three fields, called "Purse Field, Ficket's Field, and Cup Field." Many years after, even when the centre was railed in, Gray, in his "Trivia," gives but a poor account of its condition (1716) :—

> "Where Lincoln's-inn, wide space, is rail'd around,
> Cross not with venturous step; there oft is found
> The larking thief, who while the daylight shone
> Made the walls echo with his begging tone.
> That crutch, which late compassion moved, shall wound
> Thy bleeding head, and fell thee to the ground."

In 1698, Mr. Cavendish Weedon (the first inhabitant of New-square or Serle's-court) proposed the laying out of the fields in a magnificent style, to be adorned "with figures of the twelve apostles, and waterworks at each corner, to be supplied from Hampstead water, and a model of St. Mary's Chapel, to be erected in the centre, from a design of Sir Christopher Wren's."* This proposal was never carried out, but in 1735 an Act was passed for inclosing and new ordering the area of the square; and in the *Daily Journal* for July 9th of that year we read that "the plan for beautifying Lincoln's-inn-fields is now before his grace the Duke of Newcastle. There are to be four iron gates, one at each corner, and dwarf wall, with iron palisades: this plan has been agreed to by the inhabitants." At the beginning of the present century the square was again laid out and arranged, as it remains at present. Formerly each side of Lincoln's-inn-fields had a separate name; and in Hatton's New View of London (1708), the north is called Holborn-row, the south Portugal-row, the east Lincoln's-inn-walks, "*i.e.*, the strong wall that supports a fine terrace-walk," and the west the Arch-row. In Strype's Stow (1720), the same names are given, with the exception that the north side is called Newman's-row. The west side was the first built upon, and the houses erected there are still the finest in the square. The handsome building at the north-west corner, now in the possession of the Society for the Promotion of Christian Knowledge, was originally called Powis House, and was built in 1686, by Captain William Winde, for William Herbert, Viscount Montgomery and Marquis of Powis, who forfeited it to the Crown, by his steady adherence to James II. after his abdication. It was inhabited by the great Lord Somers; and in February, 1696–7, it was ordered that it should remain in the possession of the Lord Chancellor. Sir Nathan Wright, Lord Keeper, next lived in it, and the Government contemplated the settlement of it officially upon the Great Seal, but this was not done, and the house was sold to John Holles, Duke of Newcastle, who died in 1711. In 1708, Lord Cowper, the Lord Chancellor who succeeded Sir Nathan Wright, was living in a house at the south end of the Arch-row. At the death of the Duke of Newcastle, Newcastle House, as it was then called, came into the possession of its late owner's nephew, Thomas Pelham Holles, Duke of Newcastle, the leader of the Pelham Administration. A few doors to the south of this house was Lindsey House, which was built by Inigo Jones, for Robert Bertie Earl of Lindsey, who fell at the battle of Edge-hill. The fourth Earl of Lindsey was created Duke of Ancaster, and Lindsey House then took the name of Ancaster House. The duke sold it to the proud Duke of Somerset, who left it at his death to his eldest daughter.

Portugal-row, or the south side of the square, was built in 1657. Here Wilmot, Earl of Rochester, lived, next to the Duke's Playhouse, the situation of which is described in Sir William Davenant's epilogue to "The Playhouse to Let" :—

> "Therefore be pleased to think that you are all
> Behind the Row which men ca l Portugal."

The site of the Lincoln's-inn Theatre is now occupied by a part of the museum of the Royal College of Surgeons. Hatton describes Lord Cardigan's house in 1708 as a "beautiful new one, about the middle of Portugal-row." Sir Richard and Lady Fanshawe lived on the north side of the square, in a house previously belonging to the Countess of Middlesex. The distinguished inhabitants gradually migrated, but in 1805 Lords Kenyon and Erskine and Spencer Perceval were living here, and in 1812 Sir John Soane built the house on the north side of the square, where he stowed away his valuable collections in the most ingenious manner. The house is still kept up as the celebrated architect left it, and it continues to be an exhibition perhaps the most unique in character of any of the sights of London.

* Lincoln's Inn: its Ancient and Modern Buildings. With an Account of the Library. By William Holden Spilsbury. London: Reeves & Turner. 1873.

* Of this proposed chapel there is a model in wood, "finely carved," in the possession of the Society of Lincoln's-inn.

With the exception of the Soane Museum and the Royal College of Surgeons, Lincoln's-inn-fields is now almost entirely given up to business offices, and its history is concluded. Our notice, therefore, comes naturally to an end, and we will close this article with the pleasing lines that Mr. Spilsbury has given us:—

"My task is done,—a task that may recall
And touch with life the shadows of the past:
The courts, the chambers, and that ancient hall,
Where names revered around their lustre cast;
The sacred fane, where preachers, holding fast
The pure, calm faith, its champions aye have been,—
All rise to view; then shining forth the last,
Far o'er the rest, in tow'ring grandeur seen,
Rises the late-rear'd pile, majestic and serene.

Nor has it been less pleasing, sooth to say,
Within their oaken shrines, in goodly rows,
Those varied stores of learning to survey,
Whence voices seem to burst from their repose,
To tell how laws, how creeds, how faith arose:
While vision'd forms of sages meet our eyes,
Who to the toiling student's ear disclose
Such words of wisdom as his heart may prize,
To chasten, train, and guide the hopes that in him rise."

BUILDING AFLOAT.

ARCHITECTURE and building, as the words are applied in their ordinary sense to those stable edifices, public and private, in which most of us spend the greater portion of our lives, afford such full material for the notice of the journalist, that we can but rarely afford a glance at that special department of architecture for which the solid earth does not afford the basis. In a word, the building of ships, or naval architecture, is so much of a specialty as rarely to come under the notice of the civil architect. From time to time, however, occasions arise on which it is advantageous to turn our attention to those which were once the wooden, but must now be called the iron, walls of Old England.

How intimate is the connexion that exists between the occupation of the builder and the crafts of the sailor and of the shipbuilder becomes evident when we consider how much of the material necessary for structural purposes is imported into our island. Canada and Norway supply our various descriptions of pines and deals; and it is with especial reference to timber ships that very much of the excitement which has called for the recent Parliamentary inquiry has arisen. The relation between the nominal and the real capacity of vessels,—the important question of how they carry their load, whether closed under hatches or on deck,—and, above all, the doubt whether the lives of passengers or of navigators are wantonly imperilled for the sake of gain, are matters that have been debated with a vivacity, if not with a judicial impartiality, fitted to their importance. And there has already resulted, from the labours of the Commission appointed to inquire into the question of unseaworthy ships, the detection of certain customs, and certain faulty methods of procedure, the removal of which will, no doubt, do much to diminish the total of our annual losses at sea.

When we remember that the annual average of wrecks and casualties at sea, reported in Lloyds' List, is such as to give nearly ten daily throughout the year, we shall see that, as a social question, affecting the safety of a large and important class of property, and the protection of human life under circumstances of peril and adventure, we can ill afford to neglect the character and quality of our ship-building. In no other department of human industry is man so much at the mercy of the great powers of nature—the winds and the waves. We have a means of distinguishing between avoidable and unavoidable calamity at sea (that is indeed rough, but that may be taken as approximate), afforded by noting the difference in the average number of wrecks that occur in the calm and in the stormy months of the year. The casualties in November are threefold the casualties in June; the number of wrecks in the former month, on an average of ten years, being 442; those in the latter, 152. If we assume,—not as a positive fact, but for the sake of comparison,—that nothing but neglect can cause disaster in fine weather; and if we further assume that as much diligence is displayed by our sailors in fair time as in foul, we shall still have to attribute what the old charter-parties call "the act of God," twice the number of disasters that spring from the neglect of man.

Power has been given to the Board of Trade, by an Act of Parliament passed in the present year, to survey and to condemn unseaworthy ships. The chief point now unsettled on the subject is, the method by which the functions of the Board are to be put in operation in any particular case. All parties, with a few interested exceptions, seem to agree in the desirable nature of a strict and authoritative survey in any doubtful case; and of powers being given to the inspecting authority to detain unseaworthy vessels in port; to order definite repairs; or to condemn the craft to be broken up. But a wide difference of opinion exists as to the mode in which that inspection should be carried out. Some persons propose universal Government survey; others are of opinion that this is impracticable. As a general result of experience, anything of so wide and comprehensive a nature as universal inspection, which, to be worth anything, must be repeated as required, would hardly have the practical results intended. To make such an inspection absolutely reliable, would involve a very large outlay,—one that no Ministry would feel justified in proposing to Parliament, without the most stringent proofs of its necessity. To have any inspection that professed to be general, and that was in fact only partial, would be to do much more harm than good. The whole burden of responsibility would be thrown upon the Government. Private vigilance would be lulled to sleep, and the wreck register would show the result.

The chief causes of considerable danger that may be attributable to the shipowner or shipbuilder, may be reduced to two groups. First, bad construction, under which head come those questions of converting an open, or partly open, deck into a portion of the body of the ship, of which we have heard so much; and, secondly, overvaluing the life of a vessel, or continuing to keep it afloat when it is too old, or too much worn, to be seaworthy.

This simple division of the subject, however, has the effect of very much diminishing the apparently vague and enormous area of inspection, as applied to the mercantile navy. It would be very little to demand that every ship launched from our shores should be registered; that the register should be accessible in London (with copies, if requisite, in Liverpool, Glasgow, or any other place of primary commercial importance); and that any vessel which has been afloat a certain number of years should, *ipso facto*, call for an official inspection. The proper period of *life* it would be for those most conversant with shipping to indicate; but that a ship which had reached that marine old age should be forbidden to sail without inspection, which the owner should be both empowered and obliged to demand, seems no very outrageous guarantee to require, when the object sought is the preservation of human life.

A provision of this nature would simplify the general question, by the mere lapse of time. All ships that are now ill built, whether by means of original bad workmanship, or inferior materials, or from changes in the construction of the upper deck, such as those to which we have referred, would, in the course of a few years, come in for inspection; and, if proper, for condemnation. The knowledge of such an ordeal, and of the statistics which a very few years would place at the service of the public from the register of inspection, would have a wholesome influence on our ship-building firms, from the very date of the passing of an Act of Parliament enforcing such an inspection. The register of the condition of aged ships would, in a very few years, become an *aperçu* of the relative excellence of their builders. Purchasers, freighters, insurers, and all those interested in shipping, would thus soon be put in possession of the surest of all testimonials to the character of the different shipbuilders. In any case of this kind two things occur: first, the inferior producer (who will be the one most vigorously to resist the innovation) will be known, and may be avoided. Secondly, the attainment of certitude as to the character of vessels will diminish the rate of insurance; and all those charges in which a margin has to be allowed in consequence of a want of exact and reliable information.

We do not assume to speak *ex cathedrâ* on a subject that has many sides; but we suggest, as matter for serious consideration, the advantages that would result from the establishment of a fixed period at which a ship, like a horse, should become "aged"; and after which it should be unlawful to peril human life on its keel without some assurance that the vessel was seaworthy. The matter would be simple, if the *onus* of demanding a pass certificate was thrown on the owner. The inspection might with propriety fix a date for a renewal of the character given to the ship. A brief form, such as the following, would suffice. "Certificate, the ship *John Bull*; owners, Messrs. Sailwell; built at Birkenhead, by Messrs. Trenail, in the year 1863, is certified as being seaworthy, and not requiring general inspection until January, 1876." Brief notices of this nature would afford satisfaction to the public, justice to the owners, and would, in course of time, prove the most certain vouchers of the excellence of a builder's work.

Under the head of inspection rank all those questions as to soundness of material, and excellence of workmanship, as to which the report of the Commission is enough to show that some searching investigation is requisite. In nothing is this more the case than in iron. The introduction of iron into shipbuilding has made the fact of the production of cheap, bad iron, a serious evil. There is as much difference in the iron manufactured in different places as there is in the coal of different mines. As everything that is black is set down as coal, in the reports of the Commission as to the durability of our supplies, so do we find material not very much superior to good millboard, offered, occasionally, for the sheathing of ships, under the name of iron. The clever arrangement of a punch, so ordered as to cut a clean sharp hole through a sheet of iron, which will tear if attacked by an ordinary workman, is mentioned in the evidence, and is only one sample of the manner in which any but the most thorough and experienced inspector may be hoodwinked by the unscrupulous manufacturer. We could cite many instances of similar feats. It is not to the credit of this country that such should be the case. But we do not think that in a highly-complicated state of civilisation, such as that in which we live, when consequences so fatal and serious may and do so often arise from the unconscientious scamping of work, which is left to be regulated by the principle of competition alone, society is justified in relying on what used to be a sufficient guarantee,—mercantile honour. We have lately seen one of those much-needed safeguards of human life for which we have long and repeatedly asked,—the inspection of milk offered for sale,—introduced with the best results. We feel convinced that it is in the essential interest of society to detect the rogue; and, having detected him, to make an example of him. The "rat" which is to founder an over-insured ship may exist only in the imagination of the novelist. But justice and prudence alike demand that, in a nation so dependent as ourselves on maritime activity, our vessels should be as free from any possible suspicion as the very wife of Cæsar.

With regard to those causes of danger which do not result from original bad construction, but from attempts to make vessels carry more than can be done with safety, having regard to their shape and displacement, considerable difficulty exists. It seems that the port and harbour regulations of the whole maritime world are based on a principle that is discordant with the present state of maritime knowledge and habit. We refer to the question of registered tonnage. It appears to be the case, that dock and port dues are charged, not according to the length of time for which a definite area of dock accommodation is occupied by a vessel, but according to the tonnage of the vessel alone. In old times, a great degree of rough justice underlay this rule. A maritime city,—take Havre de Grace, for example,—might thus fairly regard the matter. "In the interest of commerce we intend to provide dock accommodation for a certain amount of tonnage. We must remunerate ourselves, in the only way open; that is, by tonnage-dues on the vessels which make use of our port. We can only do this by a charge upon them of so much per ton. But, if they seek our hospitality, it is open to them. If they have suffered damage at sea, and have to wait for repairs; if from a failure of advices they have to wait for orders; if for any reason they incur demurrage; we shall not aggravate their loss by charging the vessel more for the longer time which it is thus compelled to remain in our harbour. Charge we must, in self-protection, but our object is not profit, but self-supporting hospitality. No vessel will linger an hour that can be helped; and we shall not cumulate misfortune upon misfortune by charging duties on delay."

Such we conceive to have been the broad, sound, thoroughly mercantile view, which was taken by those large-hearted merchants to whom we owe the origin of commercial ports, harbours,

and regulations. But the state of affairs has now changed; not only so, it is still in course of a very rapid transition. Time has an entirely different value now, in maritime affairs, from that which it had when the good old maxim,—"Time and tide wait for no man,"—was adopted. The converse of that saw was then true. Every man was bound to wait for time and tide. That waiting might be for six hours, or it might be for three months. The traveller went down,—say from London to Dover,—in a period of time that might be reasonably fixed beforehand to an hour or two, but his stay at Dover was a matter entirely at the disposal of Providence. When the weather would allow the sailing of the packet, and how soon the packet, if she sailed, would be able to land her passengers in France, were matters regulated by the winds and the waves. Under these circumstances the amount of demand for accommodation that would be made on any particular harbour could be very closely foreseen. A month or two sooner or later would make little difference in the work done by a certain number of vessels. They would be extremely unlikely to exceed, in any year, the average number of trips between port and port; and even if they did so exceed them, no trouble would occur. If the ship came twice to a port, she took up no more water accommodation than if she stopped there for six months. Business was limited; slipping was limited; and there was no reason for that scramble for time, space, and accommodation that now exists.

The change wrought in this respect by the introduction of steam, and by the command of immediate communication which is given to the merchant by the electric telegraph, has entirely altered this comfortable and easy-going state of things. The area of a dock is now a space of rentable land (covered with water), which has its time value as well as its acreage value. It is in the interest of all parties that the payment for accommodation should be made according to those two elements. The change is one that seems very difficult to make, and the more so because it cannot be effected by any legislative power, but only by the common consent of the maritime interest at large throughout the world. Nevertheless is it one that is so consistent with common sense and common advantage that we cannot doubt that its adoption is a mere question of time.

Connected with this change in the relation between the harbour dues and the maritime requirements of the busy commerce of the day, is the question of register tonnage. It must be borne in mind that the tonnage of a vessel does not mean either its capacity or its displacement. It means the product in cubic feet, divided by 40, of certain prescribed measurements taken from its hull. From this artificial tonnage are deducted certain allowances of space allotted to the crew; and, in steamers, of space allowed for the steam machinery and requisites. The remainder is the registered tonnage. On this it is that harbour dues are generally charged, irrespective, as we have said, of time; and also to a great extent irrespective of the actual area of dock accommodation required by the vessel.

For it is the case that, with the view of encouraging steam navigation, the deductions that are possible for a steamer to claim from the legal, or gross, tonnage, before arriving at the register tonnage, are so considerable, that it may occur that a very large and capacious steam-vessel has less dues to pay than a very small craft that has nothing but its sails to propel it over the sea. This is an instance of the hardship and injustice which may arise from the imposition of differential duties; even where, as in the present case, they take the form of a *bonus*. We are not about to make the now fashionable deduction that all such regulations are in themselves bad. Quite the reverse. But we think it does follow that all fiscal regulations which are made for other than fiscal purposes, may become injurious, and that they require careful observation from time to time to prevent such an evil.

In the present case the tables have been completely turned. If we had to give a premium at the present moment, to encourage navigation, it would not be to the steamer, but to the sailing vessel that it ought to be offered. Economy and quick returns are so decidedly in favour of the steam-vessel, whether for long or for short voyages, that the only danger is, whether the sailing vessel may not be about to become, like the magnificent three-deckers of our navy during the wars of Napoleon, a thing of the past.

The London coal trade, carried on by coasting colliers, was regarded at the commencement of the present century with especial favour; not only as needful for the supply of the metropolis and southern districts, with an article of which we then consumed pounds where we now consume hundredweights, but as the special nursery and school of the first favourite of England, the Jack Tar. Internal water-carriage by navigation schemes and canals was regarded with jealousy, as likely to interfere with the coastwise colliery business; which, however, continued to flourish in spite of Telford and his comrades. We have now, in addition, the internal competition of the railways, although the opening of new internal fields of coal is enough to prevent them from absorbing the seaborne traffic.

Afloat, however, we have the steam collier, as well as the steam packet, and the steam warship. Nor is it here that the new competitor stops. We have the steam barge to ascend our rivers, as well as the steam-crane to unload her freight. Under these circumstances it is not to be wondered at that the sailor himself is undergoing change. More and more the irresistible power of steam is displacing the typical British sailor by the mechanic who can keep his legs on board a vessel. It is not, in its present phase, a change that we think a good one. But its gradual spread is undeniable; and, we fear, irresistible. That in which it is matter for regret is the effect that it may have on the character of our naval officers, as well as on that of their crews. The numerous accidents to our men-of-war, which made the Admiralty look very blue a few months since, appear to have been due, in nine cases out of ten, to the absence of the old seamanship of the captains and sailing officers. So handy and manageable have our great war ships become—the *Agamemnon* in the Crimea was called, if we remember aright, Lord Lyon's brougham,—that the anxious providence of the old salt-water captain has been less and less imperatively demanded. From the acquisition of the power of neat handling, and making an exact choice of time, the bolder and nobler characteristics of the sailor are less called into play. The unfortunate result is, that they are less readily forthcoming on demand.

The investigation of the Commission on unseaworthy ships is a matter of vital interest to all the industrial members of the community. We hope good will come out of it. It cannot fail to do so, if the public at large take that intelligent interest in the matter for which we have endeavoured to show our readers that there is ample justification.

"BOW STREET."

Our readers have heard that Parliamentary notice has been given, on behalf of the Government Commissioners of Works and Public Buildings, to remove the Bow-street Police Court. What will Seven Dials say? what the human warrens of Bedfordbury? what, above and beyond all, the dearly-cherished slums of "Old Drury"? Whole generations from these well-known regions have passed and repassed, from sire to son, and from grandam downwards, through the portals of "Bow-street," under varying conditions.

The proposed site is on the east side of Castle-street, Leicester-square, opposite the end of Green-street, facing a well-known curiosity-shop. It includes part of White Hart-court, in Castle-street, and St. Peter's-court, St. Martin's-lane, in addition to a stable-yard, and some premises in Hemming's-row. The Society of Friends have a meeting-house in St. Peter's-court, but it is not at present intended to meddle with this. It may be mentioned here that the whole of that neighbourhood will shortly change its appearance, under various Acts of Parliament. The large block comprising the former Archbishop Tennyson's School, and St. Martin's Workhouse, at the back of the National Gallery, will shortly be cleared away for the Gallery. The St. George's Barracks are included in the scheme; and then there are the new street and underground line of the Central London Railway, from Camden-town, along the west back of Tottenham-court-road, by Leicester-square, to Charing-cross. When these works are all completed, Castle-street and Hemming's-row will not be the "tatterdemalions" of streets that they are now; in fact, there will be no Hemming's-row, it will have disappeared in the house-breaker's cart, having made room for a large open thoroughfare. Green-street, with its picture-restorers, its majolica and china shops, and its cobwebbed, bric-a-brac sanctum at the Castle-street corner, into which Cabinet and ex-Cabinet Ministers may be seen furtively sliding during the "off" afternoons of the session, are all to be swept away. The Central London Railway Act of 1871, in conjunction with the Metropolitan Board of Works, and a roadway 80 ft. wide, have fixed their doom.

The name of "Bow-street" is known wherever there is a law to be broken. It is unlike any other police-court. All Government prosecutions that are to go before magistrates are sent to Bow-street as the first stage. Its seat is the highest place in metropolitan magisterial promotion, honour, and emolument. Any "barrister of seven years' standing" may well begin his 'prentice-hand down among the unsophisticated aborigines of Whitechapel or Wapping; but, for "Bow-street," nothing but full-fledged, hard-beaked ornithologicals will answer. Bow-street Police-court is to the magisterial neophyte what Drury-lane Theatre was formerly to the dramatic one. After the actor had, in bygone days, drudged for several years on the several "circuits," and won Bath, the doors of Drury were open to him. After the metropolitan police magistrate has gone his "circuit," he may look towards Bow-street; but, not till then. Bow-street rejoices in the dignity of three magistrates, all to itself, whilst other courts have only two; the principal of the three is expressly named in more than one Act of Parliament as being invested with special privileges. The 3rd of Wm. IV. c. 19 (1833), being especially devoted to the metropolitan police-courts, says, in sec. 7, that officers and patrols of Bow-street Office are empowered to act as constables in the counties of Middlesex, Surrey, Essex, and Kent; and, also, within the Royal palaces, and ten miles thereof. Of course, should the court be removed, the Act authorising the removal will have to provide for the retention of the powers mentioned above, as a change of the locality might void and determine them.

Bow-street has been the principal police-court of the metropolis for more than a century. Henry Fielding, the novelist, was a "Bow-street justice"; whilst his brother, Sir John, sat on its bench for many years. Later down, there has been Sir Richard Birnie, who, we believe, was the last untrained lawyer who presided. In early times, the magistrates were paid by fees, and it is recorded that, during a day of "bad business," both justice and clerk would adjourn to a neighbouring "public," and smoke their pipes and drink their ale together, toasting for "better luck next time." When fair fish were very scarce, the grand haul of the justice was to send the day and night constables out to scour the adjoining streets, and bring in all the loose people they could find. Then "his worship's" tactics unfolded themselves. Each person in custody had to take out a bail-bond, price 2s. 4d., with something to the Dogberry, when they were let go. If they did not happen to have the money about them, they had either to send to their friends or enter into a second bond to go and fetch it themselves! But this came to an end on account of Bow-street being severely handled once or twice, both in the law-courts and in Parliament, for having been too indiscriminate in its angling, catching the wrong fish. Things had been going on in the same way at Bow-street for many years, when the first Metropolitan Police Act was passed, in 1792. In addition to the old office, the following new ones were established:—Queen's-square, Westminster; Great Marlborough-street, Hatton-garden, Worship-street, Lambeth, Shadwell; and Union-street, in the Borough.

The magistrates of the olden time at Bow-street, went by the names of "Basket Justices," and "Trading Justices." The first-named had "presents" brought to them in baskets by the various suitors; and had, furthermore, their own baskets to receive whatever was quietly slipped into them, fruit, poultry, and game being the most acceptable. The "Trading Justices" were mostly well-to-do shopkeepers, and were settled with at their places of business before going down to the court at all.

Most people have heard of the once famous "Bow-street Runners," the "Robin Redbreasts," and many middle-aged gentlemen have seen them. They wore double-breasted red waistcoats, and carried a small painted truncheon, with a gilt crown at the head of it. They were considered to be all eyes and ears, all scent, and all feet; and it was thought to be difficult to

sneeze in any part of London, or the suburbs, without the time and place coming to the ears of a redbreast. The most celebrated of these was their chief, Townsend, a man of strong common sense, and very humane; a man with whom a lord chancellor and judges frequently conversed upon criminal policy. Townsend was examined before the Select Committee upon the metropolitan police which sat in 1816. He was then passing into years, but had a memory well stored with his peculiar information. He was most strongly opposed to the old system of "blood money," and told the committee that the police officers were "dangerous creatures;" that "human nature was frail, and money a strong temptation." He stated that at trials for life and death, where the balance of evidence hung evenly, the officer had turned the scale against the trembling wretch in the dock, for the sake of the conviction reward, and that the victim had been hanged through that extra testimony!

In 1781, when he was in his zenith at Bow-street, he told the same committee that he had rarely seen executions without the gibbet receiving as many as ten, twelve, thirteen, sixteen, or twenty; "and forty I once saw at twice, the names of every one of them I have got at home." He said that the horse and foot patrol established by Sir Richard Ford completely annihilated footpads and highway robbery.

Such were the "good old times" at Bow-street at a period within the memory of many men now living, as well as during the last years of the last century.

In 1867 the removal of Bow-street Police-court was determined upon, but it was not to leave its famous locality,—it was to be rebuilt alongside the police-station. To those who know the place, we may mention there is a block of houses bounded by the station-house in front, Martlett's-court adjoining, and Crown-court, Russell-street, where Dr. Cumming's Scotch Church and Schools are. Between the schools and the old Harp Tavern is the Harp-gateway, leading up to a livery-yard and stables. It was originally intended to clear away these stables, pull down a few houses in Bow-street, on the station-house line, and there to build the court. The police entrance would have been in Russell-street, up the gateway named. It was also proposed to cut away the half of the first floor of the Harp, so as to allow the police van to drive underneath, to take the builder's premises adjoining, and place the public entrance between the Albion Hotel and the Harp Tavern. That arrangement, however, was abandoned.

For upwards of a hundred years, as we have said, Bow-street has been the criminal centre of Great Britain. Its fame, paradoxically speaking, is infamous. It is encompassed with an ugly halo of crime.

But its character is to be redeemed by the memories of those who resided there before either police-court or station was established. In the days of Dryden, Bow-street was a fashionable lounge. In one of his epilogues, spoken by Mrs. Ann Bracegirdle, he writes:—

"I've had to-day a dozen billet-doux,
From fops, and wits, and cits, and Bow-street beaux."

In commenting upon these lines, Sir Walter Scott remarks that a billet-doux from Bow-street in modern days would be rather more alarming than flattering. In the bygone times, however, Bow-street was the abiding-place and the favourite haunt of famous men. Here was the shop of Jacob Tonson, the bookseller, in the doorway of which he received a certain epistle from Dryden. Tonson owed money to the poet, and was dilatory in his payment, so Dryden, failing by fair means to obtain the cash he so much needed, sent him a pen-and-ink sketch of a mean, shabby, bookseller:—

"With leering looks, bull-faced and freckled fair,
With two left legs and Judas-colour'd hair,
And frowsy pores that taint the ambient air."

"Tell the dog when you deliver it," said the poet to the messenger, "the man who wrote those lines can write more." The unwritten reply satisfied Dryden; he received his money in full.

Here abode Wycherley, the handsome fop and the witty dramatist. To his lodging in this street came Charles II. with 500*l.* in gold, which he presented to the playwright, then in ill-health, and requested him to depart for awhile to the south of Europe. Wycherley went, and, on his return, passing through Tunbridge Wells, entered a bookseller's shop at the moment that a lady, young and beautiful, was inquiring for a copy of the "Plain Dealer," of which Wycherley was the author. "Madame," said a gentleman who stood by, pointing to Wycherley, "there he is for you." This introduction was the beginning of a courtship that ended in marriage. The lady was the Countess of Drogheda. She was loving but jealous, and when Wycherley went across the street to the Cock Tavern he was obliged to request the waiter to open the windows, while the Countess did the same at home, that she might convince herself there was no woman in the company.

Here abode Sir Godfrey Kneller. The rencontre between him and Dr. Radcliffe has often been told, but is worth retelling. Kneller was fond of flowers, and had a fine collection. As there was great intimacy between him and the physician, he permitted the latter to have a door into his garden; but Radcliffe's servants gathering and destroying the flowers, Kneller sent him word he must shut up the door, to which the physician replied, "Tell him he may do anything with it but paint it." Kneller rejoined, "I can take anything from him but his physic." To Kneller's studio came Pope and Gay; and in it, at Kneller's request, Pope "flattered him a little." The flattery verged on profanity, but it was toothsome to Sir Godfrey.

Here for forty-three years abode Grinling Gibbons, the famous carver, whose house, on a stormy Thursday of January, 1701, came rattling down about his ears; but, providentially, none of the occupants were injured. And here, after the police court was established in 1749, abode Henry Fielding and his half-brother, Sir John Fielding, of whom we have already spoken. Dr. Johnson, too, lived in this street for a brief period.

The houses of entertainment in this street were the Cock Tavern (already mentioned) and Will's Coffee-house. The memories attached to the tavern are not pleasant. It was the haunt of the bloods and the Mohocks, who in their drunken revels set morality and religion at defiance.

The Coffee-house was frequented by wits and critics. In its chief parlour sat Dryden tapping his snuff-box and discussing poetry and politics. Hither came Pope, when twelve years of age, to look upon the poet that he venerated so much, and whom he afterwards described as a "plump man, with a down look, and not very conversible." The house was best known as "The Wits' Coffee-house," a name which it retained for ten years after Dryden's death, in 1701. The site is now occupied by a ham-and-beef shop.

Drury-lane Theatre was opened on the 8th of April, 1663. It was, with the exception of Davenant's Theatre, in Lincoln's Inn-fields, without a rival until December 7th, 1732, when Covent Garden Theatre was opened by Rich, the famous harlequin, under the patent of Davenant. After various alterations, in the course of years, Covent Garden Theatre was almost entirely rebuilt in 1787, to be totally destroyed by fire on the 20th of September, 1808, since which it has been twice rebuilt; and ultimately with the addition of the Floral Hall.

What Bow-street was in the early days can be gleaned from Whycherley's comedy of "The Plain Dealer," Though the police-court may be removed, Bow-street will long remain the suggester of sensation.

CONCRETE BREAKWATER, WORKINGTON HARBOUR.

UTILISATION OF UNSKILLED LABOUR.

An interesting building operation has just been completed in the harbour of Workington, a small seaport town a few miles north of Whitehaven, in Cumberland. Some few years ago the control of the west harbour was transferred, under the provisions of a local Act, from the Workington Harbour Trustees, to the late Earl of Lonsdale. His lordship, however, previously to this, had undertaken certain preliminary works for the improvement of the entrance of the harbour.

In 1871 a new and comprehensive scheme was brought forward by Lord Lonsdale. It was intended to effect a radical and final improvement on the entrance of the harbour. This scheme consisted of a plan to divert the Derwent entirely from its south-westerly outfall, into a new channel running due west, as well as to build a breakwater extending in a north-westerly direction from the end of the John Pier, to protect the channel. Mr. A. M. Rendel, C.E., was commissioned to draw up the plans. This erection has now been completed, and the result is a perfect transformation of the aspect of the harbour.

The structure, which presents an imposing appearance, is 400 ft. in length, 24 ft. in height above the foundation level, or 6 ft. above ordinary highwater; 28 ft. broad at the base, and 21 ft. broad at the top. As will be seen, its composition, and the mode of erecting it, are peculiar. It is composed entirely of Portland cement concrete, partly laid *in situ*, and partly constructed in blocks on the shore, and hardened some time before being laid down. These blocks weigh some 4 or 5 tons each; at the foundation they are 7 ft. long, 3 ft. thick, and 3 ft. wide. The outer casing is built up of these blocks, set in cement mortar, and the interior is filled up with cement concrete, made between the tides, and deposited when opportunity served. The breakwater head is circular, 35 ft. in diameter. For many years there has been a harbour light on the head of the John Pier; this has been removed to the breakwater.

While the breakwater is extremely solid, it has been constructed with singular economy. There is not a block of stone in it; the only stone rather being the shingle cobbles of which the concrete was made. No mason has been employed, or any skilled workman beyond a "waller" or two to set the blocks. All has been done by unskilled labour. The materials were found in abundance on the beach. Labourers mixed it up with cement, and built the breakwater, in fact.

The harbour works have now cost upwards of 20,000*l.*; and they were all, including this, defrayed by the late Lord Lonsdale.

THE NEW SURREY SESSIONS HOUSE.

During the last six months new sessions-house buildings have been in course of erection in Newington-causeway, which include the construction of an entirely new court, much larger and more convenient than one of those which have hitherto been used for the business of the county; also considerable alterations and re-arrangements of the present courts. The new buildings will also contain offices for the clerk of the peace, and also a record-room, erected on a portion of the site of the old courts. In addition to these they include a new magistrates' room, barristers' rooms, retiring-rooms for the judges, grand jury-room and grand jury waiting-room, treasurer's office, refreshment-bar, and several other apartments. The basement of the building also contains prisoners' cells, connected with the courts above by staircases and passages. And this portion of the building contains the ventilating apparatus, which consists of boilers and engine for working a ventilating fan, together with a chamber for regulating the hot and cold air to any degree of temperature, upon Mr. Haydn's principle, and the machinery for the purpose is now being fitted up under the superintendence of a representative of the patentee. Besides the ventilating apparatus just named, the courts will be ventilated by two shafts.

The building is now approaching completion externally, and in the course of the ensuing week it will be covered in. It stands immediately in front of Horsemonger-lane, with which it is directly connected. The principal frontage, which faces the area on the east side of Newington-causeway, is 150 ft. in length and 45 ft. in height, to the top of the balustrade which surmounts the central portion of the elevation. This part of the building is the most prominent feature in the structure, and is brought forward considerably beyond the two wings on each side of it. The building is erected of white Suffolk brick, with Portland stone dressings. The principal entrance is in the central portion of the elevation, and consists of a handsome portico, 15 ft. in width, with pilasters and columns of Portland stone, and surmounted by a balustrade. Under the portico the entrance leads into a vestibule, and thence into an entrance-hall, 50 ft. by 30 ft., through which the courts and other portions of the interior of the building are approached. The building has a Mansard roof, and effect is imparted to the elevation by two pavilion-towers at either angle of the central portion of the building. In addition to the main entrance there is also another entrance at the south end of the building, for the magistrates, barristers, clerk of the peace, and other officials.

The interior of the building contains, on the ground floor, the treasurer's office and the

refreshment-bar, the one on the north and the other on the south side of the vestibule. The courts themselves, as well as the witnesses' rooms and the several other apartments in the building, are approached from the central hall. The housekeeper's and servants' rooms are at the south-west corner of the ground-floor. The magistrates' private room is a convenient apartment, 29 ft. by 22 ft. The new court is 45 ft. by 40 ft., and the enlarged old court is 40 ft. square. They will both be fitted up in carved oak. They will be lighted by windows on three sides of the building, and at night by sunlights in the ceiling. The clerk of the peace's office and the record-room are erected on the site of one of the old courts, the other court, as has already been stated, having been reconstructed and considerably enlarged. The record-room is fireproof, arched over with brick. The central hall will have a panelled ceiling. A stone staircase, from the floor of the central hall, leads to a circular iron staircase and balcony, a portion of which, in addition to the record-room, will be set apart for the deposit of documents. There are also two other stone staircases from the central hall, leading to the grand room and the grand jury waiting-room on the first floor. The staircases also lead to a gallery for the use of the public in each court.

The architect for the building is Mr. Howell, of Lancaster-place, and the contractors are Messrs. Perry Brothers, the estimated cost, exclusive of fittings, being 17,500*l.* It is expected that the courts will be completed and ready for opening in the early part of the ensuing year.

IRISH WHISKY DISTILLERY PREMISES, GREENMOUNT, DUBLIN.

We were happy to perceive, on a visit recently paid to the capital of Ireland, that commercial enterprise,—especially that fostered by joint-stock companies,—is decidedly on the advance. We were strengthened in this opinion by an inspection of the distillery recently acquired by this company. Originally designed and erected for the purposes of a brewery, it has, by the agency of a limited liability company, been converted into a most promising distillery.

Some twelve months ago a few influential gentlemen in Dublin, assisted by some friends in England, conceived the idea of purchasing from Messrs. Perry & Co. their fine buildings known as the Greenmount Brewery, situated at Clrn-brassie-street Bridge, Harold's Cross, and for that purpose formed a company under the Limited Liability Act. The buildings comprised in the brewery had all been erected within the last five or six years, in a substantial manner, and under the advice and supervision of a competent architect. They comprise an entrance-gateway, with suitable offices adjoining for clerks, manager, and general staff, fitted up and completed with every requisite for carrying on a large business. The main building, which is five stories high, and 100 ft. long, by an average depth of 243 ft., was principally used for brewing, and built of limestone, with chiselled granite dressings, the floors being supported by wrought-iron box girders. Adjoining the main building two stores were erected of similar materials, each over 100 ft. long by an average width of 35 ft.; the boilers, engine-house, tanks, &c., were placed at the rear of these buildings. One of these two stores has been fitted up with the wash-backs, mash-tubs, &c., required for the purposes of distillation; the other has been set apart for the bonded store, for which purpose it is admirably adapted. The main building has been altered to answer the requirements of the distillery by putting in new floors for the grain lofts, erecting a kiln on the third story, and fitting up the second story with the requisite number of mill-stones, which are worked, as well as the pumps, by an engine on the floor beneath. The copper stills have been erected at the rear of the main building, and a chimney-shaft specially built for them. Immediately adjoining the still-house will be found the worm, top-wash chargers, receivers, &c., raised on a powerfully-constructed platform, whereby they are enabled to command the stills. The boiler-house, which formed a part of the original brewery, immediately adjoins the still-house, and the products of combustion are carried off by a chimney rising about 140 ft. high. The situation of this distillery is excellent, being close to the quay on the banks of the grand canal, by means of which the whisky can be sent down by water to the quay and shipped for any part of the world, or sent by railway to the interior of Ireland. The canal also affords facilities for getting malt and fuel from the different districts through which it runs, thereby saving outlay in cartage, as well as obtaining the malt and fuel at low rates. It is contemplated that in a few weeks' time the distillery will be in full working order, and the directors expect to manufacture at least 270,000 gallons per annum.

Another feature should not be overlooked, namely, that the same water is used for the purposes of distillation, as that employed by the old-established distillers,—a point which may be considered of little moment by those who are unacquainted with this particular business, but to the enlightened few who are admitted behind the scenes, is known to be of the utmost consequence.

The works have been executed from the designs and under the superintendence of Mr. E. H. Carson, architect, of Dublin; the machinery being supplied by Mr. Edward Toomey, of the Phœnix Ironworks, in that city; the building operations being entrusted to Mr. S. H. Bolton, also of Dublin. The wash-backs and chargers were supplied by Messrs. Oxley & Co., of Frome, Somersetshire.

PROPOSED NEW VESTRY-HALL AT KENSINGTON.

The subject of the erection of a new vestry-hall at Kensington has for some time been before the local authorities, but hitherto nothing definite has been decided upon. The preliminary steps towards the erection of the building were, however, taken by the vestry at their meeting last week, when a resolution was unanimously carried to the effect that it be referred to the special purposes committee and the law and Parliamentary committee jointly to consider and report as to the most desirable steps to be taken for erecting a new vestry-hall, or otherwise providing the accommodation necessary for carrying on the business of the vestry.

THE CITY ARCHITECT'S EXTRA PROFESSIONAL SERVICES AND THE CORPORATION.

At the meeting of the City council last week, the recommendation of the Officers' and Clerks' Committee, that the City architect, Mr. Horace Jones, be paid 5,000*l.* for his extra services in connexion with the recently completed works which have been executed by the corporation, gave rise to an animated discussion, in the course of which a diversity of opinion was elicited, some members warmly supporting the recommendation, whilst others opposed it on different grounds. Mr. Ridley was opposed to it as a right, but thought some amount might be given to the architect as a gratuity, and he moved as an amendment that 2,500*l.* be so granted. Mr. Knight did not think the architect was entitled to any extra remuneration. He admitted that the work was done in a masterly manner, but denied that the architect had any claim to extra pay for the works. Mr. Bontems was of the same opinion as the previous speaker, stating that he could not see that there was the least shadow of a pretence for saying that the architect had a claim on the corporation for extra services, and he added that if the 5,000*l.* were voted him it would be a great mistake, and very discreditable to the court. Mr. Collis, on the other hand, was at a loss to see how it could be considered extravagant to give 5,000*l.* for 20,000*l.* worth of work. The recommendation of the committee seemed to be an exceedingly moderate and just one, and he hoped the court would adopt it. Mr. Wordley observed that the architect was a gentleman for whom he had the greatest esteem, but he could not see that the claim of Mr. Jones was a substantial one. Mr. Deputy H. Lowman Taylor warmly supported the recommendation of the committee, stating it to be their unanimous opinion that the architect should be paid 5,000*l.* for his extra services, and in his honest opinion 5,000*l.* were not sufficient. He observed that the real cause of the opposition to the recommendation was the non-success of the Foreign Cattle Market, at Deptford, and he had no doubt that, had that market been a success, those now opposing the recommendation of the committee would have met the architect with open arms, and have offered double the amount. Mr. Rudkin was opposed to the recommendation, but in favour of a good increase of salary, dating back from 1871, which he thought would be the best mode of dealing with the case. Mr. Bedford was of opinion that the architect had a moral claim on the corporation, and would support the recommendation. Ultimately the 5,000*l.* were granted to the architect as a *gratuity*, in recognition of the manner in which he had carried out the work during the last ten years.

A STEAM FERRY AT MIDDLESBROUGH, AND PROPOSED TUNNEL UNDER THE TEES.

The Corporation of Middlesbrough some time ago obtained Parliamentary powers to establish a steam ferry across the Tees to connect the town with the opposite side of the river, and within the last week or two they have commenced the work of constructing the approaches on the bank of the Tees. It is said that the approaches to the ferry will cost about 10,000*l.*, and that the outlay on the steamboats will be about the same amount. The North-Eastern Railway Company have in contemplation the construction of a tunnel under the Tees at Middlesbrough, and should this scheme be carried out, a greatly required improved communication between South Durham and North Yorkshire, at the rapidly-growing centre of the iron trade, will be fully met. This tunnel is intended to commence on the south side of the Tees, immediately below Middlesbrough, the existing railway at Middlesbrough being connected with it by a junction at that point. The tunnel will run in an oblique direction under the river, terminating on the north side in Stockton, where it will be connected with the railway there by a junction. The tunnel and junctions with the railways on the two respective shores of the Tees will have the effect of connecting the coalfields of Durham with the iron districts of Cleveland in addition to uniting the two towns of Stockton and Middlesbrough more closely together. A former project of the North-Eastern Company for effecting this object by a bridge over the Tees was opposed by the corporations of both Stockton and Darlington, but the two municipal bodies have decided to give the tunnel project their warm support. The Stockton corporation are also taking steps for making new dock accommodation there and improving the river, and with this object they intend to apply for Parliamentary powers, the Bill including authority to construct a large new dock, by utilising the channel of the river opposite Stockton for that purpose, and to cut a new channel in the river. It is stated that the North-Eastern Company will assist the corporation in carrying out the works.

DECORATIONS OF ALL SAINTS' CHURCH, MARGARET-STREET, CAVENDISH SQUARE.

A committee, comprising the most influential members of the congregation of All Saints' Church, Margaret-street, Cavendish-square, has been formed for the purpose of raising a memorial of their late vicar, the Rev. William Upton Richards, who died early in the present year. The list of the committee includes the names of the Earl of Limerick, Earl Beauchamp, Lord Eliot, Lord Clinton, Sir Edward Hulse, bart., Sir Henry W. Baker, bart., Archdeacon Denison, &c.; and, we understand, it is proposed in the first instance to complete the decorations of the wall of the northern aisle of the church, six compartments of which are at present left vacant and unfinished. This work, which the late vicar had much at heart, will be carried out under the direction of Mr. William Butterfield, the architect of the church itself. The probable cost of completing the decoration of these compartments in fresco is estimated at 1,000*l.* If Mr. Butterfield's ideas are carried out, a group of saints, apostles, martyrs, prophets, patriarchs, &c., will be placed in each of the vacant panels. Some members of the congregation, however, having expressed a wish to appropriate their gifts to the completion of the All Saints' Convalescent Hospital at Eastbourne, Sussex, the secretaries to the "Richards Memorial Fund," who are the churchwardens of the parish, have opened an account at the bank of Sir Samuel Scott & Co., Cavendish-square, and they invite the donors to state to which of the two objects they desire their contributions to be devoted.

THE MEDIÆVAL BRICKWORK OF POMERANIA.*

When I was asked some time since to prepare a paper on the Mediæval Brickwork of Pomerania and its vicinity, I did not know that the subject was one which had received so little attention from English architects. Still less was I prepared to find, as I did when I began to look out for the necessary authorities and material, that even in the country of which Pomerania has so long formed a province, scarcely any work of importance had been published to illustrate the wonderful examples of art and architecture with which it teems.

German works on this topic are naturally more numerous, and Adler's fine treatise on the Mediæval brickwork of the Prussian States is a valuable assistance to any one reading up the subject. But only small portions of the country are therein dwelt on, the great examples of Pomerania and Mecklenburg being, I believe, unnoticed, so that, even in its own country, German brickwork has yet to be properly described.

The meagreness of the information one is able to get relative to the foundation and early history of the Pomeranian towns is to a great extent to be accounted for by the peculiar character of Pomeranian history. The province was for long periods after the extinction of its native dynasty the object of contention among neighbouring and more powerful States, and by its frequent change of masters it gradually lost all patriotic pride and distinctive character, without the compensation of becoming at the same time a part of any one powerful country. Russians, Poles, Swedes, and Danes have at one time or another held parts of it in possession, and it is scarcely more than half a century since it came absolutely into the hands of the kingdom of which it now forms so important a province.

Originally it was peopled by a Wendish tribe, and its natives to this day have a marked difference of appearance to the Germans of the surrounding provinces; whilst in the names borne by many of the towns, and the peculiarities of the low German spoken by the people, there are still many marks which distinctly point to the Wendish origin. At the end of the twelfth century the Dukes of Pomerania were first recognised as princes of the German empire; and with the exception of that eastern portion which was wrested from them by the Teutonic knights, and eventually added to the Polish crown, the province was governed by its native dynasty down to the commencement of the fifteenth century.

Through nearly the whole of this period it appears to have enjoyed considerable prosperity; but with the troubles caused by the Protestant changes in Germany, and the extinction of the native line, this prosperity came to an end. One after another the brothers of the Ducal house died childless; and the last of the race only lived long enough to see the troubles the thirty years' war brought on his unhappy country. The tragic circumstances which led to these misfortunes are admirably detailed by Wilhelm von Meinhold in the account he published of Sidonia von Bork, a lady of high rank and for some time the intended wife of one of the dukes, who, in revenge for being disappointed in this, was supposed to have caused the extinction of the whole ducal line by abominable witchcraft.

The physical features of the country, which perhaps more than anything else have modified and influenced the character of its architecture, are peculiar. Through its whole extent it is flat and uninteresting, broken only here and there with low rounded sand-hills, interspersed with large lakes. The coasts are deeply indented with large gulfs of havens, which form natural harbours; and the country is intersected by broad sluggish rivers, on which in the Middle Ages floated great stores of wealth and merchandise. The land consists of large sandy tracks, with clay below, and through its whole extent no building-stone of any sort is to be found. But granite boulders, sometimes of great size, are to be found everywhere deposited by the glaciers and floods, which at one time swept southwards over Europe; and in the country around Stargard they lie to this day thickly spread over the surface, in spite of the enormous quantity which has at one time or another been used for building purposes. The greater part of the ground was originally covered with great pine-forests, and although these have now, to a considerable extent, been cleared, and grain grown in their place, large tracts of country are still kept for their cultivation. Such being its physical peculiarities, it is evident that circumstances were generally unfavourable for building operations. In spite of them, however, towns of great importance, filled with churches and buildings of a size and character to challenge comparison with the finest works of Europe, were raised through Pomerania; and although the materials used were of the simplest, and not unfrequently of the coarsest, description, you will see that the results were frequently most pleasing and stable.

The granite was employed for the bases of the buildings, for the town walls, and in some rare instances for the superstructures; but the material almost invariably used for general building purposes was brick. Often of the simplest description and rudest work, sometimes modelled with a delicacy that might rival the finest terra-cottas of Italy, or carved with the sharpness and boldness of freestone, this brickwork had always an effectiveness and straightforwardness of purpose that leaves little room to regret the absence of the nobler material. When stone was used, which was but rarely the case, it had to be shipped from Sweden, an operation early found too expensive to be often resorted to. The skill with which ornamental features were moulded in clay caused less desire for carved stone than might otherwise have been felt; and in later examples such features as capitals and bases, which in the earlier buildings were worked in stone, were, with the rest of the structure, made in brick. The wood with which the country abounded was but little used in the construction of the buildings, and instead of the fine open-timber roofs of our own country, we find the churches are almost invariably vaulted in brick; while the love for blank tracery and gables, with the proficiency gradually acquired by their architects in the use of their peculiar material, caused them to prefer the lofty stepped brick fronts to the half-timber over-hanging stories that were so common in other well-timbered parts of Europe. The roofs of the churches are generally covered with copper, which, turned to a soft green with age, forms an agreeable relief to the red and purple tints of the walls.

I shall confine myself to the buildings I have myself visited in the towns of Stralsund, Stettin, Stargard, Bergen and Sagard in Rügen, Anclam, Pasewalk, Neubrandenburg, and Prenzlau, all of which, with the exception of the last two, are contained in Pomerania itself. Of these, Stralsund is architecturally the most important. It contains six churches of considerable size, a town-hall of a remarkable character, some remains of its ancient gates and fortifications, and several houses of a rich and extensive description. . . . .

In attempting to give any account of the style in which the buildings are erected, there are some facts which have to be borne in mind. To a certain extent the style was not indigenous to the country, but was imported complete when the necessity for buildings was suddenly felt. At a time when important works were going on in other parts of Germany, the Wends of Pomerania were scarcely converted to Christianity, and sunk in barbarism. But the civilised States of Brandenburg and Mecklenburg leaning on their borders, and the influence and warning conveyed by the progress of the Teutonic knights, caused a great change in the country; and although we are not able to trace it step by step, we find suddenly in the middle of the thirteenth century evidences of prosperity and taste in the numerous buildings which began to spring up in all the towns. Whether artists were imported from the surrounding States, or whether native workmen gained their knowledge by travelling, they seem all at once to commence the erection of edifices, perfect in style, and complete in all the appliances of ornament and construction. The buildings, prior to this time, were so poor and unimportant, that they themselves could not have afforded the experience required for the erection of such works, as, for example, the Nicholai Kirche at Stralsund. Another noticeable point is that, as a rule, starting from the date I have named, the earlier buildings appear to be the most enriched, and after this was maintained for a century or so, they fell off from the florid character they first assumed to a baldness that even their enormous size and proportions can scarcely atone for.

With the material the builders had in use, two modes of decoration were open to them, of which they availed themselves, sometimes apart, and sometimes in combination. Moulded or carved bricks, and enamelled bricks for coloured decorations. The latter method was one much adopted in the Old and New Mark, and about Lübeck, but it was so rarely adopted in Pomerania as scarcely to modify in any degree the style of the buildings. The cast or moulded work was, however, the characteristic charm, and to a great extent the ultimate cause of the destruction of the style.

The workmen were not long in discovering the ease with which a great variety of design could be produced by different combinations of a few simple patterns, and we accordingly find the earliest and most general decorations employed to have been small cusped bars and circles, which singly or together were built on the face of the walls in the panels. In high-class work, such as some we have noticed at St. Mary's, Stargard, the workmanship was of a much better and more artistic class, and the variations in the different portions show that each was separately and carefully modelled and built in as an ingredient part of the structure. Generally, however, the work was of the more easily made sort, and, in consequence, the moulded shapes, although they often produce exceedingly satisfactory and ornamental finishing, were of such an unsubstantial and structurally useless character that they soon decayed and fell out, leaving only ugly sockets and gaps to the detriment of the building they were intended to adorn. The facility with which it was found they could be added to the work after its completion, seems frequently to have suggested the leaving of them out until some later period, which, in too many cases, never arrived; while, in the later work, it seemed to be rather the rule to omit the more ornamental work of the earlier time, and the unshapely panels and blank arches which former builders had prepared only for a means for holding decoration, were imitated for their own sake, and bare walls and untraceried window-heads are unfortunately too often the characteristic marks of the later phases of the style. The most common form in use was a bar forming one side of a trefoil or quarterfoil, three or four of which formed a complete pattern, and these were produced indefinitely in long panels, as round the towers and under the arcades, and sometimes over large wall spaces, gables, &c. Sometimes these bars were of great size and elaborate character, and must have been made with great care to fit together, as in the south door of St. Mary's, Neubrandenburg, where three cusped bricks or pieces of terra cotta, each 3 ft. 6 in. long, form a handsome rose-window within a plain brick circle. The ordinary plain mouldings employed in these buildings have a distinctive character of their own. They are, with few exceptions, worked in the same sized bricks as the rest of the building, and necessarily show a smallness of detail as compared with stone resulting from the size of the material employed. It is in its plain mouldings that this class of work shows to great advantage, for the nature of the manufacture requiring the repetition of the same design, a rich and pleasing effect is gained by the use of one or two good sections. These mouldings appear almost invariably to have been moulded bricks, but some at St. Nicholas's, Stralsund, which church has a very fine series, appear to have been cut after they were in position. Not a little of the ornamental work in some of the earlier buildings appears to have been carved, like stone, after it was in position, as, for example, the heads in the buttress decoration of St. Peter's, Stettin, and the corbels at St. Mary's, Stargard. Another very effective but simple mode of decoration found in thirteenth-century works was the breaking of the long rolls at the angles of the buttresses, &c., with a boldly projecting brick corbel, often emphasized by a hollow on either side, and carved into a grotesque head. This will be seen in the details of St. James's, Stettin, and St. Mary's, Stargard.

The traceries of the windows were in thirteenth and fourteenth century work of a most elaborate description; they appear to have been built up entirely of moulded bricks without any support of iron bars, other than those used in the glazing, although at times the mullions are of an enormous height. The windows of the later phases of the style display, however, all the baldness and want of design which characterise the rest of the work; for anything more ugly than the monstrous windows of St. Mary's, Stralsund, divided into six or eight lights by

* From a paper by Mr. J. Tavenor Perry, read at the Institute of Architects, as noticed in our last.

mullions passing straight up into the heads, could not easily be imagined.

Some of the best examples of decoration by enamelling the bricks are to be found in Stargard, a great part of the decorative terra-cotta being black-glazed clay. Where, as in this case, if they are used with red or dark bricks, the effect, no doubt, was always satisfactory; but when a number of bright colours, washed clean and brilliant by every shower of rain, are built together in a mass, it required the lapse of centuries, and the decay inherent thereto, to mellow and harmonise the whole. The great west door of St. James's, Stralsund, has the jamb-mouldings built up in large blocks of glazed terra-cotta; but in this case the colours were all deep browns and blacks, and could never have had the staring look of the little red and blue turret I described at Prenzlau.

The bricks of which all these buildings are formed are chiefly remarkable for their size. At Passewalk I measured some 11 in. by 5 in. by 3½ in., with a full ¾-in. mortar-joint; at St. James's, Stettin, they were the same size; whilst at Lübeck some which were being removed from an old wall during the restoration of the cathedral, I found measured as much as 11½ in. by 5¾ in. by 4 in. The colour is a brownish red, and the mortar joints white, so that although we say that all the buildings are red brick, they never have the staring red colour we have too often to associate with the new red-brick house in England.

Before concluding, there are one or two points which have been incidentally mentioned in the planning and arrangement of the churches to which I would particularly recur. One of the first things to strike one is the common arrangement of a large open porch or narthex across the west front of the churches. Whether there are one or two towers in the front, the internal arrangement is generally the same, and where there is a single tower, as at St. Mary's, Stralsund, transepts are thrown out beyond the tower to form this large hall. There are two types of towers common in the district,—one the gabled square tower with the spire over, so common in Germany, of which we see, perhaps, the best example at Limburg-on-the-Lahn; and the octagonal lantern with angle pinnacles, examples of which, indeed, are scattered throughout Europe, but which seems here to have been a type carried to considerable perfection. Where, as is often the case, the aisles were built of equal height, the roof over the whole church was in a single span, and the architects gained a space in the eastern gable for lavishing all their favourite display of panels and cuspings. Thus these gables come to form a most prominent feature in the principal buildings.

JOHN STUART MILL AND THE POWER OF FINE ART.

It is impossible to note the course of the current of the even popular literature of the day without lighting every now and then, as if by accident, on some thought or other in the way of fine art, which shows how impossible it is for the human mind to rest content without it in some one or more of its forms. No merely practical education, whether of a business kind or otherwise, can altogether annihilate the feeling for it. Sometimes it is found to influence, and powerfully influence, those who have been brought up, and even educated, with a dead wall in front of them—the dead wall of pure and simple *utilitarianism*. In the earliest ages of the world's history, and among peoples of the most diverse mental type and physical organisation, it will be found that art of some kind or other, however rude it may have been, was practised, and indeed went hand in hand with whatever objects of pure necessity and utility the most savage and rudest nations were possessed of. It seems, indeed,—this desire for "ornament,"—an ineradicateable instinct of the human mind, not to be got rid of even by ignorance itself, or by an advanced education of the most learned utilitarian rigidity. It comes simply to this, that the human mind is complex, and has in it not only the faculty of the *useful*, but the faculty of the ornamental, or the *beautiful*, or the "pretty," too; and education, to be of any real service, must recognise both of them. To neglect either, or to try in any way to stamp one of them out, must needs end in failure, however perfect and complete the culture of the one left may have been.

That this is true, and the fact is not a little interesting and instructive to the artistic community, is amply proved by the example, the wonderful example, of the late Mr. John Stuart Mill. His education,—and that was education, if ever there was such a thing,—began as soon as he could speak, and was all devised for him after the model of the strictest and most severe "utilitarianism,"—the "utility" of Jeremy Bentham. In all things Mill, the philosopher, would have nothing to say to any doctrine whatever, except to the principle of utility. It was a weakness in him, as his stern preceptors thought, which compelled him to look in any other direction, and away from this mere utility. *Poetry* was the beguiling and weakening influence which served to rend asunder, and almost at times to threaten to overthrow, this structure of pure utilism, which he had, at so much labour and cost, built up in his mind. It is to this one special artistic or *poetic* influence that we would call attention. It is one which must make the "autobiography" of Mr. Mill not a little interesting, and even consoling, to architects. The youthful philosopher, looking up from his many, many books, could not but be struck with, and *was* struck with, a "view," with a liking for natural scenery, and a love for pure *nature*. After his laborious book-reading, what a revelation! But this was not all. So intent had he been on his books, that he noticed not the very apartment in which he sat, and in which he daily lived and moved, and had his being. Fortunately for him, Bentham, his great teacher, lived during the half of each year at Ford Abbey, Somersetshire, and in the spacious and lofty rooms of that Abbey it was that the principle of utility, which had so ruled his mind hitherto, was made to give way—to the impression of sombre beauty and quiet dignity. In the magnificent apartments of this Abbey, so full of architecture and quiet beauty, he found, he tells us, a new sense and idea. These architectural rooms were to me, he says, "the sentiment of a freer and larger existence, and became to me a sort of poetic cultivation." A wonderful confession, truly, from one who was brought up in the principles of the most rigid utility, and was taught to consider all things from the standpoint of a solitary utilism. Looking at the room in which he worked and studied so hard, and away for a moment from his pile of *tomes*, he saw from his window the "grounds" in which the Abbey,—to which both he and we now owe so much,—stood. They were, he tells us, "at once riant and secluded, umbrageous, and full of the sound of falling waters." It was, then, such as these that turned the head of the youthful philosopher and untiring student of *books*. The sound of falling waters and the rustling of leaves, the sight of great trees from the open window of a lofty and noble room. Utility, bare and bald utility, was shattered and fairly riven asunder in his mind by the impression of serene beauty which first glanced before him in this Somersetshire Abbey. Never before, probably, did *architecture* make so great a conquest, or achieve so transcendent a victory. It must have been, surely, says an acute writer, some ancestral type in Mill's concrete being, when he could thus find his mind, all full of sheer utility, thus affected. We do not so much wonder at it, for it seems to us almost impossible for any sane human mind to be insensible to the impression made on it by a noble room. Indeed, the very contrast between the poverty, thinness, and smallness of the ordinary middle-class habitations, and the rooms in them, and those more enlarged and right noble mansions, cannot but strike every man. They point to a great and glorious future in human existence, when we may suppose it will be conscious of this, and will find a way to provide for the nobler want. The great singularity here is, that one so brought up and isolated, and educated in the principles of sheer utility should have been thus so powerfully affected by it. It says whole volumes for architecture, and for what it can do and has done, and will yet in the future do—a distant future, it may be.

And thus may we see how poetry, in its largest sense, and architecture with it, may come to influence a man almost in spite of himself, and in spite of the most powerful of influences in the shape of a defined and rigidly strict educational course—all tending the other way. The all-powerful influences of such men as Bentham, Ricardo, James Mill, and others, with the grimmest of the hard facts of the "dismal science," constantly at him, could not destroy or even nullify the faculty for the beautiful in the mind of this gentle-hearted man, for the ennobling and purifying influences of it, from the first and always, though perhaps unconsciously, influenced his mind. It is a right noble and impressive lesson, and should go far to encourage those who are perhaps too prone to despond at the present look of things in the world of art. Human nature is too powerfully and strongly constituted to give way even to the mighty influence of a stern necessity, in the form of the absolutely useful. It will have "something *more* than use." It needs, and will have, the pretty and the pleasing; a something to find a joy, and a simple delight in. It is for these that the artistic faculties, doubtless, have been conferred, and made to form a component part of the very being of man.

And, again, may we usefully note what would by many be thought a strange attraction for so utilitarian a man, and tutored as he was; and it is interesting as still further showing how easily his mind was receptive of art influences and picturesque ideas, though constantly warring with his bald utilitarianism. We refer to his delight in the romances of Sir Walter Scott. He tells us that until he was grown to manhood, he had read nothing of the poetic dreamings of the present century, and could see, it would seem, but little merit in it; but that with the metrical romances of Sir W. Scott, he was "intensely delighted," as he always was with animated narrative. This fact is not a little remarkable and significant of the power of art and architecture, even as word-painting, over a practically educated mind. All know how full these romances of Scott's are of descriptive power; of art, and architecture, and picturesque scenery, and a simple love of nature. These works of the great novelist have captivated all hearts, and they took even John Stuart Mill's heart fairly by storm, or rather, after his dry and hard utilitarian training, they opened upon him like visions of fairy land.

We cite these facts in the life of Mill because they go to show how much more there is in matters architectural than the mere facts, important as they are, of its birth, and bringing into existence. The "*motive*" of a building, and its final destination, and the history of it, and the *romance* that gradually, as time goes on, clusters round and about it, make of its solid stones and huge timbers, material poetry. Scott's feudal castles seem hardly realities, yet they were so!

We think we may thus learn from the example of this philosopher an artistic lesson of the highest kind. In a twofold way we see the power of art and beauty over the human mind. First, in its power of teaching all men, whether philosophers or not, and then in its power of triumphing over adverse influences and circumstances, and making havoc where the defences against it would seem to have been invulnerable. We may see also in this remarkable instance of the power of art that it takes no previous art-education for a man to become subjective to its power. Not only was John Stuart Mill "ignorant of art," as the phrase is, but he was expressly educated to resist its blandishments. A wall was built up before him, to keep out the sight of art, and almost nature, too; but his warm and gentle nature, and intuitive love of the beautiful in nature and art, and even architecture, mastered it, and he became an artist in a day. He found in fine art that which his mind needed, and which he could not but miss in the merely useful. *Feeling*, or *sentiment*, he was taught to regard as a deadly sin. To give way to these was to fall into error, or, at all events, to lose time; but his very nature rebelled against this cold teaching,—his clear eyesight could not be blinded. When nature, out in the open air and in the green fields, caught his eye, his inherent love of the country quite mastered him, and he could not but feel as a painter and an artist, his rigid rules of life gave way, and, like a child, he found simple pleasure in the arrangement and collecting of humble wild flowers. There are few events in this generation, looked at from an artistic point of view, which have told so strange and instructive a tale as this fact of the mind of a strictly brought up and educated "utilitarian" being so powerfully swayed by art and simple nature. What a lesson it is, and ought to be, to our hosts of educationalists and pedagogues, and to those who nowadays in such numbers are seeking in such sometimes artificial ways to elevate the masses of humanity. In higher quarters, even, efforts are to be made to move the Royal Academy to rouse itself, and to further highly educate the architects of the future generation. But few, very few, can hope to follow the wonderful example of Mr. Mill, or

can ever attain to his vast accumulations of knowledge, both old and new, from the dead past and from the living present. Still less can they hope to *use* it all without confusion, as he did, and to apply it to a good and useful purpose. But one thing that he did all can do, instinctively and through clear and untutored eyesight. They can look at the things about them and, it may be, see in not a few of them, however common they may seem, that beauty and harmony which exist in the whole of Nature's works,—in natural scenery, in "views," even in "grounds" sometimes, and in things cast away and despised,—in weeds and in the simplest wild flowers. In the very humblest of Nature's works J. S. Mill took simple delight, seeing in them all the evidences of that transcendent contrivance which is more strikingly obvious in her mightier efforts.

THE WATER-SUPPLY OF THE METROPOLIS.

In pursuance of the powers given in the Metropolis Water Act of 1871, the water companies of the metropolis are taking steps to provide a constant supply of water to consumers; and with that object they have issued notices calling upon owners and occupiers to provide the necessary appliances to secure against waste. As a consequence considerable opposition has been aroused in various quarters of London, and it is alleged that in enforcing the regulations as authorised by the Board of Trade great severity has been exercised, so that in many localities whole streets have been deprived of water. Dr. Meynott Tidy, the medical officer of health for the district of Islington, has just presented to the local authorities an elaborate report on the present position of affairs as between the public and the water companies, in the course of which he observes that the water companies having at length yielded to the popular clamour and granted the constant service, it is unnecessary to urge its desirability; and there can be no question that it will be an enormous gain in the case of the courts and crowded homes of the poor. But to the well-to-do classes, with the present daily supply (Sundays not excepted) a supply little short of constant, it is far from certain that the constant service is so great a boon or so desirable as some seem to regard it. However, this is not a matter for discussion now, because the popular cry has been yielded to. But now a complaint of a different character is made,—that the conditions required by the companies in granting the constant supply are unfair. Dr. Tidy, however, affirms that their most manifest fault is their indefinite character. It certainly could have been wished that the companies—who were better judges than anybody else,—would have decided on some special form of apparatus to recommend for the adoption of the public, rather than leave them to choose and shift for themselves, floundering about amongst the numerous patents of almost daily creation, which are in many cases absolutely worthless. Thus a new expense is incurred for further changes of fittings that might just as well have been advised in the first instance.

But the complaint now advanced is of a deeper character than this. The public no doubt imagined when, in the first instance, they loudly asked for a constant supply,—that "constant supply" meant unlimited waste. To one with even a mere chance knowledge of the important question of the water supply to London, a work, be it remembered, of gigantic magnitude, and what is more, a work of daily-increasing magnitude, it will be seen that this never could be permitted. And hence the water companies have drawn up a series of regulations in accordance with the provisions of the Metropolis Water Acts of 1852 and 1871, which regulations have, after due and very full inquiry, received the sanction of the Board of Trade. These regulations provide for the prevention of improper waste and contamination of the water, and also, as far as possible, an equal delivery to houses on different levels; having been in force now since the 10th of August last year, and a sum of 5*l.* being the penalty for their violation, it is advisable that the public should clearly understand their nature. The regulations provide that the water companies must be consulted previously to the water supply to new dwelling-houses being fixed; that no house may have more than one pipe of communication, but that every house must have its own pipe, except in the case of blocks of houses, the water-rate of which is paid by one owner; that screw-taps only shall be employed; that no water-pipe shall, if it can possibly be prevented, be laid through a drain, but, if impossible to avoid, that certain precautions shall be adopted to prevent contamination; that to prevent the action of frost the pipe shall be of a certain depth; that no pipe in connexion with the company shall be connected with a rain-water receptacle; that no waste-pipe shall hereafter be allowed, and that all *waste* pipes,—that is, pipes the ends of which are not visible, and the outlet of which may be into drains,—shall be converted into *warning* pipes, the ends of which are visible, and so easily examined; that, except under certain conditions, no underground cistern or wooden butt without a proper metallic lining shall be allowed; that where a stand-pipe is erected for the supply of a group of houses, or for other purposes, "a water waste-preventer" must be employed; that in the case of water-closets a service-box, so constructed as not to deliver more than two gallons at each flush to the pan, shall be erected, —this service-box being refilled from a store cistern; that under no circumstances shall any pipe communicating with the water-closet be in direct communication with the companies' pipes; that bath apparatus shall be constructed so as to prevent undue waste. It is provided, however, "that all existing fittings, if sound and efficient, which are not required to be removed or altered under these regulations, shall be deemed to be prescribed fittings under the Metropolis Water Act of 1871."

But the public must be prepared for further changes in rendering the constant supply more universal. Fittings for the present supply will not answer for the constant service. The companies may give notice to the public requiring an alteration of these fittings within two months; and if the order is not carried out, the companies can do the work themselves at the expense of the owner or consumer.

Such is a summary of the new regulations; and no words are nowadays spared in their condemnation. On this matter, further, the public have a right to be heard. The water-supply is a great public question, and directors of water companies should remember that they are the custodians of what is intended for the use of all, and which the public have entrusted to their care to deal with in the best possible way, and with the greatest possible consideration for the whole community. Immediately directors cease to remember they are accountable to a higher tribunal than a company of shareholders, they then mistake their position, and fall short in what society naturally demands of them. The water companies are the creation of the people, permitted by the people, and, in all they do, accountable to the people. For the benefit of the one and all; for the greatest possible good to the greatest possible number: these are the terms of the companies' trust-deed,—contract between company and people. And of course, if the company are unmindful of the trust, the public have a perfect right to complain. But not only must the company remember the terms of the contract, the people must remember them too. And if the water companies allowed a whole district to run short because they were not sufficiently careful to prevent waste by a few, or the supply of a whole parish to be contaminated by the carelessness of an individual, then the public would be justified in complaining that the provisions of the trust had been violated. It could not be expected that a constant service, which the public and press have demanded so vigorously, could be granted except under certain conditions. These conditions should be so drawn as not to be unnecessarily burdensome or troublesome to the public, while sufficient to guard the water both as to quality and quantity. That to the uninitiated and uneducated there are difficulties in the regulations there cannot be a doubt; but then Londoners required education in the use of the constant supply, and that this education is no hopeless or difficult task the success which has attended the constant service in other places abundantly testifies. All, at any rate, will agree to this, that some measure must be adopted to prevent the waste which would otherwise be inevitable, and from which, sooner or later, the public would be sad sufferers, and also the possibility of the contamination of the water, with all the horrors of disease in its train. The question in dispute is, are the regulations proposed unnecessarily stringent for the purpose of avoiding the dangers that may arise from these causes? In answering this question, both companies and people must remember that a very false view will be obtained if they regard it merely from a single standpoint,—that standpoint being their own likes and dislikes.

NEW ARMY PREPARED-FOOD FACTORY, MAYENCE.

An undertaking, novel in its features, says the *Cologne Gazette*, is being rapidly pushed towards completion at Mayence, and which is destined to effect a great change in the existing mode of furnishing subsistence to large armies in the field, facilitating at the same time rapid movements, and producing an entire change in the present manner of warfare. Our readers are aware that, during the Franco-German war, a portion of the German army was supplied with rations of what was called *Erbswurst* ("pease-sausage")—a very carefully prepared and nutritive article of food, on which a greater part of the troops almost wholly subsisted. The principle of supplying an army in this manner is to be largely extended, and every article of food for man and beast is, in future, to be served ready for immediate use or cooking. A factory for preparing this food, capable of supplying rations to an army of 50,000 men is in course of erection at the above fortress. The initiative to the undertaking was taken by General (now Field Marshal) von Manteuffel, and a lively interest is manifested in German military circles with regard to its practicability. If the results are satisfactory, an establishment of this kind is to be erected for every *corps d'armée*.

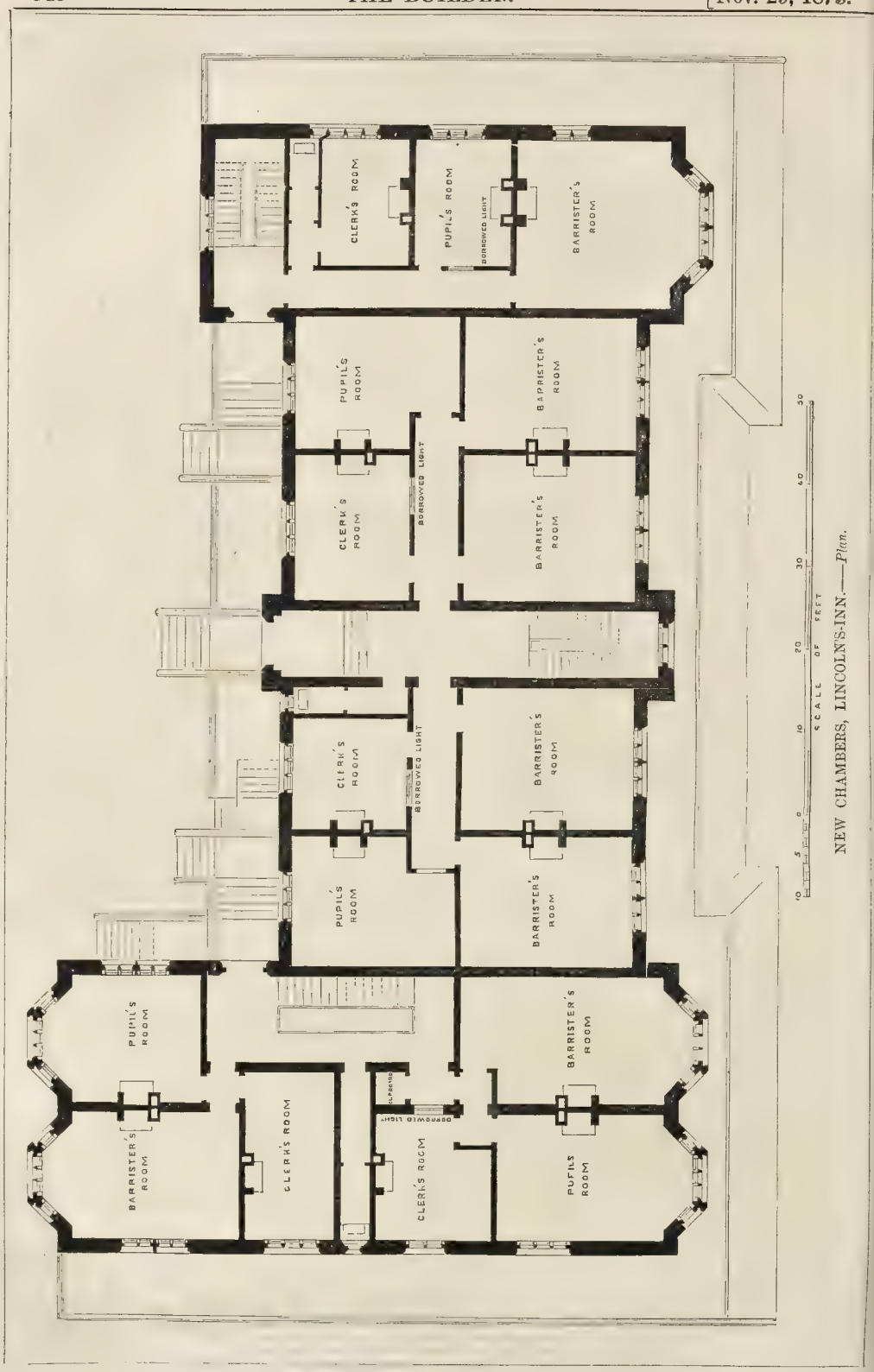
The works are so far advanced that the erection of the iron roof, with its covering of corrugated iron, as well as that of two stories, which are entirely of iron, of half of the principal building, has been nearly completed. The façade (over 1,000 ft. long) of the main building is broken by three pavilion-like jetties, which, jutting out at the back as centre and side-wings, are to serve as loading-halls for the sets of rails to be laid along the length of the building, as well as through the halls, by which means the manufactory will be brought into direct communication with the Ludwig Railway. In front of the façade of the main building the so-called water-tower is in course of erection, a high-pressure reservoir for supplying water to the whole of the factory, to contain about 90,000 gallons. For obtaining this supply, as well as the water for three steam-engines, of 200, 150, and 100 horse-power respectively, two wells have been sunk to the level of the bottom of the Rhine bed. The boiler-house and chimney are detached from the main building. The engines have been ordered from England. The works will contain steam flour-mills, bakehouses, slaughter-houses, and washing and pumping plant. The steam flour-mills will turn out 7,000 cwt. of flour daily, and there is sufficient accommodation in the bakehouse, with its kneading-machines and continuous ovens, for manufacturing this quantity of flour into bread. The slaughter-house is large enough to slaughter and deliver ready for manufacture into food 170 oxen daily, or at least 1,000 per week, to the prepared food department, which, independently of this, will manufacture also prepared vegetables. In addition to providing daily rations for an army of 50,000 men, the works will supply prepared forage rations for the horses of such an army.

Sixteen houses for the officials and about 600 workmen have been begun. The opening of the works is fixed for about the beginning of 1875.

NEW CHAMBERS, LINCOLN'S INN.

We have already referred to the new chambers now in course of erection near the Hall (p. 937, *ante*). The accompanying view and plan illustrate these, which are being built by Messrs. Jackson & Shaw, from the designs of Sir G. G. Scott, R.A. They are of red brick from East Malling, with Ancaster stone dressings, and will cost about 8,000*l.* Mr. Kabelly is the clerk of works.

The Government and Railway Accidents.—An important circular has been sent by the Railway Department of the Board of Trade to the chairmen of the various railway companies, warning them of the necessity of making better arrangements for the diminution of railway accidents, and threatening procedure in Parliament for legislative powers should this be found requisite.



NEW CHAMBERS, LINCOLN'S-INN.—*Plan.*



NEW CHAMBERS, LINCOLN'S-INN.—Sir G. G. Scott, R.A., Architect.

"LANGUISHING FOR EMPLOYMENT."

SIR,—When the "rising junior,"—slightly, or perhaps more than slightly, bald, and with a powdering of grey among his whiskers,—is introduced in a legal or social sketch, everybody confesses that the character has been outlined often enough to render him a recognised type in the world of fiction. There is, in the method of bringing him on the scene, the kind of mixture of a joke and a sentiment,—of something a little pathetic with something a little funny,—that is sure to hit the mark, and in good time to find sufficient applause from that handsome majority of us who like our pet sentences all the better when they have wellnigh qualified themselves for being classed among the materials for archæology. Middle-aged curates, when they appear in conventional story, are, it must be confessed, largely dependent upon their domestic circumstances. These dictate whether they are to belong to the worthy, wise, and somewhat pitiful and prosaic section,—or to the more interesting division, shaped by blighted hopes and the general waywardness of the world,—into characters that (kept in the background) give necessary contrasts in pictures dealing in the main with settlements, orange flowers, and all other requisites of a thoroughly satisfactory completion. It is strange that physicians and surgeons,—the members of the other universally recognised "profession,"—do not seem to have struck the popular imagination in anything like the same way. How far our old friends, Mr. Robert Sawyer and Mr. B. Allen, may have kindled a sympathy of soul with their hearty ways,—stimulated by memories of the potent punch that formed so material a portion of their intellectual sustenance; how far the will paragraphs of the *Illustrated London News* and expectations of 140,000*l.* personalty left by well-respected testators,—may have seemed to reflect a general well-to-do-ness, it is impossible to say. It may suffice that the Lydgate of "Middlemarch," on his first appearance,—young, intellectual, ardent, not ungraceful, with any possible fortunate future seemingly before him,—seems accepted now-a-days as a good typical example of a practitioner with his success yet unassured, in the profession that looks after us in all our most critical moments. No one would expect that architects,—young, middling, or old,—should have furnished as yet another stock character to the puppet-shows of comedy or domestic fiction. They are as members of a distinct profession the creations of modern wants; and have not been long joined together into any recognised body corporate. "Incorp. VII., Gul. IV." (=1837) appears beneath the lions,—whose meagreness one would hope was not meant to convey a hint, a warning, or a prophecy,—that gambol and loll out their tongues after the manner of better-fed animals on the seal of the Royal Institute of British Architects. Has too short a time elapsed? Or perhaps no types of character notable enough have been matured? The annals of any chronicler would, it may be, have presented only the general current of things,—to all appearance a little too prosperous—and dull—to be very interesting——? Or the search among individuals may not have rewarded, and so kept up the courage of the student of human nature, in anxious quest of "humours"?—"humours" being defined for the nonce (with some geniality of feeling) to express the peculiarities that in highly artificial societies are grafted on natures of the proper kind, and grow with considerable luxuriance when nurtured by habit and circumstance,—by all the positive and negative influences met with in following the very clearly-defined lines of life that we lay down nowadays.

Perhaps we have no reason to envy the old-settled professions in respect of the over-successful modelling of features and manners and tone of mind of practitioners—by their special occupation. Especially is this so when we notice, as I have suggested, that at times this modelling takes as well subordinate specialities from still other class subdivisions,—from, above all, the accidents of hope long deferred, or uniform and early successes. From these result the loss of confidence in himself on the part of the nonemployed Mr. Phunky; and, in contrast, the—surely a little over-strained—expression of force (the result of being well courted and well praised and employed from an early age) shown in the nephew of the powerful bishop. From this accident of hope deferred come as well those saddest of failures in the higher spheres of effort, where a life's struggle is given to gaining a stand in the tribune, only to find—now the opportunity has come—ashes in the mouth and commonplaces in the soul, and that almost inarticulate mumbling must be substituted for the voice ringing with delight and with power that might once have given fitting utterance to the mingled thought and feeling that then was ready to well forth in unstinted floods. However, as we commonly say, all things have their advantages and disadvantages, and to see which way the balance turns in each case makes the true wisdom of active and observant minds. Viewing life from standpoints showing enough of the panorama, such wise persons have commonly put forth as their conclusion,—that if a too-evenly spread prosperity, and the rather unsatisfactory and peculiar kind of torpidity of spirit that frequently accompanies it, have their drawbacks,—hunger, and the rather ungenial qualities that often go with it, excite in one still less enthusiasm. It is with the faint hope of averting from the architectural profession for the future this sort of reputation,—the reputation of breeding up those who will too long be deprived of their legitimate levies, and may perhaps consequently be regarded as endowed with too excellent teeth, and less and less power of doing anything in return for the tribute they get:—it is with the desire of protesting at once that I address you, and expect from your readers some agreement in condemnation of a passage in the opening address of the President of the Royal Institute of British Architects,—in which he speaks of "young men of the highest promise who are at this moment *actually languishing* for employment." (The italics are not mine, but the President's.) Some fellow-feeling and wish for their welfare may properly be felt; but I cannot help regarding the *expression* of such feelings as leading to so considerable a derogation from the dignity of the profession, and to so little else, as not to justify the innovation. Was it well advised to call such pointed attention to what is of course only one picturesque accident, among many, in a world that every one knows is full of competitors? A great portion of the pathos of a battle-scene consists in our recognising the presence of a kind of fate, that gives all victory to the very strongest, or ablest, or to the most skilful wielder of some special weapon. The dead and the conquered are the raw material out of which the glory of the victor is made up. But we need not make all the world our confidant,—tell it abroad that our professional brotherhood is the scene of similar war to the knife-point. It might fairly be left to the more or less acute observation of spectators to notice these things for themselves, if at all. Good heavens! can Sir Gilbert be aware that those who—(to translate his words) are "becoming dull in spirit, and [perhaps he meant] in mind, as the result of forced inaction," will, on careful retrospection in years to come, have little real cause to thank one or two leading practitioners for what they have done for them?—in spreading far and near the custom of withholding work from younger but worthy architects?

I am sure you will, with your usual courtesy, allow your columns to be used for the statement of the views on a professional matter of

A CONSTANT SUBSCRIBER.

DEFENCE OF SHAMS.

SIR,—Under this head, in the *Builder* for September 27th, I *intended* to show that the production of shams might not only be considered a legitimate work of the artist, but that their general recognition would be highly conducive to the advancement of the cause which real art, as understood by the elect, is said to promote. I did not expect that the views there roughly sketched, although making no claim to originality, would pass unchallenged; but I am surprised to find that on several points I have failed of that explicitness which I supposed to be the chief merit of my letter. Thus it has happened that Mr. Pecud could make no "application of the paragraph about the Vienna awards," or of the reference to the teaching in our art schools, in "the vague statement about 'years ago';" and he has supposed me to be deprecating the value of high art-culture when I was, in fact, advocating the means by which I believed the sphere of its usefulness might be extended, established, or made universal.

To "A Spectator" I would explain that I did not use the word "sham" in order to "pique curiosity," but from a sincere wish to remove the reproach, censure, and ridicule which at present attach to the wearer, user, or possessor of all articles,—whether they be of personal attire, building materials, or domestic furniture and decorations,—which can be brought under the bane of that designation. The truth is, that shams are but the product resulting from the friendly alliance of the arts and sciences, and when the invidious distinction between "real" and "imitation" shall have become a matter of curious history, then the highest art of which we are capable will be equally at the command of all; for then manufacturers will not find it necessary, in deference to high-class patronage, to mark by a debased art the costly from the cheap; nor will the patron of the "sham" have to secure himself from ridicule by mean subterfuge. Then, indeed, the "imitation" will have become "real," and *the* real will in due course take its place with hand-made bricks, black letter printings, needle-work tapestry, and kindred subjects, within the glass cases of our museums.

And this brings me to the consideration of what should be the highest aims of the decorative artist, and will enable me to show the bearings of this subject of shams upon the teachings of our art institutions. The question is, whether should the designer be the slave of that awful potentate "high art," or prime minister to that halting and many-minded monster "public taste"? Whether should he speak a language intelligible to the million subjects of the latter, or chant pretentious platitudes acceptable only to the scattered units of the former? At one and the same time both he cannot do; and it is to the persistent repudiation of this simple, self-evident fact, by those who have from time to time been entrusted with the conduct of our national art schools, that I have repeatedly attributed much of the failure to advance the character of the art industries of the country. To enter upon a surgical operation without previous inquiry as to the subject's constitution; to treat the same disease alike in all patients without reference to individual physique, is the work of the reckless charlatan; and the first duty of an art instructor, whose sphere of operation was to embrace the majority of the nation, should have been to inform himself of the mental, moral, and social condition of those committed to his charge.

Colour is not for the blind, nor is music for the deaf; yet it were not less wise to paint for the one and sing for the other, than to expect just appreciation of conventional ornament when there is no knowledge of the nature whence it is derived, or acquaintance with the artist's sources of inspiration. To what end do they discourse who speak an unknown tongue? Be they ever so learned and eloquent, to the vulgar listener it is only incomprehensible jargon, and a little plain-speaking in the mother-tongue would be of more avail. If, then, you would read a lesson in art to the cottager from the walls of his dwelling, from the covering of his floor, or from his domestic furniture, you must decorate them with objects likely to arrest his attention, stimulate his fancy, or excite in his mind some emotion of pleasure. This has not been done, and should never have been attempted, by diapering them with severely conventional forms treated in shadowless monochrome. However admirable, artistic, and suggestive these highly decorative symbols may be to the student of art or to the initiated, they utterly fail to impress the ignorant with a sense of anything in the heavens above, or the earth beneath, or in the waters under the earth, and are for any purpose of use or ornament absolutely worthless. It was perhaps natural that men living in opulence should mistake the wants of the indigent masses. Seated in a sumptuously-furnished drawing-room, which opens upon a conservatory ablaze in the brilliant bloom of choicest plants, it is easy to discover that floral decoration is an excess in the carpet; and gazing in pride upon the costly examples of the painter's art which hang upon the walls, it is not less easy to discover that the work of the paperhanger is supererogant. Here, indeed, the floor and the walls *are*, as has so often been urged, only a background to superimposed and surrounding objects, which will gain in effect by its neutral subordination. But in the poor man's home, if the needed colour and ornament are not in the wall-paper and upon the carpet, they will nowhere be found; for gilt mirrors, bright hangings, and rich upholstery do not usually there abound to give interest or relief to a whitewashed wall. The flowers which you have denied him in his floor-covering and in his wall-paper have not sprung spontaneously in the

backyard. The deal table, which you have stripped of its brightly-painted oilcloth, be it ever so well scrubbed, is but a poor substitute for the rich inlay of your own; and the air of comfort and cheerfulness which these things gave to his room have since been wanting. Ruined castles and birds of Paradise; cathedral spires, moonstruck and benighted lovers; steeplechases and impossible landscapes, may all be highly reprehensible as mural decorations from your standpoint, but they were all in all of art and of nature to the tens of thousands amongst whom they obtained; and I, who have seen something of these things and noted their effect upon the uninformed mind, do not hesitate to say that the demand which brought them into existence was infinitely more human than the intelligence which swept them away.

It was not less of life and nature and colour that were needed, but representations of a higher type, expanding the horizon of too contracted views, and indicating the existence of a higher social, moral, and intellectual society within. The flowers which could nowhere else be known were well and wisely scattered upon the floor-covering, although their presence there did destroy the proper sense of evenness, and their mimic beauties were crushed under the ruthless foot; for it *is* upon the ground, and along our path, and under our feet, that Nature has most profusely strewn them; and the plants which living trail and climb in tangled profusion in obedience to the law of their growth, or the guiding hand of man, were *not* inaptly pictured upon our wall-papers. Even the mantel ornaments, crude representations as they mostly were, of quadrupedal nature, had a use in the cultivation of the infant mind and budding affections, which I dare to say may be wanting in the abortive samples of Classic art which have displaced them. I am no longer a child to be pleased with toys, but I remember enough of my childhood to understand their necessity, and I know that the wall-papers and the carpets and the mantel ornaments were of old the picture-books and the playground and the pets, where now are only blank walls and filthy gutters to amuse and to instruct. I do not know that the rising generations have shown a more precocious reverence for Nature's works since the promulgation of the edict against pictorial wall-papers and floral carpets; a more gentle and considerate treatment of the brute creation, since their earthen effigies have been banished from the domestic hearth. I do not know that in more advanced years they have shown a higher appreciation of the beauties of art, or a greater pride in their homes; and I have yet to discover that the higher attributes of social and moral life have been generally quickened into more healthy action by the purifying ordeal through which the domestic art has been put.

My own observations, I regret to say, incline me to believe otherwise. Nor am I surprised; for there is even in the minds of the most ignorant a sense of the "everlasting fitness of things," and it is not unreasonable to believe that carelessness as to personal attire,—leading to indifference of personal conduct and domestic duties,—may have been induced by the diminished attractiveness of "Home." Thus, then, "A Spectator's" second "difficulty" is in the way of being solved, and the relation of dress to art demonstrated.

That "dress does not make the man" is only partly true, because the wearer of good clothes does receive, and is mostly entitled to receive, marks of consideration, which encourage self-respect, and stimulate love of approbation,—qualities of mind which can only be fed by active well-doing. The sloven, on the other hand, be he worthy or disreputable in himself, is in his contact with the better clothed subject to suspicion not always unjust, and liable to insult which he dare not resent; and in his desire to escape humiliation, the chances are that he will descend to debasing associates, and in the end avenge himself upon society for imaginary wrongs by swelling that stream of ruffianism which is a curse in our country. This is, however, rather the moral than the æsthetic aspect of the question; and my letter has already so far exceeded reasonable limits, that I must defer for the present the further discussion of the subject. C. Henry Whitaker.

Architectural Union Company.—The sixteenth annual general meeting of this company will be held on December 3rd, at the House in Conduit-street.

MOTTOES ON MASONRY.

Sir,—I have made inquiries concerning the house in West End-lane, Hampstead, bearing the inscription, "Furth fortune and fill the fetters," and learn that it is in the occupation of Sir Charles Murray. Your correspondent is therefore correct in his conjecture.

In turning over the pages of Crabb Robinson's Diary I perceive incidental mention of three Continental inscriptions. In vol. i., p. 104, he writes: -

"On my way back to Pirna (from Prague), I was amused by the slyness of an inscription on a newly-built wall. It was in verse, and its import as follows: This house is in the hand of God. In the year 1793 was the wall raised; and if God will turn my heart to it, and my father-in-law will advance the needful, I will cover it with tiles."

And again, at p. 118, he writes of the Fichtelgebirge, or Fir Mountains, the birthplace of Jean Paul Richter:—Here are some very curious rocks, well known and celebrated by travellers in search of the picturesque. Houses of entertainment have been erected, and are adorned with arbours, which are furnished with inscriptions. On a lofty rock, under which there is a rich spring, there are two hexameters, which I thus translated:—

"Here, from the rock's deep recesses, the nymph of the fount pours her treasures;
Learn, O man, so to give, and so to conceal, too, the giver."

The third is shorter. It relates to the great author of "The Sorrows of Werther":—

"Göethe lived in a large and handsome house—that is, for Weimar. Before the door of his study was marked in mosaic, SALVE."

The Rev. Robert Collyer, writing from America, of Yorkshire, mentions a motto which occurs on a beam in an old house by Bolton Bridge, close to Rupert Field, which was once a bridge chapel:—

"Thou that wendest on this way,
One Ave Maria thou shalt say."

I trust these additional examples will interest your readers. W.

BREAD BAKING AND HOUSE HEATING.

The following novel idea has just been proposed in Edinburgh, viz.: — An arrangement of jacketed ovens, constructed of boiler plate-iron, so that the surrounding water would retain and distribute the surplus heat from the bread ovens by such heated water, circulating in pipes laid on as required to warm public or private buildings from the jacketed iron ovens. "Be ye warmed and filled," is indeed a comforting Scripture text, that may yet be practically brought home to Edinburgh, when the great amount of waste heat surrounding the ovens of the bakers is utilised, instead of being dissipated in drying the street pavements: no doubt a very good thing in wet weather as far as it goes; but why should not this waste heat be turned to better account when fuel is so dear? A plan of utilising such heat in the basement of larger buildings may be seen in our old castles, such as Craig Millar, near Edinburgh; but indeed it is difficult to satisfy two dogs with one bone.

SIMPLE AND ECONOMICAL MODE OF PROJECTING FIRE-GRATES INTO ROOMS.

Seeing that the cost and trouble attending the removal and replacing a chamber-grate is considerable, I have this winter adopted a very simple mode of projecting a grate fire-basket into the room, so as to obtain the desired warmth from one-third the quantity of fuel formerly consumed in the ordinary Kennard grate. With a good draught into the vent, I find that by thus projecting the open basket-grate so as to require a smaller fire, the cold chink-draughts into the room are lessened.

Nine-tenths of these Kennard grates having a good draught, carry away with the smoke much heat that must be replaced in the room by cold air rushing in.

My simple modification of the existing grate in many apartments might be adopted at little cost, even less than 5s. With a good going vent an ordinary fire-basket, with hooks riveted behind, so that it will hang like a trivet on the front bars of a grate, gives a rude idea of what may be done. With an ash-pan below the fire-basket, it forms at once a very cheap and suitable projecting grate for parlour or bedrooms, safe and cleanly. I do not see why we should continue with good-going vents, wasting the warmth and glowing charms of dear coal by burying it while burning in our chamber walls, seeing that a bright blazing fire, even in a fire-basket, is the grandest decoration that a room can have at this season. My economical project may be made the most of by placing a sheet of bright tin near the front of the grate-bars, behind the fire-basket, so as to reflect the cheerful glow of the projecting fire, still more into the room, while the gaping cavity in the disused grate is decently filled up by such a sheet of tin as can be burnished up every morning.

James Kerr.

"MADDENING DRINK."

Our last paragraph on this subject (on 25th ult.) has called forth the strong remonstrance of a correspondent, under the pseudonym of "Beer." He states that he has "had much experience as a brewer, being one of the largest in the north," and he "never knew an instance of adulteration;" declares that "there is nothing to justify the gross accusations made against the trade;" and thinks "it is a scandalous thing for any one to make them without having first taken sufficient measures to ascertain their truth or otherwise."

One would think "a brewer" ought to be glad to know that drink, in which he deals, and which is declared, by many judges—if not indeed by magistrates in general,—to be "the cause of nine-tenths of all the crimes that fill their prisons;" and is declared by the experienced superintendent of Colney Hatch,—the distinguished chief asylum of the demented and the mad,—to be the main cause which fills such houses as his; is not so on account of the legitimate alcoholic and intoxicant principle which it contains, but of toxicant or poisonous principles, which simulate the intoxicating effects of pure or unadulterated drink upon the brain, and produce those deleterious effects upon it which overturn and destroy its legitimate functions altogether, and convert men into devils, and drinking-houses into hells. Whether the brewer (or distiller) be to blame, or the publichouse keeper, is a secondary question altogether by comparison with the tremendous fact that nine-tenths of all the crime which fills the prisons and madhouses are due to drink. Let the brewer console himself with the idea that it is not the drink as it passes through *his* hands that is blameable (if such be the case);—and we blamed "preparers" of the drink; distinctly and purposely avoiding the attribution of any special blame to brewers, or distillers either, although there are different opinions on these points too.

We have not space to enter farther into a subject such as this in the *Builder*, but we cannot close these few remarks without calling "Beer's" attention to the following condensed extract from a recent issue of the *Freeman's Journal*, in order to show, not so much the probability that drink is adulterated as that at last the adulterants are beginning to be used "neat," without even the drink to moderate their toxicant effect!—

"For some time past the Dublin police have been much puzzled to account for the number of persons affected with temporary lunacy whom they have had of late to arrest in the streets, or for the numerous acts of absolute madness committed by persons who were said to be *only under the influence of drink*. Almost every night in the police-stations raging maniacs were to be found. Many became so dangerously affected that they had to be taken to hospitals in the most deplorable state. It was also observed that suicides were becoming more frequent, and that persons who had no means to procure drink were seldom sober. Active inquiries have been set on foot, and it has been ascertained that in several places in the city a terrible chemical combination is sold at a low price. This liquid compound has the effect of producing the most fearful and rapid brain excitement, and we understand that it has been introduced here from America. It has the effect of not only making those who drink it demented, but also of producing temporary paralysis of the limbs and frequently utter unconsciousness. It is high time for the authorities to look after this new and terrible traffic, already so disastrously attended with the most lamentable consequences."

We may add that lunacy is on the increase in London no less than in Dublin; and that notwithstanding what "Beer" says about the Excise rendering adulteration impossible, a retired brewer and Poor-law guardian at Liverpool, while speaking of the filling of the Poor-law lunatic asylums of Lancashire with mad drunkards, expressed his decided conviction that drink *was* adulterated in certain cases *by brewers*; and Messrs. Brett & Co., distillers, admit the existence of those besotting essential oils of which the superintendent of Colney Hatch speaks, in much drink as it is distilled, and before it reaches the notorious public-house adulterators or "drink doctors" at all.

SANITARY MATTERS.

The Sewage Question at Leeds.—For the past two years the corporation of Leeds has been experimenting on the sewage of the town on a rather large scale. Works have been erected at Knostrop, on the left bank of the River Aire, about a mile and a half below Leeds Bridge, at which the "A B C" Company have been carrying on operations. The corporation are erecting much larger works on the same principle a little nearer the town. In the meantime, the existing experimental works, calculated to deal on the A B C system with about one-sixth of the entire sewage of the town, have been placed at the disposal of other experimenters on the treatment of sewage. During the last month General Scott has been conducting a series of experiments, and the Sanitary Committee of the Town Council have been visiting the works for the purpose of witnessing some experiments made by Mr. Fulda, under a new process which he has patented. The sewage is mixed with lime, sulphate of soda, and several other ingredients not specified, and thoroughly churned up by an "agitator." The action of the chemicals on the sewage is said to be to produce rapid and complete precipitation of all solid, colouring, and noxious matters, so that by the time the water flows out none but a practised eye could detect any discolouration. Nor is there any perceptible smell or taste left beyond a faint suspicion of brackishness. These results, considering the fact that Mr. Fulda only commenced operations on the previous day, produced a favourable impression on those who witnessed the experiments. The great advantages of this process are stated to be its cheapness and the facilities which it affords for adoption on a small scale as well as the largest, the appliances required being of the simplest description. The inventor affirms that he can undertake to treat the town sewage of Leeds at 17s., and the sewage as treated containing dye-waters for 24s. per million gallons respectively. This is very much cheaper than either the A B C process, which is said to cost about 4*l.* per million gallons; or the system of General Scott, which costs even more. We understand that the patent is in work at Yeadon, Guiseley, and Idle, and at Bramley Union Workhouse.

Evesham: Disgraceful Sanitary Conditions.—At a recent meeting of the Rural Sanitary Authority of the Union, the medical officer of health, Mr. G. H. Fosbroke, handed in reports relative to the sanitary condition of two of the villages in the rural sanitary district. The reports revealed a deplorable state of things at Broadway and Childswickham. At the latter place there was no regular system of drainage, and what few drains there were, including one from the churchyard, emptied themselves into a brook running through the village. The privies were, with one or two exceptions, in a disgraceful state. The water-supply was shown to be very bad. In some cases it was derived from wells, but frequently from the stream running through the village, and often taken from it only a few yards below the point where various kinds of sewage enter, in addition to that brought down from the villages above. Typhoid fever and diarrhœa were very frequently in the village, and at the date of the medical officer's visit (November 12th, 1873), the report stated that one patient was just convalescent, and one just dead, from the former disease. Both cases occurred in the same house. The water was highly contaminated with sewage, and near the door of the cottage was a filthy midden, which was being cleansed. Most of the habitations were labourers' cottages, and were in a most draughty, dilapidated condition, several being propped up by poles, and altogether unfit for human habitation. It was ordered that steps should be at once taken, with a view to the immediate adoption of remedial measures. The salaries of the temporary inspectors of nuisances (Messrs. Wadams and Smith), were raised, the former to 15*l.* and the latter to 20*l.* per annum. The salary of the clerk (Mr. J. Wadams), for extra work in relation to the sanitary business of the Union, was raised 35*l.* per annum.

Outbreak of Fever at Thornbury.—The inhabitants of the little village of Thornbury, about five miles north of Bromyard, with a population of only about 245, have been thrown into painful excitement in consequence of the outbreak of an epidemic of scarlet fever. Already seven lives have been sacrificed, and many persons are at present lying ill with it. The Sanitary Authority for Bromyard (the district to which the village is attached) is endeavouring to stay the progress of the fever. Dr. Sandford, the medical officer of health, was summoned to the village to make a sanitary report, and, if possible, to ascertain the cause of the outbreak. From a rigid inquiry he had ascertained that the infection had been imported into a public school by one of the children coming from a distance, whose relations had been suffering from the fever. Dr. Sandford minutely inspected the premises and water of the school, together with the drainage. The well is only 12 ft. from the sewage tank, which was found to be full, and the well being situated below the level of the tank, if leakage took place gravitation would inevitably contaminate the water. Dr. Sandford examined the water, and found that it had recently become slightly tainted with sewage. He did not, however, in any way attribute the outbreak of fever to this cause. The school has been ordered to be closed until further orders. Wherever there has been a large accumulation of dirty linen, orders have been given for it to be burnt, the Sanitary Authority freely acquiescing in this precaution, and compensating the poor for any loss thereby sustained.

SCHOOL BOARD SCHOOLS.

London.—Mr. C. Reed, M.P., brought up the following report from the Works Committee, which was received, viz.:—

"10th November, 1873.

(*a*) OPENING OF PERMANENT SCHOOL.

1 and 2. The committee have to report that the boys' and girls' departments of the Monnow-road, Bermondsey, School will be ready for opening on the 24th instant.

(*b*) TENDERS.

3 The committee have invited tenders for the erection of a school to accommodate 571 children on the site in Vauxhall-street, Lambeth, the amounts of which are as follow:—

W. Higgs	£5,673 0 0
Hill & Sons	5,333 0 0
T. Ennor	5,350 0 0
J. High	5,350 0 0
J. Sewell & Son	5,359 0 0
Merritt & Ashby	5,320 0 0
J. Kirk	5,288 0 0
W. Cullum	5,255 0 0
L. H. & R. Roberts	5,218 0 0
B. E. Nightingale	5,187 0 0
J. Tyerman	5,185 0 0

The committee recommend the acceptance of the lowest tender, that of Mr. J. Tyerman, of 27, Cranmer-road, Brixton, S W., amounting to 5,185*l.*

4. On the 29th October last, the Board agreed to the purchase of the site in Gipsy-hill-road, Lower Norwood, suitable for a school for 720 children, to which the children from the present school in Chapel-road, Lower Norwood, the lease of which will expire at Christmas next, could be transferred. As it will be impossible to complete the erection of the new school before next Midsummer, the committee are of opinion that in order to prevent the children being dispersed, some temporary provision should be made for their accommodation in the meantime. They therefore recommend that a wood and iron building to accommodate 320 children be erected on a portion of the site; the school to be in three departments, which can be detached if necessary, or erected side by side in order to form a single block. Tenders have been obtained from Mr. J. Kirk, of Warren-lane Wharf, Woolwich, for the erection of such a school, the cost of which will be as follows:—

	£.
Boys' School and Class-room to accommodate 120 children	390
Girls' School and Class-room to accommodate 120 children	390
Infants' School to accommodate 80 children, including Gallery	205

The committee recommend that these tenders be accepted."

At the final meeting of the Board, on the recommendation of the works committee, it was resolved that the tender of Mr. J. D. Hobson, of 7, Duke-street, Adelphi, W.C., amounting to 7,980*l.*, for the erection of a school to provide accommodation for 1,075 children, on the site in Sharp-street, Kingsland-road, be accepted; that the tender of Mr. G. Stephenson, of Beaufort-street, Chelsea, S.W., amounting to 6,394*l.*, for the erection of a school to provide accommodation for 775 children, on the site in Albany-row, Lambeth, be accepted; that the tender of Mr. S. J. Jerrard, of Homesdale, Lewisham, S.E., amounting to 6,347*l.*, for the erection of a school to provide accommodation for 814 children, on the site in Burrage-road, Plumstead, be accepted; that the tender of Mr. J. D. Hobson, of 7, Duke-street, Adelphi, W.C., amounting to 5,589*l.*, for the erection of a school to provide accommodation for 798 children, on the site in Duke-street, Deptford, be accepted; that the amended tender of Mr. J. High, amounting to 8,775*l.*, for the erection of a school to provide accommodation for 776 children on the site in Tower-street, St. Giles's, be accepted.

Northampton.—The foundation-stones of the Vernon-terrace and Spring-lane Schools have been laid. It was found that the central parts of the town were amply provided for, and that the schools to be built by the Board were required in the extremities of the town, particularly in the east and west. To meet the deficiency, four schools will have to be built, but the Board determined to erect two first, the Educational Department approving that course of action, and also the two sites for their erection,—Vernon-terrace and Spring-lane. The plans selected for the schools were those of Messrs. Bland & Cossins, Birmingham, for the Vernon-terrace Schools, and those of Mr. Walker, London, for the Spring-lane Schools; the contractors being Mr. John Watkin, 3,417*l.*, for the former, and Mr. Redgrave, 4,238*l.*, for the latter. The style of both schools is Gothic in treatment. The Vernon-street Schools, according to the design, are built in red brick, with Bath stone dressings. The elevation towards Vernon-street is a gable, filled in with a five-light transomed window. The infant-school is 52 ft. by 24 ft., with class-room, 24 ft. by 19 ft.; and lavatory, 24 ft. by 14 ft. The girls' school is 48 ft. by 20 ft., with two class-rooms, one 20 ft. by 17 ft., and the other 20 ft. by 14 ft., and lavatory 20 ft. by 12 ft.; the boys' school is 48 ft. by 20 ft., also with two class-rooms, 20 ft. by 15 ft., and a lavatory 20 ft. by 12 ft. The girls' entrance is on the right, and the infants' entrance on the left, of the front in Vernon-street, and the boys' entrance at the side in Elizabeth-street. Each school has a separate playground. In the interior they are partially open to the roof, which is covered with match-boarding, stained and varnished. The whole of the walls are boarded 4 ft. high, the boarding being finished with an ornamental railing. There is a double-light transomed window on each side of the rooms. The exterior roofs are of red Broseley tiles, and are surmounted by a bell-turret and ventilating turrets. The site for the Spring-lane Schools is considerably larger than that for the Vernon-street Schools, the schools being also somewhat larger. They are built with red pressed bricks, with black brick strings, and Bath stone dressings. The infant-school is 60 ft. by 30 ft., with large class-room, cloak-room, lavatories, &c.; the boys' school is 60 ft. by 29 ft., with two large class-rooms; and the girls' school is of the same size, and also has a couple of large class-rooms. The infant-school forms the centre of the block, and the boys' and girls' schools the side wings. The building is so arranged that the whole of the schools are entered under covered porches. In the rear of the infants' school is a playground 100 ft. square. The boys' and girls' playground is to the front of the building, and is about 130 ft. by 60 ft. The front boundary wall comes up to Spring-lane, and is a dwarf enclosure wall, surmounted with ornamental iron railings. The whole of the site is enclosed by boundary walls, the total area being about 250 ft. by 150 ft. The playgrounds are asphalted. The schools in the interior are open to the roof, which is boarded, stained, and varnished, and the side next the slates covered with felting. Ample provision is made for ventilation. Should it be required there is space for the erection of a master's house.

The Board Schools, Powell's-place, Newport, Monmouthshire.—These buildings are planned in L form. The large school-room is 50 ft. 6 in. by 24 ft., and 20 ft. high, with a large and small gallery. A smaller school-room is 26 ft. by 16 ft., and 18 ft. high, for the smaller children: this room has one large gallery. An inclined way leads to playgrounds at a lower level, of which there are two, the one an open gravelled playground, having an area of about 450 square yards, the other a covered and paved playground of about 140 square yards, beneath the large school-room. Architecturally the buildings are of Domestic Gothic character, in red brickwork, with Bath stone dressings, blue brick plinths, and with slated roof. The interior walls of the schools are lined with Bodmer's patent bricks, and the ceilings are open timbered, stained and varnished, framed with light iron tie-rods and shoes, and the floors are of ploughed and tongued red deal boarding of very substantial construction. The warming and ventilation have been specially considered, the former being effected with radiating open fireplaces, lined with tiles, and further provided with hollow chambers, and ventilators through which a continuous supply of warm fresh air passes into the school-room. Provision is made for ventilation by means of air-flues carried up alongside each smoke-flue, and by a line of perforated zinc ventilators through the whole length of the ceilings into

the roof space, and thence into the open air by louvre openings at the roof apex. Care has been taken that as far as possible the whole of the galleries should be side lighted. The accommodation is for 216 children, thus distributed:—in the principal school-room, large gallery, 84 children; small ditto, 48; desks, &c., 24; small school-room, 60. The cost of the buildings has been about 1,500*l*. The architects are Messrs. Lawrence & Goodman. The builder, Mr. David Miles.

ART CRITICISM.

SIR,—Supplementing your able article of last week, will you allow me to say a word or two? There can be no doubt that the tone of a person's criticism is much affected by outward circumstances, such as state of health and nerves, manner and time of inspection, motive for obtruding it, &c. Merely to take delight in saying sharp and smart things at the earliest opportunity, is a sure evidence of weakness; to pronounce judgment, or to rush into print for the sake of it, or with unripe and biased views is to inflict injury, and we have far too many volunteers for this responsible office to pass them over quietly. We cannot ignore the fact that there is a certain power in illnatured ignorance, the only antidotes to which are vigorous denunciation, and an appeal to more mature minds who have the power to render it harmless. It does not do at all times to treat it with silent contempt, and to refrain from a just indignation from the fear of being thought over-sensitive. I would remind some recent critics in other pages that the first and best sign of true power is a large and lion-hearted magnanimity, and a thoughtful, tender regard for things beyond them. That the duties of a critic are not to be entered upon lightly at the hasty summons of any one, and that criticism is worse than useless when it is rashly written and flippantly worded. It is just that one product of the man that cannot be bought at so much a line or column; and yet the public are almost forced to swallow these doses,—accompanied as they are by better things. No soured or disappointed man seems too far gone to make a critic. Though all the good, genial sap should be out of him, he will yet do to bear the strain of this high duty. Surely there is something wrong here that demands our attention. The public,—good, easy folks,—are not always able to detect the counterfeit and recognise the true coin: hence arises the mischief done by "cheap and nasty" criticism,—and the reason for my troubling you with these remarks, the summary of which is to beware of false and foolish critics who enter upon the almost sacred duty with a jaunty superficiality that has some show and glitter of cleverness, but is really worthless, and beneath the notice of all sensible men. Such productions are in reality noisome weeds that threaten to choke the true grain, and should be rooted up periodically; for, if unchecked, they will surely do immeasurable injury. VERITAS VINCIT.

CHURCH BUILDING IN ENGLAND.

At the laying of the memorial stone of a tower for the church of St. Botolph, Knottingley, by Lord Houghton, Mr. Childers, M.P., spoke of the difficulty of ascertaining statistically the number of churches built and restored every year in England; but said that he had succeeded so far, and that he thought he had found in the rough how much had been done by the Church of England in church-building and in church-improving during the last few years, and he would give a rough estimate of the amount spent in these great works. During the present century he found that no less than 4,100 new churches had been built, and it was with pleasure he observed how very steady, and sometimes how wonderfully rapid, church building had been increasing. They would perhaps be surprised to hear that, at the beginning of the century, although the population was rapidly increasing, and the wealth of the country increasing in a similar ratio, the number of churches annually built and rebuilt in this country—not only new churches, but churches built in lieu of old ones which had fallen down or were no longer useful,—was only about three a year. Thirty years afterwards it was forty a year. Now it was about 120 a year. It struck him that that was a very significant and remarkable rate of progress. When he came to inquire what had been spent upon those churches, he could not get any information as to years long gone by; but he found that, at the present time, on an average a new church cost, all over the country, in all dioceses and in all parts, something under 5,000*l*. So that the people of England, he did not say Church people only, for that meeting was a good illustration of the fact that those who did not profess to be Church people joined heartily in such work—the people of England had subscribed something like 600,000*l*. a year for the building of new churches; and as far as he could estimate it from the information of societies, and from comparing their accounts, they spent 700,000*l*. or 800,000*l*. a year more on enlarging existing churches. If they added to those amounts the large sums spent in the restoration of cathedrals and the adornment of existing churches, they might take it in round numbers that there was something like two millions of money expended. That was a very satisfactory result. If it could be said that during the last ten years between 15 and 20 millions sterling had been spent on church fabrics, he thought the Church of England had a good right to say that she had, with great success, put forth exertions in that direction.

We think the *Builder* records of church-building and restoration throughout England, which are the most complete to be yet got, will show that more than 120 new churches a year are now built.

THE WEST HAM AND STRATFORD PARK.

THE inhabitants of West Ham, Stratford, and the neighbourhood, having procured subscriptions for more than half the amount necessary for the purchase of Ham Park, have succeeded in inducing the corporation to subscribe a substantial sum in aid of the purchese, which is to be contributed out of the Metage on Grain Fund, the corporation to have a share in the management of the park when fully completed for recreation purposes. The desirability of securing this park for the free use of the public is proved by the fact that it was shown before a committee of the House of Commons last year, that the East-end of London was peculiarly destitute of open spaces when compared with other parts of the metropolis, and it is felt that as buildings increase it will become more difficult to obtain these open spaces for the new population. It appears that the district in which this park is situated contains a larger population than some of the English counties, and that there are over 17,000 children in the neighbourhood.

THE GOVERNMENT AND ART.

At the opening of the City and Spitalfields School of Art, in the new schoolroom, Princess-street, Bishopsgate,

Mr. Henry Cole was led, by his strong convictions as to the fate of the Kensington Museum, if handed over to the management of the trustees of the British Museum, into a little warm abuse of the late Chancellor of the Exchequer, Mr. Lowe.

Mr. Goschen, after defending his colleague, said,—He himself did not belong to the elect in matters of art; he was not an art critic, but he had, in common with all in that room, the consciousness that art and science have ennobling influences, which even those who do not profess to understand art are able to recognise and experience in themselves. The cause of art could not be confined to the few; it was the cause of the public at large. All must remember the time when we as a nation were accused of being lamentably deficient in that taste, in that art, which was the characteristic of some of our foreign neighbours. We were famous for our manufactures and for the solidity and finish of our works, and he trusted it was not true that we were falling off in these respects. No doubt there was much to be learned by this country as regarded beauty of design, as regarded taste, and it was infinitely to the credit of those who, like Mr. Cole, had been working for twenty years in this direction that such marked progress had been made in the arts which came most nearly home to the country at large. There were people who asked what was the use of this; as if they wished for nothing more than pounds, shillings, and pence. There were results in pounds, shillings, and pence, no doubt; but there were higher results than these,—results which were fitting the people for a higher social life. Man had to live socially as well as materially, and it was important that the inner life should be beautified, ennobled, and improved, as well as that food simply should be supplied; and it was to those ennobling influences on the inner life that they must look for the success of that art education which those who were most anxious on behalf of education generally rejoiced to see in operation at the present day.

PROPOSED NEW APPROACH TO THE VICTORIA EMBANKMENT.

THE works committee of the Metropolitan Board of Works at their last meeting reported that they were proceeding on the resolution of the Board on the 11th of July last, referring it to them to consider as to the steps to be taken for carrying out the Charing-cross and Victoria Embankment Approach Act. In connexion with this reference the committee had had under consideration the question of the formation of the approach from Craven-street to the Embankment. The committee received from the engineer and superintending architect a report upon this subject, which they submitted for the information of the Board, together with a plan. The report contained three proposals for the formation of the proposed approach, viz.:—1. To lower the street so as to form one gradient from Craven-court to the junction of the proposed road through Northumberland House, at a cost of 4,800*l*. in addition to the cost of the extension to the Embankment roadway, 750*l*. 2. To lower the surface to maintain a level for nearly the entire length of the street as far as No. 26, at a cost of 250*l*. in addition to the 750*l*. above mentioned; and 3. To preserve the present level of the street up to No. 26, the estimated cost of this proposal being 70*l*. in addition to the 750*l*. already alluded to. The committee found that if the scheme No. 3 be adopted, a gradient of 1 in 25 can be obtained to the junction with the new street, and that no vaults would be destroyed. The total cost of the work, including the extension to the Embankment roadway, is estimated at 820*l*., and the amount of compensation included in the Parliamentary estimate. The committee, after duly considering the three schemes, recommended No. 3 for adoption, and the report was agreed to.

CONSTANTINOPLE.

THE handsome kiosk which is being constructed near Maslak as a suburban villa for the Sultan's nephew, Prince Abdul Hamid Effendi, younger brother of Prince Murad, is now nearly completed. The designs are by the Spanish architect Celestino de Ortega, and the total cost will be about £T. 45,000. The *Levant Herald* says a large brewery recently built on the Chichli road, at the further end of the suburb of Pancaldi, has been totally destroyed by fire, a portion of the outer walls only now remaining. The brewery, we are informed, though conducted by Germans, belonged to an Armenian, and had not been insured.

It is a matter of notoriety that a number of English skilled artificers and engineers have recently been dismissed with very scant ceremony from the Imperial Arsenal, where they have contributed largely for many years past to the improvement of Turkish armaments. English superintendents also, picked men from Woolwich of the highest training whose services were indispensable, have, on the expiration of their contracts, been treated in a similarly inconsiderate and unceremonious manner, and, so to speak, dismissed at a moment's notice.

THE FALL OF A CHIMNEY AT NORTHFLEET.

SIR,—I write to correct two mistakes of fact in the letter on this subject in last week's *Builder*. Your correspondent "B." speaks of the rate of progress of the chimney as being 6 ft. per working day, or 35 ft. per week. It was, in reality, under 15 ft. per week, or about 2 ft. 6 in. per working day. Mr. Parker misquotes my evidence as to the supposed "swagging" of the cap. It contained no reference to the freshness of the work, but related purely to a question of weight and counter-weight. Your report of the inquest, published October 25th, states both these matters correctly.

I can hardly agree with the opinion that brickwork, corbelled out with an oversail of less than ½ in. to a course, so as at last to overhang,

in the average, about 18 in., "is, to a great extent, dependent on the cementing material, and, without it, might fall away bodily." Such corbelling, we all know, is constantly used to carry very great weights,—for example, the oblique faces of octagonal lanterns, brought over from a square base,—and if the overhailing is sufficiently gradual, it is a rare thing to hear of any failure in it.

The advantage or disadvantage of cement bond-courses in brickwork is a subject which must interest every one connected with building. Its application extends far beyond the region of chimney construction, and I hope it may be taken up and thoroughly discussed.

JAMES CUBITT.

PROPOSED NEW INFIRMARY IN LAMBETH.

A PROPOSAL is before the Lambeth guardians to erect a new infirmary. Some of the members are in favour of converting the old workhouse in Prince's-road into an infirmary, now that the inmates have been transferred to the large new workhouse in Kennington-lane, which has cost upwards of 80,000*l.*; but Mr. Taylor, amongst others, is of opinion that it is more desirable to sell the old workhouse, the value of which is estimated at 25,000*l.*, and build an entirely new infirmary with the proceeds. With a view of carrying out this object, Mr. Taylor has had plans prepared of the proposed new building; and at the meeting of the guardians last week he brought forward his proposal, stating that if the old workhouse were altered for an infirmary, the cost would be between 6,000*l.* and 7,000*l.* His idea was to do away altogether with the old workhouse, and to let the site at an annual ground-rental of about 700*l.* or 800*l.* a year, which it was worth, or to sell it absolutely. In either case, ample funds will be provided to build a new infirmary, suitable to the requirements of the parish. He estimated the cost of the proposed new building, according to his plans, at 18,000*l.*, and the fixtures at 2,000*l.* He explained the general architectural features and shape of the building, which, he proposed, should be in blocks, so that each separate block might be appropriated to special diseases. His proposal was that the building should be erected on the freehold site next to the present workhouse. His calculation was that the average cost for the new infirmary would be about 30*l.* a bed, whereas the cost of the present workhouse was about 90*l.* a bed. Mr. Taylor, having given an outline of his proposal, suggested that the discussion of it should be adjourned, in order to enable members to consider the subject; and it was accordingly decided to take it into further consideration at the next meeting.

THE LOST TOWER OF SIXHILLS.

THE controversy about the Sixhills bells and tower, which has long disturbed the diocese of Lincoln, is, happily, on the point of being terminated. So says the *English Churchman*. Mr. Wilkinson achieved his purpose in demanding the reparation of the tower and the replacing of the bells. The terms of the arrangement effected are simply these:—A friend of Mr. Heneage, *stat nominis umbra*, is to guarantee the reconstruction of the tower, and the replacement of the three bells in the restored belfry. Mr. Wilkinson ceases to be vicar of Sixhills, and returns to the subscribers to the Restoration Fund the amount of their individual donation.

THE ARCHITECT IN FUTURE.

ON the occasion of opening Ditchingham parish church, after various additions and works, a luncheon was provided by the rector.

The architect, Mr. A. Frere, on being called upon, made some remarks upon Church Restoration, and reviewed the advances which have been progressing in this direction during the last thirty years, pointing out that, however conscientious those efforts have been, they will be far outstripped in future generations. Giving all credit for the energetic work of those who have done so much to revive public taste in this matter, he urged that the work done has been archæological, rather than architectural; that something more was demanded of the architect of to-day than merely modelling and copying the architecture of past times; that he must now seek to produce living architecture, harmonising with all adjacent works, but in reality growing out of the special requirements of each case presented to his notice; not striving after novelty for mere novelty's sake, but specially bearing in mind utility and fitness, he must evolve charms out of new combinations of well-known beautiful forms. He maintained that whilst those to whom is due the credit of having revived the art, were quite right in trying to make careful copies of old work; yet that, owing to the difference in the spirit of the workmen, the changes in the tools used, the introduction of machinery and new materials, it was and is really impossible to produce a true *fac-simile* of such work; that at the best we can only execute models of architecture, and can never, as we ought, in accordance with the spirit of the art in its best times, produce living architecture by these means. Pointing out that progress in any art to be good must be slow, and acknowledging the immense value of all the archæological research made during the last thirty years, he said it became evident that, unless the architects of some future generation were to rush rapidly forward, discarding all previous efforts in the art, or unless we progressed in our own time, they must be content again to make new models of the models we have lately prepared for them; but that as this deduction was unlikely to be true, we may believe that an important step has been already taken, and that the time has arrived when architects may hope to make the next step in advance.

A NEW GYMNASIUM AT DULWICH COLLEGE.

THE Governors of Dulwich College have recently decided to erect a new gymnasium and fives-court in connexion with the college, at an outlay of 3,500*l.*, and we understand that the plans have been prepared in anticipation of the immediate commencement of the building. This determination on the part of the governors has given rise to an opposition to the proposal on the part of the St. Luke's Vestry, who held a special meeting on the subject last week, when the proposal was condemned as illegal and unjust, on the ground that as the governors of the college offered the parishes on the north side of the Thames 10,000*l.* only, for their interest in the charity, they ought not to spend 3,500*l.* in the erection of a gymnasium for the benefit of South London. A resolution was passed protesting against the proposed expenditure for the erection of a gymnasium at the college out of the joint funds of the four parishes until the parishes north of the Thames had been provided with equal educational advantages to those possessed by the southern parishes. The clerk advised the vestry that if the resolution was disregarded, and the building be proceeded with, they should communicate with the Charity Commissioners and the Endowed School Commissioners.

THE TRADES MOVEMENT.

Sheffield.—A strike has occurred on the part of the masons employed by Messrs. Chambers & Son, the contractors for the Gas Company's new offices at Sheffield. The dispute arose in consequence of the employers desiring the men to work a longer time each day than the rules of the society permit. The whole of Messrs. Chambers's masons struck work, and the masons employed by two other firms came out. A meeting of the Master Builders' Association, however, was held, at which it was resolved that the masons should work from a quarter-past seven to five o'clock during the winter months; and the men consented to return to their places.

Birkenhead.—While the masons of Sheffield have been striking because they were required to work longer than a winter-day, a joiner at Birkenhead has been taking his employer to the Police-court because he insisted on restricting him to a winter-day's work. The magistrate said he had not made out his claim, and dismissed the case. He wanted to be paid for loitering about while it was too dark to work.

Barrow. — Upwards of 100 carpenters employed at the Barrow shipbuilding works have struck work. The alleged cause of their grievance is that a number of non-society men employed at the same works have accepted piecework at a less price than has hitherto been paid.

Grangemouth.—The carpenters and joiners in Messrs. Adamson & Co.'s shipbuilding yard, Grangemouth, have struck for an advance of wages from 6½d. to 7d. per hour, and a reduction of hours from 54 to 51 per week, with an increase in the rate of overtime.

London.—At the Marylebone County Court, a house-painter named Watts, summoned his employer, Mr. Weir, for 11s., being money alleged to be due as travelling expenses, &c. He had been sent to do a job at Abergavenny, in South Wales. The defendant having declined to bring his foreman to give evidence as to the agreement with plaintiff, because he only resisted the demand "upon principle," the judge gave a verdict for the plaintiff.

ACCIDENTS.

Fire at the Liverpool Exchange Buildings.—Much alarm has been created in Liverpool for the safety of the pile of buildings which form the Liverpool Exchange. A fire was discovered in the sample store-room of Messrs. Newgass, Rosenheim, & Co., cotton brokers, which is on the top floor of the central tower of the quadrangle, and faces towards Oldhall-street. The fire was very soon subdued, but it was not totally extinguished until the cotton had been brought on the flags and thoroughly drenched with water. The fire was confined to the room in which it originated, but being the top room of the building, the roof was to some extent burnt through, and the flames were spreading along one of the beams into the adjoining room, when their progress was arrested by the exertions of the firemen.

Fall of a Scaffold at Consett.—At Consett Iron Works the damper of a chimney connected with one of the puddling furnaces having become damaged, a scaffold was erected, and two men, a blacksmith and a bricklayer, proceeded up the chimney. They had not been long at the top, however, before one of the iron bars on which the scaffolding rested gave way, and both men were precipitated to the ground, a distance of 30 ft. Two labourers were working at the base of the chimney at the time, and one of them was struck on the head by one of the falling men. The blacksmith was taken to his own home, and the other three men were conveyed to Consett Infirmary, where their injuries were attended to.

MEMORIAL OF BISHOP WILBERFORCE.

A COMMITTEE meeting has been held in the rooms of the Society for the Propagation of the Gospel, in London, at which it has been finally decided that the memorial of the late prelate should consist of the maintenance of a body of clergy and the provision of a building for home missionary work in South London, diocese of Winchester. Among the many influential persons present were Mr. Gladstone, the Bishops of Winchester and Chichester, the Archdeacons of Buckingham and Surrey, Canons Gregory and Winter, and Lord Henry Scott. The duty of the clergymen and laymen connected with the institution would be to carry on home missionary work in South London, which the Bishop of Winchester, with the consent of the incumbents of the districts, might appoint.

THE DEFECTIVE SEWERS AT PENGE.

CONSIDERABLE damage was done to property in Penge in the course of last summer by floods caused by the defective construction of the sewers, and it appears that the injuries to their houses which several of the inhabitants allege they have sustained by the floods are likely to involve the ratepayers in considerable expense by way of compensation.

At the meeting of the Penge Local Board last week, two claims were made by Mr. Webb and Mr. Clifford for compensation in respect of the damage which they had received from the floods, and some discussion took place upon the subject, in the course of which it was moved that the claim made by Mr. Webb be paid; whereupon this was objected to on the ground that other claims would doubtless be received, and that if the claim in question was paid it would establish an inconvenient precedent. Both claims were ultimately referred to the finance committee.

An account, amounting to 300*l.*, was also received from Mr. Williams, surveyor, who had been employed to rectify the faults in the sewers, and in the course of a conversation which ensued on the subject the clerk stated it was the opinion of Mr. Williams that the sewer was quite inadequate to carry off the storm-water of Penge.

WINDOW IN SAXMUNDHAM CHURCH.

A PAINTED window has been put up in Saxmundham Church by Mrs. Long, of Hurts Hall, Saxmundham, in memory of her two sons, the design for which was given by the Marchioness of Waterford, and is highly studied. The subject is "The Ascension," and it extends through the three lights. The window is Perpendicular in style, and the traceries are filled with angels, and the emblems of the Passion. The work is executed by Messrs. O'Connor & Taylor, of Berners-street, and is a very creditable specimen of their work.

CONVENT OF SISTERS OF PROVIDENCE.

BARTRAMS, SOUTH HAMPSTEAD.

THE first portion of the proposed new buildings, viz., an orphanage to accommodate 200 children, with chapel, has been erected. The elevations are of handsome design, and are faced with Malm bricks and Ancaster stone bands; the traceried windows, copings, and other dressings are also of Ancaster stone.

The building, internally, is fire-proof, the floors being formed of Dennett's arches on wrought-iron girders, and it has been warmed by Messrs. J. L. Bacon & Co., of Oxford-street. The chapel has an open-timber roof. The architect is Mr. C. G. Wray. Messrs. Robbins & Co., of Clapton, have been the general contractors. The carving of the panels under the east window, the gift of the architect, has been executed by Messrs. Allen & Burge, of Holloway.

ARCHITECTS *v.* BUILDERS.

SIR,—May we ask an opinion in the following case:—

We tendered for some work, and were lowest. Almost as soon as our tender was accepted a strike occurred in the locality in which the work was to be done, and also a sudden rise in the price of bricks took place. Under these circumstances we declined the contract, and the architect refused to return the 5*l.* which we had paid for the quantities, because he said ours was not a *bond fide* tender.

It seems to us an important point in the usages of the trade, and think it should be decided. X. Y. Z.

*** We are not disposed to make any objection to the course pursued by the architect. We have no sympathy with builders who make tenders and then withdraw them.

DRYING-CHAMBERS: A QUERY.

SIR,—Two cylinders are made of boiler-plate, each 15 ft. long and 4 ft. 10 in. diameter inside, and containing 488 small tubes equally distant from each other. These tubes are 1¾ in. diameter; thickness of iron, ⅛ in. The use of these tubes is to admit of a current of air, which is pressed through by means of a fan for each cylinder of 6 ft. 11 in. diameter, 18 in. broad, having eight blades to each fan, and making 800 revolutions per minute. During the time the air is passing through these tubes, there is a continual pressure of steam surrounding these tubes for the purpose of heating the air while passing along the tubes, and it is then distributed over an area of 2,928 square feet of perforated tiles, for the purpose of drying a covering of wool, and again passing through another perforated flooring covered over with another coating of wool. The air by this time becomes very much moistened. What height and proportions of a chimney will be required to carry off the moist air, and have a sufficient power of draught to draw in a corresponding quantity of air equal to what the fans produce, it being understood that the fans are to be done away with, and the whole building is to be made air-tight, the mouth or one of the ends of the cylinders to be exposed to the external air? Some of your correspondents may be able to answer the above, or say if such an arrangement is in use, and where it may be visited. J. L.

RE "HOMERTON HOMES."

SIR,—If a full report of my reply to the Board of Works for this district had been given, I think you would not have had any reason for asserting that I have not been candid in this matter. I said that 145 houses in Brook-street, Victoria-street, and Albert-street, are under notice by the ground-landlord, and must either be substantially repaired by Christmas, or fall into his hands; that 75 other houses are under notice; that eight owners of property had been summoned to Worship-street for not removing the nuisances thereon; that summonses will be taken out against others; and that all these proceedings had been taken before the appearance of your article. Also that many of the houses have lately changed hands, so that fresh notices had to be served.

The only paragraph to which I took exception was the following:—"The places of accommodation were brimful of filth, and the seats, flooring, and fittings seething with rottenness and corruption." I said that so far from the places described being brimful of filth, that only 5 out of about 150 examined were in that state, and that in one only was the stoppage caused by structural defect, but arose from the dirty habits of the people. The words "the places" are certainly equivalent to "all the places," so that if the words "several of" had been introduced, I should not have challenged the facts, although I must say that the words "seething in corruption" are somewhat figurative.

As regards Brook-street, Victoria-street, and Albert-street, I inspected many of the houses, and came to the conclusion that it would be better to allow the notices of the ground landlord to run out, than to interfere, except by removing the worst nuisances, as it seemed best for the houses to fall into the ground-landlord's hands, and be pulled down or thoroughly repaired, than to remain the property of the present owners. Of course, if the works are not begun at Christmas, we shall take stringent action against the parties who shall then collect the rents. I am aware that the course I have taken is open to discussion; but the present condition of the property must not be laid on the inspectors or on the Board.

I will conclude by stating that no difference whatever is made between members of the Board and others as to the action taken; that there have been above 7,000 premises inspected during the present year; that the inspections of Homerton and adjacent places have not long been finished, and that they were made later than usual in consequence of the death of the chief inspector and the dismissal of two inspectors for neglect of duty in the middle of this year, by which the sanitary work has been much delayed.

JOHN W. TRIPE, M.D., Medical Officer of Health.

NEW OR OLD BUILDINGS

APPEAL TO THE JUDGES IN BANCO.

THE Lord Chief Justice Coleridge, and Justices Denman and Keating, sitting in Banco, at the Court of Common Pleas, have had before them an appeal, "Hobbs *v.* Dance," from a decision of the Tunbridge Wells Justices, and which is a somewhat novel one, even to surveyors' lawyers.

Mr Dance, the respondent, is a tradesman of High-street, Tunbridge, and at the rear of his house he had a small stable, which was a wooden structure carried up from the garden-wall. He pulled down the wood, and with some old materials and new he rebuilt the stable, which was different in size, and mainly upon a new site.

The appellant, Mr. Hobbs, is surveyor to the Tunbridge Local Board, and he summoned the respondent for having violated the "Local Government Act, and a bye-law made under it," for having erected a new building without having given notice to the Local Board.

Mr. Dance contended that it was not a new building, but a mere continuation and enlargement of the old one, and the Justices coinciding, dismissed the complaint.

The knotty question submitted to the Judges was whether the magistrates' view of old and new buildings was a correct one.

The Lord Chief Justice said it would be playing with one's understanding to say that they could doubt that this was a new building; and the Court reversed the decision of the magistrates, with costs against the respondent, Dance, and who will again have to appear before the justices on the old summons.

LEADEN CISTERNS.

WILL any of your readers kindly inform me whether it is more wholesome for a leaden cistern (supplying a house with water) to be painted inside or left untouched? E.

CAUTION TO NEGLIGENT WORKMEN.

IN the Brompton County Court, on Monday, before Mr. E. J. Meynell, the judge, a working man, named George Pickering, in the employ of Messrs. Hooper, of the Britannia Iron Works, was actioned for the sum of 5*l.* compensation for negligence in the performance of his work. It being a new mode to make workmen answerable for carelessness and bad workmanship, great interest was excited.

Mr. George Williams, foreman engineer, in the service of the Britannia Iron Works, said the defendant commenced to work as boilerman, in August last, and it was his duty to look after the cleaning of the boilers, and to make all joints secure, and see that the manhole plate was properly fastened. On the 8th of October last, about six o'clock in the evening, the packing blew out of one of the plates, the steam and water burst out, and the fires had to be drawn, in order to prevent the boilers from bursting. The cause of this mischief was fastening the plate on the wrong side. He saw the defendant on the following morning, and asked him how he managed to blow the plates off, and he said he did not consider it was his duty to fix the plates. The duties of a boilerman were explained to the defendant when he entered the employ of the Britannia Works, but not by witness, or in his presence.

In answer to the Judge, the foreman said the defendant had an assistant, and need not have put the doors on himself; but he ought to have seen they were properly fastened.

Mr. Folkard, counsel for the plaintiffs, contended that employers were not expected to acquaint working men with their duties: it was their duty to understand their several trades, but here the defendant was told what he would have to do. His clients desired to make an example of a man through whose negligence a great loss of life might have occurred, as well as ruin to the works. It was not the loss incurred by stopping the steam his clients so much cared for, as the wish to show their workmen that they could be made to pay in purse through a county court, and were liable for all damage incurred by negligence or bad workmanship.

The defendant, in answer to the case, candidly admitted having fixed the plate in question the wrong side, but explained that it was entirely owing to a mistake on his part that the work was not properly done. The other five doors were marked with crosses, but there were no marks on the door in question to guide any one in putting it together. Previously to the night in question, the hammerman whose duty it was to assist him had always fixed the plate on the boiler that blew off, and he (the defendant) put the door on to the best of his knowledge.

He called John Shaw, another boilerman at the Britannia Ironworks, who confirmed the defendant's version of the matter.

The Judge said he did not think there had been any great amount of blame, negligence displayed by the defendant in fixing the plates, and he should give judgment in his favour. He trusted, however, this case would be a caution to the defendant and other workmen to be very careful with such dangerous engines as boilers, and it was a mercy a loss of life had not occurred. If at any future time negligence on the part of workmen came before him most assuredly they would have to pay the damages, as well as for compensation.

CHURCH-BUILDING NEWS.

Longney.—The ancient church of Longney, according to the *Gloucester Chronicle*, has been re-opened, after restoration. Owing to years of neglect, the fabric had become so dilapidated as to be dangerous, while many of its most interesting features had been buried under stucco and whitewash, arches had been walled up, a gallery had been erected against the west window of the nave, and the seats were of common deal. Mr. F. S. Waller, the cathedral architect, surveyed the building, and advised as to the best method of repairing it and preventing its further decay. The estimated outlay was about 1,100*l.*; the contract was taken for about that sum by Messrs. Wingate, of Gloucester. The chancels have been rebuilt, the heavy Forest stone which covered the roofs has been removed, and tiles substituted; whitewash has disappeared from the interior, stucco and plaster from the exterior; open benches of pine have been substituted for deal boxes; the oak timbers of the roof have been re-opened, and in the chancel cleaned and varnished, and the interstices plastered; the chancel-arch has been rebuilt, the timbers of the nave have been relieved of lath and plaster, and in a week or two the woodwork will be varnished and the spaces between cleansed. The churchyard, we may say, contains a few quaint epitaphs. Among the latter is the epitaph of the village blacksmith, inscribed less than forty years ago, and which is thus rendered,—

> "My Sledge and Hammer lies declined,
> My Bellows, too, has lost its wind;
> My Forge's extinct: My Fire's decayed,
> And in the Dust my Vice is laid.
> My Coals are spent, my Iron is gone,
> My Nails are drove, my work is done."

Lines to this effect, but with variations, are to be found in many of our churchyards. On a tombstone in Chipping Sodbury is this addition, —

> "His body's here, clutched in the dust.
> 'Tis hoped his soul is with the just."

And at Houghton churchyard the last two lines of the inscription read,—

> "My fire-dried corpse here lies at rest;
> My soul, smoke-like, soars to be blest."

In the course of the restoration two curious discoveries were made. Embedded in the walls was a sculptured stone, with two hands clasping an open book; and under the chancel-floor, at the south-east angle, was found a small leaden box, with an ivory top of interesting workmanship, and containing about 150 coins, with one exception (a golden noble) all of silver, and of the reigns of the first, second, and third Edward, and of Richard II.

Meerbrook.—St. Matthew's Church, Meerbrook, near Leek, the nave of which has recently been rebuilt, has been opened. The chancel was erected about five years ago at the sole expense of Miss Condliffe. The church will accommodate about 250. The new nave is in harmony with the Condliffe memorial chancel and tower. The style of the church altogether is of Early Fourteenth Century period, with tracery windows. The walls are thick, and have been built with local materials. The roof of the new nave shows all the timbers, and is covered with Staffordshire red tiles. There is a south porch, with double doors, and a heating apparatus. Much remains to be done. Mr. Paul Bailey, Wetley Rocks, has executed the masonry, Messrs. Nixon doing the carpentering, and Mr. Phillips the glazing. Mr. Edward Ash, of Meerbrook, has supplied a pulpit and a font. Mr. R. Norman Shaw, of London, designed the edifice. The cost of the nave has been about 1,100*l.*

Winkleigh (Devon).—The church of All Saints, Winkleigh, has been reopened for divine service. The works of restoration have been very considerable, and embraced the rebuilding of the south wall, porch, and vestry, the whole of the upper part and battlements of the Loosedon aisle, a considerable portion of the tower, thorough repairs of all stone-masonry, new tracery-work to several windows, new copings and gable crosses. All portions of ancient work have been preserved where possible, and it has not been attempted to make them assume the appearance of a new work, but what was mutilated or decayed has been repaired with new stone corresponding to that of the original work. Instead of slates, the roofs have been covered with warm-coloured tiles from Staffordshire, and crestings of Hamhill stone surmount the ridges of the nave and porch. The whole of the lead gutters, water-pipes, spouts, &c., are new. An

organ-chamber has been erected on the north side of the Lady Chapel, and provision made to keep out damp. The works to the tower have been extensive, embracing the rebuilding of the upper part, new buttresses, parapets, pinnacles, parapet copings, extensive repairs to the old windows and quoins, a new western doorway, entire new floors, beams, and lead covering. The pinnacles are of Hamhill stone, crocketed and surmounted by gilded vanes of copper, made by Mr. Moses Luxton, of Winkleigh. A lightning conductor, by Mr. Letheren, of Cheltenham, has also been fixed. The new western doorway has moulded jambs and arch, with carved pateræ in the mouldings, and label of Middlecot stone. There are two new decorated windows on the south side, one of which has been filled with stained glass by Mr. W. H. Dixon, of London, depicting the Raising of Lazarus. The other windows are filled with leaded glazing, supplied by Mr. Pepper, of London. A new stained-glass window has been erected to the memory of the late vicar, the Rev. J. Fisher Turner, by members of his family. The glass is by Clayton & Bell, and depicts the Crucifixion, with SS. Mary and John on either hand. The lower part of the window has angels in square panels. A son of the late vicar has promised a liberal donation towards the reredos of marble and alabaster, it being understood that the granite reredos, erected some years since, should then be placed in some other part of the church. A new altar, of oak and inlaid ebony, has been given by the Rev. W. T. A. Radford, of Down St. Mary. Mr. Pinckhard, who is paymaster of the costs, has been represented on the works by his friend, the Rev. W. T. A. Radford, with whom the architect, Mr. John F. Gould, of Barnstaple, has been associated in the carrying out of the work. The whole of the carpenters' and joiners' work, including the organ-case, were contracted for by Mr. John Dendle, of Barnstaple. All masons' and general works have been carried out by men employed by Mr. George Vickery, the clerk of the works. The contractors for other works were:—Mr. W. Letheren (Cheltenham), Mr. Young, and Mr. Harper (both of Barnstaple), iron and metal work; Mr. J. Thorne (Crediton), the painting and decorations; Mr. John Davey (Barnstaple), plastering; Mr. John Bryant, the marble and alabaster work. The whole of the carving and sculpture, both in stone and wood, has been carried out by Mr. Hems, of Exeter, who, at the architect's request, visited all the churches in the northern part of the county, where ancient remains were to be found, and took impressions of them, in order that the new work might display as much as possible the peculiar feeling and effect which pervaded the old local examples. Irrespective of special gifts, viz., clock, pulpit, and organ, the cost of the works, amounting to between 6,000*l.* and 7,000*l.*, has, with the exception of about 150*l.* raised in the parish, been defrayed by Mr. George Henry Pinckard, of Combe Court, Godalming, Surrey.

DISSENTING CHURCH-BUILDING NEWS.

Reading.—The new Wesleyan chapel just erected in the Queen's-road has been opened for divine worship. The chapel has been built at a cost of 7,500*l.* The body of the building is 80 ft. in length by 50 ft. in width, and is divided into nave, 26 ft. wide, and lean-to aisles, with arcades and clearstory. There is a chancel, 21 ft. long and 26 ft. wide, with organ-chamber adjoining; the seats for the choir are arranged upon either side of the chancel. At the back of the communion-table is a reredos composed of stone and terra-cotta, inlaid with Maw's majolica tiles, and the panels are filled with illuminations, consisting of the Creed, the Lord's Prayer, and the Ten Commandments. The centre panel over the table is ornamented, and shows an emblematical device, consisting of the intersecting triangles inclosed in a circle. Beneath this is inscribed the appropriate text "For as often as ye eat this bread and drink this cup ye do show the Lord's death till He come." Galleries extend along each side and at the end of the chapel, and these, with the benches, have been executed in pitch pine. The chancel and entrances have tesselated pavements manufactured by Mr. Godwin, of Lugwardine. Adjoining the chapel is a schoolroom, 57 ft. long by 33 ft. wide, with five classrooms attached. The minister's vestry adjoins the chancel. The chapel and schoolroom are heated by Haden's hot-air apparatus, and provision is made for ventilation. At the corner of the chapel is a tower, from which rises a spire, the height from the ground to the top of the weather-cock being 130 ft. The style is Decorated. The buildings were designed by an amateur, the Rev. J. P. Johnson, of Wood-green, London, and have been carried out under the direction of Mr. Joseph Morris, architect, Reading. The contract for the whole of the work was undertaken by Mr. W. H. Woodroffe, of Reading. Mr. Barnicoat undertook the mason's work, and the font, which is wrought in Caen stone, is his gift to the building. The illuminations upon the reredos have been painted by the Rev. J. P. Johnson as his gift, and the rest of the painting and decoration has been done by Messrs. Freeman & Son. The gas fittings are by Messrs. Hart. The chapel will comfortably seat 900 persons.

Brearley.—The foundation-stone of a new Baptist chapel has been laid by Mr. John Hodgson, of Sunderland House. The new building has been designed by Messrs. Horsfall, Wardle, & Patchett, of Halifax. It is to be in the Romanesque style of architecture, freely treated. The floor of the chapel will provide sitting accommodation for 300 persons; in addition to which sittings will be made for 200 more in a vestibule gallery over the entrance. There are to be three schools, one for boys and one for girls, besides a large schoolroom. There will also be a chapel-keeper's dwelling in the same block. The estimated cost is 3,000*l.*, towards which about a little over the half of that sum has been subscribed.

Tunstall.—The foundation stones of a new Wesleyan chapel and school have been laid here. The site of the new building is King-street, at the upper part of the town, where there is a large extent of new buildings. The edifice comprises a chapel to seat about 750 persons, a schoolroom for about 400 children, and five classrooms. The site upon which it is being erected has a frontage on its north side to King-street, and extends southwards to Cooper-street. The schoolroom will be under the chapel, and will be approached on the level from Cooper-street, whilst the chapel entrance will be from King-street, slightly elevated above it—an arrangement necessitated by the nature of the site. The design is of Italian character, and the materials to be used are red brick, with moulded bricks and bricks of other colours for relief, and stone dressings. The King-street front presents a gable as a central feature, projecting somewhat before the rest of the front, and contains the two doorways in the lower part, with small windows on either side of the same to light the vestibules; above the doorways, and occupying almost the whole of the upper part of the gable, is a recess spanned by a semicircular arch with carved keystone, and this recess is filled in with two two-light windows up to its springing line and the tympanum, with a circular window and spandrels of ornamental brickwork. The central gable is flanked by the two gallery staircases, which are circular on plan, and which terminate at a less height than the gable by circular roofs. The side elevations and elevation to Cooper-street are plain, but are relieved by bands and arches of blue brick. The internal arrangements of the chapel on the ground-floor consist of the front vestibule, 6 ft. 6 in. wide, approached through two doorways fitted with sliding doors, and from which, right and left, through glazed swing-doors, the gallery staircases (which also form inner vestibules leading to the ground-floor) are entered, and through other doors to the body of the chapel, which is to be entirely pewed, arranged with two aisles, and a portion of the side pews set apart as free. The rostrum is to be placed at the opposite end to the entrance, and will be inclosed by a communion-railing to correspond. The arrangement of the upper plan is for galleries to extend four sides of the building; the front gallery will be eight pews deep, and the side galleries three. The organ will be placed in the end gallery behind the rostrum, and on either side of it will be the children's seats, which will be approached from the schoolroom by means of a back staircase, and this staircase will provide additional means of ingress and egress for the congregation on special occasions. The form of ceiling will be one with coves finished by mouldings, and the cove will spring from foliated corbels and panelled pilasters. The interior woodwork will be slightly stained and varnished; that of the most prominent parts, such as gallery front, rostrum, &c., will be of pitch pine, and the remainder red deal. The front of the site to King-street will be inclosed by palisades and gates, and the approach from the same to the chapel will have flag pavement and retaining walls complete. The architect is Mr. George B. Ford, of Burslem, whose designs were selected from public competition; and the builder is Mr. Wm. Cooke, of Burslem. The contract for the building and fencing is 3,197*l.*

Books Received.

CHRISTMAS LEAVES.

The publishing tree shakes down coloured leaves at Christmas: they are beginning to fall. We have a special pile from Marcus Ward & Co. (Chandos-street), and a very pretty pile it makes. "Katty Lester," a book for girls, by Mrs. George Cupples, is enriched with chromographs of animal life by Mr. Harrison Weir, any two of which are worth the price of the book. A better present for *little* girls we could scarcely name. ——"Picture Stories from the Japanese" (Sinbad, Aladdin, and so on, treated in Japanese fashion), and Marcus Ward's "Fable Picture Book," containing pictures in colour of animals and their masters, with fables in verse from Æsop, are singularly good,—full of fun and cleverness. If all these illustrations are by Marcus Ward, all we have to say is that he should be president of the Children's Royal Academy, when they have one. He is, in reality, it appears, "Illuminator to the Queen," and, of course, therefore publishes a "Practical Treatise on the Art of Illuminating," including, with some good examples chromographed from old books,—

> "What treasures of art these pages hold,
> All ablaze with crimson and gold,"—

a number in outline which may be copied, and then painted in imitation of the models given. The instructions which accompany them seem sensible and clear.——Miss Braddon's *Belgravia Annual* includes stories by Walter Thornbury, C. J. Dunphie, W. Sawyer, G. A. Sala, Albany de Fonblanque, and many others, with a number of effective illustrations, and all for a shilling. One of the stories made us look behind all the way upstairs to bed. Moral: read the book in the morning.——Tom Hood's *Comic Annual*, now in its sixth year, holds its own. Real fun is a difficult thing to get, as the genial editor has doubtless found out. There are not many fountains of it just now in London; nevertheless, there is a fair sprinkle of it in Mr. Hood's last issue, besides some interesting stories.——Cassell's *Illustrated Almanac* for 1874 contains plenty of pictures, especially at the end, where specimens of other works are given.——The November number of *Food, Water, and Air* is devoted to tea and its adulterations. Every attempt to gibbet an adulterator has our best wishes.——"Tell Mamma" is the title of a new story, in one volume, by the author of "A Trap to Catch a Sunbeam," just now published by Messrs. Routledge; and a very good and interesting story it is,—one of the best yet told by its hard-working and conscientious author. Though specially addressed to young people, it will please many who may not lay claim to that agreeable title. The leading idea in the book is shown by the closing speech of the good mother of the story to her daughter:—"Teach your children what you have so well learnt yourself. Bid them, in whatever grieves or whatever gladdens them, to make their mother their confidant; make them believe that on earth no sympathy will be so great,—no love so enduring; and that advice, encouragement, and consolation can always be found if they will only '*Tell Mamma.*'"

Treatise on Practical Solid or Descriptive Geometry. By W. Timbrell Pierce, Architect. With Eighty-five Plates of original Drawings. London: Longmans, Green, & Co. 1873.

The author of this treatise is of opinion that a good text-book on the subject of Practical Solid Geometry is much wanted for English students; but, remembering the many works on Geometry published during the last few years, we should scarcely have thought so. The present treatise embraces orthographic projection and perspective, or radial projection; and Mr. Pierce proposes, in a future work, to show the application of the subject to the several arts of construction. Having been lecturer on geometrical drawing at King's College, London, and at Harrow School, the competency of the author to deal with his subject is certain.

A Mechanical Text-Book; or, Introduction to the Study of Mechanics and Engineering By William John Macquorn Rankine, C.E., LL.D., &c., and Edward Fisher Bamber, C.E. With numerous Engravings. London: Griffin & Co., Stationers' Hall-court.

This volume was in progress when Professor Rankine died. Mr. Bamber was assisting him with it, and it was at Mr. Rankine's own request that his assistant's name was given on the title-page. Nevertheless, the book is to be regarded as essentially one of Mr. Rankine's numerous and valuable productions. It is designed as an introduction to more abstruse works on engineering and mechanics, and in particular to those of the late Professor Rankine. Its study demands only a previous acquaintance with the ordinary rules of arithmetic, and with the elementary algebraical notation.

VARIORUM.

"The Buried Valley of the Mersey. By T. Mellard Reade, C.E., F.G.S., &c." This is a paper extracted from the proceedings of the Liverpool Geological Society. It is based on Mr. Reade's ideas as to the geological construction of the Mersey Valley, of which we have before had occasion to speak. The promoters of the railway tunnel which is intended to cross the Mersey, and the shafts for which have already been sunk, have always believed that they would have only a continuous mass of solid sandstone rock to penetrate. Mr. Reade, in this paper, contends that in all probability a deep gorge, filled up with clay or sand, will be met with, being the site of an ancient river or torrent formed in or before the times when England was covered with ice, and when its valleys were filled with enormous glaciers. The railway works in progress will, doubtless soon put this interesting question to the test.——A large sheet of letter-press and illustrated engravings showing certain inventions and improvements in steam-boilers, &c., patented by Mr. George Rydill, of London, mostly for the saving of fuel, has been published by Palmer, 335, Strand.

Miscellanea.

Memorial Hall to the late George Stephenson.—The hall proposed to be erected to the memory of the late eminent engineer, George Stephenson, at Chesterfield, will now, it is believed, be carried out. The hall, to be erected within view of the churchyard where the remains of George Stephenson rest, will be opposite to his residence, Tapton House, and close to the Midland Railway, which he perfected and completed, as well as to the Locksford Colliery, which was sunk and worked by him. A joint committee, consisting of members of the Corporation of Chesterfield, of the Chesterfield and Derbyshire Mining and Mechanical Engineers' Associations, of the Mechanics' Institute, and of the Technical Education Society, has been formed for arranging the preliminaries. The Corporation have offered as a site about 2,600 square yards of land in the town, now used as a bowling-green, provided that the legal estate in the land and buildings to be erected by the various societies be vested in the Corporation upon trust for a Board of management, consisting of representatives of the Corporation and the societies. The cost of the building, which is to consist of a large hall, library, and reading and class rooms, has been estimated at from 12,000*l.* to 14,000*l.*

The late Mr. John Gough Nichols, F.S.A.—We hear with much regret of the death of an old friend and well-esteemed antiquary and genealogist, Mr. John Gough Nichols, the grandson of the author of "Literary Anecdotes." He died at Holmwood, near Dorking, in his sixty-seventh year. Besides editing the *Gentleman's Magazine* for many years, he edited the *Collectanea Topographica*, and the *Topographer and Genealogist*, and in 1862 commenced the *Herald and Genealogist*, which is still in course of publication. In addition to numerous papers in the various antiquarian journals, he was the author of many separate works. He was one of the founders of the Camden Society; and several of the volumes illustrative of our national history issued by that society were edited by him. Mr. Nichols was the eldest member of the Literary Fund Committee, with one exception, having been elected to it in 1836.

Manchester Cathedral Restoration.—The new churchwardens, co-operating with the dean and chapter, have recommenced the restorations of Manchester Cathedral. The portion known as Brown's Chapel (to the right of the south entrance), which has been long in a dilapidated condition, is being taken down to the thickness of the facework, and will be rebuilt to harmonise with the new work adjoining. These works are being carried out by Messrs. Graham & Son, under the superintendence of the architect, Mr. William Dawes. There is very much to be done to the cathedral in the way of cleaning and restoring. The costly organ, presented by Mr. Houldsworth, looks out of place in its dirty surroundings. In the north wall of the Derby Chapel a new stained-glass window is about to be inserted, by Mrs. Bowers, to the memory of the late dean; and near the west end of the nave another new stained-glass window is to be placed.

Painting on Pottery.—We hope the offer of two premiums by the council of the Art-Union of London, one of 35*l.*, and one of 15*l.*, to be competed for by past or present students in Schools of Art in which painting on pottery is taught, will not be disregarded. The subject proposed is a design for the decoration of a circular tazza, of specified form and dimensions. The designs are to be on paper, in water colours or tempera, and are to be sent to the Society's house, on any day from the 1st to the 7th May next. Care must be taken that the designs are in such colours only as can be secured by the use of pigments, which are able to undergo the process of firing. The council have recently determined that the competing designs for the above, may be for execution either *under* the glaze or *over* it; but it should be stated in each case for which mode the design is intended.

Manchester Free Library. — The report for the twenty-first year shows, that during the year just closed, 609,462 volumes were issued for home reading, 149,692 volumes were used by 137,728 readers in the Branch Reading-rooms, 92,852 volumes, and 91,702 specifications of patents were issued in the Principal or Reference Library, to 54,172 and 984 readers respectively, being in the aggregate 943,708 issues to 703,300 readers, as compared to 906,311 issues to 641,327 readers reported last year. No record is attempted of the use of periodicals in the reading-rooms, but during the year probably 1,741,960 persons have so used them. This added to the number of borrowers and readers makes an aggregate of 2,501,564 persons who have availed themselves of the free libraries during the year just closed, being an increase of 236,896 on the preceding year.

House Decoration.—No. 5, Lower Berkeley-street, has been decorated by Messrs. Phillips. The drawing-room ceilings are diapered upon a pale azure blue, with ornamentation in the flat in gold; the margins are in pale canary and lilac; the walls are panelled in a silver grey, with cinnamon margins; and two pilasters on each side of the room in opaque white ground, are being painted by hand; the woodwork is amber-vellum, inlaid with black and gold. The dining-room ceiling is in pale vellum, with geometric treatment in gold; the cornice in strong primeras and gold; the walls, with a deep frieze under cornice in Indian red, inlaid with a floral ornamentation in gold, outlined on back; wall-space beneath in a pale apple green, and woodwork in Indian red, the moulding treated in silver grey.

Crystal Palace.—A *conversazione* will be held in the tropical department of the Crystal Palace; the new buildings of the School of Art, Science, and Literature; and in the Crystal Palace Aquarium, on Friday evening, December 5th. At half-past eight Mr. Thomas Hughes, M.P., will explain the principles and objects of the School of Art, Science, and Literature, in the library reading-room, supported by the Right Hon. Dr. Lyon Playfair, Mr. Norman Lockyer, and others. There will be music, under the direction of Sir Julius Benedict, in the private lecture-room, and in the studio of the School of Art, Science, and Literature.

New Mint Building Site.—A Bill under this title will be among those to be brought forward in Parliament, session 1874, for the "Acquisition of property [in Whitefriars] for the erection of a new Royal Mint, and to sell, lease, or otherwise dispose of the buildings now used as the Royal Mint."

Decoration of Belgrave Chapel, Leeds.—This chapel, which has been closed for several months, was reopened on Sunday last, after undergoing considerable improvement. The roof and walls of the interior have been decorated in colours in the Renaissance style, and the whole of the old sash-windows removed and replaced with stained-glass windows; the design being principally worked on various tints of white. The colouring of the roof and walls is of a neutral and subdued character. The decorations, together with the stained-glass window have been designed and executed by Powell, Brothers, of Leeds.

United Methodist Free Churches.—A new place of worship was opened last month in the Vauxhall Bridge-road, Westminster, for the use of the church and congregation formerly worshipping in Lewisham-street. The building, which is a plain structure, will accommodate 450 persons. There is also a large schoolroom, vestry, and other conveniences, with approaches from Vauxhall Bridge-road and from Willow-street. The cost of the building will be about 1,800*l.* Mr. Ranger is the architect, and Messrs. Richardson are the contractors.

The Chester Workhouse Plans.—These plans, prepared by Messrs. Perkins, of Leeds, have been altered by the Local Government Board architects in London, mostly in consequence of new regulations, some of them reducing previous dimensions. The alterations are said to be, on the whole, improvements, and are still within the amount advertised for,—namely, 30,000*l.* The building committee recommended their adoption, and the board of guardians have unanimously agreed to the committee's recommendation.

Tenders to Mr. Disraeli.—Tenders have been received for a monument in St. Michael's Churchyard, Hughenden, for the Right Hon. B. Disraeli, M.P. (including railings, value 80*l.*), Mr. Arthur Vernon, architect. They ran as follows:—

Broughton	£410 0 0
Reavell	306 0 0
Sansom	249 0 0

A large difference in a small matter.

Leicester. –The memorial-stone of a new Nonconformist church, now being erected in the suburb of Belgrave, has been laid. The church will seat 500 adults, and connected with it there are a school-room for 300 children, vestries, and class-rooms. The style is Early Gothic, and the cost will be about 3,500*l.* The architect is Mr. Tait, of Leicester; and the builder, Mr. Billington, of Belgrave.

A Removal.—Some of our readers may be interested in knowing that Messrs. Mayer & Co. have removed their Religious Art Collection to 37, Conduit-street, in consequence of their Grosvenor-street premises having been destroyed by fire.

The Hastings Aquarium Competition.—A certain number of the designs have been selected and referred to the county surveyor at Lewes, an independent authority, for his report.

Society of Engineers.—At the next meeting, Monday, the 1st of December, a paper will be read "On a New Method of Setting out Slopes of Earthwork," by Mr. Charles J. Light.

TENDERS

For the erection of a pair of houses at Wood-street, Walthamstow, for the Cooks' Company. Messrs. Gadsden, Ellis, & Co., architects. Quantities by Messrs. Curtis & Son:—

Reed	£2,099 0 0
Morter	1,983 0 0
Sharpington & Cole	1,963 0 0
Johnson & Co.	1,932 0 0
Taylor & Son	1,918 0 0
Upson	1,811 10 0
Warr	1,773 0 0
Hunt	1,756 0 0
Waterson & Co.	1,710 0 0
Sabey & Son	1,690 0 0
Robbins & Co. (accepted)	1,670 0 0
Turner (withdrawn)	1,485 0 0

For alterations to No. 74, Regent-street, and 7 and 9, Air-street, adjoining, for Mr. A. Ahlborn. Mr. E. Gregg, architect.

Ashby & Sons	£5,313 0 0

For a warehouse, in Rose-street, Newgate-street, for Mr. Casswell. Mr. A. Bridgman, architect. Quantities supplied by Messrs. Curtis & Son:—

Sharpington & Cole (accepted)	£3,053 0 0

The Builder.

VOL. XXXI.—No. 1609.

A Flight on Stairs.

TRYING archæologists, amateur or professed, considering the mansions and the castles which are the remains of bygone days, generally find no little interest, whether in regard to appearance or association, in the flights of stairs which have served for generations for transit from one level to another of the edifice. It may be a worn-out stone turret-staircase, each "tread" scooped hollow by countless footsteps, and which, in the case of a ruined building, emphasizes the contrast between past and present, reminding us of the occupants who have so often ascended and descended it in sterner and more turbulent days; or one of the wide, spacious oak staircases of a later date,—such as that down which the Roger Wildrakes of the Stuart period swaggered, whistling cavalier ditties, to which the long rapier scabbard hitting against every step in the descent extemporised an appropriate accompaniment.* Whether from association or architectural effect, however, there is a general interest in an old staircase, as we might conclude from the frequency with which we see such subjects selected for artists' drawings or for illustrated publications, as "Staircase in —— Hall," and the manner in which the garden-steps at Haddon are continually reproduced by photography or in water-colour.

The interest of the staircase, however, is not merely archæological or picturesque (in the ordinary sense of the term), for it is, if rightly used, the opportunity for varied treatment and effect, internally and externally, in domestic as well as in public architecture; it is the architect's opportunity for escape from the straight line and horizontal floor, and for introducing an element of variety and interest in the disposition of his building; and in Mediæval times this was fully perceived and acted upon in many examples which still exist, and probably in very many more of which no trace remains. What elements of the romantic and picturesque in building could be thus extracted from, or rather realised in, a staircase, is indicated in such works as the splendid German example, of which, by the aid of Mr. Brewer's admirable pencil, we were enabled to give a view in a recent number.† Here the crossing and re-crossing of the several flights and landings, the elaborate and rich decoration of the oak newels and balustrades, and the deep shadows between, give almost the interest which belongs to some romantic nook of natural scenery. This is an exceptional instance; but in buildings of this date we frequently come across bits of staircase equally happy and suggestive in feeling and treatment, though on a smaller or less complicated scale. Nor is the picturesque in such structures confined to the interior of the building. The staircase among the Mediæval architects was fully as often an external as an internal feature; if not an actual external flight of steps, open to the air (as not infrequently), it would be brought out in a turret or an oriel, and made to contribute, in a legitimate and purposelike manner, to the external outline and composition of the building. The stair turret, of course, is a feature in our towers and ecclesiastical buildings familiar to every one; but the same kind of treatment is found carried out much more boldly (in Continental examples particularly) in the case of domestic buildings, where it is just as applicable, where space has to be economised in the dwelling-rooms, as it is in the church or cathedral tower; though the domestic stair, being necessarily wider and more commodious, requires a different treatment from the tower stair,—rather that of an oriel or bay than a turret. This kind of piquancy of treatment goes naturally with the typical Mediæval house plan, in which the stair is nearly always kept somewhat apart, placed unsymmetrically on the plan, and occupying a nook or angle where it will be out of the way, and not encroach too much on the rooms. This retired position for the staircase renders it, one may observe, more easy to produce effect with it by any characteristic and unlooked-for treatment or design, which thus comes on the eye unexpectedly. The Italian theory in treating the staircase is, as even amateur readers need hardly be reminded, widely different from the Gothic method. Here the staircase is, in houses of any pretension to architectural effect or state, a central object,—one of the principal things one sees on entering, and is generally approached by, or surrounds, a centre court or *cortile* as spacious and imposing as circumstances will admit of. That this is the most stately arrangement of the staircase scarcely admits of a doubt: it demands, however, much greater sacrifice of space than the Gothic method, and in most cases is entirely without effect on, or relation to, the external design.

It is unfortunately, however, to the Italian method of stair-planning that the English building mind has mostly adhered and applied itself during the period since the decadence of Mediæval art: unfortunately, because the Italian plan is only suitable to the comparatively small number of large and spacious houses, and where a somewhat rich and costly material can be employed,—where there is scope for marble, or the finer kinds of building stone, in stairs, and columns, and balustrades. Its adaptation to ordinary dwelling-houses has led to frequent waste of room, in search of an effect of spaciousness which cannot be realised, and to a commonplace monotonous square arrangement of the domestic staircase, in cases where it would have been possible with the same or less expenditure, on the Gothic plan, to have produced a staircase picturesque and pleasing in arrangement and mode of access, without taking up nearly so much room. It is to this cheap imitation of the palatial Italian plan that we must set down much of that air of utter commonplace and vulgarity which characterises the stair arrangement of so many modern dwellings, where no attempt is made at any picturesque effect, and the stair is merely a thing to take one up to bed. For all dwelling-houses on a comparatively small scale (the average scale of respectable middle-class life), the Gothic plan, with the staircase secluded in a corner or a recess, is the one to follow; the stairs can then be brought to the outer wall; can be made a source of external expression by fenestration or in other ways; and internally can be treated with effect in their approach, in their lighting, and in their construction and decoration.

The qualities which gave to the staircase formerly so much of the interest which its older examples still have for us, are not to be found very largely exemplified in modern work,—a common and very serious defect is want of width; most modern staircases, in large and small houses alike, having the appearance of being made just wide enough and no more, even if they do not fall short of the "just enough." A comparatively spacious stair (and, of course, this must always be regarded in proportion to the size and scale of the house) gives at once an impression of dignity and spaciousness to the internal plan. The question of rake, the proportion of tread to rise, has an important effect in the same kind of manner; a steep stair always looks mean, besides being uncomfortable, and in this respect the advantage on the whole is rather on the side of the modern staircase, which in houses of a fair class is seldom found over steep. One of rise to two of tread is the best working proportion for a good stair; a less inclination rather increases than diminishes fatigue in ascending by multiplying the steps; the well-known circular staircase in St. Paul's is a notable instance. The comparative flimsiness and slightness of the balustrade is another common deficiency in the modern staircase. The ordinary moulded handrail, with thin sticks to support it, is mean of course to a degree in appearance; but even where something decisively decorative is attempted, there is almost always error on the side of want of massiveness, and it is rarely indeed that we meet with anything like those thick turned balusters and broad heavy toprail which are to be found in old staircases of the Jacobean and Queen Anne period, and which are so eminently satisfactory and permanent.

Of the various substitutes for wood balusters which occasionally appear, wrought iron only claims partial commendation. If plain balusters, they might as well be wood or cast iron; if worked into flowing scrolls, in the fashion to which wrought iron is so well adapted, they are apt to catch dresses in going up and down stairs. A good effect may be obtained by the employment of perforated wood, in panels, in place of balusters; but (so long as the stair is a wooden one) no effect will be so good, and no kind of work so enduring in the situation, as massive and well-designed turned balusters, with plenty of thickness in the centre of their length. As to the method of footing the balusters, there can be no doubt that a thick and massive moulded "string-board," with the balusters set on and tenoned into it, is the strongest and most workmanlike method. When the line of the steps is brought through to the outside, and the balusters foot directly on the steps, they have not nearly so strong and solid an attachment as in the other case, though, as a matter of appearance, showing the outline of the steps may have a less heavy effect. The temptation in the case of the raking string-board is to make it too thin, from motives of economy, to afford a seat for anything but a very thin and starved-looking baluster; whereas, balusters, when footed on the step, may be almost any thickness. The question as to the termination of the handrail and balusters at landings and angles can scarcely be a doubtful one. Unless in circumstances where the plan of the stair must needs be winding or circular, the newel is the only serviceable and rational way of forming a termination. The old superstition of "wreaths," "scrolls," and "ramps," gave rise to some wonderfully clever handiwork, and formed at one time almost a monopoly for a few able workmen who had specially mastered "the trick of it"; but all the trouble and science were bestowed in treating wood in an unsuitable and weak manner, and elaborately torturing it into shapes which were, when finished, unsatisfactory in appearance, constructively weak, and offering no compensating practical advantage. The newel system preserves the straight line of the wood, and gives a *point d'appui* at each turn of the stair, strengthening and steadying it. The

* See "Woodstock." † See p. 747, *ante*.

finish of the newel above and below should always be worked out of the solid piece; the almost ineradicable tendency of the modern British joiner is to put on heads ("caps," he calls them) with nails and glue; a diversion which, unless watched, he will persist in, even when the object has been carefully sketched for him after such a pattern as to render this "joinery" proceeding totally unnecessary. An important addition to the "fixings" of a staircase is a wainscot on the wall side (when against a wall), and this should be capped with a finish which will serve as a handrail, or something equivalent to it, which will afford a grasp to the hand. Falls on a staircase sometimes occur, from accident, through there being nothing on the wall-side for the hand to catch hold of.

Stone stairs are less suitable to private dwellings than to public buildings; in the former they have rather a cold comfortless aspect, though undoubtedly conveying an effect of dignity, as well as durability, beyond a wooden staircase. When fixed in the ordinary notched fashion, with sloping soffit, they cannot be suitably protected by anything but a light ornamental iron railing; anything heavier looking would be unsuitable for a structure so entirely self-supporting. Stairs constructed in this fashion, however, seldom look very well; nor are they safe in the event of an unusual crowd, or of a fire. Enough is not made, in private residences of the better class, of the opportunity for architecturally designing and constructing a stone staircase, with arches or arcades to carry the soffit on a solid basis. Stone stairs, however, lend themselves very well to a curved or circular plan, and may have a good effect on such a plan when constructed in the ordinary manner; and in this case the serpentine windings of the ramped and wreathed handrail, carried out in brass, or in gilded bronze or iron, may be more in keeping, and have a better effect, with their light flowing lines, than any other form of stair railing. Such a stair, spacious, and of well-kept bright white stone (or marble), lends itself very well as the ground-work, or passage-way, for elegantly costumed figures, as was exemplified, if we remember rightly, in Mr. Val Prinsep's very agreeable picture, under the title, "Devonshire House," in the last Academy Exhibition, representing two ladies ascending a staircase of this description.

In staircases in public buildings, the remark as to the great importance of spaciousness, within certain limits, for the sake of safety in the event of crowding, applies even more strongly than in the case of private houses: a public building with an insufficient, mean, or narrow staircase, is a discredit to its architect. A good instance of ample proportion in a staircase is Drury-lane Theatre; the principal staircase here, if properly treated and decorated, instead of presenting the cold bare appearance which it has at present, would be a remarkably good specimen of an entrance-stair to a place of public amusement. Buildings of this class, theatres and concert-rooms especially, are unfortunately constantly deficient in stair-room, a deficiency giving rise to occasional danger as well as continual poverty of effect. A considerable number of landings, provided these are of ample size, and not corners for squeezes in coming out of a building, is an element in the effect of a staircase, assisting the idea of spaciousness and liberality of accommodation. An external flight of steps is a great source of architectural effect, and has always been felt to be so; but it is often ill managed, and is so treated, by being returned and again returned on itself, as to appear like a mountainous mass of stone placed with little purpose against a building. An attempt at a grand effect by a large flight of steps up to a main entrance will defeat itself sometimes, if not treated with judgment. It is not well to leave it unbroken for any great length, as the eye in such a case has a tendency to overlook the step form and to resolve the whole, when on a large scale, into an inclined plane. It should have its larger breaks to give scale and outline to the whole flight. The treatment of the outer edge of the steps, in the case of stone stairs, is a matter for consideration: the old-fashioned "nosing" looks well, and defines the edge of the step, besides extending, practically, the width of the tread, but it cuts a great deal of stone "to spoil." On the other hand, the mere sharp edge, besides being less commodious, gives a hard, thin line, or, rather, scarcely marks the line of step at all. Where there is no lack of space for a wide tread, a slight chamfer taken off the edge of each step will be an effective finish, and comes well enough under the foot in descending.

The stone stair winding round a centre newel is coming much into the predilections of some architects now, and it gives scope for good effects and for clever *tours de force* of stonework; but a better form of circular stair, perhaps, is that which is carried round the work of a circular compartment, leaving a space in the centre; there is more scope at least for architectural effect in this. But in the main the circular stair, symmetrical as it seems, is a somewhat disappointing plan in its effect, and always involves danger in the event of crowds hastily descending. The staircase on a rectangular plan, with frequent and ample landings, is the form for realising architectural effect. The staircase thus laid out offers great opportunities to the architect in a large building; each landing having its own "point" either in a statue niche, or a stained window effectively placed, or in a sudden vista opportunely gained, on the way up, into some other portion of the building. Whether on a large or small scale, however, the staircase is a legitimate field for the introduction of architectural effect, and is capable of far more in this way, even in its more restricted forms, than is commonly obtained or aimed at.

THE ARCHITECTURE OF CHINA.*

In that strange college in the island of Laputa, which Gulliver visited in his travels, he relates, among the seemingly impossible problems which its inmates were spending their lives trying to solve, that one was an effort to build a house by beginning at the roof. This, curiously enough, is the Chinese mode of construction. The framework of the roof is first made on the ground on the exact spot where the house is to be, and then it is raised up, and the pillars are placed below to support it; and the walls are afterwards formed. Putting up a roof in this manner on wooden pillars reminds one of pitching a tent: and it is said that the peculiar curves of a Chinese roof are an imitation of a tent form, and that this is the real origin of Chinese architecture. Such may have been the case, but now the architecture of that country is essentially wooden, and these wooden forms may be found, as in other countries, repeated in stone and marble. Many important buildings are yet wholly of wood,—such as the structure on the north altar of the Temple of Heaven, and the great hall of the Ming Tombs,—and this last I believe to be one of the finest buildings in China. Stone is largely used for bridges, gateways, and for public works; while ornamental structures in gardens, for balustrades surrounding tombs and important buildings, are generally of marble. Brick might be said to be the principal building material of China. When a roof has been made and put in its place, the space between the pillars is usually filled up with a brick wall. The walls of cities are built of this material, the brick being about 12 in. long. For some temples and fine building work a very small grey brick is used. These are ground perfectly square, and all to one size. So exactly is this done that when built one could not insert the point of a knife between them, and the work produced will rival the finest specimens of work in any other part of the world. Tile is almost universally used for roofs. In palaces and temples they are often coloured and glazed. All palaces, temples, tombs, and buildings erected for the use of the emperor, or by his order, have yellow tiles, that being the imperial colour; and it is a capital offence for any one else to adopt it. There are a number of very handsome pailows about Peking, in which glazed tiles or bricks are used, producing a very fine effect, yellow and green being the favourite colours. Byron's line, where he speaks of "small-eyed China's crockery-ware metropolis," does not, I think, convey an accurate idea of the appearance of Peking. Here and there a pailow may be found with these Majolica incrustations, one or two temples have coloured tiles, all the buildings of the palace have rich yellow-coloured roofs; but in such a vast place as Peking these instances are so few and far between that they do not become a prominent feature of the city. Peking is only an extended village of dirty streets and crumbling walls, where everything seems going to ruin, or it would be more correct to say, is in a condition of ruin already. In this wilderness of decay, anything that could be called "crockery-ware" in the architecture is an exception. Were such buildings common in Peking as the temple on the Wan-sheu-Shan, near the Summer Palace, Byron's lines would have been applicable. With the exception of a marble base, it is wholly constructed of beautifully-coloured Majolica, rich and bright in effect, all covered with ornament and Buddhist figures. I should suppose that it is one of the finest specimens of this kind of work in existence, and it is highly satisfactory to know that when the destruction of the Summer Palace was ordered, the great beauty of the building saved it from the fate of everything around. Lord Elgin made a request that this work of art should not be touched. Close beside it is a very fine temple, all formed of bronze: as it would not burn, and could not be knocked to pieces, it has also escaped. It is very small, but it was curious to see in it almost every form of Chinese architecture repeated so perfectly in metal.

The place occupied by our Legation belongs to the Duke Leeang, one of the offshoots of the Imperial family, from whom it is rented by our Government. It was called the Foo or Palace of the Duke Leeang, so it is a fair specimen of Chinese architecture.

All buildings of this kind are placed upon a raised stone platform, with steps for ascent. Some of the stones forming the floor of this are cut with circular discs as bases for the wooden pillars. The pillars are not inserted, they only rest like the pole of a tent. I exhibit a small sketch of one of the large teak pillars of the Ming Tombs, with its stone base. At Nanking I noticed one of these base-stones with a socket of about an inch in depth; but that, so far as my observation went, was an exception to the rule. In more common houses, where no platform has been made, circular stones are placed below the columns, so as to preserve the wood from the damp of the ground.

I may here remark that all houses are made to face the south. I think there is no exception to this in palaces and better-class houses; although in the dwellings of the poorer classes it is not always attended to. The usual reason assigned for this is owing to a peculiar deification of wind and water known as the *Fung-Shuie*, these words simply meaning wind and water; but they have much to do with everything in China. They control the architect as well as the sexton, for it takes a long propitiation, and expenditure of means as well, to discover the proper site for a grave; and it will no doubt interest gentlemen who are connected, or at least interested, in public works, to know that this *Fung-Shuie* may be called the unresponsible heart of that department in China. No one in that country would dream of constructing a bridge, a canal, an embankment, or quay, without first propitiating this great power with sacrifice and incense, so that its supreme will might be known. The public works of China made in former times are really splendid monuments of the industry and power of the country; but that is of a past date. They are all now in ruins, and works of a more modern European kind are wanted. Railways, telegraphs, and every improvement of the present day are ready to enter China; but then the Mandarin class are most bigotedly opposed to them. Supposing a railway or a telegraph was to be made in spite of the Mandarins, its probable fate might be this. If any accident were to take place,—it might be some hundred miles away from the railway or telegraph,—the Mandarins would only have to say that the iron rails, or the telegraph poles, had interfered with the *Fung-Shuie*, and that while they existed similar events would occur. The result would be certain: the belief in this strange deification of wind and water is so deeply rooted that the population would rise in mass, and the disturbing influence would be swept out of existence. I do not see that there is much chance for modern improvements being introduced into the celestial kingdom while the *Fung-Shuie* has the chief control in such matters. Of course I have no doubt but steam, which may be looked upon as a newer Avatar of wind and water, will be the strongest in the end, and it is only a question of time when it will conquer.

To return to my subject. The relations of this *Fung-Shuie* with architecture are numerous. In the construction of a house it may have been a sanitary object which first gave rise to the connexion. In a cold climate a southern aspect is looked for by those who wish for a comfortable, which, in a sense, means a healthy house. If

* From a paper by Mr. William Simpson, F.R.G.S., read at the Institute of Architects, as elsewhere referred to.

the architecture of China came from the north,—and in that part of the country there is a cold winter, with biting winds blowing from the frozen regions of Mongolia,—hence a solid wall, or any other protection on that side, would be dictated by common sense. This simple object, no doubt, got worked into the religious ideas of the people, and is now only part of a ridiculous superstition.

A palace like the Duke Leeang's comprises a series of buildings, each behind the other towards the north. As you pass through, they each get richer in material and ornament; but there is no essential difference of constructive character. The more private rooms of a palace are those towards the north, and in the flowery land very flowery names are given to everything, and the halls of a palace are no exception to the rule. You pass through the halls of "Heavenly Bliss," "Steadfast Purity," and "Serene Felicity" is at last gained in the extreme recesses of the place. There is only one floor in Chinese houses, and their distinctive feature is, that extent of accommodation is derived from the repetition of these halls, and not from stories above or extensions on the side. Houses in India, such as I have seen in Delhi or Benares, are quadrangles with rooms all round looking into a garden in the middle. A Pompeian house is only a variety of this. The Chinese plan is most marked in its difference. The sketch represents the first of these halls on the south, and only a comparatively small space at each end is walled in, indicating that it has only got accommodation for some outer attendants. Passing this, each hall has more enclosed space, and the most northern are walled entirely round. The ground between each is more or less in the form of a garden, with shrubs, flowers, and plants. Two lion-like griffins, in stone or marble, or in palaces they are of bronze, watch the southern approach. There is still an outer wall, and you may be passing to a very fine palace in Peking, and see nothing but dirt and decay on the outside.

One very distinctive feature of this architecture is what I may call the "frieze," but I confess that the term is doubtful when applied to this part of Chinese construction. It reminds one of the bracket capital of Hindoo architecture, and no doubt it had a similar origin. It is now a complicated triple succession of small brackets, which project forward, giving increased breadth on the top for the support of the roof. Although evidently constructive in its origin and purpose, it is the most ornamental portion, and its complexity makes it perhaps the most striking feature of Chinese architecture. All buildings with anything like architectural pretensions will be found to have this peculiar frieze; and if you note it in my detailed sketches, you will then recognise it in all the sketches and photographs which I exhibit. Its origin is evidently wooden; but I have seen it repeated in stone, marble, majolica, brick, bronze, and iron. Many of these forms are exhibited in the sketches. There are some varieties in the tiles of China; but those of Peking, particularly when they were of the Imperial yellow tint, suggested that bamboos had first been used for roofs, and had given origin to the round form of the upper tiles. In these cases the terminals are round, with an ornament within. One from Peking from one of the imperial palaces there; will give an idea of the colour of the roofs. It has the fine-clawed dragon as an ornament, another of the Imperial emblems which it is treason to copy. At each end of the ridge-beam is a dragon, represented as being pinned down with a sword. It is called *Show-tow*, and is done to secure that fabulous animal as the protecting head of the house. In some of the grander temples and palaces, this top ornament is a very large and beautiful piece of majolica work. On the ridges leading to each corner of the roof are a number of smaller animals, which are also supposed to be guardians of the house.

While in Peking I managed to visit the Great Wall of China, and we planned our route so as to see the Ming tombs. I believe that they have never been properly described before, and I am sorry that time only permitted of a visit to one of them; but as that was the oldest and most important, a description of it must do duty for the others. We have all heard of the ancestral worship of the Chinese, but it would be difficult to realise it without a visit to the country. It leads to such a profound veneration for graves, that a Chinaman never disturbs one. He will plough round it from generation to generation, but he would never be guilty of the sacrilege of destroying it. The result is, that the whole of China is one vast cemetery. The usual form of the grave is a mound; and there are places where, as far as the eye can reach, nothing but mounds can be seen, almost justifying the truth of Shelley's lines:—

> "There's not one atom of yon earth
> But once was living man."

The Chinese have, no doubt, buried in this way from the most remote antiquity, and a minute account of it would be of great value, as bearing on the barrows and ancient grave-mounds which are being explored in this country. I have to deal with them architecturally, and yet I feel that the little I have got to say is not without its importance as bearing on many points of archæological interest.

The chief desire of a Chinaman is, that a descendant shall always "stand at his grave," meaning by that phrase the performance of religious rites. The present Emperor performs these ceremonies to all the deceased monarchs of his own dynasty. As the Ming dynasty ended in 1628, their tombs have had no one since that period to perform the necessary services. The locality is about forty miles north of Peking, and a fine road, with splendid bridges,—now all gone to ruins,—communicated with the capital, and by which the emperors of that time went in state to perform the due rites of ancestral worship. As we neared the tombs, on our visit, the first feature we came to was a pailow, of five gateways, in fine white marble. No one who is familiar with the gateways of the Sanchi Tope, in central India, could have failed to notice the marked resemblance. The wooden origin of its construction was palpable at the first glance. About half a mile further we passed a second gateway; but this was not a pailow; it was built in the form of a house. We passed another of the same kind, and then began one of the noted features of the Ming tombs, that is, a long dromos, with colossal stone figures on each side. This strange approach is nearly a mile in length. There are thirty-two figures in all, twenty of them being animals, and twelve are human. They are in pairs, opposite each other, and facing the roadway. First are two griffins couchant, then two standing; two camels recumbent, and two standing; then elephants, asses, and horses, in the same way. The human figures seem to be those of warriors and priests. These are all of stone, and although not executed in what we understand by rude art, yet they are not of a high class of work. I felt in looking at them how superior the conventional forms of Egyptian art were for such purposes. I afterwards found that a row of animals were not uncommon at important tombs.

On reaching the end of this sculptured avenue the Ming tombs become visible. They are called the Shi-san-ling, or the Thirteen Tombs, for that is the number of emperors buried at this place. They are about two or three miles away from the end of the avenue; for it is the approach to the whole group, and the tombs extend for some miles along the base of the hill, which forms an amphitheatre all round. My first impression on seeing the tombs,—from roofs and walls being visible through the trees which surround them,—was that they were country villas. I was admiring the beauty of the site, and thinking what a pleasant place it would be to live in, when I learned from my friends that they were the houses of the dead, and not of the living. They have all a southern exposure, and are protected by the hills on the north. This arrangement is due to the *Fung-Shuie's* controlling powers.

Our party made for the tomb of Yung-lo, who was the first of the Mings buried here. He changed the seat of government from Nanking to Peking. His death took place in 1425, which will indicate the date of his tomb. Like other tombs in this part of China it is an earth mound, but of imperial proportions, I had no means of measuring it; but it is said to be about half a mile in circumference, and my own impression is that this estimate cannot be far from the truth. There is a retaining wall, crenellated, and about 20 ft. high all round; judging from the surrounding ground I should say that this mound is wholly artificial. There is nothing to indicate where the interment has been. I have little doubt but there is a very large coffin, and that it is placed somewhere under the centre of the mound. There is no entrance. I should suppose that it would not be difficult for any one in Peking to get all the information as to how the interments are made, as to the coffin, and whether there is a vault, as well as regards the funereal ceremonies; it would be all very valuable as giving light on this most primitive mode of sepulchre. To the student of Indian architecture this grave heap will be of great interest as giving us almost the exact model of such monuments as the Sanchi and Manikiola Topes; which we know were developments from the tumulus and the cairn.

As all graves in China are places where offerings are made, they become, as it were, altars or temples. At an emperor's tomb a temple is constructed for these ceremonies, and in the case of Yung-lo it becomes an important addition to the original tumulus. A rectangular space south of the tomb is enclosed by a wall; it is about 1,000 ft. long, by 500 ft. wide,—I am sorry that I cannot give you accurate measurements, but our visit was so short,—within this are a number of buildings, one being the finest specimen of Chinese architecture which came under my observation. The plan is exactly that of a Yamun or a palace; in this I believe we have a very ancient idea which may be traced yet, that the tomb, the temple, and the dwelling were symbolically repetitions of each other. The House of God, the House of the Living, and the House of the Dead, are words which illustrate the old idea, and many evidences might be given, and the reasons which underlie it might also be explained, if that were the subject of the evening. China in her religious, philosophical, and political systems, brings down to us much that is primitive, and these large grave mounds are an evidence of this. In China the differences between domestic and ecclesiastical architecture does not exist. The temple there is still only a better house. If it is a grand temple then it resembles a palace, and this is the case at the tomb of Yung-lo. I may remark while on this point of the subject, that the connexion between a temple and a house is still more intimate in China. Every house in that country has its altars, thus making it a temple. The poorest house I have been into had something in which to burn incense before the ancestral tablet. Even those who pass all their lives in boats, who are born and die on the waters,—where the boat is the house,—they have a small portion of it set apart for the worship which it has been their custom to practise.*

SOCIETY OF PAINTERS IN WATER COLOURS.

THE twelfth winter exhibition of sketches and studies by the members of the Society of Painters in Water-Colours might give some opportunity for something new to be said of it, if it were any less interesting than the generality of those preceding it. What recommendation to public notice and admiration can it need beyond that to be found in the catalogue?

It is below platitude a degree or two, now, to affirm merits that have long ago been universally recognised and acknowledged,—to insist on pronouncing things excellent that no one said, says, or means to say, if it can be avoided, are not. Once, and since, twice a year, a visit to the Society that has helped so much to disseminate love of art and improve secular worship of Nature, to whom the members stand as high priests, was and is exception to dispute the theorem of "no pleasure realising its anticipation"; for, who was or is ever disappointed with winter or summer show of what the cleverest landscape-painters represent so well in this gallery?

No sooner has the swing-door closed out the noisy streets, than the smell of fresh grass and of wood-fires; the rustle of leaves and of waving corn; or such as the sea will cause on the shingle when it plays at touch with and within its boundary of earth, on sunny mornings (pleasanter to hear than the roar of it when the mighty monster grows angry, and writhes and wrestles, assaults and batters for more room and a wider share of the world; or its moan in retreat, after the battle; for there *is* a King who says,—"So far shalt thou come and go, O Sea, but no farther!"); and the songs of birds; the distant tinkle of sheep-bells; the murmur of brooks; and the drowsy hum of gnats (that would be sure to be present in such a scene, for instance, as Mr. J. W. North's "Trout-stream and Flowers" (237), that vies with his delightful drawings of oak-trees and hedge weeds and rustic figures, "Acorn Gatherers" (198), in exquisite

* To be continued.

qualities of colour); and the thousand and one other delights of out-of-town and town-house existence that association conjures up, seem to greet one.

We do not mean to say another word about the landscapes on this occasion. We looked for the Right Hon. Mr. Gladstone's drawing (hon. member), but could not find it; his designs will be exhibited and reported in another gallery, no doubt. Mr. Ruskin contributes two exquisite studies of the colours of marble (97 and 105) that would help to indicate that the "Stones of Venice" must be gems of fairy story. As examples of what influence a poetic apprehension of fact has on fact, these drawings are choice and beautiful indeed; but it must need a more than common eyesight to perceive floral loveliness of hue in stones even of Venice,—and how very scarce this more than common eyesight is!

A thousand English libraries,—millions of books,—offer all the knowledge they hold; give solace, direction or advice, pleasure and delight; describe every phase and picture,—in words, every human feeling; teach all who can read, and will read, everything that can be taught—save experience (wrinkles and gray hair accompany small growth of this, often). The world as it was, is, and will be, is taught us by means of two dozen letters. Yes! just those that little curly-pated Polly scrapes for her first writing-lesson so soon as she can hold pencil in one chubby fist and a slate in the other. There is not one more in the Bible than the twenty-four beginning with a, b, c, ending with zed: the bones of the body of all book-learning. A painter's means are double these, at least, and with these besides.

The keyboard of the grandest piano gives shorter opportunity for the musician than the gamut offered for painter's play, and yet tunes vary,—must vary,—to be thought worth anything; whilst pictures, like fireworks, do not vary much. And so we do not mean to say anything more about the figure compositions on this occasion, either.

THE LONDON AND VIENNA EXHIBITIONS. RETROSPECTIVE.

Almost at the same moment there have closed the London Exhibition of '73 and the Great Exhibition of Vienna, inaugurated as it was so auspiciously, and carried on under so much of Imperial help and patronage. All seems to have gone off comfortably, and without much of mishap of any kind, excepting great money loss in Vienna; and now we may look back on them without disturbing influence, and ask ourselves, What is the result of it all? And what do such displays point to and indicate in the future of art and art production? All important questions these, and well worth a little cogitation.

In the first place, it may be useful to bear in mind that the Great Exhibition of 1851, the parent of so many, included *four* main divisions or sections:—Raw materials, as they are to be got from the earth itself, or which grow upon its surface; machinery, more or less complicated, for the purpose of moulding these raw unformed materials into shape and practical usefulness; the useful *results* of this machine work in the form of manufactured goods of all kinds, from a sheet of note-paper to a complicated coloured lithograph; and then, lastly, the fourth division, the Fine Art, as it is termed, which is applied more or less to these manufactures, and which makes them *ornamental*. Pictures, it may be remembered, did not form a part of the first Exhibition of '51. In the later Exhibitions pictures were included, so that these last great shows comprehended everything. Sculpture, a word grown not a little indefinite in meaning, was to be seen in both Exhibitions, as was architecture, more or less. A few words on each one of these several sections, and on what they indicated, and on their special worth may be useful, and may, perhaps, foreshadow a something in the future of art.

Raw materials, then, are the foundation of these displays of the world's productions. Things as they are brought up from the depths of the earth, and as they are found to *grow* so wonderfully and mysteriously on its surface; things rough and unformed, though at the same time it may be noticed full of *beauty*, and sometimes of a beauty not to be surpassed, or even in any way imitated, by art, after all the labour and skill bestowed on them. It is, doubtless, a very good and interesting proceeding to collect as large a quantity of such rough and natural materials together, from different quarters of the earth, into one building, and to place them side by side, and then to compare them one with the other, and to note what they are best fit for. It is interesting and profitable to find out what other countries and climates yield, and what more can be done when quite a *new* and unknown material turns up. Trade, too, here brightens up at the sight of it. Science pries curiously into it, and analyses it, and puts it to its best purpose. But still with all those advantages and prospects, there is one consideration worth looking into, and it is,—looking at such matters artistically,—that the special materials to be found in each country, and peculiar to it, would seem almost, in some mysterious way or other, to be best fitted for it, and for its special needs and requirements, both usefully and artistically. It is, when we come to look closely into it for the first time, a little doubtful how far any one country is able to work well with the materials peculiar to another and a distant one; or, if it can do this, whether the energy and skill expended on them would not be better applied in working on the materials proper to itself. It is impossible to be otherwise than struck with this thought, when we see what,—to cite but one instance,—the native Hindoo can accomplish with some special product of his own country. And then to go a few paces and see what another nationality, 10,000 miles off, is found to do with the self-same material. This has been, in almost every Exhibition which we have seen, exemplified not a little remarkably in *wood-carving*, wherein not only the character of the ornamentation, and the art-style, have been peculiar to the country of its birth; but the very material itself is found to be specially adapted to it, and to be suitable for the special work. The colour, and texture, and grain of the wood, are in all, or nearly all, cases, found to be, and fit for, the special character of the carving. It is a question for the future, may be when art takes a new turn, how best to make use, without loss of power, of a *new* material. The true secret of a real success, and a real "progress" in art would seem to lie, not so much in new, and still less in foreign materials, as in the finding out how best to utilise our own materials, and work in them. It may be, we think, safely affirmed, that if the British wood-carver, for example, cannot do good work with his own British oak wood, he will hardly be likely to do better with Indian teak, or iron wood, or Australian wood, so strange to the touch and eye. These considerations are worth a little looking into, as we think, so much having been made of the "opening up" of new materials, almost as though we had none of our own, or they had been found out to be worthless. A thoroughly good, and exhaustive display of pure native British woods is yet a desideratum; not, be it observed, put away in glass cases, but open to the touch and eyesight; and not in little bits, and in cubic inches, and dainty walking-sticks, but in pieces of practically useful size. We have cited but one material out of a long list. Much more might be said here, but we must forbear. There is, however, one thing that strikes us, and will exemplify our meaning well. A timber, carved at the end, from almost any old Gothic roof, will show to any one the nature of the timber, the useful scantling of it, the best method of working it, and the way to "ornament" it. Would not such roof timber be a good thing to go by? It is indicative of a *useful* "wood" show.

Machinery, wonderful machinery! which bids fair before long to take the world's work out of man's hands altogether, would need a volume to do any justice to it. To the artistic eye the triumphs of machinery in these exhibitions were almost appalling. The mechanism all but lived, there was nothing it did not seem to be capable of doing almost at any speed, and to produce almost any quantity of new stuff. It would be vain to attempt to do any kind of even poetical justice to the magic power of the complicated systems of mechanism which were shown at work, and which brought forth their produce before the very eyes of the wondering spectators. The raw materials pass by some mysterious agency into useful things, all ready for use and wear; while the visitors glanced at the iron wheels, and pinions, and feeding-troughs, and delivery-troughs. A true magic show, all driven primarily by the burning fire in the dim distance.

But the thoughtful spectator all this while could not but look, not only at what this mechanism did, but must have thought,—at least, we often did,—at what it *could not*, and did not, do! Here it stopped. Here it could go no further; a limit was set to its action and power of production. In this is the key to the future of art and artistic action. The magic engine could roll and press and cut and stamp the raw metal, and even count the coins as they fell, but it could not *design* the device on the coin, nor cut without the hand and brain of man the steel die which impressed the penny-piece! It could do everything in the production of a common envelope, but it could not *design* and *engrave* the little flower on it which forms the seal. It could make the paper, and print it, and cut it up and count the sheets afterwards, but it could not *think* out the printed matter. A most wonderful distinction not so much thought of as it will one day be.

We would pass now from the raw materials and producing machinery as seen in these important Exhibitions to what was produced, to the useful products, out of the raw materials, through the costly machinery, and as, in so many cases, "ornamented" by art. Art was the last element which entered into the idea of these Exhibitions of the world's industry. But few of the objects exhibited, and which could in any wise be "ornamented," were to be met with which had not had some artistic thought bestowed on them. All the "textile" fabrics had in them either in pattern or in colouring some art element. It was a curious and not a little instructive sight. Some analytical power was needed sometimes to decide on the relative merits of the almost rival arts at work on the fabrics. Sometimes it was the pattern or design that carried all before it. The mind had to travel all the way to old Assyria sometimes to find the original of the strange device, afterwards to figure, might be, on a table-cloth or a muslin window curtain! Sometimes China drew the pattern on a hearth-rug, while the carpet on which it rested so comfortably got its novel and attractive pattern from a quaint Gothic source, invented perhaps by an old monk of the twelfth century. It was, indeed, wonderful to note where the patterns came from, and the mind had to travel fairly round the world, and through centuries of times, while contemplating the limited amount of textile fabrics necessary in the furnishing of an ordinary bedroom or comfortable little boudoir.

All the world literally came together to contribute to the novel display, and something surely ought to come out of it all *permanently*, and beyond the mere idea of a passing show.

It has sometimes occurred to us, when looking at what was done at so much cost in these Exhibitions, to ask, how is it that they have not in some way or other done a something towards the creation of a new and untried *style* in art? All and everything seen in them was more or less copied, or, if not copied, the idea artistically of the object was foreign and distant,—foreign to the country altogether sometimes, and distant,—sometimes centuries distant from the age in which we live. How is this? It is, says a great authority in such matters, "mere affectation and priggishness" to reject help from the past of art. In simple despair we must needs go back in time and borrow from what has been done. But why is this? Looking at things philosophically, and looking at the great part of art, we cannot but be struck with the contrast it presents to the present in *principle of production*. It is truly marvellous to contemplate. The closer we look, the greater the mystery and wonder of it. The old artists had, as it would seem, nothing to go by but that which had immediately preceded them. Not a thought else. The old Goth built his tower, not of Babel, and as he built it it changed in expressional power, as the style he worked in progressed, as the old passed into disuse, and the new grew into life and freshness. The old poetic thought not only alone grew as stone was piled on stone, but it changed also. A wonderful progression from foundation to spire-top. We can now in nowise equal this feat of art; but could not the future of these Exhibitions do a somewhat to enlighten us as to the future of art and architecture, and to point the new way that once upon a time was old?

Crystal Palace Secretaryship.—We understand that 230 applications have been sent in. A particularly modest man, hearing us mention this, jerked out, "Then I should say there are 230 persons who have a very good opinion of themselves." The position certainly demands peculiar qualifications.

PROJECTED RAILWAY, DOCK, HARBOUR, AND PUBLIC WORKS.

THE notices and plans which have been given and deposited with respect to applications to Parliament as to powers for new railway and other public works show that the Private Bill legislation during the next session is likely to be somewhat heavy. The total number of Bills for which notices had been given * is upwards of 300, of which 150 are in respect of railways, and sixty of these are for projected new lines by companies to be incorporated for the purpose, whilst upwards of fifty are applications by existing companies for extension lines and other works in connexion with their several systems. The tramway notices are comparatively few, their number being not more than eighteen, and several of these are for provisional Board of Trade orders. There are sixty applications in respect of new gas and water projects, and several of these are for works of a large and comprehensive character. The Bills for projects of a miscellaneous character are upwards of eighty in number, and amongst these there are several for proposed harbour, dock, and pier works of considerable magnitude, whilst there are also several Bills promoted by the local authorities in many large towns, for the erection of public buildings, the construction of parks, and general town improvements, on a large scale.

Of the aggregate number, no less than forty of the Bills directly affect the metropolis. Of this number, twenty-two are railway projects, five tramway works, two subway works under the Thames, whilst the Bills for undertakings of a miscellaneous character are eleven in number.

The railway Bills include the Midland, Highgate, and Alexandra Park; the Wandsworth, Fulham, and Metropolitan; the Alexandra Park (extension of time), and the Aldgate and Cannon-street (inner circle) lines, notices of which appeared in the *Builder* of the 22nd ult.; but it may be added, with respect to the last-named project, that it embraces an extensive line of railway from the inner circle, under the Whitechapel, Mile-end, and Bow roads, to a junction with the North-London Railway at Bow, and also forms a junction with the East-London line, now in course of construction. One great merit thus claimed for it is, that it will open out a new means of communication to the large East-end population. With respect to the new streets to be made and affected by the proposed line, it is stated that the experience of the last few years in the construction of railways under public thoroughfares will enable the engineers to construct the proposed works without unduly interfering with the traffic in the several streets affected. There are three projects for connecting the Alexandra Palace with different portions of the metropolis. The Great Eastern Company are seeking for powers to construct a line commencing by a junction with their line in Tottenham, near the point where the line crosses the Seven Sisters'-road, and terminating by a junction with the Enfield branch of the Great Northern line; another project is for the incorporation of a new company to construct a railway, commencing in Tottenham by a junction with the Enfield branch of the Great Eastern line near Lordship-lane, and terminating in the grounds of the Palace, on the north side of the refreshment pavilion; whilst the third project is that designated the Midland, Highgate, and Alexandra Park line, from the Tottenham and Hampstead line of the Midland Company to the Edgeware and Highgate branch of the Great Northern Company. The Great Eastern and South Eastern Junction is a proposed new line, commencing by a junction with the Great Eastern line near the Fenchurch-street station and forming a junction with the South Eastern line near the Cannon-street station. The Great Northern Company seek powers to construct branch lines from St. Pancras to connect their line at Islington with the North London. There are four projects for additional lines to the Crystal Palace. One of these is a proposed new line called the Crystal Palace and South London,—a new line to form a junction with the Brighton line from London Bridge, to commence on the Crystal Palace and South London junction, and terminate on the south side of the Queen's-road station; also a line from the London, Chatham, and Dover, and London and Brighton (West-end) lines at Dulwich; a third line, commencing near the Honour Oak station of the Crystal Palace line, and terminating near Brockley-lane on the South-Eastern Railway. Also, another line called the Crystal Palace High Level line, commencing at the present high-level station at the Palace, and terminating at Selhurst and Croydon, on the Croydon and Balham line. The Ealing, Acton, and City Railway is a proposed new line between Hammersmith and City, and the Great Western and Brentford lines; the Acton and Hammersmith Railway is a proposal to unite the North and South-west Junction with the Hammersmith Extension line, with a new station at Acton; whilst the Kingsbury and Harrow project is for the construction of a new line between Kingsbury and Harrow, commencing in the parish of Willesden by a junction with the Metropolitan and St. John's-wood Railway, passing through Willesden, Neasdon, Kingsbury, Wembley, and Preston, and terminating in the parish of Harrow-on-the-Hill, on the road leading from London to Pinner. The North London Company seek powers for making an embankment with a sea wharf in Poplar, commencing on the north side of the Blackwall entrance to the West India Docks, and terminating close to Messrs. Money, Wigram, & Co.'s ship-building yard. The company further seek power to remove Blackwall stairs, and provide other accommodation; and also to stop up so much of Sun-street as is situate between the western boundary wall of the Great Eastern Railway crossing that street; and the western boundary of the railway viaduct over such street. The London and Blackwall Company seek powers for the enlargement and alterations of the Fenchurch-street, Lemon-street, Shadwell, Stepney, Limehouse, West India Dock, and Millwall stations, by extending the platforms on both sides; and also for building an entirely new station at Bow. The London and South-Western Company have a bill seeking powers for the widening and otherwise enlarging their Waterloo station on both the north-west and south-east sides; and also for widening their main line at Battersea. The Metropolitan Company have a Bill to enable them to contribute funds, or hold shares in any company or association, for the building of any hotel or chambers over or adjacent to any of their stations. They also seek powers to acquire the block of buildings in Kensington, known as Methwold's Alms Houses. The London Central Company have a Bill for empowering the London and North-Western, Great Western, Midland, South-Eastern, Great Northern; Great Eastern, London and South-Western, London, Brighton, and South Coast; London, Chatham, and Dover; and Metropolitan, and Metropolitan District Companies, to subscribe and apply funds towards the construction of the line, for which Parliamentary powers have already been obtained. The East London Company have a bill for an extension of time for the completion of works, and also for powers to purchase certain lands and buildings in St. George's-in-the-East.

The Metropolitan Tramway Bills include one promoted by the North Metropolitan Company for powers to use noiseless steam-power; a Bill of the London Street Tramways Company for new lines in St. Pancras, Kentish-town, and Brecknock-road; also for new lines in Edgware-road and Maida-vale; also a Bill by the West London and Kew and Richmond Company for new lines and powers to use steam-power; also a Bill for powers to construct tramways from the West India Dock Station to the Poplar Station of the Blackwall Railway.

Amongst the Bills of a miscellaneous character connected with the metropolis is one by the East and West India Dock Company for the construction of slips, dry docks, and graving docks; also Bills for the construction of subways under the Thames, between North and South Woolwich, and between the Isle of Dogs and Greenwich; a Bill for the removal of Bow-street Police-station and offices to Castle-street; a Bill for a boulevard in Westminster and other works (already noticed in the *Builder*); powers to purchase land in Waterman's Alley, and Gas and Coke Company's buildings on Victoria Embankment, for site for new Mint buildings; a Bill seeking powers to purchase land and buildings in Seymour-street and Bedford-street, Euston, for enlargement of the Railway Clearing-house; a Bill for powers to purchase land and buildings in King William-street for enlarging the Lombard-street Post-office; a Bill by the Metropolitan Board of Works for the construction of new roads near Finsbury Park; a Bill for the construction of new roads and improvements in Eaton-terrace and Eaton-place to Ovington-square, Brompton, and the widening of Cadogan-place, near Sloane-street, Chelsea; powers for alteration of tolls at Covent-garden Market; powers to Corporation as to City of London Police superannuation; and also a Bill giving powers to City Corporation and Metropolitan Board of Works for the compulsory purchase and management of the Metropolitan gas companies.

Amongst the projects connected with the provinces there are several of an important character. Independently of a large number of entirely new railway undertakings and extension lines promoted by many of the great companies, there are several Bills, as we have already stated, in connexion with town improvements, gas and water works, and harbour, dock, and pier works. Amongst the first named is a Bill promoted by the Nottingham Corporation, of a wide and comprehensive character. In this Bill the corporation seek powers for the construction of two large new covered markets, together with a cattle-market, and public slaughter-houses. The Bill also enables the corporation to purchase land for the erection of a new town-hall, municipal-offices, court-house, gaols, station-houses, and other offices and buildings for public purposes; also to provide public parks and places of recreation, and to erect buildings within them for the enjoyment of the public; to alter and extend, for municipal purposes, the limits of the borough, so as to include therein the site of Nottingham Castle, and to enable the Duke of Newcastle's trustees to grant a lease of the castle to the corporation for any term, in order that the corporation may convert it into public libraries, museums, and art-exhibitions. The Bill further seeks for powers to enable the corporation to purchase land on the banks of the Trent for the purpose of constructing public baths; to enable them to build and maintain artizans' dwellings; authorises the corporation to enclose and lay out ornamentally any disused burial-grounds within the borough; and, finally, enables the municipal body to erect buildings for inland bonding-warehouses, and to let and regulate the use of them. The Bill also contains several stringent clauses for promoting and improving the sanitary condition of the borough, including the removal of ruinous and dangerous buildings, and obstructions, projections, and encroachments in the streets; provides for the more effectual drainage of houses, buildings, and other property in the borough; the laying out and completion of new streets, and the erection and alteration of houses and buildings; and it also contains clauses preventing or regulating the letting of cellars or underground rooms as residences, and for preventing the disfigurement of the front of buildings by sign-boards and advertisements. The Corporation of Edinburgh have also a Bill for the construction of fish, vegetable, and corn markets. A Wigan Improvement Bill also seeks for powers to build a new market and widen the streets in that town. A Leicester Improvement Bill provides for extensive drainage powers, and also for the construction of works to prevent floods in the river Soar. There are also Improvement Bills promoted by the local authorities respectively of Leeds, Cambridge, Gloucester, Hythe, Shipley, Middlesbrough, Dover, Swansea, and other places.

The Bills in connexion with gas and water undertakings include one promoted by the Wakefield and District Waterworks Company (to be incorporated) for the construction of new works to supply Wakefield and the neighbourhood, including, amongst other works, three large reservoirs. The existing Wakefield Water Company are also applying for powers to construct new works, including large reservoirs. The Edinburgh and District Water Company have a Bill for new works on a scale of great magnitude, including the construction of five large reservoirs, to contain water supplied from the River Esk. The proposed works include several miles of conduit-pipes. The Hartlepool and Wrexham Water Companies have also Bills for new reservoirs, whilst the water companies of Nottingham, Padiham, Chester, Leeds, Maidstone, Broadstairs, Maidenhead, Belfast, and Mid-Lothian are also applying for powers to construct extended works. There are several new gas companies applying for powers of incorporation for new works, and other existing companies for extension of limits of supply.

The dock, harbour, and pier projects include a Bill promoted by the Dover Harbour Board for

* Up to Saturday last, the last day allowed under the standing orders of Parliament.

powers to make three new piers or breakwaters, 550 ft., 1,900 ft., and 1,200 ft. in length respectively, together with a pier and jetty 1,200 ft. long. The trustess of the Marquis of Bute apply for powers to extend the dock accommodation at Cardiff by the construction of two new docks and a tidal harbour. The largest dock will be a continuation of the south basin now approaching completion. Its water area will be greater than that of the existing Bute East Dock, and it will have a quay space of upwards of 8,700 ft. in length. The other dock, and the tidal harbour on the west side of the town will involve the diversion of a portion of the river Taff. The water area of the dock will be seventeen acres and a half, with a quay space of 4,350 ft. in length. The Swansea Harbour Board apply for powers to improve the harbour, make new docks, extend the piers, and construct a new embankment and pier. The Sutton (Devon) Harbour trustees seek powers for the conversion into a dock of part of Sutton Pool, and also to construct dock walls and embankments. A Bill for the improvement of Neath river harbour includes powers for making a new navigable cut and embankments. Another Bill provides for the incorporation of a company to construct a new dock at Whitby; and there is also a Bill seeking powers for the incorporation of a company to construct a wet dock and two graving docks at Milford. Whilst the Brading Harbour trustees are applying for powers to construct embankments, quays, landing stages, and other works. The Londonderry Port and Harbour Board apply for new works on the shore, and in the bed of the river Toyle. There is also a Bill for powers to construct a pier 1,200 ft. long at Melcombe Regis, Weymouth, together with a heading and landing places at all times of tide, and also to erect on the pier-head music, bath, and refreshment rooms. The Tees Conservancy Board have a Bill for the construction of a graving dock, and there are also Bills for the construction of piers at Sandown, Isle of Wight; Cattle Water, Sidmouth, and Yarmouth.

No small amount of both "capital" and "labour" would be needed in carrying out this programme. All are interested in forwarding such works when wisely conceived and honestly intended.

HYBERNATION IN PUBLIC PLACES.

EVERYBODY is no doubt aware that our public fountains—though they are not without some varieties,—have been stated to belong for the most part to the same class of art as the conventional lamp-post. It was supposed, time agone, by some observers, and the supposition articulated distinctly with the aid of their all-too-flippant tongues,—that the area-railings, the posts at the street corners, and the lamp-posts of ordinary life, were in some mysterious way members of a common family. They were all, it is true, so unpretentious,—not to say dowdy; and had so little marked feature of any kind about them, favouring one another mainly as being all made up of dull negations, that to attribute near relationship in the absence of special knowledge seemed to require a stretch of temerity beyond the safe proceedings of prudent gossips. When people have no characters at all, you cannot say with justice and confidence that they have a lot of characteristics in common. It is just possible, however, that some of the more painstaking inquirers may have got their confidence from an examination of signatures. Such works bear at times inscriptions that give information as the artist's studio from which they emerge. . . . . When the street fountains appeared also in handsome cast-iron, — in imitation of Roman altars and tea-urns, of Norman windows, with observant oysters in the midst, and in the other forms dictated by a severe but enlightened fancy, it was, we have said, concluded at once that the long-established lamp-post family, being possessed of elevation and position, was courted by a new set of German cousins. Like many poor relations, the new comers felt, to all seeming, their inferiority, their want of fresh graces and charms, that could enable them to stand by themselves, and do without the countenance of their congeners,—equally unlovely, it is true, but possessed of that best of attractions the "established thirty years," which, in well-regulated communities, very properly supplies the place, does away with the necessity of other claims to consideration. Under these circumstances, the modest new race of dowdies shrank into the shade. Perhaps no one has much regretted this consequence of their estimate of themselves, and it would be an invidious and painful task to call public attention to the difference between their winter and summer aspect. Harsh people have said, indeed, that if a little more retirement would be consistent with the performance of their useful functions, theirs (the harsh people's) would not be the voices to bid such fountains to retain even their present prominence. Reduced to etherial condition from their too solid form, their change would be viewed without emotion, without bitter regrets or sad memories. They might hide themselves in boarded pump-cases; and no eye would suffer for their shyness. . . . . But there are in London a few,—it is to be feared a very few,—examples of fountains that are works of art and not unpleasant objects for the sight to dwell upon, even when compared with the grey smoked brick dwellings that in all their rich luxuriance of fancy line our better-class thoroughfares. We will not venture to point them out after the remarks above; it might be supposed that we wished to set the guardian Nymphs by the ears, which would be all too cruel sport. It may be assumed, we suppose, that mere size does not seriously affect the appointment of these guardians. While it no doubt happens that those in quest of employment regard the care of the gentle stream from a quarter-inch pipe as not quite so dignified a post as that involving a residence in the neighbourhood of thundering torrents. It is to be hoped for the sake of nymph-nature that this is forgotten when the formal installation has taken place, and that every one feels a becoming willingness to do anything dreadful that may be necessary in honour of her office, *i.e.*, her own social rank. But this by the way. There is one such fountain in particular that is at this moment called to memory by the mention of these attendant goddesses. It is pleasant to see, when it is allowed to be visible. No sooner, however, do fogs and Lord Mayor's Day gladden the world, than a sort of exaggerated hip-bath is inverted over the kneeling figure and her vase; and this truncated extinguisher is submitted for public admiration, till soft spring renders it possible for thirsty people to be satisfied to quench their thirst with water. Why is this? It is difficult to suppose that the figure runs more risk of damage in winter than at other times. Snow-balling is apparently not the dreaded danger, or it would not be covered just now, but might (though we doubt the necessity) be suddenly boxed in when the white world showed itself on the morning after the snow-fall. The basin might be closed up if fear is felt as to the suction of stale rainwater by enthusiasts heedless of the absence of the legitimate mugs. One has a suspicion that this canopy was pressed by an ingenious tradesman on the donor of the fountain as an appropriate piece of completeness, required by etiquette, without which his gift would be deemed by every one a specimen of stingy liberality that pulled up stupidly over the ha'porth o' tar. Can it be that such a tradesman lies in wait? Will this account for this somewhat inexplicable custom? Does he also keep on the watch, lest it should fall into desuetude, — lest we should not be called on to gladden ourselves with gazing, at appropriate seasons, on this magnified thimble?

DEATHS FROM ESCAPE OF GAS.

A SINGULAR series of fatalities, arising, in some of the cases, from gas, has just occurred in different parts of England and Scotland, as recorded in last week's newspapers. The coincidences are curious.

At Bilston, in Staffordshire, a man and his wife were found lying dead in bed, and the corpse of the woman in particular was dreadfully discoloured. It is supposed that they perished through an escape of carbonic acid gas from the earth.

At Edinburgh, in No. 56, Blackfriars-street, a tailor and his wife were found lying in bed, the man quite dead, and his wife apparently at the last gasp. The room was full of gas, and on examination it turned out that the gas-pipe by some means must have burst.

At Leven, also in Scotland, a young man and his wife, recently married, were found lying on the floor of the bedroom of a friend's house where they were visiting, the man quite dead, and his wife only semi-conscious. The house was a new one only recently occupied, and, amongst other conjectures, emanations from the new building have been suspected.

At Dundee, a country girl was found suffocated in her bedroom, having neglected to turn off the gas: she had perhaps blown out the light, as a country girl might readily do.

In a nunnery at Bristol a young woman was found in a cell nearly dead, and shortly after she did die, from gas, which filled the room from a burner left half on.

These are all taken from one week's papers. In three of the cases Thursday night is named as the time of the occurrence, but whether in one and the same week is not clear. In three of the instances, too, the door or window of the room had to be burst open.

THE MESSAGE OF ART.

THE ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of the session, held Friday evening, the 28th inst., Mr. E. J. Tarver, president, in the chair (when the following gentlemen were elected members:—Messrs. H. W. Lockwood, J. Edsall, J. Payne, A. N. Bromley, M. Hulbert, R. J. Dickens, jun., J. Gibbons, F. H. Farrow, Alfred H. Tiltman, F. T. Baggallay, C. W. Davies, and W. Wilson), Mr. Wyke Bayliss, F.S.A., read a paper entitled "The Message of Art, or the Legend of Beauty." In the course of his remarks he said that art was a great living influence. Everywhere there was abroad that which was ugly and ill-conceived. It was the province of art to discover the realism of the beautiful, and this was their true aim. Beauty came to them in many different forms; there was poetry in every phase of life. There were many to whom art was a living language, which language was really a beautiful one. Art was one of the highest means of culture they possessed, refining and ennobling them, and filling their hearts with gladness. Beauty was that which pleased the eye, and, synthetically, that which gave pleasure to the mind. Art told them of everything that could be told of strength, life, and beauty. As Beauty, in the legend of "Beauty and the Beast," came to the king's son, awakening him from his debased condition of the rich inheritance of his birthright, so the sacred influences of poetry and art came to them, ennobling them, refining them, lifting them from baser pleasures, teaching them that they were indeed the king's children, and that Beauty was his messenger. For not the divine alone nor the philosopher was charged with a message; but the poet and the painter also,—their message was about the beautiful. There were lilies by every river side; there was poetry everywhere; and what the lilies and the other flowers were to the margin of the stream, such should poetry and art be to their lives.

> "O flower de luce! bloom on and let the river
> Linger to kiss thy feet;
> O flower of song! bloom on and make for ever
> The world more fair and sweet."

The message of art was always and everywhere for their good. He that was not better for looking upon the splendour of the creation, would not be better for looking upon the face of the Creator; he would only shrink blasted from His presence by the excess of light. Then the message of art was always and everywhere a protest against evil. Against the raging fire of sensualism and the dead ashes of materialism alike, Greek art gave its protest in the passionless splendour of ideal beauty. Against the brutish law of force, every gentle legend of the north was like the soft hand uplifted, weak, it might be, physically as the gentle hand of a woman, but with another kind of strength, mightier than the hammer of Thor. Was there an evil in the cruel and stern dogmatism of the Mediæval Church? Then every sweet picture of the Holy Child or the Virgin Mother was a message to stay the fire and sword and rack of the Inquisition. Yet, once more: was there an evil still existing in the world, in the hard, grinding, pitiless, competition of their own times? Then poetry and art gave their perpetual protest against it in every delicate rendering of nature by the painter, in every refined thought or noble aspiration of the poet. But the message of art must always be about the beautiful. The only hope of the modern school was that it had found a new life, not in the traditions, but in the study of nature out of doors,—in the fields and under the blue sky. The message of art, the pursuit of the beautiful, as in poetry and painting, was still the "holy

grail,"—the one quest; and by seeking it, it meant the fruition of their manhood, the blossom and the fruit of which we were the germ; it was part of our faith, and this message was everywhere and always good. He knew that in taking man for a theme he must take him with all his passions of life, both good and evil; but the good and evil must not stand as co-ordinates if art was to be the king's messenger; it must show the mastery of evil, the ultimate triumph of right; it must rise,—

> "In ever highering eagle circle up
> To the great sun of glory, and thence swoop
> Down upon all things base, and dash them dead."

In the discussion which followed, Mr. Riddett, in proposing a vote of thanks, said he remembered, some six years ago, Professor Kerr stating in those rooms that there was growing up a very rapid worship of the ugly; but had the Professor been present that night, he would have found an ardent admirer of a contrary quality.

Mr. J. Douglass Mathews briefly seconded the vote of thanks.

Mr. S. Flint Clarkson said that as architects were generally looked upon as prosaic people, he would say a few words in their justification. It was a national characteristic to suppress our sentiments and conceal our emotions. There was everywhere a depreciation of art-criticism. This, no doubt, had an evil effect on the national character. There had been, too, for some time past, in the public press and in private circles, a great depreciation of our public statues, which were alluded to in terms far from complimentary, giving occasion for smart sayings; but stopping there, it seemed to him, was a deplorably bad habit, and was bad art-criticism, which seemed likely to bring out an evil feeling which they ought all to deprecate.

Mr. Boyes thought that the pursuit of the beautiful and the love of the beautiful were the true aim of all art, and being artists they should keep that before them; this was a sort of religion in them, which they believed in profoundly, though there were many obstacles in the pursuit of this belief. The prevailing worship of style and precedent was a great obstacle in the pursuit of the beautiful; but it was time that they got rid of following certain styles, and endeavoured to walk alone.

After some further remarks from Mr. Elkington and the chairman, Mr. Bayliss replied, and the proceedings then terminated.

WOODWORK AND JOINERY IN THE VIENNA EXHIBITION.*

IN presenting my report upon Woodwork and Joinery, I feel desirous of making a few preliminary remarks.

First, with regard to the Exhibition itself. Since my return I have often been asked what I thought of the great show at Vienna, and have been compelled to say that I scarcely saw it. Looking at the arrangement of the exhibits from a reporter's and workman's point of view, it has seemed to me that too much importance has been attached to the geographical position of the country supplying the article exhibited, and too little to the fact that, if a proper comparison is to be made, the productions compared should be,—as far as possible,—in juxtaposition. If the whole of the articles had been arranged according to material or class, the work of three days could easily have been accomplished in one, and comparisons could have been made with much greater ease and certainty. I am quite aware that, as a mere show, this arrangement would not have had the best effect; but it is a matter for serious consideration whether it is not of infinitely more importance to institute perfect comparisons than merely to please the eye of the ordinary spectator. After working hard for nearly a week, I came away fearing that my work was imperfectly done, and that I had missed many things which I ought to have seen, and feeling that the time had been too short for justice to be done to the various subjects.

Next, with reference to the classification of my notes. For reasons which I shall state hereafter, I have placed first, and dwelt somewhat at length upon, wood-converting machinery. I have placed second, the ordinary tools of the carpenter and joiner; third, buildings and house joinery; fourth, cabinet-work and furniture generally; fifth, machines made to any considerable extent of timber; and sixth, timber itself. In the latter portion of my report I make some remarks upon the work I noticed in various cities and towns through which we passed, believing that it is in the streets and workshops that the truest exhibition of the average workman's skill is to be found, at any rate so far as my special branch is concerned. It is not my intention to make any special reference to design, except where I feel compelled to do so in order to illustrate my opinions, as I have no desire to be caught poaching on the domains of my fellow-reporters.

With respect to the workmanship displayed in the construction of the various machines, I desire to express no opinion, leaving that to the reporters on machinery. I shall chiefly confine myself to the discussion of their adaptability to the various purposes for which they were made.

Holding strongly to the belief that in this age the nation whose machinery is most varied and perfect runs the least risk of being left behind in the race for commercial pre-eminence, and believing, also, that the measure of a nation's machinery is, or ought to be, the measure of both the wealth and ease of its operative classes, I naturally turned with some anxiety to the English section in the Machinery Hall, and was agreeably surprised to find that, in spite of above a thousand miles of land carriage, our manufacturers stood foremost in the quantity of their exhibits.

When, after looking round, I discovered that, large as was the assortment of machines, they represented only a portion of those actually in use in this country, and supplied by the various firms who are exhibitors at Vienna, I felt that, so far at least as variety was concerned, we had nothing to fear from Continental nations, and that our only rivals were our Transatlantic cousins. And here I desire to express the gratification I felt at the kindness and candour of the English-speaking portion of the exhibitors. Every machine was put in motion, and every speciality was pointed out to me, without the least hesitation; an example which was not followed by some of the Continental exhibitors, one of whom even objected to my measuring the bed of a planing machine.

But some of the difficulties which I and others of my fellow-reporters met with were, I believe, simply owing to our inability to make ourselves understood. At the same time, I would suggest that, in future, it be made a condition that exhibitors allow measuring or sketching within reasonable limits; for it appears to me that, if exhibitions mean anything, they mean an interchange of ideas.

Wood-converting Machinery.

Worssam & Co., London, exhibit, among other things, an arrangement for giving the "drunken" motion required in a circular saw when used for grooving purposes, by means of one washer and a set screw, thus dispensing with the sets of bevelled washers commonly used. They also show a set of machinery for preparing parquetry flooring, including a disc for turning up the squares when glued together, and a table with vertical spindle, enabling two men to work at one pair of cutters; the timber is held firm on the table by an eccentric roller.

Messrs. Allen, Ransome, & Co., London, among their machines exhibit a hand mortising-machine; and endless as is the variety of these machines, there have been improvements made in them of late. For instance, this firm lowers the table instead of the chisel, and if the screw and supports are only made strong enough, the advantage is great, inasmuch as it not only maintains the stroke at one uniform height, but the spindle carrying the chisel sliding in perfectly rigid bearings is an additional advantage. Besides this, they seem, with other makers, to have discarded the spring stop of the reversing apparatus, and now this step is taken, the wonder seems to be that a spring should ever have been fixed for that purpose. Personally, I should have preferred a longer stroke, and I find that the india-rubber washers are still in use, although I have seen that in a short time the oil reduces them to a pulp. There are also some important improvements in planing machines, exhibited by this firm with some other makers. They have dispensed with the flange from the pulleys of the band-saw, thereby greatly reducing the risk of breakage, and have applied to their pulleys a hinge bearing.

Charles Powis & Co. show a cheap and simple general joiner, one of the principal advantages of which is that all the operations are performed from one shaft. They also show a planing-machine, the spindle of which carries a flange for supporting the edge of the cutter, thereby imparting greater steadiness.

The pneumatic apparatus of Messrs. Allen, Ransome, & Co. ought not to be forgotten. By means of this arrangement all dust and shavings are carried away, thereby promoting health and economy, and lessening the risk of fire.

Messrs. Robinson & Co., of Rochdale, have a number of machines, amongst them a dovetailing-machine of a first-class character, a log-frame calculated to run 300 revolutions per minute, and a cross-cutting machine, having a chisel-sharpened tooth. When we consider that this firm stands in the front rank in England as makers of wood-working machinery, and that the machines they exhibit in no sense represent the extent of their manufacture, but may be said to be only a small selection from their stock, and that the same remark will apply to most of the other exhibitors, it will be understood that this Exhibition must not be taken as a test of England's strength in this direction.

The English makers seem generally to strive to obtain such a form of machine as will enable them to cast the frame in a single piece, and to secure solidity, accurate fitting, and—ugliness. The utilitarian character of the people is shown in their machines. The exhibits are precisely the same articles which will be sent from their workshops in the ordinary way of trade. The same everlasting lead colour, the same stiffness of outline, and also the same accuracy and strength.

American Section.

In this section, considering the great distance the exhibitors have had to travel, the show is tolerably large, and the variety is considerable.

There are some very compact moulding-machines by Rogers & Co., Norwich, Connecticut, some of the small ones at a very reasonable price.

A new machine to supersede dovetailing, by Knapp, of Northampton, Massachusetts, executes some very good though novel work, and its small size and neat appearance will commend it to the public.

J. A. Fay & Co., Cincinnati, show a tenoning-machine with narrow frame, enabling the attendant to feed quite through the cutters without leaning over the table. Those who have worked a tenoning-machine will appreciate this arrangement. There is also a beautiful machine for making buckets.

The general design and decoration of the American machines is superior to the English, though, for practical utility they are no better, and in point of strength and solidity are scarcely so good.

French Section.

In the French section, F. Arbey, of Paris exhibits a considerable number of machines, including a trying-machine with spiral cutters, the sharpening of the cutters being accomplished by means of an emery disc travelling over them when in motion. I have been unable to see any advantage in this arrangement; for when we consider that the primary object of such a machine should be accurate work, and not simply clean work, and when we also bear in mind that a cutter for a 24-inch machine must be 28 in. to 30 in. long, the difficulty of securing an even temper over such a length of steel, and the impossibility of applying a straight-edge to a spiral surface, makes me think that spiral cutters will never be very extensively used for trying-up machines. Several other machines are shown by this maker, including several saw-benches for manual power, very cheap, and some of them apparently well adapted for light work.

There are machines of various kinds from various countries, scattered up and down, but none of them, so far as I saw, calling for special remark.

Joiners' Tools.

Heissinger, of Nurnberg, shows a case of joiners' tools in boxwood, and a cabinetmaker's bench. The case is a credit to him, both in design and execution. The tools, also, are well finished, but peculiar in shape; the handle at the front end of the planes would be puzzling to an English joiner. There are no hand-saws, and the square blades are very narrow, which must make it easy to force them out of square.

Next is a case of tools from Leipsic. Here we see the marked difference between the English and the German tools. The bench

* By Frederick Smith, Manager, Union Land and Building Society, Manchester.

planes are very narrow, the moulding planes are all worked upright instead of being sprung as ours are. The clumsy looking frame-saw, and the variety of tools for doing the work which the English joiner would do with his plough alone, did not tend to impress me with a belief in the superiority of the German tools. The exhibitors of this case have had a medal from some exhibition; but most of the tools I saw—an English workman would consider rude and obsolete. There are other cases of tools from Rhenish Prussia, many of them well finished, but the hand-saws are conspicuous by their absence.

Of the English makers, Spear & Jackson, Ward & Payne, Kenyon & Co., and others, show joiners' tools, principally steel tools. The grinding of these tools is superior to anything of Continental manufacture. I could have wished that the show of planes and other wood tools had been larger.

Buildings.

The buildings of the Exhibition itself and the annexes, are, generally speaking, of good design, and the work is sufficiently well executed. The main buildings differ from those of previous Exhibitions, in that they are lighted from the side, and have a boarded roof; the inside was therefore cooler than it would have been had the roof been of glass. An additional advantage is, that there are no galleries, thus much labour is saved to the visitor. The roofs of the French annexe are formed of ribs of oak, bolted together in segments, and strengthened by laminated ribs above and below, the whole retained in shape by forked tie rods and king bolts. The span is about 60 ft.

Some of the other annexes have what may be called hammer-beam roofs; but in consequence of the struts passing across the middle of the hammer-beam, and straight up to the purlin, one fails to see what purpose the hammer-beam serves, except to produce an optical illusion—an illusion the worst which could be produced in a roof, namely, an appearance of deflection.

In the grounds is a Russian house and out-buildings, by G. Winterhalter, St. Petersburg, constructed of logs, about 9 in. diameter, very neatly put together. Every possible portion is of timber, even to the cornices of the living-rooms. The work is well done, but the ornaments are remarkable for being all angular.

There is a village composed of houses built in the styles adopted by the people of the various portions of the Austrian empire, and a church with a groined roof supporting a bell turret, all of timber. The work is most of it ill executed, and contrasts unfavourably with the Russian specimen before mentioned, and with a Swedish dairy, the work of which, as well as the selection of the timber, is exceedingly good.

House Joinery.

In this class of work, England and America show nothing, for the joinery of the workmen's cottages and the offices of the Commission can scarcely be called exhibits. In these, corrugated iron was the speciality, though, to my thinking, the visitors might inspect the sanitary arrangements, and be benefited thereby, for they are the only decent closets and lavatories I saw on the Continent.

Stroman and Larsomm, of Gothenburg, show some very good mouldings, and various kinds of joinery, well executed; but the panels are all jointed, and the wood badly matched in grain and colour. Other Gothenburg makers show a quantity of joiners' work, including splayed circular soffits for windows, not sufficiently well executed for England. There is also a spiral staircase from Stuttgart, with oak treads and risers; the design and proportion are very good, but the rail, instead of being moulded from the solid, is in two thicknesses, screwed together from the under side; the joints are very bad, and the lower length is in three thicknesses, the top piece being about 3 in. long, and ¾ in. thick, and of a different colour to the rest of the rail. I wonder how a workman, able to make the rail at all, failed to see the defects I have mentioned.

The pulpit by Goyers Brothers, of Louvain, is too well known to need either description or praise, and, after the specimens of bad work which I saw in Antwerp, I was ready to fancy that so much skill had been lavished on that pulpit that there was none to spare for the rest of Belgium.

I also found a spiral staircase, with risers, balusters, and rail in bent oak,—an excellent illustration of the elasticity of the material, and of the skill of the workmen in bending timber; also a model of a spiral staircase from Brazil, with scarf-jointed rail, and I wondered why no English workman or firm had sent, at least, a model, to show how a butt-jointed rail could be made.

In Venetian blinds, circular-headed windows have generally been a difficulty. In one case this is obviated by an arrangement like two fans, which close up the arch, and have a very neat appearance. In England, when the blind is drawn up, part of the light is blocked out, and the window practically shortened. In Vienna, they often obviate this by forming a box above the sash head, and drawing the blind into it,—a great improvement upon our plan.

In parquetry flooring, England is a long way behind. Perhaps it is that our damp, cold climate causes us to prefer carpets; but, be the cause what it may, although there are many specimens of this class of work, I saw none but what were from Continental countries, some of them very elaborate and beautiful in design, and superior in execution; in fact, there was no class of exhibits which struck me as being so uniformly good. I am informed that most of the machinery which is made in England for this work is sent to the Continent. Some of the principal exhibitors are,—Carl Sterkel, of Ravensburg; Baner and Rehorsh, of Breslau and Berlin; Blumer, Strasburg; and Tasson, of Brussels. The Brussels flooring was specially excellent, and in these exhibits Belgium partly retrieves her character.

As in most Continental exhibits, the judicious choice of colour strikes the eye of the English visitor as something to which he is not accustomed.

Cabinet Work.

Nothing struck me more, in examining the German specimens of cabinet work, than the wide difference in the quality of the workmanship. The designs were generally excellent; but, taking two pianos placed almost side by side, in one the joints were painfully apparent, while in the other, by F. Neumann, of Hamburg, the framing and cross-banding were perfect specimens of clean workmanship.

Another, in ebony, by a Berlin firm, was exceedingly chaste; the ornament was finished clean from the tool, and the rest of the work was all that could be desired. The same remark applies to the specimens of many other German exhibitors; but I noticed two wardrobes that were very inferior, and ought never to have found their way to the Exhibition.

An ebony cabinet, by a Dantzic firm, is very beautiful in design, the colour dead black, and the carved mouldings and general finish reflecting great credit upon the workman.

Among English exhibitors, Messrs. Jackson & Graham, Holland & Sons, Walker & Sons, and others, show specimens of the skill of the English workman. The two cabinets by the first named firm, executed from designs by Owen Jones, are perfect marvels of workmanship, both inside and out. The one in ebony and ivory is a masterpiece of cabinet work; the most rigid scrutiny on my part failed to expose a single flaw. The second firm show a splendid marquetry table, and the others have articles which fully maintain the honour of England.

The Italians show, from Milan and Florence, a quantity of furniture. From the former city comes a suite in mahogany and oak, beautiful in design, but wretched in execution; also an ebony and ivory cabinet, with lapis lazuli and jasper ornaments, very badly made; and if it could be placed beside that of Jackson & Graham, the contrast would be plain to the most superficial observer. There is also a marquetry cabinet from Carlsbad, full of work, but of a very inferior quality.

There seems to be very little ecclesiastical work in the Exhibition; the Belgian pulpit is the principal article in that branch of joinery.

Austria, and particularly Vienna, has a fine show in clock-cases; oak and walnut are the principal materials; walnut seems to be an especial favourite with the Viennese workmen. The design and workmanship are generally excellent; in fact, the workman of the Austrian capital appears to be in advance of his Continental brethren.

Machine Joinery.

In these days of iron there is little scope for the joiner in the frames of machines, except in those for agricultural purposes, such as combined thrashing-machines; and here Robey & Co. and Marshall & Co. vie with each other; the one exhibiting a frame in oak and pitch pine, and the other a similar frame in pitch pine and iron, both well made and deserving praise. Some American machines with wood frames also took my attention; they were exceedingly well put together, as American machines almost always are.

And this leads me to ask how it is that the workmen of the United States are so far in advance of those of Sweden, Norway, Germany, and other countries? It cannot all be owing to the fact of their having abundance of timber, for in the countries I have named timber is plentiful. Is it not partly owing to the fact that very many of the best of the Continental workmen find a home in the States, coupled with the fact that when they reach America they are fettered by no such absurd restrictions as prevail in their native land, and are freed from the curse of enforced military service, and so hand down to their children the glorious heritage of unfettered intellect and unrestricted energies.

Timber.

There are some very fine specimens of timber shown in the Exhibition grounds, among which is a piece of straight ash, 93 ft. long, 2 ft. 8 in. at bottom, 1 ft. 4 in. at top; a beech, 80 ft. long, 3 ft. at bottom, 2 ft. 4 in. at top; and a splendid pine about 150 ft. long, 3 ft. at bottom, 11 in. at top. The timber most used in Vienna is oak and a species of spruce-fir of two kinds—one resembling American spruce, and the other not unlike Norwegian red deal—neither of them very easy to work, and that makes me wonder that machinery is not more generally used. Much of the timber used in Vienna is rafted up the Danube, and the price of oak at the quay, when purchased in considerable quantities, was given me by Herr Paulick at about one gulden sixty kreutzers per cubic foot, or something like three shillings sterling. The timber used in Dresden is rafted down the Elbe in the same manner.

I visited the workshops of Herr Friedrich Paulick, and was received by that gentleman with the greatest kindness and cordiality. I spent some time with him in his office and workshops, and was struck with the good feeling which seemed to exist between himself and his workmen. He had some English machinery at work, but complained of the difficulty of getting his men to attend properly to it. He mentioned that it was his custom to give to his oldest workmen—I mean by that those who had been longest in his employ—a periodical bonus over and above their wages, according to the amount of his profits. I saw there,—what I am sorry to say I never saw in England,—trees and flowers growing among the piles of timber, and looking in at the office and workshop windows, so that the workman could look out, not at a brick wall, but on a flower-bed.

In the construction of casements the Germans are in advance of us; but the great obstacle in the way of adopting their windows arises from our wet climate and the difficulty of keeping casements weather-tight. Double casements are almost universal, and in Vienna the outer pair are brought flush with the face of the wall; the result is that there is scarcely any shadow on the front of the building, and the architectural effect is seriously marred. At Aix-la-Chapelle I noticed many revolving shutters made to pull up with a strap; very well made, and apparently capable of pretty general application. At Antwerp the shop fronts strike one as very peculiar. Here, also, I noticed the custom, which I have alluded to as prevalent in Vienna and elsewhere, of bringing the doors and windows out to the front line of building, and consequently giving a flimsy and gingerbread appearance to the fronts of the houses and shops by destroying the shadows. This is the more remarkable in people who understand so well the shading of flat ornaments, and is almost unpardonable in the citizens of Antwerp, who have their beautiful cathedral constantly before their eyes; but when we see that they, along with the inhabitants of Aix-la-Chapelle and Prague, have striven to hide or disfigure the edifices which which it should be their delight and pride to show to strangers, by surrounding them with cobblers' shops and *cafés*, one ceases to wonder at huge sheets of glass being brought out to the face of a wall, and I felt inclined to say, "We manage these things better in England."

The joinery of Antwerp is very indifferent. Nothing but the stump, tenon, and pin seems to find favour with the joiners of that city,—a mode of construction which would not be allowed in this country. I saw some oak doors which were

being fixed in a large shop in one of the main streets; the design was elaborate, but the workmanship was simply abominable, and no respectable English builder would have allowed himself to be disgraced by sending it out of his workshop.

The conclusions I have come to, as the result of my visit, are, that while our workmen,—and, indeed, many of our architects,—are very far behind in art-knowledge, and have very much to learn in design, especially where colour is made a predominating feature, we are as a nation greatly in advance in the quality of our workmanship. For, taking the exhibits in deal shown in the Exhibition, I do not hesitate to say that superior work can be found any day in the workshops of almost any building firm in England professing to do good work.

Again, the great difference in the quality of the exhibits, to which I have already referred, seems to indicate that the best specimens are the work of isolated individuals, and are not to be taken as criterions of the average skill of the districts from which they come. They are more careful of human life in the erection of new buildings; at least, such was my impression on comparing their scaffolding with the flimsy erections we see in this country. It seems almost impossible to fall off a Continental scaffold, unless it is done on purpose; the scaffolds being formed of square timbers bolted together, with wide floors, strong and close balustrade, and are reached, not by ladders, but by flights of steps or inclined planes.

I could not help remarking on the journey, that the amount of waste land to be seen is infinitesimally small as compared with England. Through Belgium, Prussia, and Austria they seem to know how to make the most of the land. Where they cannot grow corn they grow trees, and we find few immense commons in the very richest of their land, as with us. Near the stations and crossings, rows of fruit-trees are planted along the sides of the railway, and in many places the turnpike-roads are marked out for miles by lines of fruit-trees,—an example which might be followed with advantage in this country.

One great drawback to the development and progress of the Continental nations seems to be the military spirit which is fostered by the Governments, and the waste and demoralisation consequent thereon. Vienna swarms with idle soldiers, while the women have to do the drudgery of the city. The waste of wealth caused by the withdrawal of millions of the people from productive industry must be felt severely by the rest of the population, and the burden must be especially heavy on the poorest classes. Feeling this, I was not in a frame of mind to appreciate the exhibition of Krupp's guns, nor the armour-plates of John Brown & Co., and felt saddened to think that, after the doctrine of peace on earth and goodwill to men had been preached for nearly nineteen centuries, the workmen of the most Christian countries in the world should excel in the production of machines for murdering each other.

We are often startled by the alarmist cry of foreign competition. If our workmen would only consider that every extra ear of corn grown, either in our own country or elsewhere, increases the general stock of food, that every extra article which is useful to man increases the stock available for human comfort, and that the mission of every new machine (if in proper hands) is to lessen the toil of the masses of humanity,—instead of fearing the growing skill of their Continental brethren, they would leave off their drunkenness, become possessors of their own machines, train their minds and the minds of their children to a love of the beautiful and true in art and in nature, and bid God-speed to all International Exhibitions, and to every means which good and thoughtful men adopt in order to bring men face to face in friendship. We shall then not only cease to see women in Belgium harnessed with dogs, and drawing carts; women in Prussia carrying hay out of the fields on their backs; women in Austria climbing scaffolds and working as plate-layers, barefooted; but we shall cease to see in our own country little boys and girls, who should be at school or at play, wearing out their young lives in our factories and workshops, nearly every corner in our cities occupied by a flaring liquor-shop, our prisons and workhouses crowded, immense wealth and abject poverty elbowing each other, and every large town garrisoned by hundreds of men living in enforced idleness on the labour of their fellow-citizens.

After visiting the hospital-trains exhibited by Baron Munday, a man who deserves far more honour than a successful general, I came away deeply impressed with those lines of Longfellow,—

> "Were half the power that fills the world with terror,
> Were half the wealth bestow'd on camps and courts,
> Given to redeem the human mind from error,
> There were no need of arsenals nor forts."

In concluding my report, I desire to say that if any special machine or work has been omitted, it has been, not from any desire to leave it out, but from sheer inability to examine the whole of the articles in that immense Exhibition in the time at my disposal.

PROPOSED CENTENNIAL EXPOSITION BUILDING, PHILADELPHIA.

To obtain the best building, or set of buildings, for the Exposition proposed to be held in Philadelphia in 1876, a competition was invited, and forty-three designs were sent in. From these ten were selected, the designers of each being permitted to revise and alter the details, and having for this purpose access to all the others. There was then a second competition of the revised designs, from which the successful plan was chosen. This design is by our countryman, Mr. Calvert Vaux, and Mr. G. K. Radford, somewhat modified, we believe, by details taken from a design furnished by Messrs. Sims & Brother, of Philadelphia.

We have engraved a view of the interior of the building and the plan, as originally sent, and which it will be seen is novel in construction. We will let the designers speak for themselves.

Although several large structures are to be erected in connexion with the proposed scheme for the International Exhibition in 1876, it was evident that the problem to be first solved was the plan for the main temporary building, and to that they mainly confined themselves.

The schedule of instructions clearly recognised the advantages to be gained by providing for the various groups of exhibits in concentric zones, as in the last Paris building.

The present study in its floor plan is based on a zone arrangement, with square instead of rounded ends, it being contended that this corresponds with the facts better than the circular plan, as the angles give to the nations that require it a greater proportional increase of exhibition space in the departments, illustrating the results of high civilisation. It has, on the other hand, the main element of the Vienna plan in its twelve interior open courts, which have been designed with the idea of making them as small as practicable, but are 60 ft. in diameter; and essential features in reference to the light and air of the building, and the discharge of water from its roof.

The delivery and distribution of goods was difficult and tedious in the Paris building, as its mode of construction did not allow of access by railroad cars to all parts of the interior. This is proposed to be remedied in the present instance,—direct communications being provided for throughout the building, on three lines of double-track railroad.

In the Paris building no general interior effect was attempted, and no special emphasis was possible anywhere, so that the impressions of the visitor in regard to position were easily confused, and the interminable circular line prevented vista effects of any greater length than about one-third of the short diameter.

In the Vienna building the nave and transept arrangement, which includes all the proposed exhibition-room, was not depended on to produce any sufficiently satisfactory general effect, and a central dome, 333 ft. in diameter, was erected of permanent materials, to give an adequately grand impression. In the present study the aim has been to make the temporary building itself furnish the elements of a spacious and impressive design, that shall be equal in desirability for exhibition purposes in every part.

Instead of one detached dome with a span of 333 ft., the present design is made up of twenty-one domed or vaulted pavilions, each 240 ft. in diameter, clustered together, and connected by arches of 150 ft. opening, and fountain-courts 60 ft. in diameter. The various parts of the building are thus included in one grand whole, and the result becomes a spacious hall, adequate to the emergencies of the occasion, with long vistas, central and intermediate points of emphasis, direct lines of transit throughout its length and breadth, diagonal lines of communication where really needed, and an entire relief from any appearance of contraction anywhere, for the visitor is always in an apartment over 200 ft. wide, that opens without any intermediate corridor into other apartments, also over 200 ft. wide. This result is obtained by employing semicircular roof-trusses, springing from the ground-level.

The difficulty ordinarily experienced in this method of construction, is that a long stretch of roof is liable to be blown over while in progress of erection, even where moderate spans are used, because the design does not include provision for lateral support or stay. In the present plan this difficulty is avoided; for the principal trusses used in the construction of each pavilion are so arranged that each pair intersects another pair at right angles, the two groups being put in place at the same time, from the same centre frame or scaffold, so that when the centre frame, after serving its immediate purpose, is moved on to the site of the next pavilion, the structure from which it is removed is left standing squarely on four broad feet, and is entirely secure from any incidental disaster arising from a sudden wind-storm.

The trusses and framing of the roof and flooring are to be of timber, with iron shoes and connexions as required, the roof-covering to be shingles, and the gables and skylight to be glazed with rough or fluted glass, and the interior to be lined with painted canvas or other suitable material. The work would probably be started with a centre frame at the end of each main longitudinal passage-way, the building advancing by three pavilions at a time, from one end to the other.

The circular of instructions issued by the Commissioners calls for a floor-space of 25 acres, of which not more than 5 acres are to be included in a permanent memorial building.

In the design illustrated the main temporary building provides 22 acres of floor-space, exclusive of galleries.

The principle of classification that has been adopted by the Commissioners requires that five departments and a portion of the sixth should unquestionably be exhibited in the main building. The motive machinery and fine arts are intended by the scheme to be provided for in separate buildings, and it is suggested that other departments may with propriety also be accommodated in a separate structure, containing about 3 acres, and which may be located in a part of the park, which will be more suitable for the permanent art building than any portion of the site to be occupied by the temporary building.

Offices for the various exhibiting nations, buffets, retiring-rooms for ladies and gentlemen, and other necessary conveniences, are provided in the gables, as shown on plan, and sites for exterior restaurants are indicated. Galleries are formed over the offices, in which light refreshments may be served, and visitors enabled to rest and quietly survey the scene below.

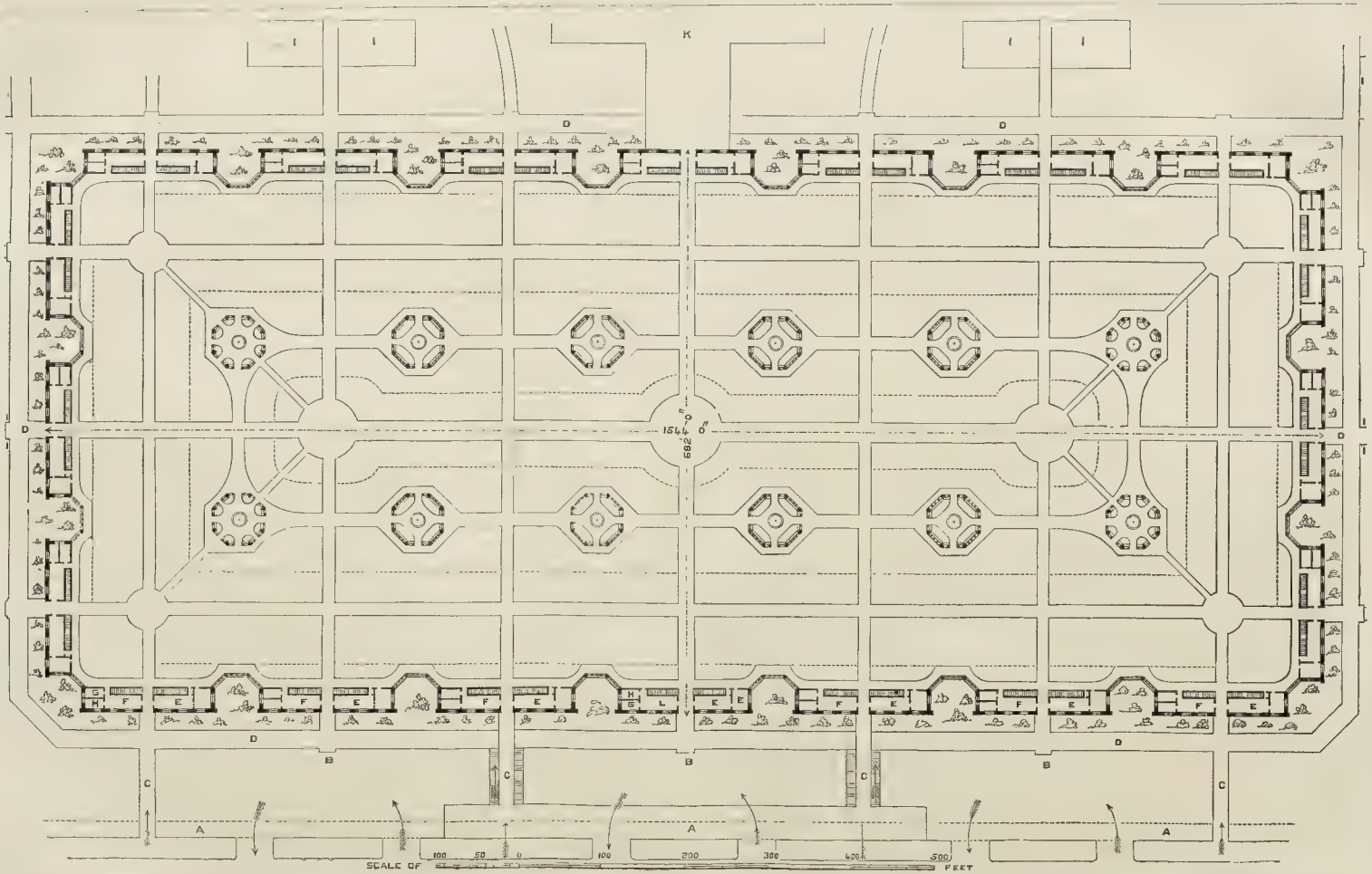
A covered piazza surrounds the building, giving access to and communicating with all the entrances and restaurants. The question of approaches to the building is a matter of detail requiring close examination and full discussion hereafter.

In the design as submitted it was proposed that a branch from the existing railroad, arranged for passenger traffic, should pass at a level of about 20 ft. above the side-walk, inside the boundary-line of the Exhibition-ground, and parallel to Elm-avenue, with high and low level entrances to the building. This would bring all visitors who may arrive by railroad, to the main entrance, without interfering with pedestrians or those who come in carriages or street-cars.

The cost of the design, as modified and much enlarged, has been stated at about 4,000,000 dollars.* The committee of the Exhibition have now recommended the erection of the following buildings, viz.:—1. The art-gallery, covering one acre and a half. 2. The grand pavilion, or main industrial hall, covering thirty-six acres. 3. The machinery-hall, covering ten acres. 4. The agricultural hall, covering five acres. 5. The conservatory. 6. Also, from time to time, smaller buildings for specific purposes, as annexes to the above.

For the art-gallery, to remain as a permanent Memorial Hall, the design of Messrs. Collins & Autenreith, architects, of Philadelphia, has, we believe, been selected.

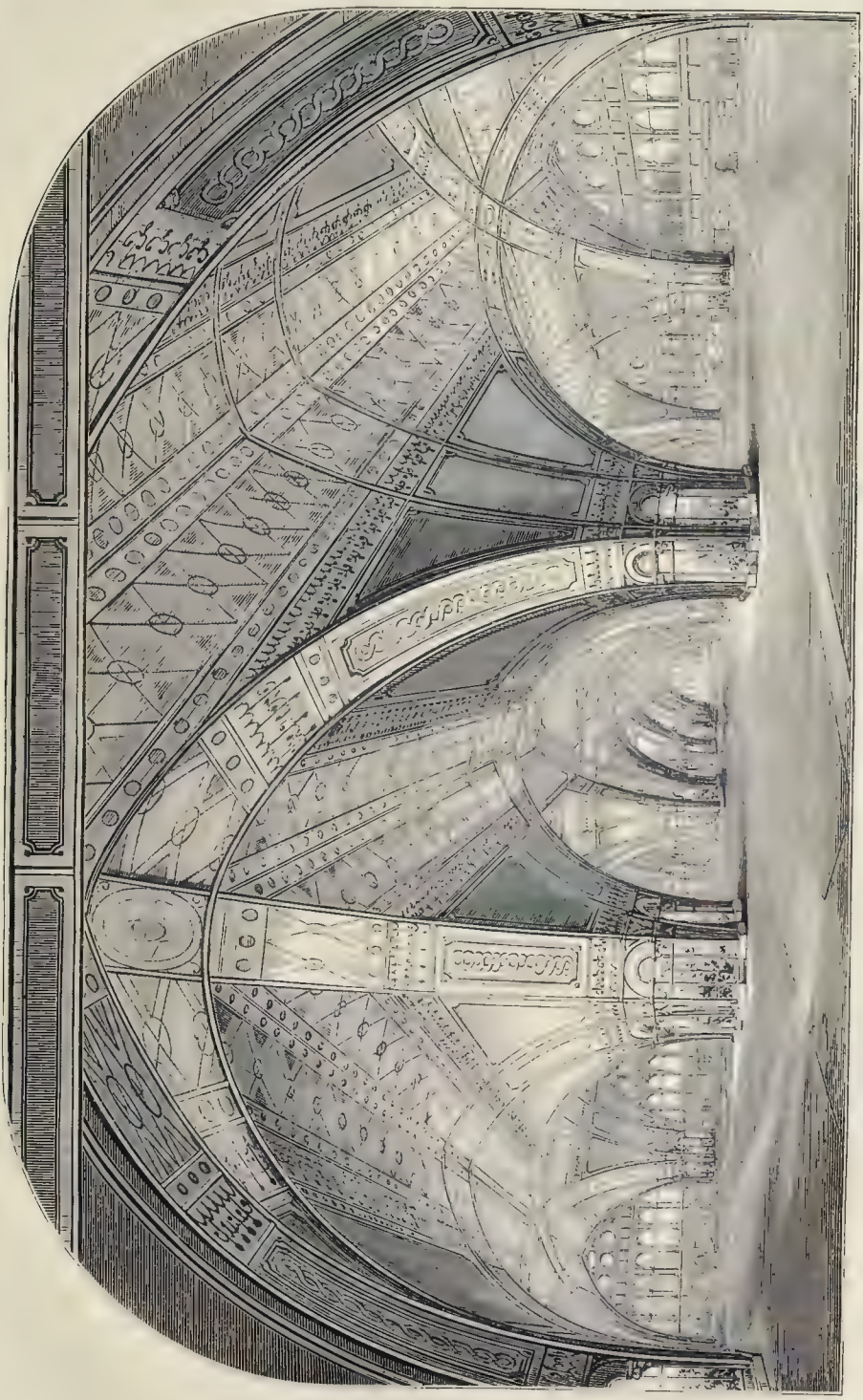
* We may mention that Mr. Vaux was assisted in his drawings by a fellow pupil in the old country, Mr. Alfred Smith, late of London, and now paying a temporary visit to the United States.



A. High-level Passenger Railway.
B. Carriage-porch.
C. Foot-entrance.
D. Covered Promenade.
E. Offices. F. Buffet.

BUILDING FOR THE CENTENNIAL EXPOSITION, PHILADELPHIA: 1876.

G. Ladies.
H. Gentlemen.
I. Site for Restaurant.
K. Site suggested for permanent Art Building.
L. Waiting-room.



CENTENNIAL ANNIVERSARY BUILDING, PHILADELPHIA, U.S.: SELECTED DESIGN.—Mr. Calvert Vaux, Architect; Mr. G. K. Radford, Engineer.

HOMES IN HACKNEY WICK.

SITUATED something over a mile beyond South Hackney Church, and adjoining to the east of Homerton by a narrow street of built-upon land, lies the derelict corner of the parish of Hackney, called the Wick. It bears about the same proportion in size to Hackney proper as the head and neck of a portly female do to the rest of her body, her extravagent chignon perhaps included. Our comparison relates only to the built-upon, or the being-built-upon, soil. The Wick is a salvage of the original marsh land, which has been lifted from the marsh within the last few years, the process being accomplished by using the Wick as a monster "shoot." Its first settlers were owing to the fact of one or two manufacturing speculators settling down here out of harm's way, having as little desire of consuming their own smoke as they had of bottling the smells which their noisome products produced. A great portion of this marsh tract was excavated for the purposes of brickmaking, and the walls of the first factories and houses erected were built of the brick burned here. In the meantime Hackney and adjoining parishes, sent out their rubbish to be shot here.

Factories having sprung up with their tall shafts; the management of machinery and plant necessitated the concentration of workmen in the vicinity; the "Jerry builders" of the metropolis became alive to the want of the neighbourhood; and, after a short interval, the first squatters in the marshes were housed in bran new brick dwellings as guiltless of drainage as they were and are of comfort or proper accommodation. Thus emerged the Wick from the low or swampy marshes stretching towards the Lea. Want having created want, more settlers came, and more houses were pitchforked together, at different angles of the Wick. The builders who built on portions of the alluvial soil were far too shrewd to excavate the ground for under kitchens; for, much as they might desire to obtain the sand below, it was scarcely worth their risk, as a donkey-engine would have become necessary to keep out the water while the foundations were being put in. As the Wick still awaits the paternal consideration of the District Board of Works, it will be seen that it would have been akin to madness on the part of the building speculators to devote a moment's thought to anything beyond mere surface drainage. The houses, therefore, of the marsh district have their footings a few inches below the surface in some places, and in others, and the greater portion, they are laid upon a stratum varying from 6 ft. to 9 ft. of an artificial compost, which we shall scrupulously describe,—viz., a combination of, dustbin, ashpit, road-gutter, broken delft or crockery, tin pots, cans, and other cooking utensils, with a large addition of cabbage-stalks, rotten matting, and the *disjecta membra* of countless boots and shoes, and other decayed vegetable, animal, and mineral rubbish. Here may be found at times the City casual and the London tramp, with their divining sticks, poking the odorous rubbish for shoes that do not pinch, and the rag-pickers and marine stores' agent striking bargains with the custodians or lessees of the "shoots." If old tin were as precious as old iron, and old leather could be worked into a pulp for india-rubber, a thriving branch of industrial employment might spring up. Over such deposits as we have described the habitations of the poor are fastly running up. Many houses have no proper system of drainage, because their basements are below the bed of the foul open sewer that runs through the district. Some are barely level with the marsh ditch, and only very few are a few inches above it. The houses are in fact positively water-logged, and the new houses that are now being erected as we write are of the most flimsy character. We examined the materials and workmanship of many. The timber is green, and far under the proper scantling; the front walls are one brick thick; the doors and sashes are 1½ in. thick; the stairs are boxed step-ladders, steep and narrow, with treads about 9 in. wide; the door-frames are merely casings of ¾ in. thick, with grounds or blocking behind to stiffen them, and on their edges are planted a strip of ogee moulding, which answers for the ornamental architrave; the window-sills are brick coated with rubbishy cement; and the only inducement to a tenant is that some of them include tolerable patches of backyards, which may be converted into gardens. This, however, is not being done except in very few instances, as the occupiers belong to a class who keep pigs or fowls, and other fancy animals. The mortar used in the brickwork and on the walls for plaster is mere rubbish, the latter having a thin skimming of lime putty. In several of the inhabited houses built upon the "Shoots" we found the backyards full to repletion with ashes and other ash-pit rubbish, and pools of muddy water, in which ducks as well as children were gobbling and dabbling together. We would not like to see the poor debarred from keeping poultry, nor would we have an objection to make against the poor pig or the hard-working though despised donkey, if they were housed at a distance from the dwelling. Our chief complaints are in respect to the situation and composition of the dwellings dwelt in, and being now erected for the poor. They are emphatically fever-nests built upon hotbeds of disease, and they are too dear at any price, no matter how low their rent or how many their rooms. Will any medical officer of health challenge our statements? Will any sanitary inspector, with a practical knowledge of his duty, report the fact to his masters? Will any independent witness, with compassion for the poor, go and see for himself, and if he is convinced speak the truth, and assist in promulgating it, that the health and lives of the living and the unborn may be saved? Laws were once represented to be sown in a certain island like dragon's teeth, where they subsequently sprang up as armed men. In the low and putrid soil of Hackney Wick the seeds of fell disease are sown broadcast and deep, and it is impossible to doubt that some day they will spring to life, not as armed men, but as pestilent fiends.

Had Taylor, the water poet, been alive, he would probably have celebrated the fame of water-logged Hackney Wick in rhyme, after the following fashion:—

Of timber green, road mud, and rotten brick,
They houses build that kill in Hackney Wick.

Rubbish shot there for good, one fathom thick,
Do rare foundations make, in Hackney Wick.

Doctors prosper well, and undertakers quick
Do follow in their wake, in Hackney Wick.

Sans pavement, flags, or drains, lo! span and spick
The Hackney Board rules over Hackney Wick.

The streets of the Wick, with the exception of about half a dozen, are, when rain falls for a few hours, in a state of sludge. As many streets are yet but half-formed, or built only upon one side, they have not as yet passed into the care of the District Board of Works. And know, all ye, by these presents, that though the Board have put up another board to caution outsiders from shooting rubbish on the open spaces being built upon, their own carts and the contractor's are carting daily continuous loads of poisonous rubbish. Speaking in the most mild term, the stuff that is shot there is quite unfit to raise houses upon, and if built on at all some years should be allowed to elapse previously.

There is a group of factories or works of various kinds, some in the Wick, and others on the boundary line of an adjoining parish, with wharfs on "Hackney Cut" Canal, which afford considerable employment to the inhabitants. Tar, ink, colour, chemical, iron, starch, jam, and other works, in all probably numbering nearly a dozen. Some are small, others extensive.

The jam factory gives employment to a number of girls, and all the factories combined absorb some hundreds of hands of both sexes, the majority of whom are housed in the houses of the surrounding district. A rubber factory is being commenced, and the foundations are laid in water. The drainage beneath will be very superficial indeed if it has only to depend upon the extent of the works we witnessed. The lower-level sewer can be here availed of, which was constructed a few years since by the Metropolitan Board. After passing through the marsh lands, and receiving a portion of the drainage of the "shoots," the foul open sewer passes along the entire length of Windsor-road, supplementing its nuisance on the way by the dregs of a colour factory, and finally disappearing into an arched sewer, where after some distance it drops to the low level. The Board, or the District Board, should see at once to the covering over of this open sewer, and prevent any drainage from the houses emptying into it in its present state. We would particularly direct attention to the system of drainage carried on in connexion with some of the buildings now being erected in the neighbourhood.

The cheap speculative buildings that are being hurriedly run up on all sides will hem in the new factory. The site of this factory a few years ago was a grassy and swampy marsh, as was also the site of the surrounding dwellings, and it was known by the amphibious name of Frog-town, from the prodigious number of the different genus of the creature that were to be found there. A little farther eastward another portion of Marshy Wick was dubbed Tarrytown, from the fact of tar-works being established there. Frogtown, Tarrytown, and other less euphonious names that find a local habitat here are being absorbed by the growth of the Wick, and in a few years will only be remembered by a few of the oldest inhabitants. The Wick affords no food for the archæologist or antiquary. There are no "finds" to be had except what the depths of the "shoots" can give forth. Stretching towards the river Lea the botanist and the geologist would doubtless turn up some trifles, but in the heart of the Wick there is nothing to be seen or found but brick above and refuse and water below. The rapid growth of the place as a living locality requires that it should be properly mapped at once, so that the old fading names, even though local, be caught up, and its earlier landmarks fixed. If a good map were prepared now, and another when the Wick is all built over, their study some years hence would be both interesting and important in a parish history and progress point of view. London east is stretching rapidly, and though pieces of commons may be preserved for open spaces, it is not improbable that the great marsh tract extending from the Wick to Temple Mills, and thence to the Lea Bridge-road, will be encroached upon by degrees until eaten up by the Moloch brick, and his usual precursor in low lands, "the shoot."

We were much amused in our not very pleasant walks through the Wick, in reading the fine names the builders have found for their two-story buildings of streets and terraces. Right royal English and Scottish names are pressed into service. Such as Windsor, Wallace, Percy, Montague, Prince Edward, Elgin, and Victoria streets. Some of these regal streets are full of hills and hollows, and have 6 in. deep of sludge. The first day of our visit we with great difficulty picked our steps over odd bricks and stones embedded in 6 in. or 8 in. of sludge. In these and some more streets, except for portions of the way, there were no footpaths, and pools of water were lying against the thresholds of the halldoors. Illness, not very long since, was rife in the district, and at present the health of the inhabitants is anything but robust. The smells arising at times from the "shoots," and from out the foul marsh sewer, reeking with slime and nuisance, are staggering. The occurrence of a warm summer could transfer the made-up ground of Hackney-wick into one monster forcing-bed for propagating an epidemic that might touch the very heart of London. Those who never spent an hour in tracing such ills as we describe may poo-pooh this statement; but we challenge denial and await the proof. To be forewarned is to be forearmed. We have but one end in view,—the general good. Let those who have power look to it.

THE SISTER ARTS.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT the first ordinary meeting of this Association for the present session, Mr. John Bryce, president, in the chair, Mr. R. Thornton Shiells read a paper, in the course of which he said:—Architecture, though it was in the ordinary parlance of the fine arts,—viz., painting, sculpture, and architecture,—placed last, is by no means the least: it is the highest, the grandest, the noblest, and, I may add, the most subtle of the fine arts. Painting is the most popular, as it represents nature in her varying forms, and thus appeals to the feelings. We have, however, no remains from the great nations of former times,—such as the Greeks, and only the decorative part of the art by the Egyptians. In the present day it is more used as an internal adornment. Thus all classes of society cannot gain pleasure from it. In this respect architecture has the advantage. Sculpture being an idealisation of life, appeals forcibly to the mind. It has been attempted in all ages, and never more successfully than in the time of Phidias, when it formed either a decorative part of architecture or had architectural surroundings. However beautiful statuary may be when isolated, its beauty is much enhanced when accompanied with architecture,—the impression on the mind being in some circumstances grandeur, in others repose. Architecture requires the assistance and combination of the sister arts merely as a

subsidiary or help. It can stand alone without them, but is adorned and beautified with them. It may seem strange that, though architecture is ever before the eye of the public, there is no art it has less knowledge of, owing to architecture being not only idealistic and scientific, but the practical embodiment of both into utility and beauty. This combination is seldom met with successfully applied, owing to the mind being naturally drawn or swayed by natural impulse or education toward either the one or the other. The necessities of the present day are the first desideratum. They have their influence over form and contrivance, as structures without such would not coincide with the spirit of the age. It is within the province of architecture to be subservient to the requirements of religion, of commerce, and the habitations of men in all climes; and more so in the present day than in any former period. as comfort, health, convenience, and sanitary appliances are all crowding forward into a prominent position by the impulse of the press and the education of the public. Science in architecture embraces the knowledge of materials, as regards their strength, properties, and durability, so that they may be adapted with becoming fitness to the several parts they may have to occupy in the embodiment of design. Architecture is not easily satisfied in its requirements. Its range is boundless, from the finest marble to the meanest clay. The triumph of mind over matter has advanced with great rapidity. Scarcely any material is so mean but what may be made more or less artistic. It is only by science that architecture can endure to after ages, for should there be any defect in construction, or the insufficient knowledge of materials from the foundation to the highest point, ruin is sure to follow. The study of ancient buildings forcibly brings before us this truth; the massive columns of the Classic and the graceful pillars of the Gothic proving it. In conclusion, each part should have its true ratio and proportion according to the position it has to occupy in relation to the whole structure, and its form and shape according to the nature and strength of the material employed, so that stability may be obtained without undue effort or waste of labour and material. In all true architecture this principle has been carried out, combined with utility, in accordance with the purpose for which the buildings were intended to be used, and the countries in which they were situated. This has been successfully exemplified in the religious structures of former times, where the materials have been judiciously used, and the construction embodied into forms of beauty. Their utility is evident, as they are still used for large assemblages at the present time, and though worshippers may be in hourly attendance, their proportions are such that light and ventilation are ample. In our modern structures, ecclesiastical and civil, those points have been much neglected, both as regards material and form, and more especially in regard to air and ventilation, as often a stifling, unwholesome atmosphere pervades in a large degree, owing to the want of sufficient space within the building in proportion to the number of people assembled. In regard to the present question of styles, true art is independent of it, though it is absolutely necessary to have a knowledge of its history and literature. Any attempt to commingle styles diametrically opposite to each other in thought, such as Doric with thirteenth-century Gothic, will always be repulsive to the eye, as the beauty of the one is in its horizontal lines, and of the other in its vertical. Architecture as a fine art has always had a latent spark or glow, in all ages, and in all countries. At times it has risen to the brightest effulgence, or been subdued to a very low flame. The expression of beauty is not felt by all alike, or otherwise there would be a uniformity of design and thought, and no battle of the styles, no Ruskin enthusiasm, no Stavart and Revit adorers. The art of the day demands a utopian embrace, though each country should acquire an expression of its own, owing to the natural products, materials, and scenery. All exotics in architecture are misplaced when transplanted from their natural zone, but may advantageously be engrafted into a milder or severer clime. The street architecture of Paris would look flat under our cold sky and hilly position, and much more so would castellated Scotch look heavy and crude in their clear atmosphere. But to come nearer home, when attempts have been made to introduce into stone districts in the stormy north the brick or timber architecture of the sunny south it has always been a failure in comfort and effect, and quite incongruous with the surroundings; and much more so when attempts have been made to castellate in brick in the Scotch style. All material, however mean, may be formed into beauty, and made a handmaid of the fine art, if it be used according to its true province, and not falsified to represent what it is not. The various materials now within command can leave the architect no excuse for falsity. Whatever material is essentially necessary, either for comfort, health, or utility, should be scientifically applied. In the latter part of the paper, Mr. Shiells gave a detailed account of various materials in use at the present time, showing the necessity of each being carefully designed so as to produce true architecture, which would endure to after ages, shedding an influence on the minds of all who behold it, honouring the age in which it was erected, and handing to posterity thought in tangible form, while the architects who produced it have passed away from the busy scene.*

NEW YORKSHIRE WATERWORKS.

For several years one of the most important questions which can affect any community, viz., an abundant supply of pure water, has been practically worked out by many populous towns in Yorkshire. As a rule, the most desirable and advantageous service has been decided upon, namely, the supply of liquid wealth which is to be found on the vast uncultivated tracks of moorland which are still to be met with. Many valuable works have within the past three or four years been constructed, and several are now in the course of completion, whilst others will doubtless ere long be undertaken.

The Barnsley corporation, at a large outlay, have constructed works at Ingbirchworth, about seven miles from that town, from the reservoir at which place they are entitled to take 1,200,000 gallons per day. The Leeds corporation has expended a good deal of money in its water supply. Halifax, since 1871, has been engaged in improving a powerful source of supply, by constructing additional reservoirs, so as to provide against any contingency which may arise. The total gathering grounds for the Halifax supply is 18,300 acres, or rather larger than that of the Manchester corporation. The Dewsbury and Heckmondwike Water Boards have also laid out a considerable sum of money near to Dunford Bridge, on the Yorkshire moors; whilst the Batley corporation have taken their stand for a Ramsden Valley in the Holmfirth district.

In addition to the works already completed or in progress, several notices have been issued, informing those whom it may concern that applications are about to be made to Parliament during the coming session for powers to take certain lands as water-sheds, and construct reservoirs at various places, so as to keep up a constant supply of good and pure water. Two notices have been given by Wakefield companies, which are giving rise to a good deal of interest. The present water company, which takes its supply from the river Calder, has given notice of its intention to apply to Parliament for powers to construct a reservoir at or near Langsett, on the borders of the Yorkshire moors, above Penistone, for supplying water to Wakefield and neighbouring districts. The notice states that the company seeks to take the whole of the water of the Little Don river, and the streams which now flow into the said river, at or above the site of the embankment of the Langsett reservoir. The notice given empowers the company to construct a tank or reservoir at Thurgoland, a tank or service-reservoir at Beacon-hill, a tank or reservoir in the township of Stanley-cum-Wrenthorpe, in the parish of Wakefield, and other places. The powers asked for would enable the company to supply over forty hamlets and parishes in the line of their pipes, and in and around Wakefield. In the latter district, amongst the places named, are East and West Ardsley, Methley, Whitwood, Altofts, Normanton, Featherstone, Sharlstone, Walton, and other mining districts, where the water for the most part will doubtless have been taken by the working of the coal measures.

A new company, to be known as the Wakefield and District New Waterworks Company, has also issued the requisite notice of its intention to apply for powers to take a supply from the Yorkshire moors, from a district a few miles nearer Manchester than the old company proposes to take. They propose to construct a reservoir, to be called the "Hordron Reservoir," in the township of Langsett, together with a catch-water drain or conduit near Muckleden, and similar works necessary for the proper storage and supply of water to the inhabitants, not only of Wakefield, but also of Penistone, Thurlston, Normanton, and many other places.

The Horbury Local Board of Health, who rule over a thickly-populated district near Wakefield, have also given notice with respect to their water supply, to enable them to obtain and supply water to their district.

ADDITIONAL REMARKS ON A NEW MODE OF HOSPITAL CONSTRUCTION.*

Mr. Henry Greenway, M.R.C.S., Plymouth, further remarks on his proposed mode of construction. The cases *specially* requiring this plan of hospital are,—wounds, whether caused by operation, accident, or disease; infectious diseases, and obstetric cases. Thus cared for, it is believed that hospital erysipelas, pyæmia, and gangrene (the pests in the surgical wards of our existing hospitals) would seldom or never occur, and would not spread through the building, as the wound of one patient would not be exposed to air tainted by the wound of a neighbouring patient, and the compartments themselves would not be a source of evil. It is believed that all wounds (some more than others) injuriously affect the air of a room either immediately or ultimately, if the walls be porous, and that they (the wounds) are very prone to absorb the organic particles thus suspended.

In a general medical ward some patients suffer, and even die, by being exposed to the same ventilation and temperature which may be considered necessary for other patients. This would not occur in my plan of building, where the ventilation and temperature of the different compartments may be varied as circumstances may require.

My plan of hospital construction has, by some surgeons, been considered unsuitable for connexion with a medical school, on account of the inconvenience which students would suffer when following the surgeon from one compartment to another. My reply is, that the primary object of a hospital should be the *patients' welfare*, and whatever interferes with the attainment of that must yield. Once let the public imagine that any hospital, or portion of one, deemed perfect for cases (especially wounds) requiring isolation, and therefore tending to save life, is objected to by a surgical staff on the score of its being inconvenient for students, we may be quite certain a cry will be raised demanding the utmost that art or ingenuity can provide for saving life, and we might hear of the establishment of hospitals apart from medical schools.

Construction.—At present, the inlet ventilating tubes of opposite sides are not designed to meet in the centre of the building. Probably it would be an improvement if they were made to pass transversely through the building, and perhaps project a foot or two on one side, the projecting portion to be perforated. In the event of high side winds, their force would then pass completely through the tubes, from one side of the building to the other, without unpleasantly affecting the compartments; and the projecting ends would act like "wind-sails" by catching a fore-and-aft breeze, thus increasing the circulation of air in the tube. I would also suggest a second inlet ventilating tube for each compartment, to pass across the ceiling of the corridor and open into the compartment, over the doorway. I think a downward current of cool air would mix with the upward current from the floor. Either of them could be shut off if necessary. The compartment would be warmed with hotwater or steam pipes, placed in the air-tubes underneath the floor-grating, or longitudinally, just above the floor. Iron guards would be placed around the interior of the compartments up to a certain height to protect the glass. As

* The President called the attention of the members to the publication of the drawings of Fortrose Cathedral which had gained the first prize last year in the competition for apprentices, and which were being published by the Association. He also intimated that Mr David Bryce, R.S.A., and Mr. J. T. Rochead had agreed to repeat their prize next year; also that Mr. John Hutchison, R.S.A., had agreed to give a premium for the best drawings of an existing Mediæval Scottish altar tomb, to be competed for among the members.

* Illustrated in the *Builder* from drawings by Mr. Hine, architect. The estimate, per bed, in 1871, was 150*l*. It would now, most probably, be somewhat higher.

a substitute for glass, certain portions of the compartment walls might be made of sheet-iron, coated with white enamel. A receptacle would be placed in each compartment, as no infected patient should be allowed to visit the water-closet. Cotton-wool screens, and vessels containing a solution of permanganate of potash, or such like material, may be placed in the inlet ventilating flues. The air would thus be filtered and ozonised. Charcoal filters may also be placed in the lower end of the outlet flues to disinfect the outgoing air, the charcoal to be occasionally reburnt.

HARBOUR AT ALDERNEY.

THE INSTITUTION OF CIVIL ENGINEERS.

On November 25th, the paper read was an "Account of the Construction and Maintenance of the Harbour at Braye Bay, Alderney," by Mr. Leveson Francis Vernon Harcourt, C.E.

The harbour at Alderney, designed by the late Mr. James Walker, Past-President Inst. C.E., was commenced in 1847. The Admiralty intended, in the first instance, to make only a small harbour, but subsequently gave directions for the enlargement of the scheme. In 1858 the design, then in course of construction, consisted of a harbour of 150 acres, with a depth of water of 3 fathoms and upwards, sheltered to the west and east by two breakwaters. The western breakwater, about 4,700 ft. in length, had been constructed, but the eastern breakwater was abandoned, and the harbour was consequently exposed to winds blowing from any quarter between N.N.E. and E.S.E. Westerly winds, however, from which the harbour was well sheltered, were the most frequent and severe in that locality. The western breakwater was exposed to the whole force of the Atlantic, and the effect of the fury of the storms was increased at Alderney by the rapidity of the tides near the island, occasioned by a peculiar confluence of currents in the bay of St. Malo. The breakwater was constructed on the *pierres perdues* system,—a mound of rubble-stone being deposited in the line of the proposed work from hopper-barges, towed out by steam-tugs. As soon as the mound was sufficiently consolidated it was surmounted by the superstructure. The stone was obtained from quarries at Mannez, on the north-east side of the island, distant about two miles, and was conveyed to the works by a railway. The superstructure consisted of a sea-wall and of a harbour-wall, 14 ft. and 12 ft. thick respectively, founded at first at the level of low water, and built, without mortar, entirely with this stone, the intermediate space being filled with rubble; the batter of the sea-wall being 9 in., and of the harbour-wall 4 in. to 1 ft. To protect the lower or quay level, which was 6 ft. above high water, a promenade wall was built on the sea side, about 14 ft. high, consisting of two masonry walls set in mortar, and filling between. The outer wall rested on the sea-wall, and the inner wall on the rubble filling between the sea and harbour walls, the whole forming the base of the upper or promenade level. As this structure proved liable to damage by storms the design was modified, in 1849, at 410 ft. from the shore. The foundations of the sea-wall were then commenced at 12 ft. below low water, with a width of 23 ft. at the base; the first five courses, each 3 ft. thick, being composed of Portland cement concrete blocks, faced with granite headers, each course having a set-off of 1 ft. on the face. The upper portion of the sea-wall was built of Manez stone set in Medina cement, with a batter of 6 in. to 1 ft., and the width of the wall was increased 9 ft. at low-water level. The harbour-wall was founded 9 ft. below low water, and was 14 ft. wide at the bottom. The first four courses were composed of Portland cement concrete blocks; the rest of the wall was built of Mannez stone set in cement, the batter of the face throughout being 4 in. in 1 ft. At the back the walls were carried up vertically, the space of 21 ft. between them being filled with concreted hearting. The promenade wall was built of solid masonry in mortar, and both the upper and the lower roadways were paved with granite pitching and copings, and a line of rails was laid down on each level. The quay level was 6 ft. above high water, and 25 ft. wide, and the upper level 14 ft. higher and 14 ft. wide.

In 1860, when the superstructure had been carried out 2,700 ft. from the shore, the design was somewhat modified. The breakwater was narrowed by reducing the width of the quay to 20 ft., the batter on the sea-face was altered to 4 in. in 1 ft., solid masonry was substituted for the concreted hearting, and the foundations of the harbour-wall were commenced at the same level as the sea-wall. The head was built in 1864. The foundations were laid 24 ft. below low-water level, across the whole width of the breakwater. The first nine courses, each 3 ft. thick, consisted of concrete blocks faced with granite headers; the upper portion was built of masonry in cement. The most exposed face-stones were joggled and dowelled together, and several of the corner quoins were further secured by iron bars and diagonal straps. Two red leading lights on the shore marked the entrance to the harbour at night.

The cost of the works of construction and of maintenance, to 1873, had amounted to 1,274,200*l.*, of which 57,200*l.* had been expended in repairs. The harbour was transferred from the Admiralty to the Board of Trade in 1866. The engineers who successively had charge of the works were,—as engineers-in-chief, Messrs. Walker, Burges, & Cooper, Messrs. McClean & Stileman, and Sir John Hawkshaw; and as resident engineers, Mr. Parkes, Mr. Rhodes, Mr. May, and the author. The contractors for the whole of the works were Messrs. Jackson & Bean.

PETERBOROUGH CATHEDRAL.

A new pulpit has just been erected in Peterborough Cathedral, and was first used on Sunday last, when the bishop of the diocese preached to a large congregation. The pulpit is from the designs of Mr. E. M. Barry, R.A., and has been presented to the Dean and Chapter by the sons of the late Dr. James, as a memorial of their father, who was a canon of the cathedral for forty years. Dr. James died in 1868, and is known as the author of treatises on the Collects, and other devotional works.

The materials used are a rich red stone from Dumfries, red Mansfield stone, and Devonshire and Irish marbles. The lower part of the design consists of a large central shaft and four angle detached columns, all of marble. The upper portion is square on plan, with the corners cut off, and at the four corners are attached marble columns, flanking figures of the four Evangelists, carved in red Mansfield stone. The pulpit is placed close to the choir-screen, on the north side, and facing westward, so as to command both nave and transepts. It is approached by a side staircase of stone steps, forming a straight flight, with small marble columns, supporting a handrail of similar material. The arms of the see of Peterborough and of the Dean and Chapter are carved on two shields, in the lower part of the staircase, and in the string, half-way up the pulpit, is a short Latin inscription, describing the purpose of the monument. There is a brass desk and light-standard, made by Messrs. Hardman; and the rest of the work has been well executed by Messrs. Field, Poole, & Co., of Westminster. The pulpit is intended for the nave services, which, at Peterborough, as at so many other places, have now secured a regular place in our cathedral system.

INSTITUTION OF SURVEYORS.

AGRICULTURAL GEOLOGY.

The first ordinary general meeting of the Institution of Surveyors was held on Monday, 24th November, at the new Rooms, Great George-street, the president (Mr. E. Norton Clifton), in the chair, when a paper was read by Mr. E. P. Squarey, on "Agricultural Geology."

It was announced that the president had given two debenture bonds of 25*l.* each towards the building debt, for which a special vote of thanks was passed.

After the paper had been read,

Mr. H. Lloyd, Q.C., said that the paper was of an extremely suggestive and practical character, and its advantageous results would be of great interest to any one concerned in agriculture.

Mr. Woolley said, that with regard to magnesium limestone, after putting on an average rental with the oolitic series, it was very similar to agricultural value as well as character. With respect to land, where coprolites were found, contractors were willing to give from 100*l.* to 150*l.* per acre, such land considerably aiding its surface value.

Mr. H. N. Jenkins, formerly secretary of the Geological Society of London, was of opinion that the subject of agricultural geology was one of immense importance, and should be more particularly studied. After some experience in the matter, he had determined to use the term surface geology, restricting himself to what he found on the surface; and was therefore able to reject anything beneath the surface which was not applicable to agriculture. He would not attempt to deal with the vast mass of facts which Mr. Squarey had established in his paper, the publication of which he would look forward to with some degree of interest, but he would confine his remarks to one or two things bearing upon general principles. On the south-eastern part of England, where we had alluvial rocks, there were to be found to a very great extent alluvial deposits. On that part of England which was the corn-growing portion these rocks had an immense importance wherever the chalk was cultivated, simply because the chalk was covered by these alluvial deposits. In the north of England it was a well-known fact that the chalk was almost entirely deposited. The Geological Survey had been turning their attention to agricultural geology, to show the extent of the surface deposits, and we should, he hoped, shortly know something more of the important subject of agricultural geology.

Mr. John Clutton regretted that Mr. Squarey did not touch upon the effect of climate and the difference of elevation, for the value of the soil depended to some extent upon its elevation. With ordinary fair management, the Wealden clay would let at from 2*l.* 10s. to 3*l.* per acre. Where a mixture of soils could be obtained, that land was the most fertile.

The discussion was adjourned till Monday, the 8th of December.

ST. SEPULCHRE'S CHURCH, LONDON.*

A discovery has been made during the progress of the restoration of the tower and porch of this church which will interest you and some of your readers. Upon taking down the octagonal turrets and pinnacles erected in 1630 and 1632, it was found that the above were cased with Portland stone, averaging 8 in. in thickness, and cramped with wrought-iron cramps 10 in. long, 2 in. wide, by ¾ in. thick, set in about 4 in. from the external air. The core of the turrets and the pinnacles was filled with rubble, and some of the crockets, embattlements, and gargoyles, with lions' and other heads, belonging to the Perpendicular church of 1450, all being of Ketton stone. This discovery is so far satisfactory, as it confirms the employment of crockets in the pinnacles, and embattled parapets on the turrets, of the present restoration. These remains will of course be preserved. W. P. Griffith.

A CALL FOR EVENHANDEDNESS.

Sir,—I happen to have two business offices,—one in London and another in a country town. This fact has for some years been the subject of careful record on the part of indefatigable compilers of directories. It is, as you must know, one among the manifold duties of members of our profession to receive,—in somewhat irregular but still tolerably constant streams,—what are known as Trade and General Circulars. These range, of course, over wide fields; and most of them are useful in one way or another. It is cheering to reflect that the Directors of the Spitzbergen Coal Company contemplate large dividends from the working of the well-known and most productive regions acquired on such favourable terms from Mr. Jones, who will remain the managing director of the company,—or to be made aware of the mixture of philanthropic impulse and pleasant expectations of gain that should urge to the exportation of some thousands of tons in unfavourable seasons to that inhospitable region. (A tendency noted of late to print on two sides, and on poor flimsy paper, cannot be too severely reprobated. The old liberal, large, and heavy foolscap, with the perforated demand slip, that it was a pleasure to write upon (at the back), will soon, it is to be feared, be an extinct institution in these parsimonious days.)

It is not uncomplimentary to be asked to subscribe to every charitable institution in the kingdom; and there is a little salve to one's self-love, even in the gentle demand for a shilling towards the church that is to exhibit the name of a professional brother on the foundation-plate, and to show throughout his power of

* See p. 232, *ante*.

producing sittings for next to nothing, and the agony of his soul at his success. There is something touching in such confidence in one's possessing character and circumstances so much in unison;—liberality of spirit in all its happiest senses, and that still more valuable quality,—a purse that fortune has filled till it finds itself forced to overflow. In the secret recesses of one's soul,—not to be revealed to the vulgar gaze,—there may, it is true, be the remembrance of stirring appeals which some one must have made to have rendered possible in time the harvest and gleanings that gladdened the heart hungering for appreciation and the completion right away of a spire in honest ashlar,—as an agreeable substitute for the dismal sense of the world's neglect that co-existed with docking and that melancholy temporary slated roof. . . . But I must not go through the list and point out all the benefits to the moral sentiments of this profuse bestowal of paper and typography,—especially when I want to convey the idea that I consider some of these gifts not in every respect up to my standard of perfection.

In point of fact, Mr. Editor, my sole purpose in writing to you is to complain;—and it therefore will appear not a little generous for me to act the Balaam at the beginning. I should hope my candour will not tell to my prejudice. I want to know why my sense of delicacy,—in one or both the capacities of which I have informed you above,—is at intervals most grievously offended. A recent flagrant instance has wrung this remonstrance from me. In this instance, as you will at once see, I am placed in a dilemma:—whichever way I take it is the worse for me. At my office in the country were received by bookpost descriptive accounts of the "Patent Monstrosity for rendering Chimneys hideous" (this may not be its full title, as I quote only from the memory). In the middle of testimonials from eminent noblemen, their agents, admirals, chimneysweeps, &c.,—among all these recommendations from persons of taste,—was laid a slip of paper, 5¾ in. by 1¾ in. (to be perfectly exact), adorned in good large legible printing, with the legend, "Architects' Discount, 10 per cent." This was not affixed in any way to the other papers. Careful forethought,—anxiously previsingthe needs of practitioners,—had provided thus for its being removed, carefully endorsed, and pasted in a systematic manner in the volume appropriated to such records. But I have a further tale to tell, and please to mark the difference. Similar papers came to me in London, and with what,—to the casual observer,—might seem a similar interesting enclosure; but this was lightly gummed on, and bore "Discount 15 per cent.," in bold Egyptian lettering, of vermilion hue. Can I, who am subjected to such treatment, be expected to indulge in heartfelt panegyric? I fear,—tiny as may seem the disturbing cause,—I am little disposed to do so. I must confess that, being unfortunately possessed of these contrasting views, derived from different mounts of vision, I am imperfectly gratified by either. Is this another instance of the folly of seeing too much behind the scenes? Does it merit a quotation from Mr. Gray's "Eton College"? Or ought it rather to stir up a desire for reform and such-like better things? When the (exact) value of my recommendation is so highly esteemed in each case (and so carefully appraised), I think I am justified in feeling offended with this difference of 5 per cent. between London and elsewhere. Why, on the other hand, is the additional expenditure on gum made for the distributions in the metropolis? Can it be suspected that business is carried on in a less thorough way there than in other places? Is it supposed that the bribery-paper might be severed from its company in the chronic hurry supposed to be characteristic of a London office? I am puzzled, and ask the assistance and sympathy of your readers. Perhaps some explanation might set these matters straight. In the meantime, the air of mystery is not satisfactory to, yours obediently,

An Architect and Surveyor.

The Cattle Show.—The private view of the Smithfield Club's Show of fat cattle, sheep, pigs, and appliances, at the Agricultural Hall, will take place on Monday, December 8th. The exhibition will remain open to the public until Friday, the 12th, inclusive.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

CHINESE ARCHITECTURE.

An ordinary general meeting of the session was held last Monday evening at the House in Conduit-street (Mr. Vulliamy, vice-president, in the chair, when the following gentlemen were elected:—Messrs. F. Beeston, D. Gostling, J. Lanyon (Fellows); Messrs. C. Baker, E. F. Roberts, and Hugh H. Stannus (Associates).

It was stated that Mr. R. H. Shout had kindly presented to the Institute a bust of Palladio, cast in pewter (exhibited), for which a special vote of thanks was passed. The chairman notified that Mr. John Wolfe had signified his intention of presenting a *replica* of the bust of the late Sir Charles Barry, which would probably be done at the next meeting.

Mr. Simpson then read a paper on the Architecture of China, part of which we have printed. In the discussion which followed, Major Crossman, R.E., said that Mr. Simpson, in his interesting paper, had given a good description of the general features of the architecture of China. He had not, however, spoken of the tombs of Tang Chow, which were situated on the side of the hills, from which they were dug out, being in the shape of horse-shoes. There were, too, numerous projections on the other side of the hills of an interesting character. In the great city of Nanking, the walls of which were thirty-eight miles round, the inhabitants could shoot pheasants and deer within the walls; but nearly the whole place was destroyed, with the exception of a few temples. There were to be noticed in this city the marble foundations of old inclosures around fish-ponds, and gardens, and such like; and also a large brick tower, the structure of which was marked with great grandeur. There was really nothing in Chinese architecture except the old wall, the temples, the pagodas, and the tombs. As regarded the origin of the style of architecture, he agreed with Mr. Fergusson that it was not exactly of a tent character, but there was to be found the high-pitched roof, with the tiles so constructed as to allow for the heavy rains which visited the country at certain periods of the year; the carved work of the houses, too, was really very beautiful. The whole of the Chinese architecture was similar in character to that of the Japanese, being very simple and clearly defined. The mechanics were nice people to deal with, the greatest difficulty, however, with them being that of their trade-unions; and if a man was dismissed they all struck work. With regard to Chinese engineering work, some of the bridges were very fine, the arches being well made. The canal, too, must have been a very great undertaking; but nothing had been done to it for many years. The roads were also treated in a similar manner, being allowed to fall into neglect, although their Commissioner of Public Works had received for years various sums of money for the purpose of repairing the highways. A road he was familiar with had not been gravelled over for more than twenty-seven years, nor any attention paid to it whatever: consequently it was full of unpleasant ruts. The gates of Pekin were of a remarkable character, and full of interest to the architect. The architecture of China had been at a standstill for many years past; and he trusted that in this respect, as well as in everything else, it would gradually advance; but this advancement required time, the Chinese being a people who cannot be forced.

Sir Digby Wyatt, in proposing a vote of thanks to the reader of the paper, said that Mr. Simpson was an illustration of the entire fallacy of a rolling stone gathering no moss, he having "rolled" almost over the whole world: they had heard of him from India, from the Crimea, and from China and Japan, and week after week he had delighted them by sending sketches of his travels to the *Illustrated London News*, so that they were *particeps criminis* in all his work. It was very delightful to find that a pure artist like Mr. Simpson could travel so far about the world and interest himself, as he did, in architectural work; for he had interested himself not only in picturesque, but in constructive and archæological matters; and they owed, Sir Digby thought, a deep debt of gratitude to Mr. Simpson for the interest he had taken in Chinese architecture. He would have liked Mr. Simpson, in his paper, to have touched upon the ordinary dwelling-houses of the Chinese. To his taste, they were far more beautiful and far more illustrative than the subjects which had been treated, which subjects were rather of an archæological character than illustrations of beauty. The Chinese excelled very much in garden-architecture, which so delighted Sir Wm. Chambers, who had interested himself very considerably in the architecture of that country; their fretwork, too, was of a gay, cheerful, and useful character. In conclusion, he trusted that at some future day a paper would be read concerning the domestic architecture of the Chinese.

Mr. T'Anson, in seconding the vote of thanks, hoped that the paper just read would be the precursor of others. He wished very much that in future observations they might learn of the permanence,—or the want of permanence—of the prevailing style of Chinese architecture. From what he could gather, the same style was carried through in all public buildings, even up to the Temple. This style, he understood, had been at a standstill for several hundred years. Previously to that time, was it, he asked, the same style precedent to that, or were there variations in the style? The Chinese buildings, they were told, were decorated with elaborate fretwork, and wherever there was detail there was difficulty of ornamentation; but the Chinese decorations were unquestionably connected, he thought, with Greek ornament. Did the Chinese, then, become acquainted with Greek art, or were they practisers of the same type of architecture, or were they influenced by the incursions of the Tartars and others, or by the different periods of prosperity or commercial import which would put them in communication with other countries?

Mr. Jennings stated that there was a great difference in the kinds of materials employed by the Chinese people.

Mr. Audsley, in answer to a call from the chair, expressed the gratification the reading of the paper had afforded him, and said that he could not offer any remarks upon it, as his experience of such architecture was confined to the Japanese.

The discussion then closed.

Before the meeting separated, the secretary called the attention of the meeting to some specimens of iron cut with a saw by steam machinery, which were exhibited, being the production of Messrs. Delong, of Paris.

BUILDERS' BENEVOLENT INSTITUTION.

The fortieth election of pensioners on the funds of this Institution, was held last week, at Willis's Rooms, St. James's, the president, Mr. Thos. Robinson (Cubitt & Co.), in the chair. Including those then elected, there are now forty-six persons receiving the benefits of the Institution, twenty males and twenty-six females, the former receiving 24*l.*, and the latter 20*l.* per annum. There were seven candidates for election on this occasion, two men and five women, but the funds of the Institution only allowed of the election of two—one man and one woman. The successful candidates were—John Thomas, 1,587 votes; and Elizabeth Trevethan, 3,320 votes. Messrs. T. Stirling and Matthew Hall acted as scrutineers, votes of thanks to whom and to the chairman closed the proceedings.

OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.

The members of this Society had their second walk this term to Pembroke College and Bishop King's House. They assembled at half-past two o'clock, in the library at Pembroke College, where the master (Rev. E. Evans) gave them a cordial reception, and briefly explained the history of the building. He said that there was scarcely a trace of the old building left. The college was founded in the year 1624, and stood upon the site once occupied by numerous academical buildings. He exhibited to the company various views of the college, and several memorials of Dr. Johnson, including the desk on which he wrote his famous dictionary.

A vote of thanks was finally given to the Master of Pembroke, for the courtesy he had shown the visitors in conducting them over the college.

Bishop King's House, in St. Aldate-street, was next visited. Mr. James Parker gave an interesting account of the building, which, he said, was certainly not the building inhabited by Bishop King, who was appointed as first Bishop of Oxford so far back as 1542, in the reign of

Henry VIII. It was very probable that he lived in a house on the site of the present building, which thus got the name of "Bishop King's House." The present house was built in 1628, in the reign of Charles I., and is a good example of the Domestic architecture of that period.

A vote of thanks was given to Mr. Parker, and the company separated.

The annual meeting of the Society took place at the Taylor Building, Professor Stubbs occupying the chair. The officers for the ensuing year were elected:—President—The Rev. the President of Trinity College. Hon. Secretaries—The Rev. J. S. Treacher, Merton College; and Mr. J. P. Earwaker, Merton College.

Mr. W. H. Turner, of the Bodleian Library, read a paper, entitled "Curious Extracts from the Ecclesiastical Court Books of the Diocese of Oxford."

A short discussion followed.

In the last walk this term Queen's College and the Church of St. Peter-in-the-East were visited.

COMPETITION.

AT a meeting of the members of the Throston School Board on Wednesday, the 26th ult., the three premiums for the designs of the proposed new schools were awarded as follows:—1st, to Mr. R. Watt, Hartlepool; 2nd, to Messrs. Parsons & Ellwood, Newcastle-on-Tyne; and the 3rd, to Messrs. Moses & Weatherill, Stockton-on-Tees.

WEST DERBY LOCAL BOARD.

A SPECIAL meeting of this Board was held at the public offices, Green-lane, for the purpose of appointing a surveyor to the Board, and also an inspector of roads, buildings, and sewers. Dr. Fitzpatrick presided. On the motion of Mr. Cook, seconded by Mr. Johnson, and supported by Dr. Glazebrook and other members of the Board, Mr. William Kelly, C.E., who has acted as surveyor since the death of Mr. Orridge, and who, for upwards of eight years, acted as assistant surveyor, was appointed surveyor, at a salary of 250*l.* per annum.

Mr. John Holme, an old servant of the Board, was unanimously appointed inspector of roads, buildings, and sewers, at a salary of 150*l.* per annum.

ENCAUSTIC TILES IN ARCHITECTURE.

SIR,—You recently gave a detailed exposition of your views as to the use and abuse of encaustic and other ornamental tiles in architectural decoration, and no exception can be taken to the judicious manner in which you deprecated their employment in their present form beyond the limits prescribed by you. But there is another side to the question, which, with your usual candour, you will, I am sure, allow to be stated in your columns; and it is whether,—admitting all you say as to their partial employment as adjuncts for effect,—the capabilities and advantages of the material being so great as to durability, cleanliness, &c., and hence its suitability to the dirty and destructive atmosphere of large towns, it could not be employed upon a thorough system for the external facing of buildings? There is abundant precedent for something like this in the East, and it is Mr. Fergusson, I think, who says that few buildings ever impressed him more, or produced upon him such a refreshing sense of beauty as those similarly decorated. Of course, the mere clapping on of variegated tiles such as we now see *would* produce all the "tea-caddy" effect you refer to; but this is not what is meant, but the designing of a structure, built say in concrete, entirely for such a mode of decoration, and the careful study and planning of the encaustic work as *a whole*, with special reference to harmony of tint and fitting architectural character in the pattern. Repose need not be sacrificed, as one tint,—say a rich cream,—might form the ground of the larger surfaces of the building, be relieved where decoration was appropriate, by well-designed patterns in different and well-harmonised tints. The endless and effective variety which could be thus obtained, combined with its superior advantages as a material over others affected by dirt and decay, point it out as worthy a thoroughgoing experiment. Its piecemeal employment as at present is open to all the objections you point out, but its capability in the way now indicated is another and interesting question, well worthy of the attention of architects, as peculiarly suited to all the conditions of our climate and the atmosphere of large towns. Not only would perpetual cleanliness and freshness be attainable, and colour, now so much wanted in our streets, but painting, re-painting, and all the other modes now resorted to to revive appearances, would be got rid of. X.

LONDON SCHOOL BOARD.

AT the final meeting of this Board, to which we have already alluded, Mr. Reed, M.P., brought up a report of the Works Committee, which was received, and in which were the following passages:—

1—3. The committee have invited tenders for the erection of the undermentioned schools, the following being the respective amounts.

Shap-street, Kingsland-road—Accommodation for 1,075 children:—

W. Cullum	£9,396	0	0
J. Sewell & Son	8,971	0	0
G. Wall	8,900	0	0
Higgs, Hill, & Co.	8,785	0	0
J. High	8,658	0	0
T. Niblett & Son	8,550	0	0
A. Killby	8,340	0	0
J. D. Hobson	7,980	0	0

Cost of site so far as purchased, 2,125*l.* 4*s.* Cost of building per head, 7*l.* 8*s.* 5*d.*

Albany-row, Lambeth—Accommodation for 775 children:—

J. High	£8,800	0	0
E. B. Gammon & Sons	6,883	0	0
Scrivener & White	6,793	0	0
W. Brass	6,778	0	0
Higgs, Hill, & Co.	6,543	0	0
G. S. Pritchard	6,483	0	0
J. Thompson	6,427	0	0
G. Stephenson	6,304	0	0

Cost of building per head, 8*l.* 5*s.*

2. Burrage-road, Plumstead—Accommodation for 814 children:—

Waterson & Co.	8,350	0	0
G. S. S. Williams & Son	7,164	0	0
Scrivener & White	6,795	0	0
Clarke & Bracey	6,784	0	0
J. Kirk	6,464	0	0
S. J. Jerrard	6,347	0	0

Cost of site so far as purchased, 1,859*l.* 17*s.* Cost of building per head, 7*l.* 15*s.* 10*d.*

The committee recommend the acceptance of the lowest tender in each case.

4. Tenders have also been invited for the erection of a school to provide accommodation for 798 children on the site in Duke-street, Deptford.

The amounts are as follows:—

J. High	£8,100	0	0
A. Sheffield	6,149	0	0
W. Higgs & Co.	5,984	0	0
J. Kirk	5,980	0	0
G. S. Pritchard	5,870	0	0
J. D. Hobson	5,589	0	0
Waterson & Co.	5,300	0	0

As Messrs. Waterson & Co. have since declined to enter into a contract for the erection of the school, the committee recommend that the second lowest tender, that of Mr. J. D. Hobson, of 7, Duke-street, Adelphi, W.C., amounting to 5,589*l.*, be accepted.

Cost of site, 800*l.* Cost of building per head, 7*l.*

5. Tenders have also been invited for the erection of a school in Tower-street, St. Giles's, to provide accommodation for 776 children.

The respective amounts have already been given in our list of tenders.

The committee recommend the acceptance of the lowest tender, that of Mr. J. High, of Clarence-road, Lower Clapton, E., amounting to 8,775*l.*

COST OF NEW CHAMBERS, LINCOLN'S INN.

SIR,—The sum of 8,000*l.*, which was given you as the cost, was for the portion *now standing*, but *not* the estimate for the total, which is 23,015*l.*

Apologising for the mistake, I am, &c.,

F. J.

PRESERVATION OF YORK GATE.

AT the last week's meeting of the Metropolitan Board of Works, a report was brought up by the Works and General Purposes Committee, which stated that they had considered the letter from Mr. Samuel John Bennett, expressing his willingness to negociate with the Board for the sale to them of the structure known as York Gate, on the Victoria Embankment, but the committee did not think that it would be advisable that the Board should purchase this structure, and they recommended that Mr. Bennett should be so informed.

After some discussion, in the course of which Mr. Lammin moved an amendment in favour of the purchase, and Mr. Bidgood and Mr. Runtz, spoke in favour of the architectural merits of the structure, the amendment was negatived by a majority of twelve to six, and the report of the committee was adopted by a majority of twelve to two.

THE LATE MR. E. T. PARRIS.

THE obituary of the *Times* will have prepared our readers for some notice of a veteran in art, who passed away suddenly on Thursday, the 27th ult. Mr. E. T. Parris was in his eighty-second year, and died, as the saying is, "in harness," for he had just done breakfast, and was about to begin his day's work, when he fell from his chair and expired. Many of his survivors who remember him in days gone by will call to mind the novel works which his mechanical ingenuity and versatile talents prompted him, not only to undertake, but to carry through with extraordinary zeal and success. Gifted with unusual energy, a true feeling for the fine arts, and a happy temperament, which helped him through many difficulties, he has left behind him a well-earned reputation, besides many personal friends who deeply lament his loss. He has, fortunately too, left a very copious journal, from which we may be able to procure some extracts for publication. At any rate, his life merits a more lengthened notice than we can give at the present moment, and we hope to supply some details of his career hereafter.

SANITARY APPLIANCES FOR THE INTERNATIONAL EXHIBITION.

THE sub-committee for obtaining a proper representation of sanitary appliances and construction at the approaching International Exhibition, 1874, held their first meeting on Tuesday last. Present:—Dr. Hardwicke, in the chair; Mr. Gatliff, Capt. Clode, Dr. Ross, and Mr. Godwin; Capt. Clayton acting as secretary. Arrangements were settled for making known the wants of the commissioners. Applications by intending exhibitors must be made by January 1st, and the articles themselves must be sent in by the 1st of March. We hope such of our readers as are interested will take note of this.

SCHOOLS OF ART.

Swindon.—The annual distribution of prizes and certificates to students in the classes at the Mechanics' Institute, Swindon, took place in the hall of the Institute, which was crowded with spectators. Sir Daniel Gooch, M.P., took the chair, supported by Sir James Anderson, and other men of influence. The successful candidates were called to the platform, and the chairman handed certificates and prizes to some of them. Lady Gooch presented prizes to females. One of these prizes was a sewing-machine. Sir James Anderson (chairman of the Great Eastern Steamship Company) addressed the meeting at some length, in the course of which he alluded to the works he had seen that day at New Swindon. They struck him as marvellous, and worthy not only of a district, but of a nation.

THE TRADES MOVEMENT.

THE Bishop of Manchester addressed a gathering of workpeople at the Atlas Works, in Manchester, on Saturday night, and his remarks were of a practical character. His lordship contended that prices had risen to such a pitch that it was impossible for society to stand the strain much longer, and he asked the working classes to prove themselves worthy of the position to which they had succeeded in raising themselves, not to be extravagant in their demands, and not to push their employers into a corner. They might, he said, for a time command their own terms in the market; but the laws of political economy always revenged themselves, and no body of men, either employers or employed, could alter those inexorable laws.

At a meeting of the master masons of South Shields it has been decided to agree to the terms of the men, namely, that their wages be not reduced during the winter quarter, but remain at 33*s.* per week. The masons have resumed work, and operations in connexion with the erection of the new Union Bank, in King-street, are being proceeded with.

Cape Town Competition. — Some of our readers may be glad to have their attention directed to an advertisement in our present issue, inviting designs for Houses of Parliament in Cape Town.

CHURCH-BUILDING NEWS.

Langport (*Somerset*).—The parish church of Huish Episcopi, near Langport, has lately undergone extensive reparation under the superintendence of Mr. Ferrey, F.S.A., architect; the contractor being Mr. Maurice Davis, of Langport, who has ably carried out the works to the entire church, — the chancel being rebuilt by the Ecclesiastical Commissioners. An entirely new roof and panelled ceiling (of the ancient wagon-headed type) have been put to the nave; but many of the old ribs have been reused, and the original colouring reproduced. The old roofs were in a thoroughly decayed condition, past preservation. The north transept and south transept roofs have been extensively repaired and restored to their ancient design. The whole of the incongruous high pewing has been removed, and the body of the church seated with handsome open oak benches having solid shaped ends. The depressed chancel arch, of debased form, has been altered and brought into a more pleasing curve, the old vousseirs being reused. A vestry has been added on the north side of the nave, it being impossible to contrive one on the north or south side of the chancel, on account of vaults being in the way. The interesting south porch has been repaired and its roof opened out and restored. Though clearly not the original design, it is yet of some antiquity. The elaborate and beautiful Norman doorway has been made good where necessary. The stone of which this doorway was constructed has evidently suffered from fire, as may be seen by its colour. The church has been heated by Mr. Kelway's apparatus. The total cost of the works to the body of the church will probably amount to 1,500*l*.

Clapham.—St. Saviour's Church, Cedar-road, Clapham Common, has been consecrated by the new Bishop of Winchester, Dr. Harold Browne. The church was completed, and has been open for service, so far back as three or four years, but it remained unconsecrated. The explanation of this is, that the late vicar caused a monument to his wife to be erected in the central portion of the front of the chancel. The monument in question consisted of a sculptured figure of the lady in a recumbent position, resting on a pedestal, with the feet towards the altar. The late bishop objected to the situation in which this monument was placed, and refused to consecrate the church until it was removed to some other position. This has only just been effected, the monument in question being now placed under the west window of the north transept. A lectern has been placed on the former site of the monument, and the pulpit, which formerly stood under the tower, and which is open to a considerable height, has also been brought forward to the angle of the nave and chancel.

St. Leonard's-on-Sea.—The foundation-stone of a new church at St. Leonard's has been laid by Mr. Beresford-Hope, M.P., in the presence of a large congregation. The ceremony was preceded by services in the present church. It is intended to erect a costly and handsome building. The offertories amounted to over 80*l*.

Deepcar.—A meeting has been held in the National School-room, Deepcar, to consider the importance of building a church in the parish. Lord Wharncliffe occupied the chair. It was resolved that a church should be built at Deepcar, and a committee was formed to carry out the object of the meeting. A subscription-list was passed round at the meeting, and it transpired that Lord Wharncliffe had given 500*l*., and that Mr. W. Taylor had given a site for the new church.

Eaton.—Christ Church, Eaton, which has been erected upon a site given by Mr. H. Bolingbroke, and situate between Newmarket-road and Unthanks-road, has been opened for divine service. The church is of the Early Gothic style of architecture, and has been built from the joint plans of Messrs. J. H. Brown and J. B. Pearce, architects, by Messrs. W. Wright and J. W. Lacey. It is of a cruciform plan, and at present consists of chancel, nave, and transepts, with organ-chamber and vestry on the south side, provision being made for the addition of aisles when required. The nave is 75 ft. long, and 25 ft. wide; the transepts are 18 ft. by 16 ft., and the chancel 20 ft. by 18 ft. The building is of flint, with Bath stone dressings, relieved with bands and arches of coloured bricks, supported by buttresses; and the chancel is the gift of the vicar (the Rev. F. Weston). The roof is of open timber, light in design; the internal walls are of stucco; the windows are glazed with cathedral glass of various tints. The east window of the chancel, which is at present only temporarily glazed with ordinary glass, is to be filled with stained glass, to the memory of the late Mrs. Hewitt. In the nave and transepts the floor is of black and red Staffordshire tiles, that in the chancel being of encaustic tiles. A light stone spire, or bell turret, is in course of erection. Altogether the church will cost between 2,000*l*. and 3,000*l*.

Haywood.—The foundation-stone of a new church has been laid at Haywood, about a mile south of the Moss Railway Station, and where the parishes of Moss, Fenwick, Burghwallis, and Owston unite. The site on which the church will be built is in a field, having the North-Eastern Railway line on the east, and the road leading from Mr. Stones's farm to the west.

Owston.—The chancel of the parish church of Owston has been restored and reopened. Coat upon coat of whitewash, plaster, and lime had disfigured the inside walls, and that on the northern side had so much receded from the perpendicular as to necessitate being driven upright before the outside portions were fixed in and rebuilt. The roof was that of a barn, and the flooring was a mixture of rough and plainly chiselled flags, with a mixture of memorial-stones to the departed. The walls have been cleansed of their coverings, a door and archway of the time of Edward III. have been brought to view; the building covered with a light roof, and the flooring laid in encaustic pavement. Sir Gilbert Scott superintended the work, and Messrs. Simpson & Malone, of Hull, carried out his designs. The large east window has been considerably enriched. Besides the five separate figures of our Lord and the four evangelists, each occupying a light to itself, the upper portion is now filled with coloured glass, harmonising with the old and lower portion of the decorations. The roof of the chancel has been made higher, and is carried up to the ancient height; it is formed of oak. The exterior of the chancel has been mostly rebuilt, with plain worked stone. On each of the bosses forming the supports of the window-arches are figure-heads. At the end of the roof over the eastern and chief window is a carved cross.

SCHOOL-BUILDING NEWS.

Hammerwood (*East Grinstead*). — The new school chapel, which has been lately erected by Mr. Oswald Smith, for the education of the children of his tenants and workmen, and also for the performance of divine service, has been opened. It is a red brick erection, with Bath stone dressings, and has a spire attached, with bell, the schoolmaster's house being immediately adjoining. The interior is fitted with seats, serving the double purpose of form and desk for scholastic purposes, and also seats with backs, for the congregation on Sundays.

Newton (*Devon*).—The foundation-stone of All Saints' Schools, Newton, has been laid. The new schools, which are called All Saints', are in course of erection on a site on the Marsh, presented by the Earl of Devon, and are intended to accommodate about 260 pupils, the cost of completion being estimated at about 520*l*., of which 320*l*. have already been promised. They will also contain a chancel, as it is intended to use the building for religious service on Sundays. The plans, which were prepared by Mr. Rowell, the architect, are being carried out by Mr. Mills, the contractor.

London. — A new wing to accommodate 90 children, and offices, have been added to St. Agnes's Poor-law School, Leyton House, which is a mansion of the Queen Anne period. Mr. Blease, of Stratford, was the contractor; and the architect was Mr. C. G. Wray, of Regent's Park, who is also the architect for the new Roman Catholic Reformatory at East Ham, and of the St. Elizabeth's Schools at Richmond; Messrs. Perry & Co., of Tredegar Works, Bow, being the contractors for both works.

Dover.—A new school (St. Paul's) for ninety children has been erected adjoining the church, the front of which is of Kentish rag stone, with Bath stone dressings, and has been designed to accord with the church. The school has an open-timber roof, and is well lighted and ventilated. Mr. C. G. Wray was the architect, and Messrs. Tunbridge & Denne, of Dover, were the contractors for the works.

Miscellaneous.—A new school-room has been erected in connexion with the North Hyde (R.C.) Industrial Schools; and a new refectory, play-room, and enlargement of the chapel in connexion with the Blythe House (Hammersmith) Industrial Schools. Mr. C. G. Wray was the architect employed; and Messrs. Robbins & Co., of Clapton, and Mr. Blease, of Stratford, were the contractors respectively.

FROM SCOTLAND.

Edinburgh.—Mr. Waddel, contractor, Bathgate, who has undertaken the work of widening the North Bridge, has just made a commencement with the preliminary scaffolding operations. It is proposed to erect a strong scaffolding of Baltic pine on both sides of the bridge, part of which will be raised from the base of each of the piers: for dealing with the spaces between the piers a staging will be swung with chains from the parapets of the bridge. The uprights for the scaffolding at each of the piers will consist of four logs placed on end, and these will be connected diagonally with battens in the usual manner. In these preliminary operations a travelling bogey-crane will be used; and as this will be run along the footpaths, the passengers on this already over-crowded thoroughfare will have to submit to considerable inconvenience for some time to come. The east side of the bridge is to be first dealt with. It is thought that the whole work will be completed by the end of June.——The new building of the School of Arts in Chambers-street is now rapidly approaching completion. There are, in addition to the large hall, which in accommodation and convenience for scientific lectures, according to the *Weekly Scotsman*, equals anything of the kind in Edinburgh, two smaller lecture-rooms, fitted up on a less elaborate scale, besides museums or laboratories for the lectures on chemistry, natural philosophy, geology, and botany. There are also rooms for the directors and secretary, and a house for the janitor.——At an aggregate meeting of the joiners of Edinburgh, the following resolution has been carried:—

"That this meeting of the joiners of Edinburgh agree to go in for an advance of wages to the extent of ½d per hour, to come in force on the 1st of March, 1874; and, to increase our confidence in one another, we immediately sign the paper circulated among the trade for that purpose."

It may be stated that the present rate of wages is 7d. per hour, and that three months' notice will be given to the masters of the intended rise. The paper referred to in the resolution is talked of by the trade as "the *plebiscite*," its object being to elicit the opinions of both unionists and non-unionists as to the desirability of the step that is proposed to be taken. This has been in circulation for some time past in the various shops, and, it is said, has been largely signed.

Leith.—The Tolbooth Wynd of Leith was in former times one of the most picturesque thoroughfares in the ancient burgh, but since the destruction of the quaint Tolbooth and interesting old watch-tower, it has sunk into a comparative architectural destitution. At the corner of Tolbooth Wynd and Water-lane, and facing towards Charlotte-street and Kirkgate, a tenement has just been put up from designs furnished by Mr. Robert Paterson, architect, Edinburgh. The frontage, which is upwards of 200 ft. in length, consists of three stories, the street-floor being fitted up as shops, while the upper flat is arranged for warerooms, saloons, &c. In point of architecture the building illustrates the application of the Italian style to the requirements of shop construction. The divisions or piers between the doors and windows of the shops are of cast iron, ornamented with small columns running up the face of each, and surmounted by carved capitals, above which are lintels with carved ends, the spandrels being filled in with carved ornament. An ornamented cornice runs along the whole frontage over the shop lintels. The upper story is wholly of freestone. The building is surmounted by a moulded cornice, having a parapet and moulded cope.

Greenock.—The Greenock authorities have made an official inspection of the new Greenock Gasworks, erected on Inchgreen Island, between that town and Port-Glasgow. The old gasworks in Glebe having latterly become deficient for the supply, and an eyesore to town residents, it was resolved by the Police Board in 1871 to construct the large and improved works just completed about two miles east of Greenock. The estimate then amounted to about 50,000*l*., but ex-

tras and the price of the land have increased the total cost to 70,000*l*. The whole work was carried out under the guidance of Mr. S. Stewart, the engineer. They are constructed to supply two million feet of gas per twenty-four hours, or three times the present demand.

Dundee.—The Albert Institute, erected in the centre of Dundee to perpetuate the memory of the Prince Consort, has been formally opened by the Earl of Dalhousie, lord-lieutenant of Forfarshire. The building is in the Gothic style of architecture, and has been erected from designs by Sir Gilbert Scott, at a cost of 33,000*l*. It is intended for a free library and museum, and the opening was celebrated by an exhibition of products of art and industry. Many noblemen and gentlemen in the neighbourhood have lent pictures, and a loan of art treasures of the value of 100,000*l*. has been obtained from South Kensington. The exhibition is to remain open two months.——The ceremony of laying the foundation-stone of a new church for the Rev. Mr. Knight, has been performed by Provost Cox. The building, which is far advanced towards completion, has cost between 8,000*l*. and 10,000*l*. The new church is to be opened on the first Sunday of next year.

Peat Fuel.—The South of Scotland Peat Fuel Company (Limited) has held its first general meeting, Mr. Maxwell, M.P., presiding. It was reported that arrangements had been entered into with Mrs. Withom, of Kirkconnel, for a lease of the peat upon her moors for thirty-one years, and also a provisional arrangement with Sir A. Grierson for the peat on Rockhall.

Books Received.

Artizans' Reports upon the Vienna Exhibition. Manchester: The Society for the Promotion of Scientific Industry, 11, Manchester-chambers; London: Simpkin & Marshall.

THE Society for the Promotion of Scientific Industry, Manchester, acted wisely when they determined that a number of selected artizans engaged in the principal industries of the country should be sent out to visit and report upon the International Exhibition in Vienna; every reporter being *bonâ fide* a workman, earning his living at his trade.

In selecting the artizans to represent the various industries associated with Birmingham, Mr. W. C. Aitken, as usual on all such occasions, rendered most efficient service. He entered *con amore* into the matter; and has, further, superintended the editing of the reports of the Birmingham men, giving, himself, an introductory chapter.

Among other instructions issued by the Council to the reporters, were the following:—

"The object in sending out selected and skilled workmen to report upon the Exhibition at Vienna is, that the artizans themselves may be benefited by the lessons such international displays are calculated to teach, and that through them their respective trades may be stimulated to improvement.

It is not intended in any way to fetter the reporters with any instructions as to their method of reporting, but each one will confine himself to his particular industry. Their best discretion must be used, and attention may be profitably directed to the following points:—

I. A comparison of the quality and character of the work exhibited by the different countries.

II. The new features in old manufactures, machines, and processes, and the principal points in new ones.

III. Relative cost of materials, wages, conditions of labour, &c.

IV. Special features of national exhibits."

Mr. W. G. Larkins, the secretary of the society, in his introduction, speaks strongly of the intelligence displayed by the reporters, and by the earnest desire they showed when in Vienna to do their work as well and as thoroughly as possible, at a time, too, when from twenty to thirty deaths were occurring daily from cholera. With the exception of the slight illness of one or two of the party, all were enabled to return to England in health.

The volume now published contains nineteen reports from the Manchester men, and fifteen from Birmingham; and when it is remembered that these were written by hard-working artizans, their own teachers, they must be regarded as most creditable and encouraging. We would point to the paper (amongst others) "On Design as applied to Jewellery," by J. W. Tonks (Birmingham); and to the report "On Ceramic Ware," by Edward Locke (Manchester), an elaborate and discriminating paper.

As a specimen of the work done, and because of the information it contains, we have printed in another part of this number the report "On Woodwork and Joinery."

Miscellanea.

New Summer-house in Eaton Hall Gardens, Cheshire. — Some curiosity has been excited in connexion with the extensive works now proceeding at Eaton Hall, by the erection of an elaborate summer-house or tea-room for the Ladies Grosvenor, in a secluded part of the shrubbery near the mansion. Externally, up to the plinth, the building, as described by the *Chester Chronicle*, is constructed of chiselled stonework, and above this of English oak framing, the panels between being plastered. The upright framing, instead of being a flat surface, is formed into elaborately-carved and moulded columns, which support carved brackets carrying the eaves. To the front of the building, which is an open covered space, between each column is a balustrade, formed of richly turned and twisted smaller columns. The roof is covered with tiles of a red colour, finished with an elaborate cresting. A portion of the area to the front and one side of the building is left open, and forms the summer-house. The principal feature of this portion of the work is the carved oak woodwork of the columns by which it is surrounded, and the roof. The tea-room is a handsome apartment. The sides are panelled with fine picked English oak, the panels being filled in with ornamental tiles. These tiles were designed by Mr. Marks, A.R.A., and executed by Messrs. Minton & Co., and duplicates of them were exhibited at the Vienna Exhibition. The subjects are principally flowers and birds, the former being painted on a white, and the latter on a light chocolate-coloured ground. The panels around the centre of the room are filled in with figure-subjects representing the Seven Ages of Man. Over the fireplace, in larger panels, are represented the signs of the Zodiac, comically treated. The whole of the work has been carried out by Mr. Hughes, of Aldford, from the designs of Mr. John Douglas, of Chester, who also designed the new park-keeper's house and kennels in Eaton Park.

Big Things.—This is an age of "big things." There is, in Western language, nothing "one-horse" about the age in which we are permitted to live. Chang, the Chinese giant, the biggest man in the world, is thriving at Calcutta. Paper has developed into churches, and, reduced to papier mâché, is found strong enough to resist both wind and weather. Florida is to be made into an island by the construction of a canal. A similar fate awaits the Morea, which is to be severed from the mainland by a canal 27 ft. deep and 39 ft. wide, converting the Peloponesus into one of the "isles of Greece." The ocean tides are to be utilised in France. At St. Malo, where the tide rises 80 ft., the motive power derived from the moon is to be bent, if possible, to the purposes of man. But America is not to be beaten. Gigantic waterways and colossal irrigation schemes are to the fore. More than this, it is proposed to keep canals fluid in winter by the use of artificial heat. Congelation can it seems, be arrested by a neat arrangement of hot-water pipes slightly below the surface of the body of water it is desired to propitiate. Tunnels are being drilled through the Alps. Marshes are "used up" by centrifugal pumps and the *Eucalyptus globulus*. Blast-furnace slag is to be adapted to all the purposes of construction; and teak is talked about as a new material for rails. St. Petersburg and Samarcand are to be united by a line of railway. The vicious bogs of Ireland, which burst with mud when their sides are tickled by the spade, are to be converted into practical peat and peat charcoal; and the pneumatic tube has taken a fresh lease of life. Meanwhile we hear nothing of the Isthmus of Darien canal, and much time and printers' ink are wasted on unprofitable discussions concerning the North-west passage.—*Iron*.

The Alexandra Palace.—Messrs. Kelk & Lucas have a large force of men at work removing the *débris* of the old building, levelling the ground and preparing the foundations for the new palace. It has been found necessary to pull down the greater portion of the walls that were left standing. At either end of the main building a large conservatory is to be erected, and midway between them is the transept or central hall, 386 ft. by 184 ft. The wrought-iron roofs for these, as well as the girders in other parts of the building (between 500 and 600 tons in all) are being made by Messrs. Handyside & Co., London.

Railroad Bridge at Buffalo.—This great work, of which we have before spoken, is finished, and connecting trains are now running to and fro between the United States and Canada without break of bulk or change of cars. The inconvenient and almost dangerous steamboat which formerly transported goods and passengers from shore to shore, has lost its vocation. The project of building a bridge across the Niagara river, to connect the two countries, is a very old one, but it was not until 1870 that the requisite capital and charter for this work were obtained. The bridge extends over the Niagara river from Buffalo, United States, to Fort Erie, in Canada. The bridge is in three divisions,—first, from Canada shore to Square Island, 1,967 ft.; second, across Square Island, 1,167 ft.; third, thence to American shore, 517 ft., making a total length of 3,651 ft. The contract was let to Messrs. C. S. Gzowski & D. L. Macpherson for 1,000,000 dollars. The two central piers are respectively 47 ft. and 48 ft. deep. Near the eastern shore of the Niagara, a swing-bridge, the largest of the kind in the world, turns upon a pivot pier, leaving two open spaces, each 180 ft. wide, for the passage of masted vessels. This swing-bridge is worked by steam-engines, and can be opened or closed in one minute. The river at this point has an average current of six miles per hour.

Whitley Partners.—A company is being formed for the purpose of acquiring and developing the well-known business of Messrs. Whitley Partners, mechanical engineers and export merchants, of Hunslet-road, Leeds, which has been carried on for upwards of twenty-nine years. The conversion of this firm into a public company has arisen, as we learn, chiefly from the desire of the senior partner (who founded the business in 1844) to retire from active engagements requiring his personal care; as also from the fact that the leading branches of the trade have become so developed as to need a larger capital than that hitherto employed. The business, which is very large, consists of three distinct branches, each materially aiding the other, viz., the brass foundry and finishing department; the mechanical engineering branch of the business, which enjoys the exclusive monopoly of several patented inventions of great utility, including the Allen Governor, for stationary, marine, and portable engines, and Peet's Valve, for steam, water, and gas pipes, and large mains; and, thirdly, as exporters of machinery and general hardware merchants.

A Community of Women.—The *Chicago Tribune* says:—"The establishment of a women's community within the limits of the town of Woburn, about twelve miles from Boston, was begun a few days ago, by the formal raising of the frame of the first building. In this community all the land is to be owned by women. The occupation of the residents in Aurora village will be varied, and industrial schools [for children?] are provided to fit persons for the different kinds of work to be done, including a domestic school for instruction in home duties. Each homestead is to be accompanied with a garden, and gardening and fruit raising will be a favourite occupation. Co-operative schemes are also planned. About 1,000 persons are committed to the enterprise, though they are not all women, and not to be residents. The site of the village is a wilderness. The community is called 'The Women's Economical Garden Homestead League,' and is established by Act of the State Legislature." It is to be hoped the statement is untrue.

The Chislehurst Sarcophagus. — The granite sarcophagus presented by the Queen to the Empress of the French, for the remains of the late Emperor, has arrived from Aberdeen, and been placed in the mortuary chapel. The building has been erected from designs by Mr. H. Clutton; and the builders are Messrs. Brass & Co. It is entirely of masonry—externally of Bath stone, lined with stone brought from France. The carving is elaborate, especially the capitals of the pillars; and the roof is groined, the design of the whole edifice being Gothic. The little chapel has a carved altar and canopy, and at the opposite end is a private doorway for the Empress. Above the door is a rose-window, and there are three other lights on the south side. The sarcophagus will stand on a tesselated pavement in the centre of the new building, and will be approached from the interior of the church by two steps, through a double bay divided by columns of jasper.

"Invention" of "Gold," and Discovery of Perpetual Movement.—One of the most eminent scientists, says the London correspondent of the *Suffolk Chronicle*, has lately been informed by a lady that she has discovered a method of inventing gold out of a mixture of other metals. She has asked the gentleman in question to assist her in bringing out her discovery. Your readers may think him very ungallant for refusing, but after all science is science, and one can hardly expect an eminent metallurgist to go back 500 years and turn alchemist. I fancy another invention which I have heard of during the last few days must be placed in the same category of pseudo discoveries. A gentleman professes to have found out that by a certain arrangement of metal rods placed underground he can produce so much galvanic force as to drive machinery. In other words, he alleges that he has discovered a motive power which is practically permanent and comparatively costless.

The Criterion.—At the last meeting of the Metropolitan Board of Works, Mr. Wakefield, clerk, read a letter from Messrs. Pain & Clark, on behalf of Messrs. Spiers & Pond, stating that application having been made for a licence for their theatre, at the Criterion, in Piccadilly, the Lord Chamberlain has stated that he will be prepared to grant the licence, provided he is satisfied, by a certificate of the district surveyor or the Metropolitan Board of Works, that the building can be regarded as a public building separate from the tavern adjoining, and asking that the necessary steps may be taken by the Board, in order that they may receive the certificate. It was referred to the Building Act Committee to visit and inspect the proposed theatre.

Proposed New Pier for Yarmouth, Isle of Wight.—The Corporation of Yarmouth have decided to apply to Parliament for the necessary permission and power to erect a pier, and to levy tolls, &c. The subject of a new pier has at various times during the last ten or twelve years been brought before this corporation in connexion with various railway schemes, but they have now given notice of their intention to erect the pier themselves. The original intention was to erect it from the Quay, but as it would be very difficult to do so and at the same time keep intact the slipway for cattle and the present goods' accommodation, it has been decided to erect it from the Bank. The engineer whom the corporation have employed is Mr. Giles, jun., of Southampton.

Utilisation of the Tides.—Mr. C. R. Huxley, writing to the *Globe* with reference to utilisation of the tides as a motive power for machinery,—which we have often urged,—says a plan is about to be submitted to the Government which illustrates the availability of water as a motive power for all standing machinery, whether for dockyards, arsenals, rivers,—in fact, wherever water is within reach. It is calculated that this invention will save the Government 200,000*l.* in fuel alone, and throw into the market, for domestic use, coal in such quantity as to reduce the price of this costly luxury to one half its present figure, and cheapen considerably most articles of manufacture.

The Birmingham Midland Institute.—The first meeting of the members of the archæological section for the present season was held in the Lecture Theatre, on the evening of Thursday, the 20th ulto., when Mr. John Cotton, architect, read a paper on "The Rise and Development of the Military Architecture of the Middle Ages," with special allusion to "some castles in the counties of Northumberland and Durham," and exhibited, in illustration of his paper, a large number of his sketches and drawings of examples of ancient military architecture.

Etching.—Mr. Hayllar has discovered that it is possible to substitute glass for copper, and thus obtain an etching at much less cost than has been possible hitherto. Copper, too, being opaque, the engraver could not ascertain how his work was progressing, except by taking proofs. But now he is able to see at once what progress he makes, and to repair any defects as he goes on. Mr. Hayllar has recently left Saxmundham to reside permanently in London.

Royal Archæological Institute of Great Britain and Ireland.—We understand that Mr. B. Montgomerie Ranking has been appointed secretary of this Society.

Memorial of Charles Knight.—A lych gate, in memory of the late Charles Knight, is being erected at the Bachelors' Acre entrance to the old burial-ground at Windsor. The architect is Mr. Tarver, of London. The piers are of red brick, with carved stone capitals, with oak woodwork, the roof being of red tiles, and surmounted with a cross. The gates are of iron, and will bear the Windsor arms. The lych gate is being erected by the family of the deceased. What has become of the memorial committee that was formed in London?

Liverpool Architectural Society.—The third meeting of the session of this society was held on Wednesday evening, last week, at the Royal Institution, Colquitt-street, Dr. Hayward presiding. The paper for the evening was by Mr. H. H. Vale, the subject being "Art Notes Abroad." In this Mr. Vale gave an account of a recent tour made by him through Belgium, Holland, and the Rhine, and sketched and criticised the architectural features of the buildings he had visited in those places.

New Use for the Sand-Blast.—The most recent application of the sand-blast is to clean the fronts of buildings. Soot, dust, and other substances are removed therefrom by such means. The impact of the sand on the surface dislodges the soot or dust from all the crevices and indentations, without perceptibly interfering with the sharpness of the architectural ornamentation.

Institution for the Blind and Deaf and Dumb in Leeds.—A meeting has been held in the Philosophical Hall, Leeds, for the purpose of considering a proposal to provide larger and more convenient premises as workshops for the blind. The meeting, acting upon a suggestion made by the Rev. E. Jackson, determined to include in the enlarged premises provision for the accommodation of the deaf and dumb also. Upwards of 2,000*l.* were subscribed before the meeting separated.

Bursting of a Canal Embankment.—A serious landslip has occurred in connexion with the Somerset Coal Canal at Monkton Combe, near Bath. The canal was drained for a distance of three miles, and a gap was made in the embankment nearly 30 ft. deep and 50 ft. wide. The field below the canal is extensively covered with *débris*, and a great many fish which had been landed high and dry by the flood have been captured by the inhabitants.

Derby Town Council.—At a recent meeting of the Derby Town Council, Mr. John Hume, C.E., of Derby, was appointed surveyor to the sanitary authority.

Police Stations.—On the 29th ult. a station, erected for the Metropolitan Police, was opened at North Woolwich. It is built by Mr. J. Terrell, of Victoria Docks.

TENDERS

For alterations and additions to Worsham, Bexhill, Sussex. Messrs. Cross & Wells, architects:—

Ockenden	£935 0 0
Parker	910 0 0
Kenwood & Co.	875 0 0
Vidler	862 0 0
Geary	845 0 0
Champion	789 10 0

For slating, plumbing, and smith work, at Upsall Castle, Thirsk:—

	Slating.	Plumbing.	Smith, Spouting, & Ironwork.	All Works.
				£. s.
Weatherley & Rymer	...	...	...	1,579 0
Baynes	...	...	...	1,537 0
Sanderson	999 0	...	...	...
Hodson	...	712 0	...	...
Dickenson	...	498 0	...	...
Robinson	662 10	...	...	...
Bayn s*	570 0	...	...	...
Collier*	...	...	250 0	...
Anderson*	...	392 6	...	1,112 6

* Accepted.

For new warehouse, Devonshire-street, Lisson-grove, for Messrs. Spencer, Turner, & Boldero. Mr. T. R. Parker, architect:—

Hyde	£2,320 0 0
Brown	2,290 0 0
Simpson & Son	2,288 0 0
Cross & Son	2,268 0 0
Morsman	2,140 0 0
Temple & Forster	2,025 0 0

For Northwold Schools, Norfolk. Mr. R. M. Phipson, architect:—

Bennett	£1,125 0 0
Hubbard	1,080 0 0
Farrow (accepted)	982 0 0

For cottage residence on Lansdown, Bath, for Mr. John Evill. Messrs. Wilson, Willcox, & Wilson, architects. Quantities by Mr. A. Deane:—

Lord	£576 11 6
Jefferies & Morris (accepted)	507 0 0

For the erection of two warehouses in Lambeth-hill and Fish-street-hill, City, for Mr. H. D. Clarke. Mr. J. Wimble, architect. Quantities supplied by Mr. William Wimble:—

		Cr. by Old Materials.
Faulkner	£4,620 0 0 ...	£40 0 0
Killby	4,593 0 0 ...	20 0 0
Scrivener & White	4,412 0 0 ...	35 0 0
Bland	4,415 0 0 ...	40 0 0
Croacker	4,355 0 0 ...	65 0 0
Newman & Mann	4,285 0 0 ...	50 0 0
Hoare & Son	4,236 0 0 ...	45 0 0
Morter	4,189 0 0 ...	250 0 0!

For the erection of a warehouse in Old Fish-street City, for Mr. Edward Wimble. Mr. J. Wimble, architect. Quantities supplied by Mr. Wm. Wimble:—

		Cr. by Old Materials.
Killby	£2,062 0 0 ...	£12 0 0
Bland	2,067 0 0 ...	20 0 0
Scrivener & White	2,040 0 0 ...	25 0 0
Faulkner	1,968 0 0 ...	20 0 0
Newman & Mann	1,936 0 0 ...	20 0 0
Croacker	1,836 0 0 ...	35 0 0
Hoare	1,892 0 0 ...	25 0 0
Morter	1,889 0 0 ...	150 0 0!

For Spanish mahogany fittings at No. 6, Angel-court, for Messrs. Stern, Brothers. Mr. N. S. Joseph, architect:—

Newman & Mann (accepted)	£785 0 0

Accepted for new stables and coachman's house at Weston Park, for Mr. Handel Cossham. Messrs. Wilson, Willcox, & Wilson, architects. Quantities by Mr. A. Deane:—

Excavator and Mason.

Bladwell	£361 15 0

Carpenter and Joiner, Slater, Plasterer, Glazier, and Painter.

Ridout	345 15 0

Plumber.

Vincent	33 10 0

Stable-fittings and Gas-fitter.

Vincent	69 17 0

For orchard-houses, vineries, &c., also at Weston Park:—

Morgan & Lovell	£1,448 0 0
Hayward	1,370 10 0
Bladwell	1,335 0 0
Ridout	1,255 0 0
Francis (accepted)	1,180 0 0

For Oxford main drainage. Contract No. 2. Mr. W. H. White, engineer. Quantities supplied:—

Chappell	£4,388 0 0
Jones	2,990 0 0
Moore	2,950 0 0
Dover	2,930 0 0
Hall	2,850 0 0
Marshall	2,5?0 0 0
Acock (accepted)	2,197 0 0
King	2,150 0 0

For alterations to King's Arms Hotel, Liverpool, for Mr. James Seddon (Contract No. 1). Messrs. J. E. Murray and G. H. Thomas, architects:—

Thompson & Cook	£988 19 0
Cheetham	857 0 0
Wilkinson & Adams	660 0 0

For alterations to premises in Cases-street, Liverpool (Contract No. 1), for Mr. Cuthbert. Messrs. J. E. Murray and G. H. Thomas, architects:—

Wilkinson & Adams	£450 0 0
Shaw	428 0 0

For alterations and additions to the William IV., Margaret-street, Clerkenwell, for Messrs. Watney & Co. Mr. H. J. Newton, architect:—

Taylor	£397 0 0
Hockley	385 0 0
Fenner	380 0 0
Brindle	356 10 0
Shurmur	352 0 0

For additional works to Fulham Cemetery. Mr. J. G. Hall, surveyor:—

Cole	£184 0 0
Wright	160 0 0
Wigmore (accepted)	158 0 0
Gay	95 0 0

For alterations to premises, No. 40, Wigmore-street, and Little Welbeck-street, Cavendish-square, for Messrs. H. J. Cave & Sons. R. H. Burdon, architect:—

Keyes & Head (accepted)	£2,525 0 0

TO CORRESPONDENTS.

New View of the Temple of Solomon (unavoidably postponed).—R. T. F. (Captain T.—Thomason College.—R.—L. and A.—C. H. W.—W. C. T.—W. P. G.—H. H.—W. G. L.—A. H. T.—R. T. S.—N. & M.—S. & B.—S.—J. B.—J. T.—W. K.—S. T. B.—H. & R. P.—M. & T.—W. H. W.—W. S—J. K.—A Builder (the letter would inundate us with mere advertisements).—J. G. (shall be remembered next time).—G. W. W. (thanks, we have not room).

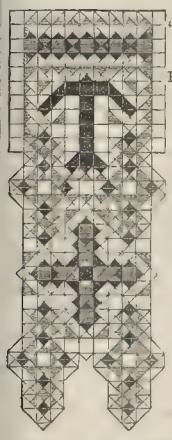
We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

The Builder.

VOL. XXXI.—No. 1610.



"Principles of Decorative Design."

THE work published under the above title * is a reprint of the substance of a series of essays written by Dr. Dresser for the *Technical Educator*, and specially intended for the encouragement and assistance of working men in acquiring a knowlege of the best principles of decorative design, with hints and suggestions for their practical application. The plan of the book in its present form is to give an introductory general definition of the requisites and characteristics of decorative design, the remaining portion showing, in chapters dedicated to different branches of material and manufacture, the manner in which these may be illustrated in practice. In the opening page of the introduction, the author observes that a man born and brought up as a "son of toil," but feeling the ability and ambition to rise above his fellows by fairly becoming their superior, can find no means of accomplishing this so readily as "by acquainting himself with the laws of beauty, and studying till he learns to perceive the difference between the beautiful and the ugly, the refined and the coarse." That this kind of perception is with nearly all Englishman an acquired one, is, as here hinted, an unfortunate fact, which it is as well to state plainly. Not less *apropos* is the warning to the student, not to take for granted the judgment of those persons, women especially (ungallant decorator!), "who suppose themselves to be possessed of good taste. It is common to assume that women have better taste than men, and some women seem to consider themselves the possessors of even authoritative taste, from which there is no appeal." This amiable illusion, however, is certainly not so generally prevalent now as it once was.

Dr. Dresser's introduction inculcates that view of the degree of meaning and expression possible in pure ornament which he has enunciated at greater length, and illustrated by some able and rather imaginative designs, in his former larger work on "The Art of Decorative Design"; a view in which there is a great deal that is true and suggestive, though it is to be regretted that the author allows himself to be betrayed occasionally into exaggerated and rather foolish rhapsody about his own particular branch of art. The general principles laid down, under the heads *truth*, *beauty*, and *utility*, are what are not unfamiliar to most of our readers, and are here well and concisely expressed and exemplified. Neither of what may be termed the two opposing prejudices in regard to ornament is adhered to. Disliking the Renaissance ornament (so much and so inconsiderately put forward as the only model by our Government art-instructors), Dr. Dresser has on the other hand no sympathy with the love of irregularity for its own sake which has arisen (logically or not) out of the Japanese mania. Among his axioms is the one that "a principle of order must prevail in every ornamental composition," and that "the orderly repetition of parts frequently aids in the production of ornamental effects." The capability of the expression of "humour" in ornament is enlarged upon, and exemplified by some illustrations which border a little too much on that taste for what may be called "Mediæval childishness," of which in some quarters there has been a great development lately.

Some of the points adverted to in the chapters on special subjects we may touch upon. The chapter on colour gives the usual facts as to the relations of colour in harmonic combinations, together with hints on the carrying out of experiments in chromatic effects; the effect produced by combinations of intense colour in small quantities is recommended, rather than that of masses of more subdued tones, as furnishing greater purity of effect: "if pigments are mixed they are reduced in intensity; but if placed side by side, when viewed from a distance the eye will mix them, but they will suffer no diminution of brilliancy:" a point which can hardly be too strongly urged among people so addicted to either muddy tints, or raw masses of colour, as are the average English decorators.

In the chapter on "Furniture" we see with pleasure an attack upon curves—the absurd and still largely prevalent fashion of working the backs and legs of chairs, &c., into the very weakest forms, both in appearance and reality, which can be devised; an error which reaches its climax in some of the furniture sent from Germany to our Exhibitions. The difficulty in regard to chairs, as we have before pointed out, is to combine solidity and durability with convenient lightness. Two or three designs for chairs given here, of rather a sumptuous character, are excellent in regard to outline and what may be called "expression" (for there certainly is expression in furniture), but which certainly would not be very handy for much lifting about. One or two others that are given show more of a combination of strength and lightness. Certain remarks (p. 62), as to the carving of structural portions of furniture (illustrated by a cabinet from a design of Pugin's") we must dissent from; the ornament is certainly wrongly placed here. The author takes opportunity further on of showing up as it deserves the absurd fashion of making cabinets in mimicry of Gothic structure, with buttresses, sloping roof, and *dormers*; the example given being by an architect of note, who really ought to know better; and records also his righteous indignation at a classic cabinet seen in an exhibition which appeared to be unimpeachable in solidity and truthfulness of structural design, until, the doors being opened, away swung with them the pilasters which had appeared to support the top. The popular looking-glass is branded as it deserves; but the picture-frame given as an example of good work (p. 71), we certainly cannot praise; it is commonplace and coarse, and shows the cross-cornered frame which is so inconvenient, from the amount of space it demands beyond the line of the frame.

The remarks on the decoration of ceilings may be read with profit, both in regard to their positive and their negative axioms. The principles laid down for the decorative treatment of walls are better than the examples given. In regard to wall-papers (p. 87), Dr. Dresser wishes the straight-joint system of hanging to be abandoned, and the paper cut as much as possible to follow the pattern. "If you use paper for the walls, use it artistically, and not as so much paper. Let a dado be formed of one paper, the upper part of the wall being covered with paper of a simple and just design" (what is a *just* design?), "and of such colour as shall harmonise with the dado." But if papers are used, such as we (as well as Dr. Dresser) should recommend, of small geometrical or powdered patterns, it would be almost absurd to think of cutting them to follow the pattern. The joining-lines do not show in well-hung paper, unless one looks for them. This is refining too much about trifles.

In the chapter on carpets, the principle (self-evident, yet constantly overlooked) should be noted, that while wall-papers or decorations may have designs with an upward tendency and a "bilateral symmetry," carpets should always consist of designs with a "radiating symmetry," so as to appear the same in every direction. Among the remarks in regard to designs for stuffs generally, table-cloths, &c., we may call attention to that in regard to articles that have to hang in folds, like the edges of table-cloths, viz., that compound curves, on at all a large scale, are bad in such a position, as they are broken up by the folds into mere wavering lines; whereas straight lines and segments of circles in such a situation naturally meet the eye as correct compound curves; and, as a general rule, that which looks well on a flat surface will look bad on a curved one, and *vice versâ*. Carpets are recommended to be kept "neutral in general tone," either by the employment of tertiary hues, or by small quantities of primary colour in juxtaposition.

In regard to pottery, and the working of hollow vessels generally, we very much concur with Dr. Dresser's observations. He is abundantly right in his remark as to the amount of finish which is often put into articles of this kind, without any art at all. Clay is susceptible of "a bold sketchy treatment," as well as of high finish. "As a rule, however, we over-estimate the value of finish, and undervalue bold art effects. . . . . I have before me some specimens of Japanese earthenware, which are formed of a coarse dark-brown clay, and are to a great extent without that finish which most Europeans appear so much to value; yet these are artistic and beautiful. In the case of cheap goods, we spend time in getting smoothness of surface, while the Japanese devote it to the production of an art effect. We get finish without art; they prefer art without finish." Which deficiency is the most serious there can be little doubt. Our author thinks we should get much more artistic and beautiful shapes if we adhered more to the old "potter's wheel" method of working clay, by which beautiful curves almost design themselves; and a somewhat similar remark will apply to the practice of glass-blowing, and the natural shapes resulting from the process, as compared with many of the more artificial cut-glass shapes and outlines. The accessories of the table are gone into at some length, and some of the shapes given for decanters, jugs, and other adjuncts, are suggestive and suitable. In touching on the ornamental use of silver, we notice the remark, unfortunately too true, that modern European silversmiths have fallen into the error, now almost universally prevalent, of making their works of a *pictorial*, rather than of an ornamental character. The extraordinary creations which we see put forth almost daily as centre-pieces, prize cups, and so on, would warrant much stronger criticism than that indulged in by Dr. Dresser. We have before now condemned them.

It is refreshing to find the prevalent absurdities of stained-glass design (architectural canopies, &c.) so strongly denounced as at p. 156. Of two specimens given by way of example, of a purely ornamental treatment of stained-glass design, both are suggestive, and one has considerable beauty, the other not.

In the main, we can recommend this book to art-workmen, as well and clearly written, suggestive, and based almost entirely on sound and true principles, in regard to the treatment and application of ornament. It is not free from the usual pessimist tendency of

* By Cassell, Petter, & Galpin.

works of this kind; every one who writes on ornament at present deeming it incumbent on him to show how fearfully wrong, bad, and degraded in taste is every article we are in the habit of using. Perhaps this is the best policy, but it is apt to be overdone. All ornamental critics, however, do not offer their thoughts in so liberal and generous a spirit as Dr. Dresser, who concludes his book by assuring the reader that, "If I personally can aid him in any way, I shall be glad to do so. If any who really seek knowledge of decorative design, and are hard workers, choose to send me designs for criticism or comment, or desire any other aid that I can give them, I shall be happy to do what little I can for them. My address will be found at the end of the Preface." After this, we can only adopt the language of Sir Hugh Evans,—"So Got judge me, that is a virtuous mind."

THE OLDEST BUILDERS' SPECIFICATION,

AND SOME NEW LIGHT AS TO ITS MEANING.

The undying interest which, from the date of the earliest edition of the English translation of the Bible, has been kept up, generation after generation, as to the architecture of that ancient house of prayer, the Tabernacle erected in the wilderness, may be thought to have furnished such a stimulus to inquiry as to have led to the exhaustion of the subject. The name of Dom Calmet will not readily be forgotten. The same patient and accurate care which this great student bestowed on the genealogies of the Imperial Family, and of certain other ancient houses of his day, when directed to the investigation of the architectural details of the Pentateuch, produced graphic illustrations of well-considered detail. Dom Calmet, indeed, drew upon his imagination to supply what he thought must have been indispensable. Thus, in his plans and sections of Noah's Ark, he not only divided the allegorical dimensions given in the Book of Genesis into decks and cabins, but went so far as to show the trunks down which the fodder (from his point of view) was daily thrown by the patriarchs for their charge. The Tabernacle, as well as the Temple, were represented by the learned Benedictine with equal precision. Nor can these early plans be regarded as more purely imaginary than some of the latest which have been offered to the world, with equal or indeed greater confidence; although as the result of much less patient examination of the case.

It may be safely admitted that, unless either newly-discovered facts can be brought to illustrate the subject, or a new method of inquiry can be shown to be possible, the matter had better now be left to the dusty leisure of the cyclopædia and the architectural dictionary; and that the columns of a practical journal have more important claims on their space, than to allow the discussion of such ancient and shadowy structures.

It is the case, however, that the last few years have witnessed the discovery of facts that have a very close relation to this ancient structural problem. And when we observe that some of these facts have been for several years published in different works, but that no one has taken the pains so to collate the information as to derive from it any positive teaching, it will appear that we are not about to tell over again an often-told tale. Further, the information collected, and in course of collection, may be rendered of increased value by the adoption of a method of inquiry somewhat more critical and severe than that which any writer, who has a theory of his own on the subject, appears to be able to prevail on himself to adopt.

In a recent number of the *Builder* (May 10, 1873), we investigated, with some detail, certain architectural terms which were in use in Palestine 2,400 years ago. We then deduced, from what we were justified in terming a very ancient specification, illustrated by certain actual measurements taken by the Royal Engineers, a good deal of positive information as to the plan of the superb Temple erected by King Solomon. In that paper we confined our remarks almost exclusively to plan, without reference to elevation; excepting in so far as the height of the great Peribolus of the Temple was determined by positive survey. Even that subject we did not exhaust, feeling that it was wiser to keep somewhat within the limits of our actual knowledge, than to hazard anything in the shape of a guess. In what we have now to bring forward, although the primary question is the true rendering of the account which, in minute detail, is thrice repeated in the book of Exodus, —of the structure of the Tabernacle, it will be seen, by those who are at all familiar with the subject, that we shall obtain very much that is suggestive as to the elevation of the Holy House, or *cella* of the Temple, which was built on the normal plan of the Tabernacle.

One point ought to be premised as to any attempt to read, with the eye of an architect, an account that was written in Hebrew 3,400 years ago. It is this. It is hopeless for any one, whose scholarship is confined to modern tongues, to attempt to explain that account. Of the technical passages of the Old Testament, we cannot be said to have even a direct translation in our language. A careful comparison of the original with the Greek, Latin, and English versions, shows that the third of these is taken almost absolutely from the Latin, and not from the Hebrew. The same mistakes are almost invariably made; and the additional obscurity, which is the natural result of a double translation, settles down upon the authorised version. We confine our remarks to these technical passages, because it is only with them we have now to deal.

Two further difficulties attend on such a collation as can alone deserve the name of critical research. One of these is, that the Greek translators, writing, to some extent, under the influence of the Alexandrine Court, and biased by the tone of thought of the learned men whom the Ptolemies collected in Egypt, have frequently left strong impressions of individual opinion on their work. Remarkable differences between a close translation of the Hebrew (as it now exists) and the Greek of the LXX, are familiar to the student. And that these differences result from the individual opinion of the translator, appears from the fact, that the same Hebrew words are translated by different Greek words, in different books of the Bible. Still, no one is justified in concluding that he is in possession of the sense of a difficult passage of the Old Testament, without collating it with the two codices of the LXX, which sometimes differ materially both from each other and from the Hebrew, and nowhere more so than in the present instance.

The other difficulty arises from the fact, that in consulting a Hebrew lexicon, the student is, nine times out of ten, only sent back, hoodwinked, to St. Jerome. We are speaking expressly from experience of one of the oldest and most scholarly of the Hebrew lexicons, that of Buxtorff. As far as translation of Hebrew words is concerned, this valued book is little more than a dissection of the Vulgate. Thus when Jerome, who, whatever he was, was not an architect, has given a vague or incorrect translation of a Hebrew architectural word, the student is in this dilemma. He will find the word used in the Vulgate translated in the authorised version. When he turns to the Greek, he is very likely to find a mere transliteration, or spelling in Greek letters of the Hebrew word. And when he goes back to the original, unless he can bring Arabic or other Oriental tongues to his aid, he will be likely to find his Hebrew lexicon repeat the original blunder of St. Jerome.

In the account of the Tabernacle occurs a remarkable instance of this want of original research. The word which St. Jerome has translated *tabulæ*, and the English writer "boards," occurs in the Book of Ezechiel (xxvii. 6), where Jerome has translated it *transtra*, "thwarts," and the English version, "benches." Accordingly the Hebrew lexicon gives *tabulæ* and *transtra* as the meanings. Any acquaintance with either natural history or shipbuilding would show the absurdity of describing the benches athwart a ship as made of ivory. The word in the Greek is "temples." The etymology of the original rather indicates plates, used in the sense of a shiny surface, like that of ice. But nine students out of ten would be perfectly contented with "*transtra*."

The only safe method, then, we take to be that which we previously indicated; namely, to treat the doubtful words like algebraical expressions; to find what ideas are included, and what are excluded, in each instance of their occurrence; and thus, finally, to attach the true value. This will almost always admit of an etymological verification.

We find it necessary to make these remarks with some degree of distinctness, in order to avoid encumbering our page with Greek and Hebrew type. Our readers, now made aware of the method adopted, will for the most part thank us for presenting the results, and not asking them to accompany our investigation, step by step.

The first thing that will verify the true construing of the accounts of the Tabernacle of Moses (if the passages in which they occur be uncorrupted) will be this. We must find a natural explanation for every term, in its proper place; and we must have neither omissions nor repetitions. When people wrote painfully, letter by letter, not even breaking the line into words, they wrote carefully. Each word was wanted; and each word had its proper meaning. We must therefore think it probable that the specification given in the Book of Exodus is adequate; and that it omits no essential part of the structure. If a workman now took that ancient description, and worked it out, he ought to be able to set up just such a tabernacle; without introducing a single structural feature for which he could not show the authorising clause in the specification.

It is clear that this critical canon will at once exclude a great many suggestive explanations of the form of the structure in question.

For the sake of brevity, we will adopt the unit of the cubit in our reading of the specification. There is no authority for supposing that the cubit here used was any other than the ordinary Jewish cubit, of 16 in., or 48 English barleycorns; as the larger cubit is not in any way here alluded to. As to the dimensions of the ordinary cubit, we have positive information in the Talmud.

The woodwork of the Tabernacle was as follows: — There were forty similar plates or boards, each 10 cubits long, 1½ cubit wide, and 4 digits, or nearly 3 in., thick, which were covered with thin plates of gold. A comparison of the weight of gold employed for all the work, with the superficial area of the woodwork of the Tabernacle, shows that this plating could not have been thicker than the tenth part of the thickness of an English sovereign, or, in round numbers 6 oz. Troy per square foot, if the weights of gold given are stated in terms of the ordinary silver shekel. There is a strong presumption, however, in favour of the opinion that the gold shekel of account, which is only of the weight of one-third of the silver shekel, is employed; and in that case, a corresponding deduction must be made in the estimate of the gold used. The weight of the silver shekel, during the existence of the first temple, was 320 grains. This we know definitely from Maimonides.

These boards, all exactly alike, were jointed (whether by a bird's-mouth groove, a tongue, or tenons and mortises, cannot be distinctly ascertained), but so as to fit together in two unbroken walls of gold. Each board rested on two feet, or bases, of silver, which must have been not very dissimilar to our present railway-chairs, of which they were about the weight, and which were buried in the earth to give fixity to the structure. These two long sides, 30 cubits in length, ran east and west, when the Tabernacle was fixed.

For the west end of the Tabernacle, which was 10 cubits long, six similar boards were made; which, according to our view, were in three pairs, with an angular slope at top, so as to form a sloped or pedimented end to the building. Two corner-pieces, of only half a cubit in width, were specially formed to connect the ends with the sides of the building. All these pieces of wood were jointed in a similar manner, and stood on similar bases. The only point which is to be considered as newly indicated here, is the shape of the end of the structure.

This is arrived at as follows. At each end of the building were five upright pieces, pillars or pilasters, those at the west end standing against the Golden Wall (whether within or without is not clear), and those at the east end sustaining a veil, in lieu of doors. The odd number shows that one pillar was in the midst; and this is an almost certain mark of a double pitched roof.

Eight upright pieces, or pilasters, are then named, the explanation of which, as direct structural elements, is now, we believe, for the first time suggested. Five bars are mentioned as fixed on either side of the building, and one long bar, 30 cubits in one piece, "in the midst between." In this enumeration we read five pairs of rafters and a continuous ridge piece. We thus have an explanation of the eight uprights. Three pairs of them corresponded with the three pairs of intermediate rafters, and were for taking the weight of the roof off the thinner boards of the sides. One pair was at the west end, forming, with the outer of the five end columns, something like a pair of coupled pillars, at each angle.

For the west end a pair of additional uprights was not necessary, because there were already two pillars at each western angle; one being the half-cubit piece, framed in the wall, and the other being the outer of the five bars attributed to the west end of the building.*

On this view the structure is perfectly simple and intelligible. Every word is explained; and the great point is attained, that nothing further is required; no tent-poles, or ridge-lines, or separate fittings for supporting the embroidered linen veil, its outer cover of black woven goat's hair, and the row of red and blue rams' skins on the top; for this we take to be the meaning of the introduction of the word translated "badger-skins," to the confusion of the naturalist, who has been unable to suggest what animal was intended. We read it that these were rams' skins, dyed of different colours, which would give a special peculiarity to the aspect of the sacred tent.

It is quite certain that any ordinary carpenter could construct a perfect model of this building, in wood, linen, and canvas, and could erect it without any hesitation or trouble. It could be easily fixed and removed; and it would always be erected in exactly the same form. The only question thus left open, as to form, is that of the angle of the roof. Here it is that a comparison of certain distinct data becomes useful.

De Saulcy published, in 1854, in his "Recherches sur la Numismatique Judaique," drawings of three Jewish coins, which have been reproduced in Sir F. Madden's "History of Jewish Coinage." Each of these coins shows on the obverse a tetrastyle temple, with a lofty, arched, central door. We do not adopt the views of either of the learned editors in question, as to the exact date and legend of these coins; and that for reasons, taken from Jewish literature which they have not consulted, to which we have no doubt that they would have been the first to adhere. There is no reference, for instance, in Sir F. Madden's learned work, to the positive determination of the silver shekel by Maimonides,—a knowledge of which would have saved a vast amount of confessedly unsatisfactory discussion, and moreover would have given accurate results, instead of erroneous approximation. But that they are Jewish coins, issued during the independence of the nation; bearing, in each instance, on the reverse, representations of objects employed in the services of the Temple; and the name, either of Jerusalem or of Israel, in the peculiar letters found on the coins before the adoption of the Greek letters by the Idumean, and even by some of the Asamonean, kings; there is no manner of doubt whatever. We do not, therefore, see how there can be much reasonable doubt that we have here representations, as faithful as the art of the coiner allowed him to give, of the elevation of the second Temple; and thus an illustration of the permanence of the type "showed in the Mount" to Moses, down to the days of Herod, and probably down to the destruction of the Temple by Titus. It is impossible to believe that any other building could be represented on a coin bearing these sacred emblems and legends.

A less positive, but still very luminous, illustration is found in the proportions of the two small tetrastyle temples of HIBBARIYEH and THELTHATHA, which are figured in "The Recovery of Jerusalem" (a work published in 1871), and which are types of numerous relics and ruins yet existing throughout Tyria. These little fanes all agree very closely in form with that which we have suggested as normal in the Tabernacle. They differ in the one particular of forming double, instead of triple, cubes, but in that almost alone. They open towards the East, with two columns interspaced between two square angle pilasters; which we take to be the form introduced by Solomon, when the central supports for the ridge beam were rendered unnecessary, by the substitution of solid masonry for framed woodwork. Even in the Tabernacle, the same form was adopted in the internal division, where four pillars supported the veil of the *adytum*. The pitch of the roof of these Syrian temples seems to have been the ordinary one, of a rise of one-fifth of the width, giving a slope of 2½ to 1 for the roof. The internal division is into porch and *cella*; the porch being in one instance one-third, and in the other one-fourth, of the entire length of the building. In the Tabernacle the external curtain was so folded and hung as to form a porch. In the Temple of Solomon the porch was a distinct feature. At the western end of the small temples are the remains of vaults, showing that the altar stood, in each case, on a raised platform, forming what we should term a choir or sanctuary. The different arrangement here holds closely to the special difference between the Jewish worship and that of the contemporary people. Where no image was allowed, the concealment, by a veil, of the mystic Ark, from above which the oracle was uttered, was a necessity. But for the careful provisions of the law in that respect, the Ark, with its forms of life beaten in gold, would, in course of time, have become the visible symbol or *idolon* of the Jewish temple.

The care that was taken to prevent the slightest approach to any idolatrous declension of this nature was extreme. The oral law prescribed every action of the High Priest on the only occasion on which he was allowed to enter the *Sanctum Sanctorum*. Two veils hung, a cubit apart, between this portion of the temple and the outer part of the body of the building; at least, in the second temple. (In the first, there was only one veil.) The outer, or western veil, was so hung as to have its opening on the south; the inner veil, on the north. The High Priest took a handful of incense, and threw it on a piece of live charcoal, taken from the hearth of the altar and placed in a golden censer. With this burning, he entered the Temple, passed within the outer veil, passed between the two veils to the second opening, turned his face again to the south, and, with his eyes cast downwards, waved the censer till the *cella* was filled with the smoke. He then retired backwards from the Temple. The contrast between this reverent mode of symbolic worship, and the magnificent display of such an object of adoration as the great chryselephantine statues of the Greek temples, is absolute. It had, as we see, a structural expression.

Thus not only the rare, but undoubtedly authentic, Jewish coins to which we have referred, but the actual forms of temples yet extant in Syria, tend to confirm the simple and intelligible reading which we have ventured to offer of the long-disputed account of the early tabernacle. Mr. Fergusson has been strongly impressed with the unreasonable character of the ordinary opinion, which makes that venerable structure resemble a flat-topped box. His argument is derived from the unfitness of that shape for the discharge of rain or snow. It should be remembered, however, that not only most of the roofs to be seen in Syria are flat, occasionally varied, as in other Mediterranean countries, by the introduction of little domes, but that the actual black goatskin tents of the Arabs of the day are generally flat-topped; being for the most part formed of only a single sheet, bent to form a flat roof and one side. Still, the question of rainfall is one of much importance. So long as the idea of a ridged roof required the introduction of any structural elements which are not mentioned in the account, we felt bound to oppose it as unauthorised. In the drawing of the Tabernacle which is given in the work called "The Holy Sepulchre and the Temple at Jerusalem," reproduced from the Bible Dictionary, occur elements which are not only not mentioned in the Book of Exodus, but which are incompatible with that account; such as the central standard between the nave and the sanctuary. The entire form of the building is altered. Side-posts, lines, and verandahs are added, and the imagination of the artist has been allowed such play as to render the original account, from the new point of view, of no value whatever; as, unless it is complete, it is unreliable. But our present scheme, which is founded simply on the principle of investigating each detail, not according to the name given to it by St. Jerome, but from a workman's point of view, removes this objection; and we thus have at once a literal translation of the venerable passage, and not only an architectural possibility, but a carefully-adjusted and beautiful structure.

The measure of half the slope of the roof, on the proportion which we have indicated, is a little less than 6½ cubits. The embroidered veil would therefore have hung down on the outer gilded walls to within 2½ cubits, or 40 in., of the ground. The outer curtain of black goat's hair would fall 16 in. lower, or to within 2 ft. of the ground. We thus attain a correct structural equilibrium between the thrust of the roof and the additional weight imposed on the wall. If the curtains were so arranged that the joinings coincided, the central suture lying on the central rafters of the building, they would have hung down only to within 7 cubits of the ground on the western, or enclosed, side, and to within 3 cubits at the open end; this portion, moreover, being folded back when not required for protection from rain.

Whether the scarlet and purple sheep-skins covered the whole of the sloping roof, or the ridge alone, is not clear. In the latter case, a subdued light would have been transmitted through the embroidered veil. In the former case, the roof within would have been only lighted by the rays that entered from the east, and by the lustre of the golden candelabrum, two of the lamps of which were kept continually alight. The awe and silence of the place; the unwonted appearance of the three objects which it contained,—the lamp, the table, and the altar,—all of pure gold; the shimmer of the walls; and the rich hues of the embroidered roof, stretched out over the shining golden rafters; must have impressed the ministering priests with a deep sense of the mysterious solemnity of their worship. Thus regarded, the Tabernacle was not a makeshift, but a well-planned ecclesiastical structure,—portable, indeed, but complete and entire,—the outline of which is preserved to the present day by its repetition on Hebrew coins, and in Syrian temples.

* It would exceed our limits to enter into detailed comparison of each of the authorities, viz., Exodus xxvi., xxxvi., and xl., in the original, LXX, and Vulgate, and the 6th chapter of the third book of "Antiquities," in the Greek. St. Jerome says that the *vectes*, which we call rafters, *mittentur per medios tabulas, a summo usque ad summum*. Josephus says that there was one *phalanx*, or beam, into which the oblique ends of the *skutalides*, or *vectes*, from each side entered. The ordinary notion that these gilded bars were merely bolts to keep the fitted side-pieces of the building together, is inconsistent with these expressions. In each description the *phalanx* is spoken of as one, and in the middle. To convert this into two long bolts, one on each side, is contrary to the language used, as well as to any intelligent ideas of structure.

THE LATE MR. E. T. PARRIS.

DESCENDED from a family in Norfolk, the subject of this notice, Edmund Thomas Parris, was born in London, in the parish of Marylebone, on the 3rd of June, 1793. He early gave evidence of a taste for drawing and for mechanical pursuits, which he continued to cultivate through his long and energetic life. In his journal, minutely kept, he has recorded of himself that at the tender age of seven years old he made many copies from engravings from the Passions of Le Brun, from Macklin's Bible, West, and others which fell in his way. The early bias of the mind of the child, encouraged or disregarded, may often account for the success or failure in the life of the man. The father of young Parris, probably without any exact or lofty notions of art, had, however, carefully noted the predilection of his son, and sensibly determined to place the boy to some kind of business in which his pencil could be usefully applied; and, accordingly, at the usual age, he was apprenticed to Messrs. Ray & Montague to learn engine-turning, enamel-painting, and gold figure-chasing. Here he wrought through the day, and in his leisure hours at night cultivated that mingled love of science and art which never left him, and which, a few years later, developed itself in the invention of his scaffold for getting at the dome of St. Paul's, and in his great picture of the Panorama of London at the Coliseum in the Regent's Park.

In 1816 Parris bid farewell to the goldsmith's shop, but occasionally made designs for his late masters, one of his latest being the sword presented to Lord Exmouth, the gold ornaments of which he not only chased, but he painted all the enamelled subjects with which it was enriched, commemorative of the naval battle at the taking of Algiers. With growing experience and higher aims, he now sought to qualify himself for the life of a painter, and entered himself a student of the Royal Academy, and at the same period studied anatomy for three years under Dr. Carpue, meanwhile making designs for anything that came in his way. In a competition for a set of drawings for the painted glass windows at Brancepeth Castle, he carried off the prize, notwithstanding the accomplished Stothard had entered the lists. Ambitious of still greater things, in 1824 Mr. Parris exhibited his first large picture, "Christ Blessing little Children," displaying his ripening powers and academic culture. This work now adorns the east end of the church of St. George at Sheffield. He also invented about this period his remarkable apparatus for getting up into the dome of St. Paul's, with the view of being employed to restore the

paintings of Sir James Thornhill, which had fallen into decay, and submitted his model to the Dean and Chapter, Professor Cockerell, Brunel, and many other architects and scientific persons, who highly approved his plans; but, for the want of funds, the restoration was delayed. Amongst others, Mr. Thos. Horner, the projector of the great works at the Coliseum, was so struck with the simplicity of his invention, that he immediately entered into an engagement with Mr. Parris to assist him generally in his huge undertaking. Accordingly, on the 12th of December, 1825, Parris commenced that stupendous work, the Great Panorama of London, covering over 40,000 square feet of canvas, or nearly an acre in extent, and which, for the following four years, taxed all his mental and physical powers to their greatest stretch. The original sketches for this work were begun by Horner in 1821, during the time a new ball and cross were being set up over the dome of St. Paul's. They were drawn in outline by means of an optical apparatus on numerous pieces of paper, and a number of young men had been employed to sketch the details of the principal buildings about London without plan or system. These, when brought together, presented the utmost confusion and endless mistakes, and were like an ill-devised puzzle, the parts of which no dexterity could fit. "The difficulties [wrote Mr. Parris in his Journal] of an undertaking of such vast dimensions, and so full of linear and aërial perspective, combined with architecture, will be understood when it is stated that every line below the horizon had to be dipped downwards, in order to appear straight on account of the curvature of the canvas; the great size of some of the objects, and the most careful finishing of details (as powerful telescopes were to be fixed in the visitors' gallery),—also to make the foreground objects appear nearer the eye, though, in reality, more remote from the spectator, the distortions of drawing on a curved surface requiring every management of the artist to humour in order to *appear true*. The canvas, too, was always in motion, which the wind or leaning against any part would occasion all over. These with the danger and awkwardness of painting every day suspended in a box 50 ft. or 60 ft. from the ground, and a multitude of others unforeseen by the projector, and beyond his control, were every day retarding the progress of the painting, and I began to despair of ever seeing it brought to completion." "Mr. Horner at length became desperate, and, convinced of his own inability to conduct the work, implored me to take the whole management into my own hands, as the only way of saving him and the picture from ruin." An artist with less energy, skill, and constructive ability would have sunk under the ceaseless labour and perplexity he went through, in setting everything in order where nothing but disorder prevailed. His power of work was amazing, as the following from his Journal well illustrates:—"When Mr. Horner made his sketches from the top of St. Paul's, the ground on which the Post-office now stands was a blank space, enclosed with wooden palings. Consulting together, we thought it would be more interesting when the building should be partly finished, with some of the scaffolding standing, than if represented as finally complete. I therefore went to St. Paul's, and made the requisite sketches from the Golden Gallery, and finished it on the canvas, without assistance, in seventeen days. It is full of very intricate lines and effects, and occupies about 423 ft. superficial."

By unflinching determination and industry, Mr. Parris had completed about two-thirds of his work, when, in 1828, a fresh cause of embarrassment arose. Rowland Stephenson, the banker, through whom Horner obtained means to carry on his undertaking, fled the country, to be followed shortly by Horner himself, who absconded to America, leaving creditors to the amount of 60,000*l*. The Panorama, however, being so far advanced, the trustees for the creditors ordered its completion; and on November 29th, 1829, Mr. Parris put the last touch to his gigantic picture of London.

At the termination of his labours, Mr. Parris, by command of Queen Adelaide, attended at the Coliseum to receive Her Majesty, and at the same time was honoured by a commission for a cabinet picture. At this period of his life, it appeared as though no amount of toil could subdue his active temperament; for scarcely had he concluded his arduous task at the Coliseum, and the town was still ringing with admiration at his great and well-merited success, when he joined in another large undertaking with Mr. Daniels, R.A., to paint a panorama of Madras, the building for the exhibition of which Mr. Parris wholly designed and constructed.

He had now established an uncommon reputation as an accomplished artist, and man of ready mechanical expedients, with quickness and acuteness in combining ideas, on an enormous scale: it was now (1832) that he displayed an equal capacity for small and highly finished work in "The Bridemaid," exhibited at the British Institution, perhaps the most felicitous of a number of pictures of this class which he produced in a succession of years, as it was undoubtedly the most popular. Purchased by the great minister, Sir Robert Peel, praised by the critics, complimented by verses from the pen of Miss Agnes Strickland, and of Haynes Bailey, mezzotinted by Bromley, it long retained the admiration of the public, and established the artist's reputation as a painter of female beauty. The demand on his time was now excessive, for numerous portraits of noble and distinguished persons; ceiling work for the Duke of Sutherland; designs for church windows; for ornamental silver, for carpets, for paperings, for illustrated books, screens, and all kinds of decorative work. It is perhaps to be regretted that he engaged in so great a diversity of things, as many of them could only serve the fashion of the hour, and draw him from more elevated occupations. For the coronation of William IV., Mr. Parris painted the architectural screen set up before the organ-loft, and other ornamental works, in the Abbey, for Mr. S. Smirke; and soon afterwards finished the picture commissioned by Queen Adelaide, entitled the "Warrior's Wife," with which her Majesty was so well pleased, that unsolicited Mr. Parris received the appointment of "Historical Painter to the Queen." He now entered largely into decorative painting for which his ready pencil and previous practice eminently fitted him. He executed the arabesques at Northumberland House; the Watteau panels for the saloon of the *Great Western* steam-ship, the first that steamed across the Atlantic; and subsequently the palatial residences of the Duke of St. Alban's, Lord Prudhoe, Lord Downshire, Earl de Grey, Marquis of Lansdowne, Sir Roger Palmer's, in Portland-place, and many others: at this last the Prince Consort honoured the painter by calling to see his work.

In 1838, Mr. Parris undertook to paint for Mr. Moon, the print publisher, a large picture for engraving of the Coronation of Queen Victoria, and remained all one night in the Abbey making preparatory sketches. Seventy members of the nobility sat to him, and Her Majesty honoured the painter with a sitting for her portrait to complete the work.

In 1843, he carried off one of the first prizes in the Cartoon Competition for the Houses of Parliament, and also exhibited a large Fresco of "King John in Westminster Hall"; and on the recommendation of Lord Prudhoe was invited to paint the Palace of Mehemet Ali at Alexandria, in fresco. He was also invited by Prince Kochebee to paint his Palace at St. Petersburg; but both these offers were declined. The question of the restoration of Thornhill's pictures in the interior of the Dome of St. Paul's was again revived in 1852-3, on this occasion to be brought to a conclusion. In March, 1853, Mr. Parris commenced his platform—"the first pole of which was raised to the great cornice and fixed in its place," and in about three weeks the whole of his ingenious plan of getting at the interior of the dome was constructed, and the restoration of the pictures commenced in July. "The whole surface painted contained about 1,800 square feet. The figures are nearly 16 ft. high, the vases 10 ft. The cornice where the painting begins is 160 ft. from the pavement; the eye of gallery at top of dome, 220 ft. Suspended at this terrific height through winter and summer he continued his arduous employment for a little over three years and a half, and finished it in July, 1856, without a single accident having occurred during the whole period, though no less than five hundred visitors had at different times ascended to the artist's platform, in addition to the necessary labourers employed,—a practical proof of the singular skill and admirable manner in which all his plans were executed. Of this structure some accounts appeared in the *Builder* for June, 1853. In 1864, he constructed a full-sized model of Shakspeare's House for the Crystal Palace Company at Sydenham; and in 1866 his facile pencil was engaged to prepare a model for a piece of tapestry, 40 ft. long, for the Paris Exhibition: the subject, Christ and the Apostles, after the statues of Thorwaldsen; and so he continued to the end, ever working: nothing came amiss to him, great or small,—he pursued it with untiring zeal. It was, indeed, impossible, with a mind so active and a hand so ready, ever to be idle. Self-reliant, he carried his inventions into practice without fear; and in painting essayed almost every form and branch of the art. With a versatility so pronounced, he could hardly be expected to achieve success in all, yet he was successful in many, and will be remembered by those who knew him, not only as a man of great general ability, but also for his kindly and happy bearing.

It is customary to express regret at the loss of those who have distinguished themselves in this world. Relatives and friends naturally mourn the departure of those to whom they have been long attached, but it may afford hope and consolation to many to know that the late Mr. Parris passed his long life in the happy enjoyment of intellectual labour, honoured by the world, and respected by troops of friends; and who, having done his work well, paid the common lot of humanity, without suffering, at the advanced age of eighty-two years.

J. J. J.

ON ARTS AND ARTISTS.

At the annual meeting of the Gloucester School of Art, fully noticed in the local *Chronicle*, Mr. Gambier Parry made, as on some previous occasions, a long and interesting address. On this occasion, he said, he thought it most appropriate to take a general view of their standing in fine arts, both nationally and as regarded their own school. If he went back to the Middle Ages, it would be only for a few minutes, because he wished them to know or to learn what arts prevailed in the Middle Ages in England, and particularly at Gloucester. In a country so small as our own island, and when it was smaller still for all available purposes by being, even as late as the reign of Edward II., about two-thirds covered with wild forest or desolate moor, and when Scotland and Ireland were but half-civilised neighbours,—a hindrance by their barbarism and a trouble by their wars,—they must not expect to find works of art of the size and imposing grandeur of those to be found in great Continental nations, or of a small one like Italy, with the gigantic wealth of Rome, and a climate and a soil exceptional in this world; but it was notorious that some forms of art in this country excelled those of other nations in their quality. Such, for instance, was the development of the purest forms of Gothic architecture at the end of the thirteenth and beginning of the fourteenth centuries, and the singular excellence of its details. English architecture of that time was surpassed nowhere, and, not to mention more than two instances, he would refer them to the little chapter-room in York Minster, on the walls of which there was this beautiful motto:—

"*Ut rosa flos florum, sic domus ista domorum.*"

"As is the rose the flower of flowers, so of houses this is of ours."

This was the brightest idea ever wrought round a building. The other was the Lady Chapel at Ely, which, although it had been knocked to pieces by the Puritans, its sculpture was still unsurpassed. The mechanical genius of Englishmen had usually been more apparent than any lofty artistic inspiration. Hence this result in our architectural work, but for that we had exhibited to the world men of highest genius, from the days of Alan de Walsingham and William de Wyckham to those of Sir Christopher Wren. Some of the most striking anecdotes had been told of the men of those times, such as that relating to old Prior Goldstone, of Canterbury, in the fourteenth century, who had every scrap of carved stone brought into his study, where he kept a little anvil and hammer, and broke up every piece that was not up to his standard of excellence. Then, again, at Gloucester, there was the excellent old Abbot Wigmore, who did much the same, and had every piece of stone and carving used for building Gloucester Cathedral brought to him, and condemned to be broken up every bit that, as he said, was not good enough for Wigmore. This Abbot Wigmore was a very remarkable man. He established the first School of Art in Glou-

cester, and worked in it himself in every grade. He was a great artist, a designer, a skilful architect, and moreover he was even an embroiderer; and in an old MS. of the biography of the abbots of Gloucester, preserved in one of the colleges at Oxford, it was recorded that Wigmore designed and embroidered with his own hands silver doves on a green satin cope for the office of the Pentecost. Wigmore was not only a man for small things, but he was a great collector of works of art, and the first account we had of any portrait-gallery of Englishmen was that possessed at Gloucester by Abbot Wigmore, who had in his rooms portraits of all the kings of England before his own time, and his time was that of Edward II. The embroidery in which Wigmore was so great a proficient was a most famous art in England, so much so that the work was valued at an immense price all over Europe. There was no doubt that painting and illumination were arts in which Englishmen used to excel exceedingly. If they went to the cloisters at Gloucester, and turned sharp to the left, when they went down the steps they would see a number of litt'e recesses wherein were seats on which a monk could sit, with the light on his left hand, and with his desk before him; and his notion was that those were the places in which the monks used to write their books and illuminated manuscripts, and where perhaps old Wigmore embroidered his doves. He now came a little nearer to our own times,—the days of Henry VII., which formed the era of the greatest amount of building in this country since the thirteenth century, and which were only equalled by the building activity of our own times. But the best of English art seemed to have died out as architecture degenerated, and we heard only of foreigners. They all knew the everlasting pictures of Henry VIII.; but no Englishman ever painted him. Indeed, if it were not too much of a joke, they might suppose that Henry VIII.'s tremendous fatness was caused by his always sitting for his portrait; he must have taken a great deal of what an Irishman called sedentary exercise. From his time things went on just as bad as ever, for in another MS., quoted by an authority on art, there was a curious statement made by the writer as to the condition of English art in the time of Henry VIII. In his time there were two men of very remarkable talent indeed,—Bossom and Hilliard,—illuminators and miniature portrait-painters. The document to which he had referred said:—"Alas! if a man be so induced by nature, and live in time of trouble, and under a Government wherein arts be not esteemed, and himself but of small means, woe be to him! as unto an untimely birth, for of my own knowledge art hath made poor men poorer;" and such were John Bossom and Michael Hilliard, who were only unfortunate in art because they were English born. They heard of Holbein and many Flemish and Italian artists, but at that date few names of Englishmen were known, except inferior workers of decoration in Henry VII.'s Chapel, and there were some sad records in anonymous MS. at the end of Henry VIII.'s reign in reference to the treatment of poor English artists. They must wander on over many years before finding any English names of eminence; Flemish and Italians were still the only men in repute, and from Sir Antonio More, through the days of Rubens, Hilliard, and Vandyck, to those of Kneller and Lely, they heard of no one but such as Betts, and Shoote, painter and illuminator, of the time of Elizabeth, and a distinguished amateur, Edward Courtnay, Earl of Devon, of the same period, and Dr. Garrord, whose name sounded like English, but who became naturalised here, and designed for engraving, glass-painting, and other arts. He was born in Bruges, but died in England in 1635. Michael Hilliard, who died in 1619, was one of the earliest-known English artists who really acquired fame for his great merits. He painted a great many portraits of Queen Elizabeth, which were now much valued. He was a genius, and, at the age of thirteen, painted his own portrait; besides which he designed and worked in gold, jewelry, sculpture, and illumination. Indeed, the poor fellow's powers were so great that it would be hardly an exaggeration to call him our Early English edition of Leonardo da Vinci, for he seemed to have known and done everything; but James I., who would have been very glad to be considered our Lorenzo de Medici, allowed poor Hilliard to live in poverty and to die in trouble. Next after him came Isaac Oliver, whose works were invaluable, because from his miniatures could be seen the faces of Mary Queen of Scots, Queen Elizabeth, Ben Jonson, Sir Philip Sydney, and James I. His works were described as being of wonderful execution, minute and powerful in expression, and perfect in nature. Sacred subjects he failed in; but the "Entombment," and copies in miniature of great pictures in the collection of Charles I., and also a few portraits, originals and copies in oil, were known to have been by him. There were others whose names at this time were hardly worth mentioning, but there were engravers such as Cute, and painters such as Pyne and Cole, whose works might now be dragging the weary folds of their canvas in rotting frames in far-off farmhouses or remote parsonages, where their traditions were invaluable, and where the ignorance of the public was to blame in neglecting the remnants of English art. One of the most remarkable names in English history was that of Bacon. Not only was there the great Sir Francis Bacon, Lord Chancellor and Keeper of the Seals to Queen Elizabeth, but there was a Sir Roger Bacon in the thirteenth century, who was so great a man as to have invented or nearly completed the telescope and the camera obscura, so that if he had lived now he would most decidedly have been an artist. But he invented another thing, and that was gunpowder, which he (Mr. Parry) was afraid was very little in keeping with the arts. He was a most wonderful man, and was the suggester of the first great Church Reformation which took place in the thirteenth century. Next, they came to Sir Francis Bacon (Lord Verulam), the great philosopher, and then to Sir Nathaniel Bacon, half-brother of the philosopher. He was one of the greatest artists of his day; but he was an amateur. Within 100 years of the present time there was another Bacon, who was a great designer of china, at Worcester and Burslem. In the time of Elizabeth there were some very distinguished architects. The principal ones were John Thorpe and Skillington, and amongst the houses built by Thorpe were Burleigh, Holland House, Castle Ashby, and Charlton, in Wiltshire. From that time English art began in earnest, and the leading names of the period were those of Peter Oliver, the great historical portrait-painter; Oliver Isaac, the elder, a glass-painter; and John, the younger, a master mason and a great carver. It was remarkable how genius and art ran in families. Next they came to William Dobson, whom King Charles used to call the English Tintoretto. He was a fine painter of portraits in oils, and succeeded Vandyck as painter to the king. Among his pictures which were valuable, as giving a good idea of those he painted, were a portrait of Prince Rupert and Sir Thomas Browne, author of "Religio Medici." Still, in spite of the fact that there were such men in this country, the persons supported and patronised were none others but Dutch, French, Flemish, and Italian artists. Amongst them was Coker, who painted Colonel Massey, a name known to every Gloucester man, and whose picture was now in Cheshire. Another man of whom they all knew was Samuel Butler, the author of "Hudibras." He was one of the greatest amateurs of the period in painting and music; but his works appeared to have shared a sad fate; for it was said of some of them that on a tax being levied on windows, several of Sir Samuel Butler's pictures were used to stop up the windows and save the tax. That was recorded in Nash's "History of Worcestershire." Among the first painters of their day were Anthony, Harrison, &c., until we came to Inigo Jones, and then it was we saw how English art was patronised. Even foreigners spoke of English artists, and were surprised that they should have been so much neglected. Inigo Jones, who was born in 1572, and died in 1652, rose to the highest estimation in England and on the Continent. He mentioned that as an encouragement to the young men in the wagon works and the carpenters' shops of Gloucester. His father was engaged in a business in which Gloucestershire especially excels. He was a cloth-weaver, and Inigo himself was apprenticed to a carpenter; but the young fellow, in his quiet moments, amused himself in art-study, little knowing how much he was going to do. His heart, instead of being in the carpenter's shop, was out of doors, and he would wander in the fields, his delight being in landscape-painting. He went to Italy to study painting, but came back an architect, and was the designer of Whitehall Chapel, the Banqueting-house, and Palace. Jones got into the high estimation of King James, who set him to find out a query, viz., what Stonehenge was,—a wonderful mystery in those days; and Inigo, after considering the matter a long time, came to the conclusion that Stonehenge must be the remains of a Roman temple! His attempts at St. Paul's were not very grand, though he did a great many good works; but, alas! for poor Inigo, he was ruined by the fall of Charles I., his goods were sequestrated, and, more sad still, his monument was destroyed in the Fire of London. Dryden wrote three lines worthy of being his epitaph:—

> "Firm Doric pillars found your solid base;
> The fair Corinthian crowns the higher space.
> Thus all below is strength and all above is grace."

A most perfect epitaph for poor Inigo's tomb! Still, foreign painters were the favourites in England, the Mytens' and other Flemish pictures being all the rage. In Cromwell's time, a man named Robert Walker was a famous portrait-painter, and was largely patronised by Cromwell, whose portrait he frequently painted, and if ever they saw a fine portrait of Cromwell they might be sure it was either painted by or copied from Walker. Two other famous painters at about this time were Francis Carter, chief clerk to Inigo Jones, and one Heywood, who painted portraits of Fairfax. Coming on to the period of the Restoration, they found a celebrated miniature-painter, Samuel Cooper, who was born in 1609 and died in May, 1672. He was the first to give the force of oil to water-painting, and he also executed portraits of Cromwell. He must also mention a famous lady named Mary Beal, a pupil of Lely, who died in 1697; and then they came to a man whom they all knew something about, the famous Grinling Gibbons, a sculptor and carver in wood, born 1648, died August 3rd, 1721. His work was unsurpassable, and was greatly admired. And now they came face to face with Sir Christopher Wren,—a great man indeed, and the first artist who seemed to have engaged the concentrated attention of Englishmen. They *did* value him, but even he died in sadness, and almost of a broken heart. He was a mathematician, an astronomer, and an architect. Of his works he need say nothing, but do not let them suppose that all the finest churches in London said to be Wren's were built by him. He built a great many churches, but there were other great men at about his time who built churches, and amongst them he mentioned Gibbs, who built St. Martin's with its fine colonnade, and no one could go past Charing Cross and down towards the Strand without being struck by the exceeding beauty of St. Martin's colonnade. He also built St. Mary's in the Strand. They next came to a number of architects, and amongst them was Sir J. Vanbrugh, who designed Castle Howard and Blenheim Palace, but did not succeed. He died in 1726. At about this time another art struck root in this country, and it was a very remarkable one, English landscape gardening; though our scenery was sweet and pretty in its way, there was wanting feature in it. William Kent, born 1684, and died 1740, was a painter, sculptor, and architect, and was also the father of landscape gardening in England. The great Prince Rupert, son of the Princess Elizabeth of England and Queen of Bohemia, after all his troubles and all his wars, settled in Paris, and occupied himself with the fine arts, and invented mezzotinto engraving. Coming still nearer to our own times, they met with Sir William Chambers, architect of Somerset House; and then came the Adamses, John and Robert, architects, who built that part of London known as the Adelphi, which, in Greek, meant brothers, and for which reason it was called the Adelphi. And now they came to a time when English art broke forth in real earnest, and began to be appreciated. He could not say that the man he was about to speak of was a great artist, but he was a great man in his way, because at that time so little encouragement was offered to architects. He referred to Sir James Thornhill, who was brought up in a quiet parsonage, and taught himself. He went to Italy, and came back full of the Italian school of the time—not a very good one—and was employed in painting the interior of the cupola of St. Paul's, and the Great Hall at Greenwich; but while the Italian painters were receiving their thousands of pounds, and Frenchmen their 500*l.* and 600*l.* for painting one room, Thornhill, who was really a great painter, was depreciated and treated in a most shabby manner. When he sent in his moderate bill for the great work to which he (Mr. Parry) had alluded, it was returned, and when the question of payment was submitted to Parliament, they said "Oh, you had better pay him by the yard!" and he actually received

for his gigantic work the sum of 10s. per yard. Thornhill was born in 1676, and died on the 4th May, 1734. The poor English artist never could come to the front simply because he was English. However, at this period things began to look brighter, and Sir Joshua Reynolds, pupil of another great man, Thomas Hudson, the portrait-painter, came upon the scene. He was born in 1723, and, after working a great deal by himself, he went to the Vatican to copy and study the greatest masters there, particularly Raffaelle and Michelangelo. With him arose Gainsborough, who was born in 1727, and was entirely untaught. It was said of him that Nature was his teacher, and that the woods of Suffolk were his academy,—a pretty little description of him which was perfectly true. These two men were the great men of their day, and then it was that art and the merits of English artists began to be rightly appreciated. But he must now leave the portrait and landscape painters, and refer to another most remarkable and beautiful art,—the art of porcelain. He did not know if they were aware of how many establishments there were in England for the artistic manufacture of porcelain: they were too numerous to mention, and were scattered all over the country. The principal manufactories were at Worcester, Liverpool, Chelsea, and Battersea, besides which there was the great Wedgwood at Burslem. Those establishments showed how much at that time art was being appreciated; but if Reynolds, Gainsborough, and Hudson had not commanded the English taste, he doubted if the porcelain works would have succeeded as they had done. As long ago as 1751 the remarkable invention of printing in copper-plate on china was discovered,—a most simple and ingenious discovery, but one which revolutionised the art of ornamental pottery, bringing the brightest things into the humblest cottage, and enabling the poorest man to have ornaments which should be to him a joy for ever. Having described the mode in which this ornamental work was done, Mr. Parry thus concluded his address:—"If any one would ask what are these fine arts, whence did they come, and why do they exist, I can only reply, firmly, that their motive power is in that spark of life divine which is our soul, and which, conscious of its own power, conscious of its own eternity, and conscious, too, of its temporary imprisonment within the narrow limits of the human breast, is ever seeking the means of its own expression to communicate and to attract the sympathy of others. And what is the purpose that it has to tell but its hatred for all that is earthly, its love for all that is lovely, good, beautiful, and true, and to tell that tale to others? If the words of common language will not suffice, it creates for its own purpose that finer and more subtle language which we call art. For this it takes the forms, the features, the sounds, and the characters of the material world, in which to embody and to express its idea. These, indeed, may be poor materials for so high a purpose; but it is all that is at hand. The spirit is within us all; it is the source and centre of our individual life and character. Some men are conscious of it; some men are not; and hence the varying tastes and habits of those around us. Some men have choked that spark of life, and closed up its avenues to the light by heaping around themselves the things of earthly and sensuous vanity. Others, more free and open to the light, are sensible of an energy within them which impels them to action and expression. They seek to clothe their thoughts in the beauty of words, or sounds, or of material things. The whole world is open to them, and whether it be in the beauty of literature or art, in the beauty of reason or science, in the beauty of moral life or material expression, they attain what they most long for, viz., the expression of their own fulness and the sympathy of others. Such purpose, such impulse, has been the motive of the poets, the sculptors, the artists of the world,—men whose names outlive their works, because their works have been the joy of the world, and joy will always outlive sorrow, and truth will always outlive falsity. The arts have had a long history. They live among us now; not, indeed, in their old vigour, but at least with an evidence of reviving force. If ever the old vigour is to be revived, if ever the great and good of fine art is to be reproduced in its future, it can only be by the same means, learnt by equal devotion, and perfected by an equal freedom from self-consciousness and conceit; and if it is ever again (as it was in former days) to be the glory of those who produce and the joy of those who receive it, it can only be by its purity and its beauty and its truthfulness, the secret of that 'touch of nature which makes the whole world kin.'"

HASTINGS AQUARIUM COMPETITION.

The first premium has been awarded to Mr. E. A. Heffer, for the design marked *Nunc aut Nunquam*," favourably noticed in our review of the competition. Mr. Heffer is best known by the Church of St. Bridget, Wavertree, Liverpool, fully illustrated some time ago in the *Builder*.

Mr. Card, to whom six of the designs sent in were referred, said in his report,—

"The authors of the designs bearing the mottoes 'Victor,' 'Neptune B,' and 'Alpha,' not having complied with the requirements proposed, or having failed to carry out the purposes suggested, or whose designs are not desirable to be considered. Those authors whose designs bear the mottoes of 'Stability,' 'Murus Maritimus,' and 'Nunc aut Nunquam,' appear such as merit the greatest commendation, and, in forming my opinion on these three designs, I have carefully weighed the various objections to each, and taking into consideration the main features of your requirements, together with the greatest benefits and advantages which would be secured by the adoption of any design, I consider that the author of 'Nunc aut Nunquam' has most fairly complied with the purpose intended, although, at the same time, it would be unwise that this or either design submitted should be carried out in its entirety without certain modifications affecting the parade, and also the widening of roadway.

In conclusion, it appears to me not only to be a matter of regret that the council did not offer a second, or even a third, premium; but that they did not also lay down a more distinct and definite plan for the competitors to proceed upon, and that too much has been therefore left to their ideas; thus rendering it a matter of considerable difficulty to arrive at the conclusion I have done."

After some discussion, the Town Council voted the sum of 50*l.* each to the authors of the designs marked "*Murus Maritimus*," and "Stability"; the authors of which are, respectively, Messrs. Wm. T. & Alfred Cross & Arthur Wells, of 53, Charing-cross, London, and Bohemia-road, Hastings; and Messrs. Jeffery & Skiller, of Havelock-road, Hastings. The awarded designs are to become the property of the council.

THE PROPOSED BATHS AND WASH-HOUSES IN SOUTHWARK AND THE LOCAL GOVERNMENT BOARD.

A few weeks ago we drew attention to an effort which was being made on the part of the parish of St. George the Martyr for the erection of baths and washhouses in Southwark, and that with the view of carrying out this object they had applied to the Local Government Board for the sum of 12,700*l.* belonging to the parish, and invested in Consols, being the proceeds of certain parochial property at Mitcham, which was sold as being no longer necessary when St. George's parish was united with St. Saviour's Union. The Local Government Board had promised that they would consent to the application of the above-named amount for the establishment of any institution or works of a permanent character for the benefit of the inhabitants. And the St. George's authorities, thinking that the erection of public baths and washhouses would confer a benefit on the inhabitants, applied for the amount accordingly. The reply of the Local Government Board, however, which has just been received, is unfavourable; and it would appear from it that the large amount now invested in Consols is likely to be invested in the building of extended workhouse accommodation in the St. Saviour's Union. The Board in their reply state that the St. Saviour's guardians have just agreed to purchase the freehold of the site of St. Saviour's Workhouse; and that they propose to erect new buildings upon a portion of it, in addition to which the contemplated alterations involve also an enlargement of the Newington Workhouse. The Board therefore state that, in expectation of the probable demands upon the parish of St. George the Martyr in reference to the new works, it is not advisable that the investment should be disturbed in respect of any other contemplated building. This communication has given rise to much dissatisfaction in St. George's parish, the inhabitants of which are warmly in favour of the erection of baths and washhouses, in order to promote the health and sanitary condition of the district. They urge that the Union has already three large workhouses, in addition to which a spacious infirmary has just been built at a large cost, and that the workhouses are ample and large enough for the requirements of the Union. The inhabitants of St. George's appear desirous that the large sum belonging to them shall be expended in the erection of baths and washhouses rather than in building unnecessary new workhouses, and we understand that a public meeting is about to be held on the subject.

BUILDING CONTRIVANCES AND MATERIALS AT NEXT INTERNATIONAL EXHIBITION.

We wish specially to direct our readers' attention to an advertisement from her Majesty's Commissioners as to the department of architecture, building contrivances, and materials, including cements, concretes, and plaster, in order that they may be induced to assist in forming an adequate representation of the section. A meeting of the sub-committee to whom it is intrusted, was held on Wednesday, the 10th inst., at Gore Lodge, Col. Gallwey, R.E., in the chair, when Colonel Wray, Major Du Cane, Mr. Grissell, Mr. George Dines, Mr. T. Roger Smith, Mr. Grant, Mr. Kirkaldy, Mr. Godwin, and others, also attended. It was determined, amongst other things, that facilities should be afforded exhibitors for testing new materials and processes. It was much desired that foreign materials and modes of construction should be well represented, and it was hoped that the foreign commissioners, through whom everything from abroad must necessarily come, would take steps to make this desire known. From France much that is valuable might be sent. If M. César Daly, M. Adolphe Lance, or M. Charles Lucas, for example, would move in it, most interesting means of comparing the building appliances and modes used in the two countries would doubtless be obtained.

Intending exhibitors at home should send notice at once.

NEW PUBLIC HALLS FOR GLASGOW.

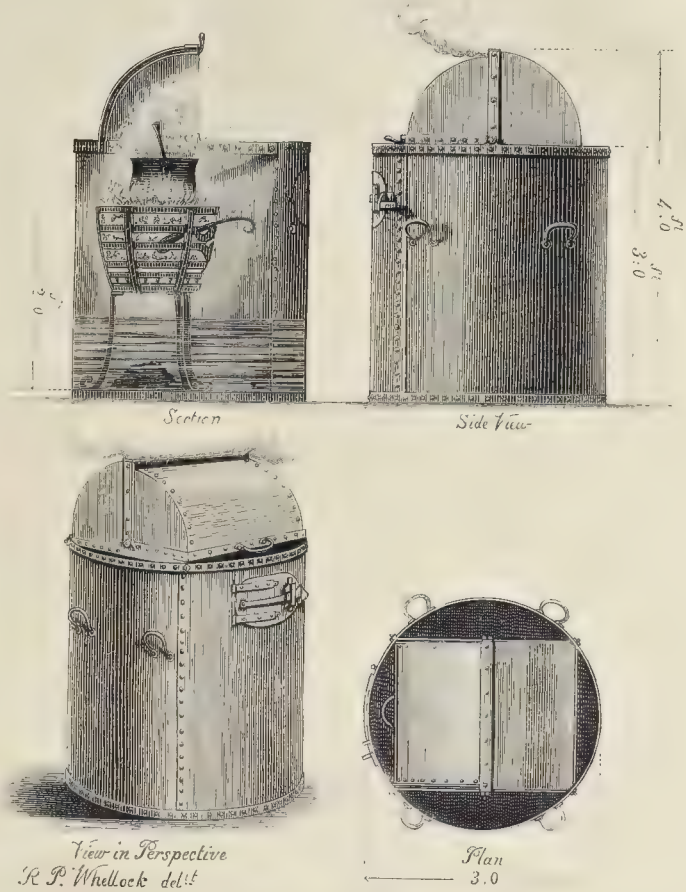
The inadequate accommodation, inconvenient situation, and defective acoustical properties of the Glasgow City Hall have been rendered painfully apparent of late owing to the occurrence of the musical festival and the visit of Mr. Disraeli. There have long been loud complaints as to the want of new and commodious public halls to meet the wants of a large city like this, and it is satisfactory to learn that those wants are likely to be soon supplied. It is proposed to erect new public halls on a plot of ground having a frontage of about 200 ft. to Granville-street and 160 ft. to Berkeley-street and Kent-road, thus occupying over 3,500 square yards of building-ground. The main entrance from Granville-street will be upon the principal floor. The great hall, which will be 75 ft. wide and 140 ft. long, will be reached through a vestibule, and then through an octagonal hall, 36 ft. in diameter. To be added to the above dimensions of the great hall is the recess for the organ and the north gallery, which will make a total length of 186 ft. The galleries will accommodate about 650 persons. A provision will be made in front of the organ for a large orchestra and chorus, which is of great importance in a place intended for large meetings. There will be six exits from the great hall. All those minor adjuncts which render the accommodation of such a place complete will be considered.

The great hall of the new building will contain 15,565 ft. of floorage, and will seat 2,920 persons, and, when packed, will hold many more. The actual capital required to complete the new undertaking will be 80,000*l.*, nearly 60,000*l.* of which have been already subscribed. Sir Michael Costa, who has examined the plans, has expressed his satisfaction with them from a musician's point of view. The late Mr. Cunningham, of Liverpool, architect, in conjunction with Mr. Campbell Douglas, of Glasgow, planned the new buildings.

THE LAW COURTS.

Messrs. Bull & Sons will commence the erection of the new Law Courts on the 5th of January next, being the first Monday in the new year.

Society of Arts.—On Wednesday evening last a paper on Mechanical Processes for producing Decorative Designs on Wood, by Mr. Thomas Whitburn, was read. We will return to it in our next.



THE PLUMBERS' FIRE-SAFEGUARD.

THE PLUMBERS' FIRE-SAFEGUARD.

THE calamitous fires by which a considerable part of Canterbury Cathedral and, still later, the Alexandra Palace, with all, or nearly all, its valuable contents, were destroyed, having been traced out to the fire-basket of the plumbers engaged in repairing the roof, from which, it is supposed, some live coals or molten metal had escaped and ignited the nearest inflammable materials, attention has been drawn to the means of preventing such disasters in future.

Mr. F. C. Penrose, the architect to St. Paul's Cathedral, having given the matter his consideration, with some valuable aid from Mr. Shand, of the firm of Shand & Mason, of Southwark, engineers, has just perfected a useful and simple invention for the protection of the plumbers' cresset or fire-basket, and which is now in actual use by the plumbers engaged in the repairs of the roof of the cathedral, and is found to answer very satisfactorily. We have given in the present page a wood-cut of it, made from sketches on the spot, and which, with the following description, will be readily understood.

It consists of a cylinder of galvanised wrought iron, made of boiler plate $\frac{1}{10}$ in. thick and 3 ft. high by 2 ft. $8\frac{3}{4}$ in. diameter; above is a cowl or hood, the one-half of which, being fixed to the centre, is movable,—*i.e.*, may be raised or lowered at pleasure, for the purpose of getting at the melting-pot. The head is square or oblong on plan, and semicircular in elevation, the two halves being concentric with each other; they are each strengthened with a framework of iron bars, of thin gauge,—in other words, formed of strap-iron, $1\frac{3}{4}$ in. by $\frac{3}{8}$ in. thick, secured to the sides of the cylinder with nuts and screws. The cowl is thus made removable for the purpose of inserting and withdrawing the cresset inside the cylinder.

When the fire-basket is fixed, water having been previously poured into the latter to the depth of about one-third of its height, the fire is lighted, the metal-pot put on, the bulbs or irons inserted between the bars, a small door being provided for getting access more readily to the fire, and which is afterwards carefully shut. When the cowl is closed, a long aperture is left of about $1\frac{1}{2}$ in. in width for the escape of the smoke.

The plan shows the sides of a segmental form, open to the atmosphere, which are purposely left for the supply of air to the fire.

The whole thing is made portable for two men, for whose use handles are provided at the sides. The enclosure, apart from the fire-basket, weighs about $1\frac{1}{2}$ cwt. to 2 cwt., but may be made considerably lighter, if requisite, by reducing the size in height and diameter about 3 in. each dimension,—but no more.

Messrs. Shand & Mason, of Upper Ground-street, Blackfriars-road, engineers, made it, and are prepared to supply them to the trade for 10*l.* each.

It answers to the full satisfaction of the plumbers now engaged with it, and, moreover, it effects a saving of at least one-third of the fuel as used under the old unprotected plan.

PROFESSOR MAX MÜLLER AND "RELIGION" IN ARCHITECTURE.

IT is most curious to note how the *past*, every now and then, starts up and makes itself visible to the *present*. If the world of to-day had nought but itself and its own thoughts to go by, it would make, it is to be feared, but a sorry figure. It is by recollections and by borrowings from the past of human experiences that the poetry of the present is made up, and perhaps its mental happiness assured. This is an old thought, but it may strike some, it may be, for the first time; for in the daily familiarity of things their *beginnings* do not press themselves on common notice. To cite an example,—architecture, what would it be without "precedent" to go by? If the past of architecture were utterly blotted out, what would the present of it be like? A curious question enough. Church architecture, again, as nowadays practised, whether in or out of the "Establishment," is but little more at any time than a careful copying, or a following of the

past of church and chapel building, both in arrangement and in details. So much are we at the mercy of those who have preceded us. If these or some such thoughts have not struck many before now, they can hardly fail to do so after the remarkable, and certainly exceptional, "evening lecture" of Professor Max Müller, in the nave of Westminster Abbey. It was about the past and the origin of the primitive religions of the world,—of those religions, and feelings, and intellectual systems which gave birth to the great architectures of the past, to which we moderns nowadays refer so industriously, and make such efforts to imitate and rival.

In this right glorious and tight little island we are so accustomed to a steady and even routine, that it becomes not a little difficult to realise to ourselves anything very different from it. It is to us the whole world in miniature. But if we go back in time, and cease to think of the present, and look at things as they once existed, and had form and movement and meaning, we must soon see how very wide a world it is we live in, and how very many are the thoughts and ways of it; and how diverse the thoughts of this world have been, for the very poles of the world are not wider apart than have been the religious expressions of it, and the architectural thoughts which have grown out of, and enshrined them. Take old Egypt, for instance,—of which, by the bye, the learned Professor said nothing,—what a strange faith and architecture. In the "science," of which the Professor speaks, it is a little difficult to say whereabouts the faith of Egypt would range itself. To the common people it must have presented a gorgeous show, as the magnificent sculptures prove; and to the "learned of the Egyptians" it must have embodied some truly grand ideas, else could the architecture never have risen to the height it did. Building was a reality, and the builder meant all he did. If the building was large and colossal then we may be sure that the feelings and motives of those who built it up, stone by stone, were large and colossal also. To this hour there does not exist on the earth's surface so *grand* a structure as Karnac, with its multitude of courts and its columned hall,—written on within and without. It is not a little strange, too, that the earthly habitations of these people should all of them have utterly perished, and passed away, while their "Temples," devoted to "dreamings," and their "sepulchres" to hold their dead bodies, should have lasted to this hour. Nowhere do we possess so complete a record of an antique faith, and of that which enshrined it, as we do in the ruined temples of Egypt; and from the sculptures, accurately realistic as they are, to say nothing of the hieroglyphic writing: it may be in the future that a complete idea of the religion of this ancient people may be got at, and the foundational ideas on which it was based, and out of which the architecture grew. Architecture and sculpture, fine art that is, were prime necessities, the outward forms could not but exist. A noteworthy fact for the thoughtful in these matters. Another phase of faith, the very opposite of this, and specially referred to by Professor Max Müller in his interesting lecture, the *Jewish*, was remarkable in the world's history, as altogether rejecting a multiplicity of temples, but demanding, as a prime necessity, *one* temple, and one only; round which the whole nation was to cluster, and which, indeed, was to hold the whole people together. We are speaking, of course, of a time before the idea of "synagogue" became a necessity. There has been, perhaps strangely, no Jewish architecture, no style of art, which can be said to have been peculiarly the invention of the Jew, and useful to him, and to him only. It would have been not a little curious to have seen this "order" of architecture. The word poetry of the Jew being what it is, the poetry in stone must surely in some strange way or other, have corresponded to it, and been worthy to enshrine it. A wonderful idea if only in thought. The magnificent "prophecies" of Israel were not uttered within houses made with hands.

We cannot, of course, follow Professor Müller into all the eight "historical languages" or utterances of the faith of mankind, from the beginning of the world to the present day, and under which headings he has catalogued the world's religions, and under which he might have almost added the world's correspondioy architecture; but we may yet say a word more on one or two of them. We have named two opposite ideas,—the one needing temples everywhere, the other needing but one. The Egyptian, there can be but small doubt, invented everything for himself, or, rather, what he needed grew out of himself, unborrowed. The Bible shows how the Jewish faith came into being; but the architecture was always, as it now is, borrowed from the country wherein the "chosen people" happened to abide at the time.

It may be interesting here to note that, before,—long before,—the birth of the Jewish faith, and before the Egyptian could have symbolised his strange ideas, there existed a form of worship which necessitated no temple or building. The faith of the Parsee or the ancient fire worshipper. So far does this primeval idea go back in time, that history has failed to date its origin, or to say when it began. It may be that it is the very earliest form of religious faith on the face of the globe, the result of a natural and spontaneous feeling and perception in the human mind. The *sun* worshipper saw the sun, and could not but feel and perceive that to it he owed everything,—light and heat, and the very fruits of the earth. What more natural than to adore it? No temple or architecture was needed; nor, indeed, while the primitive idea held, was a building possible. It is not a little strange to contemplate such a necessity before Abraham was, and to find, as may be seen in Mr. Palgrave's book on Central Arabia, that this primitive form of worship yet lives as it ever did in the earliest ages of the world. In travelling across the Desert, his attendants, more than half savage and primitive in look and manner, hailed the rising sun on the instant of his new day appearance. No more could have been done by the primitive Arab. We cite this curious circumstance here as showing a phase of the "science of religion," as the Professor termed it, which called for no architecture, and required no building; thus differing essentially from those others where a building or temple of some kind or other was in all cases absolutely necessary. The primitive movable tent, or "tabernacle" of the wandering Israelite, and the fixed stone temple of Egypt, were absolute necessities, and could not be done without, and architecture could not but spring out of them in some form, greater or less.

But passing from this, which needs to be noted, and much more, we may come to Christianity itself, which, growing out of older thoughts, made a new "utterance" in the world. Much might, indeed, here be said,—and it is somewhat strange that so little has been said about it,—that this lecture in the nave of Westminster sounded not a little startling; and the architecture of the place, and its somewhat awkward new arrangements in front of the dim shadows in the distance, woke up strange echoes. The very vastness of the subject, and its wide significance, the "Semitic" races and the "Arian" races, and the "faiths" that have grown up, no man knowing how or when, seemed in the mere talk about them to well-nigh affright the old Abbey out of its propriety and watchful conservatism. But if in this very vastness and breadth of view we confine our attention at present to the widespread Christian faith, and to the material forms, and the architecture which it has fostered, if not given birth to, we shall find matter enough for thought and wonder. It is not one style of art that it has called into its service, but many. We do not here speak of the almost infinite diversity of Christian Church and Chapel architecture at the present hour, drawn as it is from all places and all times, but of that which was done in the old days, before "books" made all architecture alike familiar to the student and the practitioner. We all know how the Gothic, or Pointed, has been claimed exclusively as a Christian style of art, and how it has been said that it could not have grown up under any other religious system. Those who say this forget the great doings of the Mahometan architects of India, the Holy Land, Egypt, and even Spain. But, passing by all this, nothing most surely can be more wonderful than the way in which the "missionary" spirit, as Professor Max Müller terms it, of the faith of Christ, has adapted itself to all forms and modes of expression, artistic and otherwise. Gothic and Renaissance, both, have been its willing servants, and it would perhaps be hard to say in which style of art it has accomplished its most striking and impressive work. St. Peter's and St. Paul's, Cologne, and Westminster would seem equally in their several ways to attest its power. It is at home in them all; and we might dwell for a long time on these results of the building powers of the faith of Christendom, as it is to be seen in the length and breadth of Europe; but there are, or have been, two special phases of Christian building, or Christian expression, in material forms, that have always seemed to us specially interesting. First, when in its infancy, having no buildings of its own, Christianity dwelt in caves and "catacombs," and upper chambers; and then, gathering strength, in "basilicas,"—the times of its "prophets, champions, and martyrs." And then, secondly, when it commenced to build for itself, in the days of the great and solemn Romanesque. In no succeeding architecture did the Christian expression of religion assume a more impressive artistic aspect. It had then taken firm hold of the Western world, and all Europe went to work and built, every nationality in its own way,—all differing, yet all alike,—its great Romanesque churches and cathedrals, and religious houses;—from north to south, and from east to west. The Southern Romanesque, as that of Venice, was especially characteristic: nothing was spared to make it great. It would be a curious thing to realise, even in a picture or in fancy, the Christian Venice of the Romanesque days. There needs must have been a harmony amidst the several arts which all went to make up the art life of the city. We may yet see a something of this in the "ivories" to be found in antiquarian stores, and in them, though perhaps but faintly, we see how architecture, and sculpture, and costume, and the common things of daily life all went together to make up a consistent and harmonious whole.

Architecture and fine art will be found to throw no small light on the great subjects on which Professor Max Müller discoursed so learnedly, and so well, and so boldly.

NEW POLICE BUILDINGS IN KENNINGTON-ROAD.

During the last few months, new and convenient police-station buildings have been in course of erection on a plot of ground in Kennington-lane, immediately adjoining the extensive new premises called the Wellington Mills, recently built for Messrs. Oakey & Co., and which were described in the *Builder* some time ago. The land on which the buildings have been erected, including the parade-ground, is 126 ft. in length and 72 ft. in depth, covering an area of upwards of 1,000 square yards. The buildings consist of two distinct blocks, with a frontage to Kennington-road of 42 ft. in length each, with entrance, carriage, and foot gates in the centre, of similar dimensions. The buildings are 40 ft. in height from the street level, in addition to a basement. They consist of a ground-floor, and two floors above. The materials used in the elevation up to the first-floor windows are of Doulting stone, rusticated, and the upper portion of red Fareham brick, with stone dressings, the plinths, window-cills, and stringcourses which ornament the elevation being in Portland stone. The first-floor windows have bold arched stone headings, and the elevation is surmounted by a projecting stone cornice. On each side of the carriage-entrance gates in the centre there are stone piers surmounted by lamps.

One of the blocks, which is called the "station," contains, on the ground-floor, the charge-room, with cells in the rear. The first-floor of this block contains the inspector's apartments, including sitting-room, two bedrooms, and other domestic offices; the second-floor containing a similar set of apartments for the sergeant. The basement contains washhouse and stores, for the use of the inspector and sergeant. The other block, which is called the section-house, is for the use of private members of the force who are single men. The basement of this block contains a drying-room, messroom, cooking-kitchen, bath-room, and washing-room. On the ground-floor is the officers' day-room, library, locker-room, clothes-room, and brush-room. The first and second floors, which contain three rooms each, are furnished with twenty-five beds on each floor, there being thus sleeping accommodation for fifty men. The parade-ground at the rear of the buildings is 80 ft. in length by 34 ft. in depth.

The buildings have been designed by Mr. F. H. Caiger, the police architect and surveyor; Messrs. Merritt & Ashby, of London-wall, being the contractors; and Mr. J. H. Taverner, clerk of works.

The Temple at Jerusalem.—Mr. James Fergusson, F.R.S., read a paper, on Tuesday evening, the 2nd inst., at Sion College, London-wall, "On the Temple of Jerusalem." The chair was taken by Mr. Driffield, the president.



CHURCHYARD GATE, ST. JEAN-DU-DOIGT, BRITTANY.

CHURCHYARD GATE, ST. JEAN-DU-DOIGT, BRITTANY.

Not the least interesting of the many picturesque and beautiful features of ecclesiastical architecture in Brittany are the churchyard gates, or, as they are called, "triumphal arches." These singular structures are, as a rule, late in date, and in some instances are excessively rich in ornament. The example we give from the churchyard of St. Jean-du-Doigt is one of the earliest we have seen, and dates from the end of the fifteenth century: it is not so rich or extensive as many others in the same neighbourhood, but its design is very pleasing and more appropriate than the more pretentious and wild buildings erected for the same purpose a century later. It is constructed entirely of granite, and is in a good state of preservation. When the name of "triumphal arches" first became applied to these structures in Brittany it is not easy to ascertain, but there is a kind of grim poetical notion about the idea mixed with a deep religious sentiment, which accords well with the general character of the Bretons.

The Church of St. Jean-du-Doigt is an interesting building of the fifteenth century, with a nave and aisles under one roof, a good tower crowned by a lead spire, a large porch, and many other objects of interest. The east window is a rich rose, with the star rather skilfully introduced into the tracery internally. The *double* font and one or two original altars are worthy of notice. The cemetery surrounding this church, in addition to the "triumphal" arch, contains a fine Renaissance fountain in cast lead, a simple Calvary churchyard chapel, and a small ossuary or bone-house erected against the base of the tower.

In the village are many interesting old Gothic houses, two of which are seen in our view.

BURLINGTON HOUSE, PICCADILLY.

The Royal Society has taken possession of its new quarters in Burlington House (the eastern side of the quadrangle), the interesting collection of portraits have been hung, and its 30,000 volumes expeditiously transferred by Mr. Wm. White, the Assistant Secretary, to the handsome and commodious library prepared for them. This is on the one-pair, and has a lofty gallery around it, with columns in front up to the roof. The fittings of the apartments are of oak, as are those in the rest of the block of buildings, the ornamental work in plaster is sufficient for the purpose, and slight decorative colourings are here and there introduced. Hot-water apparatus by Mr. Haden is, when quite in order, to warm the various apartments, and will doubtless do so. The meeting-room, which is on the ground floor, separated from the entrance-hall by an anteroom, might have been made a little higher with advantage, but this was doubtless regulated by other requirements.

On a previous occasion we gave a view of the Piccadilly front of the new Burlington House, a plan showing the accommodation provided for all the societies housed in it, and some descriptive particulars of the whole.* To these we refer our readers, to avoid recapitulation. At that time (1871) the works, under the direction of Messrs. Banks & Barry, were in abeyance, in consequence of the failure of the original contractors. They were soon afterwards placed in the hands of Messrs. Perry & Co., of the Tredegar Works, Bow, by whom they are being carried out to completion, the lamented death of Mr. Banks, in the meanwhile, leaving the sole direction to Mr. Charles Barry, as architect. Mr. Daniel Ruddle, who had his training under Sir Charles Barry, at the Houses of Parliament, has acted as clerk of the works from the commencement.

Our present view shows the south-west angle of the building from within the quadrangle, and includes parts of the portions occupied respectively by the Linnean Society (next the great archway) and the Astronomical Society. The apartments next those of the latter, northwards, are for the Society of Antiquaries; these are fast approaching completion, and will doubtless be occupied by that distinguished body by April next. The iron gates to the archway in Piccadilly, now in course of erection, are the work of the Midland Iron Company.

* Vol. xxix., pp. 217, 226, 227.

THE CORPORATION WORKMEN'S DWELLING-HOUSES.

The new workmen's dwellings in the neighbourhood of the Holborn Viaduct, the erection of which has for some time been under the consideration of the Corporation, have now been finally decided upon, and will shortly be commenced. At the meeting of the Holborn Board of Works, held last week, Mr. Isaacs, the surveyor to the Board, stated that he had seen the plans of the intended new buildings about to be erected by the Corporation for the artizan classes, on the site of Union-court, one entrance being from Bleeding Hart-yard, and another in Field-lane, at the foot of the steps recently erected by the Corporation as an approach from Field-lane to Charterhouse-street. The plans embrace four blocks, each to contain accommodation for ten families, thus making forty in all. Mr. Isaacs observed that the quantities were being taken off to enable the Corporation to receive tenders. The Board expressed their satisfaction at the prospect of the long-promised buildings being at length erected.



BURLINGTON HOUSE, PICCADILLY: VIEW WITHIN THE QUADRANGLE.—MR. CHARLES BARRY, ARCHITECT.

ART FOR THE MILLION.

SHAMS.

Sir,—Mr. C. H. Whitaker, in his last communication (p. 949), has illustrated at more length, and thus made additionally clear, his views on the production of shams. I feel personally obliged to him,—as, no doubt, do others of your regular readers. I may say also that there ought perhaps to have been no misunderstanding about the drift of his former letters (pp. 770 and 890): this is quite evident when they are re-read,—after his last. It does away, to a great extent, with one of the radical failings of written opinion, when it can be supplemented as the exigencies of readers seem to require. "I cannot help feeling, Phædrus, that writing is unfortunately like painting; for the creations of the painter have the attitude of life, and yet if you ask them a question, they preserve a solemn silence." But, then, the Platonic Socrates—speaking over 2,000 years ago,—and providing thus what might be used as an implied apology, in some cases, for us poor moderns,—had not our advantages in the way of weekly and well-disposed journals. . . . . The Vienna awards—in so far as they may indicate inferior taste and skill in our manufacturers,—ought decidedly to be brought into the fullest possible prominence, with a view to future improvement. The fact (if it is a fact) that much of this failure has resulted from the errors of purists in the decorative arts,—their defective theory, and consequently erroneous teaching,—would deserve to be enunciated and reiterated till it was universally acknowledged, and a new course entered upon. After just an intimation that few of us feel so sublimely virtuous as to reject good thinking, even if it should happen to be prefaced by a simple *apropos de bottes*, and after these other explanations, I will consider myself at liberty to take up the questioning where it was left.

The matter seems, then, to divide itself now into (1), culture (by means of the arts) of uneducated persons and children, and the best method of effecting it; and (2), the use of imitations by the rest of the world.

1. Here we have a very wide and long-debated question. It would seem quite possible to regard the many sides that present themselves for notice in any consideration of the aims and methods of education as far from a drawback. Perhaps each may do good service in its turn. So long as the practical work of teaching is steadily pursued,—according to the best system yet got into working order,—we need not complain. It is the proper work of theorists to force into notice any special defect or excess,—and thus to render systems more symmetrical to compel the nicer adaptation of means to the attainment of ends; and bring about larger modifications still when it has been agreed that there has been some mistake as to the ends themselves. Are we to conclude that there has been a misapprehension of the things to be aimed at?—or only of the means? In this case of the little luxuries, the possible decorations of the cottages of the poor. If the former, we seem to let ourselves in for still expanding issues. If the latter, the question is still very wide,—quite wide enough for me to touch on it only just now. . . . . May something which has been put forward as to pure savages be considered to have a bearing on—culture by means of things thoroughly within the reach of the taught?

I have formed no opinion, I should say, on the correctness, or humanity, or any other quality of the theory, but simply state it as it has reached me. Observers have, it seems, noted painful failures in the work of quickly-civilising savage races. By means of exertions, that could not be too highly lauded, made by devoted men, savage races have been persuaded to live in communities, to affect the manners of the nations of Europe, to aim after the realisation of the highest personal and social virtues of civilised man. Great success would seem to have attended these efforts, made with energy and steadily persevered in. Schools and churches have been built; religious services attended as a custom; habits of patient labour sometimes acquired,—all the most obvious details of life at the old home of the teachers copied with an earnestness, a thoroughness, that is not without its pathetic interest. The best models known to these teachers have been followed, and the unbounded submission of the weaker-willed and less self-mastering people under their sway has been secured. But the imperfectly-conquered savageness will, it is said, on occasion,—and the occasions are much too frequent,—show itself quite untamed. The old wild love of unrestraint breaks the linen bands that have held it in; and the moral that is pointed to as a consequence is, that no power, except the continual action of formed habits persisted in for generations, can forge the iron fetters which are worn without pain, and still effectually restrain from excesses of any kind,—the majority of a well-trained people. It is of course added that this slowly-acquired self-command is the security for the permanence of the achievements of the past,—menaced in the worst of cases only by a small section made temporarily delirious by special causes, and not restrained and cured, as they should be, by the exercise of genuine wisdom and merciful strength. In view, then, of this tendency to relapse, in the case of savages, it has been argued that the teaching which has most permanent influence on them,—which moulds their natures and forms their habits,—is that derived from the actual example of those who are nearest in culture to themselves;—such as the sweepings of our cities,—the driftwood, so to speak, of civilised humanity,—and the somewhat better class of imperfectly-educated Europeans who man the ships that trade between old countries and those now first beginning to have a history. From such persons the natives are said to imbibe in an effective and permanent way the germs that hereafter develop into the sentiment which makes the binding obligation of duty the commencement of habits that go towards some self-respect and self-restraint, &c. I probably need not pursue this further. The argument seems, as far as I can judge, not far from analogous to Mr. Whitaker's, that decorative art should speak the language most readily intelligible to those possessing the least general culture. That there are numbers of people in our own country, whose mental, moral, and social condition is not removed so far from that of savages as might have been hoped from the length of time during which the work of civilisation has been going on, and the high culture elsewhere evident;—that in fact we must begin thoroughly at the beginning, and treat hosts of grown-up men and women of our own country,—as a matter of policy,—to the sort of teaching which, in the case of children, has excited times and again indignant protest (viz., teaching that must be wholly unlearnt when,—if ever,—the intelligence is sufficiently developed). I should look for answers to the kind of difficulties here hinted at in the further communication Mr. Whitaker has promised. He will (to mention one or two details as well), I hope, show the region for which "the sterile, barren, and unattractive one occupied by the disciples of the doctrine of the purists in decorative arts" ought to be abandoned. Also whether he intends absolutely, or only as an exception, to recommend a recurrence to,—what we have for the most part agreed to consider,—errors in decoration; such, for instance, as fully-shadowed subjects for the flat surfaces of floors, walls, &c. The use of more or less colour touches no question of principle. The present interest in Chinese and Japanese art owes its strength very largely to a reaction that has been gaining force for some time,—tending towards the more general application of varied and delicate colour and unexpected harmonies.

The conclusions that may be come to as to these matters should affect so materially what one might have to say on what I have called the second division of this subject, viz., the use of imitations by others than the very poor and ignorant. Therefore, and because I am afraid this would in itself be likely to occupy more space than you would be willing to accord me in continuation of the foregoing, I had better hold back the further perplexities of

A Spectator.

BONDING COURSES.

Sir,—Want of information with reference to the results of experiments ought perhaps to deter me from addressing you on this subject,—or perhaps it may be accepted as a sufficient motive for my doing so. Some of your readers are, I doubt not, aware of facts that they have come across, in the course of practice that would solve other people's difficulties as well as mine. I must confess to a fairly diligent look-out for such facts,—in actual work, and among foremen, clerks of works, and others connected with building;—but I have found very little in the way of exact observation on some of the points, and absolutely nothing in the way of special experiment. From this it results that I am only able to put the case as I have learnt it,—the advantages of bonding courses being supposed to be:—

1. That they *spread weight*,—doing service in their way similar to that performed by wall-plates, templates, landings in foundations and piers, &c. This is done by a comparatively thin beam of stone when that material is used. In a specially unfortunate and unusual case, the greater portion of the bed under such a stone might happen to be hollow, and then—with a thickness of say 6 in. and a length of 4 ft.,—it would bridge a distance short only by a very few inches of its own length. Fracture might reasonably be expected with any considerable weight above; but in practice this would probably happen not once in a hundred instances. The whole bearing of the stone being covered with soft cement or mortar, this yielding material will be forced by the stone's weight,—certainly with the addition of a very little superincumbent matter,—into all the irregularities of surface. On the occurrence within the area of the flag of an unequal subsidence, the stone acts as a beam, with a bearing measurable in inches, and finds—it may be before long—a uniform bed once again. The temporary conditions have been changed in the imperfectly solidified work, which is, in fact, not only hardening within itself, but also setting up, as best it can, permanently satisfactory relations between its several parts. If through failure of foundations it should come about that the line of separation, between two sections of any wall, cut through such a bonding-landing, it would also fracture it,—break it in two probably like a biscuit,—when the separation had become so considerable that the beds of the work could not tilt themselves any longer. But this is a case in which ruin would be inevitable, no matter what precautions were taken to make the superstructure act together. If this view of the case is correct, bonding-courses of brick in cement may not have been treated by "B." in the *Builder* (p. 930) to all the consideration they deserve. Such a bonding-course,—composed, say of two courses, the brickwork in thickness, all thoroughly bound into one mass by quick-setting cement,—might fairly be compared with a "flat ring of stone, 12 ft. or 14 ft. in external diameter, and only 6 in. thick,"—if only this point of difference was first noted,—that the brick and cement ring has the great advantage, as far as its resistance to fracture is concerned, of being, within some slight limits, able to re-adjust its form. However quick the cement may be in setting, the ring cannot be "a rock" for days or even weeks. If the stone ring is not supposed to be continuous—(in one piece for its whole size)—the liability "to break like glass wherever the least inequality of pressure took place" would appear less certain; and this suggests to one what is likely to be the case with the brick and cement. It is sufficiently pliant to act as a succession of short stones would, i.e., each part of the length takes up its own position without being affected by what the others are doing. The inequalities are very minute: this is supposed from the very first. But while the bonding-course is showing this want of complete rigidity, it is well enough compacted to act together over sufficient areas; and thus serve the purpose for which it was introduced, and effectually prevent severance of walls or piers as the result of the slight differences that probably exist in every square foot of brickwork actually executed,—such differences being caused by difference of size of bricks, and the fact that some are well wetted and others but little, helped, of course, by fitted or unfitted cross-joints, uneven layers of cementing material, &c.

Bonding-courses,—in which hoop-iron is also used,—may be regarded as still more effective. Not only is there added the weight-bearing strength of the laths themselves, but the iron strips supply, as only iron can, the tensile strength of which the material stood in need,—making a powerful Brunel beam of the whole construction when used thick enough. The resistance to compression may in most cases be supposed to be ample; but the brick in cement and concrete lintels which bridge such considerable spaces at times cannot do without the insertion of the irons, which supplement their powers where weakest, and thus increase their forces many times.

2. As to this, much less need be said. Still it is not necessary to pass over the fact that with the hoop-iron they act also as *girdles*. In

structures covering small areas, and tall in proportion to their height, such as towers, chimneys, &c., it is absolutely necessary for safety to compel the whole to stand together, and maintain its original form unaltered. When the area of the building is considerable, and the continuity of the bonding-courses is broken by openings, and there are few cross walls to brace the hoop-irons back, it would seem likely that their action will be simply local. They will pull together certain sections of wall; also prevent,—to the extent of their own resistance to lateral flexure,—any tendency to bulge. The intimate contact set up with every portion of the material round it by the iron is equal to a pinning-down at numbers of points. Hoop-iron, tarred and sanded with coarse sand, must be perfectly incapable of sliding on the brickwork under it, when only a few courses have been built above. In ordinary buildings they may even do more than in larger ones.

3. This is especially seen to be so when we consider the main use of almost all artificial bond to be *temporary*. It supplies something to counteract against the heavy demands made in the usual course on work, when it is least able to stand them. There are all the temporary inequalities before alluded to; and in addition,—almost always,—scaffolds, with workmen, hoisting apparatus, heaps of materials, &c., derive all their steadiness, and some of them support, from what a very little while ago formed part of similar heaps.

Of the many queries as to details that might be put, beyond those suggested above, I will limit myself to :—

A. Is it not desirable to build iron into all brickwork—in cement only? not in mortar? I have heard it commonly asserted that lime mortar perishes by the action of iron. Is, however, the tarring a sufficient preparation for its insertion of the iron, without risk, in a mortar bed?

B. Will any such result happen from the use of a mixture of lime mortar and cement? Bricklayers have told me that the mixture made of cement and sand is so "short," that the addition of mortar makes a compound more readily used, and more evenly distributed by most workmen. It is, if I remember rightly, sometimes used, one third of mortar to the requisite bulk of cement and sand, mixed in the proportion found to suit the cement; and as put by workmen, the result is simply a substitution of one cementing material for another throughout the bulk of the compound,—not a further weakening of the cement. I have had a suspicion that the ingenuity of foremen leads them to attribute defects to others and to materials a little wildly at times; and that by some strange coincidence their masters, and therefore their own interests, are almost always served by the remedies they devise. But there is perhaps something in it.

C. What is the use of carrying the hoop-iron bond through openings? Instances must occur when the bonding-courses can only be put where they will be interrupted. It is difficult to imagine when they are seen in wide openings, sagging so much with their own weight, that they can act as effective girdles within the narrow limits of possible lateral movements in buildings that are going to stand any fair chance of stability. Should the bond be tightened artificially? Or is it worth while to let the iron be wasted and to involve the trouble of cutting later on,—in order that it may be clear on inspection that forgetfulness has not resulted in a saving of expense to the contractor? X.

SCHOOL-BOARD SCHOOLS FOR LIVERPOOL.

The foundation-stone of new schools to be erected in Butler-street was laid by Mr. Bushell, the chairman of the late local School Board, in presence of Mr. Foster, M.P., Vice-President of the Council on Education, who was mainly responsible for the passing of the Elementary Education Act. Afterwards Mr. Foster went to Queen's-road, where new schools, built by the School Board, are approaching completion. Here he placed in the front of the building a stone to commemorate the erection of the schools. In an address Mr. Foster reviewed the history of the Education Act, criticised its opponents, and defended the Act in a speech of an hour and a half's length.

The schools of which the memorial stone was raised are erected on a piece of irregularly shaped land, having a long frontage on the west side of Queen's-road, and are the first of the series now being erected by the Board, both as regards the date of their commencement and superiority of position. The general outline of the building is that of an inverted T, presenting a façade of 185 ft. in length to Queen's-road, and running backwards to a total depth of 103 ft. On the ground floor are placed two infants' schools, one 55 ft. by 22 ft., the other 39 ft. by 22 ft.,—each provided with junior and senior infants' class-rooms; and the senior boys' school, 39 ft. by 22 ft., with two class-rooms, each 18 ft. by 14 ft. On the upper floor are schoolrooms for junior boys and girls, each 55 ft. by 22 ft., with double class-rooms, 18 ft. by 14 ft.; also a senior girls' school, 39 ft. by 22 ft., and two class-rooms attached, each 18 ft. by 13 ft. 6 in. The various class-rooms are planned to permit of two being thrown into one by means of Stone's sliding London School Board sound-proof partitions, and the larger schools have similar provision for subdivision when required. Each room is provided with through light and ventilation, and will be warmed by hot-water pipes in addition to the open fireplaces. The ground floor is 14 ft. high, and the upper one is 16 ft. A drawing-room, mistresses' room, board and head master's room, and caretaker's rooms are provided. A large portion of the girls' and infants' playground will be roofed over, and access to the various departments and to the latrines is obtained under cover. The total accommodation provided is for 1,000 children, viz., 400 infants, 300 boys, and 300 girls. Each school department is supplied with separate entrances, hat and cloak-rooms, lavatories, &c. The whole have been carried out from the designs and under the supervision of Messrs. T. Cooke and John E. Reeve, of Liverpool, architects, whose plans were selected in competition, and have received the sanction of Mr. E. R. Robson, architect to the London School Board (and consulting architect to the Liverpool School Board). Mr. J. Henshaw, of Liverpool, is the sole contractor, and the masonry has been executed by Mr. W. Thornton, joiners' work by Mr. Samuel Webster, ironwork by Messrs. Tessimond & Kissack, slating and plastering by Mr. T. Jones, plumbing, &c., by Mr. W. Merrick, all of Liverpool. Mr. William Laidlaw has been clerk of the works. The amount of contract is 7,430*l*. The front to Queen's-road is built of Yorkshire par-points, with red Runcorn stone dressings, and the style selected by the architects is domestic Gothic.

At the laying of the foundation-stone of the Butler-street schools, fronting Penton-street, Mr. Bushell addressed the assemblage. After a few preliminary remarks, he said the school which was now about to be commenced was one of six schools which formed the first part of the Board's work. These six schools would provide for 6,200 children at a cost, including their sites, and all needful fittings, of something like 68,000*l*. In addition to these six schools the Board proposed, and the Education Department had sanctioned, a further provision for something like 5,000 children, making provision for some 11,000 altogether, at an entire cost of 123,000*l*. That money had in part been borrowed, and the remainder might be borrowed from the Public Works Commissioners at an interest of 3½ per cent., which, with an additional ¾ per cent. for a redemption fund for fifty years, would involve a sum upon the rateable value of the borough of something more than ½d. and less than ¾d. in the pound.

THE VACANT BUILDING-LAND IN CANNON-ROW.

The Metropolitan Board of Works have decided to let the vacant land at Cannon-row, adjoining the Thames Embankment, near the new St. Stephen's Club, for building purposes. At the meeting of the Board last week the Works Committee reported that they had had under consideration the utilisation of the land in question, and that the Board having finally decided not to form an approach to the Thames Embankment by a continuation of Derby-street, the committee had instructed the architect to prepare a plan of the ground, and advise as to the course to be taken. It appeared from this plan that the land belonging to the Board, following the old line of frontage, has a frontage to the Victoria Embankment of 210 ft. by a depth of 189 ft., with a frontage to a portion of it in Cannon-row of 102 ft. The committee thought that the time had arrived for letting the land for building purposes, and they recommended that advertisements be at once issued inviting tenders. The recommendation of the committee for building on the land was agreed to.

MANNINGHAM MILLS, BRADFORD, YORKSHIRE.

The erection of premises in place of those destroyed by fire, about two years and a half ago, together with additions and extensions that will entitle Messrs. Lister & Co.'s works to be regarded as equal to any in the country, are drawing towards completion. The great chimney has been recently finished. The new works are of more than usual interest, as velvet-weaving by power-loom machinery is introduced, a process which, it is anticipated, will work a decided revolution in the velvet trade. The use of power-loom machinery in velvet-weaving has hitherto been vainly sought after; but Mr. Lister, after spending many thousands of pounds in experiments, has, after many years' study, been fortunate enough to solve the problem. The extension of the works is effected by the erection of shed continuations of the premises built some time ago, and also by the building of a large mill and warehouse. The centre of the buildings, fronting to Heaton-road, is occupied as offices; and this centre block rises slightly above the shed-walls on either side, and is a little more ornamented than the rest, with high-pitched roofs at the ends.

The works have a frontage to Heaton-road of 350 yards, and they extend westward 150 yards, where they are bounded by Patent-street. They thus cover an area of about 52,500 square square yards, being nearly eleven acres, and, reckoning the several stories of the mill and warehouse, give a total extent of floorage of about sixteen acres. The new mill, to the west, at the rear of the combing-shed, is six stories high, not including the cellar, of good external appearance—in dressed stone, having a bold cornice, with blocks, and above this an ornamental and panelled parapet. The staircase is in the centre of the front, and stands clear out from the main walls. It is more ornamented than the rest of the building, and, with its turret-formed roof, surmounted with a large flagstaff, makes a feature in the great length of frontage. The four corners of the mill are also marked by raised parapets. Each room contains an area of 2,000 square yards, the tier of windows on each side numbering forty-one, so that, at a rough calculation, the whole mill will give an area of about 12,000 yards. The new warehouse, further to the rear, parallel with the mill, but separated from it by the reservoir, is six storeys high, and will furnish, reckoning each floor, room to the extent of about 14,000 square yards. The top rooms of both warehouse and mill have shed-roofs, and may be used for loom-weaving.

Each room in the mill, warehouse, and sheds is lofty and well ventilated, and provided with water-closets, lavatories, drinking-taps, and other arrangements conducive to the comfort of the workpeople. All the buildings are fireproof, even to the window-frames, which are made of iron. Each floor is of Dennett's concrete arching, resting on iron beams, supported by pillars of the same material. The supporting-pillars are fluted and ornamented. The inner walls, instead of being covered with a uniform whitewash, are painted; and the staircases, to the height of 5 ft. or so, are lined with polished brick.

There is an immense chimney at the rear of the central shed, and at the end of the new warehouse. It is 83 yards high, square in form, and outwardly of a uniform width from bottom to top. Nearly 7,000 tons weight of material have been used in its construction. The inside width is 10 ft., gradually increasing towards the top to 11 ft. The object of this arrangement is to provide a better vent for the smoke as it ascends and expands, being the reverse of the old practice of building shafts, which "throttled" the smoke at the place where most space was required. The chimney is of an ornamental design, having panelled sides with circular heads. At the height of 200 ft. is a bold cornice, surmounted by a circular panelled and ornamented parapet 50 ft. in height; this is again covered with a cornice. It is intended that this chimney shall serve for the whole of the works.

A large village has been built on the south-west side of the works. It is intersected by six new broad streets. Beamsley road bounds it on

the north and Lilycroft-lane on the south. One of the new Board schools is erected in the latter There will be room in it for 600 boys and girls.

A co-operative store on the most approved model has been built in connexion with the village, and is occupied as a branch of the Bradford Industrial Society.

Messrs. Lister & Co. manufacture silk yarn, sliver, sewing silk, silk cords, Japanese silks, silk ribbons, velvet ribbons, silk and cotton velvet, plush, &c. They also dye their own yarn and velvets.

The land opposite the front of the works in Heaton road has been laid out as building sites. Rows of villas and cottages are fast rising there; and in a short time there will be but little, if any, green fields separating Heaton from Manningham.

The architects for the works are Messrs. Andrews & Pepper, Bradford; and Mr. A. Rhodes, is clerk of works. The contracts and plans were carried out under the supervision of Captain Lepper, agent to Lister & Co.

THE ARCHITECTURE OF CHINA.

"THE TEMPLE OF HEAVEN." *

I CONSIDER that it was fortunate for me that I chanced to visit Nanking while in China; for there I saw another Ming tomb. When this dynasty began, Nanking was the capital, and Hung-wu was the first Emperor of the line. His tomb is still an object of attraction amongst the ruins of that vast city. The residence of the court having been removed, the tomb at Nanking has not been so well looked after as those at Peking; and it must have suffered during the Taeping war. I found the trenches by which Nanking was taken by the Imperialist troops all about the tomb. It seemed to me as if the buildings had been burned, for the stone bases had all the appearance of having been chipped and cracked by the action of fire. Although in ruins, the plan of the tomb could be easily made out. With some slight differences of detail, the arrangement is the same as that of the tomb of Yung-lo. I should say that if anything, the sepulchral mound is larger. This tomb is also at the very base of a ridge of hills, which cover it from the north wind, indicating again the influence of the *Fung-Shuie*. This tomb has also an approach, bordered with sculptured stone figures, like those near Peking. I had a Chinaman with me at this visit as guide, but unfortunately he could not speak a word of English; however, when he saw me sketching, he [used the word "*loong*," and pointed to the road with its men and animals. This word, I knew, means *dragon*, and as it is supposed to be only one of the various forms of the serpent, I became anxious to know what my guide meant, and I questioned him repeatedly to see if I was right in understanding that he applied this word to the long approach; I even sketched a serpentine dragon to test him, and he signified his approval of it. From this man's manner I am certain that the twisted form of the way receives from the Chinese the name of the Dragon; but whether they have the idea in this case, which has been suggested as the theory upon which the stones of Carnac in Brittany, and the avenues at Abury, are supposed to be laid down, I could not say. I made inquiries on this subject while in China, but could find no one who had studied Chinese architecture from this point of view. My stay in the country was short, or I would have had this matter cleared; and I mention it here so that those who take an interest in dracontine temples and serpent worship, may take the subject up and make further inquiries. I should be rather inclined to believe that the *loong*, or dragon, has something to do with it.

I was able one morning while in Peking to visit the Temple of Heaven; and, so far as I know, this curious shrine has not yet been fully described in our language. I have seen Du Halde's account, but not the faintest notion of the place could be formed from it; and his plan of it is fanciful and inaccurate. Photographers who hove penetrated to the place have always given the north altar as the Temple of Heaven, whereas it is only a portion of it, and not the most important. The few travellers who have described the place have been attracted by the building on the north altar, and have not even mentioned the south one, which I now believe to be the most important part of the whole. The Chinese themselves have written descriptions of the building which were made out at its construction, and which explain the purpose and meaning of it all. The Rev. Mr. Edkins, who is a Chinese scholar, has drawn from this source, and written a chapter upon the subject, which will be found in the appendix of a book of travels by Mr. Williamson, a missionary. I mention this as the source of much valuable information, but I could wish that everything connected with this very important temple were translated from the Chinese authorities, and accessible to us Westerns.

There are in Peking a number of Imperial temples, such as this Temple of Heaven; the Temple of the Earth; the Temple of Agriculture; the Altars of the Sun and Moon; and others. The ceremonies at all these temples have no relation with any of the three religions followed by the people of China; these being the Taoist, the Confucian, and the Buddhist. The Emperor only is the worshipper in these Imperial Temples at Peking. He is not only the Worshipper, he is at the same time the Priest. It is another example of that old idea of priest and king—of the spiritual and temporal power combined in the head of the State. As the present Emperor has been a minor for the last ten years, the services at these imperial temples have not been performed, or they have only been done by deputy. On the 21st of December last—that being the winter solstice according to Chinese reckoning—the young Emperor officiated for the first time at the Temple of Heaven. At the vernal equinox the Emperor repairs to the Temple of Agriculture, and ploughs a portion of land, upon which he sows five varieties of grain. This is done as a model of industry to his people. The ceremonies at the Temple of Earth take place at the summer solstice, when a bullock is sacrificed and buried.

The Temple of Heaven occupies about a square mile of ground: that is, the outer wall is about four miles round, inclosing a large space, which has a park-like appearance, with avenues of trees. Here the animals kept for the sacrifice find grazing. I was struck by noticing that this temple has three inclosures: whether this is accident or not I could not say. I know that the three-fold division is common to temples all over the East. We have the Tabernacle of Moses and the Temple of Solomon; and the Eastern churches to this day follow this three-fold division. The Umbrella is an old symbol of dominion and power, and the Chatta of Buddha is triple, implying, no doubt, sovereignty over "the three worlds," which are so often referred to in the ancient classics of India. They are as old as the Ramayana. One of the most important of the insignia of the Emperor of China is a triple umbrella; and it will be seen that the circular building on the north altar of the Temple of Heaven has a triple roof. The north and south altars have a triple terrace. From this we may almost presume that the three-fold inclosure of this great temple is not accidental. The plan of Peking itself has this same arrangement: there is the Tartar city; within that is the Imperial city; and within that again, like a *sanctum sanctorum*, is the palace of the "Son of Heaven." That the Chinese do these things in virtue of symbolic ideas, I will give a quotation from Gutzlaff. He says that China "is a heaven upon earth—*the Celestial Empire*. They have endeavoured to model their government after Nature, and the laws of the visible heavens. Even their military standards and royal palaces are supposed to have resemblance to celestial objects." It would have been valuable if we had had this author's explanation as to how his countrymen carried out this symbolism. We are left in the dark, but we will see as we proceed that the Temple of Heaven has a signification in almost every stone of which it is composed. The central portion of the Temple of Heaven contains two altars, which are distinguished as the north and south. I will first describe the south altar, as I believe it is the most important part of the temple, and also because I think it will convey more clearly the original idea upon which the whole was constructed. At the first glance it would strike the observer that it was merely a platform for a band to play upon. There are three circular terraces built on each other, each about 6 ft. high, which are ascended by four flights of steps, one towards each of the cardinal points. On the top of this there is no house, only the five vessels, in marble, which are to be found on all Chinese altars: a canopy is erected upon occasions of celebration. Although we apply the term "temple" to this, the Chinese, as will be seen, only call it an altar. Still we might apply the old Greek term, and give it the name of a hypæthral temple, for it is truly that, having no roof but the dome of heaven above. The visible objects, to which worship is directed at this shrine, is the tablet of Shang-ti, the God of Heaven, and to the tablets of the deceased Emperors of the present dynasty. Few temples in the world are so free from idolatrous forms as this. The Emperor prays, and offers incense, as an oblation of fire. He drinks, and eats the "Flesh of Happiness,"—almost repeating the sacramental ceremony of the Christian Church. Mr. Edkins says, "to Heaven alone is offered a piece of blue jade, cylindrical in shape and a foot long, formerly used as a symbol of authority." There is a furnace of green porcelain below, and eight smaller furnaces of iron; and while the ceremony is going on above, a bullock—it must be two years old and without blemish—is being burned with sheep, pigs, rabbits, and deer; pieces of silk are also burnt as offerings. Dancing and music are also part of the performances. The Emperor comes to the temple the night before, and fasts. The hall where he is lodged is called the *Chai-Kung*, or the "Hall of Penitential Fasting," and the ceremony takes place at the dawn of next day. This is only a very rough outline of the ceremony; and I will now give some details of the symbolism of the construction of this altar or temple.

The four ascents, with approaches and gates to the four cardinal points, have no doubt an astro-geographical signification. The Imperial temples of Peking have been constructed with reference to the relations of numbers, and this is more particularly the case in the Temple of Heaven: the upper circular top is 90 ft. in diameter; the middle terrace is 150 ft., and the lower 210. These are multiples of $3 \times 3 = 9$, $3 \times 5 = 15$, and $3 \times 7 = 21$. The number nine figures largely in it. The ascent to each terrace has nine steps, the whole ascent being $3 \times 9 = 27$; the pavement on the top is formed of nine circles of marble slabs; the first circle has nine slabs, the second is formed of 18, the third of 27, and so on, each circle being a multiple of 9, till at the outer circle $9 \times 9 = 81$ is reached,—a favourite number in Chinese philosophy. There is a central stone, and there, — surrounded by these symbolical circles, with terraces and enclosing walls, and the circle of the horizon as the extreme of the visible world,—a deified Emperor seems to himself, and to his court around, to be the veritable centre of the universe. With his face to the north, and assuming the attitude of a subject, he acknowledges in prayer, and by his position, that he is inferior to Heaven, and to Heaven alone. One of the statements I heard while in Peking was regarding the number of second, third, and fourth class wives which would form the complete haresm of the Emperor, and, strange to say, they were multiples of 9, being 9, 27, and 81. It is rather startling to our Western ideas that a haresm and a temple should be arranged on the same symbolism. "The balustrades have $9 \times 8 = 72$ pillars, and rails on the upper terrace; on the middle terrace there are 108, and on the lower 180: these amount in all to 360,—the number of degrees in a circle. The pavement of the middle terrace has in its innermost circle 90 stones, and in its outermost 162 stones, thus reaching the double of 81, the outermost circle of the upper terrace. So, again, in the lower terrace, the circles increase from 151 stones, the innermost, to 243, or three times the square of 9, for the outermost." These numbers are given on the authority of Mr. Edkins, and I will still further quote from him in relation to this temple. He says:—"It has been an aim to use odd numbers only: heaven is odd, earth is even; heaven is round, earth is square; or, to use the ultimate expression of Chinese metaphysical thought, Heaven is Yang, Earth is Yin. The numbers 1, 3, 5, 7, 9, belong to Yang, Heaven; the numbers 2, 4, 6, 8, 10, belong to Yin, Earth. In the official published accounts of the Temple of Heaven, this is set down as the fundamental

* From a paper by Mr. William Simpson. See p. 953, *ante*. In previous portion, "fine-clawed dragon," should be *five-clawed dragon*, that being the distinctive character of the Imperial insignia. "Manikiola Tope," should be *Manikiala*, well known to students of Buddhist architecture in India; also known as the "Tomb of Bucephalus." It is in the Punjaub, not very distant from where Alexander fought with Porus: hence the reason of this tradition getting attached to a veritable Buddhist Dagopa. The only other matter worth noticing is the length of the enclosure at Yung-lo's tomb. I wrote "1,000 ft.," but on referring to my notes afterwards I find it ought to be 1,200 ft. It was a rough measurement, made by stepping, and it is quite possible that the 1,000 ft. may be as near as our conclusion that it was 1,200 feet.
WILLIAM SIMPSON.

principle." I quote still further from the same authority respecting the Temple of Earth, as it by comparison assists us in understanding the subject:—"On the north side is a double terrace, the upper 60 ft. square, and the lower 106 ft. square, and both 6 ft. in height. The paving-bricks are in multiples of 6 and 8; 36 and 64 are the favourite numbers, for we have now come into contact with Yin, the principle of darkness, which affects a square form and even numbers, just as in the Temple of Heaven the Yang principle was represented by roundness of form and odd numbers. The principal sacrifice is offered at this altar on the day of the summer solstice. There is, near the altar, a pit for burying a bullock. At the altar of heaven, when the bullock is burnt, the Yang principle in the sacrifice is supposed to go upward in smoke and flame. At that of earth, on the contrary, when the victim is buried, the Yin principle descends in connexion with death and corruption." I may here explain that the *Yin-Yang* are the Chinese symbolic forms of the dual powers of nature which underlie nearly all primitive worship. And it is important to find it here as the declared fundamental principle on which these temples are constructed. There is a circular dwarf wall round the altar, with three doors at each of the cardinal points, and leading to the steps of ascent. Another low wall is beyond this again, with the same number of doors corresponding to the others. It is between these two walls that the altars for burning the sacrifices are placed, in the south-east corner. At the south-west corner are three very long poles, which I was told were for lanterns, as the ceremony begins early in the morning, before it is full day. On the north of the altar is a circular building, where the tablets are preserved. From this a great built-up way leads to the north altar. On each side of this way, and all round both altars, is a thick grove of cypress trees.

The north altar is a triple terrace, nor differs much from the south altar. The one most striking feature is, that a large circular house is erected upon the top of it. It is this which gives it such apparent importance, and has caused it to be taken by travellers as the real Temple of Heaven. Undoubtedly it is a part of the temple; but as the great ceremony of the winter solstice is performed at the other, I give it the precedence. It is called *Chi-Kien-Tien*, or "Temple of Prayer for the Year." It generally goes by the name of *Tien-Kung*, or "Heaven's Palace." The Emperor prays here once a year, offering sacrifices similar to those at the south altar. On occasions of famine, or national calamity, it is at this altar that he prays to heaven.

The south altar has four ascents, with gates and ways leading off to the cardinal points, as if it were approached from the four quarters of the globe. The north altar, on the contrary, has only one approach—from the south; but it has eight flights of steps. This is founded on the *Pah-Kwah*, or the "eight diagrams," a symbol equally profound with that of the *Yin-Yang*, and which figures largely in the ancient Chinese classical books as the basis of their religious as well as their philosophical system.

This circular temple, or palace, is a very beautiful specimen of the wooden architecture of China. It is 99 ft. high; four round pillars support the central and highest roof, which is nearly all gilt on the inside; twelve smaller columns sustain the second roof, which reaches only from the four inside pillars, thus leaving visible from within the whole height of the highest roof. Twelve still smaller wooden columns form the outer circle and support the lowest roof, which, like the second, only roofs the space between the pillars, which sustain it and the circle of pillars next to them. All this woodwork is elaborately painted and gilt. The tiles on the roofs are now all of a deep ultramarine blue; at first only the upper roof was of this colour, the middle was yellow, and the lower green; but the Emperor Kien-loong, who ascended the throne in 1736, changed them all to one tint. In the inside, the altar to Shangti, or the Supreme Lord of Heaven, is on the north; and the altars to the deceased emperors of the present dynasty are on the east and west. On the occasion of my visit it was all very dirty, and the pavements of the outside were covered with grass and weeds. This was owing to the fact that the place had been unused on account of the Emperor being a minor for so many years; but workmen were busy putting it all in order for the ceremony to take place at the last winter solstice.

In my travels, temples have always been a study to me; and I feel a certain degree of satisfaction in having seen, and in being able to describe this unique place of worship at Peking. It is so new to us, and so exceptional in its form, that one feels doubtful about venturing upon any explanation of its origin. In sailing up the Pei-ho, I was struck with the seemingly endless number of grave mounds. This is peculiar to all the northern part of China. These mounds vary from a yard in diameter to that of the great tomb of Yung-lo, which is about half a mile in circumference. The simple grave-mound was the most primitive form of sepulchre. We know it in the present day as the "tumulus" and the "barrow." It became the "cairn," or heap of stones, and this ultimately developed itself into the "pyramid," or tomb, among the Egyptians. The "dagopa" is only another form of this development, and is only a round pyramid, for it is also a tomb, or a relic-holder; for burning the body and preserving the ashes is the characteristic of the Buddhist system. I have no hesitation in saying that all temples are founded on tomb worship. I am aware that this is a question upon which many varieties of opinion have been expressed; but after much travelling and study of temples, I have no doubt in my own mind on the matter. During the Crimean war I went with the expedition to Kertch; and as we sailed up the straits of that name, I remember being struck with what seemed gigantic molehills all round. They were sepulchral tumuli; and Dr. Clarke, whose works are now old, although not yet forgotten, describes them, and thus speculates:—In view of labour so prodigious, as well as of expenditure so enormous, for the purpose of inhuming a single body, customs and superstitions are manifested which serve to illustrate the origin of the pyramids of Egypt, of the caverns of Elephanta, and of the first temples of the ancient world. In memory of the 'mighty dead,' long before there were such edifices as temples, the simple sepulchral heap was raised, and this became the altar upon which sacrifices were offered." The writer is here mistaken in his reference to Elephanta; it is a Brahminical temple, and the temples of that religion are in a sense an exception to the rule here laid down, and yet, I think, not altogether so when properly understood. In India we have to do with the Aryan; in China it is the Turanian race, and among them the tomb-temple theory seems to have no exceptions. Readers of Mr. Fergusson's writings will be familiar with their tomb-building propensities.

The theory I would suggest is, that the Temple of Heaven in Pekin is made in imitation of a sepulchral mound. It would be important to know if any one was buried there, or if there is any tradition as to relics of a human body having been deposited,—a point on which I have no information. Still, without this, if its origin has been as here suggested, it may be considered as a symbolical tomb; the architectural features upon it being a growth, and repeating in another way the development already described in the pyramid and the dagopa. The south altar is named in a manner to confirm this. None of the Chinese words which signify temple are applied to it. It is called *Tien-Tan*, or "Heaven's Altar"; but in the oldest times it was called *Nan-Tan*, or "South Mound"; and *Yuen-Kiou*, or "Round Hillock." These names in themselves seem to indicate the original character of this temple, and as it were exactly repeat Dr. Clarke's words, that "the simple sepulchral heap was raised, and thus became the altar upon which sacrifices were offered." *Shih-Lutze*, or "Altar of Sacrifices," is another of its names.

I think that a confirmation of this theory may be derived from the plan of the south altar. The ordinary grave mounds in the north of China, where they are in their complete form, have a square platform of earth on which the mound is heaped. Now almost every Chinaman has read the classic books of his country, and he is aware that the square form symbolises the *Earth* or the *Yin*, and that the mound also symbolises *Heaven* or the *Yang*. We have the statement from the Chinese authorities who constructed the Temple of Heaven, that it represents the *Yang*, and we can see from the plan that it stands in a square enclosure, giving us the *Yin* form; and thus realising the whole principle upon which a Chinese grave is arranged. The essential parts of the temples of China is the tablet with the name of the god to whom the temple is dedicated, and before this is a table with five vessels. The centre one is for incense, what we call "joss-sticks," are burned, but the Chinaman in his flowery style, calls them the "Fragrance of an hour." The vessels on each side of this are for candles, and the other two are for flowers. A clerical friend has informed me that this is exactly what the Church of England permits upon an altar. Incense may be used, but it must be in a stationary vessel; two candles may be upon the altar, and flowers are not objected to. It is curious that East and West should be so close in their ritualistic rules; for it can only be by an accident that it is so. I may also mention that the theatre is still a part of the temple all over China. Every temple has not got a theatre, but the conjunction of the two is very common; and giving us an illustration of the retention of ancient forms, a tendency which is perhaps more marked in China than in any other country in the East.

The official residence of a mandarin, or a court of justice, is called a *Ya-mun*. Now *mun*, the second syllable of this word, means "gate." I tried when in China to discover why this was so, and what were the ideas of the Chinese themselves; but could get no information. I naturally thought that it might be some remnant of the old idea of the king or judge sitting in the gate, and judging the people. I have described to you sepulchral monuments such as they are when ordered by the Emperor. I have now to describe another kind of monument, which are so common in China, that you can scarce move without seeing one, or the fragments of them which time has left. They are called "Pailows," and are in the form of a triple gate. They are generally put up as a reward of virtue, or good deeds; most usually they are erected in honour of virgins, or of virtuous widows, who have not married a second time. The word "pailow" has two syllables: the first means board or stone slab, and the second means upper story; so that the word is derived from the inscription being upon a slab between the upper lintels of the gateway. Although now generally constructed with large slabs of granite, the original wooden model is so exactly repeated, that we need have no doubt as to what it was; and the perfect identity of construction between these pailows and the gateways of the Sanchi Tope, which is one of the oldest architectural erections in India, would seem to indicate a closer intimacy of connexion among the races in that part of the world than we have yet realised. I exhibit a picturesque old pailow from Nanking, which will explain this wooden construction. You will see that the stones have been mortised into each other as if they had been logs of wood. In the photograph of the south altar of the Temple of Heaven three of the gateways can be seen, and the wooden construction will be evident. I exhibit a small sketch from the native town of Shanghai: it is the base of one of the supports of an old pailow, it is all that remains of it, but it shows one of the features of the wooden origin of Chinese architecture. Its right name would be a truss, but I think "base-bracket" would better express its real character. It is one of the marked members of nearly all Chinese architecture.

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It may interest architects in this country to know how money is raised in China for building purposes. In the streets of Peking I one day found a man in a sort of wooden sentry-box; large nails had been driven into it, so that their points projected through: this prevented the man from leaning against the sides, and the only rest he had was from sitting on a board within. He was a monk, and never seemed to sleep, for he had a string with which he night and day sounded a large sonorous bell every few minutes, as a sort of advertisement of his purpose. This was, that the benvolent should come forward with money: each nail represented a sum; when any one paid that sum his name was stuck up on a bit of paper, and the nail was pulled out, making it more comfortable for the hermit within. All the nails represented the necessary amount for the repair of a temple which was close behind. This is a common proceeding for raising the wind for such purposes. I was told that this monk had been two years shut up, and that he would likely be another year before he got out of his cocoon of nails.

Hospital for Consumption, Ventnor.—The Bishop of Winchester has appointed this Saturday, the 13th inst., for the opening of the chapel of the hospital at Ventnor; 1,000*l.* are still required towards the cost of it.

PROPOSED IMPROVEMENT AT HYDE PARK CORNER.

THE Works Committee of the Metropolitan Board of Works, at their last meeting, reported that they had proceeded upon the resolution of the Board of the 20th of June last referring it to them to consider and report upon the subject of the formation of a new thoroughfare from Hamilton-place to Constitution-hill. It would be remembered that the question of this improvement had been much discussed, and suggestions for relieving the block of traffic at Hyde Park-corner had been submitted to the Board by the Earl of Longford and the Marquis of Westminster. The committee at once admitted the principle of the desirability of the improvement, and it appeared to them that it would be best effected in a way suggested by the chairman of the Board, after conference with the engineer. By this plan it was proposed that Piccadilly should be widened; that a road should be formed directly opposite to Hamilton-place, running into Constitution-hill nearly at right angles; that the portion of Constitution-hill to the west of this new road should be extended into Grosvenor-place, and that a new road in continuation of the present north end of Constitution-hill should be carried over the above-mentioned extension direct into the gardens of Buckingham Palace, for the private use of her Majesty alone. As, however, the execution of this, or, indeed, any design, must affect the Green Park, it was necessary that the question should be submitted to her Majesty's Government, in order that the Board might ascertain whether to expect any and what co-operation in the formation of the proposed new road. The committee, therefore, as authorised by the reference to them, had an interview with Mr. Ayrton, the First Commissioner of her Majesty's Works, &c., on the 28th of July last, when they submitted a plan to him. Owing to the late period of the season the subject was not brought before the Cabinet until the resumption of their sittings in the present month, and the committee had now had before them a letter from the Office of Works, stating that the Government are not prepared to bring in a Bill to give effect to the Board's proposal, and that it is therefore not in the power of the Commissioner to proceed further in the matter. Under these circumstances, it did not appear to the committee that the Board could, with any advantage, take further action in the matter, and they recommended that the reference be discharged. In connexion with this subject, the committee had also a letter from Messrs. Boodle & Partington, on behalf of the Marquis of Westminster, submitting that the widening of the upper part of Grosvenor-place, at its junction with Piccadilly, would form a complete scheme in connexion with that under the consideration of the Board, transmitting a plan showing the proposed widening, and stating that the Marquis would be prepared to undertake, at his own cost, to the extent of 2,000*l.*, that part of the scheme representing the widening of Grosvenor-place, provided a place for the deposit of the excavations were given free of cost in the Green Park, within a reasonable distance. The Marquis, accompanied by his surveyor, attended the committee on the 21st of July last, and explained the details of his proposal. His lordship was of opinion that the widening of the upper part of Grosvenor-place would very greatly relieve the pressure at Hyde Park-corner and the neighbourhood, and that the architectural effect of a broad descent from the level of Piccadilly to the Grosvenor-place houses would be very striking. Lord Westminster, therefore, understanding that the Board had it in contemplation to form a continuation of Hamilton-place to Constitution-hill, instructed his estate surveyor to prepare a plan, combining, to a certain extent, the widening of Grosvenor-place with the extension of Hamilton-place, the two projects together forming, in his lordship's opinion, a complete scheme for the benefit of the public. By Lord Westminster's plan, the upper part of Constitution-hill would be cut away altogether, and a new roadway formed into Grosvenor-place on the east side of the Wellington statue, which would then occupy a central position at the head of Grosvenor-place. A road would also be cut diagonally through the north-west corner of the Green Park to Constitution-hill, meeting it at the point of junction with the new road proposed by the Board. It would be observed that this plan, equally with that of the Board, would interfere with the park, and would, therefore, presumably be open to the same objections on the part of her Majesty's Government; moreover, it did not appear to the committee that in itself the plan would meet the exigencies of the case, so far as concerned the traffic at Hyde Park Corner; nor, indeed, did his lordship seem to have contemplated it otherwise than in connexion with the Board's scheme. It was only necessary, therefore, the committee thought, that Lord Westminster should be informed of the decision of the Government, and they recommended this course for adoption, and that a similar communication be addressed to the Earl of Longford, in reply to his letter presented to the Board on the 13th of June last, and referred to the committee; and further, that the governors of St. George's Hospital, who had drawn attention to the great number of accidents which had occurred in Grosvenor-place, be also informed of the position of the matter.

General Sir William Codrington said he understood that the scheme of the Marquis of Westminster was different from the plan of the Earl of Longford. Lord Westminster's proposal stood on its own merits.

Mr. Newton said this question had been before the Board for some time. The committee had considered the plans of the Marquis of Westminster and the Earl of Longford. They waited on Mr. Ayrton, the then Commissioner of Works, who promised to support a plan for a road through the Green Park at Grosvenor-place. Before anything was done Mr. Ayrton went out of office. The Government intimated that they could not approve of any scheme which would interfere with the Green Park, and under the circumstances, the committee recommended that no further action be taken in the matter.

The motion was carried.

ENORMOUS PUMPING MACHINERY.

MESSRS. JOHN & HENRY GWYNNE, of the Hammersmith Ironworks, Hammersmith, are constructing a remarkable set of centrifugal pumping machinery, intended for employment on the reclamation of the Ferrara Marshes, in Northern Italy. The tract to be reclaimed extends over an area of nearly 200 square miles, and the work to be done by the pumps consists in raising a little over 2,000 tons of water per minute. The first pair of these pumps, with their engines, have just been completed. It is difficult to realise what is meant in saying that certain pumps have to raise 2,000 tons of water per minute. 2,000 tons, or 456,000 gallons, per minute, equal 656,640,000 gallons per day of twenty-four hours. According to the latest return, the total quantity of water supplied by the whole of the London waterworks is a little under 110,000,000 gallons per diem, so that it will be seen that the quantity of water to be dealt with by the Ferrara pumping machinery amounts to six times the whole metropolitan water supply. Again, 456,000 gallons, or 72,960 cubic feet per minute, would supply a stream over 103 ft. wide and 4 ft. deep running at a speed of two miles per hour, or 176 ft. per minute; while the delivery for a single day would suffice to fill a reservoir a mile square to a depth of about 3 ft. 9 in.

THE LONDON CENTRAL TELEGRAPH OFFICE.

THE "New Post-Office," of which we gave a view and plan on the 1st of February last, is to be used as the Central Telegraph Office connected with the Post-office, St. Martin's-le-Grand. The workmen are still busy with its interior fittings, but the great telegraph-room is being rapidly set in order; a portion of the departmental staff (which is to occupy the new building, and thus leave the General Post-office entirely free for letters and newspapers) has already moved across the road; and in a few weeks the clerks and instruments from Telegraph-street will take possession of the upper floor. As the great central telegraph-office of the kingdom, it will afford not only ample accommodation for actual needs, but sufficient room should the telegraph service develope even to twice its present dimensions.

All along one side of the great telegraph-room are ranged the curved leaden tubes and brass fittings of the pneumatic delivery apparatus, looking somewhat like a row of gigantic beer-engines. Eighteen miles' length of this pneumatic tubing is laid to twenty-five telegraph-stations in the City and Westminster, which can thus deliver their telegrams at the central office in parcel form faster than the messages could be sent by wire. The messages are enclosed, twelve or sixteen at a time, in despatch-tubes, which are shot along the exhausted pipe to the counter of the central office. From the counter they are carried to the check-table, whence they are distributed, partly by messengers and partly by travelling-tapes, to the clerks at the instruments. The post-office being the only collectors and distributors of messages, telegrams for the cables and lines of private companies come to this central office, and are sent thence to the offices of the companies by pneumatic despatch. The 440 wires working directly from the telegraph-room are in communication with upwards of 1,000 stations. The battery-room on the basement will have 25,000 battery-cells, and here, again, the wires are collected together at a test-box studded with innumerable brass finials. These test-boxes, which look something like railway ticket-offices, enable a defect in a wire to be at once traced out and set right. The gutta-percha-covered copper wire, of which there are 300 miles' length within the building, is manufactured with beautiful accuracy.

Leaving the spacious instrument-room (the telegraphic workshop and executive are lodged on the same floor), we notice through the windows the great chimney rising from the boiler-house built in the floor of the south court. Descending a staircase under a handsome skylight, we pass the departmental offices of the lower floors, and, turning along corridors, always well lighted, descend to the engine-house, on the floor of the north court. Here are being built the three engines of 50-horse power each for the pumping work of the pneumatic-tubes, and two of 10-horse power to draw water from the well of 400 ft. deep which is being sunk on the premises.

The new offices will have cost altogether, when complete, about 450,000*l.*, of which 300,000*l.* have been swallowed up by the site.

The mails and telegraphs of the kingdom will now have only a street between them, the chief Money-order Office will remain in its building in Aldersgate-street, and the Savings-bank will be moved from St. Paul's Churchyard to the vacated premises in Telegraph-street.

THE PROPOSED INCREASE IN THE PRICE OF GAS.

AT the last meeting of the Metropolitan Board of Works, the Works Committee brought up a report recommending that the Gaslight and Coke Company be informed, in reply to their letter, inquiring whether the Board is disposed to agree with the company for an increase in the price of gas in order to meet the extraordinary expenses of the year 1874, that the Board cannot agree to their suggestion, but will be compelled to oppose any application which the company may make for an increase in the price of gas.

Mr. Newton, in moving the adoption of the report, said that the recommendation of the committee in this matter had arisen in consequence of an application which had been made by the Gaslight and Coke Company. Under the circumstances, he said, the committee felt that the Board ought not to allow a further increase in the price of gas without setting up a most determined opposition to the claims of that company. He believed also that the Board ought not to agree to a continuation of the present price of gas, but thought there ought to be a considerable reduction in it. He did not believe in the reasons put forward by the companies for the increase of the price. True, coal had risen; but, on the other hand, the price of the gas products and of coke had gone up in a corresponding manner. Therefore, he was sure the Board would be justified in offering the strongest opposition to the proposal of the company to increase the price.

Mr. Watkins, in seconding the motion, said a few years ago he bought coke from the Imperial Gas Company at 8*s.* per chaldron, but the price was now 30*s.* and 32*s.*!

Mr. Leslie hoped the Board would go before the judges of the land and protest against the imposition of the gas company. The average price of the coal used by the company for the present year was 1*l.* 3*s.* 6*d.* per ton, and that of the gas products 10*s.* 9*d.*, thus reducing the price to 12*s.* 9*d.*

Mr. Freeman hoped the time would come when the gas and water companies would be

managed by some central board, for the benefit of the consumers. He would like to see some strong corporation which could take up the matter, with this end in view.

The motion was then put and carried *nem. dis.*

Mr. Leslie afterwards moved a long motion, the effect of which was :—

"That this Board resolve to prepare for immediate action, either offensively or defensively, against the Gas Light and Coke Company, either in equity or law, to compel the company to carry out the Metropolis Gas Act, 1860, outside of the City of London, in the way the judgment of the Metropolitan Board may determine as most effectually to insure a better and cheaper supply of gas to their constituent ratepayers, and a riddance of the grasping effects of amalgamation and mismanagement."

Mr. E. D. Rogers seconded the motion, which was negatived, on a division, by six to four votes.

NORTHFLEET.

Sir,—The village of Northfleet, near Gravesend, is in great need of houses suitable for working men, more especially now the large ship-building yard there is satisfactorily let, and two new cement works will be in full work very shortly. Many of the men at present employed in the various cement works are compelled to live in Gravesend and in different villages, on account of the overcrowding. A builder would do well to take a trip down there, and judge for himself.

An Inhabitant.

OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.

The members of this Society had their last walk for this term on Saturday before last. There was a large gathering.

The party first visited Queen's College, where they were received in the hall by the Provost and several of the Fellows, and the Rev. A. H. Sayce gave a history of the college, remarking that it stood upon the site of Temple Hall, Gutter Hall, and other similar institutions, the names of which had long been lost. The rev. gentleman then gave an interesting account of the large collection of valuable deeds and documents in the possession of the college, which numbered about 30,000.

The Rev. J. R. Magrath next explained the numerous pieces of plate which had been spread out on the hall tables, and the various pictures which adorn the walls.

The party next visited the libraries, chapel, and other portions of the college, where they found much to interest them.

After votes of thanks, on leaving Queen's College, the party visited and inspected the Church of St. Peter-in-the-East, where they were received by the Rev. J. R. King, the vicar. The general design of the crypt, with its four entrances, two originally communicating with the nave, and two with the chancel of the church, having been explained by the vicar, the party proceeded to the church, where the alterations and improvements, which we have recently described, were also pointed out by Mr. King.

Mr. Jas. Parker then communicated some particulars respecting the crypt and its history. Dismissing the mythical account of the building of the church by Grimbald, in the ninth century, and showing the inconsistency of the details in the chronicle which records it, he said that he was disposed to assign to the crypt an earlier date than he had on a former occasion considered to be probable; and that, judging partly from the notices of the church in the Domesday Survey, partly from the strong resemblance of the architecture to that of St. George's Chapel, formerly in the Castle of Oxford, he was now inclined to think that the crypt and the lower part of the wall of the church were of earlier date than the superstructure, and might with great probability be referred to the work of Robert D'Oiley, the builder of the castle, who is recorded to have been a "builder of churches." This would place the building at about 1070 to 1080, or nearly a century earlier than the main building of the chancel, which might with great certainty, from the many points of similarity, be pronounced as of contemporary workmanship with Iffley Church. However this might be, the plan of the crypt he declared to be a relic of a still earlier age, the only instance in England of any similar arrangement being at Ripon and Hexham, and only a very few examples of its later continuance being found in France. It was, however, the common type of the crypt of the fourth century downwards, and in Italy the examples were still very numerous. He thought that the original church probably consisted of a low chancel, with a very short nave.

In confirmation of Mr. Parker's view, as to the date of the chancel,

The Rev. J. R. King pointed out that the south wall of the nave, to a point west of the porch, was obviously built at the same time as the chancel, and that the Norman doorway under the porch bore a striking resemblance to one of those at Iffley.

Votes of thanks having been given to the Rev. J. R. King and Mr. Parker, the company dispersed.

THE SETTING OUT OF SLOPES.

Society of Engineers.

At a meeting of the Society of Engineers, held on Monday, 1st inst., Mr. Jabez Church, president, in the chair, a paper was read by Mr. Charles Julian Light "On a New Method of Setting out the Slopes of Earthwork." The author divided the conditions under which this operation has to be performed into three classes. 1. When the cross section is practically level. 2. When the inclination of surface in cross section is fairly uniform and exceeds 1 in 100. 3. When the cross section is irregular and rough. The proposed new method dealt with the second and largest class. The author then briefly described the ordinary process by successive approximations, and said that for this he proposed to substitute direct and exact measurement on the surface of the ground, based upon data easily obtained, and deduced from tables of a simple form. He then showed that the general formula for the side-width, measured from the centre peg along the surface of the ground is,—

$$A \frac{F + SH}{M + SD}$$

Where F is the half formation width, H the sectional height on centre line, S the slope, D the difference of level on cross section at a distance A from the centre peg, preferably 100 ft., and $M = \sqrt{A^2 + D^2}$.

Of the two signs in the denominator the + sign applies to the lower side in cuttings and the upper in embankments, and the − sign to the upper side in cuttings and the lower in embankments.

ARCHITECTS' CHARGES.

In a case tried at the Bloomsbury County Court, before Mr. G. Lake Russell, Judge, the plaintiff, Mr. Treherne, an architect, sued Mr. Hart, proprietor of the Alexandra Music-hall, Union-street, Borough, for 11*l.* 3*s.*, being 8*l.* balance of account due to him for furnishing plans for the re-erection of the Alexandra Music-hall, which had been burnt down, and 3*l.* 3*s.* for waiting upon the district surveyor on several occasions. The case was previously tried in this court on the 10th of July last, when the plaintiff was non-suited.

The defendant's case was chiefly that the plaintiff did not supply him with the proper plans for the roof, and that he had to employ another architect, whose charge was 19*l.* 19*s.*, but whose bill, he admitted, was not yet paid.

In cross-examination, defendant also admitted that his house was going to be pulled down by the Metropolitan Board of Works for a new street, and he had promised the job of valuing the premises to Mr. Walters, Messrs. Fox & Bousfield, and half a dozen others who bothered him, to get rid of them.

The District Surveyor's clerk proved that the plans for the building of the new music-hall were not deposited at the proper time, and before the roof was put on they required to see the plans. Plaintiff showed him some drawings at the office one day, but they were not complete. He afterwards showed witness a complete drawing, containing a plan of the roof, but it was objected to. He never saw any other drawing of the plaintiff's. There was a difficulty in getting a drawing of the roof, but he afterwards saw one, said to be Mr. Dunning's, and it was approved, and from that the roof was built.

The Judge said he was of opinion that the plaintiff had not performed his contract. It was true that a design for an iron roof had been furnished by the plaintiff, but it had been objected to, and the plan for a wooden one was supplied by another architect, called in by defendant's foreman, in order to get the building erected in time. This was a second trial, and, the plaintiff having failed to make out his case, he should give judgment for defendant, with costs.

IMPORTANT TO ARTIZANS JOINING CO-OPERATIVE WORKS.

An action brought last week in the Newcastle County Court deserves the especial attention of mechanics belonging to, or starting, co-operative works. The plaintiff, Mr. James Waters, is a mechanical engineer, and the defendants are the Directors of the Ouseburn Co-operative Engine Works, of which concern the plaintiff was formerly a member and workman. The sum sued for was 7*l.* 6*s.*, the amount of wages deposited by Mr. Waters in the concern. As the case occupied part of two days, a *resumé* must suffice to explain the particulars.

Upon a workman joining the Ouseburn Engine Works, the system adopted is, in order to become a member, for him to agree that certain sums of money shall be deducted from his wages week by week, which amount is entered in a book, and as soon as 5*l.* are collected, the man is entitled to a share in the venture. The plaintiff was in that position, and on the 30th of June a certificate was given him for two shares, being the value of 10*l.*, and to that limited liability he was a shareholder in the business so far. The plaintiff's deposits afterwards were increased to 8*l.* 6*s.*; but for this addition he did not apply, nor receive a further certificate of a share, and subsequently he gave the necessary notice to leave the establishment, and he afterwards demanded the return of his deposit-money, which the directors refused to accede to.

Mr. Joel, the plaintiff's solicitor, then wrote to Mr. Rutherford, the managing director of the Co-operative Engine Works, demanding the return of the deposit, or in failure an appeal to a law court.

The managing director, in reply to this, wrote that the directors were exceedingly anxious that the question in dispute should be fairly, liberally, and amicably settled, and that a provision was made for such a settlement in the articles of partnership through a court of arbitration, and not through a court of law; and Mr. Rutherford begged of Mr. Waters to refer the dispute to the court of arbitration, but if in case of refusal, the directors would be compelled to fall back on the rule which recited,—"Any member of the company who refused to submit any question in dispute between him and another member, or other members of the company, or between him and the company, to the court of arbitration, or if he does not submit to the decision of the court, shall forfeit all money in his deposit account."

The Judge, with respect to the above rule and the plaintiff's refusal to proceed to arbitration, ruled, notwithstanding this clause enjoining arbitration upon pain of forfeiture of all moneys deposited by recusant members, that a man had a right and a perfect option, if he thought fit, to have recurrence to the laws of his country, in order that the matter might be settled in a court of law.

This decision being tantamount to a verdict for the plaintiff, inasmuch as the directors did not for a moment dispute having the deposit, Mr. Blackwell, for the Co-operative Company, urged that if this ruling were "law," it would strike at the root of most workmen's societies where a rule for arbitration of disputes existed, and such ruling was very important for the prosperity of the Co-operative Engine Works, and he hoped the Judge would grant a case for appeal to the superior courts at Westminster Hall.

Mr. Joel, for the plaintiff, quite agreed with the other side as to the importance of the case to working men belonging to co-operative works, as this was a representative case.

To draw up the case for the Court of Common Pleas, the evidence of the plaintiff was taken, and the part not here above noticed stated that before the plaintiff was employed by the company he applied for two shares. That was in the year 1871, and he received a note stating that two shares were allotted him. That was his first connexion with the Ouseburn Co-operative Engine Works Company. He paid the sum of 2*l.* into the bank and received a receipt. A general call was made upon those two shares, and he paid a further sum of 2*l.* upon them. There had not been any further calls made upon these shares. He did not join the company as a workman until January, 1873, and at that time he received a deposit-book. Before he received this book he was required to sign as a member for a 5*l.* share. He got the book at his first "pay." After that from time to time he handed in this book from week by week, and the sums entered in the book were deducted from his wages weekly. He signed for two 5*l.* shares under pressure, and for the second 5*l.* share as a workman. He gave notice in writing to leave on the 17th of September, 1873. Upon applying for the money deducted from his wages as deposit-money, Mr. Rutherford, the manager, would not pay it.

The learned Judge wished to see the rules constituting the court of arbitration, and promised to grant a case, i.e., to draw up the facts as above noticed for the opinion of one of the superior courts, which will, upon a motion made by counsel to the judges sitting in banco, give their decision as to the legality of the County Court judge's ruling. If the judges are of opinion that the court below has decided legally, then courts of arbitration for workmen's societies are a mere figment. On the contrary, the plaintiff will be ousted in his County Court action, and have to refer his application for a return of the deposit to the arbitrators of the Ouseburn Co-operative Engine Works Company.

THE FUEL QUESTION.

The Midland Institute of Mining Engineers have held a meeting in Barnsley, at which the question of coal-cutting machinery was discussed. It was resolved that the council of the Institute and a committee of twelve members should be appointed to inquire into and report upon the merits of various coal-cutting machines. The sum of 50*l.* was voted from the funds for expenses, and it was intimated that in the event of any deficiency of funds the district coal-owners would doubtless make it good.

The Belgian *Echo du Parlement* has the following interesting letter from Hasselt, bearing on the question of a substitute for coal :—

"Ten days ago a poor peasant of our neighbourhood went the round of all the coffee-houses with a sack containing earth. He said he had found the means of heating rooms with that substance impregnated with a solution of soda [and added to small coal]. He made the experiment before a crowd of people, and succeeded. Next day the whole town was in great excitement. Everybody had tried the new discovery, and I did the same. Following the man's instructions, I filled a scuttle three-quarters with small coal, and the remaining fourth with vegetable mould; I then sent for a halfpenny worth of common carbonate of soda, which I dissolved in half a litre of water, and then mixed up the solution with the rest. This quantity has been sufficient to warm my room from two o'clock in the afternoon to seven in the evening, at which time I am penning this."

New Fuel awaiting Use.—Among the anomalies of the fuel question, the most striking con-

sists in the fact that the supply of petroleum from the Pennsylvania wells is now at a rate which has reduced its value to 1d. per gallon, and that yet no methods have been brought into general use to utilise this product, either for manufacturing or domestic purposes, so as to influence the price of coal. The present yield of the region is estimated at 30,000 barrels a day. Some wells give as much as 1,300 daily, and new discoveries are constantly being made.

SUNDERLAND TOWN HALL, COMPETITION.

SIR,—The hardihood of the Sunderland Corporation in requesting architects to furnish designs for a town-hall in three weeks is something *surprising*, even to those well acquainted with the nerve of public bodies.

Let me warn the profession against placing too much faith in the instruction issued. I happen to know that at the council meeting to-morrow a motion will be made to upset the whole scheme. It appears that the corporation have no power to build in the park, it being public property, and architects will do well to reflect before they spend their energies on what may come to nothing.

Outsiders are of opinion that it would have been wiser if the council had ascertained whether they really could build in the park before they spent the ratepayers' money in advertisements and instructions.

A RESIDENT IN THE LOCALITY.

THE TRADES MOVEMENT.

Barnsley.—The old Oaks Colliery, near Barnsley, has been idle, owing to the lads who drive the horses refusing to work. Nearly 500 persons have been idle for two days in consequence.

Bristol.—The shipbuilders of Bristol and the Bristol Channel ports have returned to work, having accepted the masters' terms, viz., that the rules of the society which restrict the amount of work to be done by the members shall be suspended until a general meeting of the trade can be called, when they shall either be rescinded or modified.

Limehouse.—On Saturday afternoon a numerously-attended meeting of engineers, principally employed in the steamship building-yards, was held at the Eastern Hall, Limehouse, for the purpose of taking the opinion of the men as to whether they would stand firm for a rise of wages on the 1st of January next. It was resolved:—"That this meeting is of opinion that the time has arrived for us to ask our employers for a rise of wages, owing to the unprecedented rise in the price of provisions; and we would suggest that that rise should be one of 2s. upon the present wages"; and that "unless our employers concede to us the amount asked for, namely, 2s. per week upon our present rate, we are determined to cease work on the 1st day of January, 1874."

ACCIDENTS.

London.—There has been a fatal accident at the National Gallery. A house-painter fell from a scaffold, while at work, and was killed. At the inquest, the father of the deceased said he was at work with his son. Deceased went to the far end of the scaffolding for something, when witness heard a shout "A man is over!" He rushed and saw it was his son. The deceased was perfectly sober at the time. A smith said he was at work with the deceased; the plank he was on was not more than 10 in. in width, he was trying with his foot to bring another plank forward, when his foot slipped, and he fell heavily on the next scaffolding, and then on to the ground, fracturing the skull, and smashing the body. Verdict, accidental death.

Halifax.—Last week a serious fire broke out at the silk-mill situate in Wade-street, Halifax. The cause was an explosion of gas in the ground floor of what is termed the "Little Mill." So instantaneous was the fire that in the course of a few minutes three floors were in flames. On the arrival of the fire brigade, with engines, hose, and reel, they could only protect the adjoining property, as the "Little Mill," was soon one mass of flames. About the fate of some of the poor girls who were at work there seems to have been some uncertainty at the time the news was despatched, but five bodies have been got.

Stockport.—A large circus has been blown down. It had been before roughly treated by the wind at Macclesfield, the crown of the tent having to be lowered during the performance. The establishment was at Hazel Grove, near Stockport, and during the gale which prevailed in the evening the large tent was carried bodily from one field to another, and literally torn to pieces. The structure had just been completed. The damage is estimated at 160*l.*

Sheffield.—A tailor's shop in Fargate, one of the busiest thoroughfares in the town, has fallen in, burying the contents of the shop and the furniture beneath many tons of rubbish. Though a number of persons were passing at the time, all escaped uninjured. The shop-people, too, had warning that the building was coming down, and rushed out in time to preserve themselves from injury. An adjoining building is in a critical condition, and has been propped to prevent its falling. The shop on the other side is also much injured, a portion of the falling building having come with terrific force against the side, smashing in all the windows, and forcing in a part of the wall. The cause of the accident is supposed to be the weakening of the foundations by some extensive excavations at the rear. In order to carry these out blasting has been resorted to.

Hartlepool.—A fatal earthslip has occurred at the new dock, now in course of construction by the North-Eastern Railway Company at Middleton, between the Hartlepools. It appears that a number of navvies in the employ of the contractor, Mr. W. Scott, were excavating earth, when, to facilitate operations, they determined to undermine a portion, beside a perpendicular cutting about 8 ft. or 9 ft. deep, and whilst they were thus engaged, the soil above gave way, completely burying beneath it one man, and partially burying a second. A number of fellow workmen ran to the rescue, and quickly extricated them, but both were seriously injured, and one died before reaching the hospital.

ASPHALTE PAVING.

AT the Freemasons' Tavern there has been a crowded meeting, chiefly of omnibus and cab proprietors, to protest against the use of asphalte paving for horse-roads. Sir James Lawrence, M.P., was in the chair, and the meeting was addressed by Colonel Beresford, M.P., and many large horse-owners. The secretary to the London General Omnibus Company said they owned 8,000 horses. Their annual loss on the old roads was 11*l.*; but since the introduction of asphalte it had risen to 20*l.* How this can be from deaths by falling on asphalte, considering the comparatively very small proportion of asphalte road throughout London, he did not explain; nor did he speak of the relative number of horses, although the Omnibus Company now supply tramways with horses, in addition to their own omnibuses. That the asphalte, however, when greasy, or between wet and dry, plays serious havoc with horses we know well from personal experience. At the meeting resolutions were unanimously adopted, condemning asphalte, praying Parliament to order its removal, and urging the Board of Trade not to lay any more.

Something must be done to get rid of the serious defect in asphalte if the use of it is to be continued. In other respects,—that is, at other times than between dry and wet, or in fog,—its advantages are admitted.

Wood-paving is turning up again, notwithstand its repeated failures both here and in New York; but it is to be hoped some very different kinds than those heretofore tried will first be tested. Slipping of horses, we well remember, was just one of the chief objections urged to them; and also their want of lasting nature.

A correspondent of the *Morning Post* speaks of an invention of Mr. Norton (of Tube-well notoriety), which is applicable both to wood and granite, and renders pavement so constructed perfectly water-tight and impervious to wet. Mr. Norton's process he understands to be as follows:—Blocks of wood or granite are placed in a mould of any required dimensions upon a backing of planking, crossed at right angles, and are then embedded in asphalte, the contraction of which in cooling leaves a vacuum at the top of the interstices of the blocks, afterwards to be filled up with coarse gravel. The wood backing is also entirely coated with a bituminous cement, and thus the whole slab is taken from the mould a homogeneous mass ready for being carted away to its required destination. The fact of these slabs being manufactured under cover, the rapidity with which they can be laid, and the facility of raising them for repairs of gas and water pipes, are, in his opinion, important features in Mr. Norton's system. No delay is occasioned by wet weather, and he says skilled labour is unnecessary.

All this, however, does not much alter the nature of wood paving. As for asphalte, it is to be hoped the asphalte companies will speedily find out some method of obviating the tendency to greasiness at certain times. Some simple mixture or mode of working the composition in laying it down may do so. It is notable how little *may* be required to effect this. By way of illustration, we may instance the common little experiment called the "Magician's sand," which may be put into water without becoming wet, by simply sprinkling it while hot with oil, which appears to evaporate entirely from it. We do not speak of this as a suggestion of use in this case, but even this we may at least say, that if such sand were well mixed with asphalte, it is hard to say but what the cure of the defect of greasiness *might* be thus completed.

WATER SUPPLY FOR VILLAGES.

Mr. ROSE, of Rayners, through the *Times*, gives practical advice for securing a supply of water in villages where there is difficulty in obtaining it. On the high ground of the Chilterns, he says, where spring-water is not to be found at a less depth than 300 ft., a comparatively inexpensive mode of constructing cottage tanks has long been successfully practised. The plan we find to answer is to dispense with all brickwork for steyning the sides, and merely to plaster the cement on the earth itself. A circular pit of the required dimensions is dug out; and as soon as solid ground is obtained, a dome is built over it with bricks or even with old bats, a manhole being left in the centre, and a pipe inserted at the side for the inlet of the rain-water. The pit is then dug to the proper depth, the earth being drawn up through the manhole, and the sides are then plastered with three coats of Portland cement and sand mixed dry, the first coat in the proportion of one part of cement to three or four of clean rough sand or shingle; the second coat, of two parts cement to three of clean sharp sand; the last coat or facing, half cement and half sand. The bottom is first laid with broken tiles, and then cemented in the same way. The thickness of the three coats of cement is not together more than one inch. Built in this way the tanks very seldom fail, and are less liable to leak than if built in brickwork and then cemented—which is the usual and more expensive plan, as the brickwork, in the process of settling, often cracks the cement lining, and thus causes leakage. Success can be secured in any description of soil, whether clay, chalk, or gravel, and, if done in dry weather, even in sand or loam, if the bricklayer is careful and the materials are good. A tank 10 ft. deep and 6 ft. over is the size usually constructed for two cottages. Experience has proved that a tank of this size, if properly connected, is very rarely empty. An outside estimate of the cost of such a tank is as follows:—Digging and leading, 18*s.*; ten bushels Portland cement, at 2*s.* 7*d.*, 1*l.* 5*s.* 10*d.*; sand, 4*s.* 6*d.*; 250 bricks for dome and manhole, at 40*s.*, 10*s.*; labour of bricklayer and labourer, 1½ day, 10*s.*; total, 3*l.* 8*s.* 4*d.*; but say, with sundries, 4*l.*, or at the rate of 2*l.* per cottage, this boon of almost priceless value can be supplied. It is little more than the cost of a water-butt and its fittings. The dome is sometimes built after the tank has been dug to its full depth. Tanks of much larger dimensions can be constructed, and are equally successful. I have one that holds 12,000 gallons. It was made twenty-five years ago, in soil partly clay and partly chalk, with a narrow vein of sand on one side. It holds like a china basin, and the lining is as sound and impervious as when first built.

CHURCH-BUILDING NEWS.

Reading.—The new Church of St. John the Evangelist, Reading, has been consecrated. It stands on the old site, and is built in the French Gothic style of architecture of the thirteenth century. It consists of nave, 85 ft. long by 30 ft. wide, and 54 ft. high to ridge, flanked on either side by clearstory traceried windows, with internal arches, supported on Mansfield stone shafts and carved caps and bases. The roof is open-timbered, boarded, and felted, and covered externally with Staffordshire tiles. The chancel has close-boarded roof, with moulded ribs; height to centre, 36 ft.; width, 26 ft. 6 in.; length, 30 ft. The transepts are double-gabled and intersected with aisle-roofs. The tota'

width from aisle to aisle is 61 ft., and length from east to west 111 ft. The organ-chamber is on the north side of the chancel, and is shut off from the transept by a carved and traceried screen. The vestry is 17 ft. by 14 ft. The entrances are by the tower and a north porch, and there is a thin ontlet by the south transept. The accommodation in seats on ground-floor is 826, capable of being made 900 by aisle-seats; and the gallery, which is over the west end, is capable of seating 60 children. This gallery is approached by external winding stone stairs, and forms a feature of some importance in the west front. The tower and spire are in course of erection (a portion of which is included in the present contract), but only as far as will cover in the west entrance. The building is of Kentish rag, with Bath stone dressings. The window and door heads have Mansfield and Bath stone arch-stones, set alternately; the whole of the columns are worked in red Mansfield stones. It is intended that the tower and spire, when complete, shall be 150 ft. from base to summit, the spire being of Bath stone exclusively. The woodwork is stained and varnished, and the aisles and chancel are tiled with encaustic tiles. The lighting is by a series of small jets surrounding each capital in the nave and transepts, issuing from a specially designed triplet burner, giving the building when lighted a pleasing appearance. The pulpit is of Caen stone. The reading-desk is of oak. The cost of the building will be about 6,000*l.*, exclusive of tower and spire, which will cost nearly 2,500*l.* more. The boundaries are of the same stone as the main building; and the infant schools, which are in the same inclosure, in every way correspond with the general character of the church. The architect is Mr. W. A. Dixon, of London, and the builders for the whole of the works are Messrs. Niblett & Son, of Hornsey-rise. The carving has been executed for Messrs. Niblett & Son by Sansom, of Kennington, and the gasfitting by Dyer, of London. The church is heated by Woodcock's system of hot air. The duties of clerk of the works have been performed by Mr. E. Green.

Margate.—The new Church of St. Paul, Cliftonville, on the east side of Margate, has been consecrated by the Archbishop of Canterbury. It accommodates 800.

Penzance (Cornwall).—The re-opening, after restoration, of the Church of Paul, near Penzance, has taken place. Paul Church is spacious, with a high granite tower. The tower is Perpendicular; but to a good deal of the fabric it would not be very easy to assign a date. It consists of a continuous nave and chancel, with north and south aisles to both, also continuous. The nave and chancel are separated from the aisles by arcades of nine bays, which may be described as of an Early type. The shafts of the columns are of granite, and mostly monoliths. One curious feature is presented by the north arcade: the third bay from the chancel end is very much smaller than either of the others, the arch being of more elegant outline, and its shafts—clearly not the original,—instead of granite, are of a dark stone, and of Perpendicular character. The arch is partially blocked by a low wall. About fifty years ago the church was restored in the worst fashion of the period. Some few years ago true restoration was commenced by the throwing open of the tower arch and allied work. What has been done now is the entire re-flooring and re-seating of the edifice, which has been executed by Messrs. Olver, of Falmouth, at a cost of about 500*l.* When the old floor was removed, the ground beneath was found to have been honeycombed with vaults and graves. These were filled up and secured, and then the new seating was erected, and the aisles laid with tiles. A new pulpit has also been provided, the chancel improved, and the organ renovated,—this last by Mr. White, of Penzance.

Nottingham.—Holy Trinity Church, Nottingham, has been reopened after undergoing restoration. The chief features in the restoration are an enlargement of the chancel, the docking of the high box-shaped pews, and the removal of the organ and choir from the west-end gallery to the chancel. Trinity Church, we understand, was built in the year 1841, from the designs of the late Mr. Stevens, of Derby, architect. The chancel has been lengthened 16 ft. to leave room for the choir, the east window has been opened, and, by the kindness of a friend, filled with stained-glass, by Heaton, Butler, & Bayne, of London. The window is geometrical in pattern, with the symbols of the four Evangelists, flowers, and conventional ornaments in panels. The chancel is filled with pitch-pine stalls. The floor of the sacrarium is laid with Minton's encaustic tiles. In the nave the seats, which were high boxes, have been cut down, the aisles have been made straight, the paint has been taken off the pews and they have been stained and varnished. The ceiling of the nave has been decorated principally in the centre part by bands of colours, with panels between the ventilators. The work has been carried out at a cost of 1,650*l.*, under the personal direction and superintendence of Mr. W. Arthur Heazell, architect. Messrs. Hudson & Facon were contractors for the builders' work, assisted by Messrs. Bradley & Barker in the carpenter and joiner work of the chancel. The decoration work has been done by Messrs. Best & Lea, of Manchester. The painters' work by Mr. A. Gascoyne. The woodwork in the nave by Mr. H. Daubney. The decoration of the chancel is to be completed in a few months' time, when the new work is dry.

Kirkby Knowle.—The church here has been reopened after undergoing a restoration. The church, previous to the restoration, would seat only 150. Besides the dilapidated state of the edifice before the commencement of the present restoration, the place was exceedingly damp and consequently unhealthy. The nave and chancel were of the same width, being extremely limited, and extending only 13 ft. 5 in. across; the entire length of the fabric being 71 ft. 3 in. The roof was flat and low, and being ceiled with plaster, presented an unsightly appearance; whilst the sittings were inconveniently fitted up and arranged, and the flooring moist and uneven. All this is now improved. The plan of the present church, built as it is upon the site of the old, is entirely new. It is much wider, but not quite so long as the former structure. The nave is 35 ft. in length by 21 ft. in breadth; and the church is 32 ft. long by 18 ft. wide. The height of the nave from the floor to the apex of the roof is 28 ft., and the height of the chancel is somewhat less, being 26 ft. The material of which the church is built is mountain freestone, obtained in the immediate neighbourhood. The walling of the edifice is hammer-dressed, and the windows and buttresses are of ashlar work. The tower is at the south-west corner of the nave. It is square, and the bell-chamber has on each of its four sides two windows. The parapet round the summit of the tower is battlemented, and it is about 60 ft. in height. The porch is at the south-west corner of the nave, and the church is entered underneath the tower. The vestry is situated on the north side of the chancel, with which it communicates; and immediately adjoining it is an organ-chamber or recess, there being introduced into it the old chancel-arch of limited dimensions, which has been retained in this position. The flooring of the old church was taken up, and the present floor of the nave is of stone paving laid down in concrete. The chancel-floor is laid with coloured tiles from the establishment of Messrs. Maw & Co., of the Benthall Tile Works, Shropshire; and the floor of the sacrarium is paved with encaustic tiles of rich pattern furnished by the same firm. The church is Early English. The roofs of the nave and chancel are similar in character,—high-pitched, open-timbered, and boarded. Welsh slates have been used in covering in the roofs, and the gables terminate with stone crosses. The nave windows are triplets, the stonework above the side lights being pierced with quatrefoils, which, as well as the three lights, are filled in with plain glass, with the exception of the margins, which are coloured. The chancel windows are lancet lights of plain glass. The east window is of three lights, and the west window of two lights, both being filled in with plain glass with coloured margins. The seats are open and of deal, with profile ends of pitch pine, and provided with bookboards. The chancel is fitted up with stalls. The internal fittings throughout, as well as the boarding and timbers of the roofs, have been stained. The church is dry, and is warmed by means of a hot-air apparatus. The restoration of the church was placed in the hands of Mr. George Fowler Jones, of York, and by him it has been carried out. The outlay has been from 1,200*l.* to 1,300*l.* The tradesmen who have executed the various works are as follow:—Masonry, Mr. Palliser, Northallerton; carpenter and joiners' work, Messrs. T. Bellerby & Son, York; plastering, Mr. Councillor Rawling, York; plumber, glazier, and stainer, Mr. Councillor Varvill, York; slaters, Messrs. T. Wood & Co., York; and warming apparatus, the Sheriff of York (Mr. Alderman Dove). Mr. Harrison was the clerk of the works.

Leicester.—Christ Church, which has undergone considerable repairs and alterations, was reopened on Thursday, Nov. 19th. The restoration of the exterior was entrusted to Messrs. Thrall & Vann, masons. The interior has been reseated with open stalls by Mr. J. Plant, a new gallery by Mr. J. Norman, and a vestry by Mr. T. Duxbury. The heating apparatus has been carried out by Mr. W. Richards, ironfounder. A carved oak pulpit and reading-desk have been executed by Mr. W. H. Noble, mediæval cabinet-maker. The old organ has been replaced by a new one, built by Mr. S. Taylor. The above are all local tradesmen.

Books Received.

Messrs. Partridge's Good Little Books.

The Children's Friend; the *Family Friend*; the *Band of Hope Review*; the *Infant's Magazine*; and the *Friendly Visitor*, all well deserve this title. They are all of the same class (a little *over*-good, some people may think), and are noticeable for the excellence of the illustrations. The infant eye cannot be too early educated in the right direction.

The yearly part of the *British Workman*, which also comes to us from Messrs. Partridge, can take only half the title we have given at the head of this notice: it is a good book, but not a little one. Of the illustrations in this valuable serial we have often spoken. They are capital specimens of the bolder kind of wood-engraving,—drawing and engraving alike good, and moreover they are well printed. The best block in the world may be nullified in the printing. The *British Workman* cannot be too widely circulated.

An Introduction to the Study of Gothic Architecture. By John Henry Parker, C.B. New Edition. Oxford and London: Jas. Parker & Co. 1874.

The fourth edition of the "Introduction to the Study of Gothic Architecture," just now published, includes considerable additions, especially in the foreign part. The Pisan style, for example, is elucidated; and in the English part special attention is called to the construction of walls, as affording a test for age. It is almost too late to say that it is a most valuable little work, and may be studied with pleasure and advantage by general readers as well as by those who are studying architecture as a profession. It forms a companion volume to Mr. Parker's "Concise Glossary of Terms used in Architecture," and the two together may be fairly considered the Grammar and Dictionary of Gothic Architecture.

VARIORUM.

The *Telegraphic Journal and Electrical Review* (Gillman, Boy-court), bound as a volume, forms an interesting record of the progress of the science of telegraphy during the year.——The editor of *Hardwicke's Science-Gossip* (Mr. J. E. Taylor), in the last number for 1873, congratulates himself and his readers on the success of the work, which "never had a larger *clientèle*." We have so strongly urged the necessity for making a place for Natural Science teaching in any scheme of education worthy the name that we need scarcely say we hear with pleasure of the success of this serial. An interest in the study has greatly spread since *Science - Gossip* was established. —— *The People's Magazine*, of which twelve volumes have now been published by the Society for Promoting Christian Knowledge, comes to an end with this December number. This is to be regretted. It needed a more special character than was given to it. —— "Old and New London," by Walter Thornbury, goes pleasantly on; twelve parts having now been issued.—— "British Battles by Land and Sea" (part xi.), and the "Illustrated History of England" (part xviii.), come to us from the same publishers as the last (Messrs. Cassell & Co.).——The December number of the *Contemporary Review* includes some interesting letters from the late Mrs. Browning to the author of "Orion" on literary and general topics, hitherto unpublished. Others are promised.—— Messrs. Henry King & Co. announce the publication of a manual of the law of contracts as affecting architects, under the title of "A Legal Handbook for Architects," by Edward Jenkins and John Raymond, barristers-at-law.——The current number of the *Art-*

The Builder.

VOL. XXXI.—No. 1611.

Northumberland House.

ONE of the last remaining of the old-fashioned London mansions of the nobility,—a house, with its courtyard and gardens, which combined within itself the quietness of a country-house with the centralness and convenience of a London one,—is about to be destroyed. Here in the very heart of Western London gates shut out the turmoil and bustle around, and all is quietness within. Such houses as these are relics of former times, when great nobles were princes with hosts of retainers.

If well carried out, a noble street leading to the Thames Embankment should be a great improvement to Charing-cross,—a place with perhaps greater capabilities than any other in London; but our love of the past makes us feel some regret that so well-known an object as the front of Northumberland House should pass away to make room for it. It is not fine architecture, and it has been so much altered and rebuilt at various times, that it has not very high claims to our notice on account of its antiquity; yet few places are more familiar to the Londoner and his country cousins; few fronts give more character to their neighbourhood. It is a landmark that we shall miss, and it is not a mere pun to say that the animal whose striking figure breaks the skyline, and who may be supposed to guard the portal beneath, is one of the "lions of London." He has been a little thrown in the shade since Landseer's lions have supported Nelson's Column; but who does not know and cherish the story of the man who gathered a crowd around him in order to see this lion wag his leaden tail?

The site of Northumberland House was occupied by a building of some pretension as early as the thirteenth century. This building was cleared away in the sixteenth century, and after a short space of time, during which the ground was unoccupied, the original of the present house was erected; but it was not until some years after its first building that it received the name of Northumberland House, and previously there had been two or more Northumberland Houses in the City. The first of these was situated in a street since called Bull and Mouth-street, in Aldersgate Ward, where lived the first Earl of Northumberland of the Percy line, and his son, the celebrated Harry Hotspur. When the Percys were defeated in their struggle against Henry IV., that king gave their town house to his wife, when it was called the Queen's Wardrobe. It was subsequently converted into a printing-office, then into a tavern, and at last disappeared altogether. The next Northumberland House was in Fenchurch-street, and was inhabited by the Earls of Northumberland from the reign of Henry VI.; but in Stow's time the gardens were turned into bowling-alleys, and the mansion into a gaming-house, much frequented by the roysterers of that day. Henry Percy, 9th Earl of Northumberland, the father of the first Earl to live at Charing-cross, occupied a house in the Blackfriars. The plurality of mansions with the same name is a constant source of confusion, and it is easy to mistake one for another by supposing a description to refer to Northumberland House in the Strand, when it was really intended for one now buried among the warehouses of the City.

In the reign of Henry III., William Marshal, Earl of Pembroke, founded and endowed a hospital and convent called St. Mary Rouncivall, on the strand of the Thames, at the village of Charing, near the place where the cross was afterwards erected. This hospital was a cell or appanage to the Priory of Roncesvalles in Navarre; and when certain alien priories were suppressed by Henry V., St. Mary Rouncivall was among the number. In 1476, however, it was refounded by Edward IV. for a fraternity or brotherhood, and continued to be so appropriated until the suppression of the religious houses by Henry VIII. The chapel and its appurtenances were granted in the year 1549 to Sir Thomas Cawarden, by Edward VI., to be held in soccage of the Honour of Westminster; but soon after coming into the possession of Henry Howard, Earl of Northampton, younger son of the poet Earl of Surrey, he razed the whole building to the ground. In Ant. van den Wyngrerde's plan of London in the Sutherland collection (Bodleian Library, Oxford, 1543), St. Mary's Hospital is shown as a fine building at the water's edge, a little to the south-east of Charing-cross; but in Aggas's view, published about twenty years later, the site is marked as unoccupied. On the vacant ground Northampton built himself a brick mansion, Peter Cunningham says about 1605, but it was probably earlier. It is a matter of dispute as to what architects are to be looked upon as the original designers of the house. Some say that Northampton himself made his own design, and left it to be carried out by Bernard Jansen, and there appears to be no doubt that Jansen was engaged in the building of the house. The front, however, does not seem to have been by him, and has been attributed by some to Miles Glover, and by others to Gerard Chrismas. Horace Walpole makes the following remarks as to the claims of the latter architect,—"Before the portal of that palace was altered by the late Duke of Northumberland, there were in a frieze near the top, in large capitals, C. Æ, an enigma long inexplicable to antiquaries. Vertue found that at the period when the house was built lived Chrismas, an architect and carver of reputation, who gave the design of Aldersgate, and cut the *bas-relief* on it of James I. on horseback, and thence concluded that those letters signified Chrismas ædificavit." Surmounting the façade, there was a border of capital letters in place of a railing or parapet, and we learn from Camden's "Annals of the Reign of James I.," that at the funeral of Queen Anne of Denmark, a young man among the spectators was killed by the fall of the letter S from the top of Northampton House. Cunningham found a corroboration of this statement in the burial register of the Church of St. Martin-in-the-Fields, where, under date 14 May, 1619, the burial is recorded of "William Appleyard, slayne by a stone falling from My Lord Treasurer's house." According to a MS. note by Inigo Jones, in his copy of Palladio in Worcester College, Oxford, the front was 162 ft. in length, and the court 81 ft. square.

The Mansion was first known as Northampton House; but the Earl of Northampton left it by will to his nephew, Thomas Howard, Earl of Suffolk, who took possession of it at his uncle's death in 1614, from which date it received the name of Suffolk House,—a name by which it continued to be known for many years afterwards. Neither of these two men has added much lustre to the history of the house, for Lord Northampton was implicated in the crimes of his great-niece, the notorious Countess of Essex, and has been described as foolish when young and infamous when old; and Lord Suffolk, who was Lord Treasurer, was fined heavily for his frauds upon the king.

In 1642 Suffolk House came into the possession of the Percys, by the marriage of Elizabeth daughter of Theophilus, second Earl of Suffolk, with Algernon Percy, tenth Earl of Northumberland, and Lord High Admiral of England. We do not know when the house first took the name of Northumberland, but it was probably not until some years after this marriage, because Evelyn still writes of it as Suffolk House in 1658. The son of this Earl and Countess (Josceline, Earl of Northumberland) dying in 1670 without male issue, Northumberland House became the property of his only daughter, Elizabeth Percy, the heiress of the Percy estates, and for eighty years there was no Earl of Northumberland. This young lady was looked upon as a great matrimonial prize, and was twice a virgin widow and three times a wife before she was seventeen. Her first husband was Henry Cavendish, Earl of Ogle; her second, Thomas Thynne, of Longleat, known as "Tom of Ten Thousand," who was murdered in the Haymarket by the accomplices of Count Konigsmark, who wished to obtain possession of the widow, himself; and her third was Charles Seymour, the proud Duke of Somerset, who survived her. The Duke and Duchess lived in great state and magnificence at Northumberland House, which continued to be so called on account of the existence already of a Somerset House in the Strand. Anthony Henley, wishing to annoy the Duke, addressed a letter to him "over against the trunk-shop at Charing-cross." The next occupant of the house was Algernon, seventh Duke of Somerset, who was created Earl of Northumberland in 1749, with remainder, failing issue male, to Sir Hugh Smithson, bart., the husband of his only daughter, Elizabeth. He died February 7, 1749-50, and in 1766 Smithson, who had taken the surname of Percy, was created Duke of Northumberland, but the title was not to descend to any child by another wife than Elizabeth, the true representative of the Percy line, and from these two the present Duke is descended.

We have as yet only mentioned the first building; but since 1605 great alterations have been made in it, so that, in fact, with the exception of the front, little of the old house now remains. Lord Northampton's mansion consisted of a front with two wings to the south, and the principal apartments were situated in the Strand front, but his successor preferred to be more secluded, and built a fourth side, which he made the chief portion of the house. It is frequently stated that this alteration was made by the Earl of Northumberland, but there is reason to believe that it was before his time, and it is not improbable that Inigo Jones was the architect engaged for the purpose. In the discussion of such a question as the present old views are of the greatest value, and we shall therefore make a few remarks upon some of those of Northumberland House. There is an undated view of Suffolk House in Wilkinson's *Londina Illustrata*, copied from a drawing by Hollar, in the Pepysian Collection at Cambridge, which is supposed to have been executed in the early part of the reign of Charles I. It represents a large massive square building with towers at the four corners, not unlike in general appearance to part of the Tower of London. The domestic offices were detached from the main building and reached to the waterside, forming a wall, with steps leading down to the river. In Wilkinson's book there is also a view of old Somerset House, taken from a painting in Dulwich College, which

represents that place as it appeared previously to the alterations made by Inigo Jones to fit it for the use of Henrietta Maria, and in the distance Suffolk House with its four towers is shown as it appears in the view just referred to. Peter Cunningham doubts whether Inigo Jones had anything to do with the south side, because Evelyn speaks of it as new in 1658, but most probably Evelyn refers to some alterations made at that date. He writes, "The new front towards the garden is tolerable, were it not drowned by a too massy and clumsy pair of stairs, without any neat invention." At all events, we know that a garden-front was in existence some time before 1658. The engraving, taken from Canaletti's painting of the street-front, was published in 1753, and represents it as it appeared after having been completely renovated. Four obelisks, surmounted with lamps, are marked as placed by the curbstones along the front. There is a view of the garden-front, by G. Wale, in Dodsley's "London and its Environs" (1761). Great alterations were made at Northumberland House in the years 1748–1752, which were begun by Algernon Duke of Somerset, and completed by his son-in-law and daughter, the Earl and Countess of Northumberland.

We printed, on the 15th of April, 1871, an article by Mr. Wyatt Papworth, in which he communicated two interesting letters from the Duchess of Somerset to Lady Luxborough, describing the works in progress, and expressing herself as frightened at the sum her husband was spending upon them. The duke put aside 10,000*l.*, but in June, 1749, he had already spent 14,000*l.*, and his wife thought that, with the purchase of certain houses, &c., he would spend as much more. The completed improvements are described as follows in Dodsley's "London":—"The street was immediately made wider, and the front next to it compleated. . . . The four sides of the court were now faced with Portland stone, and finished in the Roman style of architecture, so as to form, as it were, four stately fronts. Two new wings were also added, being above 100 ft. in length, and extending from the garden-front towards the Thames. By means of these additions Northumberland House is more than twice as large as it was when first built by Lord Northampton. The entrance into it is on the side of the court opposite to the great gateway; the vestibule is about 82 ft. long, and more than 12 ft. broad, being properly ornamented with columns of the Doric order. Each end of it communicates with a staircase, leading to the principal apartments, which face the garden and the Thames. They consist of several spacious rooms, fitted up in the most elegant manner. The ceilings are embellished with copies of antique paintings or fine ornaments of stucco, richly gilt." Mr. Papworth supposes that the street front was rebuilt at this time, but this was not so, for there can be no doubt that the stone portion of the façade above the gateway with the bow window are the remains of the original building. The parapet was new in place of the old letters, and if the towers were rebuilt they were copies of the old ones. The Duchess of Somerset writes, "My lord will do a good deal to the front in order to make it appear less like a prison;" and an Architect, writing in the *Gentleman's Magazine* (vol. lxxxii., part i.), describes the "general repair of the front" as consisting "in new pointing and facing the brickwork, recutting the stone ornaments, &c.," and adds that the Adams were believed to be the architects employed, but according to an engraving of the front published in 1752 it would appear that Daniel Garrett was the architect. The same writer affirms that his friend J. Carter informed him "that in 1752 his father made the model from which the Lion in the centre of the elevation was cast in lead." It shows how opinions change to find that Ralph, who was one of the chief arbiters of architectural taste in the last century, specially condemns the portal. He writes, "Northumberland House is very much in the Gothic taste, and *of course* cannot be supposed very elegant and beautiful, and yet there is a grandeur and majesty in it that strikes every spectator with a veneration for it: this owing entirely to the simplicity of its parts, the greatness of its extent, and the romantic air of the towers at the angles. The middle of the front next the Strand is certainly much more antient than any other part of the building, and, though finished in a very expensive manner, is a very mean and trifling piece of work. It may, indeed, preserve the idea of the original pile, and acquaint the moderns with the antiquity of their forefathers; but then it breaks the uniformity of the whole, and might be spared with more propriety than continued."*

Northumberland House has more than once suffered severely from fire. The following is an account of one that occurred on Saturday, March 18, 1780:—"It broke out about five in the morning, and raged till eight, in which time it burnt from the east end, where it began, to the west. Among the apartments consumed, are those of Dr. Percy, Dean of Carlisle. We are happy to inform our readers that the greatest part of the doctor's invaluable library is fortunately preserved." — *Gentleman's Magazine*, vol. 50.

Although we know that the old hospital of St. Mary extended to the water's edge, as did also old Suffolk House, we cannot find when the piece of ground between the garden-wall and the Thames was cut off, and the present road made. In 1750, the Duchess of Somerset refers to the duke's hope of obtaining "the remainder of the Duke of Chandos's grant for Scotland-yard, which he is in treaty for, in order to carry down his garden, and open a view from his house to the Thames." In Pennant's "London" (1791), this is referred to as follows:—"The late Duke received a lease from, the Crown of all the intervening ground as far as the river; and within these very few years an absolute exchange for certain lands in Northumberland, to erect batteries on against foreign invasion, at the period when the project of universal fortification prevailed. A little time may see every nuisance removed, and a terrace arise in their stead, emulating that of Somerset House." Again, in 1817, we find (in the *Gentleman's Magazine*) this matter mentioned, but still nothing apparently was done, and all remained as before. "The Duke of Northumberland, it is said, has concluded a treaty with the Commissioners of the Crown Lands, for exchanging the site of the Tynemouth Barracks, which are built on his grace's property, for the ground adjoining the garden of Northumberland House, which extends to the bank of the Thames, where a noble terrace is to be formed. The present carriage-way leading into Northumberland-street from Scotland-yard is to be arched over." The garden is described in Dodsley's "London," as forming "a pleasing piece of scenery before the principal apartments, for it consists of a fine lawn, surrounded with a neat gravel walk, and bounded next the walls by a border of curious flowers, shrubs, and evergreens."

Intimately mixed up with our interest in an old building is the life lived by those who have inhabited it, but a history of the Howards and Percys, who have been the owners of Northumberland House would be out of place here. Nevertheless, we may mention a few of the associations that occur upon the surface. It was in one of the apartments of this house that the Earl of Northumberland held a conference with General Monk and several leading men, when the restoration of Charles II. was for the first time proposed in direct terms "as a measure absolutely necessary to the peace of the kingdom."

As we have mentioned before, Bishop Percy found a home in Northumberland House. He dedicated his "Reliques" to Elizabeth, Countess of Northumberland, and she and her husband were always kind friends to him. Percy was the son and grandson of a grocer, but he drew up for himself a pedigree in which his aim was to identify his family with that of the descendants of Ralph, younger brother to the third Earl of Northumberland. Had this descent been capable of proof, the bishop would have been himself Earl of Northumberland, but it is doubtful whether he believed in the claim, and it is certain that his patrons did not recognise in him a pretender to their honours. Goldsmith has left us an amusing account of his first introduction to the Duke of Northumberland, who, after reading "The Traveller," had expressed a wish to see the poet. "I dressed myself in the best manner I could, and after studying some compliments I thought necessary on such an occasion, proceeded to Northumberland House, and acquainted the servants that I had particular business with the Duke. They showed me into an antechamber, where, after waiting some time, a gentleman, very elegantly dressed, made his appearance. Taking him for the Duke, I delivered all the fine things that I had composed in order to compliment him on the honour he had done me; when, to my great astonishment, he told me I had mistaken him for his master, who would see me immediately. At that instant the Duke came into the apartment, and I was so confounded on the occasion, that I wanted words barely sufficient to express the sense I entertained of the Duke's politeness, and went away exceedingly chagrined at the blunder I had committed."

The stories in which Hugh, Duke of Northumberland, and his Duchess figure are numerous in the pages of Walpole, and that ill-natured letter-writer was never happier than when he was able to set them in a ridiculous light. Sion House was too near to Strawberry-hill to please him, and the doings of the "Duke and Duchess of Charing-cross," or "their majesties of Middlesex," as he called them, always seem to have excited his bile. The Duke, when Sir Hugh Smithson, bart., of Stanwick St. John, near Richmond, in Yorkshire, was considered to be the handsomest man of his time, and a story was current that the great heiress, hearing that he had been crossed in love, expressed to a friend her astonishment that any one could refuse such a man as Sir Hugh. On this encouragement he spoke and was accepted. The noble family of Northumberland have always been famed for their hospitality and humanity. The name of Smithson has obtained fame and an adjectival form in the United States, where the munificence of an Englishman (who claimed some kind of connexion with the noble family of Northumberland) has given that country the opportunity of raising a noble institution for the advancement and popularisation of science. Previously to 1851 those few who obtained admission to the fine apartments of this grand old mansion, did so with considerable difficulty, and few, therefore, had any idea of what was behind the familiar front; but in that year, when multitudes visited London and the Great Exhibition, the house was thrown open to the public, and thousands availed themselves of the privilege to walk across the courtyard and up the handsome marble staircase, of which we give a view,* into the noble ballroom and picture-gallery, where they saw, among other fine things, the Cornaro family by Titian, for which Algernon, Earl of Northumberland, gave Vandyck 1,000 guineas, and a wonderful vase, which now has a story of its own. We may add that the staircase we have illustrated was designed by the elder Mr. Cundy. The railing is of brass, gilt; the steps and columns are of marble; the capitals of bronze.

Soon the rooms will be empty, and a site which has been occupied by buildings for more than six centuries will be cleared to make way for a street which is intended to open up from Charing-cross a view of our fine embankment.

* We remember noticing at an old building in Reading some years ago, a pair of gates nearly identical with those in the façade of which we are speaking.

FROM LEICESTER-SQUARE—TO ROSS.

Few of us would in all likelihood wish to show ourselves purblind enough to indulge in virtuous indignation at, or even friendly remonstrance with, Mr. Tulk and his coproprietors of the right recently awarded to them judicially,—of not advertising on hoardings in Leicester-square. According to their various characters, however, we might hear, if we listened, from various people various expressions of opinion as to the proceedings of these historic persons;—not (to put the case mildly) reaching the acme of praise. We have happily,—the most of us middle-classes,—been born and bred to so handsome a respect for legal decisions,—and to, if possible, a still more decided reverence for the possessors of tangible property, that we hold customarily our individual judgments in suspense, and bate our breaths before the winners of the substitutes of civilisation for Choctaw scalps,—in a way that should entitle us to the admiring reverence of less happy nations. But at times we come on exceptional cases,—instances of the variety that is plausibly said to be, at least, better than monotony,—and then in place of the normal silence or awe, we are stirred by a sense of novelty to articulate expression,—to confessions of our inmost thoughts as startling it may be in themselves as the shouts of pæan with which S. T. C.'s laconic,—very mono-syllabic friend, — welcomed the advent of a batch of apple-dumplings after his own heart. . . . . Not that the confessions for the most part indicate in the least,—that

* See p. 1007.

Talkism is other than a virtuous, and, on the whole, very natural development of well-regulated minds. Let no timid reader fear that any speculative crotchets—outside things regularly accepted—shall be allowed to give themselves air in this connexion. As we have put the matter pretty clearly above, the acme of praise may not have been reached, but that pleasant ingredient has not been forgotten. "Perseverance in pursuit of property-rights against powerful persons,"—a phrase that in the due arrangement of capital letters might appropriately figure in play-bills next week,—shows that one feature of the case at least has struck the imagination pretty forcibly of some lineal descendant,—or, let us say, some kinsman in spirit,—of John Hampden, or perhaps of the Claimant. And so we have to progress through the mystic mazes of suddenly-formed opinion, or deep conviction now first expressed, or doubt, or controversy, clouding or illumining to all seeming the ordinarily-placed seats of intellect now temporarily stirred up to so unusual an interest in the affairs of other people. But who shall, without some sense of being personally wearied, repeat all the wise sayings of others, in addition to his own? These last may be looked on without discomplacency; bantlings are sometimes loved the better for their crookedness, and sometimes for their want of any eccentricities, but who of the most well-intentioned of human kind can regard with other than an eye of pity and condescension the crippled, rickety, fetishes that fill other souls with satisfaction,—deep in proportion to the blindness of their vision. This,—at any rate, in default of better excuse,—might be accepted as a fair apology for not attempting to echo public opinion in London and elsewhere, as recently expressed,—on the subject of private interests and their relations to the interests of the community. When should the management of land be taken out of the hands of individuals, to be devoted to public uses, and managed by public bodies? When does such an appropriation become a matter of imperative necessity, or of policy approaching it? Should the will of the present holder have much weight, or a little, or none at all? Ought the laws to insist on consent, as in cases of individual obligation (marriage, for instance),—to look on the connexion of a man and his lands and houses as too sacred to be touched by any divorcing hand? On all such details we should,—in such an attempt to bring into evidence the popular judgment,—no doubt, find ourselves face to face with the very painful difficulty that puzzles a Parliamentary leader at times,—when his opponents and his supporters, with charming unanimity, take to cross-voting and a general disposition to follow,—each for himself,—his own lead. It is just possible, in fact, that such a state of affairs might by candid critics be oddly enough described as indescribable confusion,—the "chaos" of Carlylese. What a happy solution of all our difficulties,—what drawing of easy breath after imminent but avoided perils,—when we seem to be permanently out of the quandary, and once again availing ourselves of our usual common sense!—the solid and sober Macadam, instead of the broken paths of more elevated regions! This, with a happy instinct, is soon reverted to as the right path for practical people. Why arrive at principles at all, when we can get on very well, for the most part, without them? Why make ourselves logic mills, and grind on system? Why determine what we ought to do in general when each case can be taken on its merits—merits being credited to cases all round by an agreeable fiction? Why decide whether public authorities or public companies should acquire the property of different people when, as a matter of fact, most owners,—almost all reasonable men, in fact,—show no disposition to complain if they can get more than value for what they sell? By the time that the answering of a captious hunter for ideas had reached this stage, he might deem it hopeless to drive the matter further, his opponents being so comfortably entrenched and defended as well by nature with such effective armour against taunts that to tempt them into the open would be a task that would bother a charmer with the powers of the pied piper of Hamelyn.

Left then to his own conclusions, and bereft of all chance of such counsel, might not our inquiring friend without wickedness allow his mind to range seemingly, even if it may be a little aimlessly, beyond the region of compensations assessed by twelve men in a box with their attendant incidents? Might he—not forget, but for a few moments suspend—his admiring gaze at some of the ways of virtue and common sense, that do not hide their course behind screens in these days of unlimited publicity. The claims of 24,000*l.* compensation, the supporting evidence given on oath by skilled, eminent, and honourable advocate-experts, — the counter-evidence by equally reverenced witnesses as to a 12,000*l.* only properly due—(all admirable at standing fire), the summing-up of the judge directing the puzzled jury how to do what he happily need not attempt,—the verdict for 18,000*l.*,—showing so manifestly the progress of education and the skill of one at least of the jury in performing the operations of addition and division—these ever new comedies—interesting as so many good plays properly furnished with racy dialogue are,—in spite of old plots,—when well acted and mounted:—these must be left until the soul in hunger reverts, as it may be trusted to do in time, to them among the other evidences of progress, and "the widening of the thoughts of men."

Truth to tell, so erratic and inexplicable may at times be those same thoughts, that ours had wandered—where does the reader say?—to Herodes Atticus, citizen of Athens in the time of Hadrian, and to the curious custom then prevalent of erecting great public works at private expense. What odd developments of character can be effected by training and example, and other similarly powerful influences! To-day in Peking, as Mr. Simpson testifies (see p. 992, *ante*), men will be found in their wooden sentry-boxes begging that benevolent people will purchase from these habitants the right to make the boxes a little less spiky than (without the money payment) conscience requires; and absolutely finding in time sufficient numbers to pay over their money, and confide in the honour of the other parties to the bargains. Here is an odd enough instance of the force of custom, and the rest! Sufficiently odd, one might think, for the most eager searcher after instances——but a good few centuries ago "the opulent senators of Rome and the provinces esteemed it an honour, and almost an obligation, to adorn the splendour of their age and country." What an atmosphere—fit to breed disordered fancy—seems to hang about one sometimes—in contemplating the aberrations of others! "Mad doctors," it is said—probably with some truth,—need to cultivate the intimate friendship of people possessing the sanest and most evenly-balanced and trained minds, in order to keep firm within themselves their confidence in their own sanity; to correct by these healthy influences the strange mental and moral surroundings in which they are placed by their every-day business. Some such corrective would be necessary to most of us sober-minded moderns, if we had piled upon us, too often, or too much in a heap, the records of the strange private benefactions of heathens in the early centuries, before Christianity had leavened the world. Herod is but one instance among many. He, by the bye, well merits the naturalisation of his name among us, by the docking of its termination—a process which one De Quincey has made out clearly to be a sign of appreciation on this side of awe, instancing the Tacitus, whose character would forbid such trifling, and the Horace (Horatius) who would seem to invite it. Not to talk of Herod's youthful frolic, when prefect of the free cities of Asia, himself furnishing 100,000*l.*, the additional expense beyond the public grant, for supplying Troas with water. Omitting this, his small beginning, his works at Athens, the Stadium and Odeum in memory of his wife Regilla, give one the impression of goodwill. "Nor," adds Gibbon, "was the liberality of that illustrious citizen confined to the walls of Athens. The most splendid ornaments bestowed on the Temple of Neptune in the Isthmus, a theatre at Corinth, a stadium at Delphi, a bath at Thermopylæ, and an aqueduct at Canusium in Italy, were insufficient to exhaust his treasures. The people of Epirus, Thessaly, Eubœa, Bœotia, and Peloponnesus, experienced his favours; and many inscriptions of the cities of Greece and Asia gratefully style Herodes Atticus their patron and benefactor." . . . . . Here is the translation of one now remaining,—"To the High Priest of the Cæsars,—Tiberius Claudius Herodes,—on account of his goodwill and beneficence towards his country." Heir to immense treasures, married well, held public offices,—could he avoid spending the wealth that came to him?—somehow?—sometimes well, sometimes badly? and if a little greedy of the unsolid pudding called praise, could he satisfy his appetite more fully than by public works? These are the suggestive comments of all who pride themselves on their knowledge of mankind,—a phrase which of course usually means a ready discernment of all the real and imaginary resemblances between their endowments and those of pigs. . . . . Quickly, therefore, forsaking for the nonce the typical example of the ancient world,—in order to seek a true kinsman, heir to his best ways,—who shall at the same time not be obnoxious on account of similar evil qualities,—what wonder if memory lights on the Man of Ross?

> "Of debts, and taxes, wife and children clear,
> This man possess'd—five hundred pounds a-year."

No large fortune and no Regilla here, it will be observed!

But planting, water supplies, public seats, buildings, almshouse, marriage-portions, 'prentice fees, personal service to the sick, and reconcilement of friends,—in such works, though on so different a scale and scene, does the same spirit show itself? Have we here the 1 in. to a foot Herod drawn to ½-in. scale, but with spirit quite equal to the larger and older production? . . . . This architectural simile wakens one from dreaming. What can be the necessity for pointing out again the old acknowledged facts of life in the world? Who doubts that we are all in one boat, and will do well to help our shipmates?—and that many of us have it in our power at times to do many services, whether we be rich or poor?—that gifts to the public, adding to the common possessions of localities of the nation, are particularly graceful things, pleasant to all time?—that gifts may range from the ready surrender at a moderate rate of legal rights "of no use to any one but the owner," up to the munificence of a Mr. Peabody? Who is not pleased to acknowledge that such gifts and the disposition that prompts them are not absent nowadays, and that they would, strange it might appear, be all the pleasanter if they came still more frequently into sight? And, if it is to be considered one of the proper features of a sentimental ramble of this kind, to speak all the truth all round,—who doubts that architects, surveyors, engineers, and builders have the best of reasons for looking with satisfaction on all new manifestations and growths of this kind of virtue?

MESSRS. COCKS & BIDDULPH'S NEW BANK BUILDINGS.

THE new banking premises in Charing-cross which have for some time been in course of erection for Messrs. Cocks, Biddulph, & Co., have just been completed and opened for business.

The building, which has been erected from designs furnished by Mr. Coad, of Duke-street, Adelphi, is lofty as compared with the rest of the buildings in the neighbourhood. In addition to a deep and substantially-built basement, specially designed for bank purposes, the building contains a lofty ground-floor, with two upper stories, above which are dormers, with a high-pitched roof. The height of the building from the street level to the top of a projecting cornice is 50 ft., the wall facing of the structure being carried 10 ft. higher by three large dormers. The ground-floor portion of the building is of red Mansfield stone, with pilasters between each of the semicircular-headed windows, and quoins at each angle. There are two entrances to the premises, uniform in design with the windows, the principal entrance to the banking-room being at the east angle. The upper portion of the elevation is executed in red Suffolk bricks, with gauged brick dressings and rusticated pilasters, the window-heads and sills, as well as the cornice and the segmental pediments surmounting the dormers, together with the chimney caps, being in Blashfield terra-cotta, from the manufactory at Stamford. The roof is covered with Broseley tiles.

The basement is provided with four isolated strong-rooms, covered over with Dennett's fire-proof arches, which are also introduced into other portions of the building. The banking-room occupies the whole of the front portion of the ground-floor. Its dimensions are 40 ft. by 30 ft., and it is 18 ft. in height, the walls from the floor to the ceiling being entirely faced with encaustic tiles. A dado, in chocolate-coloured tiles, is carried round the apartment; whilst the upper portions of the walls are in panels formed of light-coloured tiles, with slate-coloured borders. The ceiling is also divided

into concave panelling, formed of fireproof arches, carried on girders extending across the entire width of the apartment. The floor of the banking-room, as also the floors in the other portions of the building, are all of oak, as well as the window-frames. The bank-counters and the whole of the fittings are in ebonised polished mahogany. The bank-parlours are immediately to the rear of the banking-room, and are uniform in their mural finish with the banking-room the walls being in panelled tiles, with a surrounding dado. It may here be stated, as an interesting fact in connexion with the old banking establishment, that when the building was demolished, to make way for the new structure, it was determined to retain the old bank-parlour, out of respect to the elder Mr. Cockerell (father of the late Professor Cockerell), from whose designs it was erected. This determination has been rigidly carried out in the construction of the new building, the fabric of the old bank-parlour having been preserved, and the walls refaced with tiles, and otherwise decorated, so as to harmonise with the adjoining banking-room and new bank parlour. We have omitted to say, that in addition to the strong-rooms in the basement of the building, there is another strong-room, on the ground-floor, at the rear of the banking-room. The walls of the staircases and passages leading to the upper floors of the building are uniform with the ground-floor portion already described, being faced with varied-coloured ornamental tiles, with a chocolate dado. Dennett's arched fireproof floors are carried up to the second-floor of the building, and the first story has an oak floor, and is fitted in mahogany and teak. The upper portion of the building will be occupied as residences by the officials connected with the bank.

The contractors are Messrs. George Trollope & Sons, who have substantially executed the whole of the works.

WINTER EXHIBITION: INSTITUTE OF PAINTERS IN WATER COLOURS.

There is more difference, this year, than custom, and fog, and the darkness that more than fitfully veils the cheerfullest winter-time for this metropolis, can wholly account for, in this present show of drawings and sketches that the members of the Institute of Painters in Water Colours offer for their winter exhibition: more than the odds betwixt sunlight and sun-burner this time: and those who would like to know what an exhibition at this gallery would be like without the marvels of Mr. E. H. Corbould's stippling and the deep gummy richness of his purples, and strong browns; of Mr. Edward Warren's blue skies, golden corn-fields, and beechen glades; or the pink and lemon atmospheres that prevail when Mr. C. Vacher paints the East; and Mr. J. D. Linton's exquisite finish that makes pictures out of nearly nothing, have a chance now: for absence of these well-known attributes is amongst the strongest reason for any perceptible distinctiveness that marks this December from April at 53, Pall-mall.

The charm of charms is modesty, and the utter want of anything that shows pretentiousness leaves quite a quiet glow of glory to shed meek effulgence on small and pretty things which abound. But Mr. Louis Haghe's drawings, however small, are more than pretty things,—always. He is one of the first half-dozen who proved that water-colour could fulfil almost any requirement as a painter's manual. Of his contributions,—some eight or nine,—none have greater interest than the sketch of "Vargas taking the Oath before the Duke of Alva, previous to his becoming President of the 'Conseil des Troubles'" (175); for, apart from its being a brilliant and admirable little drawing, it recalls the picture made years ago, when leading painters of to-day were little boys at school. "The Sortie" of burgher soldiery, in buff jerkin, morion, and breastplate (205), and "The Return" (255), with early morning light on the night's disaster, are quite in the vein of Mr. Haghe's style, though these conspicuous works have evidently been made with the intention of distinguishing the class of performance that the minor consideration for winter-show should set forth as promise of something better for summer. Goodness knows how good these clever works might have been if black had not been so positively painted black! It takes honest men all their life-time,—not an hour longer,—to learn that it is not always necessary or wise to speak ugly truths, unless asked for them. Mr. John Absolon is running a neck-and-neck race with colour-printing: who can but hope that he will be the winner, even whilst block paint is taking the long strides that a halt at some shop-windows will any day recount? What dash and force there are in the score of instances that clever Mr. Absolon gives of what a "diggings" an eighteen-cake colour-box is to him. "Peeling Potatoes" (16); "Charity" (34); "Going to Market" (86); or any one of such subjects as he may meet with at a "Sketching Club" (153), are sure to be turned to good account by this indefatigable sketcher, who sketches everything; a remark that could in no way be applied to Mr. C. Green, for he sketches nothing, and, whatever the nature of the work may be, the workmanship never differs. Extreme finish and gentility of taste are the all-in-all of such representation of modern young-lady-likeness, with choice old furniture for its background, as he introduces here (330), and have done nearly all that has been done to make up a pretty little old-fashioned interior, with a father and daughter receiving "The Post-bag" from the messenger, who has just arrived with it (351), for incident. Two studies of Irish character (337), very common type of the conventional kind, are less grateful for the pains that have been taken to make the most of them.

Mr. G. C. Kilburne's idea of completeness exceeds Mr. Green's even. "Blue Bells" (332), giving a title to a family agroupment in a wood of higher social grade than the busier peasant people who are "Coming Home" (340) to a cottage that is a long walk from the village, is a specimen of "the sweetly pretty," but the method of its presentation is far nearer in affinity to what photography makes cheaper, and the practised hand of the artist dearer.

Mr. A. C. Gow's melodramatic villain, "Securing the Title Deeds" (66), and making a bad "exit C"; Mr. E. J. Gregory's "Pet of the Crew" (80), and Mr. V. W. Bromley's weak warrior, or respectable armourer (teetotal), apostrophising a cracked helmet (284), are noticeable as much for finish as for the small end gained by it.

Most of Mr. F. J. Skill's drawings are agreeably free from affectation, and that of a "Misty Morning on the Dart" (3) leaves the impression of its being really a study of nature.

"The Young Shrimpers," by Mr. Hugh Carter (50), and an admirably luminous portrait of an old "Dutch Fishwife—Scheveningen" (262), by the same, as well as Mr. Jozef Israel's "Evening Sorrow," of one younger, but a widow (246), might be offered for a comparison, and as to what should be the worth of half that is called example of water-colour art, judgment should be arrived at by weight of evidence of effect rather than that of colour and labour it takes to get an effect.

Though Mr. Guido Bach has acquired extraordinary freedom and power in his use of the medium (life-sized heads such as that of the "Peasant from the Abruzzi" (269), studied from the real, no doubt, or the smaller but still large figures of the "Pifferari" (232), are striking proof of this), he no more shows its strength than its weakness.

We must leave some room to speak of the landscapes. How often has "Arundel Castle" been the subject of the sketcher's exercise? Mr. J. C. Reed, with a full brush, and on a favourable day, has sketched it once again very capitally.

The visitor as he strolls round the room will stop at "A Tranquil Day—Coast of Cornwall" (28), by Mr. J. G. Philp; "Study on Hayward's Heath, Sussex" (51); "Durlstone Head, Dorset" (70), and "The Agglestone, Dorset" (215), by Mr. H. G. Hine; "Barmouth Sands" (85), by Mr. J. Mogford; "The Warlock Knowe,—Scene on the River Ayr" (93), by Mr. W. L. Leitch, as masterly in style as it is convincing of fact; at Mr. Carl Werner's drawing, "Interior of the Vestry, Cathedral of Toledo, in Spain" (47); a head by Mr. Jopling, and at Mr. Hargitt's drawings, especially "The Drover" (90).

Undertake to understand "glamour," and fairies should be either treated comically or classically. Mr. "Dicky" Doyle or Sir John Noel Paton must always now head the list of those who would tread enchanted ground. If Titania and Queen Mab had not long ago retired from all mundane interference, they would have pinched Mr. H. Herkomer to death for painting their lieges bilious, yellow things. What does he show himself to know of such perfume, poetry, and music as the gross world held,—even for Martin Luther? A man who can paint "Faërie" is worth gold in lumps.

"Durham Cathedral" (104), by Mr. J. Orrock; Sketch from Nature at Lewes" (111), by Mr. E. H. Fahey; "Old Mill, Sussex" (116), by Mr. J. Fahey; "Hazy Morning—Mouth of the Stour" (150), by Mr. Harry Johnson; "Study of a Thames Barge" (171), by Mr. T. L. Rowbotham; "Eskdale, Cumberland" (191), and the genuine sketches made with so much force and ease, of old bedrooms at Knole, Hardwicke, and Cotehele, by the late Mr. D. H. McKewan; "A Mountain Stream" (243), by Mr. E. M. Wimperis; "The Highland Home" (295), by Mr. W. Small; Mr. W. L. Thomas's Swiss Memoranda; Mr. L. J. Wood's neatly-given recollections of Continental buildings; the "Brig drifting," by Mr. E. Hayes; the smiling Devon scenery, as painted by Mr. J. H. Mole; and Miss Emily Farmer's pretty little village children, *vide* "The Daisy Chain" (36); and "In Class," (334), all these are points dotted in our catalogue, in order that we might write or not a longer article,—and we did not, so here is an end of it.

THE LATE SIR CHARLES BARRY.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

An ordinary general meeting was held last Monday evening, Mr. Horace Jones, vice-president, in the chair.

The secretary (Mr. Charles L. Eastlake), having announced the donations of various books to the library, the following gentlemen were elected associates:—Messrs. T. H. Myres, R. B. Ogle, and W. H. Powell.

A letter was then read from Mr. J. L. Wolfe, in which he stated that he had much pleasure in presenting to the Institute a marble bust of the late Sir Charles Barry, executed by Mr. J. H. Foley, R.A., of which we have already made mention. The bust having been uncovered,—

Professor Kerr said that, owing to the absence of Professor Donaldson, through illness, he had been called upon to make a few remarks regarding the presentation. It was just thirty years ago, he went on to say, since he first came to London from a remote part of the country, to push his fortune, when he was particularly struck with a group of four distinguished men, who had been leaders of their profession, the idols, so to speak of his life,—Cockerell, Donaldson, Tite, and Barry. In Cockerell, they had a man of infinite delicacy and refinement, and an artist who did honour to every touch of his pencil, deriving honour and glory from his works. In Tite, they had, strangely contrasted with him, and singularly sometimes, a grand massive, masculine intellect, not devoid of artistic aspirations or learning. Of Donaldson they had not to speak. He was fortunately still amongst them, a man possessed of that strong personal character which enabled him to consolidate the profession in the manner in which it now existed. Lastly, in Barry, they had a successful worker, a man of few words, but a constant worker, who was manifestly designed to be the leading practitioner of the day. He was the most distinguished and illustrious of all English architects. As to his merits he would confess that he was quite unable to speak upon them, words failing to express what he then felt; and this he would say when their profession had become vastly extended, and when art criticism might be said, in a great measure, to be laid on the shelf, and when the doctrines and principles of art had been to a great extent flimsy fallacies. There was no text with which he would rather deal in preaching a sermon than the life and career of Sir Charles Barry. He was a man, as he (the speaker) had said, of few words in respect to the operation of the profession at large; in fact, he might say that he was a man of no words at all. He had no time for the discussion which unfortunately in the present day occupied so much of their attention. Sir Charles Barry had his pencil always in hand, the gracefulness of which was particularly characteristic, floating in a perpetual stream. He was always a hard worker, and so much did he find to do, that he supplemented the short hours of the day with the long hours of the night, as if he had not done enough within the reasonable limits of daylight, sitting down in silence and solitude, and working laboriously during the long hours of darkness, so as to rest in the broad daylight of morning. They all remembered the day when the flag of England first floated over the glorious summit of the

Victoria tower; it was then half-mast high, for its architect had died in the night. If it was half-mast high, it was wholly significant of his triumph, for he had completed his work, and had conquered to the uttermost within the province of his glory. He thought that there was something particularly appropriate in what was called sudden death as the end of a man like Sir Charles Barry. It was far more appropriate, he thought, than to linger through old age. When that great architect died so suddenly, they could scarcely help reflecting on the words of the poet, that

"Those whom the gods love die young;"

but they could add,—

"Those whom the gods admired died in their harness;"

for Sir Charles died, as he lived, in his harness. After some further remarks, the speaker concluded by quoting these words:—

"Life! we've been long together,
Through pleasant and through cloudy weather;
'Tis hard to part when friends are dear;
Perhaps 't will cost a sigh—a tear;
Then steel away—give little warning,
Choose thine own time:
Say not 'Good night,' but in some brighter clime,
Bid me 'Good morning.'"

The Chairman intimated that a letter of thanks, properly signed, and couched in such language as would best convey the obligations the Institute was under for the bust, would be presented to Mr. Wolfe.

Mr. Thomas Morris said, when the late Sir Charles Barry was at the zenith of his fame, Mr. Wolfe was his steadfast, silent, unpretending friend, and he thought that this fact should not be lost upon the framers of the address.

Canon Barry, in response to the express invitation of the chairman, said he was there on that night merely as a spectator; but he could not let the occasion go by without referring to the remarks of the previous speaker. What he had said of the friendship existing between his (Canon Barry's) father and Mr. Wolfe was perfectly true. Their lives were one of unbroken friendship, and his father received from him great assistance throughout his career. He (the speaker) had the task of preparing for the press his father's biography, and there was no page of it that gave him so much pleasure in dealing with it as that which commemorated the kind appreciation and generous feeling which his father had happily received from the Institute of British Architects.

Mr. Phené Spiers then read a paper on the Château of Pierrefonds, and its restoration by M. Viollet-le-Duc.

Mr. Bucknell, in opening the discussion, said that with regard to the restoration of the Château of Pierrefonds, it was really of great interest to the profession; they noticed the skill and ingenuity of the arrangement of its restoration, the science of construction, and the grandeur of its architecture. This restoration by M. Viollet-de-Duc was deeply interesting. But M. Viollet-le-Duc, though accomplished as a draughtsman, was not distinguished as an architect, though this restoration showed that his outlines were vigorous, there being harmony and unity in the designs; still they looked in vain for those things which constituted an architect in this great work.

Mr. Burges confessed that the works of M. Viollet-le-Duc had bitterly disappointed him; he agreed with others that, as an artist, he excelled, but he (Mr. Burges) parted company with him at architecture. They all owed him, he was of opinion, a great deal for his numerous works, his letters and writings being well received; but he could not allow him to be considered a great architect.

Professor Kerr, in moving a vote of thanks to the reader of the paper, could not quite agree with the remarks of Mr. Burges, and he was sure that Mr. Burges would not wish it to go forth that the Institute of British Architects tacitly agreed that M. Viollet-le-Duc was no architect; and he objected to the system of what the president in his address had called "mutual scorn." They did not, he was assured, wish to speak flippantly of the work of French architects.

Mr. Burges explained that he intended to point out that a knowledge of antiquarianism and archæology did not make an architect. He admired M. Viollet-le-Duc's profound knowledge of these, but his executed works did not come up to what was previously anticipated of him.

Mr. White, in seconding the vote of thanks, said that whether or not M. Viollet-le-Duc was a good architect, they still owed to him a great deal for his numerous works. He had not seen the Château of Pierrefonds, but as far as the work had been brought before them that night, he considered that it was a very successful restoration, for it was very difficult to find where the old work in it left off and the new work began. The new work, he understood, was dictated chiefly by the old work, excepting, perhaps, the structure of the fabric of the roofs. He had certainly diverged from all that had been accepted in the restoration of the old work.

Mr. Bucknell drew attention to the hooks used for slating, which he considered of an excellent character, he having tried them.

Mr. Hayward thought that the word "restoration" was one of those things desirable of explanation in connexion with the building. Restoration he defined as the carrying out of the old work as far as it could be carried out, not adding a large quantity to the original design. Speaking of the question of restoration in England, he hoped that the Government would see their way clear to prevent the going into decay of a variety of ancient buildings in this country; but he would deprecate strongly the restoring of old castles and buildings in the manner in which the Château of Pierrefonds had been restored, and if they were to follow out the same principle as the Government of France as regarded restoration, they would, he thought, be doing more harm than good.

The chairman said they were all agreed as to the difficulties as between restoration and rebuilding, but they were somehow permitted to take licence of their own views. With regard to the position of M. Viollet-de-Duc, he thought that they could only admire him as an archæologist, not as an architect.

CHUBB & SON'S FIRE-RESISTING STRONG-ROOM.

The completion of a fire-resisting strong-room, made this year, for the "Credito Publico Nacional" of Buenos Ayres, has led a number of gentlemen interested in such matters to inspect Messrs. Chubb's works, in Glengall-road, Old Kent-road. The strong-room referred to is one of the largest constructions of the kind ever made, we believe, being 14 ft. 3 in. wide, 11 ft. 5 in. high, and 4 ft. 6 in. deep from front to back. It is made of the best boiler-plates, $\frac{5}{8}$ in. thick, rebated together, and fastened by very strong angle-iron screws and rivets. The floor, sides, front, and ceiling are alike in construction, and, with the small air-chamber, and cases charged with fire-resisting material, make up a total thickness of 5 in. The doors are necessarily different in construction, and have each 1¼ in. thick of combined steel and iron. In the doors there are two chambers,—one contains the works of the locks, and the other is a fire-resisting chamber, charged with the vaporising material employed by Messrs. Chubb. The nature of the substances thus used is a secret of the firm. Its action, in the event of fire, is to produce vapour that is a safety to the valuables enclosed. Each of the two doors is fitted with two of Chubb's patent gunpowder-proof locks, throwing fourteen bolts all round, each lock differing from the others, and requiring its own key. The room contains a series of compartments, twelve in the length, and four tiers high. It weighs about 15 tons, and is made portable, the separate pieces being about 400 in number. It has taken ten men about three months to make, and has required the drilling of about 7,000 holes in the iron plates, and the use of 1,000 rivets and 1,400 screws. It is intended for the security of the Government bonds, and will be fixed in Buenos Ayres by one of Messrs. Chubb's workmen.

Another smaller room has been completed for the safe custody of cash. It is 5 ft. wide, 5 ft. 6 in. high, and 6 ft. from front to back. It has folding-doors that throw twenty-eight bolts, instead of two separate doors; it weighs about six tons, and is for the use of the Buenos Ayres Government National Bank. It is fitted up with extra strong safes for bullion.

The works of this firm, which cover a space of about 1½ acre, were built in the year 1866, from the designs of Mr. Hoole, of Russell-square. About 130 men are constantly employed in them, and their production is about 1,000 safes, strong-rooms, and iron doors, on an average, each year; these varying in price from 10*l.* to 1,100*l.* each. The steam power is at present furnished by a horizontal engine of 25-horse power, but this is inadequate for the wants of the factory, and a Corliss engine, of 50-horse power, is under order. There are twenty-six machine tools of the best description in the factory, including planing, punching, slotting, shaping, and drilling machines. The smiths' shop contains ten fires, and has a very active 500 cwt. steam-hammer in constant use. It is used for punching as well as forging, and delivers with great precision about 200 strokes per minute. A Walton's pneumatic steam-hammer has been ordered that will be equal to about 400 strokes per minute. The blast of the smiths' fires is supplied by a fan, from which iron pipes are carried all round the shop. Water tuyeres are about to be supplied in the smiths' shop.

It was curious to notice a mortising-machine and a band-saw employed upon iron, the one taking out mortises 2½ in. long by 1 in. wide, and the other cutting five-sixteenth bars, but equal to performance upon iron double the thickness. The merits of a mode of protection of their locks, employed successfully by Messrs. Chubb since 1858, was ocularly exhibited. This consists of the introduction of steel pins in the region of the keyholes, which renders the lock invulnerable to burglars, the drill being utterly destroyed when it comes into contact with the steel pins. This was shown by a test supplied by a Hulse machine, of which, of course, burglars cannot have the advantage in operating upon a bank strong-room. Amongst other work in progress in the factory at the time of the visit were safes for Scott's Bank, Cavendish-square; for the National and Provincial, the London and County, the London and Westminster, and other banks. It should be mentioned that the works we have been describing are only part of those occupied by the firm, their locks being chiefly produced at works in Wolverhampton.

THE STOWMARKET INSTITUTE COMPETITION.

At a meeting of the general committee convened on the 9th inst. for the purpose of receiving the report of the committee appointed to award the premiums in the competition for the plans for the new building, it was announced that the first had been given to "Utilitas" (Mr. H. Lovegrove, architect, 20, York-buildings, Adelphi, London), and the second to "Utility" (Mr. H. Goodhew, Kentish Town, London).

NOTES ON PUBLIC WORKS ABROAD.

It is interesting to learn how public works progress abroad,—how necessary improvements are effected in various foreign cities; and some information upon this subject which we have collected will not be unacceptable to our readers. Let us begin with Russia. From Berdiansk we learn that many improvements are being carried out in that port. In the first place, two good schools have been erected,—one for boys, and one for girls. The construction of a higher school for boys has also been commenced, the funds for which have been provided by the landed proprietors of the district. The local municipal authorities are anxious to carry out the necessary improvement of paving the streets of the town, but, as funds are wanting, they propose to raise the means essential to the object by special taxation. This, however, is resisted in some quarters. With regard to another Russian town (Kertch), we note that public works are being carried on with great activity throughout the town and its vicinity. A new church has been erected on the Quarantine-road; a convenient bridge has been constructed over a marsh to facilitate the approach to the town from an adjoining village; a well-macadamized road has been made for a distance of three miles, leading to the Crown and other gardens; while the erection of a new synogogue is in progress. A project is also under consideration for the erection of a new theatre of an improved character, in Kertch; and recently two large hotels have been opened there, in addition to those previously carried on. Of late, indeed, the local authorities have been very active, and many improvements have been effected, while still others are in contemplation. Throughout the town building operations are actively going on; many fine new houses have been completed, or are in course of erection, not only in the leading thoroughfares, but in the most retired quarters, the architectural appearance of the place being thus much improved. Kertch possesses a town boulevard,

described as of a handsome character. It has been raised some 6 ft. above the level of the quay, and planted with rows of trees in straight lines, with seats placed at intervals, a Kiosk in the centre, and a commodious building in one corner. It has also been discovered that the town prison is inadequate and unsuitable for its purpose, and a new one, more commodious and better arranged, has consequently been erected. Although not large, it is proportionate to the size of the town. The prison is dry, warm, and well ventilated; and every prisoner has a plank and straw pillow for his bed: this, though scanty, is sufficient in a country where men of nearly all classes sleep in their clothes, where sheets are almost unknown, and where the temperature of the prison, even in winter, is by no means severe. From Odessa we learn that the works recently undertaken, by the assistance of English capital, to provide the town with water from the Dniester, have necessitated the importation of several cargoes of iron pipes from England. By the terms of the contract these works were to be completed by the end of the present year, and they have been so completed. Improvements are also being effected in the paving and drainage of the town, and the works at the pier and port are slowly advancing, though it is said that they will still extend over several years. The introduction of tramways is contemplated in Odessa, but they appear to be intended rather for the carriage of merchandise than passengers.

Public works in Portugal appear to be progressing. With regard to the Azores, we find that a lighthouse at the north end of the island has been in course of construction for some time. The work, however, has been very perfunctorily carried on, but its speedy completion is considered imperative. Another work calling urgently for completion is the district gaol, which has, it is significant to notice, been actually twenty years (!) in course of erection, and is by no means finished yet. This system would hardly suit English builders in these go-ahead days. Other works, commenced about twenty years ago, are new baths in the valley of the Furnas, and these are very backward. The mineral waters of the Furnas being always in a boiling state, in order to treat them in an improved manner the following plan has been recommended:—first, to close hermetically the reservoirs of cold water by arching them over; secondly, to aid the cooling of the waters by means of spiral tubes introduced into the said reservoirs, through which a stream of cold water or of cold air should be driven by suitable appliances; and thirdly, to substitute the taps at present in use by openings made in the bottom of the baths, which is a more perfect system of introducing the water into them, as contact is thus avoided with the air. Another work of importance in the Azores is the erection of a new Custom-house, the existing one being far from equal to the transaction of public business. A company has also been formed to construct a floating dock, and the shares subscribed have enabled the projectors to proceed to Lisbon for the purchase of material for its construction. Of late years great progress has been made in Portugal generally. In 1851 there was not a single kilomètre of carriageable road in the country, with the exception of that from Lisbon to Cintra; not a single railway; the ports were silted up; the rivers were without bridges, except a few built years ago. At the present time, as a contrast to this state of things, Portugal possesses 3,500 kilos. of good roads, while new roads are still in course of construction throughout the country; 715 kilos. of railway in operation, 131 kilos. more almost complete; more than 200 good bridges over the rivers and smaller streams; more than 3,000 kilos. of telegraphic lines; improved harbours; and many recently erected and beautiful edifices for the service of the State. The economical progress of the country has not been less noticeable. From Portugal to Spain is not a very wide step; but with regard to the latter country there is not much to notice of special interest relative to public works. From the Canary Islands we learn that works of improvement are being effected at several ports, and although the construction of new roads is a much-needed work, it cannot be thoroughly carried out in consequence of an inadequacy of funds. A considerable portion of the mole at the port of Santa Cruz, Teneriffe, has been carried away recently by a strong wind with heavy sea from the eastward. From Porto Rico we learn that railways, irrigation, drainage works, &c., are much wanted there, but still remain in embryo. With regard to the port of Mayagnez, it is stated that some street-rails which were laid down there have proved a failure, the system being one which has never been adopted anywhere. Under these depressing circumstances, the rails have been taken up, and shipped to the United States.

Brief consideration may next be given to the public works of Turkey. With regard to Adrianople, it may be mentioned that that city contains about 160,000 houses, 50 mosques, 15 churches, 10 synagogues, a military college, 2 hospitals, &c. The houses are built of wood and sun-dried bricks; the streets are narrow, tortuous, dark, and very badly paved, being lighted at night by a few petroleum lamps, placed at long distances from each other. Altogether, the town is described as being of a most dilapidated and neglected appearance, and all the streets are extremely filthy. The roads in the province are neglected as long as possible, and only repaired when ordered by the Central Government, on the representations of some foreign authority. It is alleged that the local authorities are entirely dependent for the construction of roads, &c., upon compulsory labour. Although yet in their infancy, railways have been introduced, there being at present only three lines,—one from Adrianople to the Ægian Sea, another to Philipopoli, and a third to Constantinople. The public works carried on in the island of Crete of late have not been extensive. The most useful has been the dredging of the harbour of Retimo, the smallest of the three commercial ports of Crete. It had become so silted up with sand that vessels were forced to anchor outside, while, since the dredging, ships of 400 tons can moor inside. Road-making, it is said, in this island appears to be undertaken as a sort of concession to modern sentiment on the subject. It may, therefore, be inferred that the roads are not very good. From Cyprus we also learn that nothing has been done there of late in the way of road and bridge making; and equal neglect is manifested with regard to the reparation of dilapidated water-courses, and the organisation of some judicious system by which irrigation might be promoted and extended. The railway from Galatz to Bucharest on the one side, and from Galatz to Roman on the other, has been opened, but the traffic either way has not been very great. The increasing number of steamers at Galatz having caused the want of quay accommodation to be more and more felt, the municipality has undertaken the construction of solid stone wharfs of some extent, and the work has been commenced. The town is also being lighted with gas, and supplied with purified and filtered water by a regular system of waterworks. This is considered a great improvement upon the old system. In the town of Erzeroom (Koordistan) many improvements have been recently effected, the greatest part having been promoted by the late Vali, Samih Pasha. By his untiring zeal filthy open sewers, formerly called streets, have been converted into broad, fine roads, facilitating communication, and removing all occasion for the usual summer miasma which preyed upon the inhabitants of the overcrowded dwellings lining both sides of the now reclaimed ground. Still much is left to be done ere the town is purged of its accumulation of dirt and filth that poison the otherwise pure air. To a stranger the place has been hitherto intolerable. The Erzeroom-Trebizond road is said to be in a wretchedly ruinous condition, and much needs reparation. A new road to Batoom has been pushed on actively, and when finished will be of great commercial and strategical use. From Scutari we learn that as to the public works there are none to be reported; the roads are what they were a hundred years ago, and the greatest astonishment is expressed as to how even the natives, in winter, can manage to get over them. We suppose, however, that use is everything.

Our readers must next turn their attention to Hungary. Much has been done of late in this country in the way of railway and canal construction, and much remains to be done. The Ministry of Public Works is occupied with schemes for perfecting and rendering more serviceable the railway system of the nation. The railways there have not been so useful as they should have been. They have been constructed with too exclusive attention to the local wants, and without sufficient regard to through traffic and connexion with the railway system of other countries. It now becomes necessary to supplement the existing lines by connecting links in order to make a real railway network throughout the country. The Government have, in addition, a project under consideration for the construction of a direct line from Pesth to Semlin and Belgrade, which, when the Servian railways are completed, will, it is hoped, become a portion of the direct international line to Constantinople. As to canals, one of the most important, viz., the Franz Canal, originally constructed by the Government to connect the rivers Danube and Thaiss by Zombor and Newsatz, is being improved, chiefly by English capital and enterprise. The present condition of Pesth is described as admirable, the capital possessing numerous lofty and handsome buildings, and new wide streets, paved in many cases with asphalte. As regards rate of increase and development, it is stated that the Hungarian capital has surpassed that of any other European country; and large sums of money are being expended, not only on the embellishments of the town, but on the construction of public works necessitated by the increasing requirements of trade. The shores of the Danube are being lined with a handsome embankment; extensive docks, entrepôts, and a railway bridge across the river on the south of the town have been planned by the Department of Public Works, and will soon become *faits accomplis*. And a bridge above the town is in process of construction, and will connect the manufacturing quarter with the shipbuilding district, &c. Much of the poorest and most squalid portion of the capital is being opened out by new streets and boulevards, of an improved character, handsomely paved with granite and asphalte, and intersected by tramways. In the neighbourhood of the Museum and Houses of Parliament an aristocratic *quartier* is springing up, in which are hotels and other buildings of considerable architectural magnificence.

An important work is being carried out at Carthagena (Colombia). Mr. Terry, an English civil engineer, arrived there at the end of the last year to make various surveys for the Columbian Government of the local harbour and of the canal which leads from the Bay of Carthagena to Calamar, 116 miles on the Magdalena river. Mr. Terry was engaged seven months making these surveys; but, unfortunately, nothing is likely to result from his labours. The opening of the Digue, or canal, so as to enable steamers of moderate tonnage to strike the river Magdalena at Calamar, is known to be the only means by which Carthagena can be rescued from its present isolated position. The local harbour, covering an area of 40,000 acres, is second to none in South America in point of convenience for loading and unloading, and complete security in all weathers. Mr. Terry, in the survey he gave to the Government for opening the Digue, proposed, by cutting through one or two angles, and reducing the bends of the old route, to shorten the present distance of 116 miles from Carthagena to Calamar to eighty-one miles, in order to allow of steamers to do the distance in twenty hours. He estimates the cost of the work at 18,000*l*. The local merchants, however, show great apathy in the matter, and are content to sit still and see their fine harbour void of shipping, and their once fine city fall every year into greater decay. With regard to other public works in Colombia, there is nothing of any interest to mention, with the exception of the repair of the cathedral at Panama, which will cost the Government about 40,000 dollars. From Guayaquil (Ecuador) we glean that a proposed carriage-road from Quito to that port has been abandoned, the Government having come to the conclusion that it will be easier and cheaper to construct a narrow-gauge railroad. It will have to traverse a hilly country, the steepest gradient being estimated at 4 per cent., and the radius of the sharpest curve at thirty-one yards. The Government sent, some time since, an engineer to America and England in order to decide upon the most suitable kind of railroad, and have, at the same time, instructed their representative at Washington to make a contract for its construction. A new penitentiary in Quito has just been constructed, and is a fine building, although it is significant to note that it is always subject to be destroyed by a severe shock of earthquake—a pleasant prospect for the enterprising builder.

Public works in France deserve passing notice. The excavation of the new docks at Dunkirk proceeds slowly; but much has been done towards demolishing the old ramparts and the erection of strong forts nearer the sea. When finished a large amount of land will

become available for building purposes. By the extension of the fortifications the terminus of the Furness Railway has been enclosed within the ramparts. It is intended to unite this line with the Compagnie du Nord. A new railway is proposed between Nice and Corni in North Italy, and is considered a very desirable line, as it would connect Nice by rail with Turin and Central Europe. Another line is projected to Lyons, which would materially abridge the journey to and from England. The line to Corni would necessitate a long tunnel through the pass of the Tenda—a work which would last some time.

In Greece, several projects are in view which may be briefly alluded to. The whole of Western Greece is lamentably in need of good roads, bridges, &c., but the attempts to supply these deficiencies are not made too vigorously. The condition of the port of Missolonghi, for instance, could not be worse. From the Piræus we learn the long-pending question of a railway *vid* Thebes, Livadia, &c., to the northern frontiers of Greece, with a view to its ultimate connexion with either the Turkish or Austrian lines to Vienna, has at length received a satisfactory solution, and that a convention has been signed between the Government and a combination of capitalists for this undertaking, which is of material importance to the country. In order to carry out the work efficiently, the new company have retained the services of M. Piat, a French engineer, who is one of the original projectors of the line. The concession is for ninety-nine years, after which the railway reverts to the State. It is to be finished within a period of three years, and the Government engage to pay the company a subsidy of 15,000,000 fr., in three instalments of 5,000,000 fr. each; the first to be paid as soon as the line is open to Thebes; the second, when it reaches Livadia; and the third, when the railway is finished to the Turkish frontiers. An Exchange building has been constructed at the Piræus, at the expense of the municipality, and a magnificent structure of white Pentelic marble erected for the Academy in Athens by the opulent Greek banker, Baron Sina, of Vienna,—a building in the style of a Grecian temple, worthy, it is said, of any capital, and "for beauty of materials, probably hardly equalled in Europe." The municipality of Athens has also rendered an important service to the local public by substituting iron pipes for the supply of water to the town, in lieu of the old earthenware tubes previously used for that purpose, which were perpetually breaking. The purity of the water has been improved by this scheme.

From the classic regions of Greece we must transport our readers to the more commercial land of the Netherlands, whence we get some interesting information. The consul at Rotterdam states that the Moerdyk Railway Bridge is completed, and is the longest bridge in Europe, forming a link in the Southern Railway connecting Holland with Belgium. The increasing commerce of Rotterdam has rendered necessary greater storage facilities, and more especially river frontage; and in order to meet these requirements, the town authorities have entertained proposals from a private company, entitled the Rotterdam Trading Company, who, under certain conditions as regards quays, canals, and roads, to be constructed on account of the town, propose building docks and warehouses on the opposite shore, thus making Fyenoord—the name of the district referred to—the Birkenhead of Rotterdam. Other local public works are the new water-works. Owing to the system of sewerage, which presents engineering difficulties in a city which, for the great part, lies below the level of high-water mark, the water-supply of Rotterdam has not hitherto been the most pure; and to improve it, reservoirs are being built in the town, which are to be supplied with purified or filtered river-water. The iron tubing, which has been imported from England, has been laid down.

It is officially stated that the town of Suez is in a most neglected and filthy state, no means whatever being provided for cleansing the streets, and the sanitary arrangements being most imperfect. The open spaces are selected as the camping-grounds of numerous hordes of pilgrims, who are not particularly clean; and the Health Department (so called) take no steps to remove the refuse and filth. The local authorities, in fact, do not appear to consider themselves responsible for the cleanliness of the town. The head man asks, with Cain, Am I my brother's keeper?

ON MECHANICAL PROCESSES FOR PRODUCING DECORATIVE DESIGNS ON WOOD SURFACES.*

To define the distinction between decorative and imitative art, it may be said that the former is art which is essentially subservient to architecture, but subservient not in the sense of tame insipidity, but of sympathetic helpfulness. In all cases decoration should heighten the effect of structure, not apparently weaken or conceal it; should add to it variety, and consequently increase its beauty, but not attract attention to itself, to the detriment of more important or nobler qualities of strength, symmetry, or grandeur. For the office of decoration, at least in our day, is pre-eminently to amuse. The cultivated eye delights in a composed intricacy of line, in a symmetrical variety of figure, in a subtle balance of apparently conflicting forms. The artistically-wrought principle of repetition is as pleasant to the sense of sight as that of recurring poetical rhythm is to the ear. In a word, a decorative design, if not possessing the power of a full orchestral harmony, should at least resemble a simple, delightful, and refreshing melody. Decorative art and imitative or pictorial art, then, have two distinct functions; that of the former is to heighten the effect of structural features, and should, therefore, be adapted to the locality to which it is applied; whilst that of the latter is to attract and concentrate the spectator's attention on itself, and to make him entirely oblivious of everything surrounding it. In decorative art, form, light and shade, and colour are used merely to make fanciful or symbolical ideas intelligible, amusing, or beautiful; in pictorial art they demand the utmost subtlety of execution that the hand of the artist can express.

Nevertheless it is extremely difficult to construct a definition that will include all the aspects of which such a subject is susceptible. For instance, might it not be asked,—Are not some pictures termed decorative pictures? and if so, why are they decorative, and not others? To this is may be answered, that decoration is intrinsically an adjunct to architecture and structure. Decorative design may consist of mere outline, whether of pattern or figures, or of masses of light form relieved on dark, or *vice versâ*; or it may consist of masses of harmoniously contrasted colours. Bearing this in mind, we must recollect, also, that pictures are not all equally imitative. Some express in perfection one quality, such as form; some another, such as light and shade; others, again, are distinct from these, and illustrate colour. Now, let us consider what the qualities are which true ornamental art must possess. Accurately defined form is one; accurately defined masses of light and dark is another. Harmoniously contrasted masses of colour is a third. But delicate or almost imperceptible gradations of light and shade which confuse form, and detract from the purity or richness of colour, are, in decorative art, fatal. Works, whether engravings or pictures, in which this quality is expressed, may be so far true to nature, and exquisitely beautiful, but they are not decorative. Pictures, then, of a decorative kind, are such as have figures strongly contrasting with the background, or in which the effect depends on broad, powerful masses of colour. For instance, pictures by Paul Veronese are certainly more decorative than those by Correggio. Compare the "Family of Darius," in the National Gallery, with the "Venus, Mercury, and Cupid," and the distinction will be at once apparent. So, again, Titian's "Bacchus and Ariadne," with its masses of powerful but harmonious orange, blue, green, purple, and white, is more decorative than Rembrandt's homely, but poetically conceived, "Adoration of the Shepherds," in which the colours are fused, as it were, into very low-toned light, and richest depths of "grateful gloom." The quality that is essentially non-decorative is imitative gradation of shade. All Oriental nations, supreme in certain phases of ornamental effect, without exception ignore it. And it is scarcely too much to say that, for a time at least, the introduction of this pictorial quality into decoration, confused form, vitiated colour, and did decorative art in Europe an injury from which it is only just beginning to recover. Again, in what catagory, it may be asked, should such a work as Michelangelo's Sistine ceiling be placed? I reply, in a very small class,—by itself. Its merit is so exceptional as to be far beyond classification, cavil, or criticism. We can but wonder and admire. But when we come to work of another kind, beautiful rather than sublime,—Correggio's Cupola at Parma,—we may feel justified in doubting whether a dome should be built in order that a painter, by a prodigious *tour de force*, should make it seem of no effect. There is this to be said, however, that Correggios are not so common as domes; and that even if one of the latter be architecturally spoiled by the transformation of it into the semblance of saints and angels, the world is decidedly a gainer thereby. To come nearer home, Sir James Thornhill's treatment of St. Paul's dome is not decorative, and, unfortunately, he was not by any means a Correggio.

Now in the Greek vases, as in all other true artistic work, we find that decoration is invariably governed by fitness. It meets with an essentially architectural treatment. It never disturbs or destroys the effect of constructive lines. It is always appropriate to the position it fills. Thus, on the border of the vase is depicted some incident of heroic times, or story of the gods, whilst the border is composed of fret or foliage, of design which modern artistic ingenuity has not been able to surpass. This decoration, be it observed, is always, in vases of the best period, perfectly flat. There is no attempt to deceive the eye by semblance of relief. The natural baked clay colour of the vase, a pale brown, stands for the figures, whilst distinctness is given them by means of a transparent black ground, on which they tell as masses of light. Upon the importance of this quality of distinctness in decoration, of which form is the characteristic, too much stress cannot possibly be laid; and some remarks by Mr. Ruskin on one of the Mediæval uses of this quality are so pertinent, that perhaps you will bear with me if I quote his words concerning it:—"And this love of symmetry," he says, "was still further enhanced by the peculiar duties required of art at the time; for, in order to fit a flower or leaf for inlaying in armour, or showing clearly in glass, it was absolutely necessary to take away its complexity, and reduce it to the condition of a disciplined and orderly pattern; and this the more, because, for all military purposes, the device, whatever it was, had to be distinctly intelligible at extreme distance. That it should be a good imitation of nature when seen near was of no moment, but it was of the highest moment that when first the knight's banner flashed in the sun at the turn of the mountain road, or rose torn and bloody, through the drift of the battle dust, it should still be discernible what the bearing was. . . . Hence, to the one imperative end of intelligibility, every minor resemblance to nature was sacrificed, and, above all, the curved, which are chiefly the confusing, lines; so that the straight, elongated back, doubly elongated tail, projected and separate claws, and other rectilinear unnaturalnesses of form became the means whereby the leopard was, in the midst of the mist and storm battle, distinguished from the dog, or the lion from the wolf; the most admirable fierceness and vitality being, in spite of these necessary changes, obtained by the old designer."

The process for the mechanical production of designs on wood, for which I have obtained a patent, has not a pictorial, but a distinctly decorative intention. It is fitted to express on flat surfaces of wood either flat effects of light figures on a dark ground, or dark figures on a light ground, or figures light and dark in parts on a ground intermediate in shade; and these effects are produced on the wood by an adaptation of the processes of engraving and printing. Into the details of the various engraving processes for producing designs on paper, after the profound and exhaustive articles on these subjects, by a most competent authority, Mr. Davenport, the worthy Financial Officer of this Society, it is unnecessary for me to enter, especially as those who wish to study examples of all the stages and varieties of progress in this important branch of art may obtain access to one of the richest collections in the world—the print-room of the British Museum, now under the able keepership of Mr. George W. Reid, F.S.A., whose courtesy on very many occasions I am happy to take this opportunity of acknowledging. I will confine myself, therefore, to the experiments which I have made for producing certain specimens which are submitted to your judgment. These specimens are printed on wood, from engravings from my designs, executed on wood-blocks by Mr. Edmund Evans

* From a paper by Mr. Thomas Whitburn, read at the Society of Arts.

and Mr. Horace Harrall, and also from electrotypes from such wood-blocks. The kinds of wood which are best adapted for receiving such impressions are those which are light in colour and soft in grain, such as pine and lime trees, which I have here employed. The conditions under which the impressions are taken are precisely those essential to the production of prints on paper, namely, that the surfaces of the engraved block and of the substance taking the impression must be throughout in perfect contact. The specimens shown were produced in an "Albion" hand-printing press, with ordinary printer's ink, and were taken by Mr. Atfield, in the employ of Mr. Hooke, printer, Guildford. Such impressions, being polished or varnished, are necessarily as durable as the wood itself. As regards the colouring material for producing the impression, I may remark that the process is by no means limited to printers' ink. The object, then, of this process is to multiply designs of a decorative kind, at a cheap rate; and such designs may, I conceive, be applied to all purposes and situations in which flat surfaces of wood are or may be used; and especially for friezes, dados, panels, and borders, either for walls, architectural adjuncts, or furniture. To show the application of this process to the decoration of furniture, a cabinet has been designed by Mr. Cozens, and manufactured by Mr. F. Coote, of Tottenham-court-road, well known for the excellence and beauty of his deal suites.

By some connoisseurs mechanical processes for multiplying copies of works of art have been gravely objected to. But I think it must be conceded that even mechanical processes are not without a certain utility. Making plaster casts is, for example, a mechanically reproductive process, and some years back the Arundel Society published exquisite reductions, likewise by a mechanical process, of those two famous statues which a clever American sculptor and writer now proves, to his own satisfaction, in the current number of *Blackwood*, are not by Phidias,—the Theseus and Ilyssus. Would any lover of art object to possess those casts because they are the result of mechanical process? Again, we may not all be fortunate enough to possess a picture by Landseer; but there are few, I fancy, who are unable to obtain, or object to possess, a mechanical reproduction, in light and shade, of the delineations of those animal instincts, passions, and emotions, which he has so marvellously interpreted for us, and which may be said to have enlarged our sympathies with one class of created beings. The question really is not whether a process is mechanical, but whether the result is mechanical. Does the material or the method over-ride artistic qualities of imagination or execution? Do we get mere neatness in place of intelligent, if seemingly careless, finish? or, on the other hand, have we coarse or clumsy, in place of delicate and refined work? If the result be good, what matter though mechanism be employed; if bad, what advantage though it be shunned? Now engraving is a recognised mode of multiplying copies of works of design. Hitherto its function has been chiefly an imitative one. It has been used with this intention by great masters of thought, such as Albert Durer; or of outline and action, such as Mark Antonio; or of brilliant light and mysterious shade, as Rembrandt; but the use to which my adaptation purposes to put it is, that of multiplying for decorative purposes decorative ideas. The comparative cheapness of the process to some may be objectionable; but do we disapprove of those marvels of pictorial journalism the *Graphic* and the *Illustrated London News*, because they are cheap? Do we turn up our noses at *Punch* because his price is only threepence? Surely the love of decoration is a good thing. Would nature teem with decorative effects merely that we might shut our eyes to their influence? This society was founded to encourage not only manufactures and commerce, but art. Its efforts, from its origin until now, have been persistently directed to sap the foundations of the false and absurd Puritanical theory that beauty is a snare in the path of the righteous, and decoration a device of the devil. That these wise efforts have been crowned with success is, fortunately beyond a doubt. The establishment of schools of design in the manufacturing districts largely contributed to spread a taste for drawing among operatives; and now the museum and schools at South Kensington, for the prosperity of which the country is so largely indebted to Messrs. Henry Cole and Redgrave, has dealt, let us hope, a deathblow to insipid formality for evermore. This decorative experiment of mine, then, is not intended to compete with, or expected to supersede, the beautiful and delicate, but comparatively costly, processes of hand-painting and inlaying, the skill displayed in which has made the cabinet work of our great firms renowned throughout Europe; but, as printing on paper has brought imitative art within reach of even the poorest, so I conceive that printing on wood may eventually enable all who possess decorative taste to indulge it, and to adorn their houses with articles in which ornament will be a more important and at the same time common feature than it has hitherto been possible, for ordinary purposes to employ.

In the course of the discussion which followed, Mr. Pitman thought, if the two surfaces were not exactly even, it would be impossible for very fine features in a design to be reproduced so exactly as when transferred to a yielding material, such as paper. The only speciality appeared to be printing on wood instead of paper, and it occurred to him that if printing-ink were used with an unyielding surface, such as a piece of wood, it would either cause it to come up in lumps, which would have to be finished afterwards, or else it would squeeze out, and destroy all delicacy of outline.

Mr. Trollope also thought it would be necessary, in order to ensure perfect printing, to make the two surfaces which had to come in contact so perfectly true, that it would be almost impossible to use it for ordinary purposes.

Dr. Dresser said, it struck him there was a great fear, when a mechanical process so simple as the present was introduced, of attempting to do too much in decorating wooden structures. A fault which he constantly found when an attempt was made to decorate furniture was, that too great elaboration was given to it, and the general effect suffered. Those who had visited the late Exhibition at Vienna could not fail to have noticed that some of the most costly pieces of furniture, upon which labour must have been lavishly bestowed, and which manifested a great amount of art-workmanship, were altogether ineffective; and were they placed in a room, he did not hesitate to say that one hundred people might enter the room and yet not be struck with the beauty of the furniture. If furniture were decorated, it behoved them to have a true, just, and legitimate structure. He liked to see a perfect revelation of truth in all things. After having chosen a fit structure, it was necessary to determine on a just mode of working the material, and to choose such decoration as was necessary; but although an ornamentist himself, he was strongly opposed to too much ornamentation of furniture. It must be borne in mind that the general effect of a room had to be considered, and that they should have subjects that they could understand. When a man went anywhere to dine, it was not to be supposed that he would get up and minutely examine the chairs and every other piece of furniture in the room; and the same thing would apply to a drawing-room—the furniture must be useful. Any mechanical process which would enable them to beautify cheap furniture, at a low cost, was a thing to be desired, but they must not do too much in that way, and should be very careful in the application of ornament. At the present time their houses were for the most part built as much in one style as another. Many houses were called Gothic, with scarcely a Gothic feature in them, and the same might be said of the other styles. If the room was only a square box with a few holes, it was just as legitimate to decorate it in one style as another. If they considered what was wanted when producing any articles, and tried to use the material of which it was going to be formed in the most fitting manner, and then sought to add to it such forms as would give beauty, not altogether considering that they were pure renaissance, or Greek, or Gothic, it would be better if they were beautiful, better if they were original and vigorous expressions of that which was new and peculiarly adapted to their present wants.

The chairman (Mr. R. Rawlinson) said he, like Dr. Dresser, thought art should decorate and not smother the object, and he also thought that a considerable amount of decoration was practised now, of which he would say, as Dr. Johnson said of a piece of music which he was told was very difficult,—"Difficult! I wish it was impossible." With regard to Greek art, he thought, in trying to imitate this an enormous amount of injury had been done. Architects had attempted, in this country, to reproduce that which was done in Greece, with the materials they had in hand; had tried to copy their forms and mouldings, and to reproduce them in coarse sandstone; and the result had been utter failure. He had been told by a German professor that the Greeks used marble solely or principally because it was good to paint upon; but there were others who denied that entirely, and who maintained that the Greeks never painted the lovely temples the remains of which could now be seen. He thought the time was gone by when they would do much in attempting to copy the temples of Greece. The Gothic style, he thought, was exceedingly beautiful when kept to its own purpose, but its time had gone by. In modern art, if they had decoration, they certainly wished to have comfort, and if the architect failed in giving comfort and the means of health, he failed in his building. With regard to the special art they were then considering, a means of decorating wood by block painting, it appeared that the wood must be carefully prepared, and the design such that the block should not be fractured by the pressure put upon it to give the impression on the wood to which it was to impart its pattern. In calico printing that was not necessary, the lines being of the most delicate character. In printing our pottery, the pattern was put on to a piece of fine paper, thinner than bank-note paper, of a very strong kind, and it was simply laid on the article to be printed, the colour being left on the article, and the paper removed by moisture. This art, no doubt, might be employed for cheap forms of decoration, and might supersede in some degree the old style of graining and varnishing, but he could not see any evidence in the patterns exhibited of the same durability as wood, because he thought the ornamentation would rub off.

HATFIELD HOUSE, WANDSWORTH.

"Hatfield House," Portinscale-road, Wandsworth, the residence of Mr. W. H. Withall, of which we give illustrations, has been designed so as to combine modern improvements in construction, to a somewhat greater extent than is usual in buildings of this class.

The house externally is faced with Beart's patent white bricks, with red brick bands, and Bath stone copings, window-dressings, and cornices. The roofs are covered with Taylor's patent tiles. The columns of the windows are of cast-iron, and those of the porch are of red Peterhead granite.

All the floors are constructed with Dennett's patent concrete arching and rolled-iron joists, and the floors consequently are entirely free from vibration. The house is also warmer than if ordinary wooden joist-floors had been used; and it is stated that no sound can be heard from one room to another through the floors. The building is also rendered practically fire-proof, and the architects have been enabled to provide ventilation over the gas, without endangering the building by fire. It is a matter of interest, with regard to the applicability of this method of construction, that although the supporting-walls are only 18 in. and 14 in. thick, there is no sign of their having been forced out of the perpendicular by the thrust of the arches. The staircase is constructed of pitch pine, varnished, with carved mahogany balusters, the ceilings of the morning and drawing rooms are panelled. The joiners' work of the principal floor also has been executed in pitch pine.

The vestibule is laid with tiles. The stoves used in the principal rooms are of Edwards's patent, and the fireplaces are recessed, with windows over them; the windows can be concealed at night by shutters of looking-glass which slide out from recesses in the walls.

The interior of the house has been decorated under the superintendence of the architects by Mr. Earle, of Howland-street. Sax's electric bells and thief-alarms have been used.

There are a stable and conservatory in communication with the house.

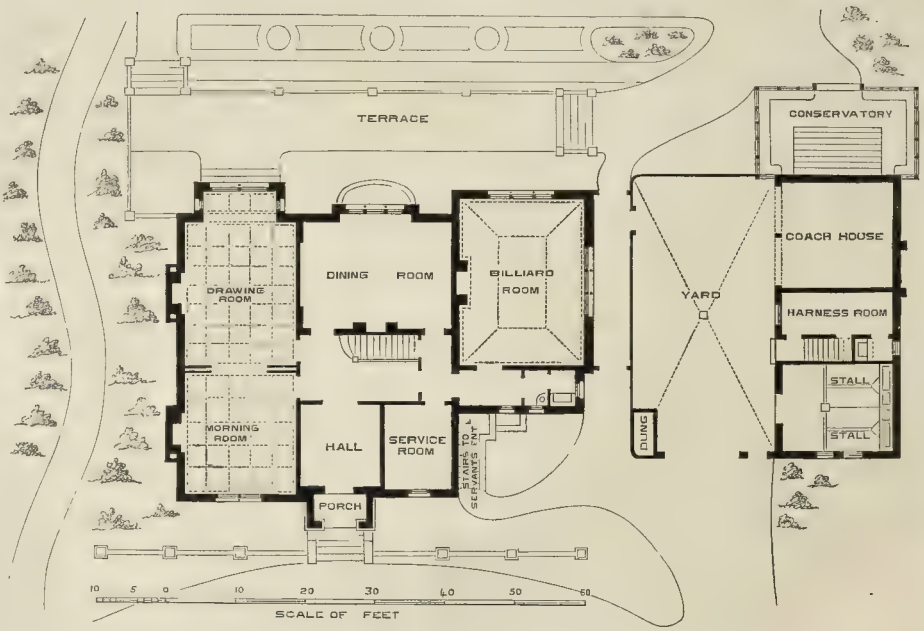
The coping and vases of the terrace to the garden front of the house are of terra cotta, by Mr. Blashfield.

Messrs. Lee Bros. & Pain, of Whitehall-place, were the architects; Mr. Joseph Thompson, of Camberwell-green, was the general contractor.

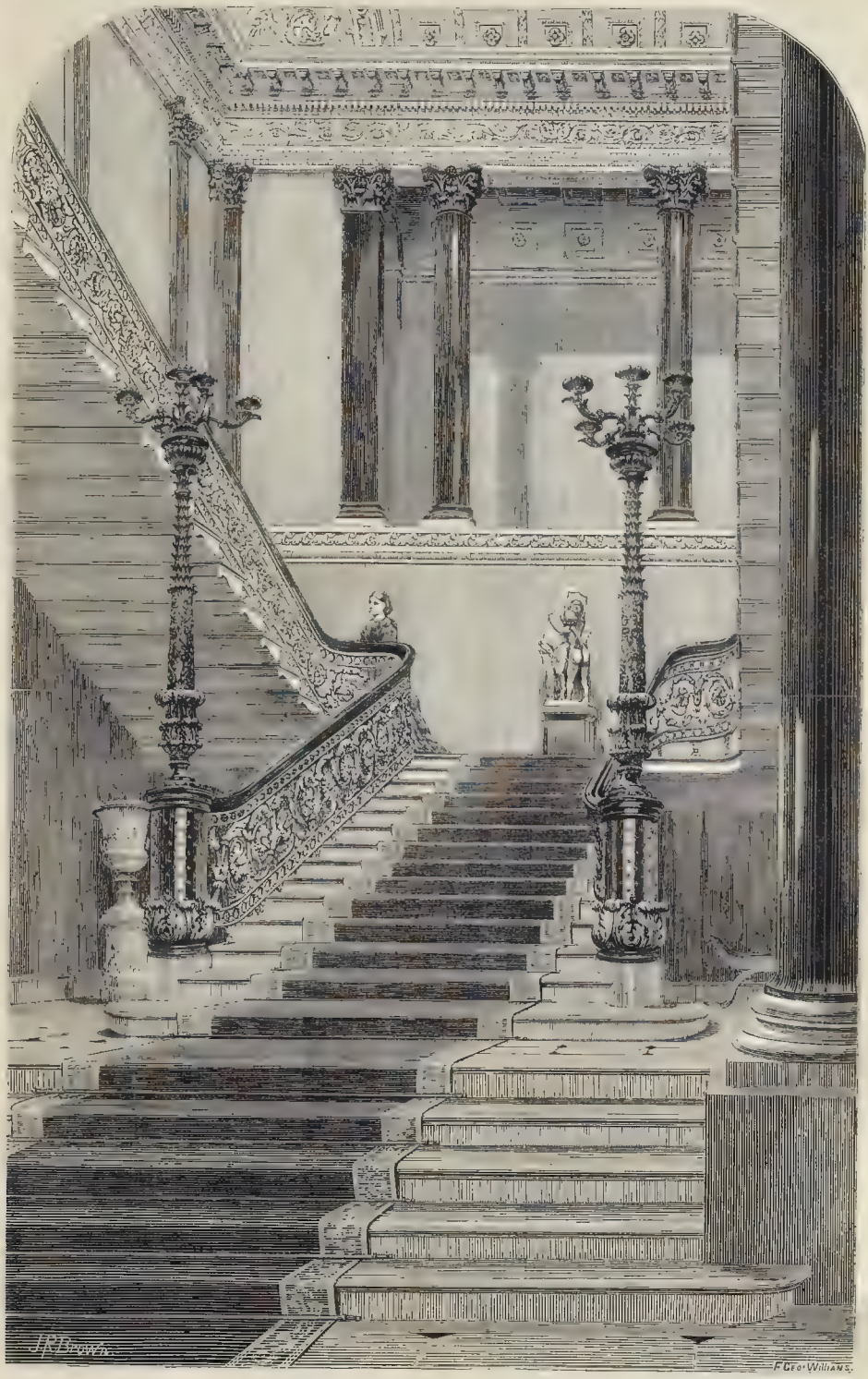
The cost of the house, including the terrace-walls and steps, amounted to 3,634*l.*; the decorations, 614*l.*; the stable-building, 800*l.*; and the conservatory, 270*l.*



HATFIELD HOUSE, PORTINSCALE ROAD, WANDSWORTH, SURREY.
Messrs. Lee, Brothers, & Pain, Architects.



Ground Plan.



NORTHUMBERLAND HOUSE, STRAND: THE STAIRCASE.

[See p. 993, *ante*.

OLD ST. PAUL'S CATHEDRAL.

THE ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of the session, held Friday evening, the 12th inst., Mr. E. J. Tarver, president, in the chair, the following gentlemen were elected members:—Messrs. W. P. Milligan, R. P. Day, S. Vigers, R. Lock, H. W. Stock, E. F. Bisshopp, J. E. Hosford, H. Athill, W. Stokes, F. W. Hamilton, E. E. Dyer, and C. H. Löhr; and a paper was read by Mr. Edmund B. Ferrey, on "Old St. Paul's Cathedral."

The Secretary announced that the visits to the various places of interest in and around the metropolis would begin about the middle of next January; and he would be glad, he said, to hear from any of the members, as to places of interest which they thought worth visiting.

In the course of Mr. Ferrey's paper, he said that Dugdale's "Monograph" was undoubtedly the best authority for the history of St. Paul's Cathedral, and to Dugdale's pages he was indebted for much historical information. Except in Stow, he was not aware of any other source where further information respecting the church could be found. With regard to Hollar's plates, no wilful carelessness could be attributed to him merely because his plates were often crude and obviously inaccurate. The discrepancies in Hollar's plates were numerous and puzzling, though not more so than in the other contemporary representations. The late Dean Milman stated that some of the earlier authorities gave the appellation of monastery to St. Paul's, but he also added that this was erroneous, though "St. Paul's was surrounded indeed with great monastic establishments,—the Black Friars, White Friars, or Carmelites, Templars, Grey Friars, or Franciscans, and other orders;" but the dean went on to say, "St. Paul's had no relation with any of their institutions."

The first church dedicated to St. Paul in London was built in the time of Bishop Mellitus, A.D. 603, by Ethelbert, king of Kent, on the former site probably of a heathen temple, dedicated to Diana. During the reign of William the Conqueror, this building was entirely destroyed by fire, though it had been doubted that this church thus annihilated was the *original* Saxon structure. Measures, however, were taken to erect a new cathedral on the ashes of the ancient one, and Bishop Maurice, in 1083, began, Dugdale told them, the foundations of a most magnificent pile, namely, all the body of the church with the north and south cross aisles. So stately and beautiful was it that it was worthily numbered among the most famous buildings, the vaults or undercrofts being of such extent, and the upper structure so large that it was sufficient to contain a vast number of people. The succeeding prelate to Bishop Maurice, Richard de Belmeis, zealously continued the work to such an extent that he bestowed the whole revenue of the bishopric upon it, supporting himself and family by other means, though he effected little towards the building excepting finishing the walls. After this they got no information as to the history of this "eminent structure" except that it had got hurt by a dreadful fire in 1135. Richard, who was made Bishop of London in 1189, however, did a good deal to the cathedral. There was little further known about the progress of the works till 1221, when a steeple was added to the building, the choir being completed in 1240. The stalls were probably commenced soon after 1236. About 1255 the roof of the old structure was made new or substantially repaired, it being then in a ruinous condition. In 1256 the cathedral was enlarged by being lengthened; and in 1283 the main brunt of the work was over, which year the worshipper beheld the sacred pictures in their tabernacles, the images, and the exquisite shrines, adorned with gold, silver, and precious stones.

Every nook and corner of the cathedral possessed its interest, and the feeling of desolation experienced in wide unfurnished naves was conspicuously absent. In 1332 the chapter-house was built, the old chapter-house then being "ruined and deformed." The first mention of the bell-tower, which stood at the east-end of the churchyard, was in Henry I.'s reign; but it appeared to have existed long before that, though no date was given. It was crowned by a large spire of timber, covered with lead, and possessed four immense bells. These detached towers must have contributed much to the picturesque effect of the churchyard, independent of the great advantage that if the bells were badly hung or ill-used, the fabric of the cathedral adjoining remained quite uninjured. The celebrated Paul's-cross stood on the north side of the choir, towards the east end, and it was there that sermons were delivered. Old St. Paul's was anciently surrounded by a wall which had six gatehouses. In 1444 the spire, of timber covered with lead, was struck by lightning, and much injured by the consequent fire. In the reign of Edward VI. the images were pulled down, according to an edict of the council, and in the spoliation of the immense treasures of St. Paul's they found that some of the altar-cloths found their way to Spain, where the cathedrals still decked themselves in the spoils of the ancient cathedral. In 1561, through the negligence of a plumber, the spire was totally destroyed by fire, as well as the timber-roofs of the cathedral; but in 1566 the latter were perfectly restored and covered with lead. In 1633, Inigo Jones built his celebrated Italian portico, this being intended as the first instalment of an entirely new church. In 1642 St. Paul's-cross was ruthlessly pulled down, and the cathedral was allowed to fall into neglect and sacrilege, and gross irreverence took place, and it remained in this ruinous condition until the restoration. In 1663 the repairs were commenced in good earnest, and appeared to have continued till the Great Fire, which most effectually put a stop to any further progress in the undertaking.

With regard to the characteristic features of the cathedral—it was of immense length, had a nave of twelve bays, a choir of twelve bays (unique as regarded English cathedrals), also a singularly stately transept of great projection, and flanked by eastern and western aisles. The plan, too, was peculiarly symmetrical and unbroken. The cloisters were of moderate dimensions. Another great characteristic was that of the light, bold, flying buttresses at the base of the tower, contributing much to the effect, though clearly put there for constructional purposes. Although the last end was square, the immense rose-windows, with the seven lights immediately under, were rather a French than an English feature, and there was somewhat the same feeling in the long narrowed tower windows. The windows of the nave aisles, for Norman examples, appeared unusually large. The sacristy did not appear to have formed an external structural feature in the building, and in vain they looked for a trace of it. With regard to the undercroft, there appeared to be no absolute evidence as to its use; it might have served as a safe place of deposit for documents, registries, &c.; but, according to Mr. Walcott, it probably served as a vestibule. The remains of the Norman transept seemed to have lasted till Hollar's time, and to have been re-used in the work of the early English period; and again in the westernmost bays of the choir behind the stalls, there were ancient remains of the old Norman architecture, with its massive piers. The vaulting in Hollar's plates was obviously of wood, and it was the opinion of some, he believed, that this was the original Mediæval intention; but if so, why, he would ask, were the flying buttresses built? The original design of the north transept was so completely transformed and masked by Italian casing that nothing of the ancient design appeared when Hollar lived. There was no evidence that the original altar-screen was particularly lofty or elaborate, except that it was mentioned in 1309. How Dean Milman could have been so utterly prejudiced against Old St. Paul's, as to speak of it as "a gloomy ponderous pile," and that, "except its vast size, it had nothing to distinguish it," he could not comprehend. By a glance at Hollar's plates they could see how fine the cathedral must have been, notwithstanding its mutilated condition. He thought that the reason it looked so grand and majestic was on account of the somewhat unusual prominence and projection of the transepts. There was every preparation for something large, the interest concentrated at the crossing; the transepts, instead of having only eastern aisles, as were common, had western ones also.

In conclusion, he said, let them bid a sorrowful farewell to the image of that glorious edifice, Old St. Paul's, and look cheerfully forward to a coming time when the genius of the architects of Old England might reproduce churches thoroughly adapted to their present requirements, while still preserving hallowed traditions of the Middle Ages.

Mr. Birch, in proposing a vote of thanks, said, with regard to the rose-windows, they were one of the marvels of the age, and Chaucer, in "The Miller's Tale," refers to them. He (Mr. Birch) differed from Hollar with regard to the dimensions, Hollar being, he thought, decidedly incorrect. Speaking of the existence of the western towers, he was of opinion that they must have existed, one of the towers being used as a prison, the Lollards having been known to be confined in one of them.

Mr. S. Flint Clarkson, in seconding the vote of thanks, did not agree with Mr. Ferrey as to the length of the cathedral, and thought the subject a debateable one. With regard to the flying buttresses, Mr. Longman, in his book, assumed that they must have existed; and in the engraving of the Cathedral belonging to the Society of Antiquaries, flying buttresses were there shown.

EASTLAKE'S LOST PICTURE.

LAST week Monsignor Capel lectured in St. George's Hall, Liverpool, taking for subject "The Painter's Mind on Canvas." Before a painter could be worthy of the name, he said, he must have a power of conceiving. Conception sprang from two elements—man's mind and his anterior knowledge. The whole power of the mind and the comparison of mind with mind depended on the intensity of the power of such mind, and secondly, upon the extent of the knowledge itself. From that he advanced to the further point—that any painter rendering the thought he had conceived must necessarily put upon the canvas part of his own mind. He placed there that which witnessed to the sense that he had, to his delicacy of perception, to his power of arranging. It was he that had the most mind, and the greatest delicacy in that mind, and the greatest knowledge of detail with regard to things past, and of science, that must necessarily be the greater painter. This might seem very elementary, and yet on it turned the whole theory of art. In illustration of this idea he adduced some works of Murillo (who, being bred amid scenes of poverty, could never paint a picture without introducing patched clothes and dogs, and so on) and others, and in referring to the "Last Supper," by Leonardo da Vinci, he attributed the contradictions and errors there exhibited, in respect of the customs and habits of the Easterns, to the painter's ignorance. Leonardo da Vinci's experience at that time was limited to his own surroundings, and when he had to render that thought, "There is one among you who will betray me," he simply portrayed his own thought. The conception once formed in the mind of the painter, the second thing was, "what was to be the motive to guide and direct him in giving light to his conception," for clearly this might alter in every way the aspect of the whole painting. One might paint for money, another from a pure love of the art, another to represent some particular leading thought. In judging of a picture they might be certain that, until they had realised the painter's thought or motive, it was impossible for them to enjoy the real pleasure of such picture. Having conceived, and having a motive for his painting, the painter next came to the power of invention—the invention of that which was to express his conception and realise his motive. Invention necessitated not only a knowledge of the fact to be embodied and the details of that fact, but it displayed a special power to induce something which would at once give expression to the painter's mind. The fourth necessary element was unity. While in nature there was marvellous variety, yet who could fail to be struck with the harmony that united all together? Turning for a moment to modern productions the lecturer said there were two great pictures now before the public mind. One of them was in Liverpool, and he might ask them did they know of any great work of any great master hidden away in any hole or corner of their town? They might not be able to answer, but it was so. Lady Eastlake, in the memoirs of Sir Charles, stated that one of his greatest productions, "Brutus haranguing the People on the Death of Lucretia," was either lost or destroyed. Now it so happened that Liverpool was the possessor of it, and that its destruction did not take place. It was in the possession of Mr. Eberle, Royal Hotel, and after the last lecture he (Monsignor Capel) gave in that hall he was invited to go and examine that splendid work. In that painting one great thing that struck him was that, though being an early

production, and while it manifested a little want of vigour in some of its features, yet, throughout, it breathed that power of conception, that unity and harmony in its various parts, which spoke of it at once as one of the greatest productions that England had yet seen from one of its own sons. He expressed a strong hope that this picture would not be allowed to leave Liverpool.

ENGLISH ACADEMICIANS AND SCOTCH ART.

In the address of Sir George Harvey, president of the Royal Scottish Academy, to the pupils, associates, and members, last week, the speaker said, it had been remarked that nothing was denied to well-directed industry; yet, in addition to the indispensable requirement of personal exertion, it was of first importance to the student to discover in what direction the bent of his mind was likely to find surest exercise, so that his inclination might go hand in hand with his work. It was sometimes painful to contemplate the result of incompetent and uncongenial effort upon subjects chosen from ideal poetry, or the romance of history, and to contrast with this the same amount of skill bestowed on an operation of common nature or still life. In the former case might not unfrequently be seen the result of a too ambitious choice, inducing only a smile on the countenance of the intelligent spectator, while in the less ambitious but more suitably chosen subject, there might be a display of very great art, yielding simple but real pleasure. It was surely a truer expression of what was sought to be accomplished, thus to give grace, and dignity, and beauty, to what might be considered in itself comparatively humble, than by incompetent treatment to bring to a low level that which was poetically high or historically grand. In saying this he would seek to keep in mind the distinction due to works of the higher class of mental conception. Such works could not be too highly valued; but seeing that it was given to few to excel in this department, surely if on trial it were found that the wings furnished by nature were not fitted to bear the student upward to those higher regions, prudence suggested the wisdom of contenting himself with a flight more suited to the powers of his pinions.

When in London, at the opening of the Royal Academy last May, more than one of the leading Academicians expressed to him (the president of the R.S.A.) the great pleasure they had in viewing the pictures produced by Scotch painters, from the general excellence of the work which they showed. One of these gentlemen asked him how they managed to produce pictures with this peculiar qualification, and his reply was,—by simply teaching students in the first place to draw well, then to colour from the life, and after that allowing every one to follow his own course in the development and clothing of his ideas. And thus he felt sure that some experience was the best, if not the only, way by which a youth might show of what he was capable by the direction of the embodiment of original thought,—a suggestion at times from those who, by their acknowledged pre-eminence, were entitled to speak with authority being all the assistance the student could desire while proceeding with his work. By this means a great variety of results might be expected from the action of individual minds, which would not be the case were students, instead of looking at nature each from his own point of view, to set about copying pictures in search of a style. Any success obtained by such means must prove to be only secondary in its value, and tended to delude with the belief that progress was being made in the power of producing, whilst all the time the student was only a copyist, and entitled to no more credit than a person of literary pursuits would be in getting Shakspeare or Milton by heart, and imagining he was acquiring the art of a poet. However much delight one might have in contemplating the outcome of great minds, still, as a rule, a man's chance of occupying a place among the efficient would be found not in being elevated on the shoulders of other men, however tall, but in pressing to the front by every legitimate means, so as to contemplate nature each for himself, and so fill the mind with the ever-varying aspects of beauty and grandeur, which she bountifully spread out for the enjoyment of all who took pleasure therein. In support of these remarks, it was only necessary that he should point to the men who had won for themselves a name, and it would be found that they were one and all characterised by the distinction that in the treatment of all they produced they had sought to make whatever they touched altogether their own.

DRYING CHAMBERS: A QUESTION ANSWERED.

Sir,—A correspondent in your impression of the 29th of November inquires what size and height of chimney will produce a draught of air equal to two fans which he describes. His question has not been answered, probably for two reasons; first, the intrinsic difficulty of the question; and, secondly, because the writer has omitted some most important points necessary to be known before a correct answer can be given. I will, however, endeavour to reply to the question so far as the data given will permit.

The inquirer has omitted to state,—first, the area of the discharge-pipe of the fans; secondly, the temperature of the air after passing through the heated cylinders; and, thirdly, the thickness and density of the two layers of wool through which the air is driven by the fans;—all which are most important to the solution of the question.

I understand that there are *two* cylinders, each with a separate fan. If the fans are of a good construction,—which, however, appears to be very doubtful from what is afterwards stated about them,—the vanes being 4 ft. 11 in. in diameter, and making 800 revolutions per minute, the air ought to be projected or driven at the rate of 150 ft. per second. This calculation is based on the assumption that the velocity of the discharge is equal to three-fourths of the actual velocity of the tips of the vanes. If, then, the *area* of the discharge-pipe is $2\frac{1}{4}$ square feet, or 18 in. by 18 in. (your correspondent only says it is 18 in. wide), the actual quantity of air discharged by each fan will be 337 cubic feet per second, or 674 cubic feet for the two fans. This quantity is irrespective of temperature, which for this calculation is of but little consequence; but in what follows the temperature is an all-important point.

Mathematicians have differed most materially in their calculations of the velocity of chimney draughts. The method of Montgolfier, however, is at once the most simple and most accurate. The best information on this subject and on the use of fans, may be found in Dr. Ure's paper, Philosophical Transactions of the Royal Society for 1836; Péclet, "Traité de la Chaleur," third edition; and Hood's "Practical Treatise on Warming Buildings and on Ventilation," fourth edition, London, 1869.

Your correspondent omits to say whether he proposes his chimney to be merely a flue heated by the hot air, after passing through the drying-chamber; or whether he proposes it to be a real chimney with a large furnace-fire at the bottom, in the same way as was used some years ago for ventilating the Houses of Parliament. I will endeavour to show him that neither plan will answer his purpose.

If the temperature of the air, after passing through the heated cylinders be 100° or 50° above the average external temperature, then as air expands ·00208 of its bulk for each degree of Fahrenheit, in a chimney 100 ft. high, we shall have this calculation,—

$$\cdot00208 \times 50 \times 100 \text{ ft.} = 10{\cdot}4 \text{ ft.}$$

as the expansion of air at 100° Fahrenheit; or, in other words, 110·4 ft. of heated air will balance 100 ft. of the colder external air. The velocity of discharge will then be equal to that which a falling body acquires by falling through a height of 10·4 ft. This will be equal to "eight times the square root of the difference in height of the two columns of air"; and in this case, as here assumed, for a flue or chimney 100 ft. high, and a temperature of 100° Fahrenheit, the velocity of discharge will be 26 ft. per second, and it will require a chimney or flue 100 ft. high, and rather more than 5 *ft. square* at the top, to discharge the same quantity of air as the fans. If the height of the chimney be equal to the great chimney of St. Rollox near Glasgow, which is 422 ft. high, the velocity of discharge will be 53 ft. per second, and the opening at the top of the chimney would require to be rather more than $3\frac{1}{4}$ ft. square at the top to discharge the same quantity of air as the fans.

But suppose the chimney is heated by a large furnace-fire at the bottom. The temperature will be about 600° Fahrenheit at bottom, and about 300° at the top, or an average of 450° throughout. In this case the velocity of discharge will be 77 ft. per second, and it will require a chimney 100 ft. high, with an aperture at the top of 3 ft. nearly to discharge the 674 cubic feet of air at present discharged through the fans.

It is not the least likely these methods can be used. The discharge of large quantities of air by chimney-draught is all but impracticable. Dr. Ure has estimated the relative cost of discharging air by fan and by chimney-draught as 1 to 38. But it is very questionable whether the weak draught from a chimney could be made to draw the air through two thicknesses of wool, in the way your correspondent requires. Nothing but experiment can determine this; and if the layers of wool are at all considerable, it is probable no effect whatever would be produced by the chimney-draught.

The pressure by means of the fan can be carried to almost any extent, if the fan be properly constructed. The eight blades, or vanes, described by your correspondent are greatly too many, in a fan of 5 ft. diameter. The vanes, also, ought to be eccentric, and not concentric, with the case. When fans with concentric vanes, and too many in number, are used at high velocities, the result is that the air is simply carried round and round in the case, and little of it is discharged through the aperture, and the cost of revolving the fan is also very greatly increased. A fan with three, or at most five, vanes and an eccentric case will discharge double or treble the volume of air than one with *eight* vanes and a concentric case can possibly do. Nothing whatever can be gained by a large number of vanes to a fan at high velocities. The air cannot escape fast enough, and the vanes merely revolve in a condensed atmosphere, causing great loss of power and greatly-diminished results. F. R. S.

CHESHIRE HOUSES.

Sir,—In Britton's "Beauties of England and Wales," vol. ii., p. 256, it is stated that "Brereton Hall was the seat of the respectable family of Brereton, one of whom, Sir William Brereton, Kt, built a magnificent brick edifice here about the middle of the sixteenth century." It is engraved in this volume, p. 256, and in Ormerod's "History of Cheshire," vol. iii. (1819). The views are taken from the south, and include the tower of the adjacent church. The building has been in some measure modernised, but the doorway on the south side, flanked by a high tower on each side,—four-sided and ancient,—and several of the rooms, are of the olden time. Two miles south of Stockport is Bramhall, the ancient seat of the Bramhales, and subsequently of the Davenports. Geoffry de Bramhale, the last member of that ancient family, lived in the reign of Edward III. In Nash's "Mansions of the Olden Time," are two engravings of this old mansion, one of which shows it as seen from the north. The other view shows one of the large windows seen from the south. In vol. iii. of Ormerod's work are two views of this mansion, one of which shows it as it was seen before the removal of the north side of the quadrangle. The other view is taken from the courtyard, looking southward, and includes the west wing. The view of this old edifice, as I saw it from the south, is picturesque and pleasing. It is built on a hill, and is painted in black and white colours. The road here, and at Brereton, permits a closer inspection of the exterior of these houses. At Brereton, I saw an ancient roadside inn; and in Congleton town, some ancient houses, including the Swan Inn, which should be inspected by architects. Ormerod's work, vol. iii., contains engravings, also, of old Moreton Hall, and of Astbury Church (see the *Builder*, No. 1603), taken respectively from the south and west. The former view shows the moat, the bridge, and long gallery, at the top of the south wing of the house. Chr. Cooke.

OLD WORK AT WHITEHALL.

Sir,—In this "age of progress," which I presume is a term intended to include what, to my mind, is one of its most important features, namely, the destruction of our old buildings in London, it is well to note, as far as we can, what becomes of the artistic remains of old London. In the recent sale of buildings at Whitehall much that is valuable will no doubt be destroyed. I am led to understand that the carved ceiling work of Inigo Jones has found a purchaser (who will, I should think, appreciate its value) in Mr. Lord, the decorator. It is to be hoped a marked catalogue will be sent to the British Museum, so that lovers of Old London may in future years know where to look for these remains.—Chauvard.

DUBLIN WATER SUPPLY.

THE state of things as described below is not such as should exist in any first-class waterworks like those of Dublin.

Average volume of water sent into the city daily, 13,714,198 gallons; legitimately used, about 6,958,256 gallons; volume wasted, about 6,755,942 gallons.

This waste of nearly cent. per cent. is, of course, caused by leaking main-pipes and sluice-valves, defective service-pipes and service-taps, and house-taps; or stand-pipes left open, broken, or wilfully or carelessly tampered with.

Waterworks engineers do not always pay sufficient attention to inspection and supervision,—in these, however, consist the true economy of water supply. Inspection and repairs should be ample and unceasing. Some persons foolishly think that a leaking tap flushes the drains, and many persons prop open water-closet valves for a similar purpose; these are mischievous ideas,—the dribble of a leaking tap only wets the drain, but does not in any degree flush it.

Dublin is not alone in wasting water. London, Glasgow, and Liverpool waste nearly in a similar proportion, and many smaller towns follow suit. We have no hesitation in saying that the fault is not so much in the consumers of water as it is in the management of the local authorities, and the power for supervision of the local engineers. The mains, sluice-valves, and hydrants should be in perfect order; and not, as on many parts of the London West End supply, be permitted to leak for months continuously. In Dublin it is merely wasting water as the supply flows in; but in London it is wasting steam-engine power, and this means wasting coals.

As in London, so in Dublin,—water is wasted whilst the poor suffer a water-famine. Should this be?

THE NEW MUSIC-HALL FOR SHEFFIELD.

THE opening of this new Music-hall is to take place on the 15th instant. The architecture of the building is Italian in character, treated very simply. There is consequently an almost entire absence of external decoration; but the otherwise dreary monotony of the brick-work is broken up by a number of grey granite pillars and by carved stone headings to the windows. The principal entrances are in Barker-pool. It is intended to cover the whole of the pavement in front and on either side of these entrances with a roof of glass. There is a waiting-room on each side of the hall, and there are two saloons which may be used for refreshments. From the entrance-hall, broad flights of steps lead up to the principal part of the building,—the great hall. At the top of the staircase leading to the floor of the hall there are two spacious corridors, one extending along the whole front of the building and the other running down the western side. In these there are four or five doors, so that there are plenty of means of ingress and egress. The balcony-stalls are approached by a separate staircase, and corridor, and the balcony or gallery at the back has also a means of entrance of its own.

Like the exterior of the building, the interior of the large hall is Italian in character. In consequence of the immense size of the organ, and the depth of the gallery at the other end, the length of the hall is deceptive. The length is 125 ft., the width 60 ft., and the height from floor to ceiling 50 ft. The hall will very comfortably accommodate 2,200 persons, and this number could be increased to 2,500 at a meeting, if the seats in the body of the hall were removed. The ceiling was originally intended to be of "coved" wood in the form of a segment, but this intention was abandoned upon the suggestion of M. Cavaille-Coll, the builder of the organ, probably because he thought such a roof would somewhat militate against the effects of his instrument. The main portion of the roof from end to end is now flat, with a division into four panels. The sides of the roof are sloping. The walls are broken up by a number of pilasters, and by recesses at the back of the balcony-stalls. The pilasters have an enriched string at the base, and capitols at the top. These support an entablature, which runs round the entire hall. The panels in the ceiling are decorated. There are seven windows on either side, each being 13½ ft. high, by 6 ft. wide. At night, the hall is lighted by four sunlights in the ceiling, one in each of the four panels. They are not sunlights of the character common in some churches, chapels, and public buildings, but are covered with a kind of double net-work of glass. The hall is heated by hot water, the principle adopted being what is known as Perkins' high-pressure system. The architects have placed a number of wood pipes above the ceiling, into which the vitiated air is conveyed by means of ornamental gratings. It then passes on to a ventilating shaft in a tower, to which it is drawn by a coil of heated pipes, and will thus pass, it is hoped, into the open air.

The site and the building have entailed a cost of 20,000*l.*—perhaps a little more than that sum—and the organ 5,000*l.* more. But by the time everything is completed, it will very likely be found that the total expenditure is not far short of 26,000*l.* or 27,000*l.* The architects are Messrs. Flockton & Abbott; and the contractors Messrs. Longdon & Son, masons and bricklayers; Messrs. Badger & Holmes, carpenters and joiners; Messrs. Harrison & Chadwick, and Mr. Staniforth, plasterers; and Mr. Bassett, plumber and painter.

THE PROPOSED NEW STREET FROM KING WILLIAM STREET TO FENCHURCH STREET: EASTERN EXTENSION RAILWAY.

FROM the proceedings of the Metropolitan Board of Works at their meeting last week, it may be taken for granted that they will support the proposal for constructing a new street from King William-street to Fenchurch-street, in connexion with the Inner Circle Railway from the Mansion House Station to Aldgate and Moorgate-street, and also the proposed branch line from Whitechapel to Bow, and that they are also prepared to contribute towards the cost of the new street. The Works Committee brought up a report to the effect that having considered the two railway schemes—the one for completing the inner circle, and the other for also extending the line to Bow, they had come to the conclusion that the Inner Circle Completion and Eastern Extension scheme was the best, because, in addition to completing the inner circle, it also connected the extreme East of London with the West, and formed junctions with the East London, Great Eastern, and North-London Railways, which the alternative plan did not. The committee recommended that it be referred back to them to consider what amount of contribution should be made by the Board towards the construction of the proposed new street in connexion with the railway. The recommendation was unanimously adopted, and it may therefore be assumed that the Metropolitan Board will support the Inner Circle Completion and Eastern Extension scheme when it comes before Parliament next session, and that the scheme for the completion of the inner circle only will be abandoned.

ENLARGEMENT OF THE LAMBETH CEMETERY.

THE Lambeth burial board and the vestry have jointly agreed to purchase a considerable area of ground adjoining the cemetery at Tooting, for the purpose of enlarging the cemetery there belonging to Lambeth. A discussion which took place upon the subject last week, when the question of purchasing the land was under consideration, revealed the fact that, in consequence of the constant expansion of building land in the neighbourhood it is rapidly increasing in value, the purchase which has just been determined upon showing that, within the last fifteen years, it has arisen from 300*l.* to 500*l.* per acre, or an increase within that period of upwards of 65 per cent. The land which it has been agreed to purchase for the purpose of extending the cemetery is 11 acres, 1 rood, and 33 perches, immediately adjoining the cemetery in Garratt-lane, Tooting, which Mr. Joseph Martin, the owner, has offered to sell for 5,728*l.*, being at the rate of 500*l.* per acre; whereas the 30 acres of land covered by the present cemetery was purchased fifteen years since for 9,000*l.*, or 300*l.* per acre. The burial board, in recommending the purchase, observe that the population of Lambeth exceeds 210,000 persons, and that the ground now occupied for burials in the consecrated portion of the cemetery will only provide for interments for two years longer, and in the unconsecrated portion for ten years. They add that the metropolis is extending so rapidly that the land in the suburbs is annually becoming available for building purposes, and when developed, not only enhances the value of the uncovered ground, but will certainly shut out the possibility of obtaining any addition to the cemetery, unless the present offer is accepted, by which provision will be made for the burial of the dead for at least the next twenty years. After the purchase, the expenditure in the preparation of the ground for interments by the erection of walls, fences, draining, and road-making, is estimated at 3,272*l.*, making the total cost of the enlarged cemetery, 9,000*l.* Mr. Taylor, senior, in advising the vestry to confirm the recommendation of the burial board, said that since the subject had been mooted, there had been several parties bidding for the land which they (the vestry) then had the opportunity of acquiring, and he was afraid that if any delay took place they would lose the chance of getting the ground, and that the parish would have to find accommodation elsewhere at a fabulous price. He added that, whilst they could obtain the land for 500*l.* per acre, the parish of Camberwell had just given 700*l.* per acre for a similar purpose. The purchase of the land for the enlargement of the cemetery, subject to the approval of the Lords of the Treasury, was unanimously agreed upon after considerable discussion.

THE CLEVELAND SLAG-WORKING COMPANY.

As mentioned by us some time ago, a "limited" company has been formed at Middlesbrough-on-Tees, for the purpose of utilising blast-furnace slag, by processes which have lately been submitted to the test of practical experiment. The chief objects of the company are, the manufacture of bricks, mortar, sand, cement, and concrete, to which purposes slag, reduced to sand as it runs from the furnace, and afterwards specially prepared, has been successfully applied at Middlesbrough and elsewhere. Numerous samples of the various products,—bricks, mortar, sand, concrete,—have been submitted for approval to practical men; and from the abundance of material and the small amount of labour required, it is calculated that the company will be able to supply building materials at a cheap rate, and yet realise a substantial profit. Land has been purchased for the erection of an extensive factory, near the new dock-entrance, convenient alike for shipping, railway, and carting, and the patents of Mr. Charles Wood, of Middlesbrough, and Captain Bodmer, of London, have been secured.

PURCHASE OF FURTHER NEW BOARD SCHOOL SITES.

SOME short time before the late London School Board retired from office, they decided, under the powers of the Education Act, to purchase sites for the erection of fifty-four new schools in different parts of the metropolis, in addition to the schools, about ninety in number, which have already been completed and now in course of erection. The necessary notices for the compulsory acquirement of the land necessary for the purpose have been given, and a few particulars as to its extent will at the present moment be interesting. The aggregate quantity of land included in the proposed purchase is 669,919 square feet, being no less in the whole than 15½ acres. The intended additional new schools are spread over the several metropolitan divisions as follow:—In the Chelsea division, four new schools are to be built, two being in Kensington, and one each in Fulham and Hammersmith, the land required for which is 75,786 square feet. In the Finsbury division, it is proposed to build no less than ten new schools, in addition to those now in course of erection. Of this number, one is in St. Giles-in-the-Fields; two in St. Andrew's, Holborn; three in Clerkenwell; three in Islington; and one in St. Luke's, the land for which covers an area of 112,980 square feet. In the Hackney division, the additional number to be built is eight, for which 97,175 square feet of land will be required, and of these three are in Hackney parish, two in Bethnal-green, and three in Shoreditch. The number to be erected in the Marylebone division is five, viz., three in St. Pancras, and two in St. Marylebone, the sites covering 38,502 square feet. The Tower Hamlets division is to have four additional schools, two of which will be in Mile-end Old-town, and two in Bromley, requiring 57,497 square feet. Westminster is to have two new schools, one in St.

Anne's, Soho, and one in St. John's, Westminster, the land necessary being 10,742 square feet. Thus the number of additional new schools which it is proposed to erect within the Middlesex portion of the London School Board area is thirty-three, for which 392,682 square feet, or upwards of 9 acres, of land will be required. On the Surrey side, eighteen new schools are to be erected, of which eleven are in the Lambeth division, five being in Lambeth parish, three in Camberwell, and one each in Newington, Battersea, and Wandsworth, and the requisite land for these schools is 170,199 square feet. The Southwark division is to have seven new schools, three of which are in Bermondsey, two in St. Saviour's, and one each in St. John's, Horselydown, and Rotherhithe, and the land required is 74,440 square feet. The land to be purchased for the schools on the Surrey side of the river is 244,639 square feet, or nearly 6 acres. The Greenwich division, in Kent, is to have three new schools, two in Deptford, and one in Greenwich, for which 30,598 square feet, or upwards of three-quarters of an acre of land, will have to be purchased.

HIGH DEATH-RATE IN NEWCASTLE.

NORTHERN ARCHITECTURAL ASSOCIATION.

The ordinary meeting in connexion with the Northern Architectural Association was held in the Old Castle, Newcastle, on the 9th inst. Mr. Matthew Thompson, President of the Association, occupied the chair. The election of officers for the ensuing year was as follows:—Mr. Thompson was re-elected president; Mr. F. Charlton, vice-president; Mr. W. H. Dunn, treasurer; Mr. Oliver, secretary; and Mr. Hodge, honorary solicitor. A paper on "The Excessive Death-Rate in Newcastle," was read by Mr. Oliver. In the course of it he said:—One of the most remarkable statements, indeed, is—and it is, perhaps, by such a statement that the true clue may be formed—that what ought to be hardy, healthy, recuperative-like working men, when admitted into the infirmary owing to accidents, are incapable of bearing the shock and consequent reaction of an operation, notwithstanding the alleviative and scientific modes resorted to. There is something almost appalling in such a statement. It seems to strike at the root and foundation of healthy manhood. Have we begun to decay? Are we retrogressing? Is it possible that the tide of England's greatness in her sons has begun to ebb before her own most ample resources are half expended? I think it is a fair and logical inference to draw from what has been stated that at least one cause lies within ourselves. I do not say to what extent, nor do I say to what, specifically, this may be attributable; whether to causes over which we have control, or whether to causes over which we have no control. But we have traced out one fact, and that is, that the general standard of health has been reduced, and as night follows day, so it follows that in the reduction of our normal life-force we lose at the same time the power to resist the influences and encroachments of disease. Doubtless, our ignorance of some of the higher, and our negligence in regard to some of what we may think the lower laws of nature, as demonstrated by science, may have something to do with the matter. We must not forget that nature is inexorable, and that she invariably avenges herself. She supposes us to know a great deal more than we at present do know, and ever and anon she reads us a lesson such as the present, for the world's future benefit. The reader said he did not care to enter into minute details, or at present to ascertain merely local causes. His object was rather to show that their chimney-shafts ought to be carried so high as to be beyond the reach of harm; that their smoke ought to be much more effectually consumed; that their foul gases ought to be burned or utilised, which, it is known, can be done; that their lanes and narrow chares ought to be deeply drained, filled up with dry materials, and solidly laid with Val de Travers, or a similar non-absorbent asphalte; and, above and beyond all that, they should at once have a great comprehensive system of sewerage, such as other towns possess, with an intercepting trunk sewer, irrespective of mere first cost. These, together with a better water supply, and the carrying out of a proper sanitary system in the older portions of the town, would, he firmly believed, if immediately and systematically and continuously carried out, despite the natural disadvantages, make Newcastle a comparatively healthy town.

WATER IN LEADEN PIPES.

In a paper addressed to the Academy of Sciences, Dr. Fordos showed that bottles rinsed with shot retained leaden particles in their inner surface. In a second paper just sent in, according to *Galignani*, the same gentleman described some further experiments of his. Distilled water never failed being more active than other waters taken from the Seine and Ourcq. The solutions obtained by mechanical means were analysed, and those derived from the river waters were found to contain two carbonates, one of lead and the other of lime. As for any lead in a metallic state, none whatever was discovered in the water after this analysis. The question now became restricted to the effect produced on water in leaden pipes. Dr. Fordos found some old ones in the lumber-rooms of the Hospital de la Charité, and, upon examination, discovered them to be inwardly coated with a deposit of carbonate of lime, strongly impregnated with sulphate of lead. Hence there remains no doubt as to the fact that river water attacks leaden pipes, but it also deposits what it takes, so that the coating above alluded to plays the part of a preservative varnish. When all the leaden surface is covered with it, the water will not only be unable to take up any more metal, but will deposit all its calcerous particles, so that it must arrive at its destination in a perfectly pure state. It would therefore appear that old pipes are safer than new. In the *Comptes Rendus* for November 17, is a note by M. Chevreul on the "Action of Pure Water upon Various Metals," which indicates several points demanding careful consideration in sanitary arrangements.

A TRADE UNION OF CAPITALISTS.

A formidable national federation of associations of employers of labour has been established at a meeting held in London, and its influence is very likely to be felt, sooner or later, in a very marked manner upon the disputes between capital and labour. In general terms, this society may be described as a combination of employers, established to counteract the influence of trade-unions. It is, in fact, an amalgamation of employers' associations, united for the common object of defending capital against the unjust demands of labour, whether they are made through the channel of legislation in Parliament, or whether they are made through the medium of strikes. The promoters profess that their organisation shall be purely defensive, and hence they decline to "emulate the trade-unions in expenditure." They propose to collect and disseminate throughout the country information bearing upon industrial questions, for which purpose it is in contemplation to establish a weekly or fortnightly newspaper. The federation will also watch over every legislative proposal affecting employers and employed, with a view to influencing the same; it will encourage the independence of non-unionists, and endeavour "to give to education, intelligence, and capital their fair share of influence in the constituencies." It would, therefore, seem from the rules and printed documents of the federation that the employers have determined to accept the gauntlet of the working-men unionists, and to fight them—if that unhappy necessity should arise—with their own weapons. It would have been almost impossible to have secured better names than appear upon the list of the council. The majority belong to Lancashire and Yorkshire; but it must not be forgotten that it is in those two counties that we find the largest employers in the kingdom. The president of the association is Mr. J. Robinson, of the firm of Messrs. Sharp, Stewart, & Co., Manchester. Among the other members of the council we observe such names as Mr. B. Hannen, of the firm of Holland & Hannen, London; Mr. J. Crossley, of Halifax; Mr. J. Laird, of Birkenhead; Sir Titus Salt, of Saltaire; Mr. E. Akroyd, M.P.; Mr. Field, of the firm of Maudsl ay, Son, & Field London; Mr. Trollope, Westminster; Mr. Stanley G. Bird, of London. Among the associations which have become affiliated to the federation are the Master Cotton Spinners' and Manufacturers' Association of Preston, of Blackburn, and of Burnley; the Engineers' Association of Belfast; the Master Cotton Spinners' Associations of Manchester and Salford, and of Bolton; the Master Builders' Associations of London, of Birmingham, of Manchester, and of West Yorkshire; the Iron Trades Employers' Associations of Barrow-in-Furness, Barnsley, Bradford, Bristol, Halifax, Huddersfield, Keighley, Leeds, Leicester, Lincoln, Liverpool and Birkenhead, London, Manchester, Nottingham, and Wakefield. These names will indicate to our readers, in some degree, the success which has attended the earlier stages of this movement, and the enormous influence that surrounds its *début*. The workmen employed by the masters belonging to the association are estimated to number nearly 2,000,000.

The Federation have inaugurated their advent by sending to the Home Secretary, Mr. Lowe, M.P., a deputation, who placed before him and the Government their views upon the statements made, on November 5th, by a deputation of trade-unionists, and also upon the questions involved in the proposed repeal of the Criminal Law Amendment Act, the amendment of the Law of Master and Servant, and the amendment of the Law of Conspiracy.

Mr. Lowe, in reply, said that the subject had engaged his attention for a long time. He would only then remark that he wished whatever was done should be in strict justice to all parties. He had offered no opinion as to the justice of the claims made by the working men's deputations, when he received them on November 5th, nor would he offer any opinion on the case now submitted to him. He thanked them for the information given, and for the clearness with which it had been imparted; and he promised to give to the statements and the memorial his best attention.

ARCHITECTURAL SOCIETY OF THE ARCHDEACONRY OF NORTHAMPTON.

The annual meeting of this Society was held at the Society's room, Gold-street, Northampton, on the 8th inst.; Mr. E. Thornton in the chair. The report was read by the hon. sec., and unanimously adopted. The opening of the report was as follows:—

The Committee of the Architectural Society of this Archdeaconry have had fewer plans for church building and church restoration brought before them during the past year than during any similar period within the last decade. This arises in part from the circumstance noted last year, that every fresh restoration leaves less to restore; and now, that happily a neglected church is the rare exception, instead of, as in the remembrance of most men, a nearly universal rule, the reports which your committee have to give of this portion of their labours must be often meagre. When, however, it is stated that, in the Nene Valley alone, three such churches as Earl's Barton, Raunds, and Rushden, second to none from their many points of archæological interest, or of architectural beauty, churches in one or more of which for many a year decay has been permitted to creep on unchecked, are all now in the course of extension and well-advised restoration, on which the advice of your committee has been asked, they think that they have not been idle. But in many other places, similar works have been in progress, and others of the same kind are still projected. In some of these your committee have been called on to lend a helping hand; in others, when their advice has not been asked, the true principles of restoration have not been ignored, and the influence of architectural associations has been indirectly felt; in others they are sorry to report that so-called restoration is effected by setting aside an ancient example of undoubted beauty, and substituting an inferior design in a worse material.

SANITARY MATTERS.

The Outbreak of Enteric Fever at Whitton.—An outbreak of enteric fever in the village of Whitton, which occupied the attention of the Board of Guardians has also been the subject of a coroner's inquiry. The disease is confined to a court, consisting of ten cottages on the town side of the Maypole Inn, the property of Mr. Wm. Lovely. In one family of the name of Lambert, consisting of nine, and living in a cottage consisting of three rooms, the disease has been most rife. The head of the family, and two boys, one aged seventeen and the other seven, have fallen victims to the disease, whilst others are either ill or convalescent. The cases have been in all thirty-seven in number, and besides the three of the Lamberts there have been two other deaths. The well from which these people obtain their drinking-water is within about ten yards of a cesspool; its top is now boarded up, and water is brought from Ipswich in a cart daily.

The coroner's jury, at the inquest on one of the bodies, was—

"That the deceased, George Lambert, died from enteric fever, brought on by a combination of causes,—viz., the over-crowded state of the houses, the poisonous water, and the want of proper drainage, and we deeply regret that the state of the law is such that our sanitary authorities are not able to move with more despatch in such matters."

They also appended a presentment calling the attention of the sanitary authority to the disgraceful state of the sanitary arrangements, and enumerating the facts of the case.

Typhoid Fever in Cambridge.—Cambridge is suffering from an alarming outbreak of typhoid fever. This fever has been prevalent to some extent for the last six months, but within quite recently several cases have occurred. In one college a case has terminated fatally, and two other persons are seriously ill. Isolated cases have occurred at other colleges, whilst amongst the townpeople it is very prevalent. Two causes have been assigned,—viz., a bad system of drainage and a supply of impure water. When the threatening character of the disease in one of the colleges was ascertained, the authorities hastily gave "exeats" to students in residence, and as quickly as possible cleared the college, and removed the students from proximity to the scene, but not before the seeds of disease were sown in some instances; so that to the cases which have occurred in Cambridge must be added, it is feared, more than one case which has appeared among the students after reaching their homes.

Wolverhampton.—We learn that Dr. Ballard, the sanitary inspector of the Local Government Board, recently arrived in Wolverhampton. After making an inspection of the town, he will make a tour through the surrounding district, including Wednesfield, Willenhall, Sei-den, and other places, and afterwards report on the result of his visits to the Local Government Board.

THE MAUSOLEUM AT FROGMORE.

In the current part of the *Sunday at Home* a view is given of the interior of the Royal Mausoleum, Frogmore, which is copied without acknowledgment from the engraving we published in July, 1870.* A well-known print-publisher in Bond-street made a similar use of it some time ago. As the view we were enabled to issue, by the gracious command of her Majesty the Queen, is the only one that has been made, we feel bound to comment on the improper course pursued. An external view of the Mausoleum, also made by Command, will be found in our volume for 1863.

PARLIAMENT CHAMBERS.

The architectural features of King-street, Westminster, have just been improved by the erection of a handsome block of buildings, near the new Colonial Offices, called Parliament Chambers. The new structure, which has an elevation of 63 ft. in height, and 42 ft. in width, is Gothic in its architectural character, and consists of ground-floor and three upper stories surmounted by dormers. The materials in which the building is executed give it a striking appearance. The main body of the elevation is in red Suffolk brick, freely interspersed with black brick bands, string courses, and arches, with a mixture of Portland and Bath stone for dressings. The ground-floor contains two large Gothic windows in three divisions, with a semi-octagonal Gothic window at the western angle; and the entrance to the building is in the centre between the two windows just named, through a Mediæval gateway. Immediately above the ground-floor windows there is a projecting balcony at the foot of the first floor, with columns and mouldings, surmounted by Roman arches having a double spring, in Portland stone, resting upon a flooring of Bath stone. The first floor windows are all richly traceried, with Portland stone columns between each division or bay. The second and third story windows are uniform in Gothic with those of the first-floor, but not traceried. Above the third story there is a projecting cornice, in Bath stone, which is surmounted by pediment dormers in continuation of the face of the elevation, the dormer gables having black brick lacings and stone copings. The west angle of the elevation is carried up to the height of the cornice by two sides of an octagon, and from the level of the attic floor an octagon turret rises 10 ft. above the main body of the elevation. Each angle of the turret has stone columns and capitals, from which spring Gothic arches. Outside the arches there is a border of red and black brick. The chimney shafts are in red and black brick with ornamental terminations. The ground-floor portion of the building is intended for business purposes, and the entrance to this part of the premises, as well as to the upper portions, which are intended for offices and chambers, will be through the central gateway. The interior of the building is finished in a strong and substantial manner. The staircases are all of stone, with oak hand-rails resting on ornamental iron supports. Spacious corridors, 6 ft. in width, lead to the different suites of chambers on the several floors. The architect is Mr. John Norton, and the contractor, Mr. John Garrud, of Spital-fields.

* Vol. xxviii., p. 606.

THE WANDSWORTH SURVEYORS AND THE ROAD CONTRACTORS.

An inquiry, of a very grave and serious nature, has occupied the attention of the Wandsworth Board of Works during the past month, which terminated last week in the dismissal of the Battersea surveyor and all his assistants, together with the road-foreman; and the Board also decided that in future no tenders should be accepted from certain road contractors whose names were mixed up in a collusion proved to have existed between them and the surveyor and his staff. A committee of the Board also recommended that the surveyors for Wandsworth, Clapham, and Putney should be called upon to resign; and, after a long discussion, the number in favour of the recommendation was 24, and against it, 17. This being on a show of hands, a division was called for, when the result was 23 for the recommendation, and 22 against it, the chairman ruling that as the majority was not the majority of the members present the motion was lost. The three surveyors in question, therefore, retain their respective offices for the present, although the actual majority of votes was adverse to them. The charge made against the several surveyors was no less than one of having accepted bribes from certain contractors, the result of which was that the work on the roads had been improperly performed, and that the ratepayers had consequently been defrauded. On this charge being made, the Board appointed an independent surveyor (Mr. W. H. Pocock) to examine the roads alluded to, and report to them. The substance of this gentleman's report was that, on an examination of the roads in question, he found that the contracts had been improperly carried out, both as regarded the roadway and the kerbing, and a committee of the whole Board, having gone through the report step by step, arrived at the conclusion that the surveyors had been guilty of neglect of duty, and their dismissal, as above recorded, was therefore recommended.

THE BOARD OF WORKS AND NORTHUMBERLAND HOUSE.

The Works and General Purposes Committee of the Metropolitan Board of Works presented a report at the last meeting on the proposed arrangement for the transfer of Northumberland House at Lady-day next, instead of Midsummer, as provided in the Charing-cross and Victoria Embankment Approach Act.

Mr. Newton moved the adoption of the report. He said that this question had arisen in consequence of some difficulty which had occurred in carrying out the Act of Parliament until the Board had got possession of property belonging to Northumberland House.

Mr. H. L. Taylor seconded the motion, and said the sooner they got possession of Northumberland House the better, and he wished at the same time to throw out a suggestion in reference to it. There was, no doubt, a desire on the part of the members of the Board to view Northumberland House before it was dismantled, and there was also a desire on the part of the public to have an opportunity of inspecting it before it was pulled down. He hoped that the Duke of Northumberland would not object to giving the members of the Board an opportunity of viewing it, of course under proper regulations, before the house was dismantled.

Mr. Fowler said it was most desirable that this improvement should be carried out as speedily as possible. The question which had been raised by Mr. Taylor was a very important one, and he thought that there were many persons who had not seen the interior of Northumberland House, and the more that was seen of it the better, as it contained many works of art which were of immense importance, and ought to be seen before they were removed. Some of the paintings were on the ceilings, and, as there was a possibility of their being injured in the removal, he thought they should be viewed as they were now, and he did not anticipate that there would be any difficulty in obtaining the opportunity for doing so.

Major-General Sir William Codrington said he understood that the cost of 3,500*l.* for the alteration of the time from the 25th of June to the 25th of March would be fully recouped to the Board by the early possession which would be obtained.

Mr. Roche remarked that the possession of Northumberland House itself would not advance the Board a single step, unless they acquired other properties facing Charing-cross, and satisfied the interests of existing tenants, as some of these tenancies would not expire for six, nine, or twelve months. He therefore said that they should give notice to those tenants at once of their intention to take possession of their premises, and settle their claims under the Compensation Clause.

Mr. Lammin moved, as an amendment:—

"That the Board do proceed as provided by the Charing Cross and Victoria Embankment Act, and that it be referred back to the committee, with authority to take steps for the service of such notices upon the tenants as may be necessary before the 25th of December instant, and also to serve the necessary notices upon all owners and occupiers of property required for the improvements, so that possession may be obtained by the 24th of June next."

He considered the expenditure of 5,000*l.* for an earlier possession of the land unnecessary.

Mr. Furness seconded the amendment.

After a protracted discussion, the amendment was put and carried by a majority of 19 to 15.

PUBLIC LAVATORIES AND RETREATS.

Sir,—It is now quite twenty-five years ago since I brought under your notice the question of the great need of public "retreats," a question you were good enough to advocate, and from which has sprung their establishment to a partial extent all over the metropolis, and which has proved so far a blessing. But still many more are needed for the wants of a city with nearly four millions of people. Now, might not these retreats be supplemented by the establishment, either by parishes or by a company, of lavatories, when a small charge might be made? I believe, Sir, such a scheme in our crowded city would not only be a great boon, but would prove a commercial success.

J. R.

ARCHITECTS *v.* PAINTERS.

Sir,—I shall ever be very thankful to you for your kindness in answering me one or two questions more than eighteen months since about sizing and varnishing.

I have been plaintiff in a case in the Alfreton County Court for two years; we have been before the judge six times, and only last court day received judgment for the total amount charged for work done at Riddings Wesleyan Chapel, *with costs*.

Among many items in dispute with the architect was one about the staining and varnishing, which the architect said, because we had *not* used size before varnishing, was worth nothing, and he should not allow us anything for it; and when before the judge he said it was always a usual practice in the trade to use size before varnishing, although not always expressed in the specifications. And he gave as an illustration that an architect never said that the boards used for *floors* shall be nailed down, but it was always understood. Just the same with size.

This did not take with the judge after we produced your answers to our questions.

William Shaw.

CAUTION TO ARCHITECTS RETAINED FOR CRIMINAL PROSECUTIONS.

At the recent Durham Assizes, Mr. Justice Honyman, whilst trying a case of murder, had before him a principal witness, Mr. Henry Stout, an architect, who made a plan of the scene of the murder; and a photograph of the place was also put in as evidence.

The witness said the plan of "Jacob's Ladder" put in he had made, and was correct, and the photograph put in showed the place accurately. The height of the railing was 2 ft. 6 in. He had not measured the place between the top rail and the one between it and the floor of the landing, nor had he measured the thickness of the rail. The distance from the floor of the landing to the yard beneath was exactly 17 ft. The witness was proceeding to give the dimensions, not from memoranda, but by means of a compass which he applied to a given space, and to a foot scale at the bottom of the plan.

Mr. Edge, counsel for the prisoner, pointed out that the scale on the plan only enabled the witness to speak with accuracy as to the plan itself, and asked if there were no other dimensions?

The witness replied that only one plan had been made.

The learned Judge commented in strong terms upon the manner in which the plan and measurement had been made. The chief point both for prosecution and defence lay in the architect's drawing up the plan. He further said the stupidity of people about these matters seemed

to pass all human comprehension, and plans for judicial cases seemed to be prepared in such a way as to give a minimum of information. The prosecution ought really to take care that proper plans, with measurement, were always supplied to courts of law, particularly in cases of the present kind, where prisoners' lives were at stake. The counsel for the Crown said an architect had been instructed to make a plan.

The Judge asked Mr Stout, the witness, if he was in business on his own account?

Witness: No, my lord, I am with Mr. J. H. Morton.

The Judge: What is your age?

Witness: Eighteen years, my lord.

The Judge: Here is a case where it is of great importance to know the precise dimensions of the place, and the chief witness cannot very clearly inform us. The thing is sent to an architect, and he, instead of doing it himself, sends a boy of eighteen. He makes a scale, but does not bring the measurements he has taken. (To the witness) I may have said something that would cause you to think that I blamed you. But I really do not blame you at all. What I complain of is that you, being rather young, were sent there on a matter of life or death, and without precise instructions.

In this case three prisoners were acquitted of a strong charge of wilful murder, and the thread that might have brought the charge home was wanting in the plans of the scene of the homicide. The omission was probably the fault of the new scale of payment of witnesses, for had the architect in this case followed up his instructions *personally*, he would at least have had to lose six days of valuable time before the coroner, the magistrates, and at the assizes, besides having long and expensive journeys, and the expense allowed would barely have paid for a dinner at a Durham hotel.

Professor Marecco, in this very case, was subpœnaed to analyse blood, and he flatly refused to attend to it on account of the small Home Office fees allowed, and the learned Judge observed, "I do not think you can compel a man to go through a series of experiments in order to qualify himself to give evidence." This dictum would equally good where an architect is subpœnaed to take plans to get up evidence, as against his interest, and without remuneration.

COMPENSATION CASE.

LONG *v.* METROPOLITAN BOARD OF WORKS.

This was an arbitration case, before Mr. F. J. Clark, as umpire, in respect of a claim made by the trustees of Mrs. Charlotte Jane Long, amounting to 5,390*l.*, for four freehold houses in St. John's-square, Clerkenwell, required for the formation of a new street from Bloomsbury-square to Shoreditch.

Mr. Horace Lloyd, Q.C., and Mr. Oppenheim, appeared for the claimant; and Mr. Philbrick and Mr. Humphries for the Board of Works.

Mr. George Fuller, of the firm of Fuller & Fuller, surveyors, gave evidence as the arbitrator in support of the claim made, and he stated that the four houses in question were let to yearly tenants, producing in the aggregate 158*l.* per annum, which he considered was no criterion of the value, as the time had now arrived when this class of property should be cleared, and buildings erected more adapted to the requirements of the present day, and therefore he valued the land upon which the houses stood at 1*l.* per foot, and 10 per cent. for compulsory sale.

Mr. Prickett, Mr. Murrell, and Mr. Fletcher, gave similar evidence in support of the claim.

Mr. Stevenson, of Hunt, Stevenson, & Jones; Mr. R. Vigers; and Mr. Robert Reid, of Great Marlborough-street, were called as witnesses for the Board. The first-named gentleman considered 10*s.* per foot a magnificent sum, and his valuation of the property amounted to 2,78*l.*, taking the present rentals at 18 years' purchase, and 10 per cent. for compulsory sale. Mr. Vigers was of opinion that the existing rents were the highest that could be obtained, and he did not believe it would pay to pull down the houses, his valuation amounting to 2,331*l.*, being 18 years' purchase, and 10 per cent. for forced sale.

Mr. Reid's figures came out to 2,504*l.*, being 16 years' purchase, and the usual 10 per cent.

Mr. Lloyd characterized the evidence of the Board's witnesses as given for the purpose of depreciating the real value of the property, and with a view now of acquiring freeholds at from 16 to 18 years' purchase.

Mr. Clark has awarded the sum of 4,202*l.*

ARCHITECTS' ACTIONS.

COLLINS *v.* ULLMANN.

This was an action in the Court of Exchequer, Westminster, before Baron Cleasby and common jury, to recover 89*l.* 4*s.* for architect's charges. The defendant paid 40*l.* into court in satisfaction of plaintiff's claim, and pleaded set-off amounting to 10*l.*

Mr. H. T. Cole, Q.C., and Mr. Arthur Cohen, appeared for the plaintiff; Mr. Huddlestone, Q.C., and Mr. E. Clarke, for the defendant.

The plaintiff was an architect and surveyor carrying on business at No. 5, Queen-street, E.C., a member of the R.I.B.A., &c., who had been in practice over twenty years. At the latter end of the year 1871 the defendant instructed the plaintiff to prepare designs for additions to his premises, 94, Regent-street. Owing to difficulties the works were not commenced until August, 1872. From December, 1871, to August, 1872, various extraneous services were performed by plaintiff,—the original designs had to be abandoned and fresh ones prepared. The plaintiff divided his claim into two heads. 1st. For professional remuneration for work and labour done in preliminary works as set forth, a nominal sum of 25*l.* 2nd. For professional remuneration for work and labour done in preparing sketches, plans, and specifications, supervising works during progress, and passing accounts, contract, cab hire, &c. (amount expended, 800*l.*), 64*l.* 4*s.* The plaintiff based his claim upon the schedule of professional practice and charges of architects published under the sanction of the Institute. He relied on clause 2 as to fittings; on clauses 5, 7, 8, and particularly on clause 10, as to the legality of a special charge being made for professional services rendered in the alterations of premises as involving special difficulties and troubles, and to cover this he stated that he invariably charged 7½ per cent. on all works under 1,000*l.* expenditure.

The plaintiff's case was supported by Mr. Chas. Cooke, F.R.I.B.A.; Mr. Tabberer, A.R.I.B.A. and district surveyor; and Mr. E. Power, A.R.I.B.A. and district surveyor.

Mr. Cooke stated that he always charged upon the schedule prices, and that had he done so with regard to plaintiff's account it would have exceeded the amount claimed.

Messrs. Tabberer and Power both stated 7½ per cent. to be their usual scale of charges for "alteration" works.

The defendant contended that 5 per cent. was the usual charge for all architect's work, and included all extraneous services, and that without a special agreement to the contrary, an architect could not legally charge or recover more.

Mr. Henry Jarvis, district surveyor; Mr. Cæsar Long, Mr. Wm. Berriman, and two or three surveyors supported the defendant's case. Mr. Jarvis repudiated altogether the Institute and the Institute's scale of charges. All the defendant's witnesses stated that they never charged more than 5 per cent. whether the works were difficult or not, or whether they involved additional trouble and skill or not; and, in answer to plaintiff's counsel, asserted that they and other architects would undertake the works of "a stable or elaborate boudoir," or the designing stained-glass windows, for 5 per cent. commission on the outlay.

The Judge, in summing up, directed the jury that the rules of the Institute were a safe guide both for himself and them, more particularly when they were corroborated by a member of the council of that body. He considered that an additional charge for works connected with alterations was contemplated by the "schedule," but he left it to them to say whether 7½ per cent. was a fair charge on the amount expended. He did not consider that any special agreement was necessary between architect and client, although, no doubt, it could be made, and he left the question of payment for extraneous services to the jury to decide—1st. If the plaintiff was entitled to them at all. 2nd. If he were, was 25*l.* a fair and reasonable charge.

The jury, after five minutes' deliberation, returned a verdict for the 25*l.*, and 7½ per cent. on the outlay, being the amount claimed by the plaintiff.

PIPES AND PRESSURE.

Sir,—Will any of your readers kindly say what should be the weight per foot run of 1½-in. lead pipe to withstand the pressure of 150 ft. head of water, or how it may be ascertained? J. D. P.

BIG TIMBER AND SHIPOWNERS.

In the Court of Queen's Bench, last week, the case of Gabriel & Co. *v.* Neane & Co. testified to one cause of the short supply of big timber for building purposes that has existed in the metropolis.

From the statement of Mr. Watkin Williams, Q.C., who appeared for Alderman Sir T. Gabriel, and which was borne out by the evidence adduced, it appeared that a contract was entered into with the defendants, who are Baltic shipowners, to ship from Norway to the Port of London 400 loads of balk timber. The defendants, in pursuance of that contract, despatched a vessel to Norway that had not sufficient capacity to ship the 400 loads in one cargo, and only brought 233 loads of the timber to its destination.

The timber merchants alleged that they had sustained a pecuniary loss, as big timber was in great demand by London builders and contractors, by the non-fulfilment of the contract, and they now sought compensation in damages.

Mr. Justice Blackburn having summed up in favour of the plaintiffs, the special jury found for them. The judge allowed costs.

OLD BURLINGTON HOUSE.

Sir,—The *Builder* of last week contains "a view within the quadrangle" of Burlington House, and in 1871 you published, in vol. xxix., descriptions and plans of the whole building, together with the elevation towards Piccadilly, which is now completed. Would it be asking too much to beg you to give in an early number a view of the front of old Burlington House as altered and *improved?* When this change on an old friend's face was projected, there were some who feared that the addition of an attic to Lord Burlington's design might injure the proportions of the front by dwarfing and reducing the importance of the principal order.

Our architects thought otherwise, and, consequently, not an attic, but a whole order was superposed, which has certainly had, to some eyes, the effect apprehended. But, as if it was thought that this formerly beautiful front could bear further alteration with advantage, within the last few months a rusticated arcade has been prefixed to the building, which not only masks, at least, the base of the three-quarter columns of the principal order, but in the centre, where the entablature further projects over the entrance, cuts off from view a considerable portion of their shafts.

To an admirer of Palladian symmetry, the effect is positively *absurd;* but perhaps you, sir, as the best authority of the day, may be able to explain the "rationale" of this remarkable performance, which jars so disagreeably on the sense of architectural beauty of a

Travellers' Club. Traveller.

CLEAN AIR.

Sir,—As a rule, most of us prefer clean air; but how are we to get it at this time of the year? We close up direct openings in walls or windows: the draught from them to the fire is unbearable. Supply, therefore, clean air warmed by the side or back of the fire, either above or at the side of the fireplace: the room is then provided with a constant unfelt, because warm, supply of clean air. No draught is felt, because the clean air is warmed, and the flue removes the dirty air. It seems to me that we want simple and cheap means of ventilation, and the above I know by experience affords this.

For summer ventilation I know nothing better than a 2-in. tube of perforated zinc, close to the ceiling, open at both ends to the outer air.

J. A. L. C.

ACCIDENTS.

London.—On Tuesday afternoon a man was at work upon the leads of a City warehouse when, owing to the fog, he walked off the building, and fell headlong to the ground and fractured his skull. He was taken at once to Guy's hospital, but died shortly after admission.

Liverpool.—A disastrous fire has occurred at the premises of Messrs. Milner, safe manufacturers. The fire originated in the southern wing of the building, which has some time since been added to the manufactory, and contained oils and paints in the second story, and it raged for several hours, during which the gable end of the works fell upon some houses, forming a *cul de sac*, demolishing two and rendering a third uninhabitable. By this accident a man and a boy were killed, while the mother of the boy was seriously injured. Damage was done to a valuable and extensive collection of safes, forming part of a large contract which the firm are getting out of hand, and it is estimated that the entire damage done will not be short of 16,000*l.* The cause of the fire is shrouded in mystery.

Northampton.—At the Petty Sessions, Mr. Pidcock, surveyor to the Improvement Commissioners, made an application for the appointment of two surveyors to inspect the state of houses in Court-yard, the scene of an accident. He produced a complaint made by four householders to the effect that the houses were in a dilapidated and dangerous condition. The surveyor said that the Commissioners had barricaded the whole yard to the height of 7 ft., but it was soon pulled down. Two or three houses were still standing. The place was strewn with bricks, &c. The Commissioners had already exceeded their duty by pulling down the houses, but they were obliged to do it. The owner was somewhere in South America, but he had an agent in the town. The magistrates granted the application.

Chester.—Whilst several men, in the employ of Messrs. Hughes, builders, of Aldford, were engaged in undermining the walls of a cellar beneath the old club-room, Queen's Head, Seller-street, symptoms of the building giving way were perceived. The men at once rushed from the spot, and immediately afterwards the building (two stories high) fell to the ground, fortunately without injuring any one. The amount of damage done is not extensive. Messrs. Seller, brewers, Foregate-street, are converting the hostelry, which fronts Foregate-street, and extends some distance up Seller-street, into vaults of an extensive character, and no blame can be attributed to Messrs. Hughes, who are the contractors for the work. Two or three hours afterwards, a labourer fell off a ladder at the same place, and injured both his legs.

Oldham.—A fire broke out in the Scotsfield Mill, Scot-street, off Ashton-road, Oldham, which resulted in the almost total destruction of the largest of the two wings which composed the principal portion of the premises. The whole was owned by Mr. Emanuel Whittaker, mayor of Oldham, but attempts to transfer it to a joint-stock company were being made. The total value of machinery and premises was held to be not much less than 30,000*l.* The fire

broke out in the first instance in a mule roller in the top room, and in a very few minutes the whole top of the building was in flames.

CHURCH-BUILDING NEWS.

Dawlish.—At an adjourned meeting of the committee it has been resolved unanimously that the eastern end of the restoration of the church should be proceeded with at once. It is calculated that this portion of the work will cost 3,000*l.*, and the committee have already works in hand tendered for at 2,350*l.*, making altogether about 5,500*l.*

Henstridge.—The Church of St. Nicholas, at Henstridge, a parish in the south-east corner of Somerset, about two miles from Templecombe Junction, has been reopened, after having been entirely rebuilt, with the exception of the tower and north wall. A few months ago, school buildings, which had been erected at very considerable expense, were opened. The church restoration involved an outlay of over 3,000*l.* In rebuilding, the edifice has been enlarged by the addition of a side-aisle and organ-chapel. The old arcade of the north aisle, as well as the arcade of the north chancel, or Toomer chapel, has been replaced. No attempt has been made to restore the monument of the Carent family, erected about 400 years ago, but care has been taken to put it in its former position, without detriment to its antique colouring. The improvements have been carried out, under Mr. J. M. Allen, architect Crewkerne, by Mr. C. Trask, builder, Norton-sub-Hambdon. They are in the Early and Decorated style, though in the old building the nave and north aisle were in the Perpendicular, and the chancel in the Decorated. The church is built of native forest marble, dressed with Doulting stone; the roof is covered with old stone tiles, and the windows, both in pattern and quality of glass, are copied from those in Bristol Cathedral. In the tower is a small painted window by Ashwins, of London; and in the south aisle a three-light one has been placed by Mr. Jonathan Gray, of Backwell-hill, near Bristol, in memory of some members of his family who are buried in the church. The latter window was executed by Cannon Brothers, of Smethwick, Birmingham, to represent the miracles of raising the dead. The chancel windows at present are of plain glass, but they are soon to be replaced by stained ones, a good portion of the sum necessary for the purpose being already promised. The choir stalls are of carved oak, but the open benches are of pitch pine. The chancel is laid with Maw & Co.'s encaustic tiles; those within the communion-rails presented by private friends of the vicar. A baptistery is formed under the tower, and it has been paved with tiles, and lighted by the above-mentioned window, and in it is placed the old font. The church has no organ, but a fund is being raised to purchase one, at a cost of 200*l.*

Uzmaston (Pembrokeshire).—The Bishop of St. David's, attended with a large number of clergymen, has celebrated the reopening of Uzmaston Church, after having been closed for nearly two years, during which period it has been almost rebuilt. The only portions of the original building remaining are the tower, a small portion of the east walls of aisle and hagioscope between tower and chancel, three fifteenth-century windows, two corbels, and a Norman font and stoup. There were hagioscopes on both sides of the chancel-arch, which have been reproduced in the new walls. The internal dimensions of the present structure, which considerably exceed those of the old one, are as follow:—Nave, 45 ft. 8 in. by 16 ft. 9 in.; north aisle, 31 ft. 8 in. by 16 ft. 5 in.; chancel, 19 ft. 1 in. by 10 ft. 2 in.; vestry, 9 ft. 6 in. by 8 ft. 6 in.; organ or harmonium chamber, 6 ft. 6 in. by 4 ft. 10 in.; and porch, 8 ft. by 8 ft. The width across the nave and aisle is 35 ft. 2 in., and the length from east to west, 67 ft. 3 in. Local stone, with dressings of Forest of Dean outside and Bath stone inside, has been used for the walls, which are plastered internally. The roofs generally are open-timbered, covered with Bangor slates and plastered between the rafters, the height of that in the nave being 27 ft. from floor to underside of ridge. The glazing generally is cathedral glass, in lead diamond quarries, but the west nave window has been filled with stained glass by Messrs. Wailes, of Newcastle-on-Tyne, in memory of a former rector of the parish, the Rev. S. O. Meares. Pitch pine and red deal mixed have been used for all the wood fittings. Some of the internal woodwork has been stained, and the whole of it varnished. The stone carving has been executed by a young country mason. The contractors, Messrs. P. James, of Milford, and Mr. W. Morgan, of Haverfordwest, have carried out the works generally, under the superintendence of Mr. E. H. Lingen Barker, of London, Hereford, and Haverfordwest, who was selected by the committee in the place of Mr. F. Welmert, of Milford, who died shortly before the commencement of the works.

Battersea Rise.—The chief stone of St. Mark's Church, Battersea Rise, has been laid by the Bishop of Winchester. This new church is being erected to afford additional accommodation which the iron church it supersedes was unable to supply. Mr. W. White, of London, is the architect, the contractor being Mr. Thomas Gregory, of Clapham. The foundations are already in, and when the church is completed it will consist of chancel, with transeptal aisles, nave with aisles, south porch, and western vestibule. The nature of the site, falling rapidly towards the east, affords opportunity for a picturesque and commanding elevation. The chancel is arcaded all around. It terminates in a polygonal apse; and passages outside the arcades lead, by staircases, into the crypt below, which serves for vestries, choral practice, and other useful purposes. This ambulatory is in the form of a lean-to aisle surrounding the chancel, with a clearstory above. The transept roofs are very simple, hipped roofs. The nave consists of four bays, with brick arches, and a rather lofty clearstory. The vestibule at the west end is specially intended to serve for funerals. It is made irregular in form, following the line of the site. The church is to be built almost wholly of stock bricks, with red bricks for jambs and arch mouldings, with a few patterns interspersed in the plain walling. The only stone employed will be for the caps of the pillars, and a portion of the heads of some of the windows. There is to be a wood block solid pavement under the seats, with tiles for passages. There will be abundant room for offerings of stained glass and mural painting from any who may be disposed to give them. The crypt is to be vaulted in brick, with moulded brick ribs and pillars. The accommodation is for 600 persons, including 85 children. The contract is for 5,045*l.*, including lighting and warming. At the west end of the south aisle is a wooden bell-turret, capable of taking a small peal of six bells. It is covered with wooden shingles. The seats will be open benches. In the evening about sixty of the builder's workmen dined at the Freemasons' Hotel, and after spending a pleasant evening, the party broke up at an early hour.

Books Received.

Wages in 1873: *Address read before the Social Science Association, at Norwich.* By THOMAS BRASSEY, M.P. London: Longmans & Co. 1873.

WE gave some account of Mr. Brassey's interesting and valuable address at the time it was read at the Norwich Congress. We confine ourselves now to mentioning the fact of its publication, in pamphlet form, and quoting the concluding paragraphs:—

"I must once more repeat the familiar axiom, that the price of labour, like that of every other commodity, must mainly depend upon the relation between supply and demand. The wages of skilled workmen have risen, because skilled workmen are scarce. How shall we increase their number, and improve their skill? My answer is, by bringing recruits into our industrial army from a class of society which has hitherto exhibited too strong a prejudice against manual labour. The same aversion to handicraft of every kind exists in the United States and Canada. In America, a skilled workman earns 30 dollars, a clerk only 15 dollars a week; and, while it is almost as difficult for a clerk to obtain a situation in New York as in London, a skilled workman can always command employment. It is unnecessary to dwell on the evils that must ensue from a disproportionate increase in the non-productive classes of the community. Lord Bacon has truly said, that a population is not to be reckoned only by numbers, for a smaller number that spend more and earn less do wear out a greater number that live lower and get more. My father's advice was often sought by parents anxious for the future of their sons. His counsel always was that a young man, whose destiny it must be to make his way, unaided, through the world, should begin by learning a trade. It is a laudable ambition in a parent to endeavour to raise his family to a better station in life. He cannot bestow on his children too high an education. But a wise man will be on his guard lest the enjoyment of such advantages should render those occupations distasteful which afford the most secure and ample livelihood to those whose lot it is to labour. When justly appreciated, the condition of the skilled artisan should be as much esteemed as that of any other class of the community. He whose life is passed in performing such needed services for his fellow-men, whatever his special calling, holds an honourable station, and social dignity will ever be most effectually maintained by those who are the least dependent upon the favours of others.

In conclusion, I would tender a few words of advice to my fellow-countrymen of the so-called working classes, for whose welfare I am bound to feel the deepest solicitude. Their just claim to share in the benefits arising from a thriving industry has of late been liberally recognised. The earnings in many trades have been unprecedented. It should not be forgotten that forethought is an especial duty in a time of prosperity. At no distant period, the progress of our commerce may sustain at least a temporary check. It will be sad indeed if the receding tide leaves behind it multitudes of our highly-paid workmen without the slightest provision to meet a period of adversity."

Etchings on the Mosel. With Descriptive Letterpress. By ERNEST GEORGE, Architect. London: John Murray. 1873.

MR. ERNEST GEORGE is a facile sketcher, as we have seen before now, and has a good eye for a point of view. Some of his former sketches were reproduced for publication by the anastatic process, but not to his satisfaction; and Mr. Ruskin advising him to etch, he set himself to work, and now shows, in the handsome volume before us, that he has mastered the difficulties of the art. We have here twenty sketches from Metz, Thionville, Trier, Cochem, Coblenz, and other places, on the picturesque Moselle, or Mosel, to use its German name with Mr. George, brightly and charmingly rendered, with a variety of colour, and precision of touch, to which older hands at the needle work do not always attain. The views of Metz; the market-place in Trier; the old houses at Cochem; the views of Schloss Elz, and the remains of the Elector's Palace at Coblenz, are capital plates. It is specially a book for the drawing-room table.

Art Workmanship: a Monthly Magazine of Design, to illustrate the Master-works of all Periods. London: Asher & Co. 1874.

EIGHT plates are to be given monthly, with short descriptions, and it is intended to illustrate ancient and modern art, including architecture, goldsmith's work, iron-work, furniture, bookbinding, and so on. The first number is devoted to works wholly of the sixteenth century. The value of the publication, which apparently has a foreign source, will, of course, depend on the skill and taste shown in the selection of subjects.

Where there's a Will there's a Way! or, Science in the Cottage: an Account of Naturalists in Humble Life. By JAMES CASH. London: Hardwicke. 1873.

THE object of this work is briefly to record the labours and bear some testimony to the character of a class of men, for the most part in the humblest walks of life, who have rendered no mean service to science. The stories of such men cannot be too often repeated. There is an interest in them for all, whether of their own station or of a higher rank in life; and there can be no fitter present at Christmas for young people of various social stations than one which will show what patience and perseverance will do, even with moderate abilities; and however hard and laborious a life may be in other respects, that, in the scientific pursuits of leisure moments, "where there's a will there's a way."

ALMANACS AND DIARIES.

The British Almanac and Companion keeps its top place for 1874, and will be found of never-ending use on the library table. Comets and meteors; utilisation of waste; the International Exhibition; work and wages abroad; the coinage of the world, with many illustrations; coal; and the Census, are the subjects of papers in the "Companion," of more than average value. The department of Architecture and Public Improvements is still in the hands of Mr. James Thorne, who gives an interesting condensed account of what has been done under those heads during the past year.——*The Art Union of London Almanac* has been issued as usual, and contains artistic information peculiarly it own. This little book is looked for by thousands wherever the English language is spoken. It has space for daily engagements, is not too large for the waistcoat pocket, and, better still, costs nothing.——Elegance is the prevailing characteristic of the pocket-books of all sizes issued by De la Rue & Co. They are all edited by Mr. W. Godward, and address the scientific. De la Rue's *Desk Diary* has a number

of plain pages for memoranda.——From Letts, Son, & Co., come all sorts and sizes of diaries and pocket-books. They who cannot suit themselves here must be hard to please. No. 31, *The Rough Diary, or Scribbling Journal*, foolscap size, gives a page to three days. The quarto diary, No. 6, is also a capital volume, and includes much business information. Letts's *Office Calendar and Reminder Tablet* (day of the month, &c.), for suspension, may be recommended.——*The City Diary* (Collingridge) includes special information as to London, proper. ——*Blackwood's Shilling Scribbling Diary* is foolscap size, and has blotting-paper interleaved. ——"The *Labour News* Almanac for 1874. Price 1d. *Labour News* Office, 1, Long-acre, London." This is a sort of memorial of a pleasant outing of the metropolitan clubs connected with the Working Men's Club and Institute Union, at Brockett Hall, the seat of Lord Lawrence, formerly Governor General of India, and late chairman of the London School Board. The almanac is illustrated with views of Brockett Hall and other engravings; and contains a list of clubs and institutes throughout the country.

Miscellanea.

Lectures at the Royal Polytechnic Institution.—The lectures arranged, and now in course of delivery, in the scientific department, at the Royal Polytechnic, by Professor Gardner, are the seventh and eighth of the series descriptive of "Inventions and Appliances Useful or Necessary to Every-day Life"; the subjects being, "Sugar; from the Cane to the Teacup;" and "The Silber Light and Lighting,"—both more or less important to all. Mr. Silber proposes to make use of petroleum lamps as sources of heat, for cooking and other purposes. He has at present completed two cooking contrivances. One of them is a substantial table lamp, fitted for ordinary chamber use. Its glass chimney can be removed, and replaced by a coffee-pot, which is, in fact, a metal chimney surrounded by an outer cylinder, the coffee being made in the space between the two. On the top of the coffee-pot is a small moveable saucepan, in which water can be boiled in a few minutes, and which is intended to cook eggs, potatoes, &c. The saucepan can be replaced by a pan, in which a chop or rasher can be fried. The cost of the whole is 21s., and a breakfast of coffee, hot milk, eggs, and a chop, can be cooked more than thirty times at a cost for petroleum of only one penny. The other contrivance is a field-oven and boiler, with a hot-plate for two saucepans. The boiler holds about 24 gallons of water, the oven contains about 18 cubic feet of space, and will bake bread or joints, by the heat which is furnished by four lamps.

Hydraulic Automotor: Pumps Superseded.—The wonders of the hydraulic press have prepared one for other extraordinary manifestations of working power in this direction, and we now observe, from an elaborate article in the *Mining Journal*, with drawings of mechanism in illustration, that a "hydraulic automotor" has been invented (though not yet in practical use) which, it is expected, will altogether supersede the use of pumps for raising water, whether from mines or for any other purpose. This important idea in connexion with practical hydraulics is claimed by Dr. Bouron des Clayes, of Paris. It is evident that, if whilst retaining, or nearly so, the proportional relations between the power and the resistance of the hydraulic press, we could succeed in augmenting in a notable proportion its conditions of speed, we should have a motor at once the most powerful, the most economic, and the least dangerous in use which could be placed at the disposal of mankind. It is precisely of this problem that the hydraulic automotor is claimed to be the solution, and of which a theoretical and practical demonstration is offered.

Tunnel from Denmark to Sweden.—The *Correspondance Scandinave* says that two Danes, MM. S. Edwards and C. F. V. Petersen, have applied to the King of Sweden for a concession of the right to make a tunnel under the Sound. In support of their request they have forwarded a letter from the Danish Minister of the Interior agreeing to give them a similar concession as regards Denmark if they can show by the 1st of September, 1874, that they can command the needful capital.

Liverpool Architectural and Archæological Society.—A meeting of this Society was held on the 10th inst., at the Royal Institution, Colquitt-street. Mr. T. D. Barry presided, and in some remarks mentioned the fact that one of their members (Mr. Heffer) had obtained the prize essay in the competition for the best design for the Hastings aquarium. Mr. W. Parslow, the secretary, observed that it had been suggested to him that a public aquarium would be a great acquisition to Liverpool. No doubt many material contributions would be made by captains visiting the port if one were established. He thought the contributions promised by several gentlemen for the erection of an art gallery, before the mayor undertook that work, might very well be appropriated to the erection of an aquarium. Dr. Haywood concurred with the suggestion. He thought, however, there was sufficient money and public spirit in the town to accomplish the object without robbing the art-gallery. Mr. J. Smith afterwards described what is called as *his* invention, of an inverted ventilating syphon. It would seem to be similar to the late Dr. Chowne's arrangement.

The New Cattle Market, Newbury.—This market, built from the designs, and carried out under the personal superintendence of Mr. J. H. Money, architect, Speenhamland, was to be opened to the public on Thursday. It has a frontage to the new street of about 450 ft., and has, besides a recessed main entrance, two side entrances, one at either end. The site in length is 470 ft., with an average width of 68 ft. The interior space of about 3,600 square yards, is divided into three sections, that nearest Cheapstreet being set apart for pigs, the central portion for sheep, and westward for cattle. The settling-room occupies a central position. Adjoining, there is a good store-room, with other necessary conveniences. The enclosed space on the right of the western entrance to the market is intended for the sale of horses or young stock, having a covered shed 56 ft. long by 12 ft. deep. There is a supply of pure water for the use of the market. The market is approached by a roadway, 30 ft. wide, from two of the principal thoroughfares, and having the railway station and corn market within five minutes' walk.

The New City Hall, Carlisle.—The Public Hall for the City of Carlisle is rapidly progressing, and the chief stone was to be formally laid on Thursday, December 18th, by the Mayor of Carlisle, assisted by the Corporation. The building, says the local *Journal*, will be one adapted in every way to the purposes for which it is required. The site is a good one, being within two or three minutes' walk of the main street and the station, with a grand space in front for any number of carriages to turn, and come and go, without danger or confusion, while the accommodation inside will be all that is desirable. There is the large hall itself, seating 2,000 people in comfort. Then the smaller hall for 500, which will be in frequent demand for sales and small meetings; then four shops, with good cellarage, &c., in addition to the halls, will form a useful basis of permanent income. There will be ample space for ingress and egress, and plenty of escape room in case of fire. The refreshment and withdrawing rooms are ample, while ventilation and warmth, as well as freedom from draught, have all been thoughtfully considered.

The State of Leicester Square.—At the last week's meeting of the Metropolitan Board of Works, Mr. Bidgood, who had a notice on the paper that he would call the attention of the Board to the decision of the Master of the Rolls in the case of "Webb *v.* Tulk," as to the garden in Leicester-square, said that since his notice the attention of the solicitor of the Board had been directed to the subject. The judgment of the Master of the Rolls should be printed and referred to the Works and General Purposes Committee for consideration and report, and he moved accordingly. Mr. Smith, the solicitor to the Board, said that he had consulted the Parliamentary agent, and he had informed him that if the Board were desirous of carrying out any plan for the improvement of Leicester-square, the standing orders might be suspended, to enable them to do so in the coming Session of Parliament; but he must, at the same time, ask the Board to authorise him to take the necessary steps for the purpose. It was agreed that the solicitor should be empowered to take all necessary steps, and report them to the Works and General Purposes Committee.

Mechanics' Institute for Calverley.—The foundation-stone of a new Mechanics' Institute has been laid at Calverley by Mr. Joshua Fielden, M.P. The site of the building, which is in the centre of the village, covers an area altogether of 580 square yards. The building itself, which will be in the Gothic style of architecture, will be 60 ft. by 36 ft. It will consist of two stories, the lower floor comprising a read, ing-room 22 ft. by 15 ft., library, smoking-room class-rooms, lavatories, &c. On the upper story will be a large lecture-hall, capable of accommodating 500 persons, and ante-rooms. The principal entrance to the Institute will be by a porch, access to which will be by a flight of steps. The building will be buttressed all round, and will be surrounded by ornamental palisading. Including the site, the estimated cost is 2,000*l.* The building will be erected from the designs of Mr. John P. Kay, architect, Idle and Leeds; Messrs. W. & C. Murgatroyd, Idle, are the contractors for the mason work; and Messrs. J. & E. Barker, Calverley, the contractors for the joiners' work.

"Catnach" of St. Giles's.—The editor of *Press News* favours us with the following:—

"We find that the *Stationer* has been inadvertently led into doing us an injustice by printing an anecdote from the *Builder* concerning Old Jemmy Catnach, which is word for word the same as that given in *Press News* a short time back, being allusions to that eccentric old character in his habit of washing his dirty halfpence in a solution of hot vinegar, and also speaking of his making a deal of money by publishing a catchpenny sheet shortly after Weare's murder, entitled '*We are* alive again!' These items we had from an old friend of Catnach's, and we consider it very mean and paltry of the *Builder* to use them without giving their authority."

We go a little out of our way to assure our critic that he is not quite correct. We never saw these anecdotes in his paper. We have heard them mentioned as known facts in more than one quarter, and they are printed in a book published by Reeves & Turner,—"The Catnach Press: a Collection of the Books and Woodcuts of James Catnach, late of Seven Dials, Printer," prefixed to which is "The Full, True, and Particular Account of the Life . . . . of Old Jemmy Catnach."

Homerton and Hackney.—The local press are doing their duty: one and all receiving with good feeling the observations we have been led to make, and urging the necessity of attention. The *Hackney Express* says:—"We have again much pleasure in calling attention to an article in the *Builder* on matters vitally affecting this district. We have ever given prominence to the discussion of sanitary and social subjects, and have constantly advocated reforms in many directions. We therefore welcome the present admirable efforts of our contemporary, and in order that its unimpassioned but trenchant articles may have the fullest possible effect, we have reproduced them in these columns, and intend, in our next issue, still further to follow up the subject treated. We trust, however, that the *Builder* will not leave the work incomplete. Having done with Hackney, the sister parishes of Bethnal-green and Shoreditch offer a promising field for similar investigations, which will abundantly repay the attention of our excellent contemporary."

Proposed New Council Chamber at the London Guildhall.—Mr. McGeorge, chairman of the City Lands Committee of the Court of Common Council, at the last meeting, moved the adoption of a report from that committee, so far as it related to the building of a new council-chamber, at an expense not exceeding 50,000*l.*, and that the committee prepare and bring up plans and estimates, together with a model of the proposed new chamber, also plans for the reconstruction of the offices of the Guildhall, showing how far the new chamber will be in harmony and form part of the whole plan in the reconstruction. The motion having been seconded, Mr. Rudkin proposed, as an amendment,

"That the report be referred back for further consideration, and that the committee do prepare and bring up plans and estimates, together with a model of the proposed new chamber, and, if necessary, the reconstruction of the offices and committee rooms of the Guildhall."

Mr. Knight seconded the amendment, which was carried.

Stove Competition.—The testing of the stoves sent in for competition for the Society of Arts' prizes will shortly commence, half of the testing-rooms being nearly completed. These rooms are being built by Mr. Nicoll, on his patent method of concrete-building. A large number of stoves have been received, the number of competitors being 107.

The Builder.

VOL. XXXI.—No. 1612.

The Masters' Federation and the General Welfare.

THE pen was just dipped to write a word or two of Christmas counsel and greeting, when the expression "the national federation of employers" fell upon our ear.

We cannot conceal the fact that this phrase has cost us no small amount of inquietude. We are not for a moment about to assume that the respectable and eminent men, whose names are cited as forming the council and supporters of the federation, are actuated by any motives but that of "supporting that which is for the common good, and steadily opposing that which is adverse to industrious interests." Such names as those of Salt and of Crossley, of Akroyd, Ashworth, and Marshall, of Hannen and Trollope, are sufficient to prove that such is the real object of the organisation. Nor are we about to be guilty of the impertinence of advising the council how to do their own work, or suggesting that they may at all be likely to drift from their proposed course. Nor, lastly, can we at all say that there has not been, even within the twelvemonth now near its conclusion, ample warning to the employers of labour that they should look anxiously and keenly to their position.

But thinking and writing, as we trust we always do, not for a class, but for a brotherhood of classes, we cannot but point out to our respected friends who now take the title of a "federation," what appears to us to be an element of no small danger in the scheme. It is a question of Flag. We have lately seen how such a question may be, in point of fact, decisive of the destiny of a nation. Not that a Flag is, in itself, more than what Bonaparte said "the throne" was, "three bits of wood and a bit of velvet." But it is the expression of a policy, and of more than a policy,—the expression of a conviction. And when a Flag is once raised, it soon becomes more than a symbol. It becomes a power. It rallies round it all classes of supporters. Anon it becomes necessary to lay down certain lines, to abandon certain positions, to enforce others,—in a word, to define such a line of policy as shall enlist the greatest number of supporters; and to carry out the common object of the mass of those supporters by imposing a stern discipline on the whole party. The compensations and graceful concessions to opposite opinions, that form the very oil of the social machine, are excluded by this process. Thus a committee, a council, or a federation, becomes a machine which may, no doubt, be very powerful, but which works with a high degree of friction.

The danger in the present case we take to be rather in reaction than in action. It is not so much to the programme of the Federation that we refer, as to the effect that the programme may have on the other members of the great industrial partnership,—the owners or makers of labour. Our main object, since first the press gave wings to our words, has been to promote the union of masters and men, to show the solidarity of living and of stored-up work, to increase the harmony of the capitalist and the labourer. With this view we have ever protested against association on the part of the workmen being cast into such a form as should be likely to lead to war; still more against any association expressly organised for the purpose of war. With the same object in view, we have to urge on the employers of labour the propriety, and the true wisdom, of carefully avoiding anything that may look like an organisation of class against class, or the repulse of a danger by a menace.

We have, it is very likely, in these columns referred more than once to certain facts connected with the industrial history of Europe that have profoundly struck us, in the course of professional visits to various parts of Europe. They are facts that cannot be too widely known, or too attentively contemplated. We refer to the certain evidence, which is afforded by the cities of different parts of the Continent, of the former existence of a great industrial prosperity, followed by a great ruin and collapse. This evidence is afforded by long streets, or wide quarters, of closed, tenantless, decaying houses. In some of the great cities of Belgium, the spectacle first hung upon us like a nightmare. It is now some years ago, and matters may have altered for the better. But Bruges, if memory does not fail, offered one of the most conspicuous examples of monuments of a past and half-forgotten energy. In Bordeaux, once one of the main seats of commerce, we have counted whole streets of tenantless houses. In Brindisi, once the Liverpool of the Roman Empire, the decrepit, desolate, unoccupied houses appeared to form the majority of the buildings. And what, in these cases, is matter of local decay, in Portugal may be observed as evidence of national decay. Nowhere, not even in Italy itself, can be seen such marks of stately power, and of unbounded wealth, as in Portugal. That ancient kingdom was our precursor and pattern in opening the world to the merchant. Her ships first doubled the Cape. Her sons were the first, or among the first, to circumnavigate the world; and in due reward for the untiring energy of her sailor prince, and her enlightened monarchs, "the exhaustless East"

> "Pour'd in her lap all wealth in teeming showers."

The monasteries, churches, and palaces of Portugal show a lavish and well-directed outlay of wealth, to which it is hard elsewhere to find a parallel.

What is Portugal now? We need only ask the inquirer to walk through Lisbon in order to reply. There the ruins caused by the earthquake of 1755 yet stare us in the face. Since the time of the great Minister Parabal, the desolation of a proud, helpless, utterly ignorant idleness seems to have enwrapped his country like a mist. Have these things no lesson for us? Is our prosperity necessarily more eternal than that of the great centres of ancient industries in the Low Countries? Is our commerce more indestructible than that cradled and nursed by the care of the great Prince Henry of Portugal?

The effect on the mind of such scenes as we have mentioned we take to be this. They show us, more plainly than mere language can do, the fleeting, transitory, perishable nature of manufacturing and commercial prosperity. They point, by recent and familiar examples, the same moral that is taught by the nameless desolations of the mighty cities of the East, by the shapeless heaps that mark the sites of queenly Babylon,—that great centre of commerce, of which the power and influence were so widely spread, that we yet weigh our gold and silver in Babylonian grains, and measure, there is some reason to believe, our Ordnance triangulation, not only by Babylonian angles, but in Babylonian feet.

It is only a feeble and unpractical mind that can experience such a shock as a visit to one of the scenes we have cited is calculated to give, without seeking for some cause, at once explanatory of what has passed, and fraught with counsel for the future; and wherever we can trace it, the cause of the loss of power and wealth can generally be traced to the relaxation of the ties that should bind society together, as in one golden hoop. Even where foreign conquest has applied the torch which has wrapped city and shrines in common destruction, that conquest has for the most part been invited by civil discord. The history of Europe is full of the lessons how, by that very municipal spirit which, to a certain extent, was the very spring of modern civilisation, were developed party interests, class interests, personal interests, which tore to pieces the garments, nay the very limbs, of the mother country. And it is an action of this nature which we so much dread for Great Britain.

We hold that to be a very false view, either of religion or of history, which regards labour as a curse. On the contrary, it is not only the common lot of man, but also the school of all that is great in man; and the splendid triumphs of physical and mechanical science which distinguish the present age have for us this noble function, that they tend to remove from labour all that lowers or brutalises the labourer, at the same time that they increase the labouring power to an untold degree.

With this new instrument given to mankind,—with the ever-new and ever-surpassing services of that "drudging goblin," the steam-engine,—new views as to the *status* of the labourer are becoming more and more clearly understood. It has been very fully pointed out by a writer in the *Edinburgh Review*, in a notice of Mr. Thomas Brassey's valuable book, "Work and Wages," that we have to reconsider many of our old-fashioned assumptions as to work and the workman. Looking at the thing from the lowest stand-point, it does not *pay* to over-drive the labourer. Good food, good clothing, good lodging, or, in another word, good wages, are found to be indispensable to produce good work. Of course, the thing may be overdone; but the main idea is, that there is a certain rate of pay, and a certain amount of time which the labourer employs in work in the course of the year, which will produce the largest economic result. As an abstract statement, this cannot for a moment be denied. Then comes the practical question, where does this limit lie? and experience goes to prove that it lies considerably higher than we have been in the habit of taking for granted. It is more remunerative to the employer (provided the labourer conscientiously does his best) to pay somewhat higher, and to demand a somewhat shorter time of work in return, than we have, until very recently, considered to be the case.

The reign of mere capital, if we are not much mistaken, has reached, if not passed, its apogee. The school of Adam Smith has done good service, in its time, in calling attention to the power of capital, and to the advantage which the labour of to-day may derive from the wise application of the fruits of the labour of the past. But there are signs abroad that the most thoughtful men of the day are taking a great stride in advance of this time-honoured position. The power, rather than the rights of labour, is that to which the attention of the producers of labour is now directed by their wisest friends, and with the best promise of good results. Not the power of idleness, or the power of obstruction, but the fruitful, creative power of the human arm, hand, and brain. Further, it is becoming daily more and more evident that the principle of association, if fully acted on by the working classes, is one that must greatly modify the power, and probably the existence, of capi-

talists as a distinct class. If this new set of the tide is taken intelligently and honestly into account, it will be well for the honest and industrious man, whatever be his industry. Further, if this be really the set of the tide, it will be as idle to attempt to withstand it, as for Mrs. Partington to try to mop up the Channel.

No individual in history, ancient or modern, has done so much to imperil the reign of great capitalists as the late Emperor of the French. His Government has done this in two ways,—direct and indirect. Directly, he set the example of appealing, in the first place, to the mass of the people, for the loans called funded debt. Louis Napoleon had the opportunity (it is not every ruler who has, or who could profit by it if he had it), of knowing how very little great capitalists actually *do* for any sound financial operation, with the exception of drawing a large profit from it. Having the credit of France to draw upon, he thought it hardly necessary to give Rothschild or Perière 10 per cent. for merely endorsing his bills. The enormous success of the popular appeal for *Rente*, inaugurated in the later years of the Empire, is well known. The importance, and also the facility, of the association of small savings, for a public object, was thus proved. We are not asserting that it is a good thing for a Government to have great facility for raising money. Our opinion is to the contrary. But, when a public loan is required, we have been thus shown that the direct appeal to those from whose pockets it must ultimately come, is both the surest and the cheapest method.

The indirect blows given by the latter year of the empire to the power of capital have been no less severe than this pointed attack. The great scandals connected with great financial names; the collapse of great credit establishments; the fatal Mexican war, originating in a "financing" speculation, and culminating in the fall of the empire, and in the court-martial of the Trianon; these have been amongst the blows to which we refer.

Now, although it is an old bit of wisdom which remarks that by-standers see more of the game than do the players, we are not to suppose that great signs of the times such as those to which we have called attention are unobserved by prudent and foreseeing men, both among the capitalists and among the working classes. And those thoughtful persons will be disposed to agree with us in the opinion that we are now at, or fast approaching to, a point at which the onward path divides into two; and we must take it either to the right hand or to the left. Either we shall go on, under the influence of the spirit which closed the Welsh coal-mines at the beginning of the present year, to a gradually increasing difference and antagonism between employers and employed; or we shall take a turn in the other direction towards a true harmony and more intimate solidarity between the two. The former course, if unhappily persevered in, will tend to much ill blood, much suffering, and much advantage to the foreigner at the expense of the English workman. It will check our industrious development, paralyse our commerce, and finally sweep away the capitalists, as a class, from this country, without any resulting advantage to the labourer.

On the contrary, if we take warning by what others have suffered, and by what we have hardly ourselves escaped, we shall draw together the bonds of the social order; and we shall find master and man begin to look at their mutual relations in the light of a wise partnership, rather than in that of a sharp bargain.

We think that, by due consideration, the federation of employers of labour may play a not inconsiderable part in the good work. We have little doubt that, unless it do so, it will, in spite of itself, become an influence in the opposite direction: a cause of strife, rather than a source of harmony.

Not to be vague, and thus of little practical aid, in the advice we venture to offer, we will indicate plainly what we mean. We think it essential to produce the results at which all good men should aim, that the Federation should give pledges of the truly catholic and national object of the association in two ways,—one by their programme, and the other by their composition.

As to the programme, there is a principle which they may inscribe on their banner without fear of raising any opposition, save from the designing and the bad. Let that principle be,—the independence of labour and the sanctity of contract and of law. Let the compact between master and man be freely entered on,—freely by both parties; and when once entered on, protected by all the vigour of the law. Those who terrify or seduce the workman, who dispose of his energies at their command, and prevent him from selling them to the best market, are the real enemies of society. We do not care whether they wear fustian jackets, but hold out hands unhardened by the honest stamp of labour, or whether they dwell in mansions and recline in luxury. We do not care whether they are stump-orators or "books in breeches,"—mere thinking-machines. Those who step between master and man, save to draw them together in strong Christian brotherhood, are the enemies of both, the enemies of labour, the enemies of wealth, the enemies of England.

Then, in carrying out this national and industrial programme, the Federation would at once take a great stride in public acceptance by associating with them some genuine representatives of labour. Not any of those who have come before the world, soft-handed, as we before hinted, as the "labourers' friends," but, as representing the class from which they spring,—men who, from humble origin, have attained great wealth. It is not our province to point out individuals; but we will indicate the direction in which we are looking. In November last we cut out from a paper, sent with the report of a certain railway meeting, an account of the operation of a co-operative industrial coal and iron company, in the North of England. It was the third annual report; and after paying 5 per cent. on all the capital employed, the directors divided, for the half-year, a bonus of 2½ per cent., and included the further entry "to the payment of the qualified workmen and *employés* of the company of a bonus in proportion to the return of the capital embarked in the several departments." Of this thoroughly respectable enterprise we know no member or associate. We observe that a City financial paper calls attention to the fair earning of 10 per cent., not on paper, and not out of promoters' pockets. It is from the leaders and organisers of sound-working schemes like these,—enterprises for which the capital is found in the pockets of the workmen themselves, redeemed from the tithe of the publican and from the "salary" of the paid agitator,—that we think the members of the Federation will do well to look for that popular element which shall prevent them from coming before the world in the guise of an exclusive class organisation.

Since our remarks were on paper, we have observed, in the columns of the most widely circulated of the daily papers, observations which, though not anticipating our own, coincide very fully with them. The *Times* appears to be as fully aware, as we ourselves have been, of the danger of a "Federation" proving a source rather of discord than of unity. It has directed its remarks chiefly to the subject of some of those legal measures (such as the penalties against conspiracy, picketing, and the like) in which opposite views are advocated by some of the employers of labour, and by the great masses of the labourers themselves. In all such questions, however, it must be obvious that any steps which tend to clothe the Federation with something of the nature of a court of arbitration,—which enable them to speak, not in the interests of capital alone, but in those of industry, fed and supported by capital,—would convert its character from that of a possible engine of party warfare into that of a promising organisation for general accord, and for the promotion of the national welfare.

BRICK ARCHITECTURE.

The order given by the Egyptian taskmasters to the Israelites, is in substance echoed just now by some active professional practitioners,—"they say unto us, 'make brick'": in other words, there seems to be a decided leaning in certain quarters towards the employment of brick, not as an economical substitute for, but in preference to, stone. Whether this is the consequence or the cause of some of the studies that have been directed to the architecture of countries where brick is necessarily the staple building material, it is not very easy to say; we should be inclined to think it is rather the former. We have studied and more or less imitated, or adapted, most varieties of European work of the great architectural epoch, so far as style is concerned; and a material hitherto comparatively little used in high class architecture among ourselves, but which in some countries has been so almost exclusively employed as to give its own decided stamp and character to the architecture embodied in it, seems to promise a further change, and suggests new combinations of old things. The discussion which has taken place thereupon is indicative, along with other things, of the wish to find some degree of novelty of architectural expression in the revival or transplantation of some of the feeling of an essentially brick architecture.

From one point of view, certainly, it might be urged that we can have no need to go to other countries to study this class of architecture, when we have a brick architecture, pure and simple, so peculiarly our own, omitting notice of earlier work in this material, filling so many leagues of our streets with its unadorned neatness, and rising to something of monumental grandeur and dignity in the masses of warehouse and factory, to be found in different parts of the kingdom; heaps of bricks, as Fielding somewhere observes, piled up as a kind of token or monument, that heaps of money had been piled first. It is all very well to sneer at the "hole-in-the-wall style," but it has at least been a great fact; it is the expression of the sole and comprehensive idea of thousands, we might say millions of people, as to the possibility of architectural expression in the exterior of city, and even of many country, homes: it represents, in one point of view, the readiest, simplest, and most economical way of using a material which can be formed into unlimited numbers of cubes of exactly the same size and proportion; and its merits in its palmy days have attracted the commendation, the sympathetic admiration of a very eminent modern philosopher.* It has the quality, specially characteristic of the grandest production of the art, unity and breadth of style; like the Doric temple, it achieves effect by a repetition of similar features; and any section of it, taken separately, is, as a composition, complete in itself. The researches of modern architectural critics, however, are tending to throw contempt on this chaste and severe style of brick architecture, and drawing our attention more and more to the effects produced in other countries by moulded bricks, and tracery, and other *tours de force* of this kind, in burnt clay, from which we may draw wholesome lessons and precedents for transplantation to our own streets and squares.

If we go beyond the pure English style of brick design alluded to, we may distinguish these stages or manners in the employment of the material, two of which have already received considerable illustration in this country. There is the brick and stone style, the coloured brick style, and the moulded brick style. The first, vulgarly known as brick with stone dressings, is indigenous, and in many cases is, in fact, merely the substitution of brick for stone in the unornamented parts of the structurre, for the sake chiefly of economy; though it may be accompanied by a certain amount of "treatment" of the brick, by the introduction of lines or crosses of darker brick on the orthodox red brick ground. Though this is an imitation in brick and stone of a masonic style, rather than a distinct style, it has, nevertheless, a character of its own, and in old houses especially, where the conflicting brick and stone elements have been toned down by time, it is capable of very pleasing effect. But in more recent times this method of combining the two materials has been the medium for all kinds of architectural commonplaces and vulgarities. It affords a means of getting what is supposed to be an architectural effect at a reduced cost from that of stone, and is eminently useful in the production of the kind of dwellings or shops called "handsome" or "respectable," as the degree of stone embroidery is more or less profuse. It is especially disagreeable when carried out with those staring, cold-looking yellowish bricks, which are the bane of so much modern town architecture; and at the best, the system of combining brick and stone in this way produces patchwork, takes away entirely the homogeneous character of a building, and gives it a kind of put-together cabinet appearance, with what we have heard called the "architectural features" added and framed into the rest. It would be possible to use brick and stone together in a much more architectural way than this, making a basement of the one and superstructure of the other; for instance, instead of putting the stone in after a carpenter and joiner's

* See Carlyle's appreciative remarks as to the quality and appearance of the bricks in the older Chelsea houses, and elsewhere, in "Shooting Niagara."

fashion, to make jambs and architraves to windows and doors. The coloured brick architecture is, as far as this country is concerned, of modern origin, or rather importation. As carried out here, it is distinguished by great flatness of treatment, and a frequently violent opposition of strongly-coloured patent brick; though lately there have been attempts to realise more delicate harmonies by the combination of stone of suitable tints. The style is, in fact, the importation here of a manner of architectural treatment arising not unnaturally in a southern climate, where there is plenty of light to bring out distinctions of tint, and where material of rich and delicate tints (marble) could be procured, either to be used alone, or to combine with and harmonise the more raw hues of brick and tile work. We have not the same facilities here. We have been smitten with "the brick and marble architecture" of Italy, and have transplanted it, *minus* the marble, into an atmosphere where we have only two things to choose between in the treatment of external colour; either to make it very unpleasantly stray at first, or to see the effect obliterated by weather in a very short period. The coloured brick style, when the buildings are new, gives certainly a variety to our town architecture, and does not there clash with the sense of association; but it quickly loses its effect. In the country, on the other hand, the style is an anomaly, not harmonising with the colour or with the sentiment of the landscape. The value to us of the introduction of this style is for interiors, where it can be treated more delicately without danger of losing its effect so soon; though even here it needs to be handled with a delicacy and refinement, in regard to choice and arrangement of tone, too often absent.

The genuine brick style, what we before called the moulded brick style, is that which has naturally and of necessity been developed in countries where the builders were obliged to trust to this as the only material available in any large quantities for realising their designs. Like the timber style of Norway, the brick style of Pomerania and some other regions of northern Europe is the genuine outgrowth of the necessities of the case. It is the attempt to do in brickwork what in other countries other Mediæval workmen accomplished in the grander and more plastic material, stone. And few things in the history of architecture are more interesting and more characteristic than the monuments left by builders contending with restricted materials, but determined to produce with these what effect they can. Like all styles formed in this natural and unaffected manner, the brick architecture of northern Europe is marked by a character at the same time distinct and homogeneous, and directly the result of the peculiarities of the material. Imitated in stone, the features of such a building as the Marien Kirche at Stralsund would appear for the most part anything but attractive; its unadorned spaces of wall would be bare and cold, its ornamental features thin, wiry, and starved looking. Recognise, however, the character and limitations of the material, and all this is changed, and the design comes out as a suitable effect and picturesque achievement.* Nothing could more forcibly illustrate the *relative* nature of architectural design, and the extent to which the intellectual capacity, the reason, is appealed to by it, as well as the eye. It is noticeable, too, that the satisfactory effect fails where the material is strained to do what it cannot satisfactorily accomplish, as in the effort to build up long lines of mullion in such a material as moulded brick. Conversely, the long pilasters, the square turrets and pinnacles in the Pomeranian brick style, which in that style appear as a satisfactory and characteristic treatment, would, if carried out in stone, appear simply bald, the material being capable of so much more rich and free treatment.

Regarding this last as the true brick architectural style, in which the material is made use of to produce purely architectural effects of composition, surface ornament, and light and shade, through the means of moulding and arcading, but with its own peculiar manner suited to the exigencies of the material; the question then becomes, how far is it desirable, in a country where there is no lack of good average building stone, to carry out and enlarge upon a style which in reality expresses the absence of stone, and only came into existence on account of that absence? If anything like an imitation of the North German style were attempted, it would almost certainly be a failure; for it would be a deliberate putting of himself into fetters by the architect, who should be content to use an inferior and cumbrous material when he had better ready to his hand. Among our stone-yielding districts a building dependent entirely on brick is an anomaly. On the other hand, what we do learn from this brick architecture, among other things, is the value of homogeneous material and treatment, rather than patchwork of a better and a worse material. Brick architecture should be purely brick, architecturally speaking, and aim at brick effects and treatment, and not be dependent on extraneous stone features to make it pass for architecture. And where circumstances are such that it really will enable us to realise an architectural effect and feeling more economically than stone, as in neighbourhoods where the stone of the district is poor or in small quantities, there will really be a valid reason for employing the artificial material; for there can be no doubt then as a mere material, in regard to tone and colour, and even finish and durability in mouldings and ornaments, good brick is better than a soft and inferior stone. Such cases, however, are exceptional in this country; otherwise, a development of pure brick architecture here must be the result of a wish to obtain a new source of effect, something which our more usual ornamental building materials cannot realise. That this is possible with brick there is no doubt; but not *economically;* any brick building, to realise architectural effect of a high order, is likely to cost as much, or more, in time and workmanship, if not in material, as stone. Whether it is worth while to try experiments of this kind will depend entirely upon the way in which architecture is regarded. If we preserve the utilitarian theory, and regard a building as a necessary erection, to be set up of the most suitable and procurable materials, and with them made to look as picturesque as possible, brickwork can only retain its place in the very plain class of buildings it has hitherto chiefly been used for; anything beyond that will be best built of stone. If we regard architecture more as an ornamental art, in which we can take any material we like, and fashion it to suit our tastes, that is another thing, and it may be an interesting experiment; but the cases in which this view can be acted upon are not many; public architecture is for the most part indissolubly bound up with public economy, and experiments therein cannot be honestly or successfully made, to any but a very limited extent.

Where brickwork is to be used in architectural design, however, it must be observed that at present we are, in a second sense, in the position of "Israel in Egypt"; for "there is no straw given unto us,"—the material for the highest class of brickwork is not forthcoming; and even the need of a larger or a smaller brick than ordinary, for special purposes, requires something little short of an act of Parliament to produce the article. Perhaps a little experimentalising in brick design might at all events have the good effect of forcing our brick manufacturers a little out of their usual groove, and helping to demonstrate that there are more ways than one of using a material of this kind.

* While referring to the Stralsund Church, notice the treatment of the apse, with the half windows next the angles, the crown of the arch adjoining the pier, instead of the springing. This looks at first sight contrary to all our habitual ideas on architectural design, yet it is, in fact, a simple and effectual way of doing away with outward thrust at the external angles of the apse, in a style where buttresses would be out of keeping.

SHALL ALL THE NATIONS BE ALIKE?

IT must often have been a subject of wonder as to how it has come to pass that no scientifically disposed person has as yet got to work and written a book on the what may be termed *aspirations* or *dominant ideas* of the leading nations of the world at each particular epoch. For instance, what was it that filled the thoughts of men as a predominating idea in the old patriarchal days? What was it in the times of barbarism, and barbaric pomp and glitter? What in the Dark Ages? Might not a philosophic history of the world's *mind* be got out of such a method of search and treatment and inquiry as this? There might be a good deal of difficulty in it, and a good many doubtful things, and it might puzzle sometimes the very keenest of historians to find out what it was that most filled men's minds at any certain and defined era. But nowadays in these centres of civilisation there could be but little trouble in the finding out of the master-thought of the time, or that which the most intelligent and influential majority are best agreed about and most eagerly desire to do. We are concerned here with the broadest possible and most general thoughts, and are led to a thought about them by the present goings on in modern civilised Europe. It is not only *within* the special province of fine art and architecture, but is really and indeed at the very foundation of them. It is a wide subject, and asks for a little gathering together of all one's knowledge, acquired sometimes with no small difficulty, but is well worth a little trouble to come at even dimly as events go on in the wide world.

If it be difficult, and we will allow this, to get at the main motive of the older dominant ideas in each age, it certainly is not so to see what in the main constitutes the one of to-day. If we might venture to give it a name which should generally characterise it, it might be "amalgamation" or the *unification of countries*, and of men, and of arts. If there be any one aspiration more certain than others of commanding universal assent from "societies," the press, the pulpit, and the general instinct of the public mind of civilised Europe, it is that of a hope and a firm belief that in time, and in no long time, all the nations of Europe, and indeed of the world, will come together and be as one, and follow the lead of the most powerful and dominant nation. All things about us help this idea. Railways practically bring distant places together. Telegraphs enable people to talk to each other across whole continents and wide seas. A sort of universal and general knowledge is gradually spreading everywhere, and a kind of "model education" is in course of being perfected which must in time include everybody, from the Bacons and Newtons of the world to the street arabs and *gamins* of its capital cities. All this is in progress, be it observed, and is not the mere hope and fancy of a future. There is also, and it is, as all know, one of the great hopes of the future, a general dissemination of what are called general or "universal principles" of fine art tending to bring all art-styles together, and to elicit out of them, if possible, a sort of universal art-language. Free trade and unrestricted commerce help this not a little, for the shop is a universal necessity of civilised life, and what is good for one place must needs do for another, if but the people in it and about it can be induced to adopt it and make proper use of it. Nothing, indeed, can well be more delightful and cheering than this thought of a universal coming together of countries, arts, and peoples; the savage "civilised," the barbarian civilised, or, what is a better word, "Westernised," and the civilised man more and ever more *educated*.

But—we say *but*, for it is quite a necessary word in all this bright prospect,—it is to be noted in the first place that this thought, though so essentially modern, and so full of the railway and the telegraph and *book* education, is not so new a one as many might think; for, strange to say, it was one, if not the chief, of the wonderful activities of Alexander the Great to not only *subdue* the whole earth by force of arms and force of will, but to "*Grecianise*" it as well. He, like the modern man, wanted to bring the whole earth together and to make all one, and to dominate all with a Greek sceptre. If there ever were in the world, and he might be well excused for thinking it, a people perfect enough to form a model for the whole of the rest of humanity, it certainly was the all but perfect Greek. Form, presence, face, manners, grace, fine arts, architecture, language, all went together to make up as perfect a whole as can well be conceived; and Alexander, with the magnificent Persian at his feet, might well be excused for hoping to accomplish the task of making all the rest of the world like it,—to make the whole world "Greek." But he did not and could not do it. Let us grant that the ancient Greek, as we may yet see him, was a well-nigh perfect man, and that his surroundings, as his architecture and his other fine arts, were quite worthy of himself; who is there, we may ask, that would wish to see *all* the world Greek, or even all Europe at the present day Greek? Nothing but Greek architecture, Greek sculpture, Greek impress everywhere, and nothing spoken but the Greek tongue? A glorious unity it must be confessed, but who would ask for such perfection of sameness? And if this be so, what are we to think of a dominant ascendancy of any one of the *present* leading nations—a domination,

be it observed, going to the root of everything, and compelling all things to be alike?

Be it observed that we are not supposing merely things as they might be, but are speaking of things as they are now going on, and "progressing," and perfecting themselves. To cite but one proof of it, not only is the fine-art and architecture of all civilised Europe growing alike by slow degrees, but the several individual details of it are actually manufactured in the same places, and even cast from the same moulds. It is really not a little difficult to conceive how any one can,—in an artistic sense,—come to think there can be "art progress" in such as this. *Commercial* progress there may be, but not art progress; for this system can but serve to make all buildings precisely alike. Invention, style, individuality of treatment, nationality, and all else that can constitute diversity and artistic interest, must needs disappear under such a system of production. There are doubtless advantages in it, but are the advantages at all commensurate with the disadvantages, and the hindrances to a real and a true art advancement and to artistic interest? It cannot surely be so. All this may be, as we may doubtless be told, inevitable, and in the nature of things; but can it be said that it is favourable to the individuality and *nationality* of fine art and architecture? And art and architecture, and all that hangs on it, are, after all, the great material proofs of what is called progress, and advanced civilisation, and high culture!

We are led to these thoughts by more than one or two things that are at the present moment going on in the world, and under the highest auspices and inspirations.

The great and dominant nations of the world are driving all before them, whether they are driven well or not. The old world conquests, such as those of Alexander, were as nothing in point of influence and lasting energy as compared with modern "*occupations*." Alexander advanced into the very heart of the great continent of Asia, and then turned back, declaring that there were no more worlds to subdue; but when turned back he left all as he found it; he bore away the spoils, may be, of the great and wonderful cities he overcame, but he left them as he found them. The conquered inhabitants must have remembered him, as men remember vaguely a distempered dream; but they could have borrowed nothing from him, and he could have taught them nought. Their special individualities remained. Art, language, manners, modes of life remained as they were before the visitation, neither better nor worse. But how different a modern conquest, or "occupation," to use a favourite and conscience-quieting phrase, such as that, for example, of the Russian advance into Central Asia, or the British occupation of India. The more satisfactory and the more complete it is, the more perfectly and entirely is the nationality of the place occupied put aside, and a something else put in its place, better in some ways, it may be, but still individuality is displaced, and so far destroyed. There was surely nothing so strange and almost mysteriously attactive in the old world as the *isolation* of its great nations, and their separation and distinctness. Arts, manners, customs, languages, their races of men, buildings, all and everything, was different; almost as in different worlds. Nature would seem, as it were, to be trying her hand at inventing and working out different and distinctive individualities. The Greek and the Jew, the Egyptian and the Assyrian, the Gaul and the savage Briton were all unlike each other as their several architectures as we now see and wonder at them in museums and in ruins. The men of each country differed, as did their several quaint, or beautiful, and graceful costumes, and in passing from one to another, as, doubtless, many an old pilgrim and trader did, it must have seemed to such like the passage from one into a new sphere of existence. Borrow from each other they sometimes, doubtless, did, but there really was no need of it. Every nation seemed to be equal to its own special work. But now-a-days all is changing; the whole drift and spirit of the time is well epitomised by the railway; the more even and level it is the better, and the great effort is to reduce all to a level. The Russian in Northern Asia, and the Briton in Southern Asia, imply not simply conquest but *occupation*,—the negation of things Asian. The great "Asian mystery," which attracts Mr. Disraeli so much, and so often, and has confounded others, is after all but a simple affair in the future; for the Asian must disappear, if not in actual person, at least in speciality and individuality in exact proportion to the "progress" he is compelled to make.

In thus hinting at these thoughts on the fate of primitive art and individuality, and at their certain amalgamation, or destruction, as we might rather term it, we cannot but be struck with one special though slight indication of national feeling on the part of some few of those, to us, strange men who now represent the great individualities of the past. We hear now and then, in faint enough tones, may be the very voice of Asia, not only present in this age, but really as coming from the ages that are gone. A dim consciousness of their own value, and the power there must be in their own individuality, seems to come over them, even after "education" has done its work, and almost transformed them into new beings. Is it, indeed, the great Asian mystery that fills the minds of such men almost unconsciously, or is it only after all the natural affection which all distinct and individualised races of men *must* sometimes feel for their own past history? Arts and architecture, and language, and, may we add, costume and manners, are surely worth the preserving and developing; for other things may be developed surely besides Westernism. There are, at least we hope so, even in Central Asia, other shops, and shop-fronts, different from those you may buy ready made in London, waiting only the fixing, compounded of all styles, and belonging to none. Surely there must be more in the individuality of nations and distinct races of men than such implies, and certain it must be, that to elicit the strength and "art power" of a distinct race of men, it is, and must be, necessary, that they work out their own ideas with their own hands, and out of their own minds, aided by their own past history, and "art precedent."

THE CRYSTAL PALACE SCHOOL OF PRACTICAL ENGINEERING.

The first year, and the third term, were brought to a close on Saturday, by the presentation in the lecture-room of the school, of the certificates awarded to students; Mr. J. W. Bazalgette, C.B., C.E., presided, and presented the certificates. Before this was done the numerous visitors had an opportunity of inspecting the work of the students in the drawing-office, in the pattern-shop, in the foundry, and in the fitting-shop. The course of instruction embraces one term in the drawing-office, one in the pattern-shop and foundry, and one in the smiths' fitting and erecting shop. The students that have attended each of the three terms have now accordingly taken the complete course. It is much to their credit that, as a substantive result of the year's instruction and training, they should among other things be able to show at work, and working smoothly and well, a 3-horse power steam engine that has been produced entirely in the school workshops, excepting only the castings that were too large for the capabilities of their little foundry. These, however, were received in the rough condition, and were finished and fitted by the students, who produced also all the drawings, and made the whole of the patterns. A number of drawings, the work of the students, each accompanied by specification, statement of quantities, and estimate, were shown in the drawing-office. The subjects included elevation, details, and estimates for a wrought-iron roof of 40 ft. span.

Mr. Bazalgette, before presenting the certificates, spoke in terms of praise of the school as well entitled to the name it took of being practical, and estimated highly the value of the theoretical instruction combined with practical training of which the students had the advantage.

Mr. Shenton read the report of the examiners, Messrs. W. Pole, F.R.S., C.E., and J. Imray, M.A., C.E.

Certificates were awarded for merit in the students' papers, "On materials and their manufacture," and for merit in the drawing-office, the pattern-shop, or the fitting and erecting shop. For merit in their papers, the students were allowed marks, the highest number they could reach being 232. Of twenty-nine students in the school, eighteen presented themselves for examination on their papers, and twelve of these received double certificates,—one for the merit of their papers, and another for the excellence of their work in the drawing-office, the pattern-shop, or the fitting shop.

Mr. P. W. Britton, with 225 marks for his papers, was second in the pattern-shop; Mr. J. H. Frogley, 223 marks, first in fitting-shop; Mr. R. J. Symonds, 202 marks, first in drawing-office; Mr. J. K. Lorimer, 174 marks, first in pattern-shop. The other students that received double certificates were Messrs. H. C. Dent, W. Michels, S. H. Hampton, E. Smith, G. Harris, W. H. B. Green, A. Wortham, and E. Green. Single certificates were awarded for drawing, to J. T. Brickford, C. S. Smith, and R. de Jaurequi. For work in the pattern-shop, H. F. E. Tompson, and E. W. W. Waite. And, for work in the fitting-shop to A. Saubergue, F. J. Jones, E. W. Rees, F. Maurice, J. Day, and H. S. Fitzgerald. The examiners conclude their report by expressing their great satisfaction with the progress of the students, and with the sound practical system of instruction and training adopted by the Principal, Mr. J. W. Wilson, C.E.

In acknowledging the vote of thanks accorded to him, Mr. Wilson stated that the students had answered four questions upon each of eighty-three lectures that had been delivered to them, or 332 questions in all.

Professor Pole, one of the examiners, on being called upon by the chairman, bore high testimony to the value of the school, and the efficiency with which it was conducted by Mr. Wilson. He considered it an admirable preparation for entrance to an engineer's office.

Votes of thanks to the chairman, the examiners, Mr. Wilson, and Mr. Shenton, closed the proceedings.

A NEW DANGER TO ARCHITECTS.

Sir,—The position of the architect in the present day is not an enviable one. Although as regards material prosperity it cannot be denied that, individually, architects have participated to a great extent in the prosperity that has attended the trade of the country during the century, it is at the same time indisputable that their influence as a body has decreased, and that their *status* with the public has declined rather than advanced of late years. For this anomalous position of the profession, and the want of recognition of architecture as a liberal art, it would be perhaps unfair to blame the public, the fault lying rather with the architects themselves, who are for the most part disinclined to enforce a compulsory system of education, as has been adopted by other professions, or to set up a standard by which the qualified practitioner might be distinguished from the charlatan. This is a question of too wide a range to be discussed in a few words, and I have no intention at present to reopen a controversy which has been virtually decided by the representative body of British Architects, in a sense intended to promote the interest of its members. I merely allude to this point from a desire to avoid including in my enumeration of the disabilities under which architects labour any burdens they have imposed upon themselves, or which they have not endeavoured to remove from their shoulders.

It is to be borne in mind that the profession of an architect never was at any time a recognised profession, in a legal sense, in this country. No certificate or diploma was ever issued to the architect to enable him to practise, and yet his position (in England, at least) was, until the commencement of this century, as clearly established, and his position as recognised, as that of a member of any other of the liberal professions. I do not forget that, occasionally, the architect suffered rebuffs, as when Wren was displaced by Denham, or when Kent, originally a painter, monopolised the patronage of the nobility in all matters connected with art. These, however, were accidents, due in the one case to intrigue and political jealousy, and in the other to the protection of a nobleman who had acquired a reputation which enabled him to dictate to the fashionable world upon questions of taste. The so-called Gothic revival, although it certainly did much to advance the study of architecture, as certainly contributed to degrade the architect in the public estimation. The writings of those eminent men by whom this important revolution was mainly effected invited us to regard the architect as merely a master mason, or clerk of the works; while the emphasis that was laid upon the necessity (or it might almost be said the sufficiency) of the study and admeasurement of Mediæval buildings, led people to believe that the comprehensive view of the education necessary to the architect which had been insisted

on from Vitruvius downwards was a mere supererogation, and that it was in the power of any one of moderate abilities who had mastered the simple elements of True or Christian architecture, and had some taste for drawing, to become an architect. The tiresome study of the proportions of classical art, the necessity for the acquisition of foreign languages, the pursuit of what was called *Belles Lettres*, and of undertaking foreign travels, were all done away with: a new royal road was opened up, and Free Trade in Art was proclaimed. There can be no doubt that many men who were before deterred from entering upon the study of architecture from the difficulties which it seemed to present, gladly availed themselves of the relaxation which followed in the course of education upon the publication of Pugin's "Contrasts" and his "Principles of Christian Architecture," and embraced a system which seemed to afford greater scope to the imagination, and at the same time dispensed with much that is distasteful to the young mind. It would be idle to deny the many valuable results that have flowed from the study of English antiquities, or to shut one's eyes to the noble works which have been executed by disciples of this school; but it is certain that the commencement of the public distrust of the architect was coincident with the revival of a taste for Gothic architecture, and it is not difficult to understand how this change was brought about. The public had before been accustomed to regard an architect as a superior being, by reason of his education and position; but finding that architects themselves ridiculed classical attainments as pedantic, and that the ranks of the profession were being recruited by men who were ignorant of everything but their business, they took their authors at their word, and came to regard an architect as merely a superior artizan, who might be entrusted with the carrying out of work, but who was of such a nature that he required to be held with bit and bridle lest he should turn and rend you.

It is this feeling that has led to the ignominous conditions that have been imposed upon concurrent architects in competitions for designs and public appointments. What, for example, can be more degrading to a man of any delicacy of feeling than to have the duties of his office rigorously defined by a code of regulations, as is now done with most new appointments? Not only, however, are the architect's duties prescribed, but his emoluments are also usually restricted, with a view to prevent his claiming any additional compensation in case he is called upon to perform any additional work incidental to his office. Everything is, in fact, done in order to prevent the possibility of the architect taking advantage of his client, and the honour of the architect himself is not considered as of any value.

A large proportion of profitable business which formerly fell to the share of the architect has of late years been monopolised by engineers and surveyors. Forty years ago the business of the surveyor was scarcely recognised apart from that of the architect. Now, the surveyor has established for himself an entirely distinct branch, and has succeeded in alienating from the architect some of the best paid portions of his business, leaving him with some of the most embarrassing and least remunerative parts. Again, by the action of the Government, a considerable number of large public buildings, such as churches, barracks, hospitals, sanitariums, &c., both at home and abroad, have been taken out of the hands of architects and given to royal engineer officers; or if an architect has been employed, the whole credit of the design is usually given to the officer in charge. The Post-Office has thus dispensed with architects, and we have lately seen that a large building has been erected in London by this department, at a cost exceeding 200,000*l.*, by a subordinate officer in the employ of the Government.

These are some few of the grievances of which architects complain, and I might readily enlarge the list, but I do not desire to do so further, but prefer to call attention to a new danger with which architects are threatened rather than dwell upon evils which are known and admitted.

The danger to which I advert is the insidious encroachments of the landscape-gardener upon the domain of the architect. It is true this is no new thing, but the encroachments have of late become more daring than before, and it behoves architects to put themselves upon their guard. The profession of the engineer has grown up chiefly through the extraordinary development attained by the railway system in this country, and however much architects may lament the fact, there can be no dispute that the engineer has fairly won the position he has acquired, and that he supplies a want which the architect was not fitted, either by taste or education, to supply. But this is not the case with the landscape gardener: his functions are essentially different from those of the architect, to which they are usually and properly subordinated, and there need not be any jealousy or any question as to jurisdiction between the two. Some landscape-gardeners have, however, assumed the title of landscape architects, a palpable misnomer, which can only have been assumed to mislead, and have taken upon themselves to design and carry out buildings in addition to their other duties. The public, little accustomed to discriminate, are deceived by the assumption of the name of "architect," and the landscape-gardener is not unfrequently entrusted with commissions for works of importance, to the manifest injury of the architect proper. It may, perhaps, seem idle to complain of the preference of the public for these irregular practitioners, seeing that, as already observed, there is no recognised standard of architectural education, and that anybody is entitled to call himself an architect, and to carry out any work that he may be able to obtain; but that is not the point to which I desire to direct attention. It is, of course, impossible to coerce the public taste, and to lay it down as a rule that none but properly qualified men should be employed upon architectural works; that is clearly impracticable in the face of the attitude of the present Government, whose action with regard to architects is not only countenanced, but applauded, by the majority of people in this country. We must be content to take things as they are, and for the most part we have become accustomed to the present position of affairs; but the new danger consists in this, that while hitherto architects and landscape-gardeners have been in the habit of working side by side upon the same work without any risk of interfering with each other, it is now impossible for the architect to call upon the landscape-gardener for his assistance, or to acquiesce in his appointment, without introducing at the same time a rival who may take away the most profitable portions of his work, interfere with his most cherished designs, or perhaps supplant him altogether. This could not have occurred under the old *régime*, but it does happen now, and the sooner architects become alive to the danger they incur in thus acting the better it will be for all parties.

It comes about in this wise. An architect has prepared designs for a mansion, let us say; the site is bare and unadorned, and the client determines to employ a landscape-gardener to lay out the grounds. The landscape-gardener prepares a plan, showing not only the arrangement of the grounds, but terraces, conservatory, garden-walls, lodge, entrance-gates, stables,—in fact, everything necessary for the completion of the mansion and its surroundings. This is submitted to the client, who is in all probability ignorant of the distinction between the duties of the architect and landscape-architect, the design is approved by him, and the landscape-architect is entrusted with the execution of the work. The architect is not perhaps consulted at all, or if he is consulted and objects, the landscape-architect makes the plausible suggestion that as he will have the control of the roads and paths, walls, &c., it will be desirable that the buildings which adjoin should also be placed in his hands: perhaps he suggests that the main building itself has not been properly treated, or that the expenditure has been excessive, or that he has carried out similar works for the Marquis of Blank, or Sir Humphrey Chose, and the client, as we have before said, ignorant for the most part of the practice in these matters, and dazzled by the achievements of the landscape-architect, acquiesces, although perhaps reluctantly. It is not the mere loss of business to the architect which is to be looked to in this proceeding, although that is not to be disregarded; but it is to be borne in mind that it is in the power of the landscape-gardener to interfere greatly with, or, perhaps, entirely destroy, the effect of the architect's design. The mansion may be Gothic, and the lodge Classic, or, *vice-versâ*, the stables may dwarf the house; and it is also always in the power of an unscrupulous man to put his rival's work in the shade, or by means of colour, outline, or juxta-position, to enhance the effect of his own compositions at the expense of his coadjutor's.

This is not an illusory picture, and the danger is real and threatening. The remedy is in the hands of architects themselves: let them take care not to associate themselves with landscape-architects, but choose a landscape-gardener of the old type; let their respective duties be clearly explained to the client, and if necessary defined in writing; and, above all, let the architect assert his authority, and insist that all drawings, for whatever works, shall be submitted for his approval before being put in hand. This is the architect's proper position, and if he abdicates his right to being consulted upon everything relating to the house and its surroundings, he will inevitably lose the confidence of his client, and will find himself immersed in numerous unnecessary difficulties.

CIVIS.

LONDON AND ITS FOGS.

LONDON and fog are as closely allied as Scotland and mist; but between the Scotch mist that is reputed to be able to "wet an Englishman to the skin," and the black dry fog of the metropolis, there is a wide difference. The reports which with difficulty can be gleaned from old newspapers and journals concerning previous London fogs are very meagre, which may be wondered at considering that each fog was, like that of the week before last, the cause of many fatal accidents. On January 1, 1720, London was so darkened by fog that several chairmen, with their burdens, fell into the canal in St. James's-park; many persons fell into the Fleet-ditch, and many into the Thames. On December 2, 1761, "the fog was so very thick in and about London that even chairmen lost their way in the streets, and carriages ran against carriages, by which much mischief was done, and many lives lost." On the 19th of November, 1767, many deaths were caused by a dense fog, Fleet-ditch and the Thames being, as usual, the recipients of many of the wanderers. Before referring to the great fog in London of 1813-14, it may be interesting to notice some fogs which have appeared in other places. A gentleman writing from Kensington, Connecticut, U.S., under the date of the 19th of April, 1758, says:—"On the 3rd inst., about sunrise at this place, was a fog of so strange and extraordinary appearance that it filled us all with great amazement. It came in great bodies, like thick clouds, down to the earth, and in its way striking against the houses, would break and fall down the sides in great bodies, rolling over and over. One of our neighbours was then at Sutton, 100 miles distant, and reports it was much the same there." On December 15, 1774, Amsterdam was wrapped up in a fog of so dense a character that people ran against each other, even though provided with torches; 230 persons were drowned by falling into the canals; their cries were heard, but no one could venture to their relief: "the case was the same all over Holland." The city of Dublin was covered with such an intense fog, on the 8th of February, 1798, "as the oldest men do not remember to have seen." Although the country round was in a great measure free from its influence, yet in the streets it was at one time so thick, that persons in conversation could hardly distinguish one another's faces. The carriage of Mr. Taylor Rowley was driven into the Liffey, near Carlisle bridge. Mr. Rowley and his coachman had the good fortune to escape, but two fine horses which drew the carriage were drowned. At night it was scarcely possible, even with the aid of lighted flambeaux, for passengers to explore their way along the streets without danger or accident." The chronicle omits to state that many persons met with a fate similar to that of Mr. Rowley's horses. The great fog in London, which happened in 1813, is briefly recorded in a newspaper of December 31st, in that year. "The density of the atmosphere during the day, and the heavy fog at night, which prevailed for the whole of the last week in London, and many miles round, has been very remarkable, and has occasioned several accidents. On Monday night the mails and other coaches were delayed unusually long. The Glasgow coach, which should reach Stamford by eight, did not arrive on Tuesday till two in the afternoon, and the York and Edinburgh not until four." Many of the coaches were overturned; the York mail twice, near Ware, notwithstanding the guard and passengers walked to keep it in the road. The Maidenhead coach, on its return to town the same evening, missed the road, and was overturned. The Birmingham

mail was nearly seven hours in going from the Post-office to Uxbridge, a distance of less than twenty miles; and the short stages in the neighbourhood of London, had two link-bearers running by the horses' heads. As during the fog of last week, many persons were drowned in the Thames and the canals. The following paragraph from the fashionable intelligence of the *Morning Post*, December 29, 1813, reads somewhat strangely in 1873: — "We stated yesterday the Prince Regent's departure, a few minutes after seven o'clock, for Belvoir Castle, the seat of the Duke of Rutland. His royal highness had not got further than about a mile from Tottenham-court-road, when one of the out-riders was thrown off into a ditch. To see the road was found impracticable. The lamps in the carriage were of no use, and even flambeaux were insufficient." Returning were as tedious as to go on. "However, his Royal Highness resolved to give up the idea of proceeding to Hatfield, and getting out of his carriage whilst it was turned, remained knee-deep in mud for some minutes. By taking off the leaders, the carriage was at length turned, and proceeding slowly with flambeaux before the horses, almost to Carlton House, his Royal Highness got safe there at about half-past nine, having been two hours and a half in proceeding about one mile beyond Tottenham-court-road." Certainly travelling in those days through Kentish Town in foggy weather, on a road untouched by Macadam, must have been far from agreeable.

What is the cause of these dense fogs? Those who have studied the question, reply,—A fog is formed by the mingling together of masses of air of different temperatures, and may properly be termed an *earth-cloud*, because it is formed at the surface of the earth, and seldom rises many feet above it. A London fog does not in general extend much beyond the height of the houses. During its prevalence one may, by ascending St. Paul's Cathedral, obtain a clear atmosphere, while underneath the dark vapour is rolling like a sea, through which the spires and steeples rise like the masts of stranded wrecks. London fog is not equal in density in all places; a long depressed line marks the course of the Thames, and the deepest darkness hangs over the most crowded neighbourhoods. Before the Act of Parliament was passed requiring the London factories to consume their smoke, the fog was particularly dense in the localities of the great breweries. The height of the fog is greatly determined by the nature of the subsoil. If it is clayey, it stands high, and low if it be of sand or gravel. Defrance states in his treatise on Vapour, that fog is occasioned by a descending current of air, which beats down the smoke and rolls it over the surface of the earth. At this time a current of air may be observed to descend through the chimneys which have no fire, producing a strong odour of soot, thus proving the existence of descending currents in the atmosphere. Therefore, if the smoke of tens of thousands of chimneys be discharged into the air, and there mingled with watery vapour, and then again forced to descend, a dense fog must necessarily ensue. It is generally considered that those fogs which have a peculiar taste, and cause the eyes to smart, owe their disagreeable properties to gases and vapours produced by the combustion of fuel, and from this source the atmosphere is charged with carbon, sulphurous, nitrous, and pyroligneous acids. A moderate wind will usually break up a fog, but an increase of temperature without wind tends to increase its density. It has often been observed that during the middle of the night until early in the morning, London is free from fog, which, however, sets in as soon as the fires are lighted; sometimes it clears away for a short time at noon, and increases in density as evening approaches and the gas is lighted. London fog has also a peculiar tidal motion, which tends down the river towards the marshes, and an extraordinary amount of electricity frequently accompanies thick driving fogs. Fogs and epidemics often accompany each other; they have, it may be, a common origin, or, perhaps the one is the cause of the other. Dr. Prout, in his Bridgwater Treatise, specially refers to a certain poisonous gas, seleniuretted hydrogen, which exists in the atmosphere during a fog, the smallest atom or bubble of which when inhaled by the nostrils excites pain: this is followed by catarrh and pains in the chest. During the recent fog, as is well known, both human beings and animals perished, probably through the inhalation of this poison.

Strange it is that though London has so long and frequently suffered from the visitations of fog, scarcely any man of science has ever come forward to propose a plan by which it might be entirely abolished and stamped out.

THE RESTORATION OF THE CHATEAU OF PIERREFONDS.*

The restoration of the exterior walls and towers of the château, comparatively easy as far as the repetition of existing forms was concerned, must have called for very great practical knowledge in the design and erection of scaffolds, and I regret very much that I was unable to visit the château in the earlier years of its restoration, especially as on these points M. Viollet-le-Duc is *facile princeps* in France, having almost, I may say, created a revolution in the principles of their construction.

In consequence of their immense thickness, and of the excellent quality of their masonry, the walls had all retained their vertical positions, and, excepting the interior vaulting and small internal walls of slight importance, no underpinning was required in the restoration. The breaches and gaps were filled in, and the masonry in the upper part of the walls was executed in the ordinary way,—that is to say, for the exterior walls, rails were laid round the whole of the château, on which the materials were drawn to their respective position, and raised by means of an immense steam crane; the thickness of the walls otherwise allowing the materials for cross walls to be rolled along on their summits. For the interior walls the scaffolding was continuous, the stones being placed in position by travellers.

The stone details for the windows, cornices, and other decorative features, were built in block, and carved or moulded in their respective positions: this applies only to those parts which were built with the soft limestone of France; whenever a harder stone was employed, it was carved or moulded first.

About 18,000 cubic metres of stone were employed in the restoration, all obtained from the neighbourhood of Pierrefonds: the chief varieties being (hard stone) Lavasine, Croni, Villiers liais de senlis (soft stone), from Pierrefonds itself (blue royal) a hard compact stone, hautefeuille, and senlis, these several varieties coming from the same quarries as those in the old building.

The floors of all the large rooms are carried on oak girders, the material being obtained from Viller's Cotteret, and the forests of Laor and Coucy, the oak of the forest of Pierrefonds being valueless for trusses or girders. These oak girders are halved and trussed, the ends rest on stone corbels, the design of which varies in the several rooms. On these girders are laid joists 6 in. by 8 in. deep, with a space of from 7 in. to 8 in. between; on the top of these the battens are laid with a bed of plaster of Paris, from 2 in. to 3 in. thick, the ceiling beneath being formed between the joists. The flooring-joists are laid on the plaster of Paris, being kept in position by the same material; the flooring is ¾-in. oak boarding. The trusses of the roof are all in iron, as well as the purlins, rafters, and laths or battens to hold the slates,—the latter are suspended in an ingenious manner on the iron laths (which serve as slate battens) by small clips of copper, so that any slate can be taken out and replaced, if necessary, without disturbing the others. The slates, which are of a deep violet colour, come from Furnay in the Ardennes. These constitute the chief constructive points; I have yet to direct your attention to those portions of the interior, viz., the courtyard, staircases, and rooms, the designs of which may be said to be more or less original, though based by M. Viollet-le-Duc on the architectural fragments found in those excavations.

Commencing as we enter the courtyard on the left is the exterior of the great assembly-room, and below it the arcade or gallery, forming corridors outside the guard-rooms. This corridor externally is divided into bays, 13 ft. wide; on the ground-floor is a three-centred arcade, carried on stunted columns; and above a segmental arch, inclosing three trefoil-headed windows, a balustrade crowning the whole. The interior of this corridor is vaulted with segmental barrel vaults in stone panelled, each vault abutting on its neighbour. The transverse wall between each bay has on the ground-floor a segmental arch, with huge keystone; and on the first, or mezzanine floor, a trefoil-headed arch, carried on corbels. The great windows of the assembly-room have solid mullions and light transoms above the balustrade to every alternate bay below, and dormer windows similarly treated. Continuing round on the north side is the belfry, an extremely picturesque feature; below it is the great window lighting the vestibule to the apartments of the garrison officers. The jambs of this window descend to the ground floor in the form of buttresses, which are corbelled out and carried on massive columns, with carved capitals, a lofty arch being thrown across between. This marks the chief entrance to the guard-rooms of the back entrance to the château. Beyond this feature is the great flight of steps leading to the entrance of the officers' rooms; the stairs rising to the first floor being strongly accentuated in the external architecture.

On the west side of the courtyard is the chapel, which is perhaps one of the happiest features. The lower portion is an origina ltreatment of the Flamboyant porch. The rose-window above is perhaps somewhat decadent in style, but was, I believe, based on the original feature. The gable and corner buttresses are well proportioned and fine features. The staircase leading to the principal apartments in the keep forms one of the more remarkable features in the court. It is preceded by a grand porch with three archways, and external flight of steps beyond them; internally the staircase is circular, externally octagonal, the windows lighting it rising with the steps.

The decoration of the interior is not yet completed in all the rooms: with the exception of the great assembly-room, and a vaulted chamber in the Cæsar tower, its principle is the same in all the rooms; a dado in oak, carved and panelled 5 ft. high, runs round the principal apartments; above this the wall is stencilled with various devices, and a deep frieze is carried round the upper part of the walls, with figure or ornamental decorations. The chimney-pieces are all in stone, carved and richly painted and gilt. The oak girders are carried on stone corbels, carved and painted. The woodwork on the ceiling is painted of a dark ground colour, relieved by light colour ornament; the ceiling between the joists has dark ornaments on light ground. The decoration varies in every room, and has all been designed expressly by M. Viollet-le-Duc; the colouring is quiet and extremely harmonious in tone, and is, perhaps, the best evidence of the wide range of his talents. The room in the Arthur tower has an octagonal vaulting, the chimney-piece being decorated with a representation of King Arthur and the Knights of the Round Table. The great assembly-room has been turned to account as a museum of arms; these were, I am sorry to say, removed to Paris during the late war, and have not yet been restored to their places; the hall is surrounded with cases to hold the collection, which is, I believe, of great value. The roof consists of a pointed band vault in wood, painted with various devices, the boarding being fixed to the iron trusses of the roof. The chimney-piece in this hall is the finest in the château; it is double, as it has two grates in it, with tiles at the back; and above are placed in niches and on pedestals the nine heroines of antiquity, with their coats of arms above, and a crenelated cornice, with miniature turrets and battlements. In conclusion, I have only to add that, although the restoration was necessarily stopped during the late war, I have every reason to believe that it will be continued and completed now; at present there are but a few artists at work, which may be accounted for from the cessation of the Emperor's donations. The whole work reflects the greatest credit on M. Viollet-le-Duc, who has consecrated to it an immense portion of his time; and it places on record for future generations one of the most interesting features of the feudal period of the Middle Ages.

* From the paper by Mr. R. P. Spiers referred to in our last.

The Inns of Court Hotel.—We are glad to hear that the pile of buildings in Lincoln's-Inn-Fields, long left unfinished, is now in course of completion. The Inns of Court Hotel Company has purchased the entire property, and having restored the Holborn block, are now finishing the remaining portion, which will form part of the hotel according to the original intention. Messrs. Lockwood & Mawson, the original architects, have the matter in hand.

THE KEEP OF CLITHEROE.

THE castle of Clitheroe, the chief seat of an ancient and extensive honour, though one of the smallest, is perhaps the strongest, the oldest, and from its position one of the most remarkable of the fortresses of Lancashire. It is placed upon the left or eastern bank of the Ribble, here the boundary between Yorkshire and Lancashire, three quarters of a mile from the stream, and about 130 ft. above it. It occupies the summit and upper part of a limestone crag, which, precipitous in parts, and very steep on its northern flank, falls, according to the dip of the rock, less steeply towards the south or south-west. Hence the northern point was selected for the keep and upper ward, and for the lower ward and approaches, the shoulder and slopes upon the south. The Roman way from Manchester, by Skipton to York, ascends the dale about half a mile east of the rock, which could scarcely have been neglected as a military post by any people who held the district in other than very peaceful times. The town of Clitheroe has sprung up at the foot of the rock upon the north-east.

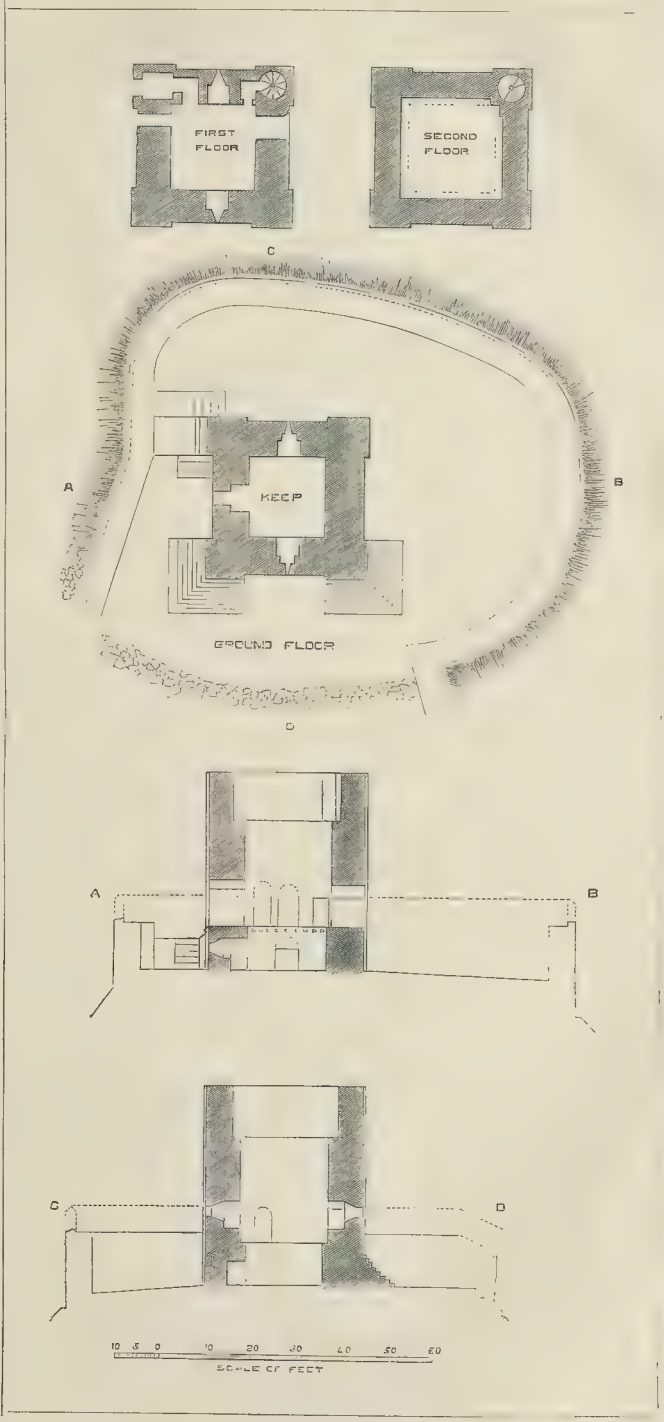
The keep stands within, but close to, the east side of a small rounded area of about 80 ft. by 90 ft., contained within a curtain wall, which skirts the edge of the rock. This curtain is 6 ft. thick, 12 ft. high inside, and from 14 ft. to 20 ft. outside. The circuit, which has no doubt been complete, is broken for about 70 ft. on the southern side. This is the breadth of the neck by which the upper ward was united to the lower, and the curtain at each end of the gap is extended southwards and south-eastwards down the steep to include the latter. Thus, what is wanting is none of the exterior curtain, only the interior and cross wall between the two wards. The open space is a steep of rugged broken rock. Probably there was a cross wall and doorway above, and a narrow flight of steps leading to it from below.

The keep is of rough rubble masonry, with ashlar quoins and dressings. It has neither plinth, set-off, nor string, and preserves its exterior dimensions to the summit. Each angle is capped by two pilasters of 9 ft. breadth by 11 in. projection. They unite at the angles, which are solid. The two southern angles are supported by extravagantly large low buttresses, of modern addition, but it is said they were preceded by buttresses somewhat similar, though of much slighter character.

The keep is 33 ft. square, and about 43 ft. high. The walls are 8 ft. thick at the base, and consequently enclose a chamber 17 ft. square. This is the basement floor, and at the ground level. It is 9 ft. high, and the floor, which covered it above, and is now gone, rested upon nine beams, and was therefore immensely strong. The north, south, and west wall are each pierced by a loop, set in a round-headed recess, 5 ft. broad, and 5 ft. high to the springing. Two of these loops have been converted into open breaches, and the third, to the north, has been walled up, and the recess covered with a flat lintel. This floor must have been entered from the room above by a trap and ladder. It was, as usual, a store, the value of these strong small towers depending upon their being well provisioned.

The first floor rested upon a set-off of a foot, and is therefore 19 ft. square, with walls 7 ft. thick. It is 23 ft. high. It has in the north and south walls small square-headed loops, placed in round-headed recesses of 4 ft. 6 in. opening. In its west side, close to the north end, is a doorway 2 ft. 10 in. broad, and 8 ft. high, round-headed. In the north wall, on each side the loop, is a door. One of these, flat-topped, of 2 ft. 6 in. opening, and 6 ft. high, leads through a small mural lobby, 4 ft. 8 in. by 3 ft. 2 in., into a well-stair, 7 ft. diameter, which occupies the north-east angle, and commencing at this level, ascends to the battlements by fifty-four steps. The other door, of 2 ft. 11 in. opening, 8 ft. high, and round-headed, leads by a passage bent at a right angle with a barrel vault, into a plain mural chamber, 7 ft. by 5 ft., also barrel-vaulted, and which, no doubt, had a loop in its west wall. This wall, however, is now broken away, so that the chamber has much the aspect of an entrance-door, which it certainly was not.

The second, or uppermost, floor rests upon a set-off of 2 ft., and is therefore 23 ft. square, with walls 5 ft. thick, and at present 11 ft. high. Singularly enough, it shows no trace of any wall-opening whatever, as though it had been added in modern times for effect only, which, however, does not appear to be the case. The staircase, however, has certainly been repaired, and no doubt originally opened into this floor. The wall at the interior angle is thickened somewhat to give space for the stair. The walls may have been a foot or so high, but scarcely more. The parapet is gone, and was probably another 5 ft. The north-east angle seems to have ended in a small square turret.



The principal entrance was evidently on the first floor, in the east wall, reached by an external stair built against the wall, and ascending from the south end. This is clear from the position and dimensions of the doorway, and from the absence of a loop on this side of the basement, where it would have been covered by the staircase.

The small door of the west wall of the same floor seems to have led upon the rampart of the adjacent curtain, here only 11 ft. from the keep. There is such a door at Arques and Rochester, and also at Helmsley and Adare. This keep contains no fireplace nor gardrobe, nor ornament of any kind.

The lower ward has been so altered for domestic purposes, and is so built over, as to be very obscure. It was at least eight or ten times the area of the upper ward, and descended 280 ft. down the slope, with an extreme breadth of 150 ft. The modern dwelling-house is built upon the south-east curtain, and no doubt represents, and probably contains, part of the old domestic buildings. Buck gives a view of the southern front of this ward, and shows a large round tower upon one of the angles not now seen.

A convenient ascent skirts the foot of the west curtain, or rather of the cliff upon which it stands, and enters at the upper end of the lower ward, just below the keep. This, however, is probably modern. The old way seems to be represented by the road from the town, which rises on the other or eastern side.

About a furlong to the south of and much below the castle is a steep straight bank of earth with an exterior ditch, probably an outwork covering the foot of the hill.

The castle is the property of the Duke of Buccleuch, whose steward for the honour of Clitheroe resides here, and allows visitors to enter the keep unchallenged. The chief rents and royalties of the honour are vested in the Duke, and are said to be valuable. All is neatly kept, and is in as substantial repair as becomes a ruin; but his Grace's most commendable zeal does certainly a little obscure the fabric it was intended to preserve, and it is to be regretted that the new work was not made more clearly distinguishable from the old.

The name of Clitheroe, though evidently old, and said in part to be British, does not occur in Domesday. Whittaker is of opinion that the place is included in Bernulfeswic, now Burnoldswick, a parish about six miles north-east of the castle, and that it is referred to as the Castelry of Roger of Pictavensis or of Poicton. It is stated that "in Bernulfeswic Garnel held 12 carncates, paying geld to Berenger de Todeni. The manor is in the Castelry of Roger the Poitevin." Usually Roger is identified with the Castle of Lancaster, but at that time Lancaster Castle was not built, and that lordship did not belong to Roger. Roger was a large tenant in chief in the shires of Chester, Derby, Notts, and Lincoln. In Yorkshire and Lancashire he then held but little. The mesne lord, de Todeni, was one of the family who had Belvoir; Dugdale says, the son of Robert de Todeni, who built it. He does not again appear in connexion with this part of England.

Roger is thought to have granted the fee to Roger de Buisli, from whom, or from Albert Greslet, it came to the De Lacys of Pontefract, lords of Blackburnshire, of whom Robert de Lacy is said to have held it under De Buisli. This De Lacy, whose history belongs to Pontefract, is the reputed founder of Clitheroe keep in the reign of Henry I., and certainly the building is not of later date. From that time Clitheroe shared with Pontefract the honour of being the seat of the De Lacy power, and so remained until their estates merged in the earldom and duchy of Lancaster, and this again in the Crown. The founder probably also endowed the Chapel of St. Michael within the castle, probably in the lower ward, and which is mentioned in the reign of Henry I. A claim, however, to represent this chapel is set up for the parish church, though this building could never have been within the castle.

Clitheroe, like other strong places in Lancashire, was held for the king in the Parliamentary struggles, and in 1649 the castle was ordered to be dismantled.

Charles II. granted the castle and honour to General Monk, whose son, Christopher Duke of Albemarle, left it to his wife, Lady Elizabeth Cavendish, who again left it to her second husband, Ralph Duke of Montagu, from whom it has descended to the present owner. G. T. C.

1873.

ART CRITICISM.

If "every man is the measure of all things to himself," the corollary to that saying is the other that "the true measure of all things is God," and so the depth and measure of a man's moral nature are the measure of his partaking of God, "in whom we live and move and have our being," and thus there is no exaggeration in speaking of the inspiration of the poet or the artist.

It is in this spiritual world where is to be found that mystic force called sympathy,—the action of moral intelligence on moral intelligence,—an electric cord which girdles the world of mind and carries messages from soul to soul, resulting in effects which influence more than any other thing the whole aspect of social life.

There is a power pervading the living influence of the truly noble that draws congenial elements from the crowd, inspiring its votaries with a courage to carry victory to a higher issue than mere mortal combat, to carry by assault the citadel of the passions and cast out the demon within, inspiring men with that truest of heroism to look beyond self and mere material good, inspiring them with enthusiasm and devotion to the good, the true, the beautiful; and of this moral ideal, material beauty is but the sign and symbol.

It is the sentiment which underlies the work of the artist which renders it noble or ignoble, the subtle element which stirs the heart, which appeals to the mind, which carries the beholder out of himself, and places him *en rapport* with the soul of the designer.

"The statue is born in the clay, it dies in the plaster, and lives again in the marble." The clay model is not a mere piece of handiwork; it is, above all, the work of the artist's brain; the cast is produced by a merely mechanical operation; the marble is sensitive to every touch of the worker. Labour there must be, and the hand must be trained to answer every wave of thought; if not, to the extent it fails so to do will the realised work fall short of the ideal. What that ideal was no one but the artist himself can fully know; but, having sounded the key-note of his thoughts, a responsive echo may be awakened in the mind of another, which, with remarkable distinctness, repeats that note, and the mind of the recipient may even tack on harmonies to it never dreamt of by the originator. Mechanical excellence is doubtless an admirable thing, but it must not be confounded with artistic excellence, it is but the servant of art, without whose service she is helpless. Theory and practice must go hand in hand; science and sentiment lend their aid to the artistic constructor.

A language without grammatical construction is deficient in vitality: it may exist—like some of those in Central Africa—for a generation only; but when the disjointed fragments are constructed into a system, the language grows and expands so widely that it is with difficulty the original roots can be traced. Cultivated with care, the weed becomes the flower; the acrid, unpalatable berry the rich and luscious fruit. The language, or certain words in the language, may have had their origin on the banks of the Indus or of the Euphrates, or in the Isles of Greece, or in the City of the Seven Hills; it matters not whence derived, they are but the means of giving expression to thought. Worthy thoughts, although rudely expressed, deserve admiration; but if, in addition, they are beautified and arranged into harmony, or brightened by the light of eloquence, they receive the devotion due to genius. Style is but the language in which the artist expresses himself, and it is according to the amount of thought embodied in the work, and the beauty and eloquence with which it is expressed, that he should be judged.

Thousands of eager listeners crowd to hear the words of wisdom uttered by a speaker, and tens of thousands con these words next day at ease by the fireside. When read over with deliberation, their truth and value can be better estimated than when heard from the living voice. Why, then, not print them off at once? Why, but that the living influence of the man cannot be so intensely felt. Another may read the printed page with more point and emphasis than the author, but the effect is not the same. A work of art may be copied so skilfully as to be mistaken for the original, but the copy will never be valued as such. Harmony cannot be elicited from the cord of sympathy unless it is touched by a master-hand. Man, created in the image of God, has the gift of originality bestowed upon him; he is touched by a ray from the holy of holies; he is inspired to produce what has not before existed; he becomes a creator. The creations of genius are the most precious of gifts,—too precious to be lavishly dealt out: let those prize them who possess them; but, above all, let us pay due respect to the great ones who created them.

But the soul of man is chained while on earth to a mortal frame,—material wants must be supplied; he ransacks the store of Nature and subjects to his uses what he finds there. Not content with merely subjecting the material so found to useful purposes, he adorns his handiwork with suitable detail; he strives after harmony of proportion; he studies effects of light and shade; he constructs with skill; he combines technical excellence with æsthetic beauty. Special requirements call for special treatment different materials must be differently used; the laws of nature must be studied. Here the ideal and the real meet, and they cannot be severed; a drag is put upon the imagination; the poetic is burdened with the prosaic. This restraining influence must be overcome if the work is to be a work of art; the skeleton requires to be carefully constructed, but upon it must be superadded the grace of form and the charm of colour. The true artist must be possessed of the faculty of design, of the faculty of invention, of the power to express an original thought in the material he has at command. His aim should be to elevate and refine the taste of his age, to give new sensations to those around him, to add to the amenities of life, to enhance the pleasures of daily existence. He may not be appreciated. "We have no absolute criterion of greatness amongst us; we can but be measured by our relation to each other." He may fall short of his aim, but he will have his reward if he has raised his own taste, and so increased his capacity for enjoyment.

To discover the sentiment underlying the work of the artist, to understand the technical excellence thereof, and—where such is a necessity—the suitability of the design to the purpose for which it is made, are absolute requisites to the formation of an art-critic.

* See p. 924, *ante*.

SOUTHSEA LAUNDRY COMPANY.

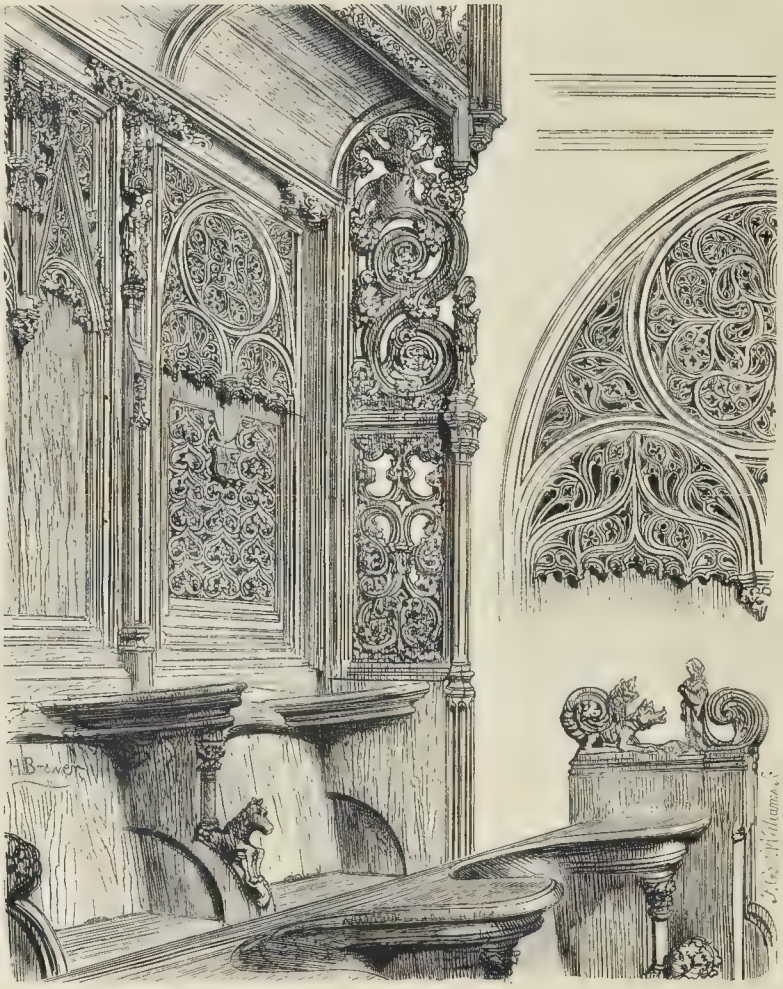
On Tuesday, the 16th inst., the Mayoress of Portsmouth laid the foundation stone of the steam laundry buildings, which are to be erected in the Highland-road, Southsea. The buildings are for a company which has been formed for the purpose of providing an establishment where the washing, wringing, drying, mangling, and ironing of articles of all kinds, can be performed by machinery.

The building will be a plain but substantial structure, the walls of Portland cement concrete, built with Drake's patent apparatus. The gravel and sand will be obtained by digging on the site. Attention has been paid by the architect to the internal arrangement, so that the business may be carried on with ease and economy. On the ground-floor will be a receiving and sorting room, large washhouse, drying-room, private washhouse, disinfecting-room, engine-room, store, and office. The drying-room is to be heated by a steam-coil, assisted by the waste heat from the boiler, which is placed for this purpose below the floor; the washing, blueing, wringing, and drying, being completed on the ground-floor. The articles will then be raised by a lift to the floor above, consisting of starching, folding, mangling, and ironing rooms. Here the process will be completed, and the things will descend by another lift into the packing-room, where they will be sorted, and placed in racks set apart for the various customers, ready to be returned.

Stabling, coal-stores, &c., detached from the main building, are also provided for.

Mr. Archibald H. Ford, of Portsea, is the architect; Mr. J. C. Cooper, of that town, is the contractor. All the machinery is to be supplied by Mr. Thomas Bradford, of London. The buildings and machinery together, will cost about 3,500*l.*, and the company will be able to wash from thirty to forty thousand pieces weekly.

New Landing-Stage at Birkenhead.—A contract for the construction of a landing-stage at Birkenhead, which is expected to cost 50,000*l.*, has been accepted by the Mersey Docks and Harbour Board.



CARVED STALLS IN THE CATHEDRAL OF ST. POL DE LEON, BRITTANY.

STALLS AT ST. POL DE LEON, BRITTANY.

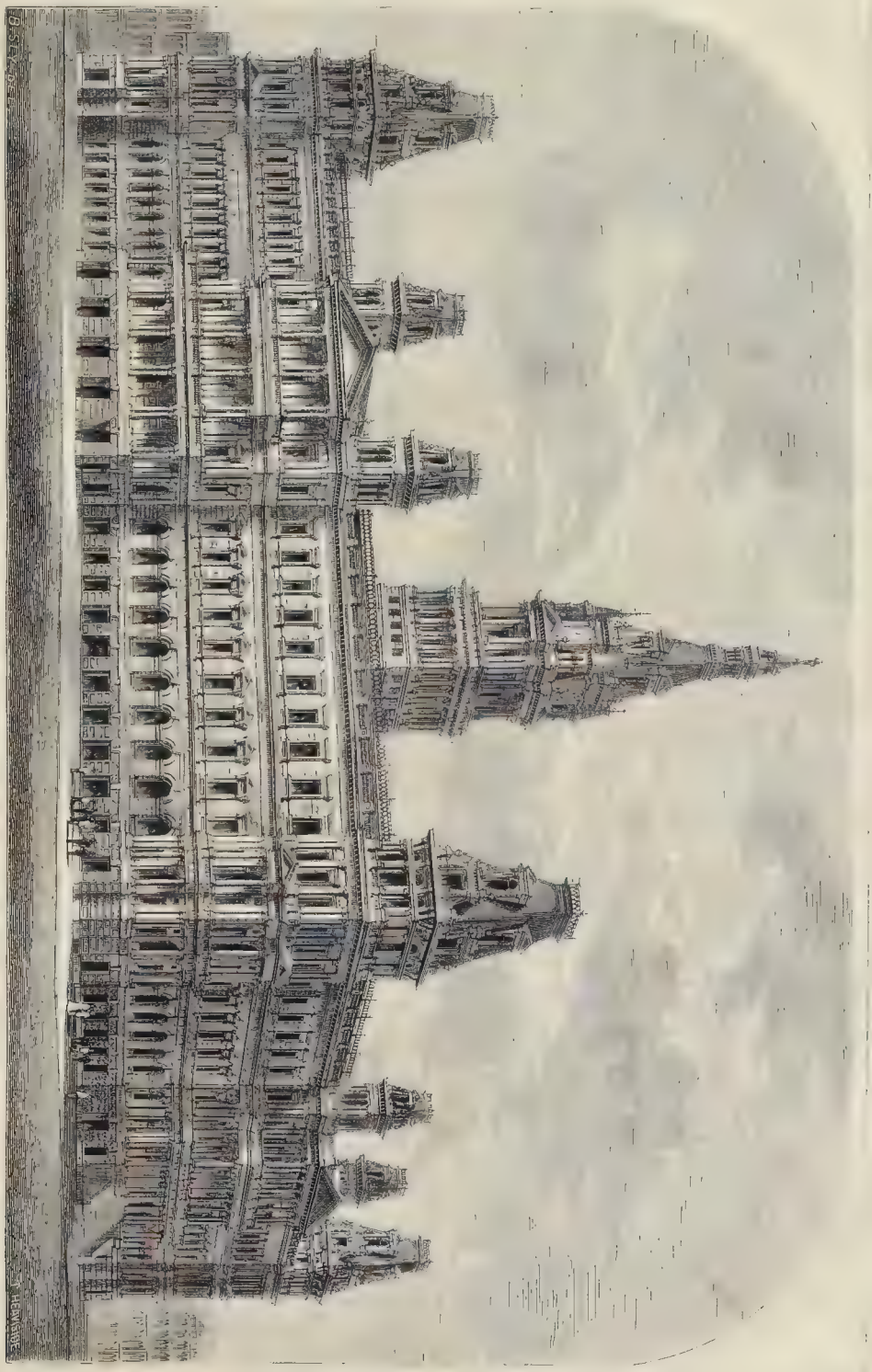
The interesting old episcopal city of Pol-de-Leon, in Brittany contains two very remarkable churches,—the Cathedral and the Church of Notre-Dame-de-Kreisker. The latter of these has a very lofty spire, entirely constructed of granite, which dates from the fourteenth century, and is a great pet with all guides and guide-book writers. Architects, however, will not be quite so contented with it, as it is far from being a satisfactory example of Gothic architecture, and will turn away from this rather meretricious and exaggerated building to examine the ancient cathedral with satisfaction.

The Cathedral of St. Pol-de Leon is really a singularly beautiful church; and though its dimensions are small for a cathedral, yet it is remarkably dignified and well proportioned. The nave bears a strong resemblance to our Early English work, and the choir and transepts are rich Decorated work.

The church contains a great deal of ancient furniture. Nearly *twenty* original stone altars *in situ*. Some of these are quite plain, with simply-moulded mensæ and plinths; but others are ornamented with rich panelling and carving. In several of these altars the piscinæ are cut into the side of the altar.

The stalls, of which we give an illustration, are situated in the choir, and are fine examples of late fourteenth-century, or perhaps early fifteenth-century, work. They are amongst the most elaborate existing in France, and are in an excellent state of preservation. They are constructed entirely of oak. Their design is very remarkable, as, although they bear a strong resemblance to German and Flemish work, they are quite unlike anything that we know of in France. A comparison of the "shades" of these stalls with those which we illustrated some time back from the Cathedrals of Hildesheim and Bois-le-Duc, and from the Church of Moosburg, near Munich, will satisfy our readers of the truth of this remark. We were unable to obtain any reliable information concerning the history of these remarkable stalls.

Palestine Exploration Fund.—M. Ganneau, who has charge of the Jerusalem researches, while at Jaffa discovered the ancient cemetery of the town.* On the way to Jerusalem he revisited the site which he had previously identified with the Biblical city of Gezer. Here he was able to trace in part the plan of the old city and the position of its houses and suburbs.



PROPOSED CITY HALL AND COUNTY BUILDINGS, CHICAGO.—DESIGNED BY MESSRS. J. C. RANKIN & G. O. GARNSEY, ARCHITECTS.

LIBRARY

CITY HALL AND COUNTY BUILDINGS FOR CHICAGO, ILLINOIS.

Designs having been invited for the City Hall and County Buildings for Chicago, forty-nine sets of drawings were submitted, and from these eighteen were selected as the best. Of the latter, the design by Messrs. J. C. Rankin & G. O. Garnsey, architects, received the majority of votes. The authors in their descriptive particulars say,—

"In selecting a style of architecture, it was determined to adopt a modern treatment of the classic, as such a style combines in its effects greater elegance and dignity, and is much less costly, than the styles which, originating in semi-barbarous ages, depend more upon the elaboration of their ornamention for effect, than upon goodly proportions or elegance of outline. Thorough symmetry of all the parts, which is an essential element in the grandeur of architectural effects, is also gained by the adoption of this style, as well as the practical use of all ornamentation."

The plan submitted, is that of a building having an open court in the centre, the inner rooms being lighted from the courtyard, and the outer ones from the several streets. The entrances are situated on all four streets, in the centre of each front—access being immediately to the basement floor. In addition to these, flights of steps on Washington and Randolph streets will afford immediate access to the principal floor from the streets.

The several floors will be connected by four double dights of stairs, constructed of iron; commencing immediately in front of the entrances, and leading to each of the four wings of the structure. These stairways will be very handsomely lighted and ventilated from the roof, as well as by windows at each landing. Elevators are also provided for, one being on the city, and one on the county, side of the building.

Access to the various rooms, on each floor, will be had from the corridors, which lead entirely round the building, and also connect the La Salle and Clark-street fronts, through the rotunda in the centre. These corridors will be well lighted from the stairways, and will be paved with marble.

It is intended to overlay the entire foundation of the building with a layer of concrete, 4 ft. thick. This method of construction was found to be absolutely necessary, after thorough and exhaustive investigation on the new Government building now being erected in this city.

The footings of the main walls will be of Illinois limestone, as that material has been found to sustain a pressure of 17,000 lb. to the inch, which is superior to most granites. The foundation walls are intended to be of the same material.

The construction of the cut-stone masonry is such that all the modern appliances of machinery can be made available in getting it out, and no gigantic dimensions of scantlings are needed to furnish the building, and to produce all the effects shown by the general view.

At the risk of reputation (observe the architects), it may again be said that elaborate ornamentation has been avoided, with the belief that the stability, endurance, beauty, and economy of the building have been consulted thereby.

The interior walls of the building are all proposed to be of brick, or, in the case of the lighter partitions, hollow tile or iron lath and standard partitions.

All the floors are fireproof, the arching between the beams being intended for hollow tile or corrugated iron, as may be selected.

The mansard roof has not been adopted, as there is no need for the space which it would supply as an upper story, and a varied sky-line has been secured by means of the corner and flanking portico towers. The roofs are entirely of iron construction, to be covered with slate laid on fireproof arching.

The matter of ventilation has been carefully considered, and it is proposed to lead the foul air downwards, and thence to the ventilating-shafts, through which are carried the furnace-flues, and to those in the great tower.

It was determined to place the tower in the centre of the building and of the interior court-yard, and treat it as a tower rather than as a dome (which in its construction would be much more expensive, and would be out of harmony with the design submitted). It was also considered that the dome treatment had become so common to all public buildings, that something different was demanded.

The adoption of such a tower was considered absolutely necessary in the construction of the entire building, containing, as it is intended, the principal foul-air shafts, the tank for the reception of the water of the artesian well, from which tank it is proposed to furnish fountains (to be located in positions afterward to be considered), and to work the elevators. It will also contain a clock, a bell, and a fire lookout.

The county portion of the basement contains accommodation for the recorder, the sheriff, heating apparatus, and the receiving vaults; and also the vaults of the circuit and probate clerks, which could not be provided, for want of space, on the first-floor.

On the city side, arrangements have been made, as called for, for the police and fire departments, the meter department, pay-room, harbour-master, gas inspector, and heating apparatus and necessary storage.

On the first-floor, on the county side, are located the treasury and collecting departments, county clerk, county commissioners, superintendent of public charities, and clerks of superior, circuit, and probate courts.

On the city side are the mayor's suite of apartments, the comptroller, treasurer, collector, board of public works department, water department, and city clerk. Accommodations are also provided on this floor for the tax commissioner.

On the second-floor are the county and probate courts, with the necessary adjuncts of jury and judges' rooms, the superintendent of schools, the law library, county surveyor, and coroner.

On the city side are accommodated the law department, superintendents of streets, public buildings and sidewalks, draughting, and special assessment department, the engineers', sewerage, and board of education. Several unappropriated rooms will also be found on this floor.

County side. On the third story, ample accommodation has been provided for the superior, circuit, county, and chancery courts, in all twelve rooms, of the area required; each of the courts being provided with jury, judges', and witnesses' rooms adjoining. A mezzanine story is constructed above the smaller apartments.

On the city side is the council chamber, which is placed in the centre of the building on La Salle-street. A gallery is provided for spectators, of the length of the room, and handsome accommodations adjoin the chamber, consisting of retiring, committee, cloak, and wash rooms, &c. These are approached through a private entrance, and the committee and reception rooms can be thrown together when needed, by the aid of sliding-doors.

Adjoining the council chamber, rooms have been provided for the superior House, if such should be created. The corridor adjoining the council chamber is enlarged to a lobby for the accommodation of the public. The supreme court is also arranged for, and has the necessary adjuncts of judges' and clerks' rooms, library, &c. The fire-alarm telegraph and Board of Health offices are also arranged for on this floor.

The total cost is estimated at 2,307,274 dolls. 85 cents.

But in case doors and windows, including frames and casings, are made of iron, the cost will be increased 461,970 dolls.

DRESS IN RELATION TO THE DECORATIVE ARTS AND PAINTING.

In recent numbers of the *Builder* I have attempted the "Defence of Shams"; nay, more, I have presumed to claim for them an important place in any system of art-education intended for the benefit of the middle and lower classes of society; and I have expressed my belief that their honourable recognition in connexion with dress and personal ornaments would at once make them powerful auxiliaries of "legitimate" art in the elevation of the national taste.

My remarks brought upon me, in the columns of your journal and elsewhere, some censure and some ridicule, and raised the question,—"Is the desire for personal decoration so amiable and spirit-stirring a quality as to render worthy any sort of gratification that may be afforded it"? In reply, I promised to point out more definitely the closeness of the relationship I had assumed to exist between the esteemed professions of the painter and decorator, and the tailor's and dress-maker's unhonoured trades. But the subject of dress, in all its bearings upon individual and public *morals*, as suggested for my consideration by "A Spectator," is too complex and too important for anything like adequate discussion within the conventional limits of a letter; and I must beg my readers to believe that I do not in this communication pretend to do anything more than skim over the surface of the subject in the most superficial manner.

The first obvious fact which suggests itself is, that the earliest arts of which we have any record were developed in connexion with personal attire; the second is, that these clothing arts were in ancient times held in high respect, and that the good housewife is commended in the Scriptures for the labour and time she bestows upon the manufacture and ornamentation of her domestic draperies.

Foremost amongst ancient nations stands Egypt, and chief amongst her decorative arts were those pertaining to textile fabrics, embroideries, and personal ornaments. Solomon praises the beauty of her carpets and the fineness of her linens; and centuries later, Tyre still imported the rich embroideries of Egypt, and counted them amongst her most valuable possessions. The remains of Asiatic art are mainly sculptural, yet the parallelism of the arts of clothing and the decorative arts can there also be traced. The Chinese and Japanese, alike remarkable for the richness of their costumes, had already made considerable advances in the art of painting; whilst the Indians and the Persians, amongst whom it might almost be said dress was non-existent, were still ignorant of any higher art than the rudely-sculptured hieroglyphics of their rock-cut temples.

The study of dress and embroidery gave the impulse to art in Greece; and the shawl of Alcisthenes, made 400 years B.C., upon which were worked a galaxy of gods and goddesses, and a portrait of the illustrious owner himself, was a *chef-d'œuvre* of decorative art. The finest samples of Greek pottery and sculpture which have been preserved to us, or of which we have any record in history, were indeed produced during the prevalence of a dominant passion for personal adornment. The evidence of this is found, not only in the elegance of the prevailing fashions of dress, and the variety and beauty of its associated embroideries, but equally so in the tastefully varied and elaborate decorations of the hair and head, and the magnificence of the jewelry universally worn; whilst the greatest painter of the age was praised by Lucian over all others for the surprising truth, elegance, and flowing lightness of his draperies.

Amongst the Romans, the arts rapidly degenerated; but whether that degeneration preceded or followed that which certainly took place in all matters of personal adornment, both civil and military, I will not here attempt to discuss. The fact sufficient for my purpose is, however, beyond dispute; that the marvellous combinations of richness and simplicity, of variety and unity, of ornament and utility, which prevailed in Greece, were very early and utterly lost in Rome. The Greeks clothed the body without concealing it; and each addition to, and enrichment of, the dress, was so skilfully arranged that it seemed but the more to reveal the beauty of the form beneath. This surprising faculty of adjusting and elaborating the manifold draperies with which they robed themselves, adapting each dress to the condition and wants of the wearer, and infusing the spirit of art into all, did not descend to the Romans; and all beauty and variety of costume were ultimately sacrificed by that nation in favour of the universal toga,—a garment which has proved, in the hands of later artists, as fatal in its effects upon modern, as it ever was upon ancient, art.

Thenceforward, to the end of the twelfth century, we are as little concerned with art as art was with dress. Humanity of these dark ages had indeed, lapsing into barbarism, cared little for one, and nothing for the other, and had well-nigh forgotten the use of both. It was not until the beginning of the thirteenth century that art again showed any conspicuous signs of vitality. Then, again, marching slowly forward hand in hand with the clothing arts, and culminating in the sixteenth century with the works of Leonardo da Vinci, Michelangelo, Raffaelle, Titian, and Correggio, we find that in no other period of European history had all classes of society affected greater magnificence in personal attire, or exhibited more taste, skill, art, and ingenuity in the manifestations of their exuberant love of display.

But the lamps which burnt thus brightly during three centuries over Italy, Germany, and France, flickered but faintly and fitfully in

the uncongenial atmosphere of England. The earliest signs of art revival were here met in 1364 by the sumptuary laws and penal ordinances of Edward III.; and in successive reigns, to the middle of the fifteenth century, every fresh manifestation of vitality was the signal for further legislation and more stringent statutes. Yet the strong arm of the law would probably have been still too weak to arrest or hold in subjection a sentiment so universal and dominant of the human faculties, had it not enlisted into its cause an army of volunteers, whose fanatical ravings made the centuries dolorous. But civil, religious, and social persecutions proved too much for human endurance, and under their combined influences England remained without national art and without native artists until the seventeenth century.

The fitful and feverish history of the arts and costumes from this period is closely interwoven with the political records of the country, and infinitely too involved for treatment in this sketch; but if any one still believes that I have unduly estimated the influence of dress upon art and national taste,—if he still doubts that "love of finery" is the potential germ which, under intelligent culture, grows and fructifies into the mature fruit of highest art,—let him pursue the subject for himself from the date at which I have left it, and I do not fear but his ultimate judgment will wholly vindicate my own, for he will find that corelation of growth is as certainly a mental as a physical law in biology, that the human faculties have a bilateral tendency, and that if their growth is persistently checked in one direction, they will surely cease to develop in the other; and finding that the penalties of the law, the anathemas of the clergy, the satire of the "reformer," and the still worse cruelties of domestic tyranny have united to stamp out every effort of the human mind to worthily clothe the human body, as though the contemplation of filthy rags were an ennobling study, and the physical degradation of man, created in the image of his Maker, an acceptable sight in the eyes of the omnipotent God, he will no longer think it remarkable that we have grown up as a nation in besotted ignorance of art and in callous indifference to its beneficent influences.

Yet love of dress is not, in my estimation, a universal good; neither do I believe that all the virtues follow in the train of art. The mountain stream will bring down some refuse, and man's noblest aspirations, still testifying to original sin, will ever be degraded by contact with the sordid facts of material life, through which alone they can find expression. But with this aspect of the question, as I have already said, I am not at present much concerned. My theme has been "Dress in relation to the Decorative Arts and Painting," and if I have proved their corelation of growth in the past, I do not less confidently affirm it of the present. We are confessedly the most inartistically dressed nation of the earth, and I have yet to discover in which department of the fine arts we can claim pre-eminence.

C. HENRY WHITAKER.

METROPOLITAN IMPROVEMENTS AND POPULATION STATISTICS.

IN the course of a lengthened and exhaustive financial statement which was made recently by Mr. Dresser Rogers, chairman of the Finance Committee of the Metropolitan Board of Works, some highly interesting facts were disclosed as to the improvements which have been made in the metropolis during the last ten or fifteen years, and also some equally interesting statistics regarding the population and sanitary condition of the metropolis generally.

Referring to improvements, Mr. Rogers stated that the great improvements now being carried out in the metropolis were gigantic in their character, which was almost revolutionising the appearance of London, and they could not fail to be of the highest importance as far as sanitary measures were concerned. Adverting to the question of dangerous structures in the metropolis, he said that during the past year the Finance Committee had had them very frequently under their consideration, and scarcely a meeting passed without having reports from the accountant with regard to the dangerous-structure fee account. Objections had been taken to the working of the Act of Parliament throughout the metropolis, but this he attributed to the fact that from year to year the Legislature of the country was casting duties on the Board entailing considerable responsibilities with regard to public matters of great importance to the inhabitants of the metropolis, and these duties were thrust upon the Board by the House of Commons without giving the Board a fair opportunity of recouping the ratepayers for the expenditure incurred.

Referring to the population and the subject of sewers and drainage, he said that the population of the area over which the Board had charge remained much the same as last year, namely, about 3,266,987, and the number of houses 419,642; whilst the acreage was 75,490 acres, and the area of taxation 117 square miles. The total length of main drainage sewers was now eighty-two miles, exclusive of old sewers, which amounted to 165 miles in length. The total length of local sewers constructed by vestries and district boards since the year 1856 was, at the present moment, 722 miles in length. The rateable annual value of the metropolis last year was 20,367,298*l.*, but during this year it had increased to 20,644,060*l.* The finances of the Board comprised an income and an expenditure of more than 750,000*l.* per annum. The statement went into lengthened details upon a variety of other financial topics, including loans to various public bodies and vestries. The sale of ground-rents during the past year also formed a prominent feature in the statement, from which it appeared that they included Southwark and Westminster communication, 29,128*l.* 8*s.* (equal to twenty-six years' purchase); Victoria Park approach, 6,278*l.*, or twenty-one years' purchase; Southwark Park, 500*l.*; Whitechapel improvement, 658*l.* 19*s.* 10*d.*; Kensington improvement, 56,992*l.*, or twenty-five years' purchase; Mansion House-street, 11,249; Stingo-lane improvement, 3,575*l.*; Park-lane improvement, 29,389*l.*; and Wapping and other improvements, 201*l.* 17*s.*; making a total recoupment of 138,000*l.* It further appeared from the statement that during the year 3,500*l.* had been received from an abortive scheme known as the Waterloo and Whitehall Railway Company in satisfaction of the Board's claim on them for money expended in carrying out works, which they were empowered to have done under their Act of Parliament, by the Board on the Thames Embankment. The value of surplus land was 1,232,812*l.* this year, as against 1,795,291*l.* in the estimates for last year, and Mr. Rogers explained that the reason for the reduction was, in addition to the sales, that the architect had been enabled, during the past year, from circumstances that had occurred, to give a truer estimate of the value of the surplus lands than formerly.

This statement gave rise to a remark from Mr. Newton that he thought it unfortunate the statement should go forth that their surplus lands were worth less than last year; and he added, speaking from his experience in the works committee, that he did not think the vacant land had let below the architect's estimate, in proof of which he said that a few days ago a plot had been sold for twenty-six years' purchase, and in many cases even a higher price might be obtained.

THE INSTITUTION OF CIVIL ENGINEERS.

ON the 9th inst., the paper read was "On the Geological Conditions affecting the Construction of a Tunnel between England and France," by Mr. Joseph Prestwich, F.R.S.

The author, in this paper, reviewed the geological conditions of all the strata between Harwich and Hastings on one side of the Channel, and between Ostend and St. Valery on the other side, with a view to serve as data for any future projects of tunnelling, and to show in what directions inquiries should be made. The London clay, at the mouth of the Thames, was from 200 ft. to 400 ft. thick, while under Calais it was only 10 ft., at Dunkirk it exceeded 264 ft., and at Ostend it was 448 ft. thick. He considered that a trough of London clay from 300 ft. to 400 ft., or more, in thickness extended from the coast of Essex to the coast of France, and, judging from the experience gained in the Tower Subway, and the known impermeability and homogeneity of this formation, he saw no difficulty, from a merely geological point of view, in the construction of a tunnel, but for the extreme distance,—the nearest suitable points being eighty miles apart. The author, when considering the Palæozoic series, to which his attention was more particularly directed while making investigations, as a member of the Royal Coal Commission, on the probable range of the coal measures under the south-east of England, showed that these rocks, which consisted of hard Silurian slates, Devonian and carboniferous limestone, and coal measures, together 12,000 ft. to 15,000 ft. thick, passed under the chalk in the north of France, outcropped in the Boulonnais, were again lost under newer formations near to the coast, and did not reappear until the neighbourhood of Frome and Wells was reached. Supposing the strike of the coal measures and the other palæozoic rocks to be prolonged from their exposed area in the Boulonnais across the Channel, they would pass under the cretaceous strata somewhere in the neighbourhood of Folkestone, at a depth estimated by the author at about 300 ft., and near Dover at about 600 ft. The author considered that it would be perfectly practicable, so far as safety from the influx of the sea water was concerned, to drive a tunnel through the palæozoic rocks under the Channel between Blanc Nez and Dover, and he stated that galleries had actually been carried in coal, under less favourable circumstances, for two miles under the sea, near Whitehaven. But while in the case of the London clay the distance seemed almost an insurmountable bar, here again the depth offered a formidable difficulty. He was satisfied that on geological grounds alone, it was in one case perfectly practicable, and in one or two others it was possibly so; but there were other considerations besides those of a geological nature, and whether or not they admitted of so favourable a solution was questionable.

SCHOOL BOARD SCHOOLS FOR BATTERSEA.

THE London School Board Schools in Bolingbroke-road, Battersea, were opened on the 1st instant, without any ceremony. They occupy an open position, rather more than three-quarters of an acre in extent. The buildings are set back about 50 ft., and are surrounded by separate playgrounds for girls, boys, and infants, the area of which, allowing 25 square feet for each child, would be sufficient for nearly 1,300 children.

The schools consist of a central mass, two stories in height for the boys and girls, with other buildings, one story high for class-rooms and infants' school. The general plan is the H form, the centre room for boys being 42 ft. 9 in. by 21 ft., with two class-rooms on each side, each 24 ft. by 16 ft. 6 in. These are connected with each other by double sliding doors, and with the general room by glass doors.

The boys' entrance-lobby, lavatories, and cap-room, are in the centre of the group; the girls' entrance and staircase, also with lavatories and bonnet-room over that of the boys, with W.Cs.; and over these is the mistress's room overlooking the girls' playground. The girls are provided with a general room, 42 ft. 9 in. by 21 ft., and one class-room. Another room, 24 ft. by 16 ft. 6 in., with a north light, is intended to be used by both as a drawing-class room, with separate access.

The infants' school contains a general room, 38 ft. by 21 ft., with a gallery calculated to accommodate 73 children; a babies' room, 20 ft. by 18 ft., with gallery for 56 children; and class-room, 16 ft. 6 in. by 13 ft., with desks for 30 infants.

The managers' rooms, 18 ft. by 14 ft., with lavatory and W.C., adjoins the infants' school entrance, with the infants' lavatory, cap-room, and W.Cs. behind, connected with the covered playground.

At the back of the main building a wing contains the master's room, commanding the boys' playground, over which, in two stories, are the caretakers' dwellings.

All the school and class rooms are warmed by grates intended to consume the smoke, and supply warm fresh air to the rooms from a chamber at the back, fed from the outside; and connected with flues to carry the warm air to the rooms on the first floor. All the rooms are ventilated by gratings connected with a cavity adjoining the flues. In addition to these, fresh air is conveyed by a shaft to the upper part of each room, with extracting flues for the vitiated air.

The boys' and girls' schools are provided with sitting accommodation, in pairs, for 240 boys, and 120 girls, with drawing-class room for 40 more. Allowing 9 square feet for each child, the rooms would admit of 276 boys, and 114

girls. The infants' school provides sitting-room for 153 children; at 8 square feet for each they would accommodate 172.

The buildings are in the Gothic style, of simple character, and are built with yellow stock bricks, with sills and lintels, and occasional bands of Bath stone, with red brick arches to the windows and doors.

The amount of the contract was 5,370*l.*, and the schools have been built by Mr. John Spink, of Battersea, under the superintendence of the architect, Mr. John W. Walton, of 12, Buckingham-street, W.C.

THE REPLY OF THE RAILWAYS.

THE circular recently addressed by the President of the Board of Trade to the several railway companies, in which the companies are, by implication at least, charged with neglecting the means for securing the safety of the travelling public, by not having provided works and station accommodation commensurate with their constantly increasing traffic, has been followed by replies from the chairmen of nearly all the great companies, in which the latter warmly defend themselves against the charges made by the Board of Trade authorities. A notable feature in these several replies is that which discloses the enormous outlay which has recently been incurred in extension lines, and new and enlarged station buildings by many of the companies concerned.

The statement of the chairman of the London and North-Western Company reveals the fact that during the last five years this company has expended more than 4,000,000*l.* in doubling lines and enlarging stations, in addition to a further expenditure of 2,000,000*l.* on new lines, of which the greater part was laid out to relieve the traffic of existing lines, amounting altogether to about one-ninth of the whole capital of the company. Beyond that sum they have expended during the last two years out of the annual revenue 100,000*l.* per annum almost entirely on refuge sidings and interlocking points. The chairman shows that many of the large stations have been rebuilt and materially enlarged to meet the increased traffic, amongst them being the Euston Station, the area of which has been doubled. Lime-street Station at Liverpool, the chairman states, has been built three times, and the company are now doubling its area at a cost of upwards of 500,000*l.* Stafford and Crewe stations have also both been constructed three times, and greatly enlarged on each occasion, and plans have just been settled for a further enlargement of Crewe station, at a cost of about 100,000*l.* Manchester, Birmingham, Warrington, and many other stations have also been reconstructed and enlarged at enormous cost; whilst Carlisle, Preston, and Bolton stations are now in course of being rebuilt and enlarged. Similar works have for some years been going on, and are now being carried out, on almost all parts of the line, as rapidly as the state of the labour market and other circumstances will permit, and others are in contemplation. The chairman, adds, "On this, as on all railways in the kingdom the stations were laid out originally on what was then considered an extravagant scale, but in the great majority of cases they have now proved insufficient, and as works of different kinds naturally gathered round the stations the task of enlarging them has become not only excessively expensive, but very difficult, owing to the vested interest concerned, which frequently cannot be dealt with without Parliamentary powers, obtained after great delay." Respecting new lines and branches, and additional double lines, the chairman states that a third line was several years ago completed from London to Bletchley, and that a fourth line will shortly be opened, and also, in order to continue these lines into Euston-square, powers were obtained in last session to construct a duplicate tunnel for two lines of rails under Primrose-hill. Plans are also now preparing for further extending these two additional lines to near Northampton. A third line has recently been opened between Rugby and Nuneaton on the up side, for the goods trains, in order to facilitate the passage of the night mails. Two additional lines are already in course of construction between Stafford and Crewe, and the Board are proceeding with arrangements for filling up the intermediate portions so as to complete four lines of rails over the whole distance between London and Crewe. Alternative railways have likewise been constructed in several cases, such as the Whitchurch and Tattenhall, for the purpose of conveying the traffic of South Wales with Birkenhead and Chester, without passing through the busy station at Crewe, the Runcorn Bridge and its necessary approaches having cost more than 500,000*l.* The Lancashire Union lines, the doubling of the line between Liverpool and Huyton, and the new lines from near Manchester to Wigan, make duplicate communications between Manchester, Liverpool, and Wigan and the north. Several branches and tunnels, especially a tunnel three miles and a quarter long in Yorkshire, originally made for single lines of rails, have also been doubled to meet the public requirements. The expenditure on the block and interlocking system is also noticed, the chairman stating that in this department the outlay for some years past has amounted, on an average, to 80,000*l.* per annum, and that sum will be exceeded during the present year. To show the magnitude of these works the chairman states that they have involved the erection of 13,000 new signals, with the corresponding apparatus.

The chairman of the Midland Company has also replied to the President of the Board of Trade's circular, and his statement likewise shows the heavy expenditure which that company has incurred, and is now incurring in new works and station accommodation for their increasing traffic. He states that the amount expended during the last six years upon the enlargement of stations, sidings, buildings, and establishing the block and interlocking system, is 1,766,059*l.* The amount expended during the same period on widening existing lines is 1,233,635*l.*; whilst in duplicating the line between two common points, the sum of 2,390,866*l.* has been expended within the same period. The amount expended in increasing the number of engines, carriages, and wagons, was 2,558,265*l.*, making a gross outlay for the above-named purposes, during the six years, of 7,948,825*l.* The chairman adds, that this expenditure is altogether irrespective of the construction of new lines in progress, and is still going on. He also makes the important statement that the sidings upon the Midland system at the present time exceed 700 miles in length. Respecting the block system, he remarks, that at present it is in operation over nearly 500 miles of the most important portions of the railway, and the further extension of it is being proceeded with as fast as materials can be obtained and the work executed. Similarly, steps have been taken with respect to the interlocking and safety points. As regards the sufficiency of the staff for the proper conduct of the traffic, he states that while the gross receipts from all sources of traffic during the period named have increased from 2,804,436*l.* to 5,026,102*l.* per annum, being at the rate of 79 per cent., the number of servants has increased from 15,882 to 30,006, or 90 per cent., and the salaries and wages paid from 871,728*l.* to 1,852,136*l.*, or 112 per cent.

Sir Daniel Gooch, the chairman of the Great Western Company, in his reply to the Government circular, states that during the last year the company substituted the narrow for the broad gauge throughout the whole distance from Swindon to Milford Haven, representing about 500 miles of single line, and that they contemplate a similar operation in the ensuing year on other important and extensive parts of their system. In effecting these changes, as well as on other parts of their line, the enlargement and rearrangement of stations and sidings, and the laying down where needed of additional lines, have been and will be proceeded with. But the chairman adds, that the question of "station and siding accommodation," referred to in the Government circular, is a complex and difficult one. The fluctuating nature and extent of the requirements of the traffic involved considerations perpetually varying with the variations of traffic in different localities. What amounts to sufficient provision for the safe working of increased traffic by the enlargement and rearrangement of stations and sidings, is a question dependent upon the special circumstances of each locality, and must be dealt with in reference thereto. On this particular point the chairman observes that the directors never hesitate to incur any expenditure which is called for by the demands of an expanding traffic, the reasonsonable accommodation of the public, whether as passengers or as traders, being inseparably bound up with the permanent interests of the company. The chairman "regrets that it should have been deemed necessary by her Majesty's Government to address to this company a letter which contains—by unavoidable inference and implication—charges as to the conduct and management of the company's affairs of so grave and serious a character," and he denies, so far as the Great Western Company is concerned, the charge made by the Government "that there is a want of due care that the permanent way, the rolling-stock, and the station and siding accommodation, are kept up to the requirements of the traffic."

Mr. Castleman, the chairman of the South-western, replies on behalf of the directors of that company, and in doing so, states that the board have adopted every known means for strengthening and improving the permanent way; that a very large expenditure has been incurred in enlarging the station and siding accommodation; and that the work is still proceeding without cessation. Within the past seven years, in addition to the cost of the ordinary maintenance of the permanent way, 250,000*l.* have been expended upon its strengthening and renewal, and the directors have thus been enabled to keep the permanent way and the siding and station accommodation fully up to the requirements of the increasing traffic; and that as regards the rolling-stock the same course has steadily and successfully been pursued. The chairman further states that, some time ago, a very considerable expenditure was incurred at the Waterloo station in erecting a large over-bridge signal-box, with all modern appliances for interlocking signals and points, and an extensive traffic had, for many years, been worked in the Waterloo station. A further large expenditure has been, and is still being, incurred in erecting additional signals and making other improvements on that station. Referring to the absolute block system, he states that out of 664 miles of railway, 419 miles are already worked upon that system; eighty-eight miles additional will soon be brought under its operation, and next year the absolute block system will be further extended. He adds that the interlocking of points with signals has also been carried out by the company to a very large extent, and is in course of further extension.

RAVAGES AMONG BUILDINGS BY A STORM OF WIND.

ON Monday night and Tuesday morning of last week, England and Scotland were visited by an extraordinary storm of wind, resulting in great damage to property, and serious loss of life.

The gale over Sheffield and district, for intensity and disastrous results, has never been equalled in the history of the town. Numerous tall chimneys have been cast down, and other premises demolished. High chimneys, too, which still stand, were seen to rock to and fro in an ominous manner. A catastrophe occurred which has long been referred to as being probable in the event of an unusually rough wind—this was the fall of a square-built chimney, over 150 ft. in height, situated in Trippet-lane. The front part of the premises were used as a sewing-machine manufactory; the next set of workshops, twelve in number, by cutlers. This part of the building was utterly and completely demolished by the massive chimney, and the occupants, numbering between twenty and thirty, of both sexes, were buried in the heap of ruins. After some hours' labour, the police recovered five bodies, mangled and crushed beyond recognition, and it was believed that many more were buried. A fettling shop at the newly-erected foundry of Mr. Hadfield, in Newhall-road, Attercliffe, was blown down, burying two men in the ruins. A square chimney, 40 yards in height, fell at the Norfolk Works, destroying part of the forge and hammer mill. A brick chimney fell at Messrs. Matthewman's works, Milton-street, smashing some steam-pipes in its fall. Part of Messrs. Hornby's vitriol works, Attercliffe, were blown down. The workmen, being at breakfast, escaped. At Guest & Son's, Watery-lane, the high chimney fell, cutting the three-story factory in two. At Messrs. Christopher Johnson & Co.'s, Portobello-street, the chimney fell, breaking through workshops and warehouse. The infirmary and hospitals are full of injured people, and the list of casualties cannot possibly be exhausted herein. The following enumerates some few more of them:—Six shops partly destroyed in Highfields; the police-station, Highfields, considerably damaged; sixteen houses unroofed; Thompson & Co.'s fitting-shops blown down; in Washford-road the churches are more or less damaged; and the

Pavilion and Botanical Gardens partly destroyed. In every street some houses are unroofed and chimneys blown down. The telegraph wires between Sheffield and Barnsley were completely wrecked.

The new Board schools at Walkley stand in a position where they encountered the full force of the gale, and they have sustained very serious damage. The schools are erected in the shape of the letter H, and they were so far completed as that the main principals of the centre roof had been got up. A tremendous gust of wind swept across the hill, and literally lifted the massive framework of the centre roof from off the walls, and dropped it over the front of the building, a great deal of it being smashed to pieces in the fall. The centre walls being thus left without support, were blown down to the floor line. The roofs of the outer portions are not much injured. One of the gable chimneys was blown down, and did some damage. One of the buildings to suffer was the Methodist New Connexion Chapel, which stands at the junction of Walkley-road and Walkley Bank-road.

Instances are not wanting where every chimney in a whole row of houses has been blown down. Such is the case at what is known as the Brick-row, at Hillsbro'.

In Leeds, churches and chapels were terribly knocked about. 20,000*l.* will not cover the damage done. One large building, situate in Lady-lane, injured three men in its fall. Many buildings in the course of erection have been injured to a greater or less extent. At Gildersome, near Leeds, a blacksmith's shop was blown down. At Churchwell, a new co-operative store was much damaged, and great injury to residences was also done. At Halton and Whitkirk, a chimney, fifty yards high, in Meadow-lane, was forced down to the ground, and in its fall cut through the mill and a portion of a dwelling-house.

The Weeton Railway Station, near Harrogate, was blown down, as well as several houses. The same thing occurred at Knaresborough. The North-Eastern Railway engine-shed at West Hartlepool is almost a wreck, and various stacks of chimneys have been unable to stand the violence of the hurricane.

At Halifax, a new brick chimney, just completed for the saw-mill in course of erection in Horton-street, for Messrs. Bedforth & Son, builders, was blown down, and fell on a shed immediately under it, killing a youth, and seriously injuring three sawyers. The chimney was 40 yards high, of which 13 yards fell. The lime had not dried. Three of the pinnacles at the foot of the spire of Square Congregational Church were blown down from the tower. The pinnacles are in double sets at each corner of the tower, the set at the south-west corner falling into the yard, and smashing gravestones. At the north-west corner, one of the pinnacles fell through the roof, its companion having a great rift in it, and it was momentarily expected to come down.

At Dewsbury Moor, a newly-erected building (not occupied) was demolished, and a house at Earlsheaton was rendered uninhabitable, the roof being completely lifted off the walls. Considerable damage was done to St. John's Church, Dewsbury Moor. The large new chimney of the Dewsbury and Batley Brewery Company was blown down, and other damage was done to the works. The new Board Schools, in course of erection by the Soothill School Board, were totally unroofed, and the buildings were otherwise seriously damaged. Many buildings, including the *Dewsbury Chronicle* office, were partially unroofed. A foundry was partly demolished at Heckmondwike, where a great deal of damage was done. At Batley, one of the four pinnacles of the tower of the parish church was blown through the roof, 6 square yards of which it carried away into the church, causing damage to pews.

At Aberdeen, and elsewhere in Scotland, much damage to buildings also occurred.

The Projected Railway to Roundhay Park, Leeds.—At a meeting of the subscribers to the proposed Leeds, Roundhay Park, and Osmondthorpe Junction Railway, it has been unanimously resolved:—

"That having regard to the very limited amount of support given to the project, and to the formal expression of dissent received from the Corporation of the borough, this meeting is of opinion that the promoters will not be justified in prosecuting the Bill in the ensuing session of Parliament, and that unless the measure receive a more general support, the Bill be withdrawn."

CONSTANTINOPLE.

A special section has been established in the Council of State for the consideration of all matters connected with public works. Of this section his Excellency Edhem Pasha, ex-minister of public works, has been named president, with Kiani Pasha, Mustapha Assym Pasha, and Pavlaki Mussurus Bey as colleagues. According to the *Levant Herald*, M. Guérard, engineer, as the representative of M. Pascal, has recently submitted to the Porte that gentleman's plans for the harbour and other works at Dédé-Agatch, Varna, Salonica, and the Stamboul terminus at Sirkedji-Iskelessi.

The Turkish papers publish an official communication announcing the arrangements made by the Government for carrying out the new cadastral survey and valuation of real estate in Constantinople and its suburbs as the basis of the assessments contemplated by the recent reforms. The existing plans and registers are no longer correct, and are often a cause of contention and confusion.

The capital and its suburbs will be divided for the purpose into a certain number of cadastral districts, and the Government surveyors, in conjunction with professional valuators and the *imams* (priests) and *moukhtars* (head-men) of the quarter, will for each district prepare an accurate list of the real estate contained within its boundaries, the houses and shops unoccupied and occupied, whether by tenants or owners. When the survey is commenced all owners must exhibit their title-deeds; but if the owners be in the provinces, or the title-deeds themselves be elsewhere than in Constantinople, a delay of five months from the beginning of the survey will be allowed for the presentation of these documents; but should that lapse of time be exceeded, the defaulters will be liable to a fine of 10 piastres per 1,000 upon the estimated value of their properties.

THE PROPOSED MEMORIAL OF THE LATE SIR WILLIAM TITE.

It may be remembered that, after the decease of Sir William Tite, M.P., who represented the parish of Chelsea at the Metropolitan Board of Works, the vestry of that parish made a stir with regard to erecting a monument to Sir William on the Chelsea Embankment, and Sir Charles Dilke, M.P. for the borough, forwarded a cheque for 100*l.* Several of the vestry proposed, also, that the parish, which owed so much to their late member of the Board of Works, should bear part of the expense, and some of the vestrymen talked of their own desire to subscribe.

To carry out the design a "Memorial" Committee was formed, and, at the last meeting of the vestry, the committee submitted a report recommending that the project be abandoned, and this course the vestry agreed upon.

The friends of the late Sir William Tite will no doubt be much surprised, if not something else, at this issue; for the step taken by the vestry unquestionably hindered others ready to erect a substantial record to the memory of Sir William Tite; and it may be now a difficult task to get friends together for the desired object.

THE ENGRAVING FOR THE ART-UNION OF LONDON.

DUTCH TRAWLERS LANDING FISH AT EGMONT.

It appears from the last report of the Council of the Art-Union, that the plate of "Tilbury Fort," after Stanfield, is still so much in request, and the eight plates of "Coast Scenery," given two years ago, were so popular, that it was thought another marine subject might please; and accordingly Mr. E. W. Cooke, R.A., was commissioned to paint, for the Society, one of his charming pictures representing seafaring life on the coast of Holland. We have here a couple of the full-bowed Dutch boats, much such as those in Mr. Cooke's picture in the Academy this year—lying on the shore near Scheveningen—the tide being so low that the men and women can wade through the shallow water to carry the baskets of fish to land. We seem to catch the smell of the sea, and to hear the waves breaking against the hulls of the vessels, and driving the shells and pebbles before them as they subside into ripples on the beach.

The boats are painted with the artist's firm solid touch, and the sails—one in shade, the other lighted by a watery gleam of sunshine, which is relieved against a black threatening cloud behind it—form a striking, but not violent contrast. The subject has been capitally engraved in pure line by Mr. Arthur Willmore, almost the only landscape-engraver in this style now left; unfortunately, the more rapid and economical methods of mezzotint, or chalk engraving, being alone patronised by the print-publishers, though nothing can attain the brightness and power of the pure line manner.

We learn that the prizes at the ensuing distribution will comprise, amongst other works, and the right to select pictures from the public galleries, a number of statuettes in bronze of the painter Cimabuë, from a model by Mrs. Fennessy, for which, as a pupil in the Bloomsbury School of Art, she received the Queen's Gold Medal last year, and the warm commendation of many critics.

WHITBY JET AND ITS MANUFACTURE.*

What is jet? This is a question often put, but never satisfactorily answered. Nearly all the jet workers have an opinion on its origin, and most of them, in common with the greater part of the inhabitants of Whitby and its neighbourhood, believe it to be of ligneous origin. Some, however, believe it to be of mineral origin, and others think it combines the two. Taking the opinion of Mr. Martin Simpson, the curator of the Whitby Museum, who has studied the geology of this district exceedingly well, and with whom I have talked on this subject, he put his theory as follows:—"Jet is generally considered to have been wood, and in many cases it has undoubtedly been so; for the woody structure often remains, and it is not unlikely that comminuted vegetable matter may have been changed into jet. But it is evident that vegetable matter is not an essential part of jet, for we frequently find that bone and the scales of fishes have also been changed into jet. In the Whitby Museum there is a large mass of bone, which has the exterior converted into jet for about ¼ in. in thickness. The jetty matter appears to have entered first into the pores of the bone, and then to have hardened, and during the mineralising process, the whole bony matter has been gradually displaced and its place occupied by jet, so as to preserve its original form."

To this latter opinion I am inclined to agree, for it has the appearance of a substance that has distilled from the rock, and in some cases has impregnated vegetable, and in some other cases animal substances, while in others it has simply filled up a fissure in the rock, and solidified. In some specimens I have seen the grain, apparently of wood, distinctly; in others, scales and bones of fishes; and in one of the best specimens that have been found here, the mass in form and structure was that of a tree, with bark, knots, and roots, and in the curled portions of the roots, stones and soil conglomerated were imbedded.

Whatever may be the actual formation of jet, that known as the hard jet is most worked, it not being thought worth while working the soft species, since the importation of the Spanish article. The hard jet has a specific gravity of about 1·238, has a conchoidal fracture, a resinous lustre, it gives off a bituminous odour when burnt, is an electric, and a bad conductor of heat. It was formerly obtained in the largest quantity by working in the cliffs, by a process called "dressing" (very dangerous work),—that is, by clearing away and hewing down the cliff-sides till jet ends protruded; the seams were then followed till exhausted. Some seams have realised as much as 1,000*l.*, and have been discovered in a short time. At other times, however, men have been employed for weeks, occasionally months, and have found nothing; in fact, have been on the point of giving up, when they have unexpectedly come upon a seam that has fully repaid all their labour.

There are somewhat more than twenty mines at work at present; about 200 miners, whose weekly wages vary from 24*s.* to 26*s.* Owing to these low wages, many men, who might otherwise be at jet-mining, go to the ironworks in the district where they get paid much better. A short time since there were more than 400 miners, but they have gradually lessened to the number before mentioned. Again, jet-mining seems to be a sort of hazardous undertaking, as far as profits are concerned, for often large areas have been tunnelled, and nothing found; and

* From a paper by Mr. John A. Bower read at the last meeting of the Society of Arts.

others have sometimes taken up mines that former workers have given up in disgust, and reaped a fine harvest. Both the jet cliffs and mines are rented by the workers. By far the largest jet-miners are W. Thompson and J. Turner, both of Whitby. The former has carried his business on most successfully since the year 1860. Rough hard jet varies in value from 4s. to 21s. per pound, according to its closeness of texture, direction of grain, freedom from flaws, and breadth for working. The soft jet varies from 5s. 6d. to 30s. per stone; the price of the Spanish is about the same as that of the English soft jet. The Whitby hard jet is the best in the world, not only for working, but it will take a fine polish, which it retains for years, and it can be worked up into finer designs on account of a greater tenacity and elasticity that it has over other qualities.

The skin has first to be removed, which is done by the workmen chipping the surface with a large iron chisel; the stripped portions are then taken to the sawing bench, where the jet is sawn up, with the keenest eye to economy, into the various shapes and thicknesses, according to the articles for which they are required. The pieces are then given out to the carvers or turners, as the case may be. In the case of the former, if he requires to make it into a brooch, locket, or chain-link, he takes it to a grindstone, which he works by a treadle, and brings the edge, which he keeps turning round, on to the face of the stone; it soon then becomes oval, round, square, or any geometrical shape required. The surfaces are next both ground smooth; it is then fit for carving. Very often—I might say rarely is it otherwise—the artist in jet who undertakes this is no draughtsman whatever, yet he can cut the most beautiful and truthful faces in high relief, the most delightful floral designs,—the latter often without any pattern at all; the most tasteful monograms, and other designs equally good, without being able to sketch the simplest object on paper, and often not being able to write his own name. It was only last week a striking instance of this kind came under my own notice. I saw a workman, one of the best hands in a large shop in Whitby, able to cut the most elaborate monograms, the most accurate portraits, the most elaborate foliage, but quite unable to sign his name. Is it not important, then, when we have many such instances, that we in Whitby should have not only elementary classes, but also a School of Art? I remarked on the economy with which the jet was cut up. I am informed that some masters, by care, get one-fifth more work out of the same amount of material by strictly observing this.

The most complete workshops we have in the town are those of Mr. Bryan, who has lately gone to considerable expense in rearing not only a large structure, but has added every possible convenience conducive to the health and comfort of the men.

I have heard Mr. C. Bryan, whom I named just now, say that he was willing to take fifty little London street Arabs as apprentices, and able, too, to guarantee that more than half should turn out first-rate jet workers; and from frequently visiting these workshops I have every reason to believe this is no exaggeration.

According to the classes of work so do the wages of the workmen vary; some idle and careless hands getting from 16s. to 1*l.* 1s. per week; others earning from 30s. to 50s. weekly; and the average wages for boys, from twelve to fourteen years, being 8s. to 10s.

In conversations with the masters on an improvement in the patterns, or the introduction of something new, I am told that if customers improved in taste, and there were any demand for articles of a better design, they would be ready to do them; but when they made a fresh effort by bringing out a good and new design, it frequently was on their hands for a long time, or, to use their own expression, "it would not sell"; so that much improvement in this class of goods depends on the public taste.

The designs would be greatly improved if we had a good art school in Whitby; this is very much required, and many of the artizans have expressed a strong desire that efforts should be made to get them one. The only school we have in connexion with drawing is one under the auspices of the Mechanics' Institute, but although it is doing much good to the few who attend, many more would avail themselves of it did it afford more advantages; the want of a larger selection of good copies, designs, and models is greatly felt.

A good museum of works of art, occasionally localised in the town, would do very much to help the men and improve the art, and repetition of such inducements as have lately been given by the Turners' Company would most assuredly bring out the taste and skill of the workman.

ARCHITECTS' CHARGES.

SIR,—It is more interesting than instructive to observe the exceptional difference of opinion among architects and surveyors touching their professional charges, as evidenced in the case of Collins *v.* Ullman, reported in your last issue. On the one hand, we have a grave and weighty Institute,—chartered by King William IV., royalised by Queen Victoria, and supported (with idiosyncratic exceptions, such as the elder Pugin, proving the rule) by the genuinely eminent members of the profession, such as Cockerell, Barry, Smirke, Donaldson, Tite, Scott, &c.,—setting forth a system of remuneration; and, on the other hand, we have "Mr. Henry Jarvis, district surveyor," who "repudiates altogether the Institute and the Institute's scale of charges," and is thus supported by lesser lights, taking official scale. The reason of this somewhat rude rebellion seems to be that it is the custom of the dissentients to charge the same, or "never more than 5 per cent., whether the works were difficult or not, or whether they involved additional trouble and skill or not." But, of course, no sensible men could accept such a system as generally binding or otherwise than as generally wrong; and so the jury said by their verdict. For, in these days of free trade, cheapness is matter of comparison rather than of compulsion; and we have, many of us, considered our "bargains" at our leisure, and counted the cost of one man underselling his neighbour. The direction of Baron Cleasby, that "the rules of the Institute were a safe guide both for himself and the jury" is of immense importance, while any advocates of cheap architecture have still no cause of complaint.

E. L. TARBUCK.

THE CONSTRUCTION OF THE NATIONAL ALBERT MEMORIAL.

SIR,—My mind has been much exercised of late on the constructional aspect of the National Albert Memorial; but as I am not in possession of full information, the question I propose asking must be taken with a qualification. It is this:—"Is the monument an illustration of sound constructional principle?" I do not refer to the strict principles of "Puginism," but to those which could suggest themselves to any non-professional individual. Were such a one expressing himself, he would probably take this position. Here is a shrine, with a roof of immense weight, sustained by pillars, which, by some occult reason, appear efficiently to discharge a duty I should not have supposed them competent for. The architect must have made some compact with statical law, and so insured the safety of his design.

Well, the reply will be, you may rest satisfied; the secret lies in certain iron cross-girders, of immense strength, which relieve the substructure of outward thrust; and hence security. The non-professional might accept such an explanation; but this, if I am not mistaken, will not satisfy the thoughtful professional; and I open up this question, not out of any disposition to cavil, but with a desire to elicit a right theory of construction. Let us reason out the matter.

When an architect brings unresting forces into play by arch-construction, he provides means of resistance which bring these forces into a state of equipoise. When he constructs, for instance, a tower or spire at a church crossing arch—pierced,—he has abutments in the nave, and chancel, and transepts. Take away these abutments, and the points of support must be altered accordingly. But I presume it will not be considered a piece of hyper-Puginism to say that this alteration cannot recognise beams or ties of any kind, as legitimate, or, at least, satisfactory construction.

This case is, I take it, precisely analogous to the Albert Memorial, in which there is a heavy superstructure depending for its support on means which do not make themselves apparent; and although I do not assert that means of construction should be evident in all their unadorned savageness, they should be visible enough to satisfy the spectator that his object of admiration is stable; and this, I venture to say, is what cannot be said of the Albert Memorial. It *is* stable; but its stability requires explanation, and whenever that explanation is not forthcoming there must be a feeling of dissatisfaction; for it is evident that the four points of support do not unaided fulfil the purpose of support.

An individual may feel himself secure under a church-roof with visible tie or resisting buttresses, or under an arch with proper abutments; but, for aught he can learn from observation, his position under the Albert Memorial might not be so.

G. S. A.

"HOMES IN HACKNEY WICK."

REPORTS of the proceedings of the Hackney Wick District Board of Works, in the local papers, show that attention has not been directed a moment too soon to the sanitary condition of the homes and streets in Homerton and Hackney Wick. We are glad to observe, that a motion was carried to institute an inquiry, and that a sanitary committee are to specially bring up a report upon the matter. We will not anticipate the report, but we shall be prepared to supplement it should it fall short of what we expect it to be. We know the exact state that the district was in when we first visited it, as also its condition within the last week. The state of the streets and roads, and of the foul march sewers, alluded to by us, is to receive immediate attention, and it is to be hoped that the drainage and foundations of the dwellings of Homerton and Hackney Wick will also receive special attention in the report promised. The local *Express* follows up its observations, in last issue, with the following words:—

"The necessity of seeing ourselves 'as others see us' is being forced upon us in a remarkable manner. Our contemporary, the *Builder*, has sought out in our midst, and held up to our gaze a grim array of terrible facts. As a district, we fear we must stand convicted of the offences which are charged against us. It would be an exhibition of the most contemptible species of false pride were we to attempt to put a gloss on the hideous truths that have been laid bare within the last few weeks by our enterprising and painstaking contemporary. The deservedly high reputation of the *Builder* would be a sufficient guarantee for the reality and truthfulness of the picture which it has given us of some of the 'homes' which exist in the borough of Hackney, were it not that the calm and unimpassioned tone of its remarks indicates that the circumstances which are described are real.

We have already commented upon the evidence adduced by the *Builder* in reference to the 'Homes' in Homerton; and our readers are already familiar with the really startling revelations which have been made concerning that district. Now we have to face a new array of facts, and to consider the fresh results which have been arrived at through the efforts of our contemporary, and we accordingly find that Hackney Wick is another district which 'awaits the paternal consideration of the District Board of Works.' . . . .

Those of our readers who have perused the extract from the article given by us in our last week's impression will have learned some interesting, but withal some remarkable, facts concerning the nature of the soil upon which Hackney Wick is built. Many persons will, no doubt, learn these facts for the first time. To those who have not read the article we commend its careful study,—it is eminently instructive.

We feel that we cannot dismiss this vitally important subject with the present article. A deep sense of public duty will compel us to return to it again. Meanwhile, the thanks of the whole district are due to the editor of the *Builder*."

WATER IN THE NORTH.

AT a recent meeting of the new Local Board of Health at Bishop Auckland (a town under the wings of the Bishop of Durham, and of considerable population and trade), the clerk read the following offer to supply the town with water, from a member of the Board:—

Gentlemen,—In accordance with your request, I hereby give you a written offer of the terms and conditions on which I am willing to undertake the pumping and supplying the water to the town. 1. I propose to supply water *free of charge* for twenty-five years to all ratepayers within the Board of Health district who require it for domestic purposes only, and also the water required for watering the streets. 2. All persons using the water for commercial or manufacturing purposes, to pay on the same scale of charges on the rateable value of their premises as at present, or by meter, in cases where I consider it necessary, at the rate of 9d. per 100 gallons. 3. I will keep in repair all existing works and mains, but if the Board should at any time from the extension of the town, or other causes require additional storage, reservoirs, or new mains, such new works to be paid for by the Board. 4. The Board to delegate to me, for and during a term of years to be agreed upon, the existing plant, and full powers for obtaining and filtering the water, and for making the necessary erections, excavations, and other works, for the erection of a turbine wheel, and supplying the water power, and for excavating in the streets or other public places when necessary for repairs or making connexions. 5. The inspector of nuisances appointed by the Board to continue as part of his duties to inspect all water-taps, and report any waste of water to me. I am prepared to give ample security for carrying out of the contract.—JOSEPH DUFF."

Several members considered it a very fair offer but said, if accepted, Mr. Duff would have:

vacate his seat at the Board. Mr. Duff said it would be quite a relief for him to resign. His only motive was to benefit the town through his offer. A member said it was simply a present of 10,000*l.*, according to the present water-rate for domestic purposes, but wished to know if the Board could give the donor a lease for twenty-five years or more. The clerk replied that the Board could not grant the lease. A member, putting on his hat whilst leaving the room, said warmly, "Well, there it is again: cross my name out of the Board of Health. I am disgusted."

It appears that this liberal offer will not be carried out; and unless the London Board spurs the Bishop Auckland Board to instant action, years will elapse before a good water supply will flow into the town.

ARCHITECTS BEFORE THE JUDGE.

A RUMOUR, believed to be well founded, that a representation is to be made to the Home Office by the learned judges of the superior courts, as to the necessity of appointing official architects and surveyors for criminal proceedings, renders the following account of Mr. Justice Honyman's raid upon the county of Durham's professional men, of more than ordinary interest.

In last week's *Builder*, a report appeared of the judge's censure on a youthful architect, and his Lordship having ordered a fresh indictment, Mr. Joseph Hall Morton, of South Shields, architect, was subpœnaed to give evidence in place of his pupil. Mr. Morton, in answer to counsel, said,—I produce a plan of the place called "Jacob's Ladder." I made it. It is an accurate one, and is on an eighth scale.

The Judge.—Is this the plan we had the other day? I think I recognise an old friend with a new face.

Counsel.—It is the same as we had the other day, with some measures put on, and amendments: it is embellished.

The Judge.—Did you, Mr. Morton, make that attic plan?

Mr. Morton.—Yes. I assisted my clerk to make it. It is made to scale.

The Judge.—You say you assisted your clerk to make it. He said last time that you left it to him.

Mr. Morton.—I overlooked it.

The Judge.—In one sense you did *overlook* it, for your clerk told me that it was not made to scale.

Mr. Morton.—That plan is altered. It is made to scale. It has been corrected.

The Judge.—In what way?

Mr. Morton.—In the blue wall.

The Judge.—I am almost certain it is no such thing. When I had occasion to measure this before, your clerk told me it was no good measuring it because this part was not made according to scale. Did you go with your clerk when the plan was made?

Mr. Morton.—Yes, my lord. When I went to make the plan I could not get up into the attic. The doors were locked.

The Judge.—Upon my word, this is really preposterous. You go to make a plan, and when you found the doors locked you could have got the keys or applied for them.

Mr. Morton.—I went yesterday, but could not get them.

The Judge.—Be careful. Do you mean to say there has been any alteration made in lifting this wall at all?

Mr. Morton.—The wall has been washed out and altered.

The Judge.—Then I am to take it that both the ground floor and the attic are still together. I really hope the next time you make a plan you will not make it like this. This looks as if it were all one level. You must be cautioned against this sort of thing. All these are drawn on the floor, and this is 17 ft. high. You ought to know if you call yourself an architect that not only ever makes a ground floor and upstairs and blends them together to make them look like one. It is most disgraceful carelessness.

Having disposed of the above case, his Lordship tried another case of murder, and this time Mr. Thomas Edmunds Oliver produced a plan he had made.

The Judge.—Which is Bainbridge's house on the plan?

Mr. Oliver.—I believe Bainbridge's house is No. 15.

The Judge, throwing down his pen.—You *believe*. Really there seems to be a fatality about plans in the place. I asked the witness which is Bainbridge's house, and he says he "thinks it is No. 15."

Before answering other questions, the witness measured the distance on the plans, and his lordship, after strongly complaining that the witness had not marked the whole of the different distances on the plans, asked Mr. Oliver several questions respecting the position of various places represented on the plans, and after some time so spent, the Judge said, "Are you capable of answering the question?"

Mr. Oliver.—I am, my lord.

The Judge.—I do not think, sir, you have the capability to answer the questions, or you will not apply your mind to them.

Mr. Oliver having given some further measurements, the Judge said there seems to be nothing but back streets. There are no front streets, and there are no architects in the county.

An Architect.—And no judges of architects.

The Judge.—If people will not prepare their plans with ordinary care, I will not allow their expenses. Where is that highly intelligent architect? I advise him to learn to make a plan before he attempts to execute another.

In a third case of murder before his lordship, Mr. William Ground produced a plan of a public-house he had made, and in answer to the Judge he said he did not see blood on the plan marked, but the spot was pointed out by a policeman some months afterwards.

His Lordship said this illustrated what he had said on the previous day. He wished the different places and the distances between them marked; but, as a general rule for architects and surveyors, it was better not to indicate anything without certainty.

Mr. Edge, counsel for the prosecution.—There have been such severe comments made by judges here that all the solicitors are frightened.

The Judge.—If that is so it is necessary to repeat what I thought I had already expressed. It is not in every case that you want a plan. In the case where a plan is requisite it seems that you do not make any, or make one that you cannot understand. Something has been said about the Treasury not allowing expenses for plans. So far as I understand, there is no foundation for that. [The learned judge has been misinformed on this point. Sufficient expenses are not allowed.] The rule is this: When a matter is difficult and intricate, such as the South Shields murder, a plan is necessary, and must be made; but in a trial here the other day—the Darlington murder case—a series of plans were produced for which there was not the slightest necessity. It was the most absurd thing I ever heard of, that because the murder happened in Cleveland-street, some architect (Mr. William Hodgson, of Darlington) had been employed to make an elaborate plan of the elevations of all the houses in Cleveland-street. You might just as well have given us a plan of Tyne Dock, or something of that kind. It would be better for an architect, in making a plan, to confine himself to the plan, and not indicate the place where the murder was committed, as the knowledge of that can only be gained second-hand. If you put a trace of blood upon the plan an objection would be properly raised to the plan going before the jury, because it would be laying before the jury something that was told by the policeman. If the architect is prepared to say the distance from so and so, he may, but he cannot be allowed to say "that is where the blood was," and so give evidence indirectly of his plans. His Lordship, looking at the plan, "It is the old story, the kitchen is not marked here, nor anything else. Which is the kitchen? I really wish that when plans are made they were made in such a way that they would be of some slight use."

Mr. Ground (the architect). I never heard of a kitchen being mentioned, or anything else.

The Judge.—Did you ever make a plan in your life before?

Mr. Ground.—Many a time.

The Judge.—I should think from the specimen before me that you never did. But this room? There is Livingstone's public-house, but which room is which?

Mr. Ground pointed out a certain place.

The Judge.—I wish you had put it on, then. Which is the room they must go through in order to go out?

Mr. Ground.—No room at all, you must go through the passage.

The Judge.—Then your plan is still more incomprehensible than ever, according to this, my good man. Which is the room you go into before you turn to the right and go out of the open air?

Mr. Ground.—I do not know what it is used for. It is a storeroom, or a back kitchen, or a wash-house.

The Judge.—I knew as much as that—that it is a kitchen, or a wash-house, or something of that sort.

The above description of the judge's attack upon architects and surveyors conveys but a minute idea of the feeling expressed by the profession throughout the North of England on the subject, and it may perhaps be necessary to add that the evidence given by architects in eight charges of murder at the late Durham Assizes, added to other testimony, has left three men sentenced to death, and three others to fifteen years' penal servitude. The police will, for the future, experience great difficulty in procuring Durham architects to assist them with plans.

THE WANDSWORTH SURVEYORS AND THE ROAD CONTRACTORS.

SIR,—In your report, in last week's impression of the *Builder*, under the above heading, you state that Mr. Pocock, the surveyor engaged to examine the roads in Battersea and Wandsworth, reported that "on examination of the roads in question, he found that the contracts had been properly carried out, both as regards the roadway and the kerbing." Now, sir, as regards the one road in Wandsworth upon which Mr. Pocock was instructed to report, that gentleman came to the conclusion that the "contract had been honestly and faithfully carried out"; therefore, you will perceive, that should this version of the matter go uncorrected, my character and reputation might be seriously injured thereby.

Whilst writing to you, I deem it my duty to inform you that at a meeting of the Board this day (22nd), upon a full review of the circumstances, it was decided to retain the services of the Clapham, Putney, and Wandsworth Surveyors. I trust that you will, with your usual impartiality, give this letter insertion in your next impression.

THE WANDSWORTH SURVEYOR.

NATIONAL TRAINING SCHOOL FOR MUSIC.

THE first stone of the proposed new building, in connexion with this undertaking, was laid by his Royal Highness the Duke of Edinburgh, on Thursday, the 18th inst.

The site of the school is on the west side of the Royal Albert Hall, and about 50 ft. distant from the western portico. Her Majesty's Commissioners for the Exhibition of 1851 have granted a lease of the ground necessary for the school for a period of ninety-nine years. The Royal Albert Hall supplies unrivalled accommodation for any large audiences in connexion with the training school. It will also provide a small theatre and some large rooms for library. It is therefore contemplated to connect the new building with the Albert Hall, by means of a bridge, and to have an arcade from the Kensington-road, giving a passage under cover to the school. The new building, devoted to twenty class-rooms, professors' rooms, and offices, has been designed by Lieut. H. H. Cole, R.E. The style is described as an English style of the seventeenth century, as may be seen at Longleat and Wollerton, with panels decorated with sgrafito work, designed by Mr. F. W. Moody. Mr. C. J. Freake will liberally cause the building to be erected at his own risk, by Mr. J. Waller, and he has offered the free use of the building to the school for five years.

When the school is built it will be under a committee of management, consisting of two members appointed by the Royal Commissioners for the Exhibition of 1851, two members appointed by the Council of the Royal Albert Hall, and three members appointed by the Council of the Society of Arts.

The Council propose to establish the school for a period of five years, and to obtain the public support for that period. At its expiration the Society of Arts hopes that the British empire will so recognise the utility of the institution that it may be engrafted upon the system of national education, and be made part and parcel of science and art instruction, directed by a minister of public education.

HEAVY GOVERNMENT FEES FROM CANDIDATES FOR THE INDIA PUBLIC WORKS.

MUCH dissatisfaction was expressed on Friday amongst the hands of the large mechanical engineers' firms in the metropolis, at the Government notification that candidates for direct appointments as assistant engineers for the Public Works Department in India would be required to pay the enormous fee of 40*l.* for admission to the competition—half to be returned to the successful candidates, and all forfeited to the unfortunate losers of appointments. At this competitive examination any man under twenty-four years of age, and who has been employed for not less than eight months as pupil or assistant to a civil or mechanical engineer, will be eligible to compete. The subjects of examination will consist of mathematics, natural and experimental sciences, engineering, &c. They will also be required to undergo an examination likely to occupy several weeks in practical work in the laboratory and practical surveying, drawing, designing, and estimating.

The examination will not be held until after next Eastertide, and in the meanwhile poor and working-men candidates will have time to urge upon Government how serious is the "forty-pound gate to enter" where the number of prizes are not likely to exceed twenty, and the blanks, perhaps, be hundreds. It will be seen, too, that the fortunate candidates will be further rewarded by having half their fee returned.

THE NEW GOODS WAREHOUSES AND STATION FOR THE MIDLAND COMPANY AT WHITECROSS STREET.

FOR some time past the Midland Railway Company have been actively carrying out a policy in different parts of the Metropolis, having for its object the establishment of large goods and coal depôts in connexion with their system. The largest and most costly of these is the very extensive goods station and warehouses which are now in the course of construction on the site of Whitecross-street prison, which the Company purchased from the City authorities for upwards of 50,000*l.* about four years ago. This land, which is about three acres in extent, has been in course of excavation since the early part of the year, down to the level of the Metropolitan Railway, with the view of converting it into a spacious goods station to be approached from the Metropolitan line, over which the Midland Company have full running powers.

The area covered by the site extends from Whitecross-street, with a frontage of about 260 ft. in length, to a depth of 300 ft., where it is bounded by Redcross-street, the junction of the intended depôt with the Metropolitan line being on the south side between the Moorgate-street and Aldersgate-street stations. The heavy character of the preliminary work of excavation may be imagined when it is stated that the depth from the street-level to the bottom, upon which a bed of concrete is intended to rest, is 30 ft.; and the estimated quantity of earthwork to be removed is upwards of 80,000 cubic feet. The warehouses are to be erected on the east side of the site, with a frontage to Whitecross-street extending the entire length of the land, and they will be carried in the direction of Redcross-street to a depth of about 75 ft., thus covering a ground area of upwards of 2,000 square yards, or about one-fifth of the entire area of the depôt. The rest of the site, between the rear of the warehouses and the Redcross-street boundary, will be covered with metals for the goods-wagons, communicating by sidings with the Metropolitan line. The rails, however, will extend over the whole of the ground area, under the warehouses to the Whitecross-street frontage, the several floors of the warehouses being carried up on strong iron columns and wrought-iron girders, with hydraulic lifts from the ground-floor under the warehouses to the several floors above. With the view of preparing the foundations for the warehouses, the work of excavation, since the

commencement of the undertaking, has been directed in the first instance to the Whitecross-street side, and this portion has now been almost completed. The whole of the site, after being excavated to a depth of 4 ft. below the level of the Metropolitan Railway, is to have a foundation of concrete of that depth, so as to bring it up to the level of the Metropolitan line, and a considerable portion of the basement over which the warehouses will be erected has already so been laid with concrete, and is ready to receive the superstructure, which will be proceeded with in a few weeks.

As regards the warehouses themselves, it may be stated that they will be an unusually lofty block, being 80 ft. in height, and consisting of six stories above the railway level of the station. They will be built of red brick, with dressings in Portland stone, and will in every respect be of the most substantial character. Iron columns, resting upon the basement columns already named (3 ft. in diameter), will carry each floor to the top of the building, and all the floors will be strictly fireproof. There will be entrances to the warehouses in Whitecross-street, as well as from the rear of the building on the railway low-level. Messrs. Mansbridge, of Camden-town, are the contractors for these extensive works, which, it is said, will take about two years from the present time to complete, and we understand that the contract amounts to upwards of 130,000*l.*

The above are not the only works of a like character in which this enterprising company are engaged in the metropolis. About two years ago they expended upwards of 40,000*l.* in the construction of an extensive coal depôt at Walworth, adjoining the London, Chatham, and Dover Railway, upwards of four acres in extent, and they are now about to extend it to the boundary of Hanover-street, near the Elephant and Castle, to the extent of an additional two acres. The preliminary steps for this extension were taken last week by an application to the Newington vestry; and the land being already in their possession, the works are immediately to be commenced. In addition to this, the company have recently opened a coal depôt, four acres in extent, at Wandsworth; and are about to erect goods warehouses and other buildings adjoining, upon a portion of an additional six acres of land which they have already secured.

GLAZES.

SIR,—Will one of your correspondents inform me what kind of ingredients I should use to glaze yellow tiles with? The nearest I can find are equal quantities of red lead, antimony, and borax. J. F.

COMPENSATION CASE: THAMES EMBANKMENT.

IN the Sheriffs' Court, Red Lion-square, before Mr. Under-Sheriff Burchell and a special jury, the case of Sir H. P. Gordon, bart., *v.* The Metropolitan Board of Works, has been tried.

This was a claim by Sir Henry Percy Gordon for injury done to his residential estate at Chelsea, near the hospital, by which his water frontage had been cut up, and his privacy intruded upon by the works of the Thames Embankment. The claim as made was 3,000*l.*

Evidence was given on both sides, and the surveyors disagreed. The rental was put at 500*l.* a year on one side and at 270*l.* on the other. The embankment would injure the reside..ce, it was said by one party; and the theory on the other side was that it would improve the property.

The jury, after a long investigation, gave a verdict for 450*l.* A much larger sum had been offered before the trial.

MOULDED AND MORTISED BRICKS.

MESSRS. L. DE FONTAINEMOREAU & Co., Patent Agents, have forwarded us drawings of some improved bricks and tiles, patented by M. Gaillon, of Paris. The patent consists in forming the bricks or blocks with mortises and tenons or dovetails, and of the required shape, so that they shall fit into and be joined to one another, and so dispense with mortar or cement to produce the required design of a house or other building to be constructed. The bricks are further connected together by iron work of suitable construction, by which but little wood is required in such structures, and a great economy, it is claimed, is effected in labour and materials.

The patentee proposes to form cornices and entablatures of bricks or blocks with mortises and tenons, and with the required moulding on the outer face, and with channels on their upper faces, so that when put together and united by iron ties (passed through suitable openings left in the blocks for that purpose), a gutter will be formed with a proper fall, thus dispensing with wood and lead as usually employed.

Window and door frames, with the required boxes for weights, rabbits, and grooves, with mouldings and architraves round, may also be made. Mantelpieces can also be built up by employing these improved materials, and can be afterwards enamelled or painted.

SCHOOL BOARDS.

Goole New Board Schools.—The design by Mr. William Watson, architect, of Doncaster, and of Wakefield, has been chosen by the Board out of ten designs submitted in competition by nine competitors. The buildings will be Gothic in style, and consist of schools for 600 children, and teachers' residence, and the cost is estimated at about 3,500*l.*

Driffield.—The subject of the proceedings of the contractors of the new schools was again brought before the Board. Mr. Paul, the architect, had been over, and had given notice to the contractors that unless they proceeded with their work more satisfactorily, he should advise the Board to take the works into their own hands, for there was no prospect of their being completed by the time required by the Board. Instead of being ready by Christmas, it was more likely to be next Lady Day before the works were finished. A long discussion ensued respecting the contractors having used Scotch fir blocks in laying the floors, instead of larch blocks, as required by the specification. The Board expressed a determination that there should be no departure in this respect from the requirements of the contract, which, as representing the ratepayers, they were bound to see carried out. A letter was read from the architect to the clerk of the works in reference to the failure of the contractors in carrying out the contract,—that the clerk of the works was to exercise his own judgment, and act accordingly. This the Board thought was a very extraordinary letter to have been sent by an architect to a clerk of works on his representing a departure by the contractors from the specification. The meeting was adjourned to allow time for a report from the architect on the necessity of taking measures for the completion of the works, and deciding what course should be adopted in dealing with the contractors.

SCHOOL BOARD SCHOOLS, HUDDERSFIELD.

THE foundation stone of Stile Common Board School, Hudderfield, has been laid. This building, when completed, will be a plain Gothic one, built of pitched-faced wall-stones, 20 in., and lined inside with brickwork 5 in. thick. The windows and doors will be of sandstone dressings, and the school will be roofed with plain red Staffordshire tiles.

It will have a frontage of 213 ft. 4 in.; a depth from back to front of 116 ft. 8 in., and will stand in an enclosed area of 7,261 square yards. The boys' school will be 70 ft. long by 22 ft. wide, and will have three class-rooms, 22 ft. by 18 ft. 9 in.; a lavatory of 21 ft. by 13 ft.; and a teachers' room, 13 ft. 9 in. by 9 ft. The girls' school will be precisely similar to the boys'. The infants' school will be 50 ft. by 25 ft, and will contain one class-room, 22 ft. by 20 ft.; two class-rooms, 20 ft. by 19 ft.; a kind of lavatory, 20 ft. by 12 ft. 7 in.; and a teachers' room, 11 ft. 7 in. by 9 ft. One of these three distinct departments will accommodate 250 boys, another 250 girls, and one for 300 infants, making a total accommodation for 800 children. Each of these departments will have a separate playground. The estimated cost of the building when completed, will be 7,260*l.*, distributed as follows:—Tenders, 6,200*l.*; fittings, 400*l.*; architect's commission, and other expenses, 360*l.*; contingencies, 300*l.* The school and the playground will cover an acre and a half.

The Huddersfield School Board have either built, or have in contemplation, thirteen new schools,—one in Almondbury, which will accommodate 412 children; the second in Beaumont-street, or Fizwilliam-street, which will accommodate 845 children; the third at Berry Brow, for 350; the fourth at Birchincliffe, for 150; the fifth at Crosland Moor, for 120; the sixth at Deighton, for 150; the seventh at Moldgreen, for 1,080; the eighth at Mount Pleasant, for 1,062; the ninth at Oakes, for 800; the tenth at Outcote Bank, for 230; the eleventh at Salendine Nook, for 100; the twelfth at Spring-street, for 67; and the thirteenth, the foundation stone of which was now laid, for 800. These collectively give a total accommodation for 6,166 children. The estimated cost of these schools will be 69,578*l.*, involving an annual repayment of 3,027*l.* 3*s.* 9*d.*, or 4*l.* 7*s.* per cent., for a period of fifty years. Besides these schools, they have one in Spring-street, at present accommodating 150 children, and a second at Outcote-bank, for 460 children, which has been handed over to the School Board. They have a third school at Crosland Moor for 314 children, and a fourth at Hillhouse for 297 children, the two latter of which they regard as more of a permanent character than those at Lockwood. These four schools give accommodation for 1,221 children, and when these others are completed there will be accommodation for 7,387 children.

THE LEICESTER SQUARE IMPROVEMENT.

FROM the decision just given by the Master of the Rolls, it results that the vacant space in Leicester-square is not to be built over, but will be retained as open ground for the purposes of ornament and recreation. His Lordship stated that there had been more litigation over this square than any other square in Europe. A plan of the proposed improvements which the Metropolitan Board of Works hopes to effect by the powers of the Act of Parliament to be asked for in the ensuing session has been deposited in the usual manner with the Clerk of the Peace for the county of Middlesex, together with a book of reference to the plan, &c. The notice accompanying the plan states that the Board asks for powers to provide for the transferring and vesting in it of the garden of the square, to extinguish all existing rights, and, if necessary, to acquire all estates, rights, and interests in it compulsorily; to enable the Board to regulate and use the garden, and to lay it out, drain, plant, and ornament it; to make bye-laws and regulations for its government, management, and improvement, for preserving good conduct and good order, and preventing nuisances and annoyances in it; and to vary and extinguish all rights and privileges which would interfere with any of these objects. At the last meeting of the Board the Parliamentary Committee reported that they had prepared the Bill for the acquisition o Leicester-square, and proposed to apply to Parliament to set aside the standing orders in order that it might be introduced during next session. The Board, after purchasing the square, will be able to deal with the railway company which has power to pass under it in the same way as the present owner.

SCHOOLS OF ART AND OF SCIENCE.

St. Martin's School of Art, London.—The annual distribution of the prizes gained by the students of this school took place in the school-building, Castle-street, Long-acre, in the presence of a large assemblage of visitors. Mr. R. Redgrave, R.A., presided, and gave an introductory address, expressing his satisfaction with the efforts of the students, at the favourable position of the school as compared with others connected with the Science and Art Department. The prizes, which included several presented by the Plasterers' Company, were then distributed by the chairman, the most distinguished of the prize-winners being Miss Cornelisen, Mr. Seymour Lucas, and Mr. George Jupp, to each of whom was awarded the bronze medal. Mr. H. S. Marks, A.R.A., then addressed the students on the subject of art, giving them many valuable hints and a good deal of sound practical advice. Lord Francis Hervey subsequently made a few observations upon the same topic; and during the remainder of the evening a selection of music was performed by the students and friends.

Bristol School of Science and Art.—The prizes and certificates awarded by the Science and Art Department, at the last examination, to the students of this school were distributed, at the Fine Arts Academy, Queen's-road. The Mayor (Mr. T. Barnes) presided over a large attendance. From the annual report it appeared that the debt of 655*l.* on the institution had been reduced to 25*l.* The committee, however, lamented the smallness of the subscription-list, which amounted to only about 35*l.* a year. The report went on,—

"The results of 1873, as compared with those for 1868, the first year of Mr. J. Nicol Smith's head-mastership of this school, are highly satisfactory. Results for 1868:—

2nd grade, 111 exercises passed by 83 students, 16 prizes, and 7 full certificates; 3rd grade—12 prizes, 5 honourable mentions, 19 works selected for national competition. 1873:—2nd grade 143 exercises by 102 students, 28 prizes, and 16 full certificates; 3rd grade 24 prizes, 10 works selected for national competition, 5 free studentships, 1 National Queen's prize. This increase has necessitated an extension of the school accommodation, and it is proposed, as speedily as possible, to undertake the erection of enlarged and additional class-rooms, towards which your committee hope to receive such a substantial grant from the Science and Art Department as will, they trust, enable them to complete their alterations without any application to the public for contributions to the building. At the same time they venture to express their earnest hope that their present appeal for new subscriptions will not be made in vain." It was resolved,—

"That this meeting recognises the great work being done by the Bristol School of Science and Art, commends it very strongly to the citizens and manufacturers of Bristol, and invites their support towards raising the amount of its subscriptions to at least 1001. per annum."

Leicester School of Art.—The annual meeting of this school and distribution of prizes took place in the lecture-room of the museum. The chair was occupied by Mr. A. Pell, M.P., who delivered the prizes, and the room was crowded to excess, many people being unable to obtain admission. A large number of the works of the students were exhibited on the walls of the room, and were inspected by the audience. In course of the proceedings Mr. Pilsbury, the head master, read his report, which stated that the school has been quite as successful as ever. He says:—

"I find that out of the total of 260 students, upwards of 150 belonged to the artizan class.

The total number of works executed during the year and sent for examination to the Science and Art Department, was 1,094. Last year the total was 1,448. This decrease is attributable to the advance of the students to the higher stages, in which more time is required to execute the works.

Although the works were less numerous this year than in either of the previous years, we have gained more prizes for them.

I am glad that the complaint which the examiners made last year respecting the want of a more concentrated force of light on the objects of study, as shown by the students' works, has not been repeated this year, and that we are informed that 'the drawings show a marked improvement.' But the unsuitableness of the present building continues to be very detrimental to our progress, and it is exceedingly difficult to place the casts and other objects in a proper light. This difficulty increases as the students advance to the higher stages, and require more casts and objects arranged to study from.

The antique-room and space allotted to the advanced work in the evening class, will also soon be too small for the increasing number who are passing from drawing from flat examples to working from the round.

I need scarcely say that the position of the school in relation to the other art schools in the kingdom depends greatly upon the character of the works in the higher stages, and that this advanced work will exercise the greatest influence upon the industrial art of this town. It is, therefore, important that every obstacle be removed which discourages the students and retards the progress of those who, having passed through the elementary stages, have arrived at the more advanced branches of study.

The requisite space and proper lighting cannot be obtained in the present building, and I trust that one specially designed for the purposes of a School of Art will speedily be provided."

Mr. Pell attributed the deficiency in the taste for art in such towns as Leicester to the unequal increase in the population, and to the fact that there was less art in making a stocking than in designing of patterns for Nottingham lace, Birmingham toys or jewelry, or Coventry ribbons. He advised all students of art to avoid novelty, or what was termed "originality," especially those of a mechanical turn of mind. When travelling in Staffordshire recently, he endeavoured to ascertain why we had in England such a number of ugly jugs that it required something good inside them to make them tolerably pleasant. The explanation he received was that the new patterns were brought out by the smallest masters, and that they brought out a new design every year. This was dangerous, and must end in unsatisfactory results.

York School of Art.—The annual meeting of the subscribers and friends of this school was held at the Institution, Minster-yard. There was a numerous attendance. Major York occupied the chair, and distributed the prizes. Amongst others, Mr. Dominy, the master of the school, addressed the subscribers and the students present. Having thanked the former for their generous support of the school, and congratulated them on its improved financial condition, he spoke of the work done in the various classes during the past year. On the whole, this was highly encouraging. Many students had passed their examination very creditably, and had done well. Speaking of the various ways in which a thorough and practical knowledge of art was of great service to its possessors, reference was made to ornament in manufactures, which as a branch of study he should like to see carried out more in that institution. He was perfectly aware that there were, comparatively speaking, very few manufactories in this city, and hence not that encouragement and incentive to this special branch as in larger towns; but he was glad to say that a start was made during the past year, and he hoped this course of study would be continued, and produce better results next year. At some length Mr. Dominy alluded to the preference on the part of many of the students for what he might term showy work, rather than the more artistic kinds, and those which were of more intrinsic and permanent benefit. He spoke of the growing interest in art, its elevating influence, the necessity of patient and thorough application, and the importance of scientific and correct art instruction. To the students he gave much valuable advice.

Walsall School of Science and Art.—The annual meeting of the Walsall Science and Art Institute took place at the Tantarra-street Board School, the president, Mr. C. Forster, M.P. for the borough, and who distributed the prizes, in the chair. There was a good attendance of students and friends. The report, after acknowledging the efforts of Mr. Forster to bring about an amalgamation of the different institutions of the town,—efforts which ultimately proved successful,—went on to state that the committee commenced its labours in the rooms above the railway station, in October, 1872, with five classes in art studies, for the absolutely elementary and the more advanced; and six classes in science, viz., physical geography, animal physiology, electricity and magnetism, acoustics, light and heat, geology, and chemistry. Owing to the amalgamation having taken place late in the session, many students were prevented joining; but, nevertheless, there were passed by the Government examiners forty-six students in art, and fifty-one in science, winning twenty-six Queen's prizes, and two honourable certificates,—a success of which all concerned might be justly proud, excelling, as it did, most other institutes of like proportions. At the present time there were sixty-three students in the art classes, being an increase of seventeen, who were taught by an experienced teacher, Mr. A. Mulligan, and his assistant, Mr. A. Mills. In the science classes, there were ninety-four students, being an increase of fifty-nine, who were taught by Mr. Turner and his assistants. It was intended to take for use the rooms above the station, at present occupied by the Working Men's Club, and use them in addition to those now occupied by the institute; and it was also proposed to fit up a laboratory, and provide apparatus for the study of electricity and magnetism. The financial condition of the institute was not unsatisfactory, but its extended operations would render increased funds necessary, and those funds, the committee felt sure, the town would be willing to supply.

Derby Central School of Art.—The annual distribution of prizes and certificates to the successful students of this school, took place in the Lecture Hall, Wardwick, the presentation being made by the Right Hon. Lord Vernon, the president of the school, who occupied the chair. The attendance of the general public was very good, both the body of the hall and the gallery being well filled. The head master (Mr. Simmonds) read a statement, in which he said: It is very satisfactory to be able to state that there has been a continual increase in the number of students from the time the school was first opened until March last, when, I regret to state, it was necessary to close the registers and refuse admission to all other applicants, in consequence of the space in the rooms being totally inadequate to the demand. This course was not adopted till the rooms were so crowded that the studies were much interrupted, and, in many cases, in the advanced work all chance of success entirely prevented. After the registers were closed a large number of applicants were received. If it be reported that the premises are unsuitable the Government aid will be liable to be partially or entirely withdrawn. Therefore it is evident, that unless speedy measures be taken to provide something like the accommodation afforded in neighbouring towns, the school will be unable to maintain its position, even should it not cease to exist. Finally, I would urge the gentlemen of this committee to make an effort to uphold a school that has accomplished in the time more than any school of art in the kingdom.

History of Jewish Coinage.—The book on this subject recently quoted by us is by *Mr.* Frederick Madden, not his father, the late "Sir Frederick," as stated.

CHURCH-BUILDING NEWS.

Torquay (Devon).—The formal celebration of the completion of the rebuilding of the parish church and tower of St. Marychurch, Torquay, has taken place. The undertaking has cost 14,250*l.*

Nibley.—The parish church of St. Martin, North Nibley, has been re-opened. Three windows have been restored in the south aisle, and filled with cathedral glass; and one in the east end is a completely new one, the upper tracery is filled in with stained glass, with the words, "Holy, Holy, Holy, Lord God of Hosts." These were executed by Mr. Blandford, builder, and Mr. Garn, glazier, both of Dursley. The east chancel window has also been filled with stained glass, wrought by Messrs. Bell & Son. The window, of Gothic design and in three divisions, contains nine subjects in our Saviour's life, viz.:—"I am sent to my Father," "And to your Father," "And to My God and your God," "Feed My Sheep," "And He took Bread" (this forming the centre subject), "Abide with Me," "Touch Me not," "Be not Faithless," "They ran both of them together."

Pulham.—The Church of Pulham St. Mary Magdalene, Norfolk, consists of a nave and aisles, tower, and north porch, of the time of Henry VII., whilst the chancel is of the earlier or Decorated period, or about the time of Edward II. The roofs, all of which are figured in Brandon's "Open Timber Roofs," have now been restored, every portion of the old timbers, as far as they were sound, having been left as they were, and all necessary new pieces have been reinstated in oak, moulded like the old, but left in their new wood, without stain or varnish, so as to show exactly what is original and what is not. The nave and chancel roofs have been covered with green slates, and the aisles with lead, as before. The eastern bay of the nave-roof had been highly decorated in distemper, but time had to a great extent obliterated it. It formerly consisted of angels and cherubs and monograms of the name of our Saviour and St. Mary, and ornaments in red, green, gold, white, and other tints. There was sufficient left to enable the artist to exactly recopy the old, which has been done by Mr. King, of Norwich. The east window was a very debased post-Reformation work. A new three-light Early Geometrical window has been put in its place, and filled with stained glass, by Heaton, Butler, & Bayne, representing, in the centre light, the Crucifixion, with Mary kneeling at the foot of the cross; on the left-hand, Mary Magdalene washing the Saviour's feet; and on the right, Mary telling the Apostles she had seen the Lord after His death. The side windows in the chancel are also filled with stained glass by the same firm, and consist of emblems of our Saviour, St. Mary Magdalene, St. Mary the Virgin, and other devices. The chancel is benched with oak carved benches, of the Early Decorated character, the floor being laid with Minton's encaustic tiles, that within the altar-rails containing emblems of our Saviour, the four Evangelists, the cup, &c.; and outside, the letter M, for St. Mary Magdalene, and other devices. A new vestry and organ-chamber have been built on the north side, opening into the chancel and north aisle, with stone arches, filled in with oak screens. The clearstory and south-aisle windows are glazed with cathedral glass, the walls having been re-stuccoed, and the floor laid (where the seating should be) with wood, and the passages of the nave and aisles with the old monuments and paving. The whole of the doors, both north, south, and west end, and vestry, are of moulded oak, the hinges and fastenings being of wrought iron, made from special designs by the architect, Mr. R. M. Phipson. The church is warmed by apparatus supplied by Haden & Sons, of Trowbridge. The general contractors for the works are Mr. Vine, of Eye, and Mr. Grimwood, of Weybread. The organ has been repaired by Mr. Rayson, of Ipswich. It now occupies a chamber at the east end of the north aisle, and its outward appearance has been brought into harmony with the restored interior of the church.

Cheltenham.—The committee appointed some time ago to consider the best means of increasing the church accommodation of the parish have issued an appeal from the pen of the rector, Canon Bell. It is of a twofold character. First, the committee ask the inhabitants to complete the restoration of old St. Mary's Church. To properly restore the building 4,000*l.* will be required. Secondly, funds are asked to erect a new church, capable of holding the presen

large congregation of the temporary church. To do this 14,000*l.* or 15,000*l.* are needed.

Liverpool.—St. Margaret's Church, Anfield, has been consecrated. It occupies, says the local *Journal*, a prominent site at the corner of Belmont-road and West Derby-road, within the township of Anfield. It has been erected from designs by Messrs. W. & G. Audsley, of Liverpool, and is of the early French style of architecture, freely rendered, so as to harmonise with the treatment demanded by the materials employed in the structure. It is constructed of local grey bricks, relieved with the sparing introduction of red and black bricks in the arches, bands, and cornices, the finishings being of Storeton stone, Yorkshire stone, and polished red granite. Externally the design is of great simplicity, little ornament being applied except in the west façade and south porch. The general features of the design are a long nave with narthex and lateral aisles, an apsidal chancel, north and south transepts, and a centre tower, gabled east and west, and roofed in the saddle-back form. The west portal is large and deeply recessed, with jambs set with nook shafts, and alternating arches of red brick and carved stonework; within these are set double doorways, divided by grouped shafts of polished red granite, and surmounted with a moulded and carved tympanum, enriched with sculptures of our Lord in glory, and adoring angels. The south quasi-transept, or limb of the narthex, is used as the principal entrance-porch, having a double doorway, with scenes from the life and martyrdom of St. Margaret sculptured in the tympanum, and a full-length figure of the saint, as depicted in Christian art, in a centre niche above. The treatment of the remainder of the exterior is simple. The interior of the church consists of a western narthex, a nave with lateral aisles, a choir space at the crossing, north and south transepts, and a spacious chancel. The nave is 100 ft. long, with its aisles 61 ft. wide, and 60 ft. high to the ridge-rib of the wagon ceiling. The western end is crossed with the narthex, composed of quasi-transepts, which open into the nave by arches 36 ft. high, and into the aisles by lesser arches. The southern limb of the narthex is used as the entrance vestibule, and the northern as the baptistery. The ceiling of the former is decorated with devices containing the monogram of the patron saint, and the latter is illuminated in gold and colours, the designs having allusion to baptism. The font, which is placed in the centre of the baptistery, is of large size and elaborate workmanship; it is of square shape, and consists of a carved Caen stone basin, with capping and inlays of coloured marbles, supported on four square and sixteen circular columns of red and green marble, with carved capitals and bases. The whole stands on a base of three steps. The ceiling of the nave is of a wagon form, and painted throughout in gold and colours. The ceilings of the side aisles are also decorated in gold and colours. Over the western doors is a painting of the Adoration of the Magi, extending the whole width of the nave; it is the work of Messrs. Heaton, Butler, & Bayne. The nave is seated with low open benches of pitch pine, and warmed, along with the rest of the church, with hot-water pipes. The choir is placed under the tower at the crossing of the transepts, and opens into the nave, chancel, and transepts by four arches 50 ft. high. The pulpit, which is of Caen stone and marble, is placed on the left of the screen and against the north-west pier of the tower. In the north transept is erected the organ, a work of Messrs. W. Hill & Son, with its principal front across the tower arch and its secondary front in the transept arch towards the nave. The ceilings of both transepts are decorated in colours. The width of the church across the transepts is 70 ft. The chancel is of an apsidal form, 25 ft. wide and 30 ft. long. The reredos is of marble and Caen stone, and contains three sculptured groups of the Agony, the Crucifixion, and the Ascension divided by columns and surmounted by pedimented arches. At each end, and between the arches, are four angels bearing inscribed scrolls. The whole terminates at the height of about 16 ft. with a cross and dove. The altar is of black oak relieved with gold and colours.

Walsall.—The foundation-stone of the new district Church of St. George, Walsall, has been laid by Lady Hatherton. The design is in the Early Decorated style, the outer walling being of limestone, with Penkridge stone dressings, and consists of nave, 90 ft. 9 in. by 29 ft. 6 in.; chancel, 40 ft. 6 in. by 20 ft.; vestry and choir-vestry, and organ-chamber. There will be a porch on the north and south sides of the church, and above the former will rise the steeple, which will be 168 ft. high, or 3 ft. higher than that of the parish church. The roof will be an open-timbered one, and the fittings of pitch pine. Owing to the formation of the ground, the floor will incline from west to east to the height of 3 ft. The floor will be laid with encaustic tiles, and the church will be heated with hot water. The cost of the whole building, it is estimated, will be about 10,000*l.*; but at present the nave and aisles only will be erected, at a cost of between 5,000*l.* and 6,000*l.*, but this will include the foundations for the whole structure. The erection of the steeple will not be entered upon until the other portions of the building are finished. The architect is Mr. R. Griffiths, county surveyor, Stafford, builder, Mr. James Adkins, Walsall; and clerk of the works, Mr. J. Adkins, jun.

DISSENTING CHURCH-BUILDING NEWS.

Bridlington.—The foundation-stone of a Baptist chapel, to be erected on the west side of the Quay-road, has been laid. The style is Gothic, and the building will be of white brick, with ornamental stone, with a tower on the south side and at the east end of the chapel. It is intended to accommodate 500 people, having a gallery over the entrance at the east end, and an orchestra behind the pulpit at the west end; also a schoolroom and vestry on the west of the chapel. The building will cost over 3,000*l.*, towards which the building committee have received, in donations and promises, 1,000*l.* Mr. Musgrave, jun., of Hull, is the architect; and Mr. John Rennard, of Bridlington Quay, the contractor.

Frodsham.—A new Wesleyan chapel has been opened for divine worship at Frodsham. The chapel is the gift of Mr. Thomas Hazlehurst, of Prospect-villa, Runcorn, and has been presented to the Wesleyan Conference, complete with the internal fixtures, and free from debt, at a cost of 7,000*l.* The land, which cost 600*l.*, was the gift of Mr. Charles Hazelhurst. The minister's house, which is close to the chapel, has been erected by the congregation and other friends of the cause. The style of architecture is Gothic, freely treated, local stone being used throughout, from the quarries of the Marquis of Cholmondeley, by whom it was supplied at a nominal cost. The spire is 120 ft. in height, and of the broach description, with canopied windows on the four sides, and surmounted by the usual vane. The upper part of the tower, immediately below the spire, is finished with a recessed window and an arcade below, with polished granite shafts. A smaller arcade, but richer in detail, has been added to each side of the main entrance; this is ornamented with polished granite shafts. The chapel faces Main-street, and thus occupies a prominent position. The grounds within the gateway are laid out and cultivated. The architect is Mr. C. O. Ellison, of Liverpool. The building is constructed to accommodate 600 persons. The seats are open, and of pitch-pine, the entrance to the body of the chapel being by two doors from the main entrance, and two on either side of the communion rails, at the other end. There is a spacious gallery on three sides. The effect of the communion enclosure is maintained by an arch, moulded, and with polished granite clustered columns, the lower portion being filled in with a pitch-pine screen, with polished brass shafts and carved capitals and ornamental glass panels. The pulpit is of pitch-pine, with ebony shafts, traceried panels and side panels, inlaid with black. The font is the gift of the architect, and is in hammered brass and copper jewelled; it stands immediately over the centre of the handrail, and bears this inscription:—"Presented to Trinity Chapel, Frodsham, by its architect, C. O. Ellison, Liverpool, Nov. 6th, 1873." The gallery-front, the wall-boarding, and the framing of the aisles, are finished with long narrow panels along the tops, filled in with ornamental perforations, with crimson cloth at the back. The pillars which support the gallery are moulded, and from them lighter columns ascend to support the roof-timbers, which ride from the caps of the upper columns in every direction. The ceiling is filled in with diagonal pitch-pine boarding, with ornamental perforations in the centre, communicating with ventilating chambers between the ceiling and the roof. The windows of the chapel are the work of Messrs. Holloway, glass contractors, Liverpool. They are traceried in stonework, the heads being filled in with painted glass of varied design and colour. The ornamental effect is carried down the windows by borders and panes. The pillars are decorated in gold colour, to match the organ front. The decorative work has been carried out by Messrs. Chandley, of Warrington. The gas-fittings are by Messrs. Brawn & Downing, of Birmingham, and are constructed of hammered brass and iron, in colours. A ten-light corona is suspended between each column, and five-light brackets from the walls under the gallery. The heating properties of the chapel are afforded by apparatus supplied by Messrs. Trusswell & Co., of Sheffield. The organ was built by Mr. Wadsworth, of Manchester, at a cost of 400*l.* The front of the instrument is divided into three bays, the pipes being of metal, wood, and reed, and is enclosed in a pitch-pine case, with ebony shafts and ebony mouldings in gold and black. The centre pipes are gilded on colour, and the side pipes coloured on gold. The organ is placed in front of the congregation, behind the pulpit, in a gallery erected for the purpose. A Sunday-school has been erected at the back of the chapel, and is completely fitted for week-night services. A fault, however, in the construction of this building appears to be its deficiency of light, which is afforded by low windows of stained and glazed glass. There are three vestries connected with the chapel. The house of the minister is of plain construction, without any features of attraction, and built of red stone. The builders were Messrs. White & Son, of Runcorn; the mason, Mr. Charles Holland, of Chester.

Biggleswade.—The chief stone of a new Primitive Methodist chapel has been laid. The plans and specifications were prepared by Mr. Thos. Handley, of this town, architect, according to the *Bedfordshire Times*, which states that the new chapel will be in the Gothic style, will accommodate about 300 persons, and be so constructed that a gallery (if needed) may be added. The estimated cost is about 560*l.*

Belgrave (*Leicester*).—The memorial-stone of a new Nonconformist Church has been laid at Belgrave. The building is intended to seat 500 persons, 400 on the ground-floor and 100 in an end gallery. It is roofed in one span, and has a light projection on each side, and also a recess behind the Communion platform, which is occupied by the baptistery. Behind the chapel, and on the same level with it, are two vestries and a ladies' retiring-room. A staircase adjoining these rooms leads to the lower story, which is arranged to contain a schoolroom for 300 children, two senior class-rooms, an infant-school-room, a kitchen for tea-meetings, heating-chambers, and other conveniences. The levels of the ground are such as to admit of the basement being well lighted, and also of the school being approached from Vann-street, with only a small number of steps, while the chapel-floor above it is not an inconvenient height above the Leicester-road, towards which the main entrance fronts. The style of architecture is Early English Gothic, the material for the walling being red pressed-brick and Bath stone. The architect is Mr. Tait, of Leicester, whose design was chosen in competition; and the contract for the building has been taken by Mr. Billington, of Belgrave.

STAINED GLASS.

Miscellaneous.—Two double-light memorial windows have been lately placed in the chancel of the (R. C.) Church of Our Lady and St. Patrick, Oldham; the following subjects from the New Testament are arranged therein in medallions, three in each respective light, viz., Annunciation, Visitation, Flight into Egypt, Holy Family at Nazareth, Marriage Feast at Cana, Good Shepherd, Charge to St. Peter, Crucifixion, Resurrection, Ascension, and Descent of the Holy Ghost. The spaces between each medallion are filled up with patterns in grisaille inclosed by Early English borders. These windows are the gift of Mrs. Sophia Ainsworth, relict of Mr. John Lees Ainsworth, late of Bankside, Oldham. The execution on glass was by Mr. William Gardner, of the St. Helen's Stained Glass Works, after the cartoons of Mr. Casolani, of the same town. The same artists have likewise recently completed the following:—A double-light baptistery window for the same church, with the Baptism of Our Lord, and Christ Blessing Little Children, in large figures, the gift of Mr. G. Kighley; one

of the openings of a four-light window of Lady Chapel in the (R. C.) Conventual Church of St. Francis, West Gorton, with a representation in full-length figures of "the Immaculate Conception," and in a panel underneath Pius IX. defining that dogma; the remaining three lights to be subsequently filled in with other suitable subjects. A small lancet window in St. Wilfred's Church, Bedford-street, Hulme, with a figure of St. Margaret of Scotland under a canopy, erected by Mr. G. Kighley in memory of his deceased wife. Three aisle-windows, representing the Annunciation, Visitation, and Nativity, in large medallions on grisaille grounds and borders. Four lancets in St. Joseph's Chapel, and four in the Lady Chapel of St. Ann's Church, Ashton-under-Lyne, with full-length figures of saints.

Books Received.

Science Simplified. By Professor Pepper, late of the Polytechnic. Frederick Warne & Co., Bedford-street, Covent-garden.

Under this general heading, we have six interesting and useful little books by the popular lecturer on Science, Professor Pepper, respectively devoted to Heat, Light, Electricity, Pneumatics and Acoustics, Chemistry, and Magnetism. They all have numerous illustrations, are full of useful information pleasantly conveyed, and each can be separately obtained.

Miscellanea.

The Ventilation of Law Courts and other Public Buildings.—Mr. Justice Denman has refused to sit in the room provided by the Corporation of the City of London for the sittings of the Second Court at Guildhall. He found that the chamber was small, low in ceiling, hot with large fires, and poisoned with gas-smoke. In Leeds, says the *Yorkshire Post*, judges and jurors for a long time experienced all the ill effects of a similar state of things in the Assize Courts, and various plans have been tried, at much cost, with the object of bringing about an improvement. This has, with the approval of the corporation, been introduced by Mr. Martin Tobin:—

"To thoroughly ventilate the court without introducing currents of cold air that would be prejudicial to the health of those attending it, was the task Mr. Tobin set himself. What he did was to fix in the court a few tubes connected with the exterior of the building, and then, like a wise physician, leave Nature to work her own cure. The fresh air surrounding the hall dashes into the open mains, and, after coursing through the crypt, it pours into the court out of the tops of the tubes. By this means eight or ten streams of fresh air find their way into the apartment, and the various currents being higher than the heads of the great bulk of those attending the court, no inconvenience is felt. Each column of air rises to a considerable height, and then diffuses itself in the upper region of the court. The ventilation in the ceiling carries off the impurities, and the fresh air being constant in supply, the improved condition of the atmosphere is maintained."

Gas Explosion: prepare for Frost.—The millinery establishment of Mr. Garland, Westwell-street, Plymouth, was being opened by a porter, but on going into a room behind the shop, he perceived a strong smell of gas, and, calling for a pair of steps *and a light*, he mounted the steps, striking a match close to the gas pendant in the room. Immediately there was a terrific explosion, the window of the room being blown out, and the plate-glass front of the shop and the shutters blown across the street. All the articles in the room were burnt. The porter and three women were severely scorched, as also was another person. The cause of the gas escaping was, that on the previous evening the pendant was pulled down too far, and a large amount of gas was collected in the room during the night.——This is the time again to speak of the advisability of substituting Colza oil for water in hydraulic pendants to prevent accidents in frost. The pendant to which we have for several winters referred passed another winter in safety, and without any attention or addition whatever, since last winter, although it is very easy to replenish it with the oil, which gives no bad smell, and does not burst the pipe soldering, and so cause accidents in any degree of frost, as water is apt to do.

Housebreakers' Differences.—The following tenders have been delivered for the demolition of two cottages, Albion-hill, Ramsgate, for the Local Board:—

Buckley	£63 5 0
Smith & Son	49 7 6
Home	34 19 6
Green (accepted)	14 15 6

The Metropolitan Gas Question. — A numerous deputation from the vestry and inhabitants of Paddington attended at the last meeting of the Metropolitan Board of Works and presented a memorial upon the subject of the proposal made by the Imperial Gas Company to raise the price of gas supplied by them. The memorialists stated that the Gas Company possessed a monopoly for the supply of gas, and notwithstanding that they charged the maximum price allowed by Parliament for 14-candle gas, at 3s. 9d. per 1,000 ft., the memorialists had heard, with astonishment, that the company had given notice of its intention to apply to the Board of Trade to raise the price after the 1st of January next. The reason assigned—the high price of coal—was fallacious, inasmuch as the price of the residual products had very much increased. The deputation hoped the Board would use all the means at its command to oppose the application of the company. Mr. Roche said this was only the first of many memorials which would come in to the Board from all parts of the metropolis protesting against the proposed increase of price. The memorial was referred to the Works Committee for report and consideration.

The Clapham and Brixton Baths.—It is satisfactory to hear that the scheme for supplying with water, from an artesian well, the swimming-bath now nearly erected by this company in the Ferndale-road, Shepherd's-lane, Brixton, under the superintendence of Messrs. Fowler & Hill, architects, is in a fair way of being carried out. The managing director, Mr. A. T. Timewell writes to us as follows:—On the 26th of July last, the then Lord Mayor, Sir Sidney H. Waterlow, bart., laid the foundation-stone of the above-named building, and at the ceremony expressed his opinion that the company itself was formed for a praiseworthy object, and that he considered the financial success turned upon the manner in which we obtained our water supply. I have now great satisfaction in announcing that a well has been dug, and bored to a depth of 418 ft. 6 in., and that we have entered a substratum of water, which rises to within 83 ft. of the surface of the ground; and by all our trials, both by hand and steam-driving the last three weeks, we have been unable to lower the water in the least, although the pump has thrown at times upwards of 200,000 gallons without stopping.

Northallerton New Town-hall and Market Buildings.—This hall was to be opened on Monday with a grand concert. The new market-house is a building of brick and stone, erected from the designs of Messrs. Ross & Lamb, architects, Darlington. The basement is entirely occupied with cellarage. On the ground-floor are a covered market, with accommodation for the market-people, and seven shops. The first-floor contains the public hall, capable of seating about 600 people, and with dressing and cloak rooms attached. This hall will occasionally be used as a concert and ball room, and for theatrical performances. The ceiling, which is wagon-headed in form, is decorated in colours. At the back of the stage or platform is a semicircular recess, which, together with the form of the roof, aids the acoustic qualities of the room. The lighting and ventilation have also received attention.

Improvements in Brussels. — The new boulevard now in progress will, when completed, bear comparison with any of the Paris boulevards. The houses already erected are built in an expensive style, far surpassing any of the existing buildings in Brussels. The site of the new boulevard was formerly occupied by the River Senne, which has been covered in at a great expense, and after several years' labour, by Messrs. Waring Brothers, of London. A committee has been formed in Brussels for the purpose of giving a banquet, on the 10th of January, to M. Anspach, the burgomaster, in recognition of his services in connexion with the various recent improvements.

A New Church for Cardiff.—A meeting has been held in the Tredegarville Schoolroom, Cardiff, for the purpose of considering what steps should be taken for the erection of a new church in the district of St. John's. Tredegarville is a populous part of the town, adjoining Roath. The necessity of a new church there is very strongly felt in the neighbourhood. It was ultimately resolved to form a committee for the purpose of taking the necessary steps for the erection of a church.

The Mill Memorial.—At the last meeting of the Metropolitan Board of Works, a report was presented from the Works and General Purposes Committee, stating that the committee have considered the letter from Mr. W. T. Thornton and Mr. Arthur Arnold, Honorary Secretaries of the Executive Committee of the John Stuart Mill Memorial Fund, requesting permission to erect a statue of the late Mr. Mill at the western end of the gardens of the Victoria Embankment, near the Houses of Parliament, and requesting the assignment of a site for that purpose, and recommending that a site, to be hereafter determined upon, be granted, the design of the statue and pedestal to be subject to the approval of the Board. Mr. Newton moved the adoption of the report. He considered the Victoria Embankment a most appropriate place for the reception of statues of distinguished men. The motion was carried.

The New Pier at Blackfriars Bridge.—The stage which is to form the future place for embarkation and landing on and from the river steamboats at Blackfriars Bridge, has been placed in position, as well as the bridge which connects it with the platform leading to Bridge-street, Blackfriars. The landing-stage is of the improved pattern, such as those at Westminster and the Temple, consisting of a number of air-tight iron drums. Wooden houses for the accommodation of passengers and the officials of the Iron, Citizen, and Woolwich Steamboat Companies respectively are erected upon the stage. A light iron bridge, rising and falling with the tide, connects a stage with a fixed iron bridge, which leads up to the entrance of the pier, within a couple of yards of Blackfriars District (Underground) Railway Station. The pier has been opened for steamboat traffic.

Presentation to Mr. E. Dresser-Rogers. The vestry of the parish of Camberwell have presented an engrossed memorial to Mr. E. Dresser-Rogers, in recognition of his indefatigable services in opposing the South London Gas Bill, which, if it had passed, would have cost the ratepayers several thousands of pounds annually, and allowed the price of gas to be raised. Mr. Dresser-Rogers, in thanking the vestry for the compliment paid him, said he could safely state, as a member of the Metropolitan Board of Works, that the parish of Camberwell, at the present time, was particularly privileged with regard to the gas question, and that it might consider itself quite safe against any increase at present. He hoped, therefore that the vestry would give their moral support to the other parts of the metropolis in their endeavours to oppose any encroachment by the gas companies in raising the price of gas.

A Well-earned Gratuity.—The governor of Devonport borough gaol having, in addition to his ordinary duties during the past two years, designed and caused the prisoners to build a new wing for the prison without employing any free labour or extraneous assistance, the Devonport council have awarded him 100*l.*, with smaller amounts to other officers. The prison, crediting it to the ordinary value of the labour bestowed on the new wing, has not cost the borough one penny during three years, and so thoroughly are the prisoners kept to industrial pursuits, that for several years they have earned their own maintenance, and partly paid the salaries of the staff. The per-centage of recommittals to Devonport Gaol is unusually low.

A Diamond Saw.—The *American Manufacturer and Builder* speaks of a diamond saw in operation at the Exhibition of the American Institute. It is an ordinary reciprocating saw-machine; but diamonds form the cutting tools, in combination with the steel blade as a guide. The diamonds are set in "cutter blocks" at intervals upon the blade, and work horizontally as a true saw in the stone set beneath. But while an ordinary saw cuts on an average 1 ft. 3 in. of brown stone in a day, the diamond-saw will do as much in half an hour.

The New Street through the Charterhouse.—Dr. Middleton has applied to the Chancellor of the Diocese of London (Dr. Tristram), at the Consistorial Court, for a faculty or licence to take a portion of the churchyard of the Charterhouse, and to remove the bodies to another part. In order to make the new street from Bloomsbury to Shoreditch, it would be necessary to take part of the churchyard of the Charterhouse, and a faculty was required to appropriate a consecrated spot. The court granted the prayer of the applicants.

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